

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

Carlsbad Field Office
Artesia

FORM APPROVED
OMB NO. 1004-0137
Expires: January 31, 2018

SUNDRY NOTICES AND REPORTS ON WELLS
Do not use this form for proposals to drill or to re-enter an abandoned well. Use form 3160-3 (APD) for such proposals.

5. Lease Serial No.
NMNM030456

6. If Indian, Allottee or Tribe Name

SUBMIT IN TRIPLICATE - Other instructions on page 2

7. If Unit or CA/Agreement, Name and/or No.
NMNM71016T

8. Well Name and No.
POKER LAKE UNIT CVX JV BS 24H

9. API Well No.
30-015-41598-00-S1

10. Field and Pool or Exploratory Area
WCG06S253002O-BONE SPRING

11. County or Parish, State
EDDY COUNTY, NM

1. Type of Well
 Oil Well Gas Well Other

2. Name of Operator
BOPCO LP

Contact: STEPHANIE RABADUE
E-Mail: stephanie_rabadue@xtoenergy.com

3a. Address
6401 HOLIDAY HILL RD BLDG 5 SUITE 200
MIDLAND, TX 79707

3b. Phone No. (include area code)
Ph: 432-620-6714

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)
Sec 1 T25S R30E SWSW 165FSL 1160FWL
32.091039 N Lat, 103.502139 W Lon

12. CHECK THE APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION			
<input checked="" type="checkbox"/> Notice of Intent	<input type="checkbox"/> Acidize	<input type="checkbox"/> Deepen	<input type="checkbox"/> Production (Start/Resume)	<input type="checkbox"/> Water Shut-Off
<input type="checkbox"/> Subsequent Report	<input type="checkbox"/> Alter Casing	<input type="checkbox"/> Hydraulic Fracturing	<input type="checkbox"/> Reclamation	<input type="checkbox"/> Well Integrity
<input type="checkbox"/> Final Abandonment Notice	<input type="checkbox"/> Casing Repair	<input type="checkbox"/> New Construction	<input type="checkbox"/> Recomplete	<input checked="" type="checkbox"/> Other
	<input type="checkbox"/> Change Plans	<input type="checkbox"/> Plug and Abandon	<input type="checkbox"/> Temporarily Abandon	Surface Disturbance
	<input type="checkbox"/> Convert to Injection	<input type="checkbox"/> Plug Back	<input type="checkbox"/> Water Disposal	

13. Describe Proposed or Completed Operation: Clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recomplete horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports must be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompletion in a new interval, a Form 3160-4 must be filed once testing has been completed. Final Abandonment Notices must be filed only after all requirements, including reclamation, have been completed and the operator has determined that the site is ready for final inspection.

XTO Energy, Inc / BOPCO, L.P respectfully requests a 95.878acre location in SWSW quarter of Section 1-T25S-R30E, NMPM, Eddy County, New Mexico for the purpose of a Central Delivery Point, equipment staging area, and laydown yard. Onsite of location was performed on August 3, 2017, with BLM Natural Resource Specialist Fernando Banos. The Cowboy Central Delivery Point (CDP) and associated staging area is a 95.878acre proposed permanent facility designed for prudent development of anticipated Poker Lake Unit volumes at the end of the midstream pipeline system intended to handle and store oil and gas products safely and responsibly with consideration to a reduction of long-term environmental impacts and product waste prior to sale to 3rd Party Gatherers.

RECEIVED

AUG 07 2018

Attachments:
1 - Plan of Development
2 - Certified Plat

GC 8-13-18
Accepted for record - NMOCD

DISTRICT II-ARTESIA O.C.D.

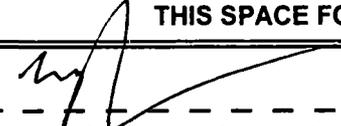
14. I hereby certify that the foregoing is true and correct.

Electronic Submission #420934 verified by the BLM Well Information System
For BOPCO LP, sent to the Carlsbad
Committed to AFMSS for processing by PRISCILLA PEREZ on 05/25/2018 (18PP1787SE)

Name (Printed/Typed) STEPHANIE RABADUE Title REGULATORY ANALYST

Signature (Electronic Submission) Date 05/21/2018

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved By  Title AFM Resources Date 11 Jul 2018

Conditions of approval, if any, are attached. Approval of this notice does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.

Office UMMPO2800 CARLSBAD

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

Additional data for EC transaction #420934 that would not fit on the form

32. Additional remarks, continued

- 3 - Geotechnical Report
- 4 - Anticipated Layout

Cowboy Central Delivery Point

XTO Energy, Inc. / BOPCO, L.P

SWSW Quarter-Section 1-T25S-R30E
Eddy County, New Mexico

5/11/2018

Cowboy Central Delivery Point
XTO Energy, Inc. / BOPCO, L.P.
Section 1-T25S-R30E, NMPM
Eddy County, New Mexico

1. PURPOSE AND NEED:

- a. XTO Energy, Inc / BOPCO, L.P respectfully requests a 95.878acre location in SWSW quarter of Section 1-T25S-R30E, NMPM, Eddy County, New Mexico for the purpose of a Central Delivery Point, equipment staging area, and laydown yard. Onsite of location was performed on August 3, 2017, with BLM Natural Resource Specialist Fernando Banos.
- b. The Cowboy Central Delivery Point (CDP) and associated staging area is a 95.878acre proposed permanent facility designed for prudent development of anticipated Poker Lake Unit volumes at the end of the midstream pipeline system intended to handle and store oil and gas products safely and responsibly with consideration to a reduction of long-term environmental impacts and product waste prior to sale to 3rd Party Gatherers.
- c. XTO Energy, Inc./BOPCO, L.P. anticipates a project start date of: June 15, 2018 with construction taking 3 months before the Central Delivery Point is brought online. Once operational, a subsequent 3160-5 will be submitted to the Authorized Officer for review. If additional time is deemed necessary to complete construction, a 3160-5 will be filed with the Authorized Officer pursuant to anticipated activities.
- d. Anticipated Traffic. After construction completion, travel to the Central Delivery Point and staging area will include those required to maintain and monitor the appropriate facilities as well as construction loading and off-loading for equipment deliveries.

2. RIGHT-OF-WAY LOCATION:

- a. The Cowboy Central Delivery Point is located in the SWSW quarter of Section 1-T25S-R30E, NMPM, Eddy County, New Mexico.
- b. See attached plats for legal description.
- c. No new roads are needed for this project.

3. FACILITY DESIGN FACTORS:

- a. New Roads. No new or upgraded roads are needed or being applied for in this application.
- b. Routing. All equipment and vehicles will be confined to travel routes laid out in existing roads with existing rights-of-ways. If additional roads or access points are deemed needed, they will be applied for via 3160-5 sundry application with the Authorized Officer.
- c. Surface Material. Surface material will be native caliche.
- d. Fencing & Security. During construction, the location will be marked with orange construction fencing to prevent any disturbance outside of the requested area. After clearing, the site will be fully fenced by chain link with overlapping security cameras along the exterior as necessary to secure the perimeter. Access will be limited and controlled via security badge to all main and secondary egress locations.
- e. Cuts and Fills. Not significant.
- f. Topsoil. Approximately 6 inches of topsoil (root zone) will be stripped from the proposed site prior to any further construction activity. The topsoil that was stripped will be spread along the outer boundary of the facility. The topsoil will be seeded with the proper seed mix designated by the BLM.
- g. Drainage. The proposed facility location will be constructed and maintained in accordance with guidelines contained in the joint BLM/USFS publication: Surface Operating Standards for Oil and Gas Exploration and Development, The Gold Book, Fourth Edition and/or BLM Manual concerning construction standards on projects subject to federal jurisdiction.
- h. Ancillary Facilities. No campsite, airstrip, or other facilities will be built as a result of this operation.

- i. Oil Storage Tanks. 4 – 50k bbl oil storage tanks will be onsite and connected to the appropriate pipelines for sale to 3rd party gatherers after stabilization.
- j. Flare. A stabilization flare will be located onsite. The flare will be a 12" stack diameter by 90' tall with 3 continuous pilots rated for 70k MMBtu/hr (air assisted). The flare will be located 150' or further in distance from all facility equipment for safety purposes.
- k. Communication Tower. A communication tower will be located on the proposed facility site. The communication tower will be 185' and set in a concrete foundation for the purpose of wireless communication.
- l. Electrical Substation. An electrical substation will be installed on the proposed facility to handle the anticipated load of the central delivery point. Electrical lines have been applied for separately with a 3160-5 within the anticipated pipeline corridors.
- m. Containment Berms. Containment berms will be constructed completely around any production facilities designed to hold fluids. The containment berms will be constructed of compacted subsoil, be sufficiently impervious, hold 1.1 times the capacity of the largest tank plus average rainfall and away from cut or fill areas.
- n. Aboveground Structures. All permanent aboveground structures (on site six months or longer), such as risers, constructed or installed on location and not subject to safety requirements will be painted 'Carlsbad Canyon' [2.5Y 6/2] from the Munsell Soil Color Chart that reduces the visual impacts on the built environment.

4. ADDITIONAL COMPONENTS:

- a. Existing components on or off public land are comprised of existing access roads.
- b. Future Components On & Off Public Land. Pipelines and associated corridors have been applied for separately across state, federal, and fee land via 3160-5 application pursuant to Authorized Officer guidance.
- c. Construction Materials. Any construction material that may be required for surfacing of the proposed facility site will be from a contractor having a permitted source of materials within the general area. No construction materials will be removed from federal lands without prior approval from the appropriate surface management agency. The surface will be constructed of 6" rolled and compacted caliche. Anticipated Caliche Locations:
 - i. Pit 1: Federal Caliche Pit, Section 32-T23S-R32E
 - ii. Pit 2: Federal Caliche Pit, Section 10-T25S-R31E
- d. Equipment Storage Areas. None. This request includes equipment storage locations as staging area / laydown yard for the construction of separately applied for pipeline corridors.

5. GOVERNMENT AGENCIES INVOLVED:

- a. None. No additional government agencies are involved in this project request.
- b. 100% of the proposed project is under the jurisdiction of the Bureau of Land Management.

