District I
1625 N. French Dr., Hobbs, NM 88240
District II
811 S. First St., Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy Minerals and Natural Resources
Department
Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-147
Revised April 3, 2017

3RF-46

Recycling Facility and/or Recycling Containment

RCVD 8/2/19

Type of Facility: ☒ Recycling Facility ☒ Recycling Containment*

Type of action: ☒ Permit ☒ Registration
☐ Modification ☐ Extension
☐ Closure ☐ Other (explain) _____

pCS1921337468

*** At the time C-147 is submitted to the division for a Recycling Containment, a copy shall be provided to the surface owner.**

Be advised that approval of this request does not relieve the operator of liability should operations result in pollution of surface water, ground water or the environment. Nor does approval relieve the operator of its responsibility to comply with any other applicable governmental authority's rules, regulations or ordinances.

1.

Operator: Enduring Resources IV, LLC (For multiple operators attach page with information) OGRID #: 372286

Address: 200 Energy Court, Farmington, New Mexico 87401

Facility or well name (include API# if associated with a well): Rincon Unit 2706-29O

OCD Permit Number: _____ (For new facilities the permit number will be assigned by the district office)

U/L or Qtr/Qtr O Section 29 Township 27N Range 6W County: Rio Arriba

Surface Owner: ☒ Federal ☐ State ☐ Private ☐ Tribal Trust or Indian Allotment

2.

☒ **Recycling Facility:**

Location of recycling facility (if applicable): Latitude 36.539671 Longitude 107.490588 NAD83

Proposed Use: ☒ Drilling* ☒ Completion* ☒ Production* ☒ Plugging *

The re-use of produced water may NOT be used until fresh water zones are cased and cemented

☐ Other, ***requires permit for other uses. Describe use, process, testing, volume of produced water and ensure there will be no adverse impact on groundwater or surface water.***

☒ Fluid Storage

☒ Above ground tanks ☒ Recycling containment ☐ Activity permitted under 19.15.17 NMAC explain type _____

☐ Activity permitted under 19.15.36 NMAC explain type: _____ ☐ Other explain _____

☐ For multiple or additional recycling containments, attach design and location information of each containment

☐ **Closure Report (required within 60 days of closure completion):** ☐ Recycling Facility Closure Completion Date: _____

3.

☒ **Recycling Containment:**

☐ Annual Extension after initial 5 years (attach summary of monthly leak detection inspections for previous year)

Center of Recycling Containment (if applicable): Latitude 36.539671 Longitude 107.490588 NAD83

☐ For multiple or additional recycling containments, attach design and location information of each containment

☒ Lined ☐ Liner type: Thickness 60 mil ☐ LLDPE ☒ HDPE ☐ PVC ☐ Other _____

☒ String-Reinforced

Liner Seams: ☒ Welded ☐ Factory ☐ Other _____ Volume: 385.633 bbl Dimensions: L:466' X W: 356' X D 24'

☐ Recycling Containment Closure Completion Date: _____

State of New Mexico
Energy, Minerals and Natural Resources Department

Michelle Lujan Grisham
Governor

Sarah Cottrell Propst
Cabinet Secretary

Todd E. Leahy, JD, PhD
Deputy Secretary

Adrienne Sandoval, Division Director
Oil Conservation Division

RE: Approval of Rincon Unit 2706-29O Recycling Containment 3RF-46

Mrs. Felix,

The New Mexico Oil Conservation Division (OCD) has approved the Rincon Unit 2706-29O Recycling facility and containment on August 2, 2019, with the following conditions of approval;

- Enduring will notify OCD District III at least 72 hours but no more than 1 week prior to the start of installation of the liner/Geotextiles
- Enduring will notify OCD District III at least 2 business days prior to covering the leak detection system with rocks or liner.
- Enduring will notify OCD District III prior to the commencement of the first initial filling of the pond.
- Enduring will check the leak detection system to verify that it is empty prior to the start of operations.
- Enduring will fill the containment to a level of 5' which cover the entire base of the containment and wait 24 hours and check the leak detection for liner integrity.
    - IF water is found in the leak detection Enduring must follow 19.15.34.13 NMAC
    - If no water is found in the leak detection Enduring may continue to fill the containment and will check the leak detection daily during the initial fill.

If you have any questions, please call the office.

Respectfully,

Cory Smith
OCD District III
Environmental Specialist

4.

Bonding:

☒ Covered under bonding pursuant to 19.15.8 NMAC per 19.15.34.15(A)(2) NMAC **(These containments are limited to only the wells owned or operated by the owners of the containment.)**

☐ Bonding in accordance with 19.15.34.15(A)(1). Amount of bond $_____ **(work on these facilities cannot commence until bonding amounts are approved)**

☐ Attach closure cost estimate and documentation on how the closure cost was calculated.

5.

Fencing:

☐ Four foot height, four strands of barbed wire evenly spaced between one and four feet

☒ Alternate. Please specify: 8 foot chain link fence

6.

Signs:

☒ 12"x 24", 2" lettering, providing Operator's name, site location, and emergency telephone numbers

☐ Signed in compliance with 19.15.16.8 NMAC

7.

Variances:

Justifications and/or demonstrations that the proposed variance will afford reasonable protection against contamination of fresh water, human health, and the environment.

Check the below box only if a variance is requested:

☒ Variance(s): Requests must be submitted to the appropriate division district for consideration of approval. If a Variance is requested, include the variance information on a separate page and attach it to the C-147 as part of the application.

If a Variance is requested, it must be approved prior to implementation.

8.

Siting Criteria for Recycling Containment

Instructions: The applicant must provide attachments that demonstrate compliance for each siting criteria below as part of the application. Potential examples of the siting attachment source material are provided below under each criteria.

General siting	
Ground water is less than 50 feet below the bottom of the Recycling Containment. NM Office of the State Engineer - iWATERS database search; USGS; Data obtained from nearby wells	☐ Yes ☒ No ☐ NA
Within incorporated municipal boundaries or within a defined municipal fresh water well field covered under a municipal ordinance adopted pursuant to NMSA 1978, Section 3-27-3, as amended. - Written confirmation or verification from the municipality; written approval obtained from the municipality	☐ Yes ☒ No ☐ NA
Within the area overlying a subsurface mine. - Written confirmation or verification or map from the NM EMNRD-Mining and Minerals Division	☐ Yes ☒ No
Within an unstable area. - Engineering measures incorporated into the design; NM Bureau of Geology & Mineral Resources; USGS; NM Geological Society; topographic map	☐ Yes ☒ No
Within a 100-year floodplain. FEMA map	☐ Yes ☒ No
Within 300 feet of a continuously flowing watercourse, or 200 feet of any other significant watercourse, or lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark). - Topographic map; visual inspection (certification) of the proposed site	☐ Yes ☒ No
Within 1000 feet from a permanent residence, school, hospital, institution, or church in existence at the time of initial application. - Visual inspection (certification) of the proposed site; aerial photo; satellite image	☐ Yes ☒ No
Within 500 horizontal feet of a spring or a fresh water well used for domestic or stock watering purposes, in existence at the time of initial application. - NM Office of the State Engineer - iWATERS database search; visual inspection (certification) of the proposed site	☐ Yes ☒ No
Within 500 feet of a wetland. - US Fish and Wildlife Wetland Identification map; topographic map; visual inspection (certification) of the proposed site	☐ Yes ☒ No

9.
Recycling Facility and/or Containment Checklist:
Instructions: Each of the following items must be attached to the application. Indicate, by a check mark in the box, that the documents are attached.

- ☒ Design Plan - based upon the appropriate requirements.
- ☒ Operating and Maintenance Plan - based upon the appropriate requirements.
- ☒ Closure Plan - based upon the appropriate requirements.
- ☒ Site Specific Groundwater Data -
- ☒ Siting Criteria Compliance Demonstrations –
- ☒ **Certify that notice of the C-147 (only) has been sent to the surface owner(s)**

10.
Operator Application Certification:
I hereby certify that the information and attachments submitted with this application are true, accurate and complete to the best of my knowledge and belief.

Name (Print): Andrea Felix Title: Regulatory Manager

Signature: Date: 7-9-2019

e-mail address: afelix@enduringresources.com Telephone: 505-386-8205

11.
OCD Representative Signature: **Approval Date:** 8/2/19

Title: Environmental Specalist **OCD Permit Number:** 3RF-46

☐ OCD Conditions

☒ Additional OCD Conditions on Attachment

Enduring Resources IV, LLC

200 Energy Court

Farmington, NM 87401

Rincon Unit 2706-29O

Water Recycle Facility / Containment

Submitted by:

Andrea Felix, Regulatory Manager

July 8, 2019

Table of Contents

1. Introduction

Operator	Enduring Resources IV, LLC
OGRID	372286
Facility Name	Rincon Unit 2706-29O
Facility Type	Recycling Facility & Recycling Containment
Location	Section 29, T27N, R6W Rio Arriba County
Surface Owner	Federal- BLM

In accordance with NMAC 19.15.34, Enduring Resources IV, LLC (Enduring) requests the registration of a recycling containment and permit for a recycling facility. The facility and containments will be used to treat and recycle produced water for re-use in Enduring completion activities.

The surface owner of this location is the BLM and as part of the Rincon Unit POD (plan of development) BLM has been notified and has approved of the placement of this facility/ containment on their lands as Enduring is the operator of the applicable oil and gas mineral rights. A copy of this C-147 application has been provided to the BLM.

2. Siting Criteria

The Rincon Unit 2706-29O facility / containment is located in accordance with 19.15.34.11 as documented below:

- **Ground water is greater than 50 feet below the bottom of the containment**
  A test well was drilled on 4-24-2019 per the attached GeoMat drilling Log which indicated a ground water depth greater than 85 feet.
  NM Office of the State Engineer - iWATERS database search; USGS; Data obtained from nearby wells is shown on the aerial or topo maps provided.

- **Within incorporated municipal boundaries or within a defined municipal fresh water well field covered under a municipal ordinance adopted pursuant to NMSA 1978, Section 3-27-3, as amended**
  The recycling facility / containment is not located within any incorporated municipal boundaries within a defined municipal fresh water well field covered by a municipal ordinance adopted pursuant to Section 3-27-3 NMSA 1978, as amend.

- **Within the area overlying a subsurface mine**
  The recycling facility / containment is not located within an area overlaying a subsurface mine according to NM EMNRD Mining and Minerals Divisions database there are no subsurface mines in Section 29, T27N, R6W Rio Arriba County.

- **Within an unstable area**
  The recycling facility / containment is not located within an unstable area and is not on the side of a hill.

- **Within a 100-year floodplain. FEMA map**
  The recycling facility / containment is not located within a 100-year floodplain as shown on the aerial or topo maps provided.

- **Within 300 feet of a continuously flowing watercourse, or 200 feet of any other significant watercourse, or lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark)**
  The recycling facility / containment is not located within 300 feet of a continuously flowing watercourse, or 200 feet of any other significant watercourse, or lakebed, sinkhole, or playa lake as shown on the aerial or top maps provided.

- **Within 1000 feet from a permanent residence, school, hospital, institution, or church in existence at the time of initial application**
  The recycling facility / containment is not located within 1000 feet from a permanent residence, school, hospital, institution, or church in existence at the time of initial application as shown on the aerial or topo maps provided.

- **Within 500 horizontal feet of a spring or a fresh water well used for domestic or stock watering purposes, in existence at the time of initial application**
  The recycling facility / containment is not located within 500 horizontal feet of a spring or fresh water well used for domestic or stock watering purposes in existence at the time of initial application as shown on the aerial or topo maps provided.

- **Within 500 feet of a wetland**
  The recycling facility / containment is not located within 500 feet of a wetland as shown on the aerial or topo maps provided.

3. Variance Request

Enduring is requesting a variance to 19.15.34.12.D(1) NMAC which states, "Recycling facilities shall be fenced with a four-foot fence that has at least four strands of barbed wire evenly spaced in the interval between one and four feet above ground level".

Enduring will install an eight (8) foot chain link fence with one strand of barbed wire over the top around the facility as requested by the surface owner to allow for greater protection to the facility than the requirements of 1.15.34.12.D(1).

4. Design and Construction Plan

In accordance with Rule 19.15.34.12 NMAC the following Design and Construction Plan describes Enduring's Rodeo Unit 511H recycling facility / containment and will assist Enduring personnel to ensure compliance with the minimum design and construction requirements as defined by NMOCD as outlined in 19.15.34.12 NMAC.

4.1 Confinement of Produced Water

The recycling facility / containment has been designed to ensure the confinement of produced water, the prevention of releases, and the prevention of overtopping due to wave action or rainfall.

4.2 Foundation Construction

The recycling facility / containment has been designed, and will be constructed, to have a properly constructed foundation with an unyielding base, free of rocks debris and sharp edges. Geotextile will be placed under the secondary liner in order to reduce stress-strain on it. A geo textile 10 OZ Standard Black Polyester will be placed under the secondary liner to reduce localized stress-strain that may otherwise compromise the liners integrity. The containment levee will be constructed with an inside grade no steeper than 2 horizontal feet to one vertical foot (2H:1V). The levee will have an outside grade no steeper than three horizontal feet to one vertical foot (3H:1V). The top of the levee shall be wide enough to install an 18 inch anchor trench and provide adequate room for inspection and maintenance.

4.3 Liner Construction

The recycling facility / containment is designed to have a 60 mil, HDPE textured Nominal Conductive liner as the primary liner. The primary and secondary liners will be resistant to UV light, petroleum hydrocarbons, salt and acidic/alkaline solutions and shall cover the bottom and sides of the pit including the minimum three (3) feet of freeboard. The secondary liner will consist of a 60 mil HDPE smooth Black Nominal Conductive liner that meets the conductivity requirement of 1×10^{-9} cm/sec. Liner material will be factory welded by the manufacturer by qualified personnel. The liner will be installed to minimize liner seams orienting them vertically minimizing seams in corners per 19.15.34.12a.5. The liner material will overlap a minimum of 4 inches. All welding and testing will be completed by qualified personnel.
External discharge or suction lines will not penetrate the liner. The liner will be protected from excessive hydrostatic force or mechanical damage, and the point of discharge and suction from the containment is specifically designed to eliminate damage from fluid forces.

4.4 Leak Detection System

The leak detection system between the upper and lower geomembrane liners consist of a 200-mil geo net to facilitate drainage. The leak detection system consists of a properly designed drainage and collection and removal system placed above the lower geomembrane liner in depressions and sloped to facilitate the earliest possible leak detection. A 30-foot-wide by 15-foot-long by 1-foot-deep depression will be constructed to

allow for collection of any leaking liquid. A 2-inch and 6-inch PVC liner will be installed in between the primary and secondary liners from the top of the tank to the depression to allow for detection and removal of liquid. The leak detection system as modified is in compliance with 19.1.34.12

4.5 Top Soil

The top soil being stored is not within 100 feet of a continuously flowing watercourse or significant watercourse; within 200 feet from a lakebed, sinkhole, or playa lake; within 100 feet of a wetland or within a 100-year flood plain as shown on the aerial or topo maps provided.

4.6 Signage

The recycling facility / containment will have a sign no less than 12" by 24" with lettering not less than 2" in height in a conspicuous place near the recycling facility / containment. The sign will contain the operator's name, location of the recycling facility / containment by quarter-quarter or unit letter, Section, Township, Range and emergency phone numbers.

4.7 Fencing

The recycling facility / containment will be surrounded by an eight-foot chain-link fence and maintained in good repair. All gates associated with the fence will be closed and locked when responsible personnel are not onsite. The fencing will be kept in good repair, and inspected as part of the weekly inspection.

4.8 Wildlife Protection

Enduring Resources will install a bird deterrent system pursuant to the attached *Migratory Bird Mitigation Plan.* The recycling facility / containment will be inspected weekly for dead migratory birds, and will be reported.

5. Maintenance and Operating Plan

In accordance with Rule 19.15.34.13 NMAC the following Maintenance and Operating Plan describes Enduring's Rincon Unit 2706-29O recycling facility / containment and will assist Enduring personnel and contractors to ensure compliance with the requirements as defined by NMOCD as outlined in 19.15.34.13 NMAC

- Enduring will inspect the recycling facility / containment and associated leak detection systems weekly while the containment is holding fluids. An inspection log will be maintained by Enduring, and will be available for review upon request by the division.

- Enduring will remove any visible oil from the surface of the recycling facility / containment upon discovery.
- Enduring will maintain a minimum of three feet of freeboard in the containment at all times.
- The injection and withdrawal of fluids from the containment shall be accomplished through a header, diverter or other hardware that prevents damage to the liner by erosion, fluid jets or impact from installation and removal of hoses or pipes.
- If a leak is discovered in the containments primary liner above the liquid level in the containment, Enduring will repair the primary liner within 48 hours, or request an extension on repair within the 48-hour time limit.
- If a leak is discovered in the containments primary liner below the liquid level in the containment, Enduring will notify the division office of the leak, remove all fluids above the leak level, and repair the primary liner within 48 hours, or request an extension on repair within the 48-hour time limit.
- The recycling facility / containment will be operated in such a way to prevent the collection of surface water.
- An oil absorbent boom or other device will be onsite to contain an unanticipated release.
- The recycling facility / containment will not be used for the storage or discharge of hazardous waste.
- Enduring will consider the recycling containment to have ceased operations if less than 20% of the total fluid volume is used every six (6) months following the first withdrawal of produced water for use. Enduring will report cessation of operations to the appropriate division district office. If additional time is needed for closure, Enduring will request an extension from the appropriate division district office prior to the expiration of the initial six (6) month time period.

6. Closure Plan

In accordance with Rule 19.15.34.14 NMAC the following Closure Plan describes Enduring's Rincon Unit 2706-29O recycling facility / containment closure requirements.

- Upon cessation of operations Enduring will remove all fluids within 60 days of the official date of cessation.

- Enduring will close the produced water containment within six (6) months from the official date of cessation. If Enduring will require more than 6 months to complete closure activities, an extension request will be filed prior to the six (6) month time limit for closure.

- Within 60 days of final closure completion, Enduring will submit a closure report on form C-147, including required attachments, to document all closure activities including sampling results. The closure report will certify that all information in the report and attachments are correct and that Enduring has complied with all applicable closure requirements and conditions specified in division rules or directives.

- Closure activities will consist of the following:
    a. Removal of all containment contents
    b. Removal of liners and associated leak detection equipment for disposal at a division approved facility.
    c. Removal of all equipment associated with the continued operation of the recycling containment.
    d. Enduring will test the soils beneath the containment for contamination with a five-point composite sample which includes stained or wet soils, if any, and that sample shall be analyzed for the constituents listed in table I.
    e. If the closure sample collected return results equal to or less than the parameters listed in *Table I* closure will be completed and backfill with begin with non-waste containing, uncontaminated, earthen material.
    f. If the closure sample collected indicates concentration is higher that the values listed in *Table I*, Enduring will report the elevated sample values to the NMOCD, and additional delineation may be required at that time.

Table I

Closure Criteria for Recycling Containments

Depth below bottom of containment to groundwater less than 10,000 mg/l TDS	Constituent	Method*	Limit**
51 feet - 100 feet	Chloride	EPA 300.0	10,000 mg/kg
	TPH (GRO+DRO+MRO)	EPA SW-846 Method 8015M	2,500 mg/kg
	GRO+DRO	EPA SW-846 Method 8015M	1,000 mg/kg
	BTEX	EPA SW-846 Method 8021B or 8260B	50 mg/kg
	Benzene	EPA SW-846 Method 8021B or 8260B	10 mg/kg
> 100 feet	Chloride	EPA 300.0	20,000 mg/kg
	TPH (GRO+DRO+MRO)	EPA SW-846 Method 8015M	2,500 mg/kg
	GRO+DRO	EPA SW-846 Method 8015M	1,000 mg/kg
	BTEX	EPA SW-846 Method 8021B or 8260B	50 mg/kg
	Benzene	EPA SW-846 Method 8021B or 8260B	10 mg/kg

* Or other test methods approved by the division.
** Numerical limits or natural background level, whichever is greater.
[19.15.34.14 NMAC - N, 3/31/15]

- Enduring will reclaim the containments location to a safe and stable condition that blends the surrounding undisturbed area. Tops soils and subsoils will be replaced to their original relative positions and contoured to achieve erosion control, long term stability and preservation of surface water flow patterns. The disturbed are will then be reseeded in the first favorable growing season following closure. The impacted surface area will be restored to the condition that existed prior to construction.
- Reclamation of all disturbed areas no longer in use shall be considered complete when all ground disturbing activities have been completed, and a uniform vegetative cover has been established that reflects a life-form ratio of plus or minus fifty percent of pre-disturbance levels and total percent plant cover of at least seventy percent of pre-disturbance levels excluding noxious weeds.
- Soil cover and revegetation as required in 19.15.34.14 NMAC will be met in addition to the reclamation requirements by BLM as surface owner which provide for more stringent requirements.

Attachment A

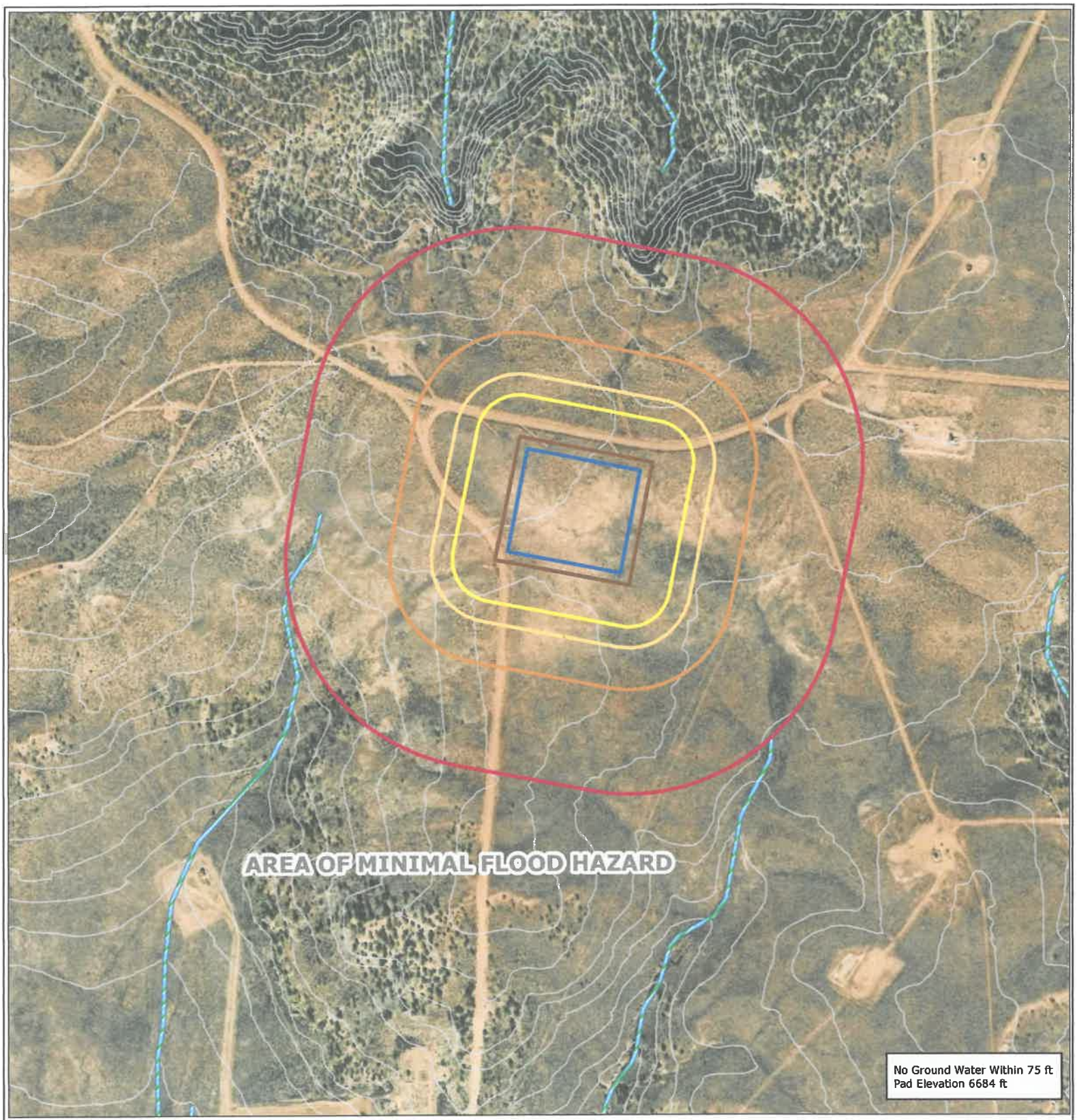
Enduring Resources IV, LLC

200 Energy Court

Farmington, NM 87401

Rincon Unit 2706-29O

Water Recycle Facility / Containment



RNU 2706-29O Recycling Facility/ Containment location

OSE_wells_AOI
Mines and Mills
Coal
VM Vermiculite
S Sulfur
PM Pumice
PO Potash
PL Perlite
MI Mica
GY Gypsum
NM_Wetlands
NHDWaterbody
PAD_TYPE
Contain
Disturb
200 ft
300 ft
500 ft
1000 ft
FEMA High Risk Flood Zone
USGS Water Courses

Feet
0 500 1,000 2,000

ENDURING RESOURCES, LLC

Data Source Statement:
BLM-FFO, Enduring Resources GIS, ESRI Inc., NCE Surveys, USGS

NAD 1983 2011 StatePlane New Mexico West FIPS 3003 Ft US	Author: drogers	Date: 7/2/2019

Attachment B

Enduring Resources IV, LLC

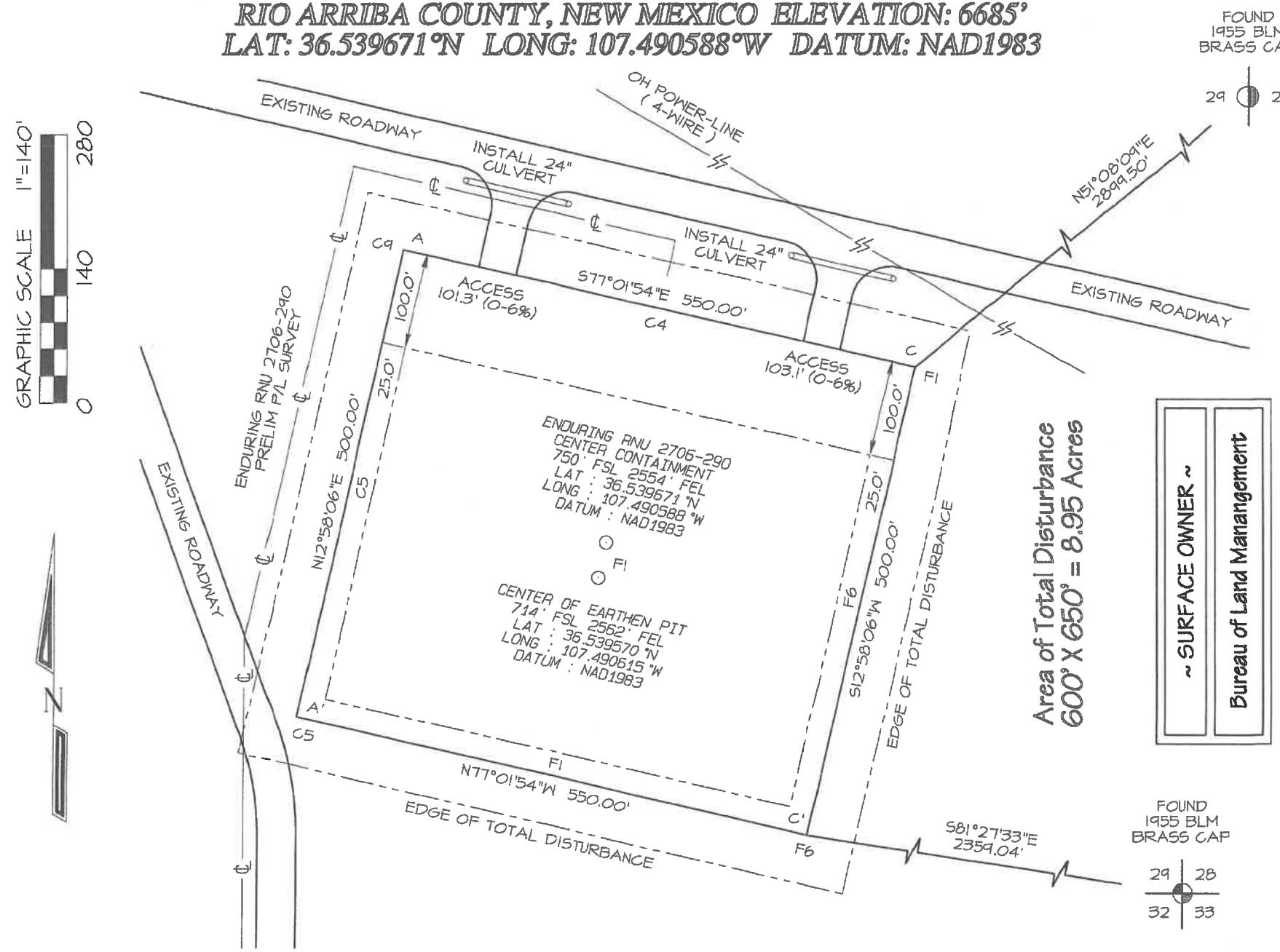
200 Energy Court

Farmington, NM 87401

Rincon Unit 2706-29O

Water Recycle Facility / Containment

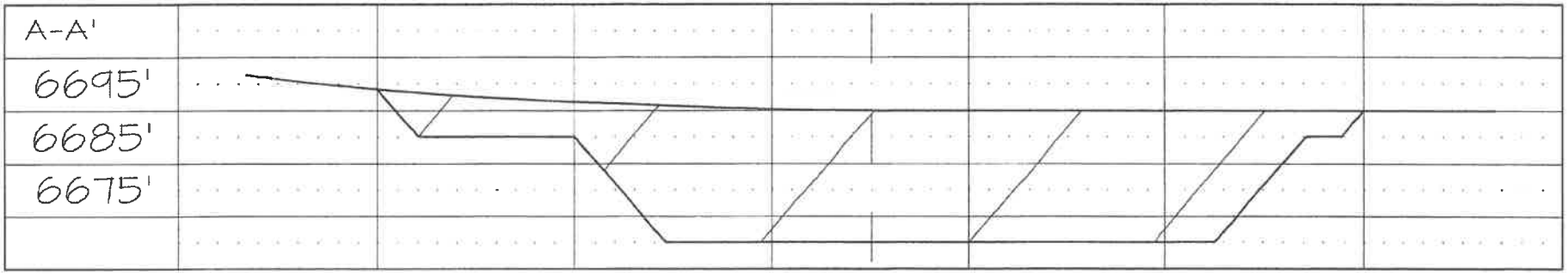
ENDURING RESOURCES, LLC RNU 2706-29O WATER RECYCLE FACILITY
LOCATED IN SE/4 SW/4 & SW/4 SE/4 OF SECTION 29, T27N, R6W
RIO ARRIBA COUNTY, NEW MEXICO ELEVATION: 6685'
LAT: 36.539671°N LONG: 107.490588°W DATUM: NAD1983



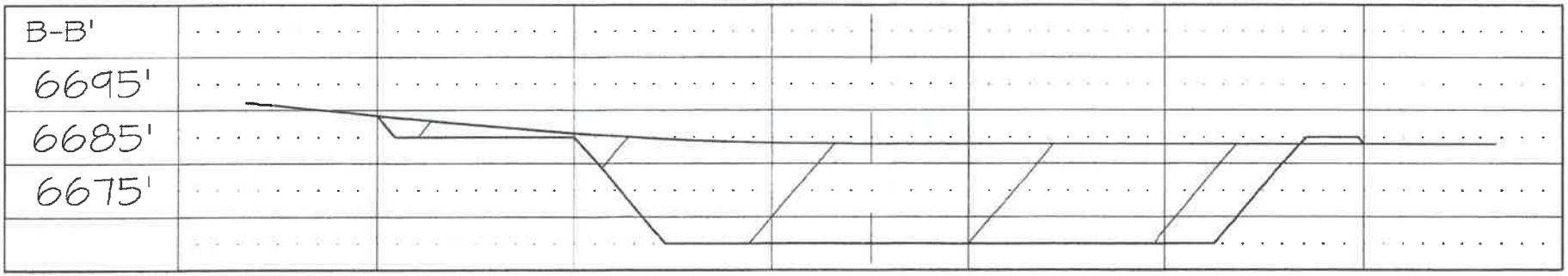
Steel T-Posts have been set to define the Edge of Disturbance limits which are 50' offset from the edge of the staked frac pad.