6. CONSTRUCTION OF FACILITIES:

- a. Construction Process, Workforce & Construction Data. Contractors will be hired to clear ground, applying with all local, state, and federal laws in conjunction with an engineering design plan. The site will be cleared in accordance to the proposed facility with supervision by an XTO Energy, Inc. / BOPCO, L.P. construction foreman. Equipment installation for the Central Delivery Point will be coordinated appropriately by the XTO Energy, Inc. / BOPCO, L.P. construction foreman in conjunction with the engineer. The workforce for the project is anticipated to include licensed and insured construction contractors required for 24-hour operation.
- b. Staking & Onsite. Staking of the site was conducted by RRC Surveying on August 3, 2017. Plat was completed September 11, 2017. Onsite of location with the BLM Natural Resource Specialist Fernando Banos, was completed on August 3, 2017.
- c. Clearing / Grading. Clearing and grading will be kept to a minimal and on an as-needed basis. Grading will be performed in accordance to a registered professional engineer to best match the contours of the existing area. There are no significant cuts and fills for the project.

- d. Access to the right-of-way during construction will be limited to XTO Energy, Inc. / BOPCO, L.P authorized personnel, XTO Energy, Inc. / BOPCO, L.P. hired contractors, and Bureau of Land Management employees. The access road used will be available to the grazing lessee, lease operators, and other personnel as needed for lease operations or inspection.
- e. Contingency Planning.
 - i. Holder Contacts:
 - Responsible Construction Foreman:
 - Bobby Hankins
 - c/o Collin Praught
 - 6401 Holiday Hill Road
 - Midland, Texas 79707
 - Cell: 970-629-5213
 - Responsible Engineer:
 - Collin Praught
 - 6401 Holiday Hill Road
 - Midland, Texas 79707
 - Cell: 903-394-0269
 - ii. BLM Contacts: All BLM Personnel requiring access during construction or operations will be allowed to inspect the location as deemed necessary by the Authorized Officer.
- f. Safety Requirements.
 - i. Fencing. During construction, the location will be marked with orange construction fencing to prevent any disturbance outside of the requested area. After clearing, the site will be fully fenced by chain link
 - ii. Security Access. Overlapping security cameras will be installed along the exterior as necessary to monitor the perimeter. Access will be limited and controlled via card access to all egress and main access locations.
- g. Industrial Wastes & Toxic Substances. – See Operation & Maintenance Section
- h. Seasonal Restrictions. No seasonal restrictions are anticipated. Construction, reclamation, and/or routine maintenance will not be conducted during periods when the soil conditions for construction could lead to impacts to the surrounding environment, or when watershed damage is likely to occur as a result of these activities.

7. RESOURCE VALUES & ENVIRONMENTAL CONCERNS:

- a. This site is proposed as new disturbance outside of existing corridors.
- b. No additional roads or access points are needed.
- c. Potential Conflicts with Resources, Public Health & Safety:
 - i. Public. No conflicts anticipated. Nearest City: 20 Miles East of Malaga
 - ii. Range. No conflicts anticipated. Grazing Lessee: Richardson Cattle Company. Allotment #: 77042. Range study to be completed and submitted to the Bureau of Land Management.
 - iii. Noise. No conflicts anticipated. Upon construction completion and operational startup XTO Energy, Inc / BOPCO, L.P anticipates that noise throughout the area will be reduced throughout Poker Lake Unit as anticipated traffic decreases for oil hauling and gas takeaway.
 - iv. Geologic Hazards. No conflicts anticipated. Location is outside of a geological active area.
 - v. Mineral & Energy Resources. No conflicts anticipated. Purpose of project is for mineral and energy resource development.
 - vi. Soils & Vegetation: No conflicts anticipated. Soils are classified as Simona Gravelly Fine Sandy Loam and Simona-Bippus Complex. Simona soils are found on alluvial fans and plans and form in mixed alluvium and/or Aeolian sands. Bippus soils are found on alluvial fans and floodplains and form in mixed alluvium. The Simona-Bippus soils are dominant to the east and the Simona Gravelly Fine Sandy Loams are dominant to the West.

- Dominant vegetation species include: mesquite, sumac snakeweed, and various forbs and grasses. Ground cover is minimal, offering 90 percent visibility.
- vii. Hydrological. No conflicts anticipated. Location is outside of a 100-Year Floodplain (FEMA). Nearest Salt Playa: ~11 Miles.
 - viii. Wildlife/Threatened & Endangered Species. No conflicts anticipated. Location is outside of Lesser Prairie Chicken, Dune Sagebrush Lizard, and Texas Hornshell habitat. A 3rd party wildlife survey has been conducted and provided to the Bureau of Land Management.
 - ix. Cultural & Paleontological Resources. Conflicts anticipated.
 - 1. Cultural Resources. A 3rd party archaeological survey was conducted and provided to the Bureau of Land Management. XTO Energy, Inc. / BOPCO, L.P. has worked with BLM Archaeologist Bruce Boeke on archaeological site recovery for this project performed by Lone Mountain.
 - 2. Paleontological Resources. No conflicts anticipated. Location is outside of a Class IV resource area.
 - 3. BLM Projects & Recreation Areas. No conflicts anticipated. No BLM projects are known in the area. Location is outside of all federal, state, and local recreation areas.
 - x. Cave/Karst. No conflicts anticipated. Location is inside of a low cave/karst area pursuant to BLM basemap information.
 - xi. Visual Resources: No conflicts anticipated. Location is classified as VI. All permanent aboveground structures (on site six months or longer), such as risers, constructed or installed on location and not subject to safety requirements will be painted 'Carlsbad Canyon' [2.5Y 6/2] from the Munsell Soil Color Chart that reduces the visual impacts on the built environment.

8. STABILIZATION & REHABILITATION:

- a. Soil Replacement, Stabilization & Topsoil. Approximately 6 inches of topsoil (root zone) will be stripped from the proposed site prior to any further construction activity. The topsoil that was stripped will be spread along the outer boundary of the facility. The topsoil will be seeded with the proper seed mix designated by the BLM.
- b. Disposal of Vegetation Removed During Construction. Vegetation, soil, and rocks left as a result of construction of maintenance activity will be randomly scattered on the applied for pipeline corridors and will not be left in rows, piles, or berms, unless otherwise approved by the Authorized Officer. The entire proposed facility shall be contoured to match the surrounding landscape.
- c. Fertilizer. No fertilizer use is anticipated.
- d. Limiting Access to ROW. See Safety Requirements & Security Access under Construction Activities.

9. OPERATION & MAINTENANCE:

- a. Inspection, Minimum Maintenance, Work & Maintenance Schedule: During construction, the site will be maintained 24 hours until activities are completed. Upon completion of construction and operational startup of the Central Delivery Point, the site will be monitored and assessed daily for maintenance or repairs.
- b. Control, Warning, and Directional Traffic Signs: During construction, traffic signs will be located in existing access road right-of-way corridors directing traffic to location. Upon completion of construction and operational startup, the Cowboy Central Delivery Point and associated laydown yard will be identified by appropriate signage. Signs will state, at minimum: the holder's name, legal location, and associated lease. All signs and information will be posted in a permanent, conspicuous manner, and will be maintained in a legible condition for the life of the facility.
- c. Safety. Appropriate safety plans will be provided via subsequent 3160-5 upon completion of construction and operational startup of the facility. The safety plan will include standard operating procedures of the central delivery point and use of the staging area/laydown yard.
- d. Methods of Handling Waste:

- i. Portable, self-contained chemical toilets will be provided for human waste disposal. Upon completion of operations, or as required, the toilet holding tanks will be pumped and the contents thereof disposed of in an approved sewage disposal facility. All state and local laws and regulations pertaining to disposal of human and solid waste will be complied with. This equipment will be properly maintained during the drilling and completion operations and will be removed when all operations are complete.
 - ii. All trash, junk, and other waste materials will be contained in trash cages or bins to prevent scattering and will be removed and deposited in an approved sanitary landfill. Immediately after trunk line completion all debris and other waste materials on and around the well location not contained in the trash cage will be cleaned up and removed from the location. No potentially adverse materials or substances will be left on the location.
- e. Industrial Wastes & Toxic Substances:
 - i. Hazardous Materials.
 - 1. XTO Energy, Incorporated/BOPCO, L.P., and its contractors will comply with all applicable Federal, State and local laws and regulations, existing or hereafter enacted promulgated, with regard to any hazardous material, as defined in this paragraph, that will be used, produced, transported or stored on the oil and gas lease. "Hazardous material" means any substance, pollutant or contaminant that is listed as hazardous under the CERCLA of 1980, as amended, 42 U.S.C 9601 et seq., and its regulation. The definition of hazardous substances under CERCLA includes any "hazardous waste" as defined in the RCRA of 1976, as amended, 42 U.S.C. 6901 et seq., and its regulations. The term hazardous material also includes any nuclear or nuclear by-product material as defined by the Atomic Energy Act of 1954, as amended, 42 U.C.S. 2011 et seq. The term does not include petroleum, including crude oil or any fraction thereof that is not otherwise specifically listed or designated as a hazardous substance under CERCLA Section 101 (14) U.S.C. 9601 (14) nor does the term include natural gas.
 - a. No hazardous substances or wastes will be stored on the location after completion of the proposed facility.
 - b. Chemicals brought to location will be on the Toxic Substance Control Act (TSCA) approved inventory list.
 - c. All undesirable events (fires, accidents, blowouts, spills, discharges) as specified in Notice to Lessees (NTL) 3A will be reported to the BLM Carlsbad Field Office. Major events will be reported verbally within 24 hours, followed by a written report within 15 days. "Other than Major Events" will be reported in writing within 15 days.
 - f. Fire Control. The location will be registered with local emergency service departments. A list of emergency numbers will be kept on the location at multiple points in case of an undesirable event. A fire safety plan for operations will be kept on the location for reference and a copy of the fire safety plan will be provided to the Bureau of Land Management upon completion of construction via subsequent 3160-5. The fire safety plan will include a layout of the facility including egress access, emergency evacuation plan, and location of safety equipment.

10. TERMINATION & RESTORATION:

- a. Upon determination that the Central Delivery Point is no longer needed, 100% of equipment and any associated structures will be cleaned and removed from the location to be disposed of at an approved local, state, and federal facility.
- b. Stabilization & Re-Vegetation of Disturbed Area

Definition: Reclamation includes disturbed areas where the original landform and a natural vegetative community will be restored and it is anticipated the site will not be disturbed for future development.

Reclamation Standards:

Vegetation, soil, and rocks left as a result of construction of maintenance activity will be randomly scattered on the applied for pipeline corridors and will not be left in rows, piles, or berms, unless otherwise approved by the Authorized Officer. The entire proposed facility shall be recontoured to match the surrounding landscape. The backfilled soil shall be compacted and a 6-inch berm will be left over the ditch line to allow for settling back to grade.