ENDURING RESOURCES, LLC RNU 2706–29O WATER RECYCLE FACILITY
750' FSL & 2554' FEL, SECTION 29, T27N, R6W
RIO ARRIBA COUNTY, NEW MEXICO ELEVATION: 6685'

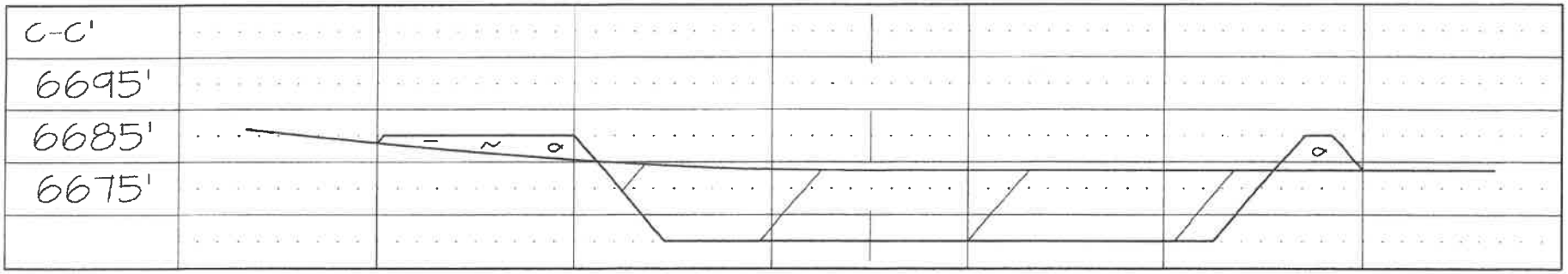
HORIZONTAL SCALE 1"=100' C/L VERTICAL SCALE 1"=30'



C/L



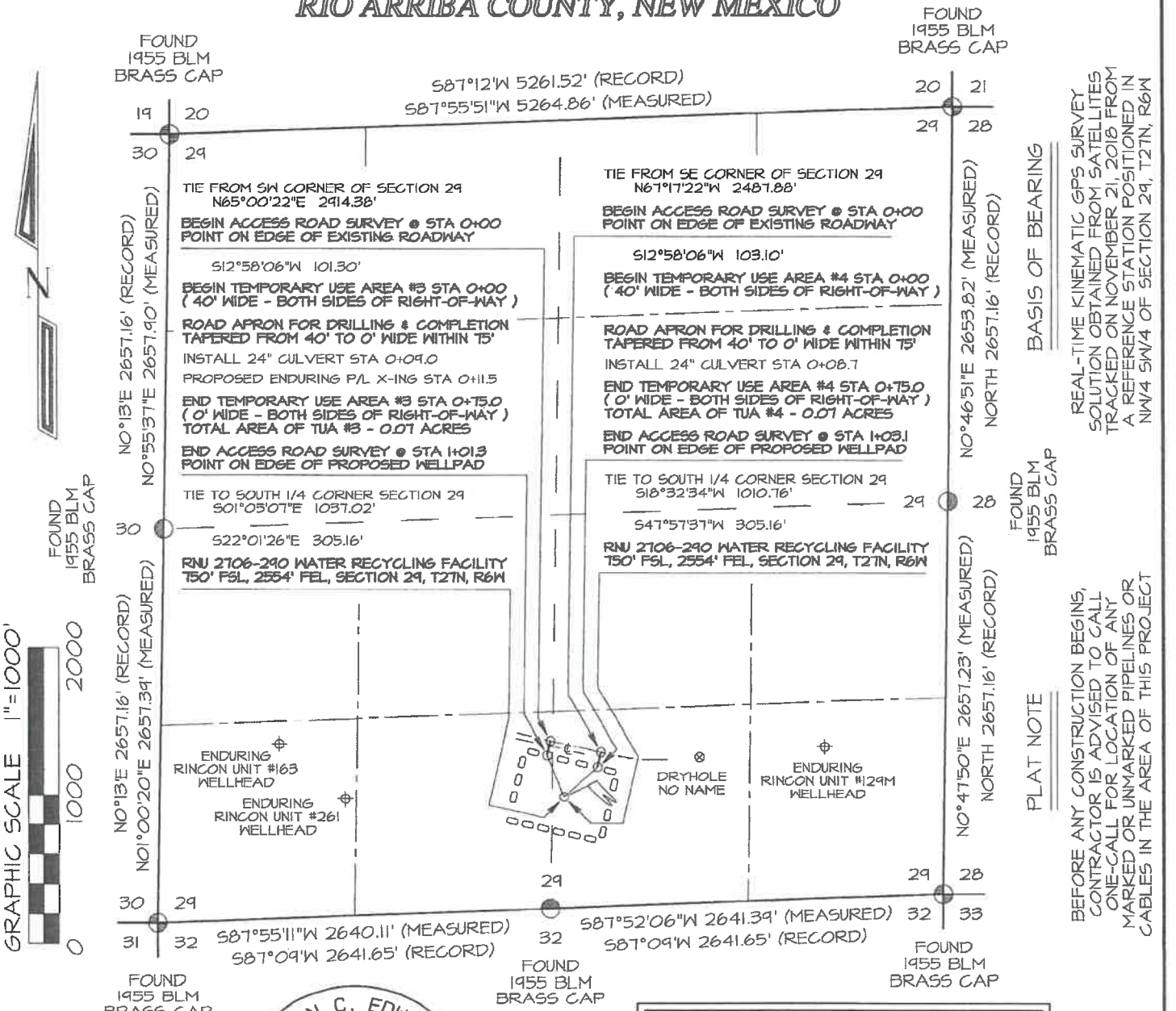
C/L



EDWARDS SURVEYING, INC. IS NOT LIABLE FOR LOCATION OF UNDERGROUND UTILITIES OR PIPELINES.

CONTRACTOR SHOULD CONTACT ONE-CALL FOR LOCATION OF ANY MARKED OR UNMARKED UNDERGROUND UTILITIES OR PIPELINES ON WELLPAD AND/OR ACCESS ROAD AT LEAST TWO WORKING DAYS PRIOR TO CONSTRUCTION.

ENDURING RESOURCES, LLC RNU 2706-29O WATER RECYCLE FACILITY
PROPOSED ACCESS ROAD SURVEY LOCATED IN THE SE/4 SW/4 & SW/4 SE/4 OF SECTION 29, T27N, R6W, N.M.P.M. RIO ARRIBA COUNTY, NEW MEXICO



~ SURFACE OWNERSHIP ~ Bureau of Land Management	
0+00 TO 1+01.3	101.3 FT / 6.1 RODS
0+00 TO 1+03.1	103.1 FT / 6.2 RODS

JASON C. EDWARDS
NEW MEXICO
15269
REGISTERED PROFESSIONAL SURVEYOR

I, Jason C. Edwards, a registered professional surveyor under the laws of the State of New Mexico, hereby certify that this plat was prepared from field notes of an actual survey meeting the minimum requirements of the standards for easement surveys and is true and correct to the best of my knowledge and belief.

JASON C. EDWARDS Date: April 2, 2019

Jason C. Edwards
New Mexico LS #15269

Prepared for:
ENDURING RESOURCES, LLC
200 ENERGY COURT
FARMINGTON, NM 87401

N C E SURVEYS, INC.

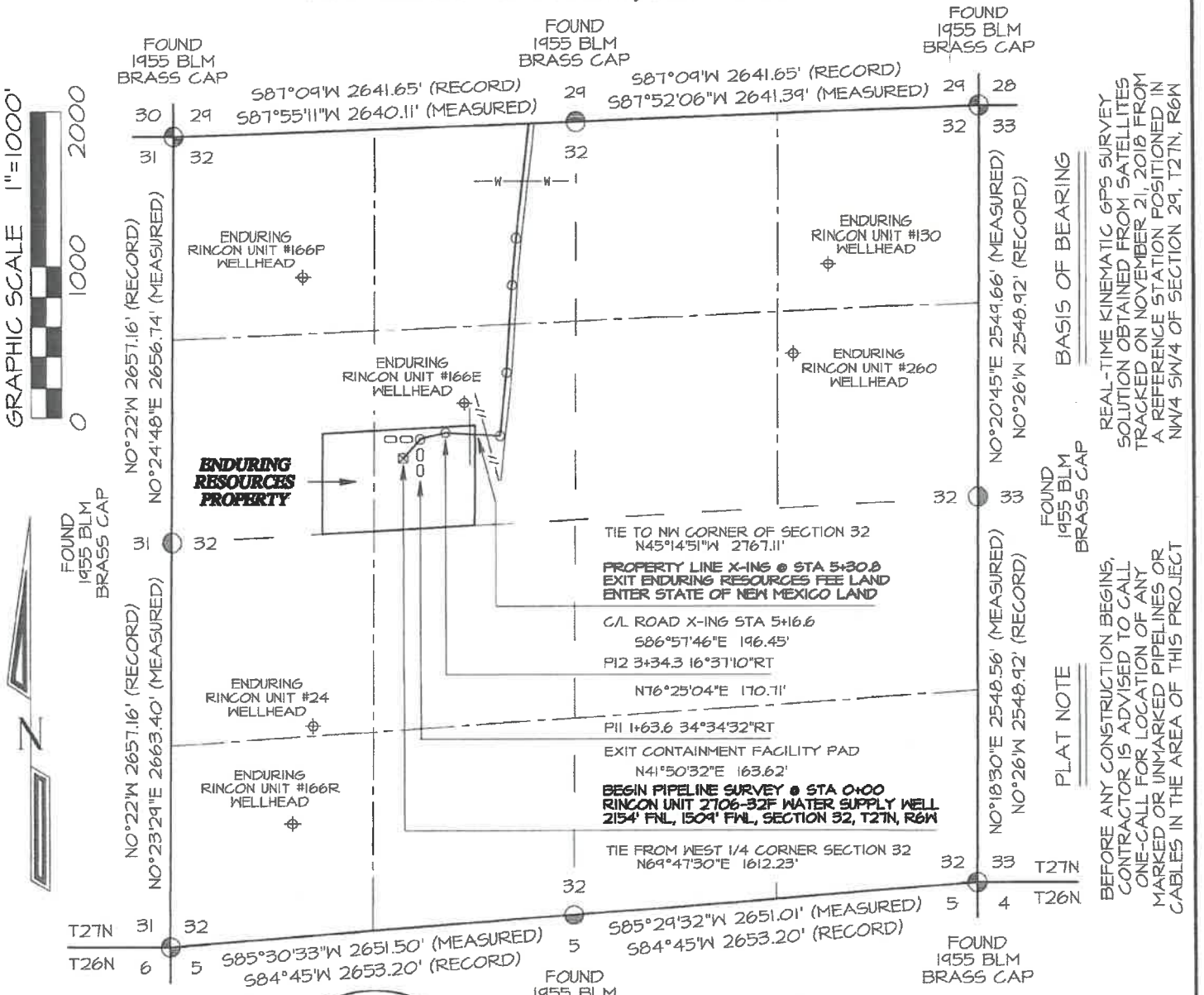
Land Surveyor:
Jason C. Edwards

Mailing Address:
Post Office Box 6612
Farmington, NM 87499

Business Address:
111 East Pinon Street
Farmington, NM 87402
(505) 486-1695 (Office)
ncesurveys@comcast.net

SHEET 3 OF 13 | CHECKED: JCE
FILENAME: 271629AP1 | DRAWN BY: RAP

ENDURING RESOURCES, LLC RNU 2706-29O WATER RECYCLE FACILITY
PROPOSED PIPELINE SURVEY LOCATED IN THE
SE/4 NW/4 OF SECTION 32, T27N, R6W, N.M.P.M.
RIO ARRIBA COUNTY, NEW MEXICO



~ FEE SURFACE OWNERSHIP ~ ENDURING RESOURCES, LLC	
0+00 TO 5+30.8	530.8 FT / 32.2 RODS

JASON C. EDWARDS
NEW MEXICO
15269
REGISTERED PROFESSIONAL SURVEYOR

I, Jason C. Edwards, a registered professional surveyor under the laws of the State of New Mexico, hereby certify that this plat was prepared from field notes of an actual survey meeting the minimum requirements of the standards for easement surveys and is true and correct to the best of my knowledge and belief.

JASON C. EDWARDS Date: April 2, 2019

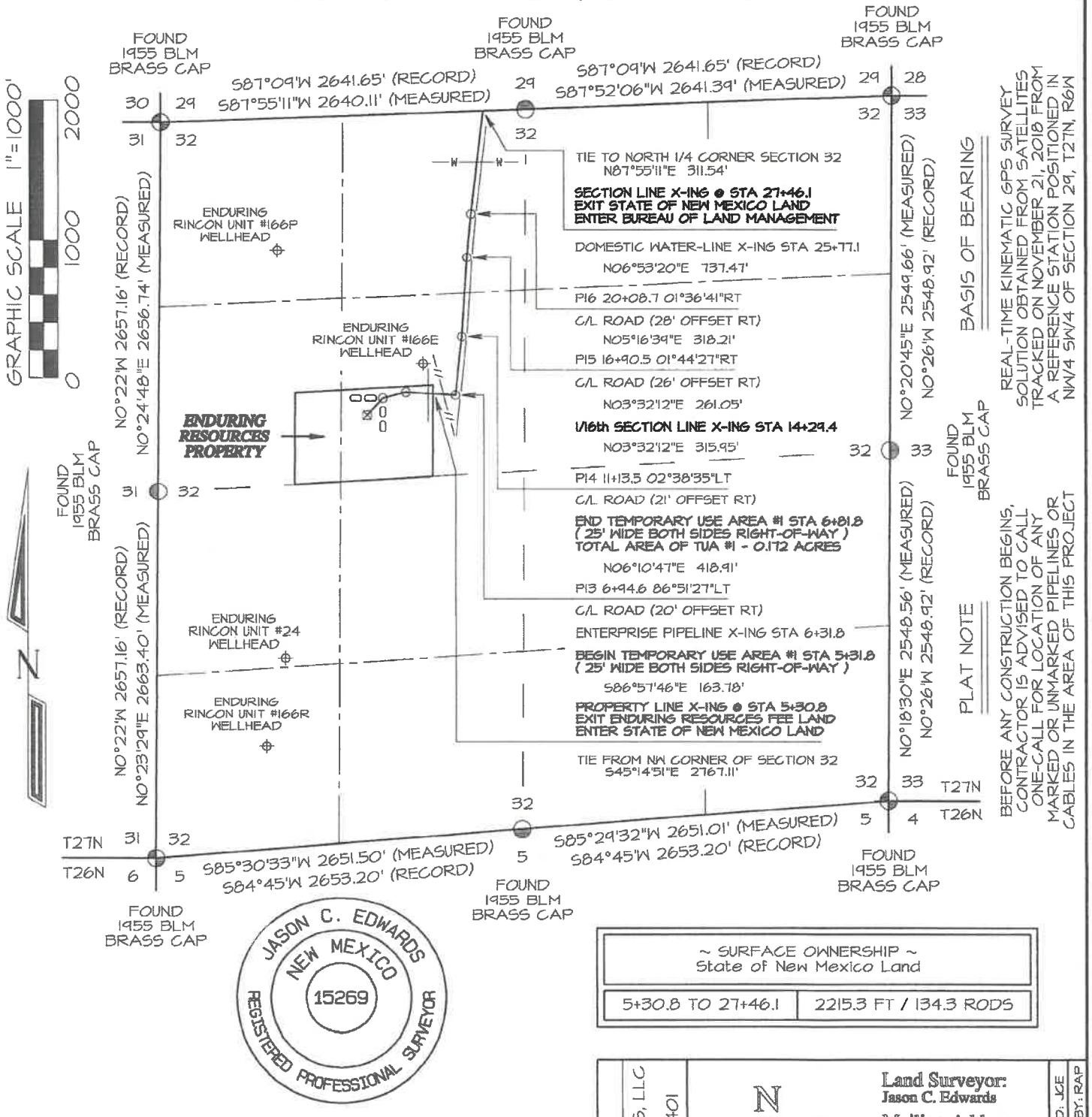
Jason C. Edwards
New Mexico LS #15269

Prepared for:
ENDURING RESOURCES, LLC
200 ENERGY COURT
FARMINGTON, NM 87401

Land Surveyor:
Jason C. Edwards
Mailing Address:
Post Office Box 6612
Farmington, NM 87499
Business Address:
111 East Pinon Street
Farmington, NM 87402
(505) 486-1695 (Office)
ncesurveys@comcast.net
NCE SURVEYS, INC.

CHECKED: JCE
DRAWN BY: RAP
SHEET 4 OF 13
FILENAME: 216326P1

ENDURING RESOURCES, LLC RNU 2706-29O WATER RECYCLE FACILITY
PROPOSED PIPELINE SURVEY LOCATED IN THE E/2 NW/4 OF SECTION 32, T27N, R6W, N.M.P.M. RIO ARRIBA COUNTY, NEW MEXICO



~ SURFACE OWNERSHIP ~ State of New Mexico Land	
5+30.8 TO 27+46.1	2215.3 FT / 134.3 RODS

JASON C. EDWARDS
NEW MEXICO
15269
REGISTERED PROFESSIONAL SURVEYOR

I, Jason C. Edwards, a registered professional surveyor under the laws of the State of New Mexico, hereby certify that this plat was prepared from field notes of an actual survey meeting the minimum requirements of the standards for easement surveys and is true and correct to the best of my knowledge and belief.

JASON C. EDWARDS Date: April 2, 2019

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New Mexico LS #15269

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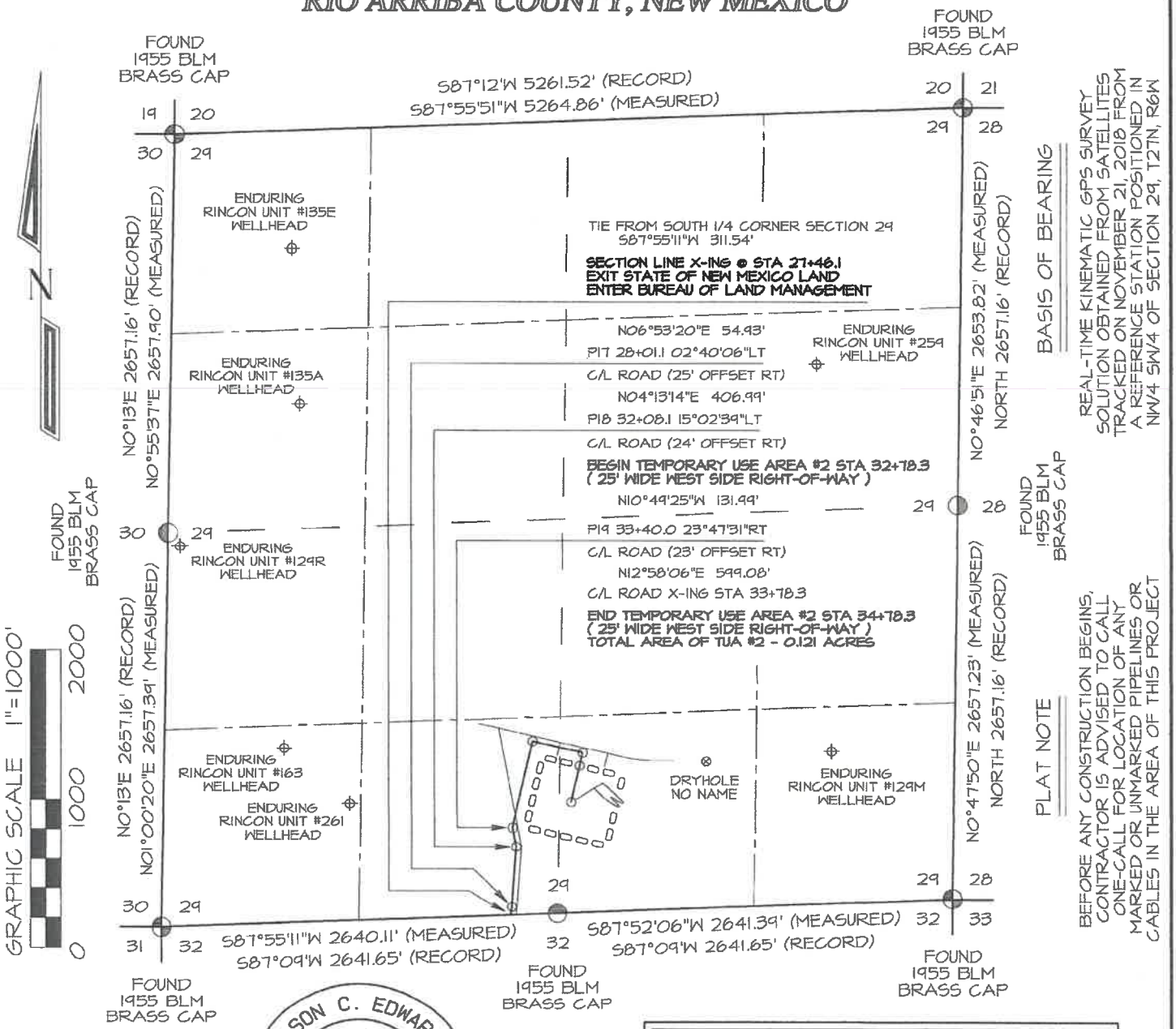
ncesurveys@comcast.net
NCE SURVEYS, INC.

CHECKED: JCE
DRAWN BY: RAP
SHEET 5 OF 13
FILENAME: 216326P2

ENDURING RESOURCES, LLC RNU 2706–29O WATER RECYCLE FACILITY
PROPOSED PIPELINE SURVEY LOCATED IN THE
SE/4 SW/4 & SW/4 SE/4 OF SECTION 29, T27N, R6W, N.M.P.M.
RIO ARRIBA COUNTY, NEW MEXICO



~ SURFACE OWNERSHIP ~ Bureau of Land Management	
27+46.1 TO 46+23.5	1877.4 FT / 113.8 RODS

JASON C. EDWARDS
NEW MEXICO
15269
REGISTERED PROFESSIONAL SURVEYOR

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JASON C. EDWARDS
Jason C. Edwards
New Mexico LS #15269

Date: April 2, 2019

Prepared for:
ENDURING RESOURCES, LLC
200 ENERGY COURT
FARMINGTON, NM 87401

N C E SURVEYS, INC.

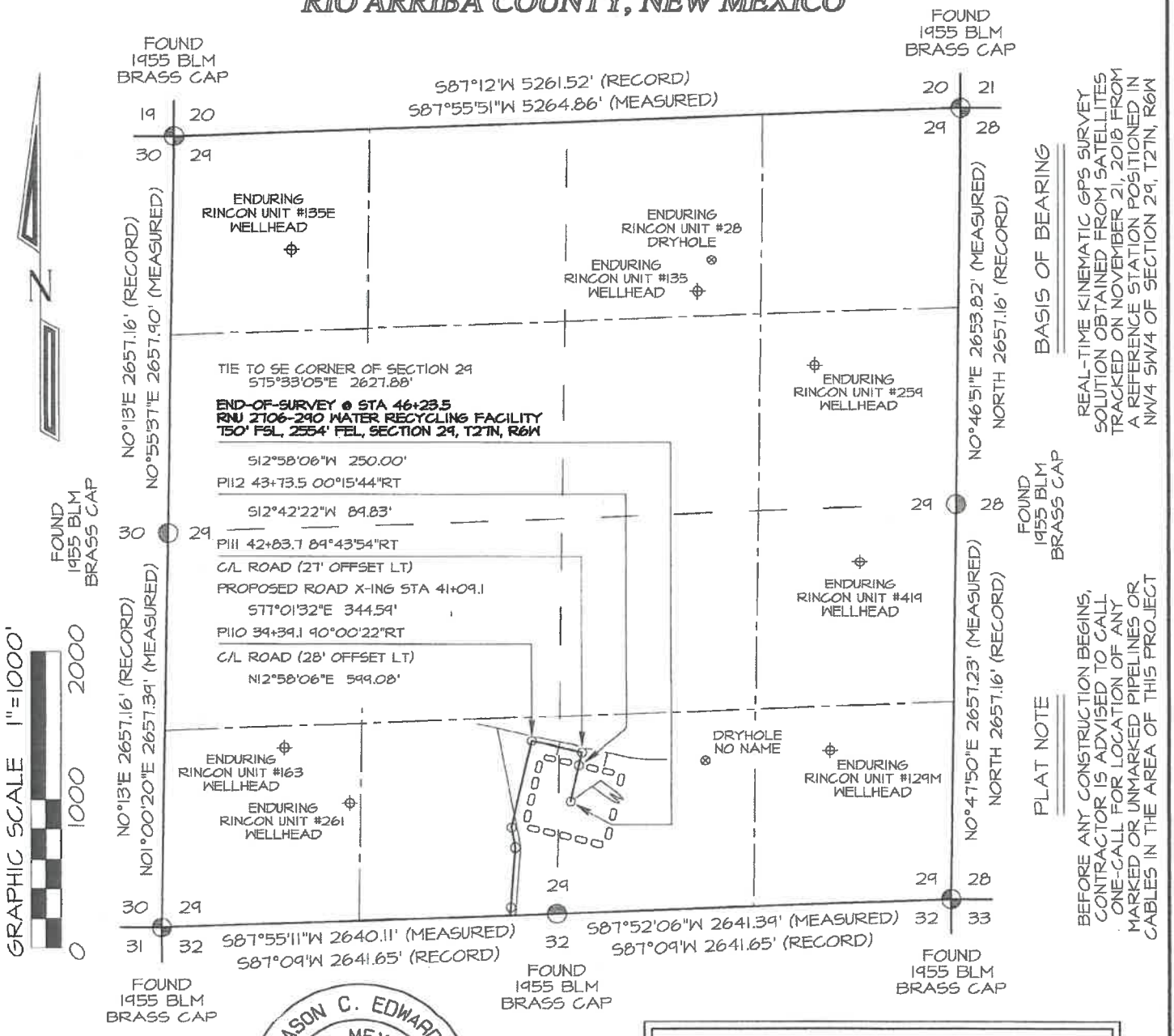
Land Surveyor:
Jason C. Edwards

Mailing Address:
Post Office Box 6612
Farmington, NM 87499

Business Address:
111 East Pinon Street
Farmington, NM 87402
(505) 486-1695 (Office)
ncesurveys@comcast.net

CHECKED: JCE
DRAWN BY: RAP
SHEET 6 OF 13
FILENAME: 21624GP3

ENDURING RESOURCES, LLC RNU 2706-29O WATER RECYCLE FACILITY
PROPOSED PIPELINE SURVEY LOCATED IN THE
SE/4 SW/4 & SW/4 SE/4 OF SECTION 29, T27N, R6W, N.M.P.M.
RIO ARRIBA COUNTY, NEW MEXICO



BASIS OF BEARING

REAL-TIME KINEMATIC GPS SURVEY SOLUTION OBTAINED FROM SATELLITES TRACKED ON NOVEMBER 21, 2018 FROM A REFERENCE STATION POSITIONED IN NW/4 SW/4 OF SECTION 29, T27N, R6W

PLAT NOTE

BEFORE ANY CONSTRUCTION BEGINS, CONTRACTOR IS ADVISED TO CALL ONE-CALL FOR LOCATION OF ANY MARKED OR UNMARKED PIPELINES OR CABLES IN THE AREA OF THIS PROJECT

~ SURFACE OWNERSHIP ~ Bureau of Land Management	
27+46.1 TO 46+23.5	1877.4 FT / 113.8 RODS

JASON C. EDWARDS
NEW MEXICO
15269
REGISTERED PROFESSIONAL SURVEYOR

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JASON C. EDWARDS

Jason C. Edwards
New Mexico LS #15269

Date: April 2, 2019

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200 ENERGY COURT
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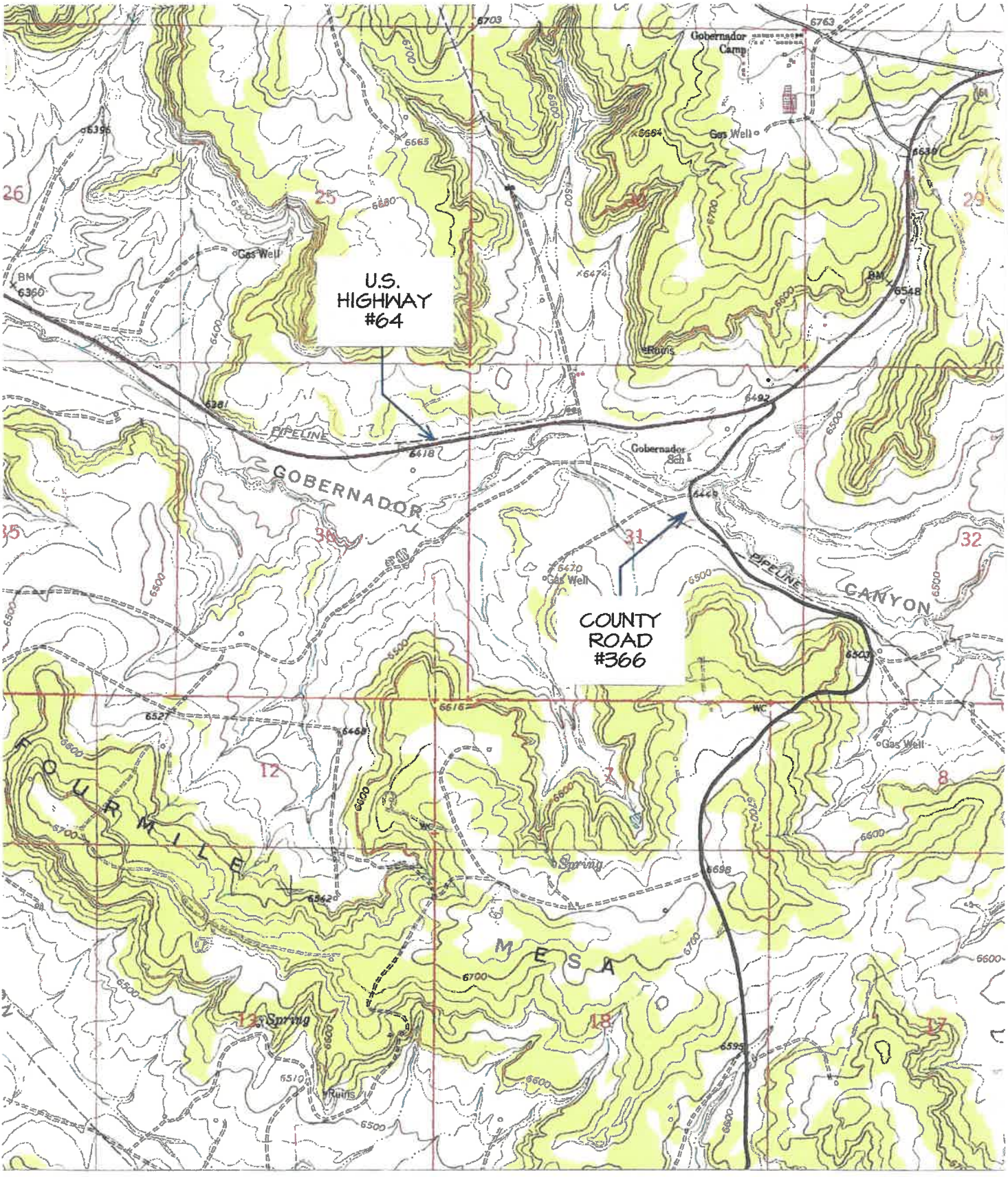
Farmington, NM 87402
(505) 486-1695 (Office)
ncesurveys@comcast.net
NCE SURVEYS, INC.