Erosion features are equal to or less than surrounding area and erosion control is sufficient so that water naturally infiltrates into the soil and gullying, headcutting, slumping, and deep or excessive rills (greater than 3 inches) are not observed.

In those areas where erosion control structures are required to stabilize soil conditions, XTO Energy, Incorporated / BOPCO, L.P. will install such structures as are suitable for specific soil conditions being encountered and which are in accordance with sound resource management practices.

The location will then be ripped and seeded. A self-sustaining, vigorous, diverse, native (or otherwise approved) plant community will be established on the site with a density sufficient to control erosion and invasion by non-native plants and to re-establish wildlife habitat or forage production. At a minimum, the established plant community will consist of species included in the seed mix and/or desirable species occurring in the surrounding natural vegetation.

The site will be free of State-or County-listed noxious weeds, oil field debris and equipment, and contaminated soil. Invasive and non-native weeds will be controlled.

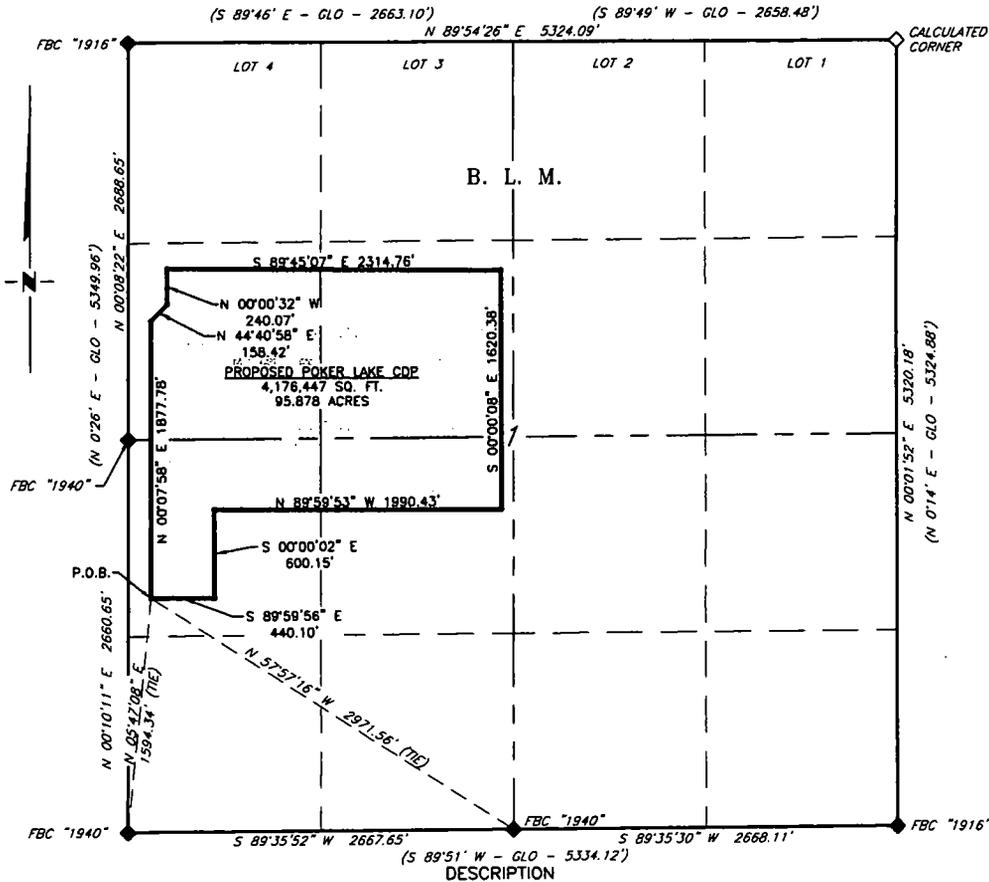
Seeding:

- Seedbed Preparation: Initial seedbed preparation will consist of recontouring to the appropriate interim or final reclamation standard. All compacted areas to be seeded will be ripped to a minimum depth of 18 inches with a minimum furrow spacing of 2 feet, followed by recontouring the surface and then evenly spreading the stockpiled topsoil. Prior to seeding, the seedbed will be scarified to a depth of no less than 4-6 inches. If the site is to be broadcast seeded, the surface will be left rough enough to trap seed and snow, control erosion, and increase water infiltration.
- If broadcast seeding is to be used and is delayed, final seedbed preparation will consist of contour cultivating to a depth of 4-6 inches within 24 hours prior to seeding, dozer tracking, or other imprinting in order to break the soil crust and create seed germination micro-sites.
- Seed Application: Seeding will be conducted no more than two weeks following completion of final seedbed preparation. A certified weed-free seed mix designed by the BLM to meet reclamation standards will be used.
- If the site is harrowed or dragged, seed will be covered by no more than 0.25 inch of soil.

11. BOND COVERAGE:

- a. XTO Energy, Inc. Bond Coverage is Nationwide; Bond Number UTB000138.
- b. BOPCO, L.P. Bond Coverage is Nationwide; Bond Number COB000050.

XTO ENERGY, INC.
PROPOSED POKER LAKE CDP
SECTION 1, T25S, R30E,
N. M. P. M., EDDY CO., NEW MEXICO



A tract of land located in Section 1, Township 25 South, Range 30 East, N. M. P. M., Eddy County, New Mexico, across B. L. M. land and being more particularly described by metes and bounds as follows:
 BEGINNING at a point which bears N 05°11'06" E, 1,594.34 feet, from a brass cap, stamped "1940", found for the Southwest corner of Section 1 and being N 58°07'37" W, 2,971.56 feet from a brass cap, stamped "1940", found for the South quarter corner of Section 1;

- Thence N 00°07'58" E, 1,877.78 feet;
- Thence N 44°40'58" E, 158.42 feet;
- Thence N 00°00'32" W, 240.07 feet;
- Thence S 89°45'07" E, 2,314.76 feet;
- Thence S 00°00'08" E, 1,620.38 feet;
- Thence N 89°59'53" W, 1,990.43 feet;
- Thence S 00°00'02" E, 600.15 feet;
- Thence S 89°59'56" E, 440.10 feet to the Point Of Beginning.

Said tract of land contains 4,176,447 square feet or 95.878 acres, more or less, and is allocated by forties as follows:

NW 1/4 SW 1/4	834,160 Sq. Ft.	19.150 Acres
SW 1/4 NW 1/4	1,340,592 Sq. Ft.	30.776 Acres
SE 1/4 NW 1/4	1,401,242 Sq. Ft.	32.168 Acres
NE 1/4 SW 1/4	600,453 Sq. Ft.	13.784 Acres

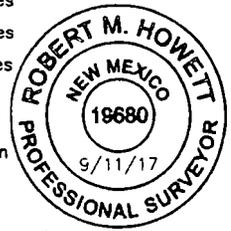
SCALE: 1" = 1000'
 0 500' 1000'

BEARINGS ARE GRID NAD 83
 NM EAST
 DISTANCES ARE HORIZ. GROUND.
 LEGEND

- () RECORD DATA - GLO
- ◆ FOUND MONUMENT AS NOTED
- ◇ CALCULATED CORNER
- P.O.B. POINT OF BEGINNING

I, R. M. Howett, a N. M. Professional Surveyor, hereby certify that I prepared this plat from an actual survey made on the ground under my direct supervision, said survey and plat meet the Min. Stds. for Land Surveying in the State of N. M. and are true and correct to the best of my knowledge and belief.

Robert M. Howett
 Robert M. Howett NM PS 19680



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NO.	REVISION	DATE
JOB NO.: LS1708479		
DWG. NO.: 1-1708479		



308 W. BROADWAY ST., HOBBS, NM 88240 (575) 964-8200

SCALE: 1" = 1000'
DATE: 8/3/2017
SURVEYED BY: JM/EF
DRAWN BY: KAKN
APPROVED BY: RMH
SHEET: 1 OF 1



Report of
Geotechnical Engineering Services Report

**Due Diligence – Cowboy CDP
Twin Wells Road and Buck Jackson Road
Lea County, New Mexico**

Prepared for
Audubon Engineering Company, LP
10205 Westheimer Road, Suite 100
Houston, Texas 77042

Prepared by
Professional Service Industries, Inc.
4601 Ripley Drive
El Paso, TX 79922
January 26, 2018

PSI Project No. 06251452



January 26, 2018

Audubon Engineering Company, LP
10205 Westheimer Road, Suite 100
Houston, Texas 77042

Attention: Mr. Gabriel Garcia

Subject: Due Diligence Geotechnical Engineering Services Report
Cowboy CDP
Twin Wells Road and Buck Jackson Road
Lea County, New Mexico
PSI Project No. 06251452

Dear Mr. Garcia,

Professional Service Industries, Inc. (PSI) performed the geotechnical engineering site investigation for the above referenced project. PSI provided its services in general accordance with PSI Proposal No. 0625-225382R3 dated January 2, 2018.

PSI thanks you for choosing us as your consultant for this project. Please contact us at 915-584-1317 if you have any questions or we may be of further service.

Respectfully Submitted,

PROFESSIONAL SERVICE INDUSTRIES, INC.
Texas Firm Registration No. F-03307

Jassiv Hernandez
Graduate Engineer
jassiv.hernandez@psiusa.com

Ruben Barrientos, Jr.
Branch Manager
ruben.barrientos@psiusa.com

Reviewed by:
William H. Kingsley, PE
Principal Consultant Geotechnical Services
william.kingsley@psiusa.com





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1 PROJECT INFORMATION

1.1 PROJECT AUTHORIZATION

Professional Service Industries, Inc. (PSI) has completed a preliminary geotechnical due diligence exploration for the proposed Cowboy CDP to be located approximately 0.25 miles south of the intersection of Twin Wells Road and Buck Jackson Road in Lea County, New Mexico. The services were authorized by Ms. Jessica Tauzin by signing Exhibit A of Audubon's Subcontractor Services Contract, Work Order No: 0181930001-WO-PRO006-001 on January 4, 2018.

1.2 PROJECT DESCRIPTION

Based on information provided by the Client, PSI understands that the project will likely consist of a new Central Delivery Point site having a footprint of approximately 95 acres. The development will have incoming oil slug catchers, oil compressors, oil stabilizer equipment, a storage tank area, gas stabilizer equipment, gas compressors, a NGL storage area, a flare and K.O. area, and a Cryo area.

PSI understands that the intent of this investigation is to provide a general preliminary evaluation of the site, from a geotechnical standpoint, for this type of construction.

The geotechnical recommendations presented in this report are based on the available project information. If any of the noted information is incorrect, please inform PSI in writing so that we may amend the recommendations presented in this report as appropriate. PSI will not be responsible for the implementation of its recommendations when it is not notified of changes in the project.

1.3 PURPOSE AND SCOPE OF SERVICES

The purpose of this study was to perform a preliminary (due diligence) site evaluation of the subsurface conditions at the subject site by limited drilling, sampling and testing materials that will be supporting the proposed structures. The subsurface information was obtained from auger boring, standard penetration testing and sampling. As requested by the client, total of two (2) soil test borings were advanced to a depth of fifty-one and one half (51½) feet below grade. The number of borings, their locations and depths were selected by the client. The approximate boring locations are shown on the Boring Plan (Figure 2) in the appendix of this report.

The borings were advanced utilizing hollow stemmed auger drilling methods. Soil samples were routinely obtained during the drilling process. During the sampling operation, Standard Penetration Tests (SPT) were performed in accordance with ASTM D1586. The SPT for soil borings is performed by driving a 2-inch diameter split-spoon sampler into the undisturbed formation ahead of the auger string with repeated blows of a 140-pound hammer falling a vertical distance of 30 inches. The number of blows required to drive the sampler the last twelve (12) inches of an 18-inch penetration depth is a measure of the soil consistency. The borings were backfilled with soil cuttings derived from the auger drilling process following completion of the drilling operations and observation of groundwater levels.

Soil samples were generally obtained beginning at the one half (½) foot depth followed by the two and one half (2½) foot depth and then at two and one half (2½) foot intervals to a depth of approximately ten



(10) feet below the existing ground surface. Below a depth of approximately ten (10) feet, soil samples were obtained at approximately five (5) foot intervals to the total explored depth. The SPT samples were sealed in plastic bags at the site to prevent loss of moisture during shipment to our laboratory. All samples were returned to the laboratory where they were processed, and specific testing assigned to selected materials.

In addition, a field soil resistivity survey was performed at the site. The results of the survey are provided in the appendix of this report.

This report briefly outlines the testing procedures, presents available project information, describes the site and subsurface conditions and presents recommendations regarding the following:

- General subsurface soil conditions, including depth and consistency of soil strata;
- groundwater levels as observed during field work, excluding quantitative determinations of flow or dewatering rates;
- potentially suitable foundation types;
- general ranges of bearing and uplift capacity of the soils encountered during the preliminary investigation;
- potential needs for treatment and/or removal of unsuitable bearing soils, if encountered;
- estimated seismic site class in accordance with IBC 2009;
- suitability of on-site material for engineered structural fill; and
- other observed potential geotechnical related conditions that may affect construction or performance of the proposed facility elements.

This report does not address an environmental assessment for determining the presence or absence of wetlands, or hazardous or toxic materials in the soil, bedrock, surface water, groundwater, or air on or below, or around this site. Any statements in this report or on the boring logs regarding odors, colors, and unusual or suspicious items or conditions are strictly for informational purposes. Prior to development of this site, an environmental assessment is advisable.

2 SITE AND SUBSURFACE CONDITIONS

2.1 SITE AND LOCATION DESCRIPTION

The site is in the southeast area of Eddy County, New Mexico approximately 0.25 miles south of the intersection of Twin Wells Road and Buck Jackson Road. The site lies on an undeveloped plot of land of approximately 95-acres. The site is immediately bounded undeveloped land to the south, Buck Jackson Road to the north and west, and an existing petroleum handling facility to the east.



2.2 GENERAL SUBSURFACE CONDITIONS AND GEOLOGIC SETTING

The elevation of the ground surface at the boring locations was not provided to PSI. Therefore, all references to depth of the various materials encountered are from the existing grade at the time of drilling (January 12, 2018).

Select soil samples taken during the investigation were tested in our laboratory to determine material properties for our evaluation. Laboratory testing was accomplished in accordance with ASTM procedures. The soils encountered in the test borings generally consisted of Silty Sands (SM) to a depth of approximately thirty-five feet underlain by Poorly Graded Sands with Silt (SP-SM) to boring termination. The soils exhibit loose conditions at the surface to a depth of approximately two and one half (2½) feet underlain by very dense conditions, attributed to carbonate cementation in the silty soils and high confinement in the cleaner sands at depth, to boring termination. Generally the soils at the site are classified as moist to dry.

The above subsurface descriptions are of a generalized nature to highlight the major subsurface stratification features and material characteristics. The boring logs included in the Appendix should be reviewed for specific information at the boring locations. These records include soil descriptions, stratifications, penetration resistances, locations of the samples and laboratory test data. The stratifications shown on the boring logs represent the conditions only at the actual boring locations. Variations may occur and should be expected between boring locations. The stratifications represent the approximate boundary between subsurface materials and the actual transition may be gradual. Water level information obtained during field operations, if any, is also shown on the boring logs. The samples that were not altered by laboratory testing will be retained for sixty (60) days from the date of this report and then discarded.

2.3 GROUNDWATER INFORMATION

The borings were dry during and upon completion of drilling, indicating that the continuous groundwater level at the site at the time of the exploration was either below the terminated depths of the borings, or that the soils encountered are relatively impermeable. Although groundwater was not encountered, it is possible for a groundwater table to be present within the depths explored during other times of the year depending upon climatic and rainfall conditions. Additionally, discontinuous zones of perched water may exist within the overburden materials and/or at the contact with clay lenses.

3 EVALUATION AND RECOMMENDATIONS

3.1 GEOTECHNICAL DISCUSSION

The following information has been developed based on the previously described project characteristics and subsurface conditions encountered. If there are any changes in the project criteria, including project location on the site, a review must be made by PSI to determine if any modifications to the report will be required. The findings of such a review should be presented in a supplemental report. Once final design layouts and loadings are available, a project specific geotechnical investigation should be conducted.



3.2 CORROSION POTENTIAL

Steel/metal and concrete elements in contact with soil are subject to corrosion or degradation due to soil chemical activity. Buried metal/steel and concrete elements should be designed to resist this soil chemical activity.

Corrosion potential was evaluated by measuring field resistivity (ASTM G57), the laboratory chloride test (EPA 300), and the content pH test (Tex-128E) of the soils from this site. Table 1 below presents general corrosive potential ratings as a function of electrical resistivity.

Table 1-Corrosive Ratings Based on Soil Resistivity

Electrical Resistivity (Ohm-cm)	Corrosivity Rating
Greater than 20, 000	Essentially Non-Corrosive
10,000 to 20,000	Mildly Corrosive
5000 to 10,000	Moderately Corrosive
3000 to 5000	Corrosive
1000 to 3000	Highly Corrosive
Less than 1000	Extremely Corrosive

Source: Handbook of Corrosion Engineering, by Pierre R. Roberge, McGraw-Hill; Publication Date: 2000

The onset of corrosion of steel in concrete associated with the presence of chloride typically occurs when the values are above 0.9 kg/m³ (1.5 lb/yd³) (Corrosion Standards and Tests, N. Silva, 2013). The American Concrete Institute suggests maximum values of chlorides in conventionally reinforced concrete in moist environments be limited to 0.10% by weight of cement.

The resistivity, chlorides and pH tests were performed on a composite soil sample from Borings B1 and B2 (0-5'). The results of the resistivity, laboratory chloride content test and pH test performed on these samples are shown below.

Table 2 – Soil pH and Chloride Results

Boring Location	Depth (feet)	pH	Chloride (mg/kg)
B1	0 – 5	7.73	9.78
B2	0 – 5	7.68	9.88

Table 3 – Field Resistivity Results

Field Resistivity Location	Resistivity (ohm-cm)
North to South	34,334
East to West	23,779



The data suggests that the soils at the site fall into the essentially non-corrosive range based on the field resistivity readings, however, a few measurements at the site fall in the mildly corrosive range. The soil resistivity field results are in the appendix of this report. Corrosion attributed to the presence of chlorides is anticipated to be relatively low. PSI recommends that a dense, high quality concrete having a low hydraulic conductivity be used for the project. Exposed metal components should be limited, however, where required, they should be coated to prevent the intrusion of the corrosive elements. Corrosion is a complex problem to quantify, so, it should be realized that limited testing alone might not provide a reliable indication of corrosion potential.

3.3 CHEMICAL ATTACK POTENTIAL FOR DEGREDDATION OF CONCRETE

The concentration of water-soluble sulfates is a good indicator of the potential for chemical attack on concrete. Based on the ACI Manual of Concrete Practice (ACI 201.2R-10) or (ACI 318/318R-33), the amount of water-soluble sulfate in soil can be used to determine the sulfate exposure as shown in Table 3 below.

Table 3 - Sulfate Exposure Rating

Water Soluble Sulfate in soil (mg/kg)	Sulfate Exposure (SO ₄) in soil, percent
0 to 150	Mild (0.00 to 0.10%)
150 to 1,500	Moderate (0.10 to 0.20%)
1500 to 10,000	Severe (0.20 to 2.0%)
Over 10,000	Very Severe (>2.0%)

The result of the laboratory sulfate ion concentration test performed on composite samples from Borings B1 and B2 (0-5') are shown in Table 4 below.

Table 4 - Sulfate Results

Boring Location	Depth (feet)	Water Soluble Sulfate in Soil (mg/kg)	Sulfate Exposure
Comp. (B1, B2, B3)	0-5	55	Mild Exposure
Comp. (B5, B6, B7)	0-5	55	Mild Exposure

Based on the limited testing, the sulfate ion concentration is in the mild exposure range. Resistance to sulfate attack can be obtained with sulfate resistant cements and dense, high quality concrete mixtures having a low water cement ratio. Based on guidelines set forth by the American Concrete Institute, PSI recommends using a concrete mixture comprised of Portland cement meeting Type II criteria. We also recommend the concrete have a maximum water-cement ratio of 0.5. Supplemental testing is recommended following site grading to assess the as-graded soil conditions.



3.4 SITE PREPARATION

Rubble, trash vegetation and other deleterious material discovered during the site clearing operations should be removed and disposed of off the site prior to pad preparation or filling operations.

General Soil Preparation

Depending on the site layout and finished floor elevation of the structures, it is anticipated over-excavation will be required for the foundation and slab elements. The required over-excavation and compaction soil treatment is estimated to be in the range of twenty (24) inches below existing grade or 8 inches below the bottom of the proposed foundation elements for the building structures, depending on the actual loading conditions.

Construction should not be allowed on surfaces which have not been cleared of vegetation and oversized materials. Treated areas will require densification. Depending on pad elevations it is estimated that the existing soils may require improvement, again dependent on the actual loading conditions. If required, it is anticipated that the on-site soils can be used as structural fill material, however, material containing vegetative debris should not be used as structural fill.