SHEET 7 OF 13 | CHECKED: JCE
FILENAME: 216296P4 | DRAWN BY: RAP

ENDURING RESOURCES, LLC RNU 2706-29O WATER RECYCLE FACILITY

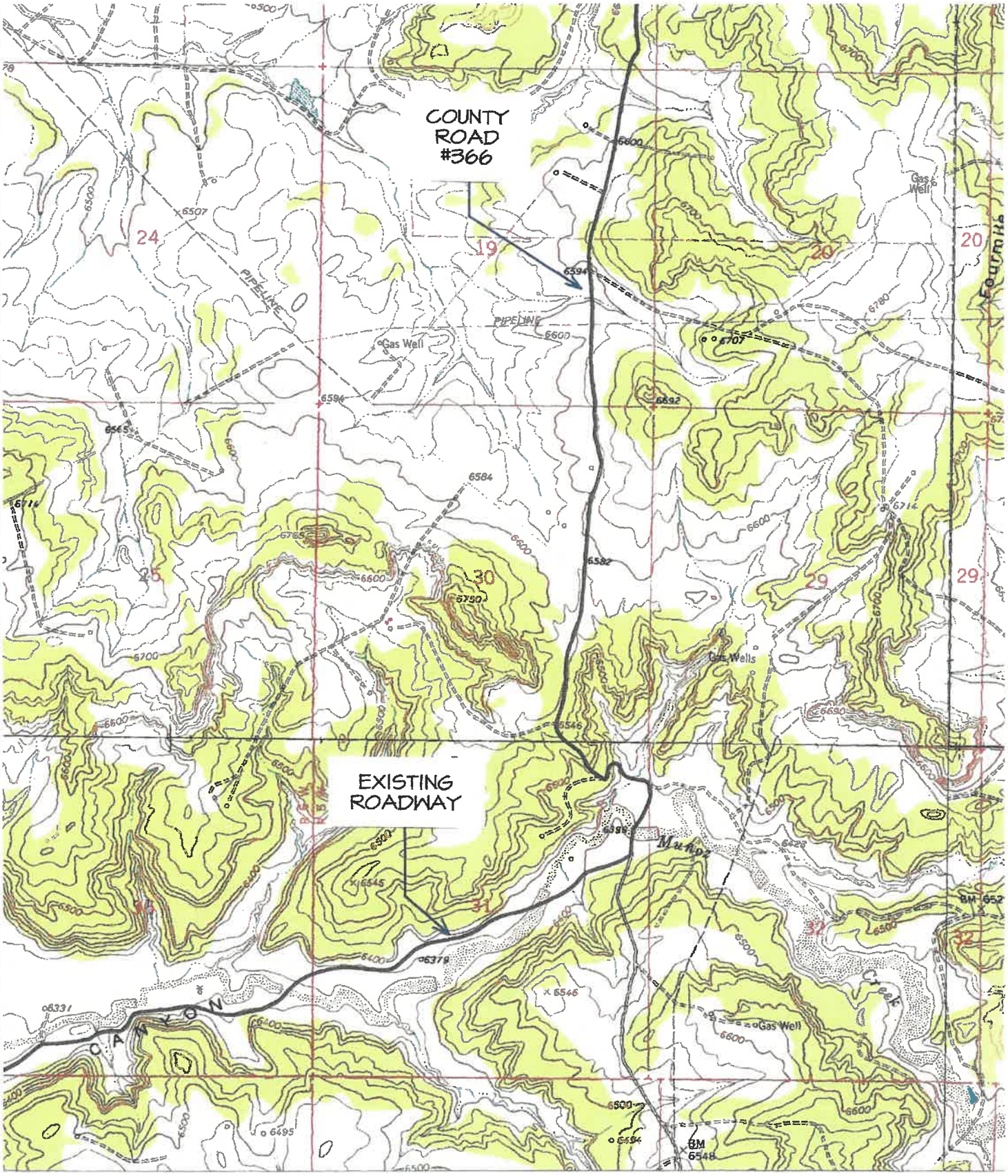
LOCATED IN SE/4 SW/4 & SW/4 SE/4 SECTION 29, T27N, R6W
N.M.P.M., RIO ARRIBA COUNTY, NEW MEXICO



TOPO NAME : FOURMILE CANYON ⊕ PRODUCING WELL ⊗ PLUGGED & ABANDONED WELL

ENDURING RESOURCES, LLC RNU 2706-29O WATER RECYCLE FACILITY

LOCATED IN SE/4 SW/4 & SW/4 SE/4 SECTION 29, T27N, R6W
N.M.P.M., RIO ARRIBA COUNTY, NEW MEXICO

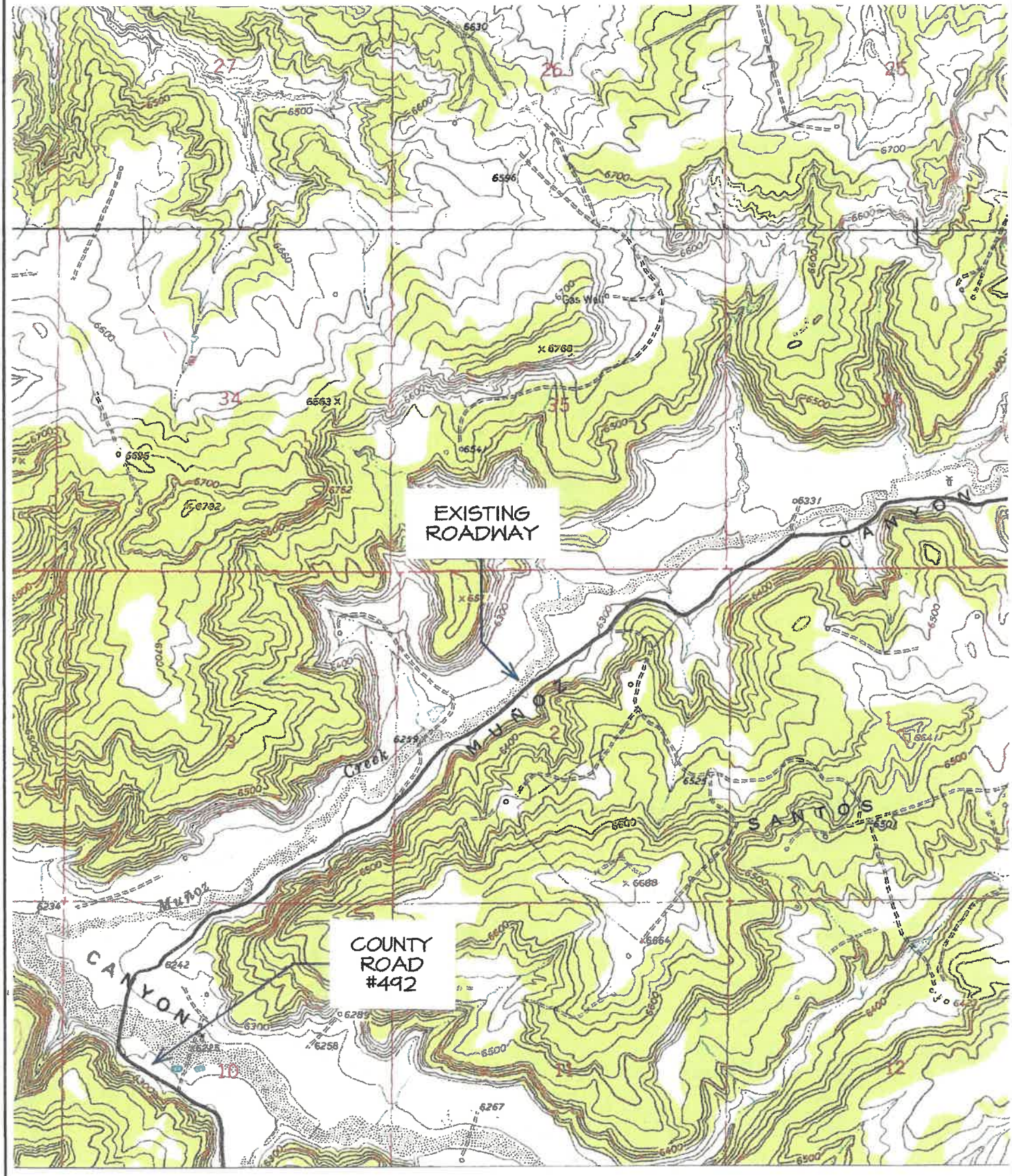


TOPO NAMES : SANTOS PEAK & FOURMILE CANYON

⊕ PRODUCING WELL ⊗ PLUGGED & ABANDONED WELL

ENDURING RESOURCES, LLC RNU 2706-29O WATER RECYCLE FACILITY

LOCATED IN SE/4 SW/4 & SW/4 SE/4 SECTION 29, T27N, R6W
N.M.P.M., RIO ARRIBA COUNTY, NEW MEXICO

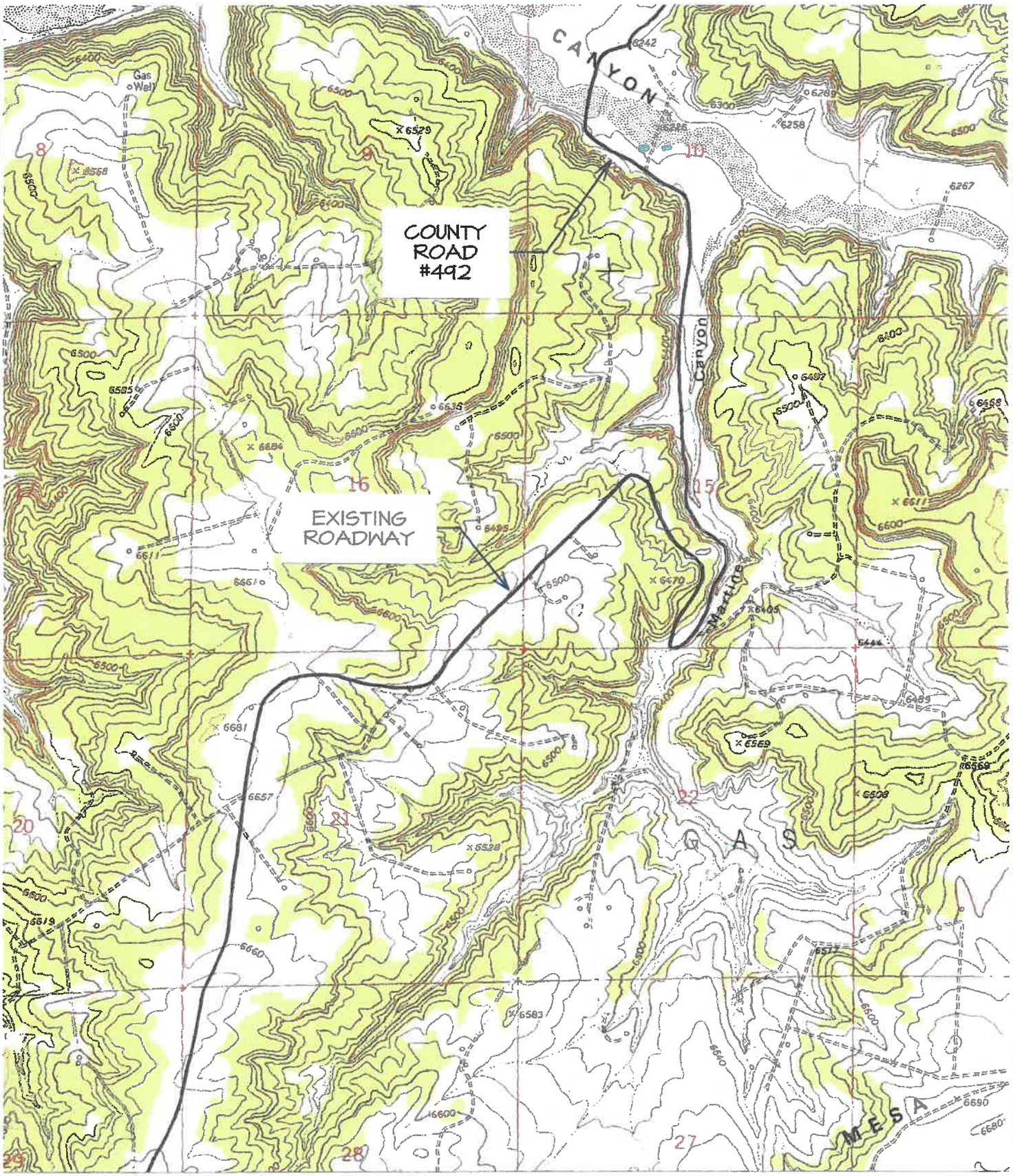


TOPO NAME : SANTOS PEAK

⊕ PRODUCING WELL ⊗ PLUGGED & ABANDONED WELL

ENDURING RESOURCES, LLC RNU 2706-29O WATER RECYCLE FACILITY

LOCATED IN SE/4 SW/4 & SW/4 SE/4 SECTION 29, T27N, R6W
N.M.P.M., RIO ARRIBA COUNTY, NEW MEXICO

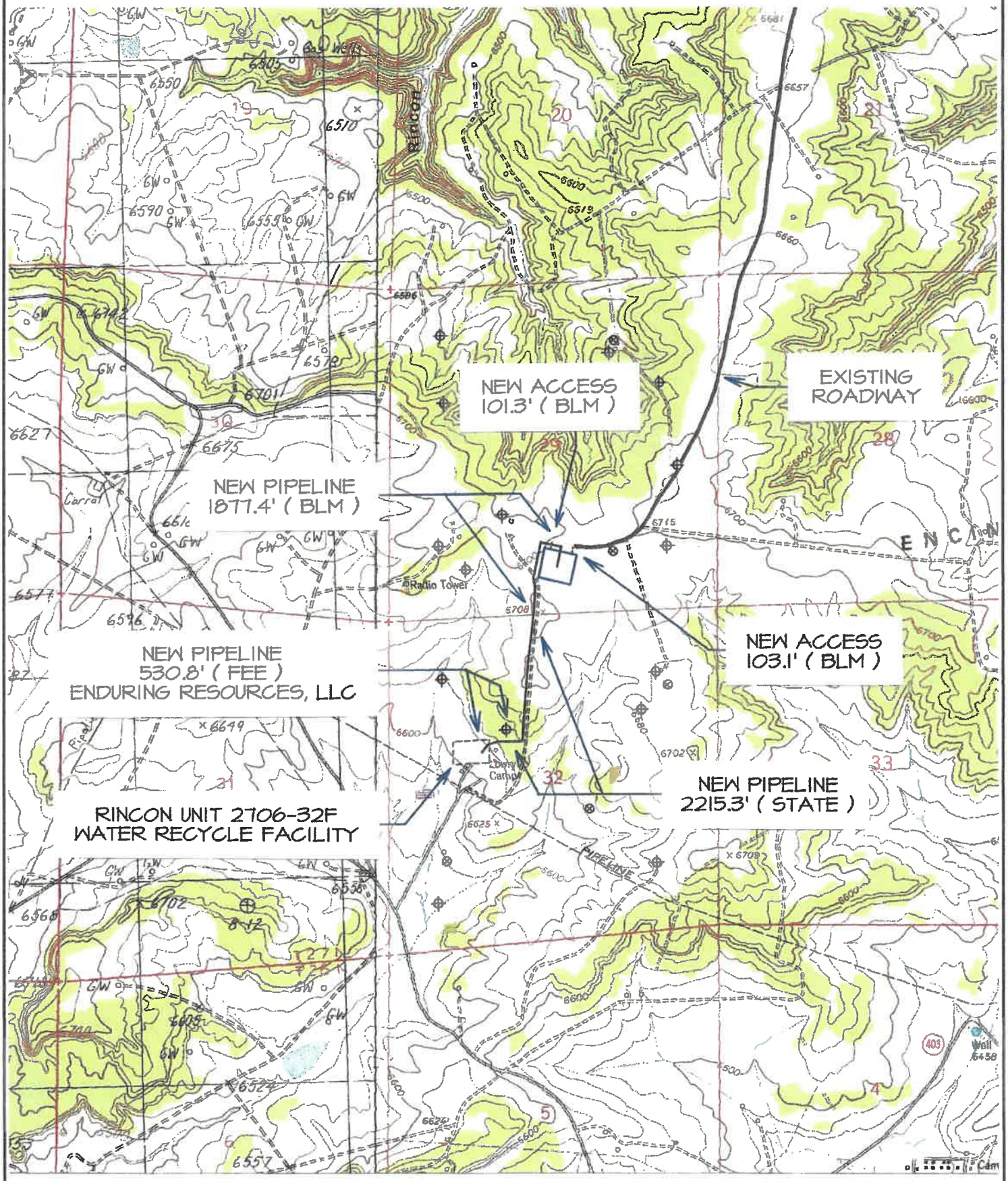


TOPO NAME : SANTOS PEAK

⊕ PRODUCING WELL ⊗ PLUGGED & ABANDONED WELL

ENDURING RESOURCES, LLC RNU 2706-29O WATER RECYCLE FACILITY

LOCATED IN SE/4 SW/4 & SW/4 SE/4 SECTION 29, T27N, R6W
N.M.P.M., RIO ARRIBA COUNTY, NEW MEXICO



TOPO NAME : SANTOS PEAK

⊕ PRODUCING WELL ⊗ PLUGGED & ABANDONED WELL

Directions from the Intersection of US Hwy 550 & US Hwy 64

in Bloomfield, NM to Enduring Resources, LLC RNU 2706-29O Water Recycle Facility

Located in SE/4 SW/4 & SW/4 SE/4 Section 29, T27N, R6W

N.M.P.M., Rio Arriba County, New Mexico

Latitude: 36.539671°N Longitude: 107.490588°W Datum: NAD1983

From the intersection of US Hwy 550 & US Hwy 64 in Bloomfield, NM, travel Easterly on US Hwy 64 for 36.8 miles to General American Road just beyond Gobernador School at Mile Marker 101;

Go Right (Southerly) on General American Road for 1.2 miles to fork in roadway;

Go Right (South-westerly) continuing on General American Road for 3.4 miles to 4-way intersection;

Go Straight (Southerly) continuing on General American Road for 1.1 miles to fork in roadway;

Go Right (South-westerly) along Munoz Wash for 4.3 miles to 4-way intersection;

Go Straight (South-westerly) continuing across Carrizo Wash for 0.3 miles to fork in roadway;

Go Left (South-easterly) which is straight onto County Road #492 for 0.4 miles to fork in roadway;

Go Right (Southerly) continuing on County Road #492 for 1.4 miles to fork in roadway;

Go Right (Northerly) exiting County Road #492 continuing uphill on existing roadway for 0.6 miles to fork in roadway;

Go Left (South-westerly) for 0.8 miles to fork in roadway;

Go Right (Westerly) which is straight for 0.4 miles to fork in roadway;

Go Left (Southerly) which is straight for 2.1 miles to begin proposed access on left-hand side of roadway which continues for 103.1' to staked RNU 2706-29O Water Recycle Facility.

Attachment D

Enduring Resources IV, LLC

200 Energy Court

Farmington, NM 87401

Rincon Unit 2706-29O

Water Recycle Facility / Containment

Enduring Resources, LLC's
Recycling Containment
Migratory Bird Mitigation Plan

Enduring Resources, LLC (Enduring) is proposing this Migratory Bird Mitigation Plan (Mitigation Plan) in compliance with the New Mexico Oil Conservation Division (NMOCD) Rule 19.15.34.12.E Enduring shall ensure that the recycling containment is protective of wildlife by implementing the following proposed Mitigation Plan. Enduring employees will inspect the containment weekly for and, within 30 days of discovery, report the discovery of dead migratory birds or other wildlife to the appropriate wildlife agency and to the division district office in order to facilitate assessment and implementation of measures to prevent incidents from reoccurring. This Mitigation Plan will utilize a combination of visual and audio deterrents to discourage wildlife, particularly birds and bats, from the recycling containment in order to mitigate potential impacts. This Mitigation Plan would be implemented while the Recycling Containment is active and in use, as to not desensitize birds to the deterrents.

The following mitigations will be implemented to reduce any wildlife impacts that may occur from the Recycling Containment:

- The following visual bird deterrents will be installed (Appendix A):
    - Bird-X Prowler Owl decoys will be installed at all four corners of the Containment.
    - Scare-Eye Balloons will be installed along the perimeter of the Containment.
- A Bird-X BroadBand PRO System will be installed at the Containment facility. It utilizes sonic (naturally-recorded bird destress calls & predator cries) to deter birds; as well as, ultrasonic high-frequency sound waves to deter bats. Bird propane cannons were avoided, so as not to disturb other wildlife species.
- The containment will be inspected on a monthly basis when water is present in the containment. All inspectors will insure the containment is receiving only filtered produced water with no hydrocarbons, as well as being trained to inspect the premises for, and respond to any wildlife incident, should it occur.
- Inspection will include:
    - An inspection of the filtration system and all visual and audio deterrents to insure they are in working order and functioning properly.
    - A thorough search of the entire containment facility, and just beyond, for the presence of any wildlife (entrapped, injured, dead, etc.).
- In the event a wildlife incident should occur, James McDaniel with Enduring will be contacted immediately and he will notify the appropriate wildlife agency and division district office. Enduring, appropriate wildlife agency, and division district office will then work collaboratively to address the incident appropriately to insure the incident does not reoccur.

Appendix A:
Visual and Audio Deterrents

All Bird-X Products

Electronic Bird Control >
- Sonic Bird Control
- Ultrasonic Bird Control
- Other Electronic Bird Deterrents
- Solar Panel Products

Bird Spikes
- Bird Spikes Kits
- Stainless Steel Spikes
- Plastic Spikes

Bird Netting

Drones

Laser Bird Control

Shock Track Systems

Bird Balls

Bird Wire

Visual Scares and Predator Decoys

Bird Gels, Taste Aversions, & OvoControl® P

For Songbird Lovers

Remote Control Drone

Retail Products

Accessories

BroadBand PRO

- Combines SONIC and ULTRASONIC Bird Control Technology
- Creates Uninviting Environment For Birds
- Covers Up To SIX ACRES

IN STOCK - AVAILABLE IMMEDIATELY!

Deter Birds With Multi-Faceted Sonic and Ultrasonic Attack! The BroadBand PRO's 4-speaker system simultaneously emits sounds that are both audible and inaudible to humans that confuse, disorient, and intimidate pest birds, keeping them away.

Starting at $850.00 NOW $725.00 (15% SAVINGS!)

Voltage Options: BroadBand PRO 110v ($725
Quantity: 1
Price: $725.00
Product Total: $725.00

ADD TO CART >

Reviews | Details | Applications | Benefits | Add & Combine | Specs | Case Studies

Guarantee + Warranty

Backed by our 30 Day Electronics Performance Satisfaction Guarantee AND our 6-Month Manufacturer's Warranty Against Material Defects

- Option to add 3 Visual Scares to package for added efficacy
- Emits a combination of audible noises & high-frequency sound waves that are silent-to-most-humans
  - SONIC: Uses naturally-recorded bird distress calls & predator cries, covers up to 6 acres
  - ULTRASONIC: Uses high-frequency sound waves, covers up to 3,600 sq. ft.
- 4 speakers included – 4 independent speakers with 100 ft. of wire each
- Fully programmable – control volume, sound delays, & daylight / night operation
- Weather resistant – NEMA type box is designed to withstand outdoor use
- Option to add an assortment of three (3) high-quality visual scares products

All Bird-X Products

Electronic Bird Control
- Sonic Bird Control
- Ultrasonic Bird Control
- Other Electronic Bird Deterrents
- Solar Panel Products

Bird Spikes
- Bird Spikes Kits
- Stainless Steel Spikes
- Plastic Spikes

Bird Netting

Drones

Laser Bird Control

Shock Track Systems

Bird Balls

Bird Wire

Visual Scarers and Predator Decoys >

Bird Gels, Taste Aversions & OvoControl® P

For Songbird Lovers

Remote Control Drone

Retail Products

Accessories

Prowler Owl

- **Proven Visual Scare**
- **Saves Money on Cleanup & Repair**
- **Eliminates Bird & Small Pest Problems**
- **Money-Back Guarantee**

Decades-proven visual deterrent, improved with dynamic realism & movement! Scare away birds & small pests with this predator replica of the most-feared aerial predator: the Great Horned Owl, which catches & eats nearly everything it can catch.

- Lifelike, wind-catching design increases effectiveness
- Accurate plumage & hunting flight pose
- Intimidating glassy eyes 'follow' pests
- Flexible wings move & flap in the wind realistically

Without movement, an owl scare is useless – don't be fooled by imitations that are immobile! **Install Prowler Owl decoy in any open outdoor area where pest birds or small critters are a problem.**

Quantity 1

Price $ 39.25

Product Total $ 39.25

ADD TO CART >

Quality Guarantee

Guaranteed to be manufactured to specifications & free from defect at the time of purchase.

Reviews | Details | Applications | Benefits | Add & Combine | Specs

- Predator owl replica, life-size owl
- Owl scare repels pest birds & other small animals
- Always-moving "hunting" posture keeps birds away
- 4-foot wingspan & accurate markings
- Safe, humane, non-toxic, silent
- Covers up to 6,000 sq. ft.

BIRD-X

Pest control for today's environment

Search

Call Us 888.683.1834

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All Bird-X Products

Electronic Bird Control
- Sonic Bird Control
- Ultrasonic Bird Control
- Other Electronic Bird Deterrents
- Solar Panel Products

Bird Spikes
- Bird Spikes Kits
- Stainless Steel Spikes
- Plastic Spikes

Bird Netting

Drones

Laser Bird Control

Shock Track Systems

Bird Balls

Bird Wire

Visual Scares and Predator Decoys >

Bird Gels, Taste Aversions, & OvoControl® P

For Songbird Lovers

Remote Control Drone

Scare-Eye Balloons

- Simple, Highly Effective Bird Repellent
- Reduce Time & Energy Spent on Cleanup
- Reflective Mylar Eyes and Tails Included

3-Pack

Keep birds away with these simple vinyl ball visual deterrents that move with the wind & intimidate pest birds within visible range

- Includes three balloons – one white, one yellow, one black
- Easy to use, cost-effective solution – hang the balloons anywhere
- Balloons move in the wind for fear of movement

Scare Eye® balloons are useful in many applications – homes, gardens, barns, trees, garages, marinas, doorways, & many more

Quantity 1

Price $ 32.55

Product Total $ 32.55

ADD TO CART >

Quality Guarantee

Guaranteed to be manufactured to specifications and free from defect at the time of purchase.

Reviews | Details | Applications | Benefits | Add & Combine | Specs

- Predator decoy, 3D balloons
- Three balloons included: one (1) white, one (1) black, and one (1) yellow
- Includes mylar eyes, mylar tails, and strings for each balloon
- Weatherproof vinyl inflatable balloon
- Design exaggerates the glaring stare and gaping mouth of natural predators
- Wind causes the Scare-Eye Balloons to move in the wind, increasing efficacy
- Easy installation

Attachment E

Enduring Resources IV, LLC

200 Energy Court

Farmington, NM 87401

Rincon Unit 2706-29O

Water Recycle Facility / Containment

ENDURING RESOURCES
RINCON UNIT 2706-29O
RECYCLING CONTAINMENT PIT PROJECT
CONSTRUCTION PLANS

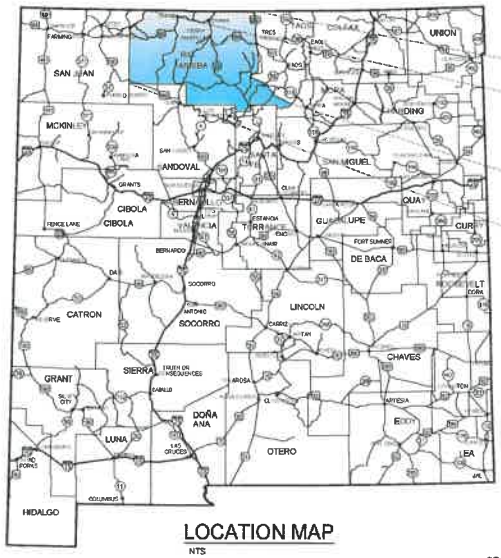
SITE CONTROL

CENTER OF PRODUCED WATER PIT Lat 36°32'22"N Long 107°29'26"W

SECTION 29, TOWNSHIP 27 NORTH, RANGE 6 WEST, NEW MEXICO PRINCIPAL MERIDIAN,
RIO ARRIBA COUNTY, NEW MEXICO

June 2019
RIO ARRIBA COUNTY, NEW MEXICO

PROJECT DESCRIPTION:
RINCON RECYCLING PIT



LOCATION MAP
NTS

VICINITY MAP
NTS

Sheet List Table

Sheet Number	Sheet Title
G100	COVER
G101	GENERAL NOTES AND LEGEND
C101	SITE MAP
C102	SITE GRADING AND DRAINAGE PLAN
C103	SITE PROFILE AND ACCESS ROAD PROFILE
C104	SITE CROSS-SECTIONS
C105	HORIZONTAL CONTROL PLAN
C106	LINER BALLAST TUBES AND PIT GEOCOMPOSITE VENTILATION GRID LAYOUT
C107	GEOCOMPOSITE DETAILS
C108	LINER AND BALLAST TUBE DETAILS
C109	LEAK DETECTION SYSTEM DETAILS
C110	ROAD AND DRAINAGE DETAILS
C111	CHAIN LINK SECURITY FENCE DETAILS
C112	SITE EROSION CONTROL PLAN
C113	SITE EROSION AND SEDIMENTATION CONTROL DETAILS

THESE DETAILED PLANS AND SPECIFICATIONS WERE PREPARED UNDER MY DIRECTION AND SUPERVISION ON BEHALF OF SOUDER, MILLER & ASSOCIATES.

Heather D. McDaniel 5-20-2019

HEATHER D. MCDANIEL, P.E. NM #22047 DATE
PROJECT MANAGER

*CONSTRUCTION SHALL NOT TAKE PLACE UNTIL ENGINEER HAS RECEIVED A COPY OF THE GEOTECHNICAL REPORT AND VERIFIED DESIGN PARAMETERS. IF CONSTRUCTION TAKES PLACE WITHOUT ENGINEER REVIEW, THEN OWNER ASSUMES ALL LIABILITY.

Rev #	Date	Description	By	Chk'd

SOUDER, MILLER & ASSOCIATES
5610 Ward Road Suite 130
Arvada, CO 80002-1309
Phone (303) 239-9011 Fax (303) 239-9745
www.soudermiller.com
Serving the Southwest & Rocky Mountains
Albuquerque, Chalked, Farmington, Hobbs, Las Cruces, Roswell, Santa Fe, Carlsbad, Grand Junction, Arvada, CO - Bedford, AS - El Paso, TX

GENERAL NOTES:

1. SIGNED AND SEALED CONSTRUCTION DRAWINGS ARE PREPARED BASED ON EXISTING SITE CONDITIONS AND REGULATIONS PER THE SEALED DATE ON THE PLANS. DUE TO POSSIBLE CHANGES TO THE SITE, CODES, REGULATIONS, UNDERGROUND UTILITIES, ETC. BETWEEN THE SEALED DATE ON THE PLANS AND DATE OF CONSTRUCTION COMMENCEMENT, THE DESIGN AND RECOMMENDATIONS PROVIDED ARE LIMITED TO THE SEALED DATE ON THE PLANS. IF CHANGES TO ANY SITE CONDITIONS AND/OR REGULATIONS OCCUR BEFORE THE PROJECT CONSTRUCTION DATE, THE OWNER SHALL NOTIFY ENGINEER OF SUCH CHANGES AND OBTAIN THE ENGINEER'S OPINION AS TO THE COMPLETENESS OF THE PLANS AND SPECIFICATIONS. ANY SUCH CHANGE IN FIELD CONDITIONS AND/OR REGULATIONS MAY REQUIRE ADDITIONAL DESIGN SERVICES AND COMMENSURATE FEE INCREASE TO ACCOMMODATE SUCH CHANGES.

2. CLARIFICATIONS AND/OR REQUESTS REGARDING PROJECT INTENT AND MODIFICATIONS SHALL BE SUBMITTED TO THE ENGINEER PRIOR OR DURING CONSTRUCTION IN A FORMAL WRITTEN REQUEST FOR INFORMATION (RFI). THE ENGINEER SHALL NOT BE HELD LIABLE IF RECOMMENDATION(S) ARE ALTERED BY OTHERS.

3. SITE CONDITIONS, EACH SUBCONTRACTOR DOING WORK ON THE PROJECT SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR THE SAFETY OF ALL PERSONS AND PROPERTY WITHIN THEIR WORK AREAS, DAY AND NIGHT, DURING BOTH WORKING AND NONWORKING HOURS; AND, SHALL PROVIDE ALL BARRICADES, SHORING, FLAG MEN, SIGNS, LIGHTING AND OTHER DEVICES REQUIRED THEREOF.

4. THE CONTRACTOR WILL BE RESPONSIBLE FOR THE REPAIR AND/OR REPLACEMENT OF ANY DAMAGE DETERMINED TO BE CAUSED BY THE CONSTRUCTION OF THIS PROJECT TO ROADS, FENCES, DRAINAGES, DRAINAGE STRUCTURES, UTILITIES, INCLUDING CONDUIT, WIRING, EQUIPMENT, AND FIBER-OPTICS. THE CONTRACTOR SHALL REPAIR AND/OR REPLACE ALL DESTROYED OR DAMAGED SURFACE IMPROVEMENTS WITH IMPROVEMENTS EQUAL TO THOSE REMOVED.

5. STOCKPILING OF TOP SOIL: CONTRACTOR SHALL SEGREGATE AND STOCKPILE ALL TOPSOIL OUTSIDE OF THE CONSTRUCTION AREA WITH APPROPRIATE SEDIMENT CONTROL. TOP SOIL SHALL BE REDISTRIBUTED ON THE OUTSIDE OF CONSTRUCTED BERMS, AND EITHER SEEDED, AND MULCHED OR PROTECTED WITH EROSION CONTROL MEASURES. REFER TO CONSTRUCTION PLANS FOR DETAILS.

6. ALL EXISTING TRAFFIC SIGNS, MILEPOST MARKERS AND DELINEATORS WITHIN CONSTRUCTION LIMITS SHALL BE REMOVED OR OFFSET BY THE CONTRACTOR AS DIRECTED BY THE OWNER'S DESIGNEE. INFORMATIVE SIGNS ARE TO BE OFFSET, AND ALL OTHERS ARE TO BE REMOVED. THIS WORK WILL BE INCLUDED IN THE UNIT BID PRICE FOR REMOVAL OF STRUCTURES AND OBSTRUCTIONS.

7. THE CONTRACTOR SHALL MAINTAIN REASONABLE ACCESS TO ALL ADJACENT PROPERTIES BY PROVIDING EASY RIDING CONNECTIONS TO TURNOUTS AND DRIVEWAYS AS DETERMINED ACCEPTABLE BY THE OWNER'S REPRESENTATIVE OR DESIGNEE. THIS WORK WILL BE CONSIDERED INCIDENTAL TO COMPLETION OF THE PROJECT AND NO MEASUREMENT OF PAYMENT WILL BE MADE THEREFORE.

8. THE CONTRACTOR IS HEREBY ADVISED THAT UTILITY RELOCATION BY UTILITY COMPANIES WILL BE DONE CONCURRENTLY WITH CONSTRUCTION. THE CONTRACTOR SHALL PROVIDE FOR UTILITY WORK IN CONJUNCTION WITH CONSTRUCTION OPERATIONS AND SHALL COORDINATE THE SCHEDULING OF WORK WITH THE RESPECTIVE UTILITY COMPANIES IN ORDER TO AVOID DELAYS DUE TO UTILITY WORK. THE CONTRACTOR SHALL PROVIDE FOR THESE CONTINGENCIES WHEN BIDDING THE PROJECT. NO CLAIM FOR DELAYS DUE TO UTILITY WORK WILL BE ALLOWED.

9. THERE IS NO CONSTRUCTION CLEAR ZONE FOR THIS PROJECT. THE CONTRACTOR SHALL NOT STORE EQUIPMENT OR MATERIAL OUTSIDE OF THE PROJECT BOUNDARIES ON THIS PROJECT. THIS WORK SHALL BE CONSIDERED INCIDENTAL TO THE COMPLETION OF THE PROJECT AND NO SEPARATE MEASUREMENT OR PAYMENT WILL BE MADE THEREFORE.

10. EMERGENCY ACCESS SHALL REMAIN OPEN AT ALL TIMES.

11. THE CONTRACTOR WILL REMOVE AND PROTECT ROAD NAME SIGNS DURING CONSTRUCTION AND REPLACE AS SOON AS POSSIBLE AFTER CONSTRUCTION.

12. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPORTING AND CLEAN UP OF SPILLS ASSOCIATED WITH PROJECT CONSTRUCTION AND SHALL REPORT AND RESPOND TO SPILLS OF HAZARDOUS MATERIAL SUCH AS GASOLINE, DIESEL, MOTOR OILS, SOLVENTS, CHEMICALS, TOXIC AND CORROSIVE SUBSTANCES, AND OTHER MATERIALS WHICH MAY BE A THREAT TO PUBLIC HEALTH OR THE ENVIRONMENT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPORTING PAST SPILLS ENCOUNTERED DURING CONSTRUCTION AND OF CURRENT SPILLS NOT ASSOCIATED WITH CONSTRUCTION. REPORTS SHALL BE MADE IMMEDIATELY TO THE ENVIRONMENTAL EMERGENCY SPILL REPORTING LINE AT 1-866-428-6535 AND TO THE OWNER'S REPRESENTATIVE OR DESIGNEE. ANY UNREPORTED SPILLS IDENTIFIED AFTER CONSTRUCTION AND ASSOCIATED WITH PROJECT CONSTRUCTION SHALL BE CLEANED UP BY THE CONTRACTOR IN ACCORDANCE WITH THE CONTRACT. THE CONTRACTOR SHALL BEAR THE FULL COST OF CLEANUP OF SUCH UNREPORTED SPILLS.

13. FINAL PAYMENT OF CONCRETE AND REINFORCING BARS SHALL BE BASED ON PLAN QUANTITIES. IF THE DESIGN IS REVISED DURING CONSTRUCTION OR IF A QUANTITY CHANGE IS REQUIRED DUE TO DISCREPANCIES ON THE PLANS, THE PAYMENT SHALL BE BASED ON COMPUTED FIELD QUANTITIES MEASURED TO NEAT LINES.

14. EXISTING FENCE, SIGNS AND OTHER ITEMS OF PRIVATE PROPERTY FOUND TO BE WITHIN THE RIGHT-OF-WAY ARE TO BE REMOVED AND REPLACED AT THE EDGE OF RIGHT-OF-WAY, BY THE CONTRACTOR. THIS WORK WILL BE CONSIDERED INCIDENTAL TO THE COMPLETION OF THE PROJECT AND NO MEASUREMENT OF PAYMENT WILL BE MADE THEREFORE.

15. THROUGHOUT THE LIFE OF THE PROJECT THE CONTRACTOR SHALL KEEP LOCAL LANDOWNERS INFORMED IN TIMELY FASHION, OF ANY LANE CLOSURES WHICH WILL RESTRICT THE NORMAL FLOW OF TRAFFIC. THERE WILL BE NO DIRECT PAYMENT FOR THIS WORK.

16. THE CONTRACTOR SHALL MAINTAIN UP TO DATE SETS OF AS-BUILT PLANS FOR THE PROJECT. THESE PLANS SHALL BE KEPT CURRENT, WITHIN FIFTEEN (15) DAYS, AT ALL TIMES AND SHALL BE SUBJECT TO REVIEW BY THE OWNER'S REPRESENTATIVE OR DESIGNEE THROUGHOUT THE PROJECT AND WILL BE REVIEWED BY THE OWNER'S REPRESENTATIVE OR DESIGNEE FOR ACCURACY AND COMPLETENESS AT LEAST ONCE EVERY 15 DAYS. THE FINAL AS-BUILT PLANS SHALL BE SUBMITTED TO THE OWNER'S REPRESENTATIVE OR DESIGNEE PRIOR TO FINAL PAYMENT.

17. ALL WORK IN THE VICINITY OF LIVE STREAMS, WATER IMPOUNDMENTS, WETLANDS OR IRRIGATION SUPPLIES SHALL BE AFFECTED IN SUCH A MANNER AS TO MINIMIZE VEGETATION REMOVAL, SOIL DISTURBANCE AND EROSION. CROSSINGS OF LIVE STREAMS WITH HEAVY EQUIPMENT SHALL BE MINIMIZED, AS DETERMINED BY THE OWNER'S REPRESENTATIVE OR DESIGNEE. EQUIPMENT REFUELING, MAINTENANCE AND CEMENT DUMPING IN THE VICINITY OF WATER COURSES IS STRICTLY PROHIBITED AND SHALL BE PERFORMED IN PROPER CONTAINMENT AREAS.

18. TOPOGRAPHY SHOWN ON THESE PLANS IS ACCORDING TO FIELD LOCATION BY NCE SURVEYS, INC. JAMES C. EDWARDS P.L.S. #15269, DATED APRIL 2, 2019.

19. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL REMOVALS REQUIRED TO COMPLETE THE PROJECT. ADDITIONAL REMOVALS NOT SHOWN ON THE PLANS WILL BE DESIGNATED BY THE OWNER'S REPRESENTATIVE OR DESIGNEE. THIS WORK WILL BE CONSIDERED AS INCLUDED IN THE CONTRACT PRICE FOR REMOVAL OF STRUCTURES AND OBSTRUCTIONS AND THE CONTRACTOR WILL NOT RECEIVE ADDITIONAL COMPENSATION FOR UNLISTED REMOVALS.

20. UNSUITABLE CONSTRUCTION MATERIALS AND DEBRIS FROM CLEARING AND GRUBBING ARE TO BE PLACED IN AN ENVIRONMENTALLY SUITABLE DISPOSAL SITE.

21. UTILITY LOCATIONS SHOWN WITHIN THE PROJECT BOUNDARY ARE BASED UPON THE BEST AVAILABLE EVIDENCE, BUT THE POSITIONS ARE NOT WARRANTED TO BE ACCURATE. CONTACT UTILITY PROVIDERS BEFORE STARTING ANY EXCAVATION WORK. SHOULD CONFLICTING INFORMATION OR INTERFERENCE PROBLEMS APPEAR IN THE CONSTRUCTION DRAWINGS THE CONTRACTOR SHALL BRING THAT INFORMATION TO THE ATTENTION OF THE ENGINEER IMMEDIATELY PRIOR TO INSTALLATION. FAILURE TO DO SO SHALL NOT BE A BASIS OF EXTRA PAYMENT TO THE CONTRACTOR.

22. THE CONTRACTOR SHALL NOTIFY ALL UTILITY COMPANIES BEFORE COMMENCING WORK AND SHALL BE RESPONSIBLE FOR COMPLYING WITH NEW MEXICO ONE-CALL PROCEDURES. ANY DAMAGE TO EXISTING UTILITIES MUST BE IMMEDIATELY REPORTED TO THE APPROPRIATE UTILITY COMPANY.

23. NEW MEXICO 811 LOCATES SHALL BE FIELD VERIFIED BY THE CONTRACTOR THROUGH POTHOLING AND COORDINATION WITH UTILITY OWNER.

24. THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING THE RESPECTIVE UTILITY COMPANIES PRIOR TO GRADING OR TRENCHING.

25. THE CONTRACTOR SHALL REVIEW AND FOLLOW THE RECOMMENDATIONS PROVIDED IN THE "GEOTECHNICAL ENGINEERING REPORT - RINCON RNU 2705-29O WATER RECYCLE FACILITY RIO ARRIBA COUNTY, NEW MEXICO", PREPARED BY GEOMAT INC., DATED MAY 20, 2019 FOR MOISTURE CONTENT, MAXIMUM COMPACTED LIFT DEPTHS, AND MINIMUM COMPACTION REQUIREMENTS FOR THE PROJECT.

26. THE CONTRACTOR SHALL CONFORM TO ALL REQUIREMENTS SET FORTH BY THE TECHNICAL SPECIFICATIONS LOCATED IN THE PROJECT MANUAL.

27. TRENCHES DEEPER THAN 5' IN DEPTH MUST BE SHORED, SLOPED, OR SHIELDED PER OSHA REGULATIONS.

28. EARTHWORK ESTIMATES ARE BASED ON COMPACTED AND IN-PLACE MATERIAL. CONTRACTOR IS RESPONSIBLE FOR PROVIDING THE REQUIRED MATERIAL AND HAUL ASSETS TO EMPLACE AND REMOVE THE CORRECT VOLUMES USING LOOSE SOIL CORRECTION FACTORS. NO SEPARATE MEASUREMENT OR PAYMENT WILL BE MADE THEREFORE.

29. PLACE AND COMPACT FILL IN HORIZONTAL LIFTS, USING EQUIPMENT AND PROCEDURES THAT WILL PRODUCE RECOMMENDED MOISTURE CONTENTS AND DENSITIES THROUGHOUT THE LIFT.

UN-COMPACTED FILL LIFTS SHOULD NOT EXCEED 10 INCHES LOOSE THICKNESS.

MATERIALS SHOULD BE COMPACTED TO THE FOLLOWING:

MINIMUM PERCENT

MATERIAL	(ASTM D698)
LINER SUBGRADE	PER LINER MANUFACTURER'S RECOMMENDATIONS
SUBGRADE SOILS BENEATH FILL AREAS	95
ON SITE OR IMPORTED SOIL FILLS:	
BENEATH FOOTINGS AND SLABS ON GRADE	95
AGGREGATE BASE BENEATH SLABS AND PAVEMENTS	95
MISCELLANEOUS BACKFILL	90

ON-SITE AND IMPORTED SOILS SHOULD BE COMPACTED AT MOISTURE CONTENTS NEAR OPTIMUM.
EMBANKMENT FILLS SHOULD BE COMPACTED TO A MINIMUM 95 PERCENT OF THE MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D698 AT NEAR OPTIMUM MOISTURE CONTENT IN LIFTS NOT EXCEEDING 10-INCHES IN LOOSE THICKNESS.

30. BACKFILL MATERIALS TO BE PLACED UNDER CONCRETE SLABS SHALL BE A GRANULAR SOIL. EXPANSIVE TYPE SOILS ARE PROHIBITED AS BACKFILL MATERIALS.

31. THE EARTHWORK HAUL ON THIS PROJECT WILL BE CONSIDERED AS INCLUDED IN THE CONTRACT PRICE FOR UNCLASSIFIED EXCAVATION AND BORROW AS APPLICABLE, AND NO SEPARATE MEASUREMENT OR PAYMENT WILL BE MADE THEREFORE.

32. THE PROJECT WILL HAVE ALTERATION, VERIFICATION, AND SUBGRADE DENSITY TESTS COMPLETED BY A GEOTECHNICAL ENGINEERING COMPANY TO VERIFY COMPACTION. PROOF ROLLING WILL BE COMPLETED ALONG THE PROJECT SUBGRADE AND ANY SOFT SPOTS WILL BE REMOVED AND RECONSTRUCTED BEFORE THE CONTRACTOR BEGINS WORK.

33. NOTWITHSTANDING THE APPROVAL OF THESE GRADING PLANS, THE CONTRACTOR IS RESPONSIBLE FOR THE PREVENTION OF DAMAGE TO ADJACENT PROPERTY. NO PERSON SHALL EXCAVATE ON LAND SO CLOSE TO THE PROPERTY LINE AS TO ENDANGER ANY SUCH PROPERTY FROM SETTLING, CRACKING, EROSION, SILTING, SCOUR OR OTHER DAMAGE, WHICH MIGHT RESULT FROM THE GRADING DESCRIBED ON THE PLAN.

34. SPECIAL CONDITION: IF ANY ARCHAEOLOGICAL RESOURCES ARE DISCOVERED ON THE SITE OF THIS GRADING OPERATION, SUCH OPERATION WILL CEASE IMMEDIATELY, AND THE PERMITTEE WILL NOTIFY THE OWNER'S REPRESENTATIVE.

35. ALL PROJECT LIMITS AND CONSTRUCTION AREAS SHALL BE CLEARLY DELINEATED IN THE FIELD PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION AND/OR GRADING.

36. DURING ROUGH GRADING OPERATIONS AND PRIOR TO THE CONSTRUCTION OF ANY PERMANENT DRAINAGE STRUCTURES, TEMPORARY DRAINAGE CONTROL SHALL BE PROVIDED TO PREVENT PONDING WATER AND DAMAGE TO CONTIGUOUS PROPERTIES.

37. NO OBSTRUCTION OF FLOOD PLAINS OR NATURAL WATER COURSES WILL BE PERMITTED.

38. ALL EXISTING DRAINAGE COURSES ON THE PROJECT SITE MUST CONTINUE TO FUNCTION DURING STORM CONDITIONS. PROTECTIVE MEASURES AND TEMPORARY DRAINAGE PROVISIONS MUST BE USED TO PROTECT CONTIGUOUS PROPERTIES DURING GRADING OPERATIONS.

39. THE FINISHED GRADE SHALL BE SLOPED AWAY FROM ALL EXTERIOR BUILDING WALLS AND FACILITIES TO PROMOTE POSITIVE DRAINAGE AWAY FROM FOUNDATIONS.

40. RIO ARRIBA COUNTY SHALL BE NOTIFIED 72 HOURS PRIOR TO COMMENCING ANY WORK IN THE PUBLIC RIGHT OF WAY.

41. ROADWAY SECTION REPLACEMENT SHALL MEET CURRENT RIO ARRIBA COUNTY AND UNITED STATES BUREAU OF LAND MANAGEMENT GOLD BOOK STANDARDS FOR DEPTH OR MATCH EXISTING DEPTH, WHICHEVER IS THICKER.

42. RECORD DRAWINGS OR WORK COMPLETED SHALL BE SUBMITTED TO ENGINEER PRIOR TO FINAL ACCEPTANCE OF THE INSTALLATIONS.

43. IN THE EVENT A SERVICE OUTAGE IS REQUIRED, CONTRACTOR WILL NOTIFY ALL AFFECTED PARTIES DATE OF OUTAGE AND DURATION THEY WILL BE WITHOUT SERVICE.

44. OWNER WILL ENSURE THAT ALL INSTALLED EROSION AND SEDIMENTATION CONTROL MEASURES COMPLY WITH THEIR EXISTING ASSET STORMWATER POLLUTION PREVENTION PLAN(SWPPP).

45. EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE IMPLEMENTED AND SHALL BE KEPT IN PLACE UNTIL EROSION AND SEDIMENTATION POTENTIAL IS MITIGATED. REMOVAL OF SILT AND SEDIMENT IS REQUIRED ONCE SILT AND SEDIMENT HAS REACHED HALF THE HEIGHT OF THE SILT FENCE. EROSION AND SEDIMENTATION CONTROL DEVICES SHALL BE CHECKED AND MAINTAINED PER THE OWNERS PERMIT.

46. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS IN THE FIELD.

47. THE CONTRACTOR SHALL COORDINATE STRUCTURAL DRAWINGS WITH OTHER DRAWINGS FOR INDIVIDUAL ITEMS. DISCREPANCIES UNCOVERED, IF ANY, SHALL BE REPORTED BEFORE PROCEEDING WITH THE WORK SO THAT PROPER ADJUSTMENT CAN BE MADE.

48. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING SAFE AND ADEQUATE SHORING FOR ALL PARTS OF THE PROJECT DURING CONSTRUCTION. ALL STRUCTURES SHOWN ON THE DRAWINGS HAVE BEEN DESIGNED FOR STABILITY UNDER FINAL CONFIGURATION.

49. THE OWNER WILL PROVIDE CONSTRUCTION OBSERVERS AND MATERIAL TESTERS TO OBSERVE AND TEST ALL CONTROLLED EART-WORK. THE CONSTRUCTION OBSERVERS AND MATERIAL TESTERS SHALL PROVIDE CONTINUOUS ON-SITE OBSERVATION AND TESTING DURING CONSTRUCTION OF CONTROLLED EARTH-WORK. THE CONTRACTOR SHALL NOTIFY THE CONSTRUCTION OBSERVERS AND MATERIAL TESTERS AT LEAST TWO WORKING DAYS IN ADVANCE OF ANY FIELD OPERATIONS OF THE CONTROLLED EARTHWORK.

50. CONTRACTOR SHALL COMPLY WITH ANY AND ALL CONDITIONS OF APPROVALS ISSUED BY THE REGULATORY AGENCIES AS DETERMINED BY OWNER.

51. ENGINEER HAS NO CONTROL OVER COST OF LABOR, MATERIALS, EQUIPMENT OR SERVICES FURNISHED BY OTHERS, COMPETITIVE BIDDING OR MARKET CONDITIONS.

OWNER

ENDURING RESOURCES
332 COUNTY ROAD 3100
AZTEC, NEW MEXICO, 87410
(505) 386-8167

CIVIL ENGINEER

HEATHER D. MCDANIEL, P.E.
SOUDER, MILLER & ASSOCIATES (SMA)
8000 WEST FOURTEENTH AVENUE
LAKEWOOD, COLORADO 80214
(303) 239-9011

SURFACE OWNER

BUREAU OF LAND MANAGEMENT
6251 COLLEGE BLVD, SUITE A
FARMINGTON, NEW MEXICO, 87402
(505) 564-7600

ABBREVIATIONS

CMP	CORRUGATED METAL PIPE	MIN.	MINIMUM
CU. FT.	CUBIC FEET	N.T.S.	NOT TO SCALE
CU. YD.	CUBIC YARDS	O.C.	ON CENTER
DIA.	DIAMETER (Ø)	RT.	RIGHT
ELEV.	ELEVATION	SQ. FT.	SQUARE FEET
EX.	EXISTING	SQ. YDS.	SQUARE YARDS
FG	FINISH GRADE	STA.	STATION
FL.	FLOWLINE	TOE	TOE OF BANK
FT	FEET	TOP	TOP OF BANK
HORIZ	HORIZONTAL	TYP	TYPICAL
LF	LINEAR FEET	w/	WITH
LLDPE	LINEAR LOW-DENSITY POLYETHYLENE		
LT.	LEFT		
MAX.	MAXIMUM		
ME	MATCH EXISTING		
MCC	MECHANICAL CONTROL CENTER		
MIL or MM	MILLIMETER		

LEGEND

- EXISTING POWERPOLE
- EXISTING OVERHEAD ELECTRIC
- EXISTING INDEX CONTOURS
- EXISTING INTERMEDIATE CONTOURS
- PROPOSED INDEX CONTOURS
- PROPOSED INTERMEDIATE CONTOURS
- PROPOSED DRAINAGE PIPE
- PROPOSED CHAIN LINK FENCE
- PROPOSED MAN WAY PEDESTRIAN GATE
- PROPOSED FLOWLINE

No.	Date	Description	By	Client

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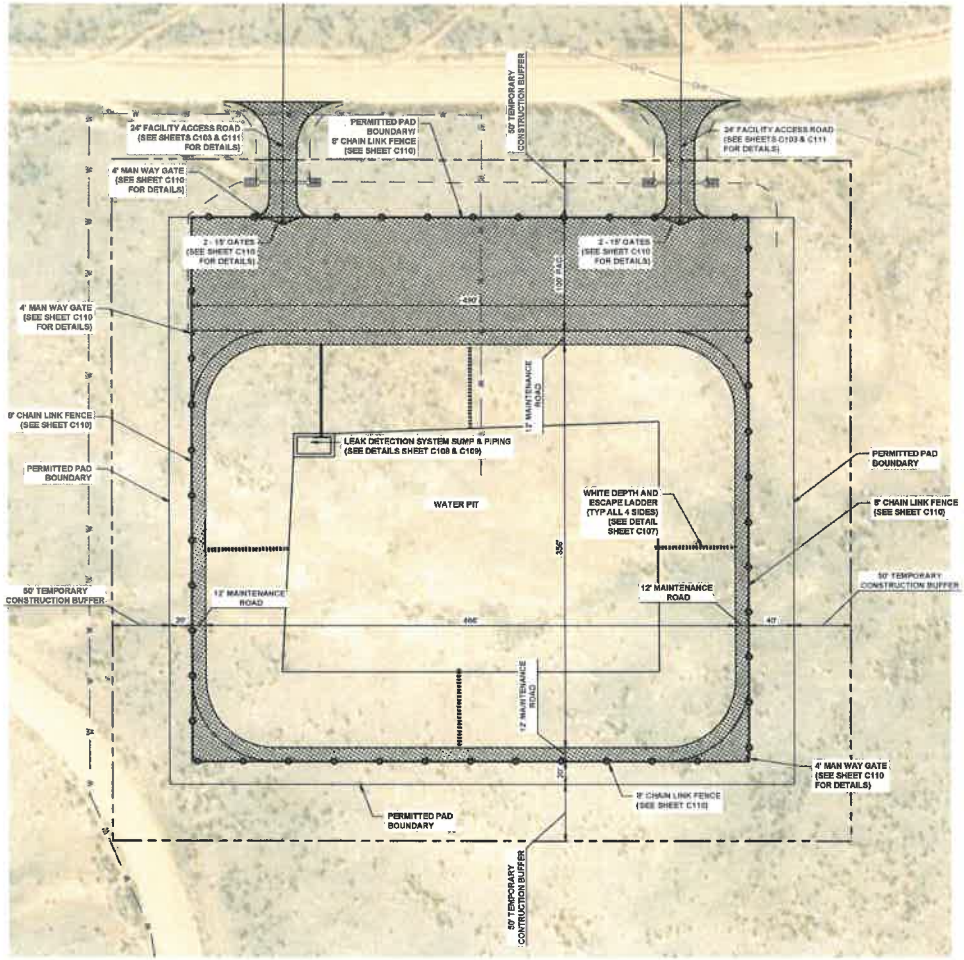
ENDURING RESOURCES — RIO ARRIBA COUNTY, NM

RINCON UNIT 2706-29O
RECYCLING CONTAINMENT PIT PROJECT
GENERAL NOTES AND LEGEND

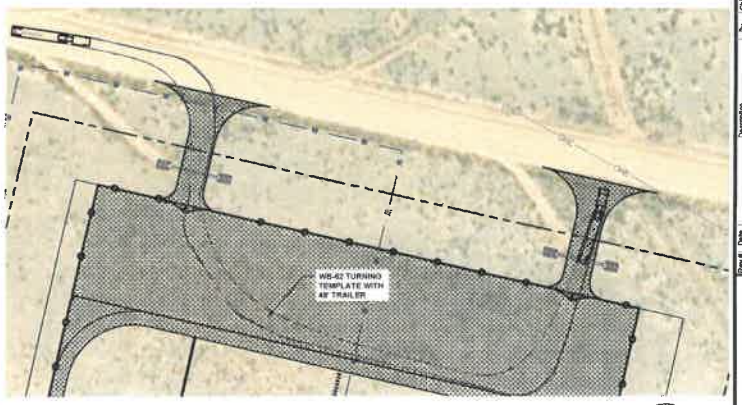
THIS DRAWING IS INCOMPLETE AND NOT TO BE USED FOR CONSTRUCTION UNLESS IT IS STAMPED, SIGNED AND DATED.

Designed	Drawn	Checked
HDM	JTN	HDM

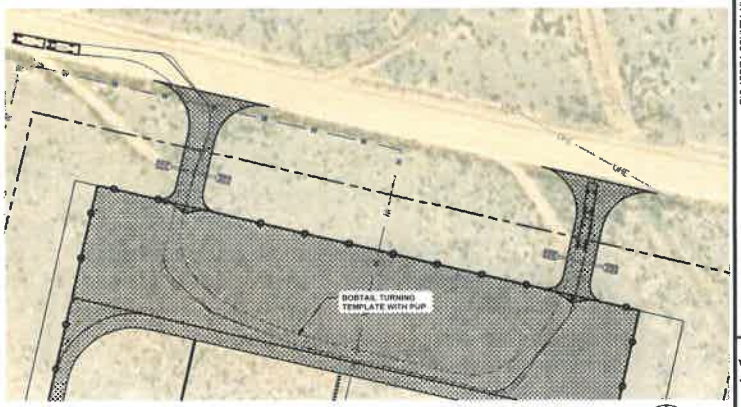
Date: June 2019
Scale: Horiz: 1" = 60'
Vert: N/A
Project No: 9127383
Sheet: G101



SITE MAP 1 C101



WB-62 TURNING TEMPLATE 2 C101



BOBTAIL AND PUP TURNING TEMPLATE 3 C101

NOTE:
STOCKPILING OF TOP SOIL: CONTRACTOR SHALL SEGREGATE AND STOCKPILE ALL TOPSOIL OUTSIDE OF THE CONSTRUCTION AREA WITH APPROPRIATE SEDIMENT CONTROL. TOPSOIL SHALL BE REDISTRIBUTED ON THE OUTSIDE OF CONSTRUCTION BERMS, AND EITHER SEEDED AND MULCHED OR PROTECTED WITH EROSION CONTROL MEASURES. REFER TO CONSTRUCTION PLANS FOR DETAILS.

PROPOSED POND INFORMATION:

TOP OF BERM ELEVATION:	6693.40
MAXIMUM WATER SURFACE ELEVATION	6690.07
MAXIMUM WATER SURFACE AREA (EL EV. 6690.57)	147,710 SQ. FT. (3.39 ACRES)
POND STORAGE VOLUME:	60,161 CU. YD. (385,653 BBLS)

P:\5-Enduring Resources - 18B Pond Design (5127383)\CADD\civil\RINCON\5127383 RNC SITE PLAN.dwg, 6/18/2019 9:30:55 AM JTN

No.	Date	Description	By	Chkd

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ENDURING RESOURCES

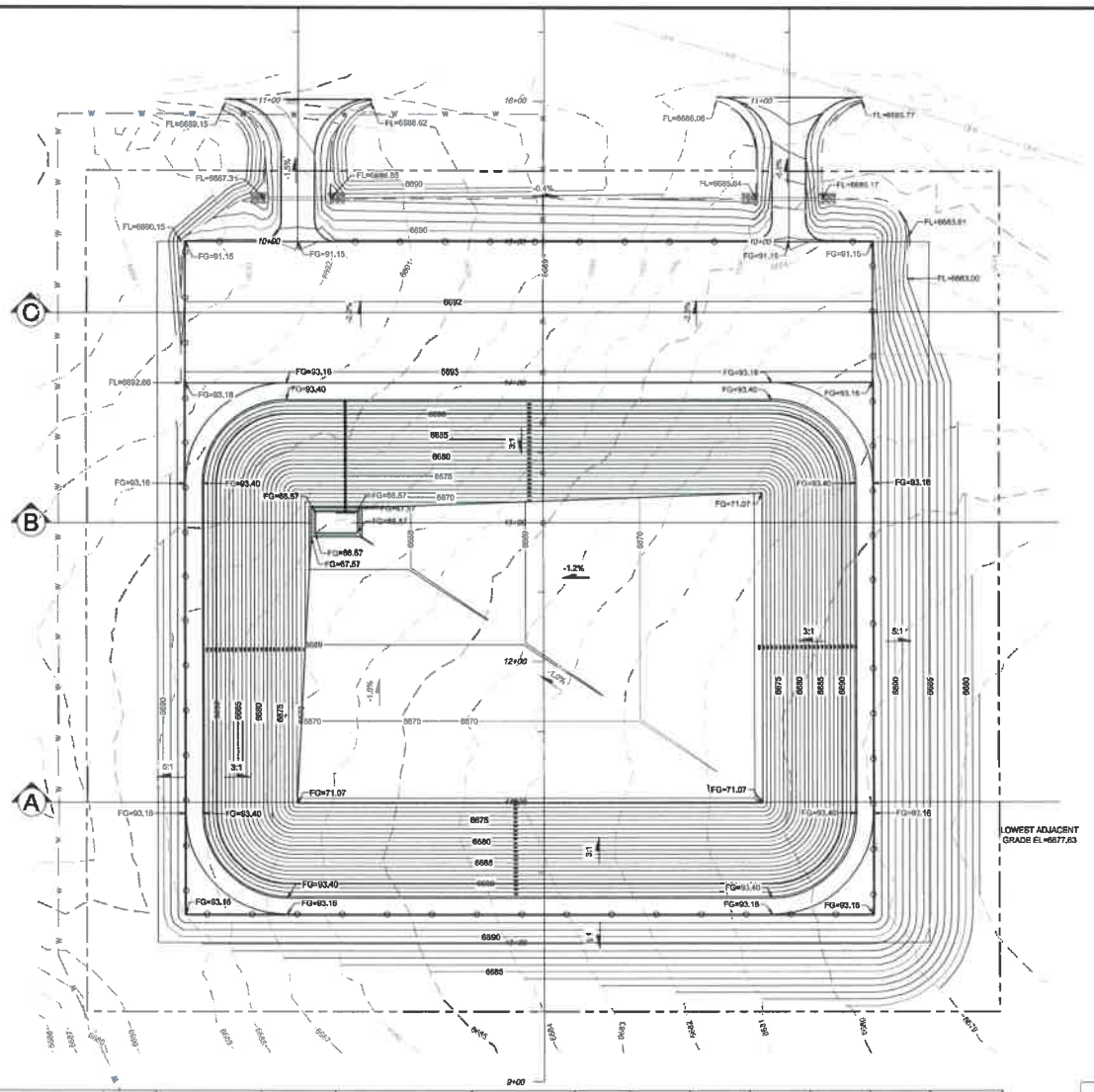
RIO ARRIBA COUNTY, NM

RINCON UNIT 2706-29O
RECYCLING CONTAINMENT PIT PROJECT
SITE MAP

THIS DRAWING IS INCOMPLETE AND NOT TO BE USED FOR CONSTRUCTION UNLESS IT IS STAMPED, SIGNED AND DATED

engineer	Drawn	Checked
HDM	JTN	HDM

Date: June 2019
Scale: Horiz: 1" = 50'
Vert: N/A
Project No: 9127383
Sheet: C101



On-Site Drainage	Area (ACRES)	NRCS Soil Types	Percent Imperviousness	Methodology for Analysis	Time of Concentration (MINUTES)	2-Year, 24-Hour Flow Rate (CFS)	5-Year, 24-Hour Flow Rate (CFS)	10-Year, 24-Hour Flow Rate (CFS)	25-Year, 24-Hour Flow Rate (CFS)	50-Year, 24-Hour Flow Rate (CFS)	100-Year, 24-Hour Flow Rate (CFS)	NOTE
Pre-Development Area	11.4	D	2	Rational Method	25.25	0.34	0.99	3.23	9.03	12.69	17.74	Historical
Post-Development Pad Area	3.3	D	50	Rational Method	13.89	2.04	3.17	4.32	6.43	7.92	9.75	Post Development

Rainfall Impact on Pit Freeboard			
Storm Event	Stormwater Volume (CF)	Pit Volume Increase (CF)	Impact on Freeboard (FT)
Maximum Storage	-	0	0.000
25-Yr, 24-Hr	15,433.67	15,433.67	0.108
50-Yr, 24-Hr	17,781.93	33,215.60	0.124
100-Yr, 24-Hr	20,154.23	53,369.83	0.142

PROPOSED SITE EARTHWORK:

APPROXIMATE CUT:	50,671 CU.YD.
APPROXIMATE FILL:	50,033 CU.YD.
APPROXIMATE NET CUT:	578 CU.YD.
TOPSOIL REMOVAL (0.5' DEPTH)	5,000 CU.YD.
BASE COURSE (4" DEPTH)	973 CU.YD.

NOTE:
STOCKPILING OF TOP SOIL: CONTRACTOR SHALL SEGREGATE AND STOCKPILE ALL TOPSOIL OUTSIDE OF THE CONSTRUCTION AREA WITH APPROPRIATE SEDIMENT CONTROL. TOPSOIL SHALL BE REDISTRIBUTED ON THE OUTSIDE OF CONSTRUCTION BERMS, AND EITHER SEEDED AND MULCHED OR PROTECTED WITH EROSION CONTROL MEASURES. REFER TO CONSTRUCTION PLANS FOR DETAILS.