The soils at the site will require confinement to achieve and maintain acceptable bearing capacities. Proper embedment of foundation elements will be required to adequately support the structure. The minimum embedment depth of shallow foundation elements will be dependent on the size of the required elements. Typical embedment depths from the surface grade to the base of an element ranges from $\frac{1}{4}$ to $\frac{1}{2}$ of the maximum foundation dimension, again depending on the required size.

To maintain proper confinement the required soil treatments should extend a minimum of three (3) feet beyond the perimeter of the slab and foundation elements. The soils exposed at finished subgrade levels should be proof-rolled to identify excessively loose or low-density areas of the subgrade. Soils which are observed to rut or deflect excessively (greater than 1 inch) under the moving load should be undercut and replaced with properly compacted fill. The proof-rolling activities should be witnessed by a representative of the Geotechnical Engineer and should be performed during a period of dry weather.

Following proof-rolling, the exposed subgrade should be scarified to a depth of approximately eight (8) inches, moisture conditioned to near optimum moisture content and then be compacted to at least 95 percent of the soil's maximum dry density per ASTM D-1557. Engineered structural fill placement, where required, may then begin. The thickness of structural fill required, or over excavation, will be dependent on the site-specific investigation once locations of the proposed structure(s) have been identified. The first layer of engineered structural fill should be placed in a uniform horizontal lift and be adequately keyed into the stripped and scarified subgrade soils. These are typical recommendations and are common to most project site preparations of this type.

Structural Fill

Typically fill materials for engineered structural fill should be free of organic or other deleterious materials and should have a maximum particle size less than three (3) inches. Soils proposed to be used as engineered structural fill material should be classified in accordance with procedures stated in ASTM



D2487. The on-site soils meeting the following criteria could be reused as engineered structural fill. Most of the upper on-site soils will likely meet the requirements of structural fill. Soils will be considered satisfactory for engineered structural fill when classified as follows:

GW, GP, GC, GM, GC-GM, GP-GM, GP-GC
SW, SP, SC, SM, SC-SM, SP-SM, SP-SC

Soils will be considered unsatisfactory for engineered structural fill materials when classified as follows:

PT, OL, OH, MH, ML, CL and CH or
where the plasticity index exceeds 15.

It is anticipated water will need to be added to the soils at this site to obtain workability and achieve compaction. If water must be added, it should be uniformly applied and thoroughly mixed into the soil by disking or scarifying. Each lift of compacted engineered fill should be tested by a representative of the Geotechnical Engineer prior to placement of subsequent lifts. Care should be taken to apply compactive effort throughout the fill and fill slope areas. The moisture content and the degree of compaction of the structural fill soils should be maintained until the construction of the structures within the area. Excessive drying of the soils at this site will increase susceptibility to disturbance during the construction effort.

3.5 FOUNDATION RECOMMENDATIONS

Based on our understanding of the proposed structures, PSI would recommend that the structures be founded on conventional shallow foundations consisting of continuous strip/grade beam and isolated spread footings. A ringwall foundation system would likely be recommended for storage tanks. Typical ringwalls for tanks at similar facilities founded in these soils extend to a depth on the order of thirty (30) to thirty-six (36) inches below the lowest adjacent grade.

Depending on the building geometry and load distribution it is estimated that, after proper site preparation, bearing capacities in the range of 3,000 to 5,000 pounds per square foot can be achieved. Typical minimum embedment depths for shallow foundation elements would be on the order of two (2) feet below the lowest adjacent grade depending on the size of the footings. Note again, as described previously, actual embedment depths are dependent on the required foundation dimensions. Typically, the recommended allowable soil bearing pressure may be increased by $\frac{1}{3}$ for short term wind and/or seismic loads.

Based on the assumed potential required site grading, we would estimate that post-construction total and differential settlements could be designed to be less than 1 inch. Actual foundation movements are dependent on the size and loading of the foundation elements. These magnitudes of estimated settlements are assumed to be within tolerable limits, but this should be confirmed by the project architect and structural engineer.



3.6 FLOOR SLAB RECOMMENDATIONS

The floor slabs can likely be grade supported provided the slab is underlain by properly compacted structural fill placed on prepared subgrade soils. As previously discussed, site preparation will likely consist of over-excavating the upper twenty-four (24) inches of the existing site grade.

The materials should be moisture conditioned and compacted immediately prior to concrete placement to promote more uniform curing. The supporting material should be moist, but not saturated at the time of concrete placement.

The floor slabs should have an adequate number of Isolation, Construction and/or saw-cut Contraction joints to reduce cracking resulting from any differential movement and shrinkage. The floor slab should not be rigidly connected to columns, walls, or foundations. It is recommended that utility perforations through slabs be designed to allow for independent movement of slabs and utilities.

3.7 SEISMIC SITE CLASS

We understand that the project is governed by the International Building Code (IBC), 2009 edition. As part of this code, the design of structures must consider dynamic forces resulting from seismic events. These forces are dependent on the magnitude of the seismic event as well as the properties of the soils that underlie the site.

Part of the IBC code procedure to evaluate seismic forces requires the evaluation of the Seismic Site Class, which categorizes the site based upon the characteristics of the subsurface profile within the upper 100 feet of the ground surface.

To define the Seismic Site Class for this project, we have interpreted the results of our soil test borings drilled within the project site. Using that information along with observations and our experience with other sites in the area we estimate the site class to be C based on the preliminary borings performed. The estimated soil properties were based upon data available in published geologic reports as well as our experience with subsurface conditions in the general site area.

If a more definitive evaluation of the Seismic Site Class would require additional borings and deeper drilling, or, a Refraction Microtremor (ReMi) study of the site to evaluate the shear wave velocity profile to a depth of 100 feet below the surface. A more accurate evaluation is the ReMi study. This study involves the placement of geophones on the ground surface and recording vibrations. Through integration of the data, the characteristic shear wave velocity of each below-grade stratum can be interpreted and used to determine the Site Class in accordance with the provisions of the International Building Code 2009.

4 CONSTRUCTION CONSIDERATIONS

It is recommended that PSI be retained to provide observation and testing of construction activities involved in the foundations, earthwork, and related activities of this project. PSI cannot accept any responsibility for any conditions which deviated from those described in this report, nor for the



performance of the foundations if not engaged to provide construction observation and testing for this project.

4.1 MOISTURE SENSITIVE SOILS/WEATHER CONCERNS

Some of the soils encountered at this site are expected to be sensitive to disturbances caused by construction traffic and changes in moisture content. During wet weather periods, increases in the moisture content of the soil can cause significant reduction in the soil strength and support capabilities. In addition, soils which become wet may be slow to dry and thus significantly retard the progress of grading and compaction activities. It will, therefore, be advantageous to perform earthwork and foundations construction activities during dry weather.

4.2 DRAINAGE AND WATER CONCERNS

Water should not be allowed to collect in the foundation excavation, on floor slab areas, or on prepared subgrade of the construction area either during or after construction. Undercut or excavated areas should be sloped toward one corner to facilitate removal of any collected rainwater, groundwater, or surface runoff. Positive site surface drainage should be provided to reduce infiltration of surface water around the perimeter of the building and beneath the floor slabs. The grades should be sloped away from the building and surface drainage should be collected and discharged such that water is not permitted to infiltrate the backfill and floor slab areas of the building.

To reduce the possibility of high moisture intrusion below foundation elements PSI recommends that flora not be located adjacent to structures, however, if planters must be located adjacent to the structures we recommend using only flora requiring low water volumes for maintenance. Water systems designed to wet only the root areas should be used. Flood irrigation or other methods that may promote deep soil saturation should not be used adjacent to structures.

Similarly, PSI recommends that roof water drainage be designed to discharge water away from structures. Also, positive drainage should be maintained to drain water away from the structures. Water should be collected rapidly and directed to ponding areas located away from equipment and structures.

As discussed previously, groundwater was not encountered at the time the field exploration was accomplished. However, it is possible that seasonal variations will cause fluctuations, or a water table to be present in the upper soils at differing times of the year. Additionally, perched water may be encountered in discontinuous zones within the overburden and/or near the contact with clay lenses and bedrock. Any water accumulation should be removed from excavations by pumping. Should excessive and uncontrolled amounts of seepage occur, the Geotechnical Engineer should be consulted.

4.3 EXCAVATIONS

In Federal Register, Volume 54, No. 209 (October 1989), the United States Department of Labor, Occupational Safety and Health Administration (OSHA) amended its "Construction Standards for Excavations, 29 CFR, part 1926, Subpart P". This document was issued to better insure the safety of workmen entering trenches or excavations. It is mandated by this federal regulation that excavations, whether they be utility trenches, basement excavation or footing excavations, be constructed in



accordance with the new OSHA guidelines. It is our understanding that these regulations are being strictly enforced and if not closely followed the owner and the contractor could be liable for substantial penalties.

The contractor is solely responsible for designing and constructing stable, temporary excavations and should shore, slope, or bench the sides of the excavations as required to maintain stability of both the excavation sides and bottom. The contractor's "responsible person", as defined in 29 CFR Part 1926, should evaluate the soil exposed in the excavations as part of the contractor's safety procedures. In no case should slope height, slope inclination, or excavation depth, including utility trench excavation depth, exceed those specified in local, state, and federal safety regulations.

We are providing this information solely as a service to our client. PSI does not assume responsibility for construction site safety or the contractor's or other parties' compliance with local, state, and federal safety or other regulations.

4.4 SUMMARY

As previously stated, the materials on the site will adequately support the CDP facility utilizing shallow foundations if proper compaction is followed. It is not known at this time what the final elevation(s) will be, however, significant cut or fill is not anticipated for this project site.

Compacted soil should be maintained after treatment. Excessive drying or over wetting of the upper silty fine sands could cause construction equipment to disturb the material significantly causing a site maintenance problem during construction activities.

5 REPORT LIMITATIONS

The recommendations submitted, in this report, are based on the available subsurface information obtained by PSI. A specific geotechnical investigation should be made on this site once the scope and locations of the structures have been determined. If there are any revisions to the plans for this project, or if deviations from the subsurface conditions noted in this report are encountered during construction, PSI should be notified immediately to determine if changes in the foundation recommendations are required. If PSI is not notified of such changes, PSI will not be responsible for the impact of those changes on the project.

The Geotechnical Engineer warrants that the findings, recommendations, specifications, or professional advice contained herein have been made in accordance with generally accepted professional Geotechnical Engineering practices in the local area. No other warranties are implied or expressed.