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ENDURING RESOURCES | RIO ARRIBA COUNTY, NM

RINCON UNIT 2706-29O
RECYCLING CONTAINMENT PIT PROJECT
SITE GRADING AND DRAINAGE PLAN

THIS DRAWING IS INCOMPLETE AND NOT TO BE USED FOR CONSTRUCTION UNLESS IT IS STAMPED, SIGNED AND DATED

Designed	Drawn	Checked
HDM	JTN	HDM

Date: June 2019
Scale: Horiz: 1" = 40'
Vert: N/A
Project No: 9127383
Sheet: C102

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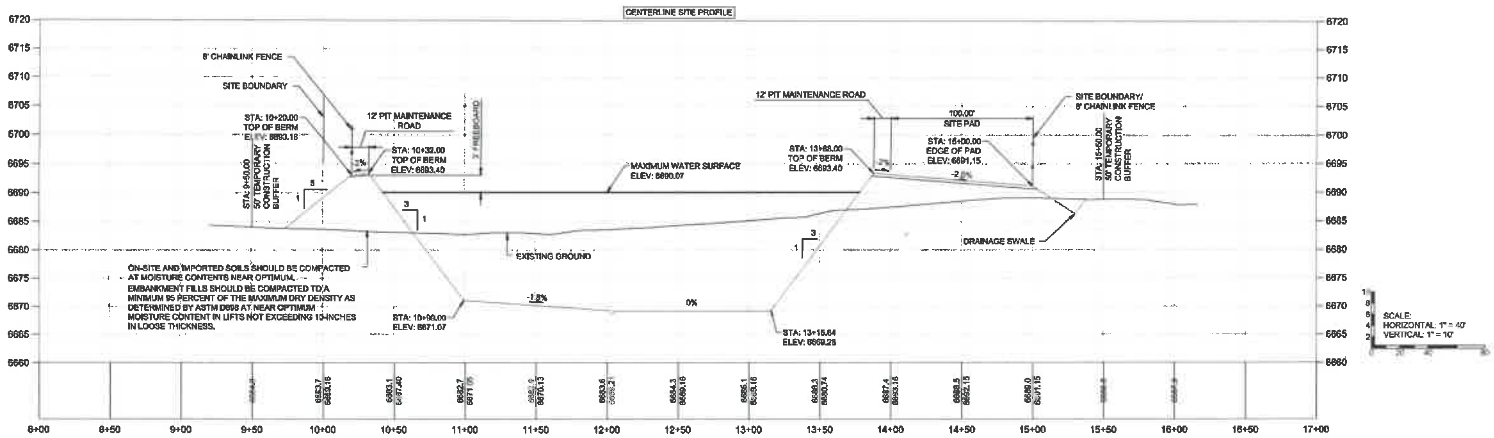

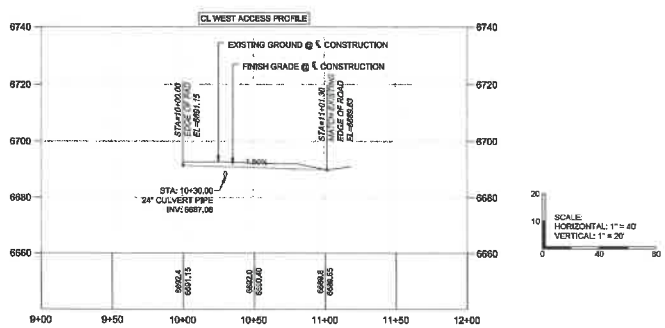

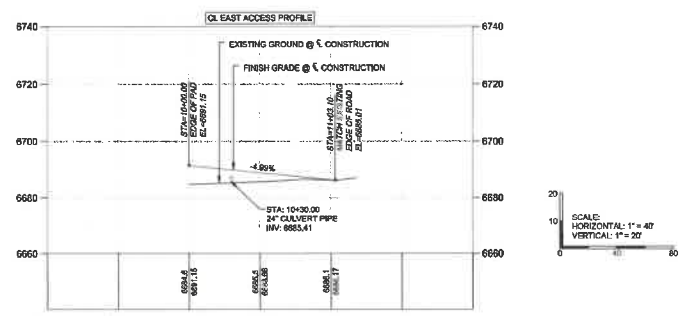

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ENDURING RESOURCES — RIO ARRIBA COUNTY, NM

RINCON UNIT 2706-29O
RECYCLING CONTAINMENT PIT PROJECT
SITE PROFILE AND ACCESS ROAD PROFILE

THIS DRAWING IS INCOMPLETE AND NOT TO BE USED FOR CONSTRUCTION UNLESS IT IS STAMPED, SIGNED AND DATED

Designed	Drawn	Checked
HDM	JTN	HDM

Date: June 2019
Scale: Horiz: 1" = 40' Vert: 1"=10'
Project No: 9127363
Sheet: C103

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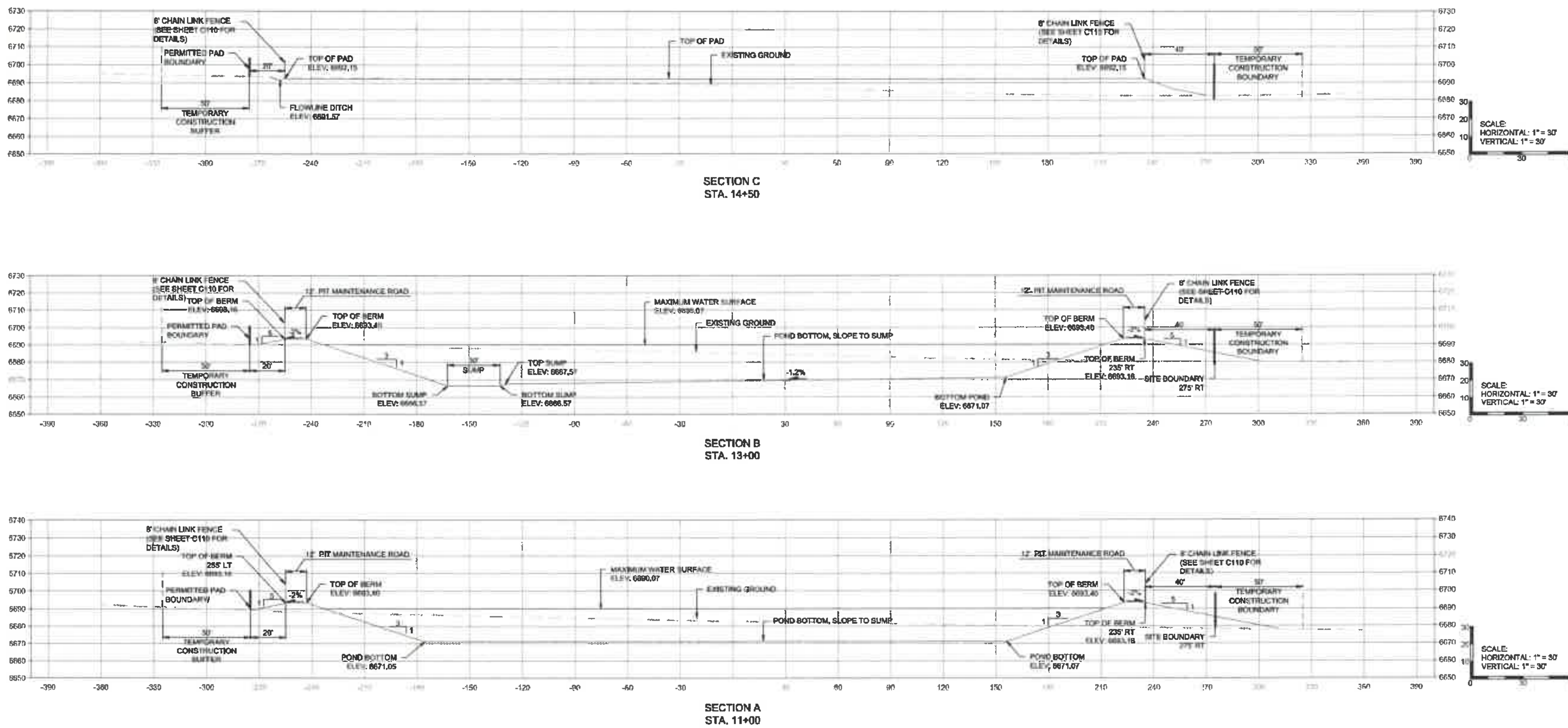

NOTE:

1. ON-SITE AND IMPORTED SOILS SHOULD BE COMPACTED AT MOISTURE CONTENTS NEAR OPTIMUM. EMBANKMENT FILLS SHOULD BE COMPACTED TO A MINIMUM 95 PERCENT OF THE MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D698 AT NEAR OPTIMUM MOISTURE CONTENT IN LIFTS NOT EXCEEDING 10-INCHES IN LOOSE THICKNESS.
2. EXCESS CUT NOT USED IN CONSTRUCTION OF THIS SITE TO BE DISPOSED OF BY OWNER.

Rev #	Date	Description	By	Chk'd

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ENDURING RESOURCES — RIO ARRIBA COUNTY, NM

RINCON UNIT 2706-29O
RECYCLING CONTAINMENT PIT PROJECT
SITE CROSS-SECTIONS

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Designed	Drawn	Checked
HDM	JTN	HDM

Date: June 2019
Scale: Horiz: 1" = 30' Vert: 1" = 30'
Project No: 9127383
Sheet: C104

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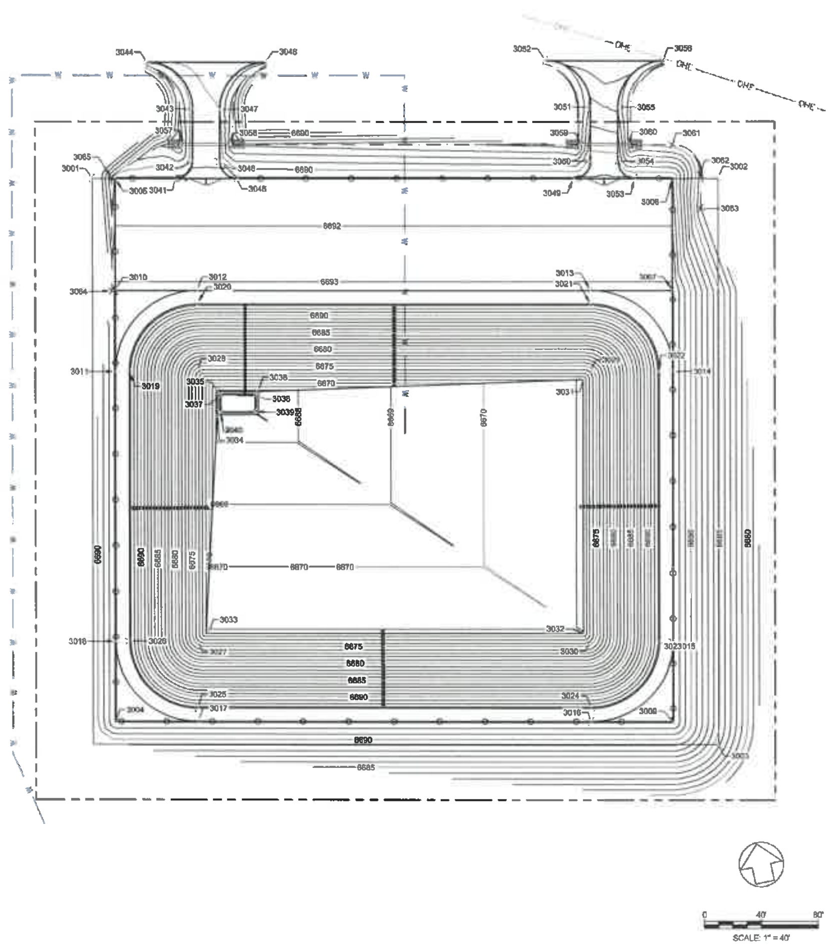

NOTE:
DATUM COORDINATES ARE NAD83, STATE PLANE, NEW MEXICO CENTRAL.

Point Table				
POINT #	NORTHING	EASTING	ELEVATION	DESCRIPTION
3001	2018368.77	1275788.77	6693.66	SITE BOUNDARY
3002	2018245.35	1276304.74	6684.13	SITE BOUNDARY
3003	2017758.10	1276192.53	6684.21	SITE BOUNDARY
3004	2017896.53	1275680.54	6693.16	FENCE CORNER
3005	2018364.29	1275788.28	6691.15	FENCE CORNER/TOP OF PAD
3006	2018254.32	1276265.76	6691.15	FENCE CORNER/TOP OF PAD
3007	2018156.87	1276243.32	6693.16	FENCE CORNER/TOP OF PAD
3009	2017786.57	1276158.04	6693.16	FENCE CORNER
3010	2018266.84	1275765.81	6693.16	TOP OF PAD
3011	2018196.67	1275749.65	6593.16	TOP OF BERM
3012	2018250.68	1275835.98	6593.16	TOP OF BERM
3013	2018173.03	1276173.15	6593.16	TOP OF BERM
3014	2018088.71	1276227.16	6593.16	TOP OF BERM
3015	2017856.73	1276174.20	6593.16	TOP OF BERM
3016	2017802.72	1276087.68	6693.16	TOP OF BERM
3017	2017880.37	1275750.70	6693.16	TOP OF BERM
3018	2017966.69	1275696.70	6693.16	TOP OF BERM
3019	2018193.98	1275761.35	6693.40	TOP OF BERM
3020	2018238.99	1275833.29	6693.40	TOP OF BERM
3021	2018161.34	1276170.46	6693.40	TOP OF BERM
3022	2018089.40	1276215.47	6693.40	TOP OF BERM
3023	2017859.42	1276182.50	6693.40	TOP OF BERM
3024	2017814.42	1276090.57	6693.40	TOP OF BERM
3025	2017892.07	1275753.39	6693.40	TOP OF BERM
3026	2017964.00	1275708.39	6693.40	TOP OF BERM
3027	2017950.54	1275766.88	6674.24	RADIUS POINT
3028	2018180.52	1275819.82	6674.24	RADIUS POINT
3029	2018102.87	1276157.00	6674.24	RADIUS POINT
3030	2017872.89	1276104.04	6674.24	RADIUS POINT
3031	2018097.62	1276148.60	6671.07	POND BOTTOM
3032	2017881.28	1276098.78	6671.07	POND BOTTOM
3033	2017956.13	1275778.16	6671.05	POND BOTTOM
3034	2018139.07	1275828.23	6667.57	SUMP
3035	2018159.54	1275832.95	6667.57	SUMP
3036	2018151.46	1275868.03	6667.57	SUMP

Point Table				
POINT #	NORTHING	EASTING	ELEVATION	DESCRIPTION
3037	2018155.94	1275835.20	6666.57	SUMP
3038	2018149.21	1275864.43	6666.57	SUMP
3039	2018134.59	1275861.07	6666.59	SUMP
3040	2018141.32	1275831.83	6666.57	SUMP
3041	2018352.39	1275839.90	6691.15	DRIVEWAY
3042	2018363.64	1275857.89	6690.93	DRIVEWAY
3043	2018408.76	1275868.28	6690.47	DRIVEWAY
3044	2018456.72	1275838.27	6690.15	DRIVEWAY
3045	2018340.27	1275892.53	6691.15	DRIVEWAY
3046	2018358.26	1275881.28	6690.93	DRIVEWAY
3047	2018403.38	1275891.67	6689.99	DRIVEWAY
3048	2018433.38	1275939.62	6689.12	DRIVEWAY
3049	2018273.85	1276180.98	6691.15	DRIVEWAY
3050	2018285.10	1276198.96	6690.40	DRIVEWAY
3051	2018331.97	1276209.76	6688.24	DRIVEWAY
3052	2018379.93	1276179.75	6686.56	DRIVEWAY
3053	2018261.73	1276233.60	6691.15	DRIVEWAY
3054	2018279.71	1276222.35	6690.40	DRIVEWAY
3055	2018326.59	1276233.14	6687.76	DRIVEWAY
3056	2018356.59	1276281.10	6688.27	DRIVEWAY
3057	2018360.06	1275853.46	6687.28	24" CULVERT PIPE INVERT
3058	2018371.08	1275892.44	6686.88	24" CULVERT PIPE INVERT
3059	2018301.51	1276194.53	6685.61	24" CULVERT PIPE INVERT
3060	2018292.54	1276233.51	6685.21	24" CULVERT PIPE INVERT
3061	2018283.56	1276272.49	6684.43	FLOWLINE
3062	2018252.29	1276290.88	6683.61	FLOWLINE
3063	2018223.05	1276284.15	6683.00	FLOWLINE
3064	2018267.51	1275762.89	6692.66	FLOWLINE
3065	2018364.98	1275785.33	6690.15	FLOWLINE

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Rev #	Date	Description	By	Chk'd

ENDURING RESOURCES — RIO ARRIBA COUNTY, NM

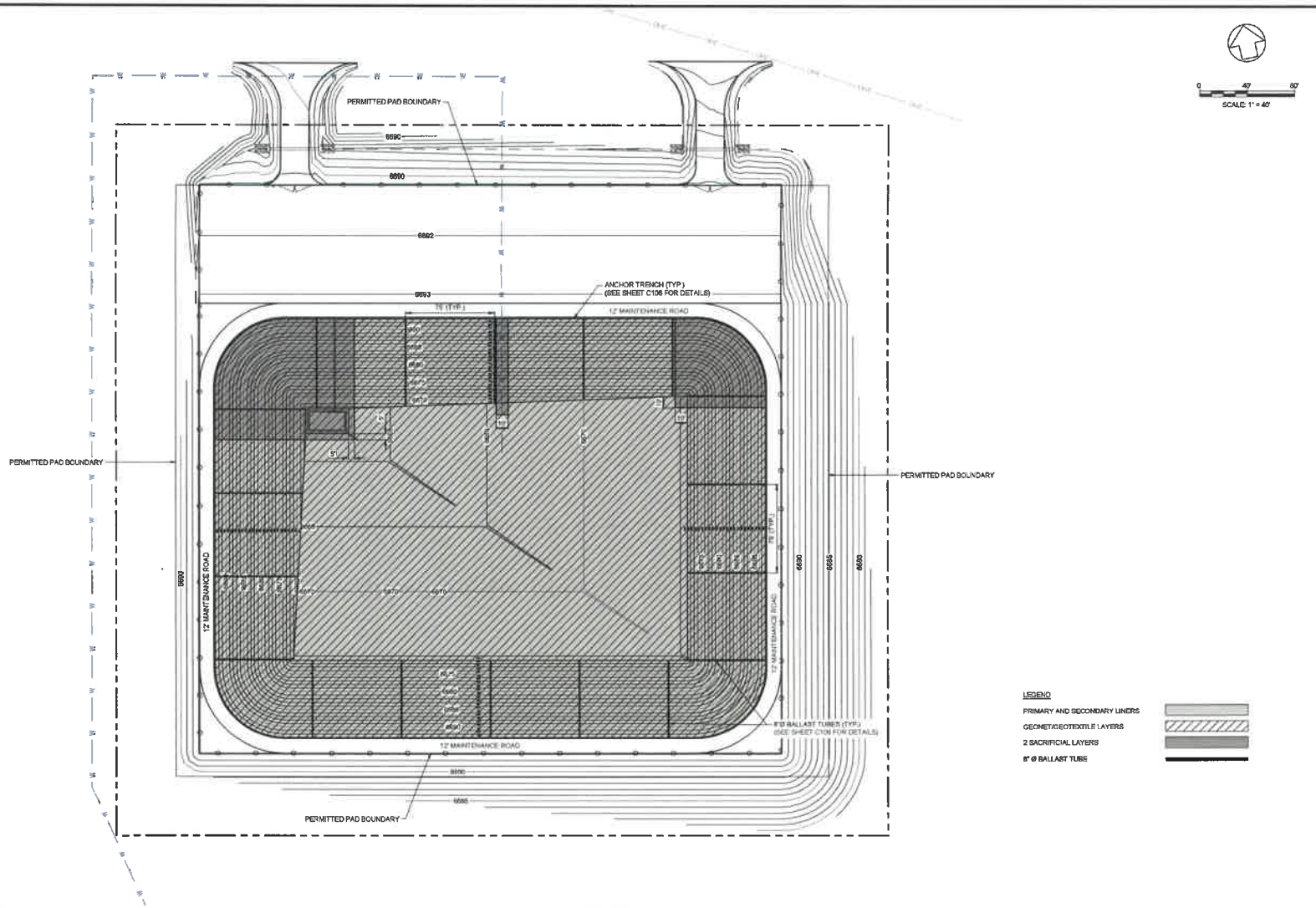
RINCON UNIT 2706-29O
RECYCLING CONTAINMENT PIT PROJECT
HORIZONTAL CONTROL PLAN

THIS DRAWING IS INCOMPLETE AND NOT TO BE USED FOR CONSTRUCTION UNLESS IT IS STAMPED, SIGNED AND DATED

Designed	Drawn	Checked
HDM	JTN	HDM

Date: June 2019
Scale: Horiz: 1" = 40' Vert: N/A
Project No: 9127383
Sheet: C105

P:\5-Enduring Resources - 16B Pond Design (5127383)\CAD\Civil\RINCON\5127383 RNC HORIZ CNTRL.dwg, 6/18/2019 8:32:31 AM JTN



LEGEND

- PRIMARY AND SECONDARY LINERS
- GEONET/GEOTEXTILE LAYERS
- 2 SACRIFICIAL LAYERS
- 8" Ø BALLAST TUBE

NOTES:

1. LINERS SHALL COVER PIT BOTTOM, SIDE SLOPES AND END IN THE ANCHOR TRENCH. SEE DETAIL SHEETS C107 AND C108 AND MANUFACTURES SPECIFICATIONS.
2. 8" Ø BALLAST TUBES SHALL BE PLACED EVERY 75±.
3. SACRIFICIAL LAYERS SHALL BE WELDED TO THE PRIMARY LINER.

QUANTITIES:

LABEL	DESCRIPTION	QUANTITY	REFERENCE
PRIMARY LINER	60 MIL HDPE CONDUCTIVE LINER:	21,822 SQ.YDS.	31 05 19.16 POLYETHYLENEGEOMEMBRANE LINER
SECONDARY LINER	60 MIL HDPE NON-CONDUCTIVE LINER:	21,822 SQ.YDS.	31 05 19.16 POLYETHYLENEGEOMEMBRANE LINER
2 SACRIFICIAL LINERS	2-60 MIL SACRIFICIAL LINERS:	1,000 SQ. YDS. X 2 = 3,612 SQ.YDS.	31 05 19.16 POLYETHYLENEGEOMEMBRANE LINER
GEONET LAYER	200 MIL GEONET LEAK DETECTION LAYER:	21,822 SQ.YDS.	31 05 19.18 GEONET
GEOTEXTILE LAYER	10 oz. GEOTEXTILE LAYER:	21,822 SQ.YDS.	31 05 19.18 GEOTEXTILE
BALLAST TUBES	BALLAST TUBES:	1,250 LF	31 05 19.16 POLYETHYLENE GEOMEMBRANE LINER
ANCHOR TRENCH	ANCHOR TRENCH:	1,540 LF	31 23 17 ANCHOR TRENCH

No.	Date	Description	By	Ck'd

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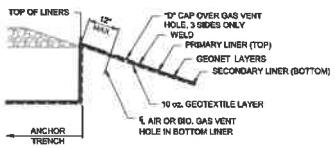
ENDURING RESOURCES — RIO ARRIBA COUNTY, NM

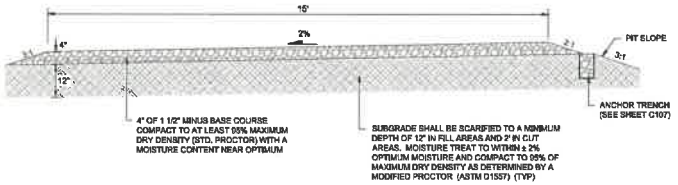
RINCON UNIT 2706-29O
RECYCLING CONTAINMENT PIT PROJECT
LINER BALLAST TUBES AND PIT GEOCOMPOSITE VENTILATION GRID LAYOUT

Designed	Drawn	Checked
HDM	JTN	HDM

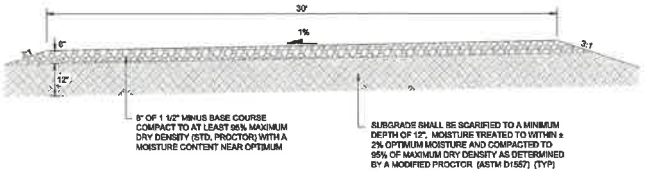
Date: June 2019
Scale: Horiz: 1" = 80'
Vert: N/A
Project No: 9127383
Sheet: C106



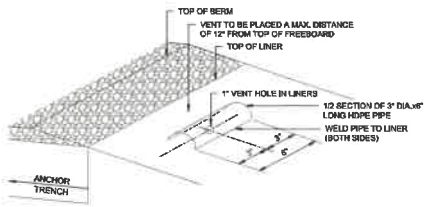
TYPICAL DOUBLE LINER GAS VENT (1 / C107)
N.T.S.



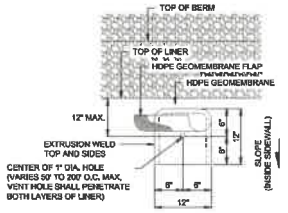
PRODUCED WATER PIT MAINTENANCE ROAD SECTION (2 / C107)
N.T.S.



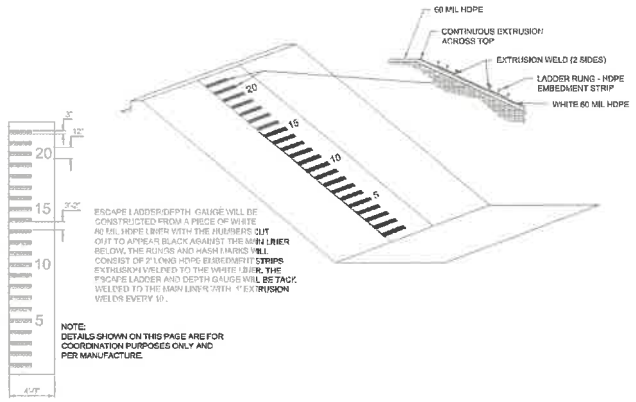
SITE DRIVEWAY ROAD SECTION (3 / C107)
N.T.S.



TYPICAL VENT HOLE WITH HDPE PIPE (4 / C107)
N.T.S.



TYPICAL VENT POCKET DETAIL (5 / C107)
N.T.S.



DEPTH GAUGE AND ESCAPE LADDER (6 / C107)
N.T.S.

No.	Description	By	Chkd
Rev #	Date		

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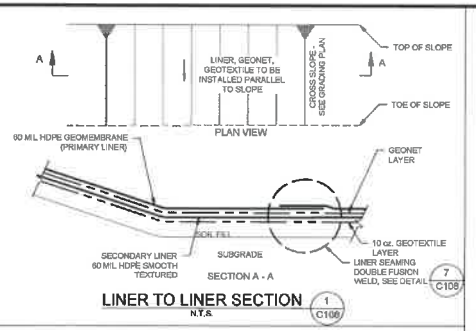
ENDURING RESOURCES — RIO ARRIBA COUNTY, NM

RINCON UNIT 2706-290
RECYCLING CONTAINMENT PIT PROJECT
GEOCOMPOSITE DETAILS AND ROAD SECTIONS

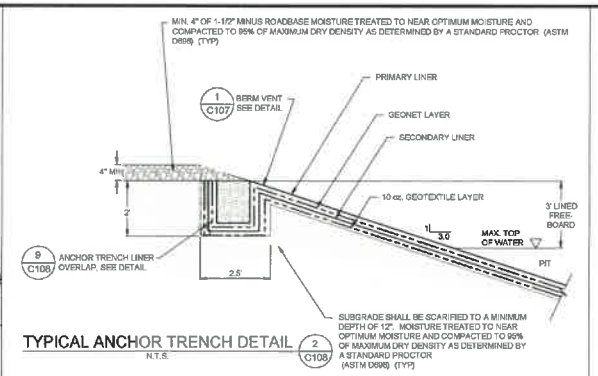
THIS DRAWING IS INCOMPLETE AND NOT TO BE USED FOR CONSTRUCTION UNLESS IT IS STAMPED, SIGNED AND DATED

Designed	Drawn	Checked
HDM	JTN	HDM

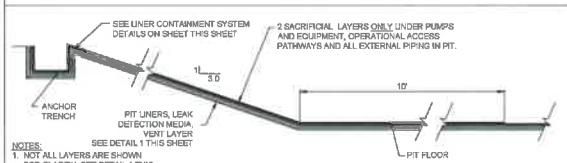
Date: June 2019
Scale: Horiz: N/A Vert: N/A
Project No: 9127383
Sheet: C107



LINER TO LINER SECTION
N.T.S. 1 C108

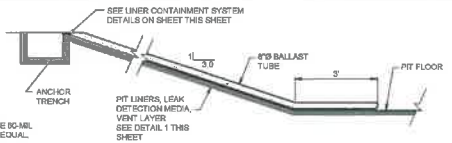


TYPICAL ANCHOR TRENCH DETAIL
N.T.S. 2 C108



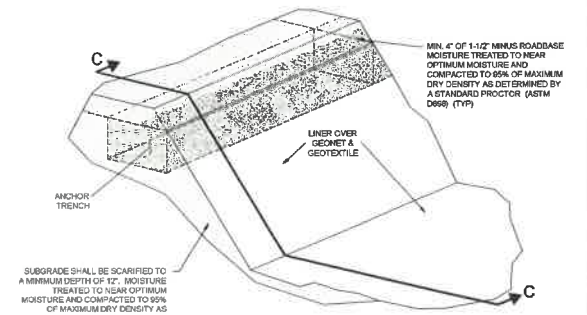
NOTES:
1. NOT ALL LAYERS ARE SHOWN FOR CLARITY. SEE DETAIL 1 THIS SHEET.
2. SACRIFICIAL LAYERS SHALL BE WELDED TO THE PRIMARY LINER

PROTECTION LINER DETAIL
N.T.S. 4 C108



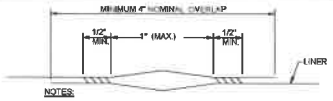
NOTES:
1. BALLAST TUBES TO BE 60-MIL HDPE OR APPROVED EQUAL.
2. FILL 6"Ø BALLAST TUBES WITH SAND. ANCHOR IN LINER TRENCH AND EXTEND SEVERAL FEET ONTO PIT FLOOR AS NOTED.
3. SACRIFICIAL LAYERS SHALL BE WELDED TO THE PRIMARY LINER

BALLAST TUBE DETAILS
N.T.S. 5 C108



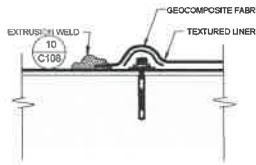
FINISHED LINER SYSTEM AND BERM VENT DETAIL
N.T.S. 6 C108

NOT USED
N.T.S. 3 C108



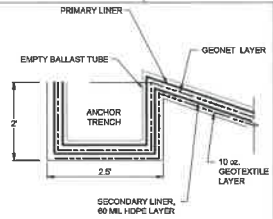
NOTES:
1. LINER SHEETS SHALL BE TACK WELDED TOGETHER AT OVERLAP TO FORM TEMPORARY BOND PRIOR TO WELDING.
2. DOUBLE FUSION WELDING SHALL BE THE PRIMARY SEAMING TECHNIQUE USED.
3. GRINDING NOT TO EXCEED 1/4" PAST "SQUEEZE-OUT" ON EITHER SIDE. PROPER CARE SHOULD BE TAKEN TO INSURE THAT VERY LITTLE MATERIAL IS TAKEN WHEN GRINDING.
4. AIR PRESSURE OR VACUUM TESTING SHALL BE THE NON-DESTRUCTIVE SEAM TEST METHODS FOR DOUBLE FUSION WELDS.
5. SUBGRADE PREPARATION, SELECT FILL (IF REQUIRED) SHALL BE PER LINER MANUFACTURES REQUIREMENTS.
6. DETAIL SHOWN IS PER MANUFACTURE

LINER SEAMING DOUBLE FUSION WELD DETAIL
N.T.S. 7 C108

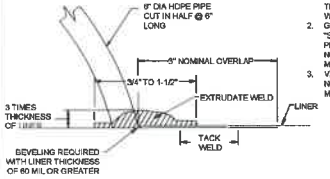


EXTRUSION WELD AT ANCHOR DETAIL
N.T.S. 8 C108

NOTE:
DETAIL SHOWN IS PER MANUFACTURE



ANCHOR TRENCH LINER OVERLAP DETAIL
N.T.S. 9 C108



NOTES:
1. LINER SHEETS TACK WELDED TOGETHER AT OVERLAP TO FORM TEMPORARY BOND PRIOR TO WELDING.
2. GRINDING NOT TO EXCEED 1/4" PAST "SQUEEZE-OUT" ON EITHER SIDE. PROPER CARE SHOULD BE TAKEN IN NOT REMOVING TOO MUCH MATERIAL WHEN GRINDING.
3. VACUUM TESTING IS THE NON-DESTRUCTIVE SEAM TEST METHOD FOR EXTRUSION WELDS.

EXTRUSION WELD DETAIL
N.T.S. 10 C108

NOTE:
DETAIL SHOWN IS PER MANUFACTURE

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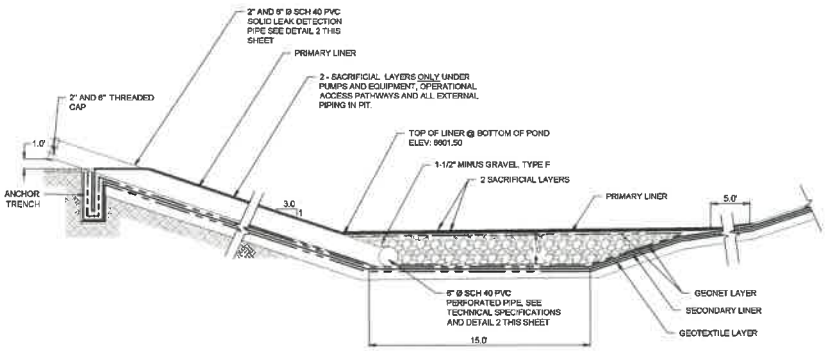
ENDURING RESOURCES
RIO ARRIBA COUNTY, NM

RINCON UNIT 2706-29O
RECYCLING CONTAINMENT PIT PROJECT
LINER AND BALLAST TUBE DETAILS

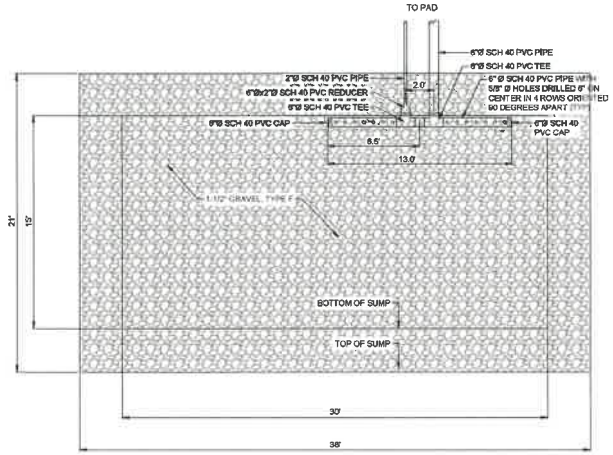
THIS DRAWING IS INCOMPLETE AND NOT TO BE USED FOR CONSTRUCTION UNLESS IT IS STAMPED, SIGNED AND DATED

Designed	Drawn	Checked
HDM	JTN	HDM

Date: June 2019
Scale: Horiz: N/A Vert: N/A
Project No: 9127383
Sheet: C108



PRODUCED WATER PIT LEAK DETECTION 1 C109
N.T.S.



LEAK DETECTION SYSTEM PIPE DETAIL 1 C109
N.T.S.

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No.	Date	Description	By	Check

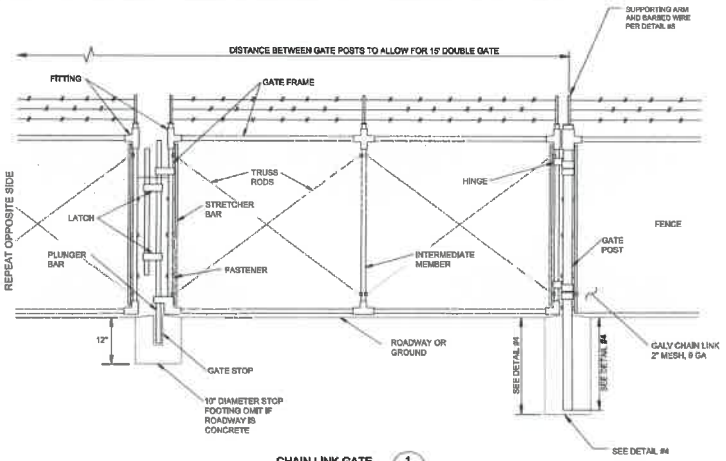
ENDURING RESOURCES
RIO ARRIBA COUNTY, NM

RINCON UNIT 2706-29O
RECYCLING CONTAINMENT PIT PROJECT
LEAK DETECTION SYSTEM DETAILS

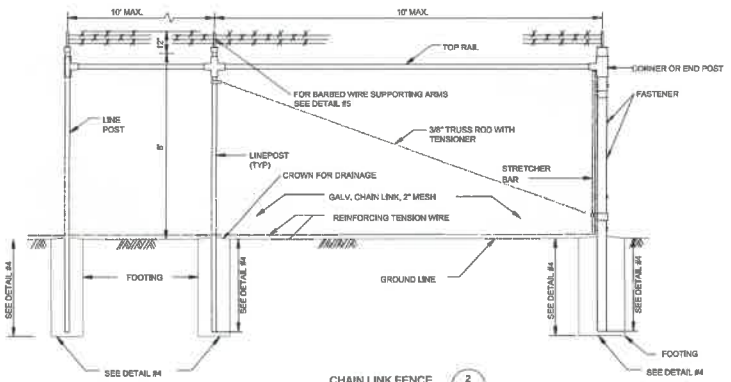
THIS DRAWING IS INCOMPLETE AND NOT TO BE USED FOR CONSTRUCTION UNLESS IT IS STAMP: SIGNED AND DATED

Designed	Drawn	Checked
HDM	JTN	HDM

Date: June 2019
Scale: Horiz: N.T.S. Vert: N/A
Project No: 9127383
Sheet: C109

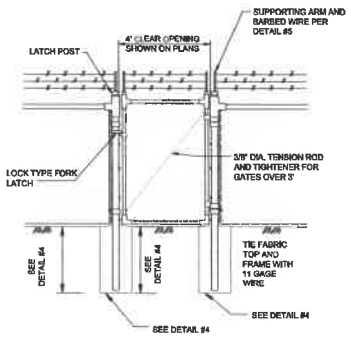


CHAIN LINK GATE
N.T.S.
1 C110

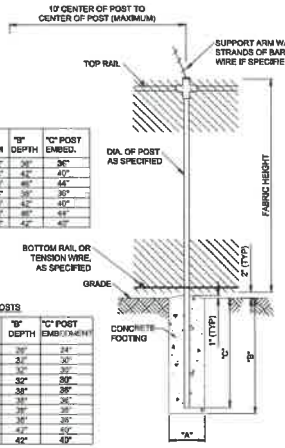


CHAIN LINK FENCE
N.T.S.
2 C110

NOTE:
AT BROW CROSSING, EMBED ON 6" CENTERS, 4 - 1/2"X24" GALVANIZED RODS WITH 2" HOOKED END INTO BROW DITCH CONCRETE, EXPOSED END OF ROD SHALL BE WOVEN INTO FENCE FABRIC.



4' MAN WAY GATE
N.T.S.
3 C110



GATE POST

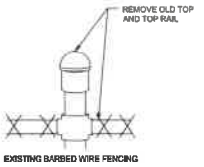
GATE LEAF WIDTH	GATE POST O.D.	FABRIC HEIGHT	"A" DIAM	"B" DEPTH	"C" POST EMBED.
3' TO 6'	2.785"	3' TO 5'	12"	36"	36"
		6' TO 7'	14"	42"	40"
7' TO 12'	4.000"	10' TO 12'	16"	48"	44"
		3' TO 5'	14"	36"	36"
		6' TO 7'	16"	42"	40"
13'	6.625"	10' TO 12'	16"	48"	44"
		8'-0"	16"	42"	40"

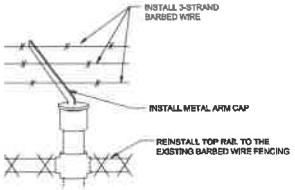
LINE AND TERMINAL POSTS

FABRIC HEIGHT	TYPE POST	"A" DIAM	"B" DEPTH	"C" POST EMBEDMENT
3'-0" TO 4'-0"	LINE	8"	28"	24"
	TERMINAL	10"	32"	30"
5'-0" TO 8'-0"	LINE	8"	32"	30"
	TERMINAL	10"	32"	30"
10'-0" TO 12'-0"	LINE	12"	38"	36"
	TERMINAL	12"	38"	36"
13'-0" TO 16'-0"	LINE	16"	38"	36"
	TERMINAL	16"	38"	36"
	LINE	24"	42"	40"
	TERMINAL	24"	42"	40"

NOTE: TERMINAL POSTS INCLUDE END, CORNER, AND PULL POSTS SEE SPECIFICATIONS

CHAIN LINK FENCE FOUNDATION
N.T.S.
4 C110





NOTE:
ADD SUPPORTING ARM AND BARBED WIRE TO NEW AND EXISTING CHAINLINK FENCE POSTS AND GATES

SUPPORTING ARM AND BARBED WIRE
N.T.S.
5 C110

WARNING SIGN
N.T.S.
6 C110

WARNING SIGN
N.T.S.
7 C110

No.	Description	By	Date

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RIO ARRIBA COUNTY, NM

ENDURING RESOURCES

RINCON UNIT 2706-290
RECYCLING CONTAINMENT PIT PROJECT
CHAIN LINK SECURITY FENCE DETAILS

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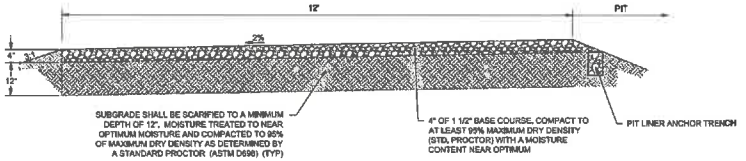
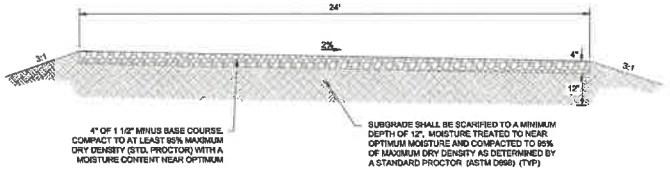
Date: June 2019
Scale: Horiz: N/A Vert: N/A
Project No: 9127383
Sheet: C110

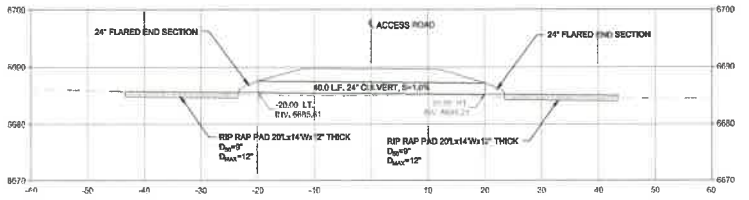


PIT ACCESS ROAD SECTION (1 / C111)
N.T.S.



SITE DRIVEWAY SECTION (2 / C111)
N.T.S.

FACILITY WEST ACCESS ROAD STA. 10+30 CULVERT DETAIL (3 / C111)
SCALE: 1"=10'



FACILITY EAST ACCESS ROAD STA. 10+50 CULVERT DETAIL (4 / C111)
SCALE: 1"=10'

Rev #	Date	Description	By	Chkd

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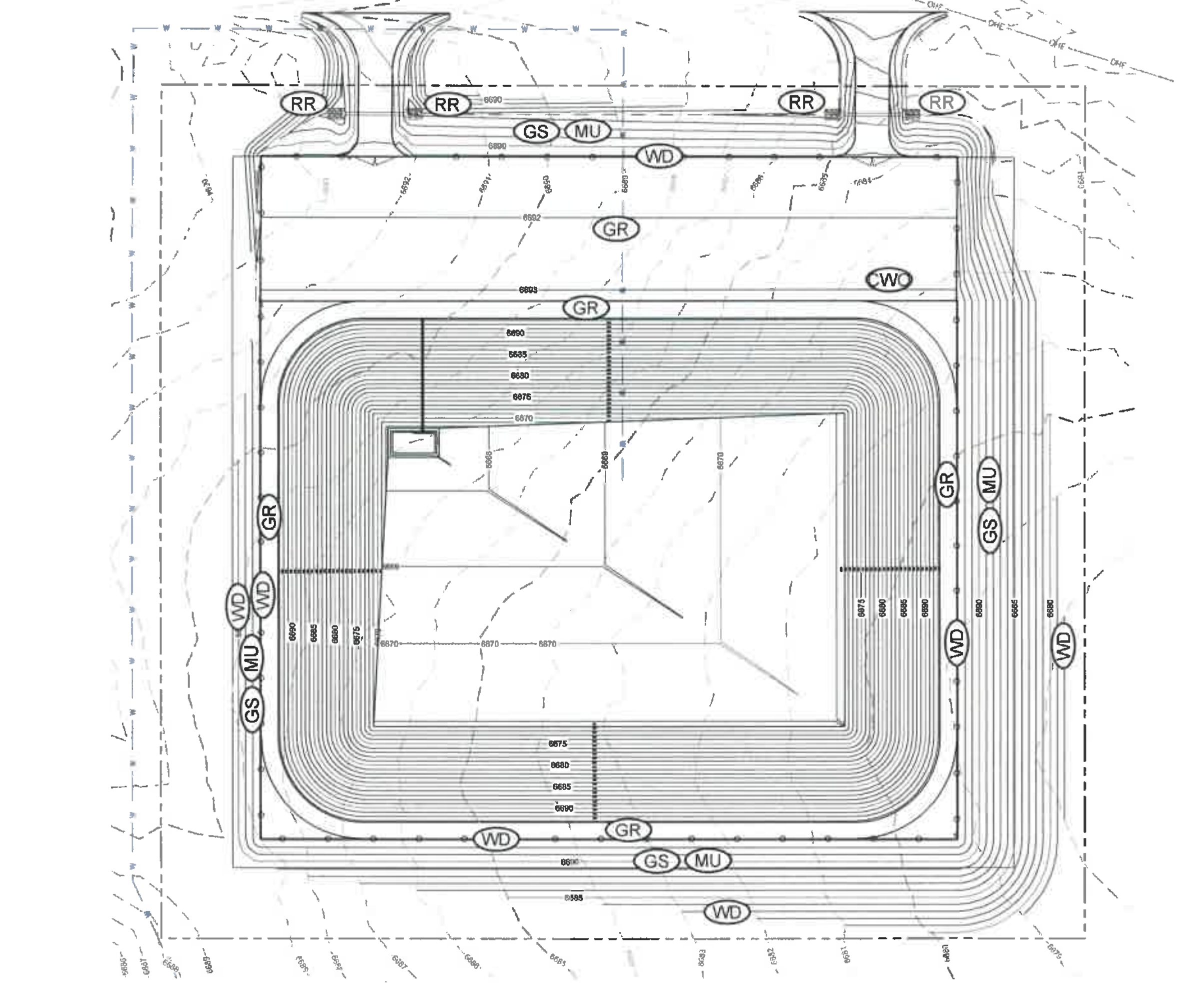
ENDURING RESOURCES — RIO ARRIBA COUNTY, NM

RINCON UNIT 2706-29O
RECYCLING CONTAINMENT PIT PROJECT
ROAD AND DRAINAGE DETAILS

THIS DRAWING IS INCOMPLETE AND NOT TO BE USED FOR CONSTRUCTION UNLESS IT IS STAMPED, SIGNED AND DATED

Designed	Drawn	Checked
HDM	JTN	HDM

Date: June 2019
Scale: Horiz: 1" = 60'
Vert: N/A
Project No: 9127383
Sheet: C111



PERMANENT BMPs

- (GS) GRASS SEEDING
- (MU) MULCH
- (RR) RIP RAP
- (GR) GRAVEL

TEMPORARY BMPs

- (WD) 10" DIA WADDLE/FIBER ROLL
- (CWO) CONCRETE WASHOUT

NOTES:

1. ALL FACILITY INFORMATION CAN BE FOUND ON SHEETS C101 AND C102.
2. ALL SLOPES SHALL HAVE WADDLES PLACED AT TOP OF SLOPE AND TOE OF SLOPE PARALLEL TO CONTOURS.
3. CONTRACTOR SHALL ADD GRASS SEED AND MULCH TO ALL UNPAVED/UNGRAVELED SURFACES THROUGHOUT THE SITE.
4. ALL SOIL STOCKPILES ARE TO HAVE WADDLE/FIBER ROLL PLACED AROUND THEM.

NOTES:

1. SHEETS C112 AND C113 EROSION AND SEDIMENT CONTROL MAY BE IMPLEMENTED BY THE OWNER, AT THE OWNER'S DISCRETION, SHOULD EROSIONAL ISSUES OCCUR DURING CONSTRUCTION AND OPERATION ACTIVITIES.
2. STOCKPILING OF TOP SOIL: CONTRACTOR SHALL SEGREGATE AND STOCKPILE ALL TOPSOIL OUTSIDE OF THE CONSTRUCTION AREA WITH APPROPRIATE SEDIMENT CONTROL. TOPSOIL SHALL BE REDISTRIBUTED ON THE OUTSIDE OF CONSTRUCTION BERMS, AND EITHER SEEDED AND MULCHED OR PROTECTED WITH EROSION CONTROL MEASURES. REFER TO CONSTRUCTION PLANS FOR DETAILS.

ENDURING RESOURCES — RIO ARRIBA COUNTY, NM

RINCON UNIT 2706-29O
RECYCLING CONTAINMENT PIT PROJECT
SITE EROSION CONTROL PLAN

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Rev #	Date	Description	By	Chk'd

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Designed	Drawn	Checked
HDM	JTN	HDM

Date: June 2019
Scale: Horiz: 1" = 60' Vert: N/A
Project No: 9127383
Sheet: C112

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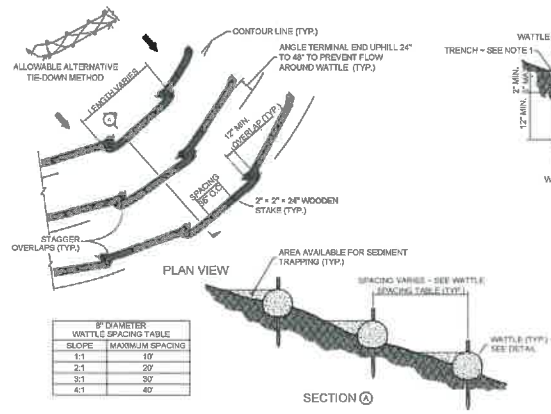
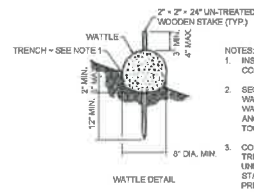


8" DIAMETER WATTLE SPACING TABLE	
SLOPE	MAXIMUM SPACING
1:1	10'
2:1	20'
3:1	30'
4:1	40'



NOTES:
1. INSTALL WATTLES ALONG CONTOURS.
2. SECURELY KNOT EACH END OF WATTLE. OVERLAP ADJACENT WATTLE ENDS 12" BEHIND ONE ANOTHER AND SECURELY TIE TOGETHER.
3. COMPACT EXCAVATED SOIL AND TRENCHES TO PREVENT UNDERCUTTING. ADDITIONAL STAKING MAY BE NECESSARY TO PREVENT UNDERCUTTING.
4. INSTALL WATTLE PERPENDICULAR TO FLOW ALONG CONTOURS.
5. WATTLES SHALL BE INSPECTED REGULARLY, AND IMMEDIATELY AFTER A RAINFALL PRODUCES RUNOFF, TO ENSURE THEY REMAIN THOROUGHLY ENTRENCHED AND IN CONTACT WITH THE SOIL.

WADDLE INSTALLATION ON SLOPES (WD)

N.T.S.

GENERAL NOTES

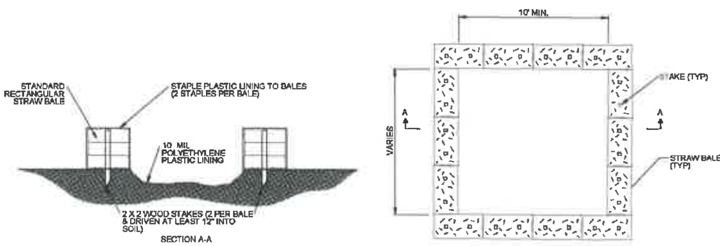
1. SEE SHEET C112 FOR SITE SPECIFIC APPLICATION OF EROSION CONTROL.
2. EROSION & SEDIMENTATIONCONTROL PLAN WILL COMPLY WITH OWNER'S EXISTING ASSET SWPPP.
3. THE CONTRACTOR SHALL SET, LOCATE, AND MAINTAIN EROSION CONTROL MEASURES PER THE EROSION CONTROL PLAN, AND THE OWNER'S EXISTING ASSET STORMWATER POLLUTION PROTECTION PLAN. (SWPPP)
4. EROSION CONTROL MEASURES SHALL BE IMPLEMENTED AND SHALL BE KEPT IN PLACE UNTIL EROSION AND SEDIMENTATION POTENTIAL IS MITIGATED. REMOVAL OF SILT AND SEDIMENT IS REQUIRED PER SWPPP.
5. EROSION CONTROL DEVICES SHALL BE CHECKED AFTER EVERY STORM. REPAIRS OR REPLACEMENT TO THE EROSION CONTROL MEASURES SHALL BE MADE AS REQUIRED BY THE OWNERS PERMIT TO MAINTAIN PROPER PROTECTION.
6. SWPPP SHALL BE MODIFIED TO CONTROL EROSION AND SEDIMENT. TRANSPORT BY USING ANY MEANS SHOWN ON THIS PLAN OR IMPLEMENTING OTHER CONTROL MEASURES.
7. PERMANENT BEST MANAGEMENT PRACTICES (BMPS) (I.E. SEEDED, MULCH) MUST BE IMPLEMENTED WITHIN 14 DAYS OF LAST CONSTRUCTION ACTIVITY IN THE AREA, AS REQUIRED PER THE SWPPP.
8. THE CONTRACTOR/OWNER SHALL UPDATE OR MODIFY THIS PLAN AS NEEDED TO COMPLY WITH THE APPLICABLE POLLUTANT DISCHARGE ELIMINATION SYSTEM REQUIREMENTS.
9. CONTRACTOR SHALL BE REQUIRED TO HAUL EXCESS CONCRETE AND WASHOUT OFF-SITE TO AN APPROVED/PERMITTED DISPOSAL SITE.
10. CONTRACTOR SHALL SPREAD STOCKPILED TOPSOIL BEFORE PLACING GRASS SEED AT CUT AND FILL LOCATIONS USING OWNER APPROVED MIX.
11. CONTRACTOR SHALL PLACE MULCH IN CONJUNCTION WITH GRASS SEEDING.

TEMPORARY BMPs

- (WD) 10" DIA WADDLE/FIBER ROLL
- (CWO) CONCRETE WASHOUT

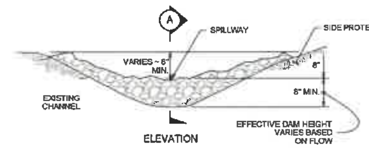
PERMANENT BMPs

- (GS) GRASS SEEDING
- (MU) MULCH
- (RR) RIP RAP
- (RD) ROCK CHECK DAM
- (GR) GRAVEL

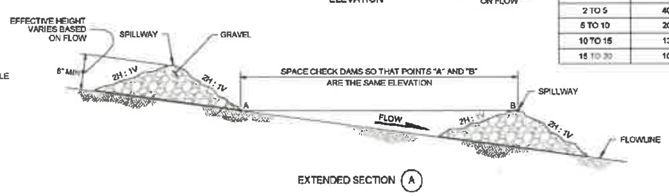


CONCRETE TRUCK WASH OUT FACILITY (CWO)

N.T.S.



ROCK CHECK DAM SPACING	
CHANNEL SLOPE (%)	SPACING (FEET)
<2	100
2 TO 5	40
5 TO 10	20
10 TO 15	13
15 TO 20	10



EXTENDED SECTION (A)

ROCK CHECK DAM (RD)

N.T.S.

Rev #	Date	Description	By	Ch'k'd

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ENDURING RESOURCES — RIO ARRIBA COUNTY, NM

RINCON UNIT 2706-29O RECYCLING CONTAINMENT PIT PROJECT SITE EROSION AND SEDIMENTATION CONTROL DETAILS

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Designed	Drawn	Checked
HDM	JTN	HDM

Date: June 2019
Scale: Horiz: N/A Vert: N/A
Project No: 9127383
Sheet: C113

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Attachment C

Enduring Resources IV, LLC

200 Energy Court

Farmington, NM 87401

Rincon Unit 2706-29O

Water Recycle Facility / Containment

GEOTECHNICAL ENGINEERING REPORT
RINCON RNU 2706-290 WATER RECYCLE FACILITY
RIO ARRIBA COUNTY, NEW MEXICO

Submitted To:

Eric Stevens, PE
Enduring Resources
200 Energy Ct.
Farmington, NM 87401

Submitted By:

GEOMAT Inc.
915 Malta Avenue
Farmington, New Mexico 87401

May 20, 2019

GEOMAT Project 192-3247

GEOMAT INC.
915 Malta Avenue ◆ Farmington, NM 87401 ◆ Tel (505) 327-7928 ◆ Fax (505) 326-5721

May 20, 2018

Eric Stevens, PE
Enduring Resources
200 Energy Ct.
Farmington, NM 87401

RE: Geotechnical Engineering Study
Rincon RNU 2706-290 Water Recycle Facility
Rio Arriba County, New Mexico
GEOMAT Project No. 192-3247

GEOMAT Inc. (GEOMAT) has completed the geotechnical engineering exploration for the proposed Rincon RNU 2706-290 Water Recycle Facility (Rincon III)) to be located in Rio Arriba County, New Mexico. This study was performed in general accordance with the requests made by Enduring Resources (Enduring) for supplemental exploration at the facility's relocated site through email and phone communications during April and May of 2019.

The results of our engineering study, including the geotechnical recommendations, site plan, boring records, and laboratory test results are attached. Based on the geotechnical engineering analyses, subsurface exploration and laboratory test results, the pond could be constructed as a partially incised with embankments as proposed. Other design and construction details, based upon geotechnical conditions, are presented in the report.

We have appreciated being of service to you in the geotechnical engineering phase of this project. If you have any questions concerning this report, please contact us.

Sincerely yours,

GEOMAT Inc.

ROBERT L. FLEGAL JR. NEW MEXICO 16019 PROFESSIONAL ENGINEER

17MAY19

Robert "Bob" Flegal, P.E.
Senior Engineer

Matthew J. Cramer, P.E.
President

Copies to: Addressee (1); H. McDaniel, P.E., C.F.M. @ SMA (both via E-mail)

TABLE OF CONTENTS

TABLE OF CONTENTS (continued)

GEOTECHNICAL ENGINEERING REPORT
RINCON RNU 2706-290 WATER RECYCLE FACILITY
RIO ARRIBA COUNTY, NEW MEXICO
GEOMAT PROJECT NO. 192-3247

INTRODUCTION

This report contains the results of our geotechnical engineering exploration for the proposed Rincon RNU 2706-290 Water Recycle Facility (Rincon III) to be located in Rio Arriba County, New Mexico, as depicted on the Site Plan in Appendix A of this report.

The purpose of these services is to provide information and geotechnical engineering recommendations about:

- subsurface soil conditions
- groundwater conditions
- lateral soil pressures
- earthwork
- slopes for pond walls and embankments, and
- drainage.

The opinions and recommendations contained in this report are based upon the results of field and laboratory testing, engineering analyses, and experience with similar soil conditions, structures, and our understanding of the proposed project as stated below.

PROPOSED CONSTRUCTION

The Rincon III pond will have dimensions of approximately 500 feet by 500 feet and will be located at 36.539671° north latitude / 107.490588° west longitude. As shown in the attached preliminary review drawing provided by Souder Miller and Associates (SMA) dated April 2019, 2019, we understand the pond will be partially incised into the existing grade with constructed embankments to an approximate elevation of 6693'. Based upon the provided site layout, the maximum height of constructed embankment is expected to be approximately 15 feet above the existing grade located at the south-east corner of the pond. The pond will be incised to an elevation of approximately 6672', sloping to a sump located in the north-west corner of the pond at approximately 6667'. The resulting average depth of the pond is approximately 25 feet. The maximum water level is not indicated, but it is expected to maintain a freeboard of approximately 3 feet as found in the original Rincon pond design. The pond will be lined with a double HDPE liner system. The pond is to be located on a graded flat terrain with an adjacent well pad design. It is assumed that, although cleared and graded, the surficial soils have not been compacted and that the existing surface is equivalent and representative of the native soils.

SITE EXPLORATION

Our scope of services performed for this project included advancing three borings for subsurface exploration with sampling and logging performed by our staff geologist, laboratory testing of representative samples and engineering analyses.

Field Exploration:

Subsurface conditions at the Rincon III site were explored over the period April 24 through April 30, 2019 by drilling three exploratory borings, designated B-1 through B-3, at the approximate locations shown on the Site Plan in Appendix A. Boring B-1, was advanced to a depth of approximately 85 feet below existing ground surface (bgs), while borings B-2 and B-3 were drilled to depths of approximately 35 feet bgs.

B-1 was advanced to explore for the presence of groundwater and was completed on April 26, 2019. A full-length, 2-inch temporary screen was installed on April 26 and remained open in excess of the required minimum 48-hour period, from April 27 to April 30, for that groundwater exploration. The exploration was evaluated by GEOMAT on April 29, 2019 with no water found to be present. Borings B-2 and B-3 were advanced at that time at Enduring's direction.

On April 30, 2019, boring B-1 was again reviewed by a representative from the New Mexico Oil Conservation Division with GEOMAT present. No groundwater was found within the temporary screen at that time and B-1 was backfilled. A representative bulk sample of the surficial soils in B-1 was obtained for use in conducting remolded direct shear testing due to its central location to the site.

All borings were advanced using a CME-55 truck-mounted drill rig with continuous-flight, 7.25-inch O.D. hollow-stem auger. The borings were continuously monitored by a geologist from our office who examined and classified the subsurface materials encountered, obtained representative samples, observed groundwater conditions, and maintained a continuous log of each boring.

Soil samples were obtained from the borings using a combination of standard 2-inch O.D. split spoon and 3-inch O.D. modified California ring barrel samplers. The samplers were driven using a 140-pound hammer falling 30 inches. The standard penetration resistance was determined by recording the number of hammer blows required to advance the sampler in six-inch increments. Representative bulk samples of subsurface materials were also obtained.

Groundwater evaluations were made in each boring at the time of site exploration. Soils were classified in accordance with the Unified Soil Classification System described in Appendix A. Boring logs were prepared for B-1 through B-5 and are presented in Appendix A.

Laboratory Testing:

Samples retrieved during the field exploration were transported to our laboratory for further evaluation. At that time, the field descriptions were confirmed or modified as necessary, and laboratory tests were performed to evaluate the engineering properties of the subsurface materials.

Bulk samples of the surficial soils from B-1 and B-3 were also prepared and shipped to the TRI Environmental Inc, Geotechnical-Interaction Laboratory in Austin, Texas for direct shear testing.

SITE CONDITIONS

The RNU 2706-290 WRF site is located approximately 30 miles southeast of Bloomfield, New Mexico in Largo Wash. The ground surface across the site of the proposed pond was relatively flat with a slight gradient towards the east. An elevation change of approximately 7 feet occurs from the highest point in the northwest corner of the site to the lowest at the southeast corner of the site. The site had a sparse vegetation of weeds and sagebrush at the time of our exploration. No evidence of prior structural development was noted at the site. The photo below depicts the site conditions at the time of our exploration.

Drill Rig at Boring B-3
View toward the South

SUBSURFACE CONDITIONS

Soil Conditions:

As presented on the Boring Logs in Appendix A, in all three borings, B-1 through B-3, we encountered dense, sandy soils to depths of 4½, 6, and 10½ feet bgs, respectively. Below the sandy soils, formational shale bedrock was encountered in all of the borings extending to depths of approximately 29½, 25, and 35 feet bgs, respectively. In boring B-3, the shale extended to the total depth explored. Below the shale bedrock, we encountered sandstone bedrock in both B-1 and B-2. In boring B-2, the sandstone extended to the total depth explored in the boring (35 feet). In boring B-1, the sandstone extended to a depth of approximately 70 feet bgs and was then underlain by shale bedrock which extended to the total depth explored in the boring (85 feet).

Groundwater Conditions:

Groundwater was not encountered in any of the borings. Groundwater elevations can fluctuate over time depending upon precipitation, irrigation, runoff and infiltration of surface water. We do not have any information regarding the historical fluctuation of the groundwater level in this vicinity.

Laboratory Test Results:

Laboratory analyses of samples tested indicate the sandy soils have a fines content (silt- and/or clay-sized particles passing the U.S. No. 200 sieve) of approximately 40 percent, with a plasticity index of 15. In-place dry densities of the soil were 112 pounds per cubic foot (pcf), with a natural moisture content of 8 percent. In-place dry densities of the shale bedrock were 107 pounds per cubic foot (pcf), with a natural moisture content of 13 percent. The standard proctor result (ASTM D698) for the composite sample taken from B-1, at depths of 0'-15' bgs indicated an optimum density of 109.7 pcf at 16.5 percent moisture. These values were utilized in specification of the remolding for the direct shear testing (ASTM D3080) at TRI.

The direct shear results from TRI indicate an effective friction angle, θ', having values 28.3° and 31.6°, and an effective cohesion, c', of approximately 0 psf (forced) and 43 pcf for construction of embankments of compacted fill. Given the expected mixing of site materials for construction, slope stability analysis of the embankment design utilized an average value of 30° for θ' with selected multiple cohesion values for a sensitivity analysis. Values of 0, 5 and 43 pcf were evaluated for c', both interior and exterior slopes. Analytical results are discussed below and the results of all laboratory tests are presented in Appendix B.