After the plans and specifications are more complete, the Geotechnical Engineer should be retained to perform a site specific geotechnical study to establish foundation recommendations and other geotechnical considerations for this site. At that time, it may be necessary to submit supplementary recommendations. If PSI is not retained to perform these functions, PSI will not be responsible for the impact of those conditions on the project. This report has been prepared for the exclusive use of Audubon Engineering Company, LP, for the specific application to the future Cowboy CDP to be located south of the intersection of Twin Wells Road and Buck Jackson Road in Lea County, New Mexico.



intertek
psi

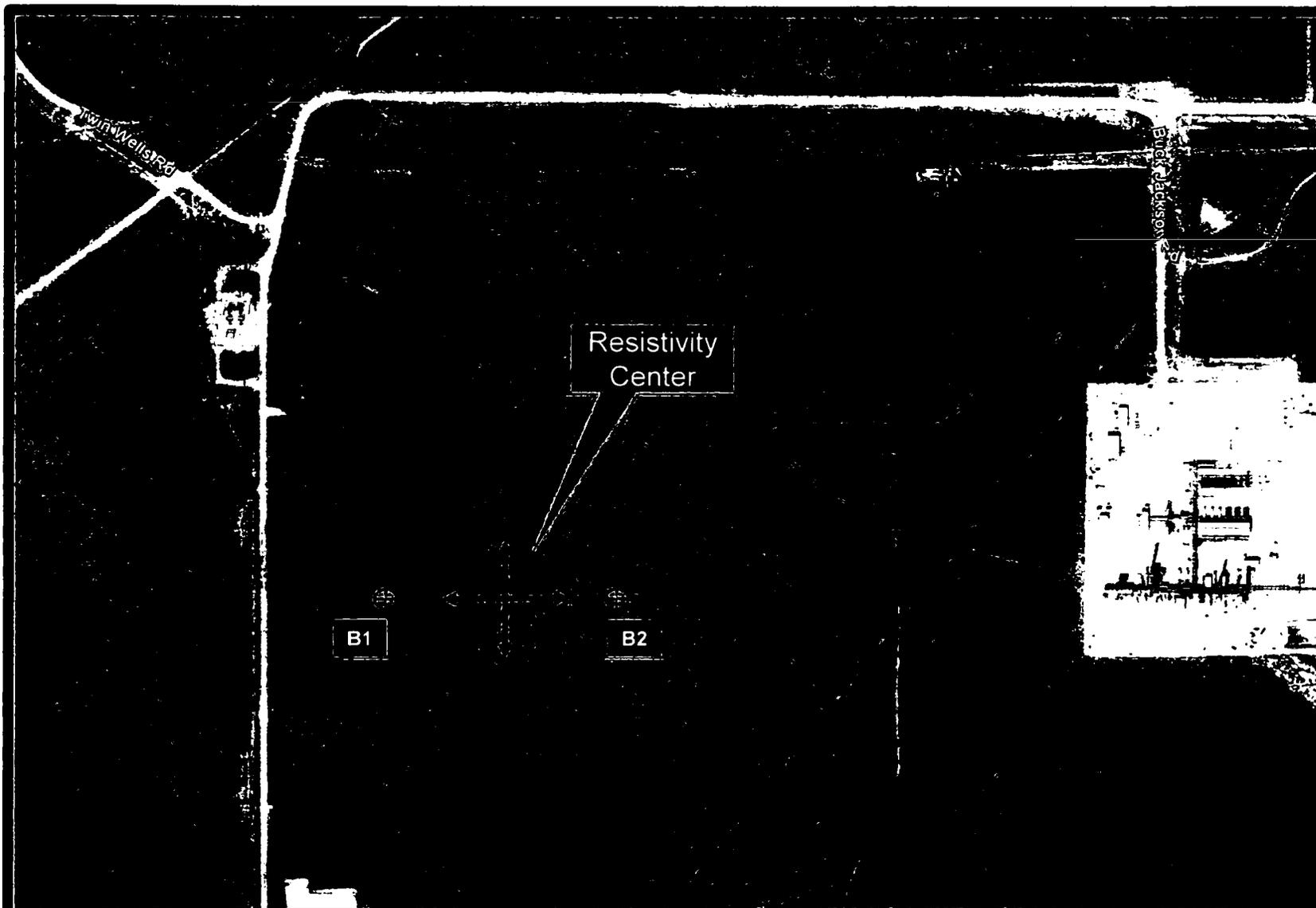
PSI
4601 Ripley Drive
El Paso, Texas 79922

**PROJECT
NAME:**

Due Diligence – Cowboy CDP
Twin Wells Road and Buck Jackson Road
Lea County, New Mexico
PSI Project No. 06251452

**FIGURE 1
Vicinity Map**





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El Paso, Texas 79922

**PROJECT
NAME:**

Due Diligence – Cowboy CDP
Twin Wells Road and Buck Jackson Road
Lea County, New Mexico
PSI Project No. 06251452

**FIGURE 2
BORING PLAN**
Approximate Boring Location
NOT TO SCALE



FIGURE: 1

DATE STARTED: 1/12/18	DRILL COMPANY: PSI, Inc.	BORING B01
DATE COMPLETED: 1/12/18	DRILLER: AB LOGGED BY: AF/JH	
COMPLETION DEPTH: 51.5 ft	DRILL RIG: CME-85	Water: <input type="checkbox"/> While Drilling None feet <input type="checkbox"/> Upon Completion None feet <input type="checkbox"/> Delay N/A
BENCHMARK: N/A	DRILLING METHOD: Hollow Stem Auger	BORING LOCATION: See attached boring plan, figure 2
ELEVATION: N/A	SAMPLING METHOD: 2-in SS	
LATITUDE: 32.160556°	HAMMER TYPE: Automatic	
LONGITUDE: -103.840833°	EFFICIENCY: N/A	
STATION: N/A OFFSET: N/A	REVIEWED BY: Ruben Barrientos, Jr., P.E.	
REMARKS:		

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	STANDARD PENETRATION TEST DATA N in blows/ft @	Additional Remarks
0				SS1	18	SILTY SAND - brown, loose, moist		1-2-2 N=4	Moisture: 4% PL: 0% LL: 0%	Non-Plastic Fines=16.9%
	5			SS2	18	tan, very dense, with Carbonate Cementation CCI 1 ("Caliche")		4-30-35 N=65	Moisture: 8% PL: 0% LL: 0%	Non-Plastic Fines=32.4%
				SS3	18	CCI 2-3		17-18-36 N=54	Moisture: 6% PL: 0% LL: 0%	Fines=23.5%
				SS4	11			36-50/5	Moisture: 6% PL: 0% LL: 0%	Fines=23.5%
	10			SS5	11			25-50/5	Moisture: 6% PL: 0% LL: 0%	Fines=23.5%
	15			SS6	18	light brown, with Gravel		19-30-42 N=72	Moisture: 7% PL: 0% LL: 0%	Fines=14.2%
	20			SS7	18	no Carbonate Cementation, medium dense	SM	7-12-17 N=29	Moisture: 7% PL: 0% LL: 0%	Fines=14.2%
	25			SS8	18	very dense		14-25-27 N=52	Moisture: 7% PL: 0% LL: 0%	Fines=14.2%
	30			SS9	18	dense		8-12-20 N=32	Moisture: 7% PL: 0% LL: 0%	Fines=14.2%
	35			SS10	18	very dense		14-25-32 N=57	Moisture: 7% PL: 0% LL: 0%	Fines=14.2%
	40			SS11	18	POORLY GRADED SAND - with Silt, multicolored, very dense, dry		21-34-42 N=76	Moisture: 2% PL: 0% LL: 0%	Fines=7.3%
	45			SS12	18		SP-SM	16-27-32 N=59	Moisture: 2% PL: 0% LL: 0%	Fines=7.3%
	50			SS13	18			12-20-35 N=55	Moisture: 2% PL: 0% LL: 0%	Fines=5.6%
						Boring terminated at 51.5 feet below grade				



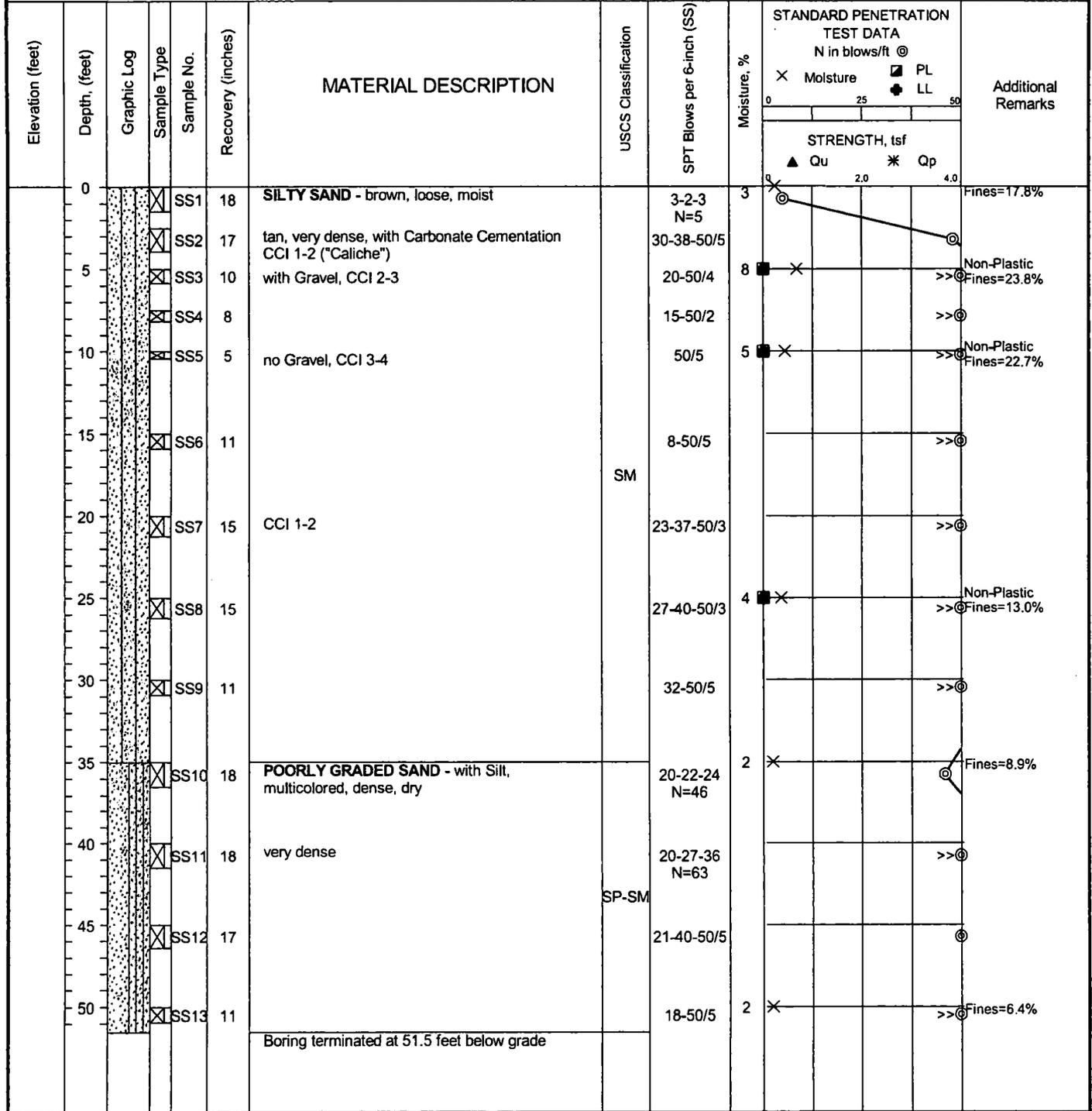
Professional Service Industries, Inc.
4601 Ripley Drive
El Paso, TX 79922
Telephone: (915) 584-1317

PROJECT NO.: 06251452
PROJECT: Cowboy CDP Due Diligence
LOCATION: Lea County, New Mexico

The stratification lines represent approximate boundaries. The transition may be gradual.