OPINIONS AND RECOMMENDATIONS

Geotechnical Considerations:

The site is considered suitable for the proposed fracking water pond based on the geotechnical conditions encountered and tested for this report and our understanding of the project. If there are any significant deviations from the assumed finished elevations, slopes and/or pond locations noted at the beginning of this report, the opinions and recommendations of this report should be reviewed and confirmed/modified as necessary to reflect the final planned design conditions.

Pond Design and Construction:

The Rincon III pond could be constructed as an incised basin with engineered constructed embankments as proposed. The HDPE liner system described by enduring should be installed in accordance with the manufacturer's recommendations. In addition to being sound practice, proper installation of the liner should assist in minimalizing exposure of the shales utilized in embankment construction to an increase in moisture content from leakage. Compaction of the subgrade within the incised portions of the pond below the liner should be in accordance with the liner manufacturer's recommendations and is assumed to be consistent with the recommendation found within the **Placement and Compaction** section of this report. It is anticipated that at least portion of the incised portion of the pond will be in rock. The liner manufacturer should be consulted for recommendations with respect to the liner being constructed on rock. Subgrade and fill for the embankments should also be constructed in accordance with those recommendations and adhere to the details in the provided pond design as evaluated. Assuming construction materials for the embankments will be excavated from the incised portion of the pond, there was initial concern regarding the significant of volume of shale at the site with respect to its use as fill for the pond embankments. Shales can be non-durable and easily degrade if construction parameters such as lift height, moisture-density control during compaction, and compaction equipment are not properly applied and maintained.

Our recommendations for construction below are based on the information obtained from the borings performed during our subsurface exploration. It should be realized that subsurface conditions could vary across the extent of the pond area, and these variations may not become apparent until construction is underway. If, during construction, soil types other than those encountered during our exploration are encountered, we should be contacted to observe the actual conditions and confirm/modify our recommendations, as appropriate.

Slope Stability Analysis:

A slope stability analysis was performed for Rincon III to evaluate the proposed design of the incised portions of the pond and the surrounding constructed pond embankments. A representative cross section was selected, modeled and evaluated utilizing Galena Slope Stability

software (version 6.1) as an aid in developing our recommendations. Slopes were modeled utilizing an internal grade of 3.0:1 (horizontal:vertical) and a 5.0:1 external. These parameters are consistent with the supplied revised design received from SMA.

An access roadway is proposed in the design to be located on the top surface of the constructed embankments. As a result, light vehicle loads were added to the model as two 1500-pound point loads to represent possible additional loading. Analyses were performed for both the internal and external profiles at the selected cross section. Printouts of the software graphical analyses are attached in Appendix B. Table 1 summarizes the results of the analyses.

Seismic Considerations and Slope Stability:

Based on the subsurface conditions encountered in the borings, we estimate that Site Class C is appropriate for the site according to Table 1613.5.2 of the 2009 International Building Code. This parameter was estimated based on extrapolation of data beyond the deepest depth explored, using methods allowed by the code. Actual shear wave velocity testing/analysis and/or exploration to a depth of 100 feet were not performed as part of our scope of services for this project. Slope stability analyses were performed to include seismic forces at the critical representative cross section and incorporating the designed internal and external grades. For this site, seismic parameter of peak earthquake coefficient is 0.1014g as show in the printout included in the appendix. This value was utilized in slope stability modelling. Example graphical printouts are included in the appendix and the results are provided in Table 1 below.

Table 1 - Slope Stability Analysis.

			Factor of Safety	
	Slope	**Cohesion (psf)**	**Base**	**Seismic Applied**
Internal Slope	3:0:1	0	2.08	1.50
		5	2.10	1.52
		43	2.16	1.57
External Slope	5.0:1	0	3.08	2.01
		5	3.19	2.08
		43	3.49	2.26

Based on the results of our subsurface exploration, laboratory testing, and engineering analyses, the designed grades of the incised pond walls and the constructed embankments are acceptable at the proposed 3.0:1 internal and 5.0:1 external slopes in the site soils/rock if constructed as recommended herein. All embankments shall be compacted to a minimum of 95% of the maximum dry density as determined by ASTM D698 and as recommended in Earthwork section of this report.

Lateral Earth Pressures:

For soils above any free water surface, recommended equivalent fluid pressures for unrestrained foundation elements are presented in the following table:

- **Active:**
  Granular soil backfill (on-site sand) .....35 psf/ft
  Undisturbed subsoil .....30 psf/ft

- **Passive:**

  Shallow foundation walls .....250 psf/ft
  Shallow column footings.....350 psf/ft
  Sump walls .....400 psf/ft

- **Coefficient of base friction**: 0.40
  The coefficient of base friction should be reduced to 0.30 when used in conjunction with passive pressure.

Where the design includes restrained elements, the following equivalent fluid pressures are recommended:

- **At rest:**

  Granular soil backfill (on-site sand) .....50 psf/ft
  Undisturbed subsoil.....60 psf/ft

Earthwork:

General Considerations:

The opinions contained in this report for the proposed construction are contingent upon compliance with recommendations presented in this section. Although underground facilities

such as foundations, septic tanks, cesspools, basements and irrigation systems were not encountered during site reconnaissance, such features could exist and might be encountered during construction.

Site Clearing:

1. Strip and remove all existing fill, debris and other deleterious materials from the proposed construction areas.

2. If unexpected fills or underground facilities are encountered during site clearing, we should be contacted for further recommendations. All excavations should be observed by GEOMAT prior to backfill placement.

3. Stripped materials consisting of vegetation and organic materials should be removed from the site, or used to re-vegetate exposed slopes after completion of grading operations. If it is necessary to dispose of organic materials on-site, they should be placed in non-structural areas, and in fill sections not exceeding 5 feet in height.

4. Sloping areas other than those evaluated herein that are steeper than 5:1 (horizontal:vertical) should be benched to reduce the potential for slippage between existing slopes and fills. Benches should be graded for drainage (level) and wide enough to accommodate compaction and earth moving equipment.

5. All exposed areas which will receive fill, once properly cleared and benched where necessary, should be scarified to a minimum depth of eight inches, conditioned to near optimum moisture content, and compacted to at least 95% of standard proctor (ASTM D698).

Excavation:

We present the following general comments regarding our opinion of the excavation conditions for the designers' information with the understanding that they are opinions based on our boring data. More accurate information regarding the excavation conditions should be evaluated by contractors or other interested parties from test excavations using the equipment that will be used during construction.

Based on our subsurface evaluation it appears that shallow excavations in soils at the site will be possible using standard excavation equipment. Although not anticipated, excavations that encounter formational rock are expected to be difficult and may necessitate the use of heavy-duty equipment and/or specialized techniques.

On-site soils may pump or become unstable or unworkable at high water contents. Dewatering may be necessary to achieve a stable excavation. Workability may be improved by scarifying and drying. Over-excavation of wet zones and replacement with granular materials may be necessary. Lightweight excavation equipment may be required to reduce subgrade pumping.

Fill Materials:

1. Native soils could be used in any areas cut for facilitation of the pond excavation.

2. Select granular materials should be used as backfill behind walls that retain earth.

3. On site or imported soils to be used in structural fills, not including the pond embankments, should conform to the following:

Gradation	Percent finer by weight (ASTM C136)
3"	100
No. 4 Sieve	50-100
No. 200 Sieve	50 Max
Maximum expansive potential (%)*	1.5

* Measured on a sample compacted to approximately 95 percent of the ASTM D698 maximum dry density at about 3 percent below optimum water content. The sample is confined under a 144-psf surcharge and submerged.

4. If required, aggregate base should conform to Type I Base Course as specified in Section 303 of the 2014 New Mexico Department of Transportation (NMDOT) *"Standard Specifications for Road and Bridge Construction."*

Placement and Compaction:

1. Place and compact fill in horizontal lifts, using equipment and procedures that will produce recommended moisture contents and densities throughout the lift.

2. Un-compacted fill lifts should not exceed 10 inches loose thickness.

3. Materials should be compacted to the following:

Material	Minimum Percent (ASTM D698)
Liner Subgrade	Per Liner Manufacturer's Recommendations
Subgrade soils beneath fill areas	95
On site or imported soil fills:	
Beneath footings and slabs on grade	95
Aggregate base beneath slabs and pavements	95
Miscellaneous backfill	90

4. On-site and imported soils should be compacted at moisture contents near optimum.

Compliance:

To assess compliance, observation and testing should be performed by GEOMAT.

Drainage:

Surface Drainage:

Positive drainage should be provided during construction and maintained throughout the life of the proposed project to prevent surface runoff from entering the pond.

Protective slopes should be provided with a minimum grade of approximately 5 percent for at least 10 feet from the structures. Backfill against footings, exterior walls, and in utility trenches should be well compacted and free of all construction debris to reduce the possibility of moisture infiltration.

Subsurface Drainage:

Free-draining, granular soils containing less than five percent fines (by weight) passing a No. 200 sieve should be placed adjacent to walls which retain earth. A drainage system consisting of either weep holes or perforated drain lines (placed near the base of the wall) should be used to intercept and discharge water which would tend to saturate the backfill. Where used, drain lines should be embedded in a uniformly graded filter material and provided with adequate clean-outs for periodic maintenance. An impervious soil should be used in the upper layer of backfill to reduce the potential for water infiltration.

GENERAL COMMENTS

It is recommended that GEOMAT be retained to provide a general review of final design plans and specifications in order to confirm that grading recommendations in this report have been interpreted and implemented. In the event that any changes of the proposed project are planned, the opinions and recommendations contained in this report should be reviewed and the report modified or supplemented as necessary.

GEOMAT should also be retained to provide services during excavation, grading, and construction phases of the work. Construction testing, including field and laboratory evaluation of fill, backfill, and compacted slopes should be performed to determine whether applicable project requirements have been met.

The analyses and recommendations in this report are based in part upon data obtained from the field exploration. The nature and extent of variations beyond the location of test borings may not

become evident until construction. If variations then appear evident, it may be necessary to re-evaluate the recommendations of this report.

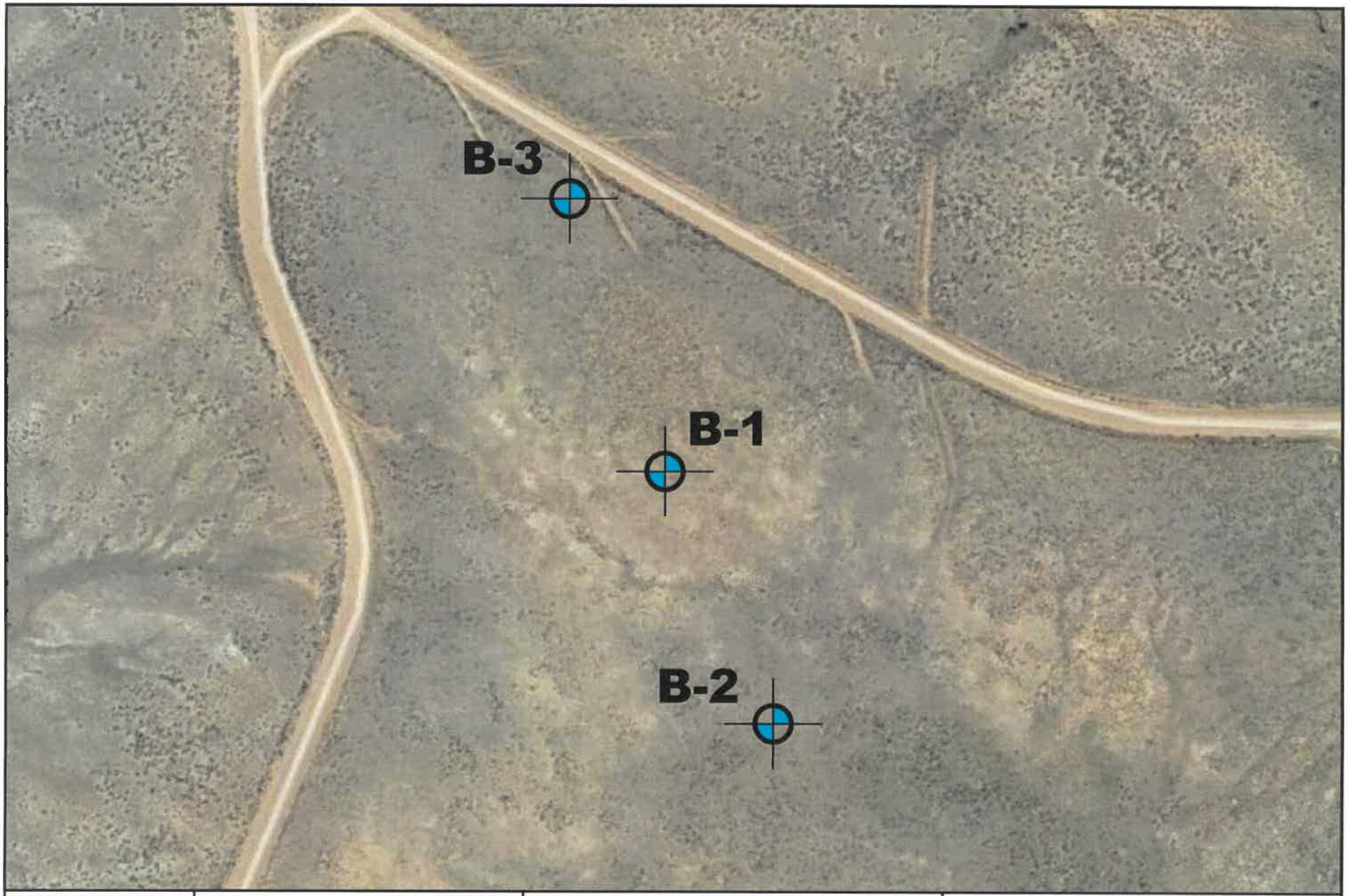
Our professional services were performed using that degree of care and skill ordinarily exercised, under similar circumstances, by reputable geotechnical engineers practicing in this or similar localities at the same time. No warranty, express or implied, is intended or made. We prepared the report as an aid in design of the proposed project. This report is not a bidding document. Any contractor reviewing this report must draw his own conclusions regarding site conditions and specific construction equipment and techniques to be used on this project.

This report is for the exclusive purpose of providing geotechnical engineering and/or testing information and recommendations. The scope of services for this project does not include, either specifically or by implication, any environmental assessment of the site or identification of

contaminated or hazardous materials or conditions. If the owner is concerned about the potential for such contamination, other studies should be undertaken. This report has also not addressed any geologic hazards that may exist on or near the site.

This report may be used only by the Client and only for the purposes stated, within a reasonable time from its issuance. Land use, site conditions (both on and off site), or other factors may change over time and additional work may be required with the passage of time. Any party, other than the Client, who wishes to use this report, shall notify GEOMAT in writing of such intended use. Based on the intended use of the report, GEOMAT may require that additional work be performed and that an updated report be issued. Non-compliance with any of these requirements, by the Client or anyone else, will release GEOMAT from any liability resulting from the use of this report by an unauthorized party.

Appendix A



Approximate Not to Scale	SITE PLAN Boring Locations (approximate) GEOMAT Project No. 192-3247 Date of Exploration: April 24 & 29, 2019	PROJECT Rincon Fracking Water Pond III Enduring Resources Rio Arriba County, New Mexico

GEOMAT INC.

GEOMAT INC.
915 Malta Avenue
Farmington, NM 87401
Tel (505) 327-7928
Fax (505) 326-5721

Borehole B-1

Project Name:	Rincon Pond III	Date Drilled:	4/24/2019
Project Number:	192-3247	Latitude:	Not Determined
Client:	Enduring	Longitude:	Not Determined
Site Location:	San Juan County, New Mexico	Elevation:	Not Determined
Rig Type:	CME-55	Boring Location:	See Site Plan
Drilling Method:	7.25" O.D. Hollow Stem Auger	Groundwater Depth:	None Encountered
Sampling Method:	Bulk, Ring and Split spoon samples	Logged By:	SY
Hammer Weight:	140 lbs	Remarks:	None
Hammer Fall:	30 inches		

Laboratory Results: Dry Density (pcf)	% Passing #200 Sieve	Plasticity Index	Moisture Content (%)	Blows per 6"	Sample Type & Length (in)	Symbol	Material Type	Soil Symbol	Depth (ft)	Soil Description
					A		SC		1	Clayey SAND, tan/brown, fine- to medium-grained, dry to damp
									2	
									3	
									4	layer with higher clay content
				11-14-17	SS				5	
									6	grades to shale bedrock
									7	SHALE, gray, damp, slightly to moderately fissile/friable, slightly weathered
									8	
									9	
					A				10	
									11	
									12	
									13	
									14	
106.8			13.1	27-39-50/5"	R		RK		15	
									16	
									17	
									18	
									19	
									20	
									21	
									22	
									23	intermittent siltstone in cuttings
									24	
									25	
									26	
									27	
									28	
									29	grades into sandstone
				50/3"	SS				30	
									31	SANDSTONE, tan/gray, fine- to medium-grained, slightly damp, moderately cemented, slightly to moderately weathered
									32	
									33	
									34	intermittent shale in cuttings
									35	
									36	
									37	
									38	
									39	
							RK		40	
					A				41	
									42	
									43	
									44	harder drilling
									45	
									46	
									47	
									48	
									49	
									50	

A = Auger Cuttings R = Ring-Lined Barrel Sampler SS = Split Spoon GRAB = Manual Grab Sample D = Disturbed Bulk Sample PP = Pocket Penetrometer

GEOMAT INC.
915 Malta Avenue
Farmington, NM 87401
Tel (505) 327-7928
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Borehole B-1

Project Name:	Rincon Pond III	Date Drilled:	4/24/2019
Project Number:	192-3247	Latitude:	Not Determined
Client:	Enduring	Longitude:	Not Determined
Site Location:	San Juan County, New Mexico	Elevation:	Not Determined
Rig Type:	CME-55	Boring Location:	See Site Plan
Drilling Method:	7.25" O.D. Hollow Stem Auger	Groundwater Depth:	None Encountered
Sampling Method:	Bulk, Ring and Split spoon samples	Logged By:	SY
Hammer Weight:	140 lbs	Remarks:	None
Hammer Fall:	30 inches		

Laboratory Results: Dry Density (pcf)	% Passing #200 Sieve	Plasticity Index	Moisture Content (%)	Blows per 6"	Sample Type & Length (in)	Symbol	Material Type	Soil Symbol	Depth (ft)	Soil Description
					A				51	tan/orange
									52	
									53	
									54	
									55	
									56	intermittent shale in cuttings
									57	
									58	
									59	
					A		RK		60	
									61	
									62	
									63	
									64	
									65	
									66	
									67	
									68	
									69	
									70	
					A				71	SHALE, gray, slightly damp
									72	
									73	
									74	
									75	
									76	
									77	
									78	
							RK		79	
									80	
									81	
									82	
									83	
									84	
									85	
					A				86	
									87	Total Depth 85 feet
									88	
									89	
									90	
									91	
									92	
									93	
									94	
									95	
									96	
									97	
									98	
									99	
									100	

A = Auger Cuttings R = Ring-Lined Barrel Sampler SS = Split Spoon GRAB = Manual Grab Sample D = Disturbed Bulk Sample PP = Pocket Penetrometer

GEOMAT INC.
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Borehole B-2

Project Name: Rincon Pond III
Project Number: 192-3247
Client: Enduring
Site Location: San Juan County, New Mexico
Rig Type: CME-55
Drilling Method: 7.25" O.D. Hollow Stem Auger
Sampling Method: Ring and Split spoon samples
Hammer Weight: 140 lbs
Hammer Fall: 30 inches

Date Drilled: 4/29/2019
Latitude: Not Determined
Longitude: Not Determined
Elevation: Not Determined
Boring Location: See Site Plan
Groundwater Depth: None Encountered
Logged By: SY
Remarks: None

Laboratory Results				Blows per 6"	Sample Type & Length (in)	Symbol	Material Type	Soil Symbol	Depth (ft)	Soil Description
Dry Density (pcf)	% Passing #200 Sieve	Plasticity Index	Moisture Content (%)							
111.7	40	15	7.8	18-28-50/6"	R		SC		1-6	Clayey SAND, tan/brown, fine- to medium-grained, dense, dry to damp, caliche layer with higher clay content
				14-17-22	SS					
				50/5"	R		RK		7-25	SHALE, gray, slightly damp, slightly to moderately fissile/friable, slightly weathered interlayered with gray/tan siltstone
				50/3"	SS					
				50/5"	R					
				50/4"	SS		RK		26-35	SANDSTONE, tan/gray, fine-grained, dry to slightly damp, moderately cemented
				50/2"	SS					
				50/3"	SS				36-50	Total Depth 35 feet

A = Auger Cuttings R = Ring-Lined Barrel Sampler SS = Split Spoon GRAB = Manual Grab Sample D = Disturbed Bulk Sample PP = Pocket Penetrometer

GEOMAT 192-3247.GPJ GEOMAT.GDT 5/1/19

GEOMAT INC.
915 Malta Avenue
Farmington, NM 87401
Tel (505) 327-7928
Fax (505) 326-5721

Borehole B-3

Project Name: Rincon Pond III
Project Number: 192-3247
Client: Enduring
Site Location: San Juan County, New Mexico
Rig Type: CME-55
Drilling Method: 7.25" O.D. Hollow Stem Auger
Sampling Method: Ring and Split spoon samples
Hammer Weight: 140 lbs
Hammer Fall: 30 inches

Date Drilled: 4/29/2019
Latitude: Not Determined
Longitude: Not Determined
Elevation: Not Determined
Boring Location: See Site Plan
Groundwater Depth: None Encountered
Logged By: SY
Remarks: None

Laboratory Results: Dry Density (pcf)	% Passing #200 Sieve	Plasticity Index	Moisture Content (%)	Blows per 6"	Sample Type & Length (in)	Symbol	Material Type	Soil Symbol	Depth (ft)	Soil Description
				16-22-25	SS		SC		1–10	Clayey SAND, tan/brown, fine- to medium-grained, dense, dry to damp, caliche
				8-32-45	R					layer with higher clay content
				12-18-39	SS				11–12	SHALE, gray, slightly damp, slightly to moderately fissile/friable, slightly weathered
				50/5"	R				13–15	interlayered with gray/tan siltstone
				22-28-46	SS		RK		16–30	
				50/6"	R					
				50/6"	SS				31–34	higher sand content
				50/3"	SS				35–36	Total Depth 35 feet
									37–50	

A = Auger Cuttings R = Ring-Lined Barrel Sampler SS = Split Spoon GRAB = Manual Grab Sample D = Disturbed Bulk Sample PP = Pocket Penetrometer

GEOMAT 192-3247.GPJ GEOMAT.GDT 5/1/19

UNIFIED SOIL CLASSIFICATION SYSTEM					CONSISTENCY OR RELATIVE DENSITY CRITERIA		
Major Divisions			Group Symbols	Typical Names			
Coarse-Grained Soils More than 50% retained on No. 200 sieve	**Gravels** 50% or more of coarse fraction retained on No. 4 sieve	Clean Gravels	GW	Well-graded gravels and gravel-sand mixtures, little or no fines	Standard Penetration Test Density of Granular Soils		
			GP	Poorly graded gravels and gravel-sand mixtures, little or no fines	Penetration Resistance, N (blows/ft.)	Relative Density	
		Gravels with Fines	GM	Silty gravels, gravel-sand-silt mixtures	0-4	Very Loose	
			GC	Clayey gravels, gravel-sand-clay mixtures	5-10	Loose	
	Sands More than 50% of coarse fraction passes No. 4 sieve	Clean Sands	SW	Well-graded sands and gravelly sands, little or no fines	11-30	Medium Dense	
			SP	Poorly graded sands and gravelly sands, little or no fines	31-50	Dense	
		Sands with Fines	SM	Silty sands, sand-silt mixtures	>50	Very Dense	
			SC	Clayey sands, sand-clay mixtures	Standard Penetration Test Density of Fine-Grained Soils		
Fine-Grained Soils 50% or more passes No. 200 sieve	**Silts and Clays** Liquid Limit 50 or less		ML	Inorganic silts, very fine sands, rock flour, silty or clayey fine sands	Penetration Resistance, N (blows/ft.)	Consistency	Unconfined Compressive Strength (Tons/ft2)
			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays	<2	Very Soft	<0.25
			OL	Organic silts and organic silty clays of low plasticity	2-4	Soft	0.25-0.50
	Silts and Clays Liquid Limit greater than 50		MH	Inorganic silts, micaceous or diatomaceous free sands or silts, elastic silts	4-8	Firm	0.50-1.00
			CH	Inorganic clays of high plasticity, fat clays	8-15	Stiff	1.00-2.00
			OH	Organic clays of medium to high plasticity	15-30	Very Stiff	2.00-4.00
Highly Organic Soils			PT	Peat, mucic & other highly organic soils	>30	Hard	>4.0

U.S. Standard Sieve Sizes

>12"	12"	3"	3/4"	#4	#10	#40	#200	
Boulders	Cobbles	Gravel			Sand			Silt or Clay
		coarse	fine	coarse	medium	fine		

MOISTURE CONDITIONS	
Dry	Absence of moist, dusty, dry to the touch
Slightly Damp	Below optimum moisture content for compaction
Moist	Near optimum moisture content, will moisten the hand
Very Moist	Above optimum moisture content
Wet	Visible free water, below water table

MATERIAL QUANTITY	
trace	0-5%
few	5-10%
little	10-25%
some	25-45%
mostly	50-100%

OTHER SYMBOLS	
R	Ring Sample
S	SPT Sample
B	Bulk Sample
▼	Ground Water

BASIC LOG FORMAT:

Group name, Group symbol, (grain size), color, moisture, consistency or relative density. Additional comments: odor, presence of roots, mica, gypsum, coarse particles, etc.

EXAMPLE:

SILTY SAND w/trace silt (SM-SP), Brown, loose to med. Dense, fine to medium grained, damp

UNIFIED SOIL CLASSIFICATION SYSTEM

TEST DRILLING EQUIPMENT & PROCEDURES

Description of Subsurface Exploration Methods

Drilling Equipment – Truck-mounted drill rigs powered with gasoline or diesel engines are used in advancing test borings. Drilling through soil or softer rock is performed with hollow-stem auger or continuous flight auger. Carbide insert teeth are normally used on bits to penetrate soft rock or very strongly cemented soils which require blasting or very heavy equipment for excavation. Where refusal is experienced in auger drilling, the holes are sometimes advanced with tricone gear bits and NX rods using water or air as a drilling fluid.

Sampling Procedures - Dynamically driven tube samples are usually obtained at selected intervals in the borings by the ASTM D1586 test procedure. In most cases, 2" outside diameter, 1 3/8" inside diameter, samplers are used to obtain the standard penetration resistance. "Undisturbed" samples of firmer soils are often obtained with 3" outside diameter samplers lined with 2.42" inside diameter brass rings. The driving energy is generally recorded as the number of blows of a 140-pound, 30-inch free fall drop hammer required to advance the samplers in 6-inch increments. These values are expressed in blows per foot on the boring logs. However, in stratified soils, driving resistance is sometimes recorded in 2- or 3-inch increments so that soil changes and the presence of scattered gravel or cemented layers can be readily detected and the realistic penetration values obtained for consideration in design. "Undisturbed" sampling of softer soils is sometimes performed with thin-walled Shelby tubes (ASTM D1587). Tube samples are labeled and placed in watertight containers to maintain field moisture contents for testing. When necessary for testing, larger bulk samples are taken from auger cuttings. Where samples of rock are required, they are obtained by NX diamond core drilling (ASTM D2113).

Boring Records - Drilling operations are directed by our field engineer or geologist who examines soil recovery and prepares boring logs. Soils are visually classified in accordance with the Unified Soil Classification System (ASTM D2487), with appropriate group symbols being shown on the logs.

Appendix B

LAB NO.	BORING NO.	DEPTH FT.	ASTM D698		MOISTURE CONT. (%)	DENSITY		ATTERBERG LIMITS			SWELL (%)	CONSOL TEST	% PASS #200 SIEVE	CLASSIFICATION
			Density	Moisture		WET (pcf)	DRY (pcf)	LL	PL	PI				
8007	B-1	0 - 15.0	109.7	16.4	-	-	-	-	-	-	-	-	-	Clayey **SAND** (SC) / **SHALE** (RK)
8010	B-1	15	-	-	13.1	120.8	106.8	-	-	-	-	-	-	**SHALE** (RK)
8008	B-2	2.5	-	-	7.8	120.4	111.7	30	15	15	-	-	40	Clayey **SAND** (SC)

GEOMAT INC.

SUMMARY OF SOIL TESTS

Project	Rincon RNU 2706-290 Water Recycling Facility
Job No.	192-3247
Location	Rio Arriba County, New Mexico
Date Drilled	4/24 & 4/29/2019

LABORATORY TESTING PROCEDURES

Consolidation Tests: One-dimensional consolidation tests are performed using "Floating-ring" type consolidometers. The test samples are approximately 2.5 inches in diameter and 1.0 inch high and are usually obtained from test borings using the dynamically-driven ring samplers. Test procedures are generally as outlined in ASTM D2435. Loads are applied in several increments to the upper surface of the test specimen and the resulting deformations are recorded at selected time intervals for each increment. Samples are normally loaded in the in-situ moisture conditions to loads which approximate the stresses which will be experienced by the soils after the project is completed. Samples are usually then submerged to determine the effect of increased moisture contents on the soils. Each load increment is applied until compression/expansion of the sample is essentially complete (normally movements of less than 0.0003 inches/hour). Porous stones are placed on the top and bottom surfaces of the samples to facilitate introduction of the moisture.

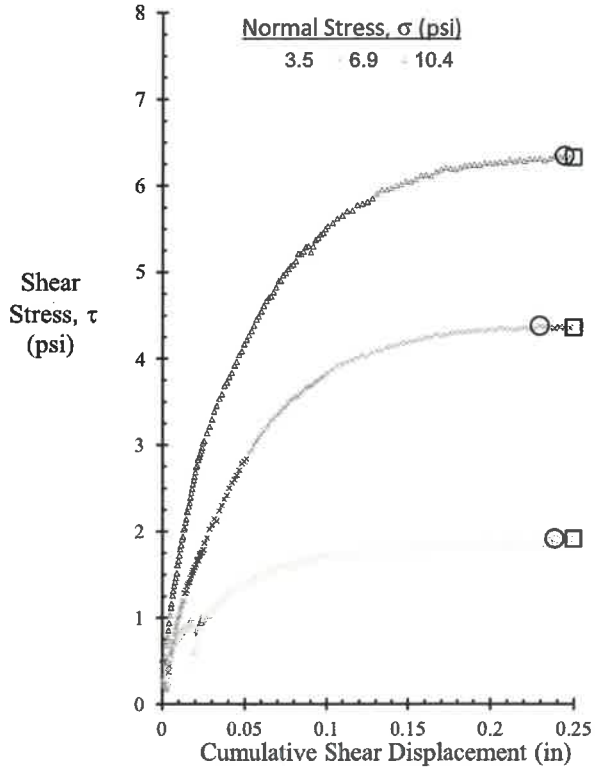
Expansion Tests: Tests are performed on either undisturbed or recompacted samples to evaluate the expansive potential of the soils. The test samples are approximately 2.5 inches in diameter and 1.0 inch high. Recompacted samples are typically remolded to densities and moisture contents that will simulate field compaction conditions. Surcharge loads normally simulate those which will be experienced by the soils in the field. Surcharge loads are maintained until the expansion is essentially complete.

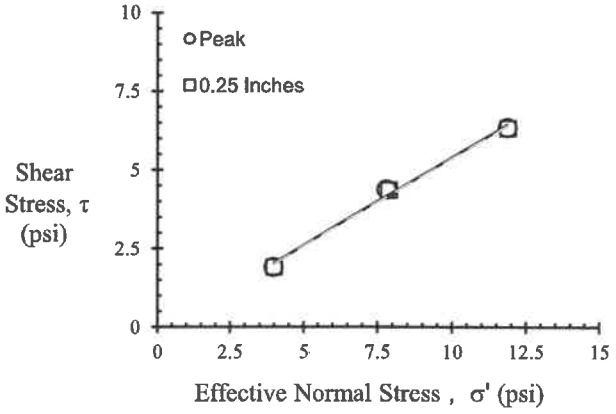
Atterberg Limits/Maximum Density/Optimum Moisture Tests: These tests are performed in accordance with the prescribed ASTM test procedures.