FIGURE: 2

DATE STARTED: 1/12/18	DRILL COMPANY: PSI, Inc.	BORING B02
DATE COMPLETED: 1/12/18	DRILLER: AB LOGGED BY: AF/JH	
COMPLETION DEPTH: 51.5 ft	DRILL RIG: CME-85	Water
BENCHMARK: N/A	DRILLING METHOD: Hollow Stem Auger	While Drilling: None feet
ELEVATION: N/A	SAMPLING METHOD: 2-in SS	Upon Completion: None feet
LATITUDE: 32.16063°	HAMMER TYPE: Automatic	Delay: N/A
LONGITUDE: -103.83728°	EFFICIENCY: N/A	BORING LOCATION:
STATION: N/A OFFSET: N/A	REVIEWED BY: Ruben Barrientos, Jr., P.E.	See attached boring plan, figure 2
REMARKS:		



	Professional Service Industries, Inc. 4601 Ripley Drive El Paso, TX 79922 Telephone: (915) 584-1317	PROJECT NO.: 06251452
		PROJECT: Cowboy CDP Due Diligence
		LOCATION: Lea County, New Mexico

The stratification lines represent approximate boundaries. The transition may be gradual.

APPENDIX B – FIELD RESISTIVITY TEST RESULTS

SOIL RESISTIVITY TESTING

Project Name:	Cowboy CDP - 06251452	Date:	1/25/18
Project Location:	Twin Wells and Buck Jackson Lea County, NM	Crew:	TA/JH
Prepared for:	Audoban Engineering Company, LP	Remarks:	Sunny
Instrument Used for Testing:	MC M Co - MILLER 400A		
Air Temperature:	70° F		
Ground Water Table:	N/A		

	Test #	Spacing (feet)	Resistance (Ω)	Ω -cm
East / West	1	5.0	31.000	29,683
	2	10	20.000	38,301
	3	20	8.500	32,556
	4	40	2.000	15,320
	5	60	1.000	11,490
	6	80	1.000	15,320
	7	100	1.000	19,151
			Average	
North/South	1	5.0	35.000	33,514
	2	10	19.000	36,386
	3	20	7.000	26,811
	4	40	3.500	26,811
	5	60	2.000	22,981
	6	80	3.000	45,961
	7	100	2.5	47,876
			Average	



Professional Service Industries, Inc.

Geotechnical Consulting Services

APPENDIX C – KEY TO TERMS

TERMS DESCRIBING CONSISTENCY OR CONDITION

COARSE GRAINED SOILS (major portion retained on #200 sieve)

Includes (1) clean gravels and sands described as fine, medium or coarse, depending on distribution of grain sizes and (2) silty or clayey gravels and sands. Condition is rated according to relative density, as determined by laboratory tests or estimated from resistance to sampler.

PENETRATION RESISTANCE BLOWS / FOOT*	DESCRIPTIVE TERM	RELATIVE DENSITY**
0 – 10	Loose	0 – 40 %
11 – 30	Medium dense	40 – 70 %
31 – 50	Dense	70 – 90 %
Over 50	Very dense	90 – 100 %

* 140 pound hammer, 30 inch drop.

** From tests on undisturbed sand sample.

FINE GRAINED SOILS (major portion passing #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 or by unconfined compression tests.

DESCRIPTIVE TERM	COMPRESSIVE STRENGTH tons/sq. ft.	DESCRIPTIVE TERM	COMPRESSIVE STRENGTH tons/sq. ft.
Very Soft	Less than 0.25	Stiff	1.00 to 2.00
Soft	0.25 to 0.50	Very Stiff	2.00 to 4.00
Firm	0.50 to 1.00	Hard	4.00 & higher

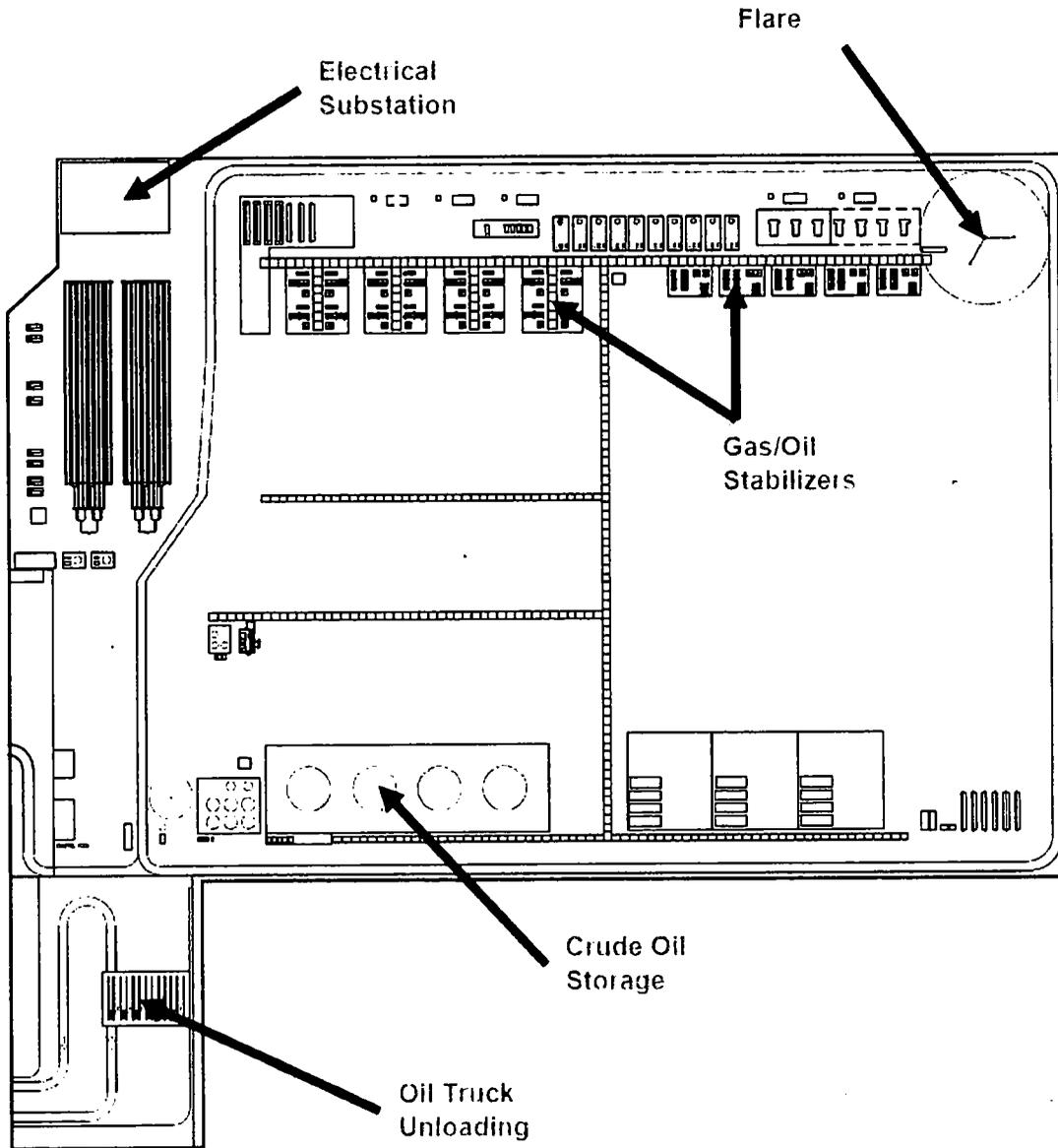
NOTE: Slickensided and fissured clays may have lower unconfined compressive strengths than shown above, because of planes of weakness or shrinkage cracks in the soil. The consistency ratings of such soils are based on penetrometer readings.

TERMS CHARACTERIZING SOIL STRUCTURE

- Slickensided** – having inclined planes of weakness that are slick and glassy in appearance.
- Fissured** – containing shrinkage cracks, frequently filled with fine sand or silt; usually more or less vertical.
- Sensitive** – pertaining to cohesive soils that are subject to appreciable loss of strength when remolded.
- Laminated** – composed of thin layers of varying colors and texture.
- Interbedded** – composed of alternate layers of different soil types.
- Calcareous** – containing appreciable quantities of calcium carbonate.
- Well Graded** – having wide range in grain sizes and substantial amounts of all intermediate particle sizes.
- Poorly Graded** – predominantly of one grain size, or having a range of sizes with some intermediate size missing.

Cowboy CDP Anticipated Equipment Layout
5/11/2018

Empty Area: Laydown Yard



Company Reference: Bopco, LP

WELL NO. & NAME: Poker Lake Unit CVX JV BS 24H

PROJECT: Cowboy CDP

STANDARD STIPULATIONS FOR OIL AND GAS RELATED SITES

A copy of the application (Grant/Sundry Notice) and attachments, including stipulations and map, will be on location during construction. BLM personnel may request to view a copy of your permit during construction to ensure compliance with all stipulations.

The holder agrees to comply with the following stipulations to the satisfaction of the Authorized Officer, BLM.

1. The holder shall indemnify the United States against any liability for damage to life or property arising from the occupancy or use of public lands under this grant and for all response costs, penalties, damages, claims, and other costs arising from the provisions of the Resource Conservation and Recovery Act (RCRA), 42 U.S.C. Chap. 82, Section 6901 et. seq., from the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), 42 U.S.C. Chap. 109, Section 9601 et. seq., and from other applicable environmental statutes.
2. The holder shall comply with all applicable Federal laws and regulations existing or hereafter enacted or promulgated. In any event, the holder shall comply with the Toxic Substances Control Act of 1976, as amended (15 U.S.C. 2601, et. seq.) with regard to any toxic substances that are used, generated by or stored on the right-of-way or on facilities authorized by this grant. (See 40 CFR, Part 702-799 and especially, provisions on polychlorinated biphenyls, 40 CFR 761.1-761.193.) Additionally, any release of toxic substances (leaks, spills, etc.) in excess of the reportable quantity established by 40 CFR, Part 117 shall be reported as required by the Comprehensive Environmental Response, Compensation and Liability Act, Section 102b. A copy of any report required or requested by any Federal agency or State government as a result of a reportable release or spill of any toxic substances shall be furnished to the Authorized Officer concurrent with the filing of the reports to the involved Federal agency or State government.
3. The holder agrees to indemnify the United States against any liability arising from the release of any hazardous substance or hazardous waste (as these terms are defined in the Comprehensive Environmental Response, Compensation and Liability Act of 1980, 42 U.S.C. 9601, et. seq. or the Resource Conservation and Recovery Act, 42 U.S.C. 6901, et. seq.) on the right-of-way (unless the release or threatened release is wholly unrelated to the right-of-way holder's activity on the right-of-way). This agreement applies without regard to whether a release is caused by the holder, its agent, or unrelated third parties.
4. If, during any phase of the construction, operation, maintenance, or termination of the site or related pipeline(s), any oil or other pollutant should be discharged from site facilities, the pipeline(s) or from containers or vehicles impacting Federal lands, the control and total removal, disposal, and cleanup of such oil or other pollutant, wherever found, shall be the responsibility of

the holder, regardless of fault. Upon failure of the holder to control, dispose of, or clean up such discharge on or affecting Federal lands, or to repair all damages to Federal lands resulting therefrom, the Authorized Officer may take such measures as deemed necessary to control and cleanup the discharge and restore the area, including, where appropriate, the aquatic environment and fish and wildlife habitats, at the full expense of the holder. Such action by the Authorized Officer shall not relieve the holder of any liability or responsibility.

5. Sites shall be maintained in an orderly, sanitary condition at all times. Waste materials, both liquid and solid, shall be disposed of promptly at an appropriate, authorized waste disposal facility in accordance with all applicable State and Federal laws. "Waste" means all discarded matter including, but not limited to, human waste, trash, garbage, refuse, petroleum products, brines, chemicals, oil drums, ashes, and equipment.

6. The operator will notify the Bureau of Land Management (BLM) authorized officer and nearest Fish and Wildlife Service (FWS) Law Enforcement office within 24 hours, if the operator discovers a dead or injured federally protected species (i.e., migratory bird species, bald or golden eagle, or species listed by the FWS as threatened or endangered) in or adjacent to a pit, trench, tank, exhaust stack, or fence. (If the operator is unable to contact the FWS Law Enforcement office, the operator must contact the nearest FWS Ecological Services office.)

7. All above-ground structures not subject to safety requirements shall be painted by the holder to blend with the natural color of the landscape. The paint used shall be a color which simulates "Standard Environmental Colors" designated by the Rocky Mountain Five-State Interagency Committee. The color selected for this project is **Shale Green**, Munsell Soil Color Chart Number 5Y 4/2.

8. Any cultural and/or paleontological resource (historic or prehistoric site or object) discovered by the holder, or any person working on the holder's behalf, on public or Federal land shall be immediately reported to the Authorized Officer. The holder shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer. An evaluation of the discovery will be made by the Authorized Officer to determine appropriate actions to prevent the loss of significant cultural or scientific values. The holder will be responsible for the cost of evaluation and any decision as to the proper mitigation measures will be made by the Authorized Officer after consulting with the holder.

9. A sales contract for removal of mineral material (caliche, sand, gravel, fill dirt) from an authorized pit, site, or on location must be obtained from the BLM prior to commencing construction. There are several options available for purchasing mineral material: contact the BLM office (575-234-5972).

10. The operator shall be held responsible if noxious weeds become established within the areas of operations. Weed control shall be required on the disturbed land where noxious weeds exist, which includes the roads, pads, associated pipeline corridor, and adjacent land affected by the establishment of weeds due to this action. The operator shall consult with the Authorized Officer

for acceptable weed control methods, which include following EPA and BLM requirements and policies.

11. Once the site is no longer in service or use, the site must undergo final abandonment. At final abandonment, the site and access roads must undergo "final" reclamation so that the character and productivity of the land are restored. Earthwork for final reclamation must be completed within six (6) months of the abandonment of the site. All pads and facility locations and roads must be reclaimed to a satisfactory revegetated, safe, and stable condition, unless an agreement is made with the landowner or BLM to keep the road and/or pad intact. After all disturbed areas have been satisfactorily prepared, these areas need to be revegetated with the seed mixture provided. Seeding should be accomplished by drilling on the contour whenever practical or by other approved methods. Seeding may need to be repeated until revegetation is successful, as determined by the BLM.

Operators shall contact a BLM surface protection specialist prior to surface abandonment operations for site specific objectives (Jim Amos: 575-234-5909).

12. The holder shall stockpile an adequate amount of topsoil where blading occurs. The topsoil to be stripped is approximately 6 inches in depth. The topsoil will be segregated from other spoil piles. The topsoil will be used for final reclamation.

13. The holder will reseed all disturbed areas. Seeding will be done according to the attached seeding requirements, using the following seed mix.

- | | |
|--|--|
| <input type="checkbox"/> seed mixture 1 | <input type="checkbox"/> seed mixture 3 |
| <input checked="" type="checkbox"/> seed mixture 2 | <input type="checkbox"/> seed mixture 4 |
| <input type="checkbox"/> seed mixture 2/LPC | <input type="checkbox"/> Aplomado Falcon Mixture |

14. In those areas where erosion control structures are required to stabilize soil conditions, the holder shall install such structures as are suitable for the specific soil conditions being encountered and which are in accordance with sound management practices. Any earth work will require prior approval by the Authorized Officer.

15. Open-topped Tanks - The operator will take actions necessary to prevent wildlife and livestock access, including avian wildlife, to all open-topped tanks that contain or have the potential to contain salinity sufficient to cause harm to wildlife or livestock, hydrocarbons, or Resource Conservation and Recovery Act of 1976-exempt hazardous substances. At a minimum, the operator will net, screen, or cover open-topped tanks to exclude wildlife and livestock and prevent mortality. If the operator uses netting, the operator will cover and secure the open portion of the tank to prevent wildlife entry. The operator will net, screen, or cover the tanks until the operator removes the tanks from the location or the tanks no longer contain substances that could be harmful to wildlife or livestock. Use a maximum netting mesh size of 1 ½ inches. The netting must not be in contact with fluids and must not have holes or gaps

16. The operator will prevent all hazardous, poisonous, flammable, and toxic substances from coming into contact with soil and water. At a minimum, the operator will install and maintain an

impervious secondary containment system for any tank or barrel containing hazardous, poisonous, flammable, or toxic substances sufficient to contain the contents of the tank or barrel and any drips, leaks, and anticipated precipitation. The operator will dispose of fluids within the containment system that do not meet applicable state or U. S. Environmental Protection Agency livestock water standards in accordance with state law; the operator must not drain the fluids to the soil or ground. The operator will design, construct, and maintain all secondary containment systems to prevent wildlife and livestock exposure to harmful substances. At a minimum, the operator will install effective wildlife and livestock enclosure systems such as fencing, netting, expanded metal mesh, lids, and grate covers. Use a maximum netting mesh size of 1 ½ inches.

17. Open-Vent Exhaust Stack Enclosures – The operator will construct, modify, equip, and maintain all open-vent exhaust stacks on production equipment to prevent birds and bats from entering, and to discourage perching, roosting, and nesting. (Recommended enclosure structures on open-vent exhaust stacks are in the shape of a cone.) Production equipment includes, but may not be limited to, tanks, heater-treaters, separators, dehydrators, flare stacks, in-line units, and compressor mufflers.

18. Containment Structures - Proposed production facilities such as storage tanks and other vessels will have a secondary containment structure that is constructed to hold the capacity of 1.5 times the largest tank, plus freeboard to account for precipitation, unless more stringent protective requirements are deemed necessary.

19. Special Stipulations:

20. Cattleguards

An appropriately sized cattleguard(s) sufficient to carry out the project shall be installed and maintained at fence crossing(s). Any existing cattleguard(s) on the access road shall be repaired or replaced if they are damaged or have deteriorated beyond practical use. The operator shall be responsible for the condition of the existing cattleguard(s) that are in place and are utilized during lease operations. A gate shall be constructed on one side of the cattleguard and fastened securely to H-braces.

21. Fence Requirement

Where entry granted across a fence line, the fence must be braced and tied off on both sides of the passageway prior to cutting. Once the work is completed, the fence will be restored to its prior condition, or better. The operator shall notify the private surface landowner or the grazing allotment holder prior to crossing any fence(s).

22. Livestock Water Requirement

Any damage to structures that provide water to livestock throughout the life of the well, caused by operations from the well site, must be immediately corrected by the operator. The operator must notify the BLM office (575-234-5972) and the private surface landowner or the grazing allotment holder if any damage occurs to structures that provide water to livestock.

Hydrology:

The entire well pad will be bermed to prevent oil, salt, and other chemical contaminants from leaving the well pad. Topsoil shall not be used to construct the berm. No water flow from the uphill side(s) of the pad

shall be allowed to enter the well pad. The berm shall be maintained through the life of the well and after interim reclamation has been completed. Any water erosion that may occur due to the construction of the well pad during the life of the well will be quickly corrected and proper measures will be taken to prevent future erosion.

Tank battery locations will be lined and bermed. A 20 mil permanent liner will be installed with a 4 oz. felt backing to prevent tears or punctures. Tank battery berms must be large enough to contain 1 ½ times the content of the largest tank or 24 hour production, whichever is greater. Automatic shut off, check valves, or similar systems will be installed for tanks to minimize the effects of catastrophic line failures used in production or drilling.