Direct Shear of Soil Under Consolidated-Drained Conditions

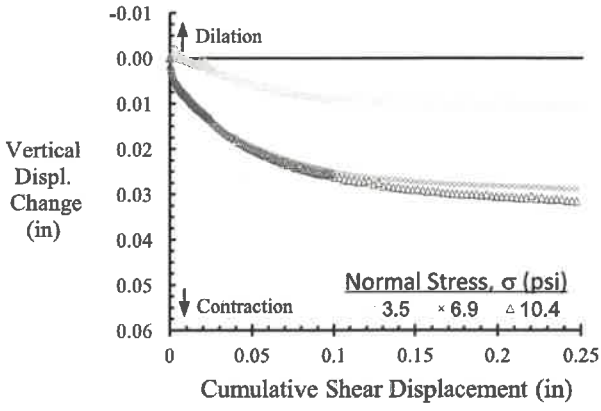
Client: GEOMAT Inc.
Project: Rincon III
Sample: Rincon III B3 (10.0-20.0)

TRI Log#: 46478.2
Test Method: ASTM D3080





Note: Area Correction Has Been Applied



Specimen Number		1	2	3
Initial Condition	Diameter, in	2.50	2.50	2.50
	Height, in (before consol)	1.00	1.00	1.00
	Water Content, %	16.0	16.0	16.0
	Saturation, %	68.1	67.7	68.0
	Dry Density, pcf	104.3	104.0	104.2
	Void Ratio	0.65	0.65	0.65
Consolidation Stress, σ' (psi)		3.5	6.9	10.4
Post-Consol	Height, in (prior to shear)	1.01	1.02	1.06
	Dry Density, pcf	103.0	101.9	98.5
	Void Ratio	0.65	0.67	0.73
Displacement rate (in/min)		3.0E-04		
Final Water Content, %		31.9	28.0	27.1
Peak	Normal Stress, σ' (psi)	3.98	7.81	11.88
	Shear Stress, τ (psi)	1.91	4.38	6.35
	Secant Friction Angle, Degrees	25.7	29.3	28.1
	Displacement (in)	0.24	0.23	0.24
	ϕ'_d, degrees	28.3		
	c'_d, psi	0 (Forced)		
0.25 Inches	Normal Stress, σ' (psi)	4.00	7.89	11.90
	Shear Stress, τ (psi)	1.91	4.36	6.33
	Secant Friction Angle, Degrees	25.5	28.9	28.0
	ϕ'_d, degrees	28.1		
	c'_d, psi	0 (Forced)		

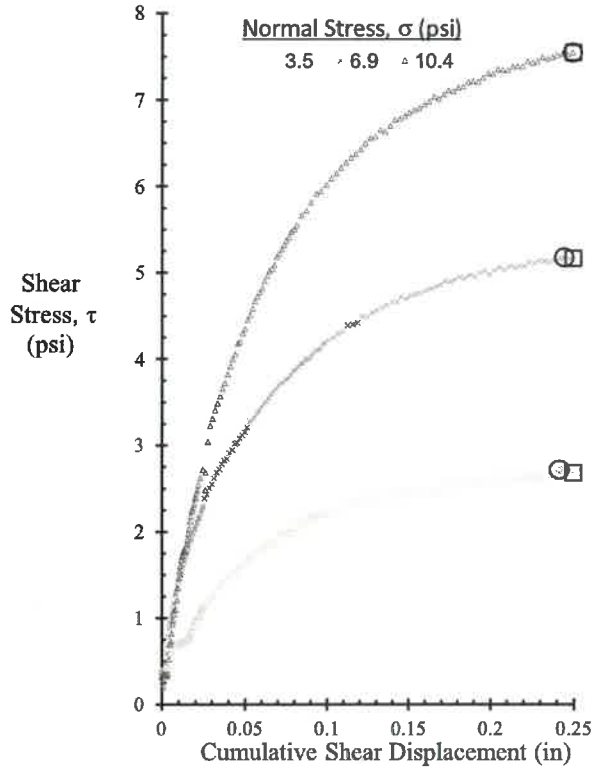
Note: The soil was air dried and passed through a No. 8 sieve to eliminate any over sized particles. The soil was moisture conditioned, allowed to equilibrate, and then adjusted according to the target gravimetric moisture content of 16.0% based on an oven dried moisture content. The specimen was then remolded into a known volume to achieve the target dry density of 104.0 pcf. A specific gravity of 2.75 was assumed for weight-volume calculations.

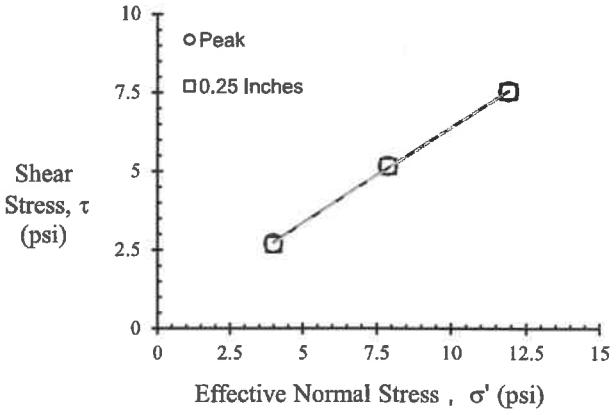
Jeffrey A. Kuhn, Ph.D., P.E., 5/13/19
Analysis & Quality Review/Date

Direct Shear of Soil Under Consolidated-Drained Conditions

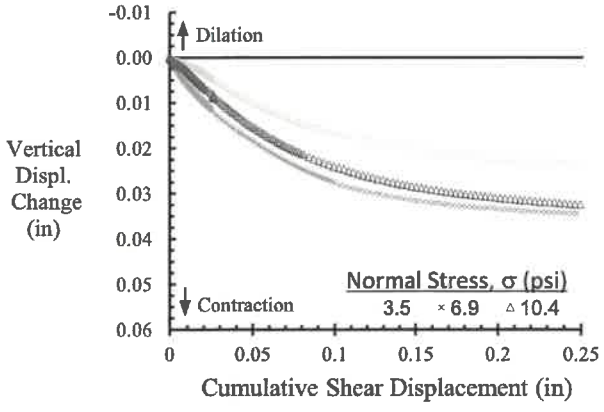
Client: GEOMAT Inc.
Project: Rincon III
Sample: Rincon III B3 High Side (0.0-15.0)

TRI Log#: 46478.1
Test Method: ASTM D3080





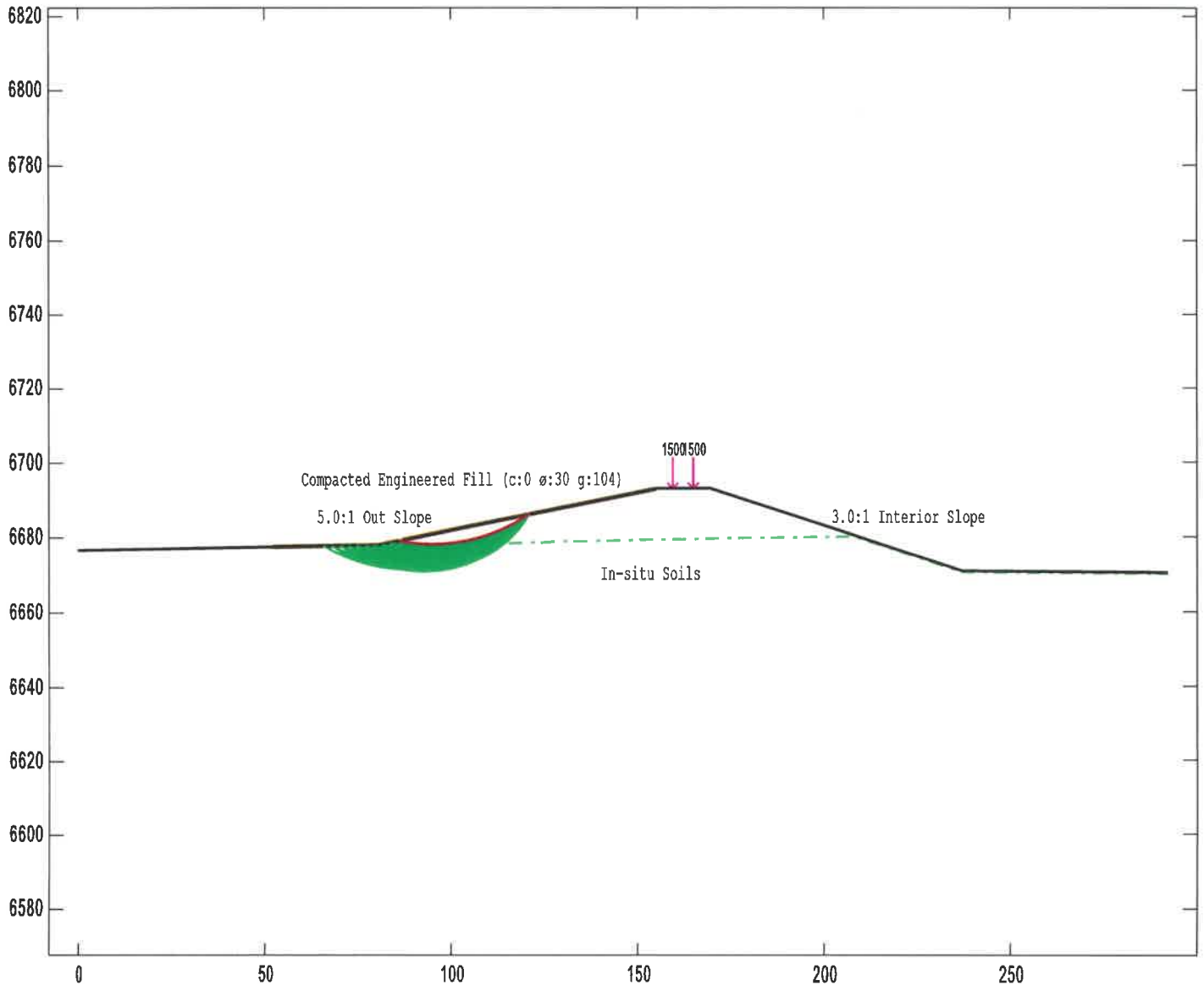
Note: Area Correction Has Been Applied



Specimen Number		1	2	3
Initial Condition	Diameter, in	2.50	2.50	2.50
	Height, in (before consol)	1.00	1.00	1.00
	Water Content, %	16.1	16.1	16.1
	Saturation, %	68.4	67.6	67.5
	Dry Density, pcf	104.2	103.7	103.6
	Void Ratio	0.65	0.66	0.66
Consolidation Stress, σ' (psi)		3.5	6.9	10.4
Post-Consol	Height, in (prior to shear)	0.97	0.94	0.92
	Dry Density, pcf	107.1	109.7	112.5
	Void Ratio	0.59	0.55	0.51
Displacement rate (in/min)		3.0E-03		
Final Water Content, %		24.0	28.9	24.3
Peak	Normal Stress, σ' (psi)	3.99	7.88	11.91
	Shear Stress, τ (psi)	2.71	5.17	7.54
	Secant Friction Angle, Degrees	34.2	33.3	32.3
	Displacement (in)	0.24	0.24	0.25
	ϕ'_d, degrees	31.4		
	c'_d, psi	0.3		
0.25 Inches	Normal Stress, σ' (psi)	4.00	7.89	11.91
	Shear Stress, τ (psi)	2.67	5.16	7.54
	Secant Friction Angle, Degrees	33.7	33.2	32.3
	ϕ'_d, degrees	31.6		
	c'_d, psi	0.2		

Note: The soil was air dried and passed through a No. 8 sieve to eliminate any over sized particles. The soil was moisture conditioned, allowed to equilibrate, and then adjusted according to the target gravimetric moisture content of 16.0% based on an oven dried moisture content. The specimen was then remolded into a known volume to achieve the target dry density of 104.0 pcf. A specific gravity of 2.75 was assumed for weight-volume calculations.

Jeffrey A. Kuhn, Ph.D., P.E., 5/13/19
Analysis & Quality Review/Date



GALENA Version 6.10

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Material Keys

Compacted berm from site mat'l

Sand /Shale Mix - Insitu Incised

Analysis 1

Multiple Stability Analysis

Method: Bishop Simplified

Surface: Circular

Results

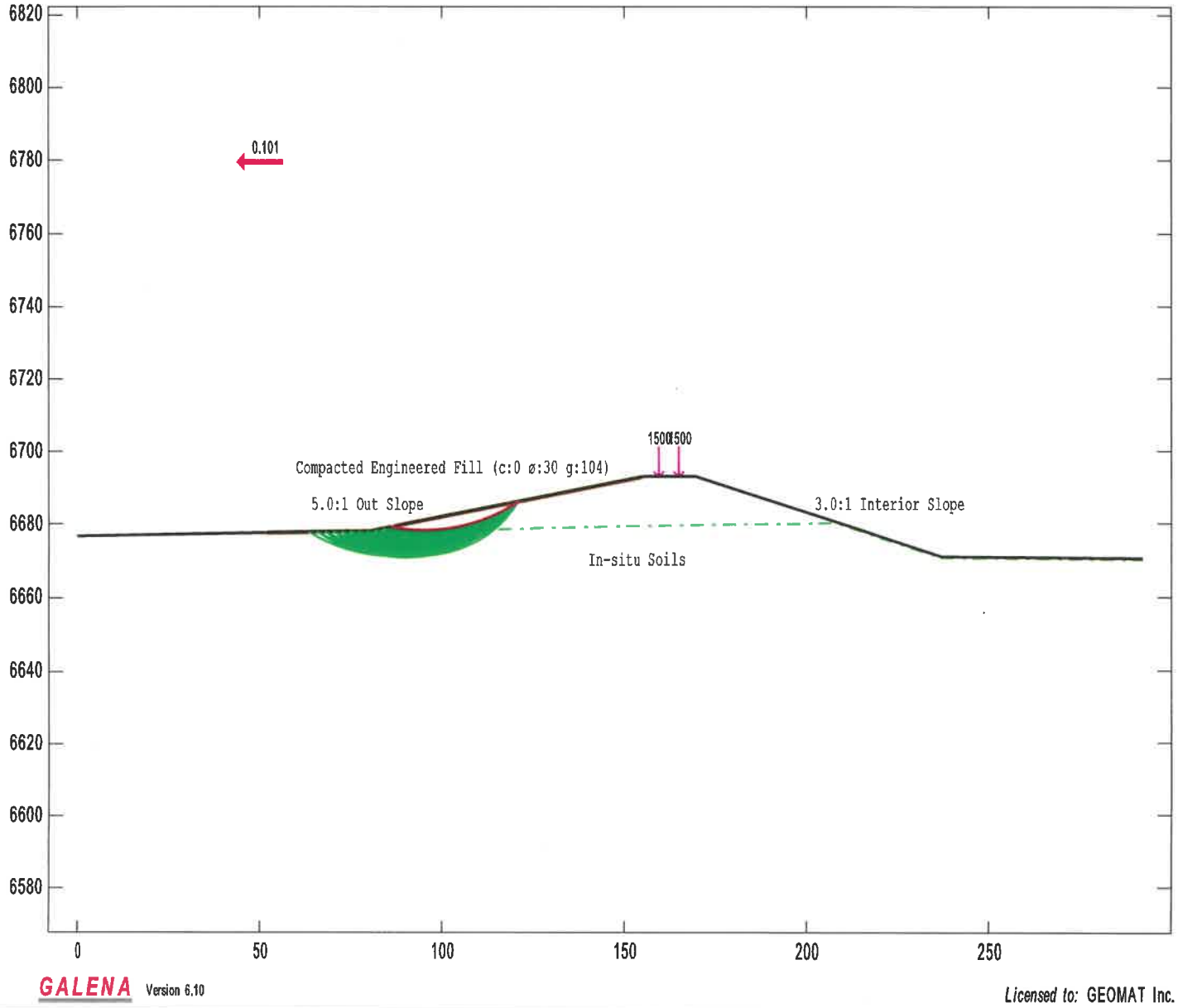
Critical Factor of Safety: 3.08

Project 192-3247 Rincon III Pond Berms
Enduring Rincon Pond - 5.0:1 Outside

File: P:\Eng\Project 2019\192-3247 Rincon III Pond\Engineering\Slope Stability\Rincon Pond RF 5.0to1 OUTSIDE.gmf

Edited: 17 May 2019
Processed: 17 May 2019

GEOMAT Inc.



GALENA Version 6.10

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Material Keys

Compacted berm from site mat'l

Sand /Shale Mix - Insitu Incised

Analysis 2

Multiple Stability Analysis

Method: Bishop Simplified

Surface: Circular

Results

Critical Factor of Safety: 2.01

Project 192-3247 Rincon III Pond Berms

Enduring Rincon Pond - 5.0:1 Outside, w/Seismic

File: P:\Eng\Project 2019\192-3247 Rincon III Pond\Engineering\Slope Stability\Rincon Pond RF 5.0to1 OUTSIDE.gmf

Edited: 17 May 2019

Processed: 17 May 2019

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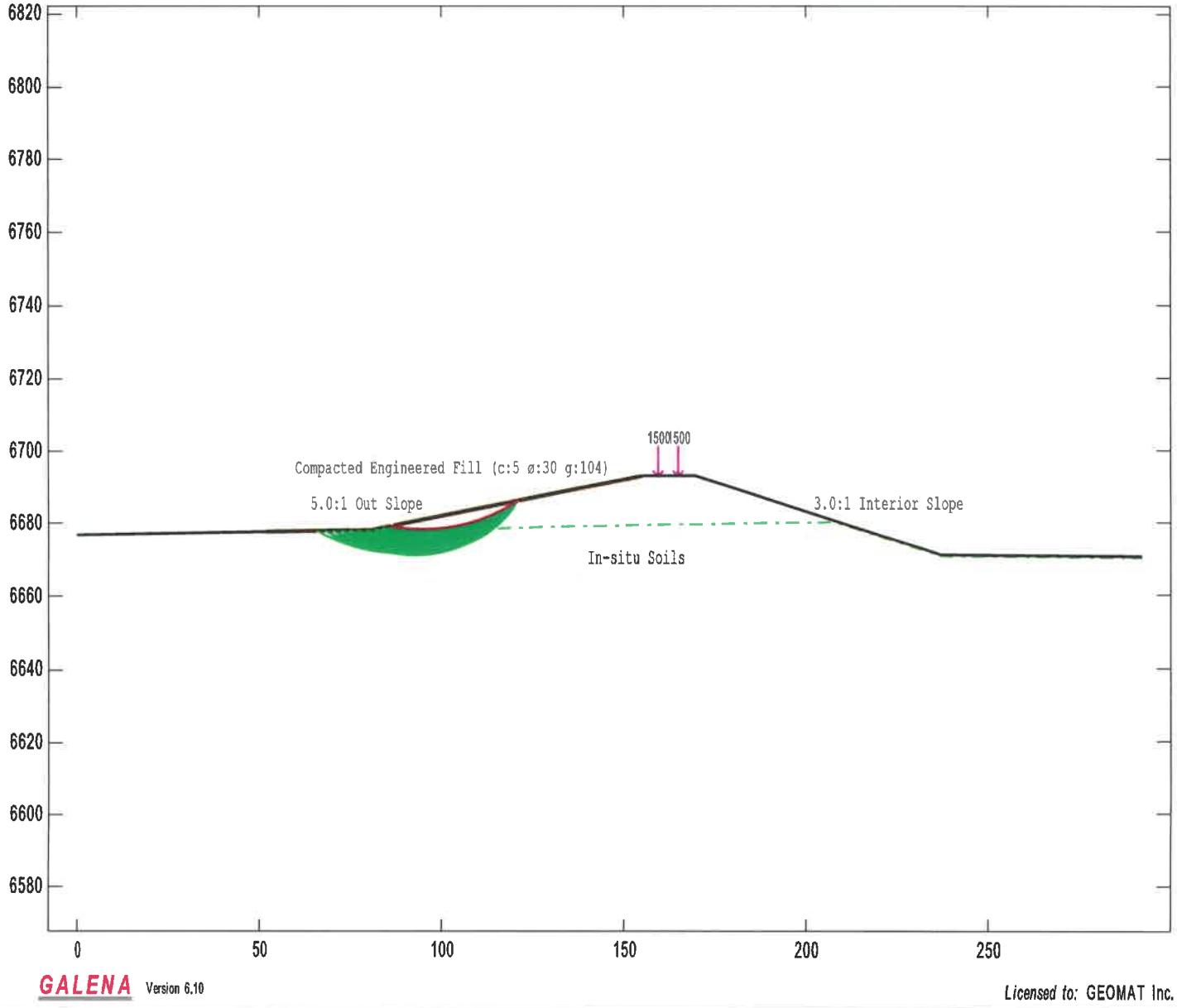

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Material Keys

Compacted berm from site mat'l

Sand /Shale Mix - Insitu Incised

Analysis 1

Multiple Stability Analysis

Method: Bishop Simplified

Surface: Circular

Results

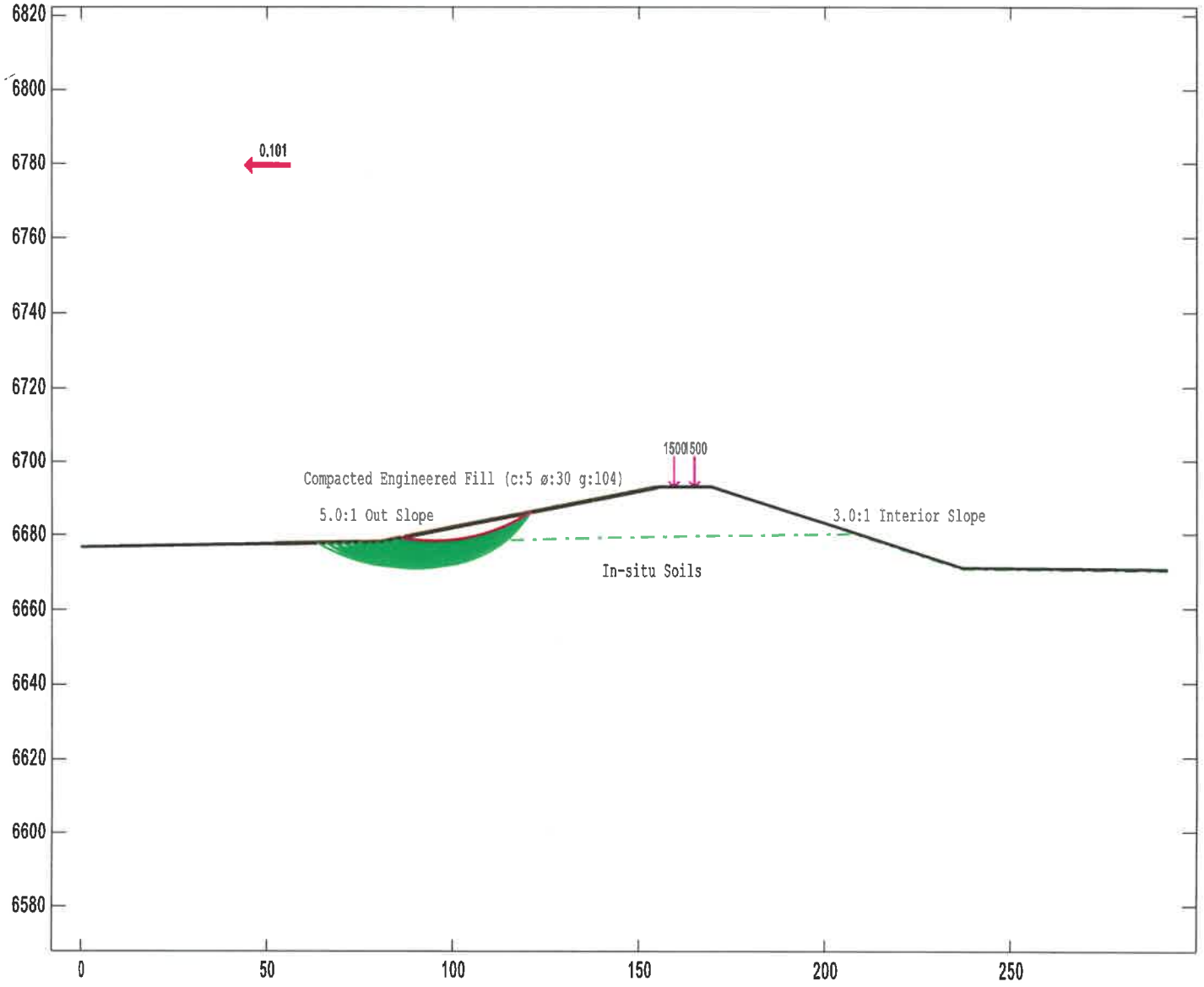
Critical Factor of Safety: 3.19

Project 192-3247 Rincon III Pond Berms
Enduring Rincon Pond - 5.0:1 Outside

File: P:\Eng\Project 2019\192-3247 Rincon III Pond\Engineering\Slope Stability\Rincon Pond RF 5.0to1 OUTSIDE C-0.gmf

Edited: 17 May 2019
Processed: 17 May 2019

GEOMAT Inc.



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Material Keys

Compacted berm from site mat'l

Sand /Shale Mix - Insitu Incised

Analysis 2

Multiple Stability Analysis

Method: Bishop Simplified

Surface: Circular

Results

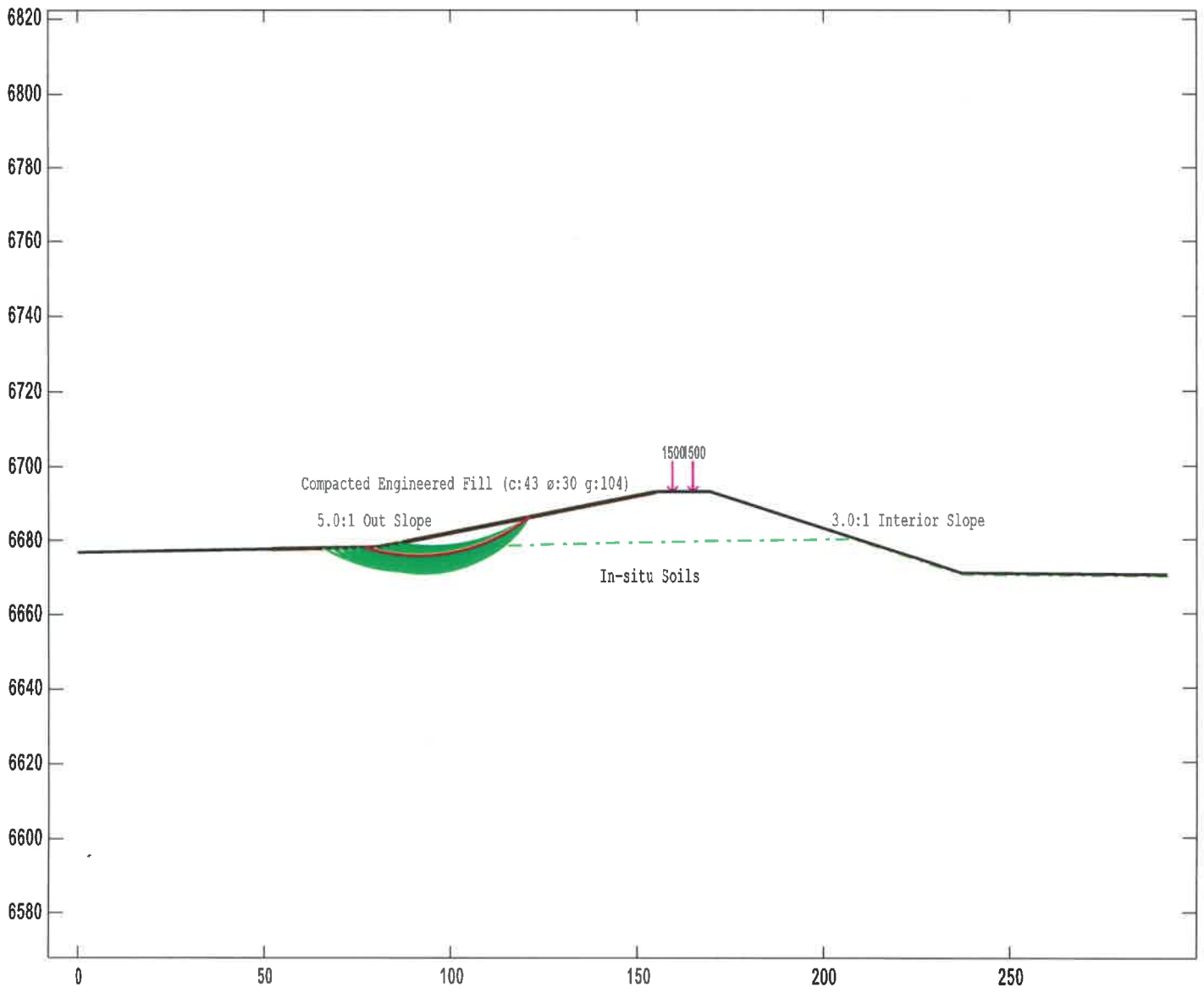
Critical Factor of Safety: 2.08

Project 192-3247 Rincon III Pond Berms
Enduring Rincon Pond - 5.0:1 Outside, w/Seismic

File: P:\Eng\Project 2019\192-3247 Rincon III Pond\Engineering\Slope Stability\Rincon Pond RF 5.0to1 OUTSIDE C-0.gmf

Edited: 17 May 2019
Processed: 17 May 2019

GEOMAT Inc.



GALENA Version 6.10

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Material Keys

Compacted berm from site mat'l

Sand /Shale Mix - Insitu Incised

Analysis 1

Multiple Stability Analysis

Method: Bishop Simplified

Surface: Circular

Results

Critical Factor of Safety: 3.49

Project 192-3247 Rincon III Pond Berms
Enduring Rincon Pond - 5.0:1 Outside

File: P:\Eng\Project 2019\192-3247 Rincon III Pond\Engineering\Slope Stability\Rincon Pond RF 5.0to1 OUTSIDE C-5.gmf

Edited: 17 May 2019
Processed: 17 May 2019

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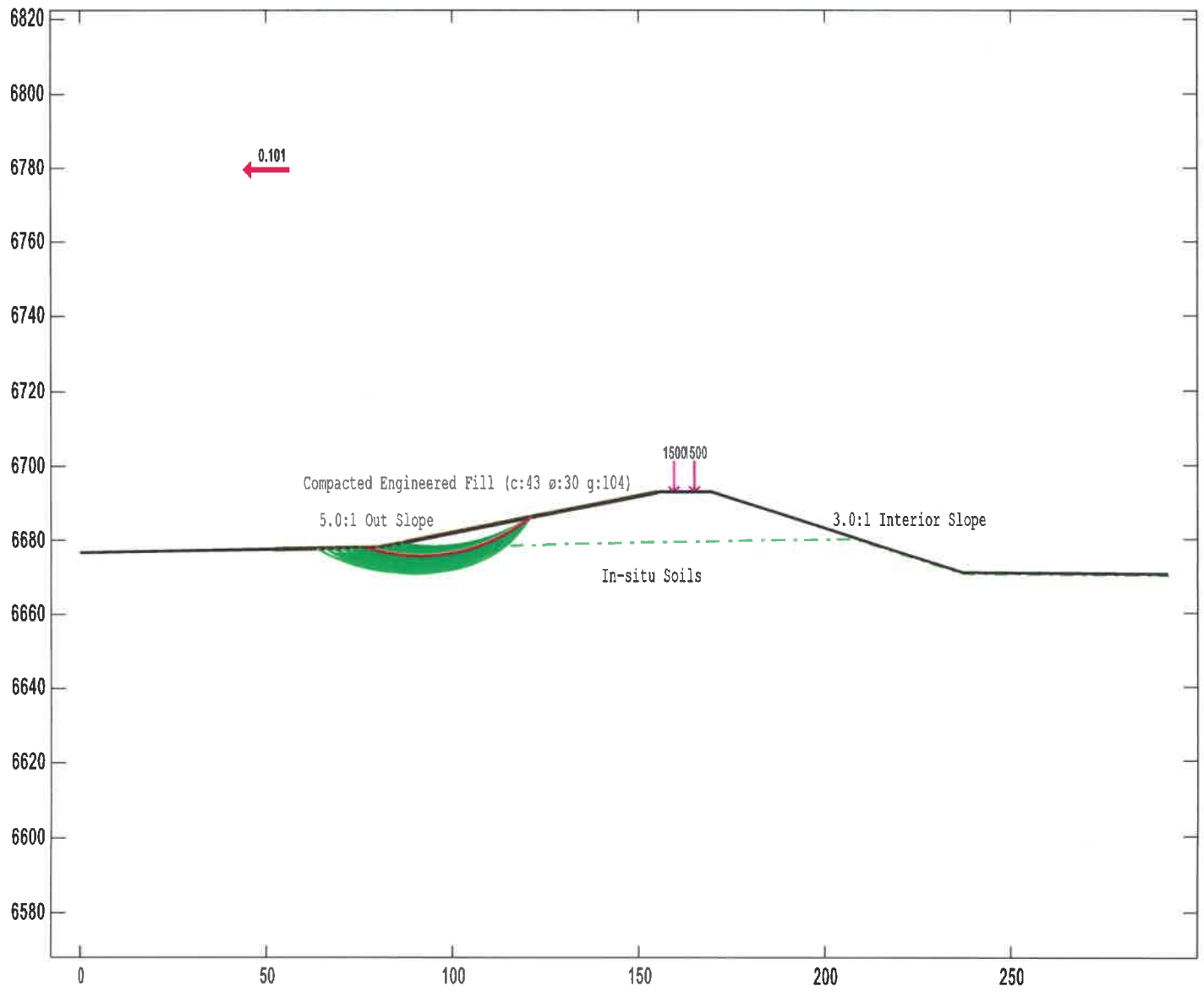

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Material Keys

Compacted berm from site mat'l

Sand /Shale Mix - Insitu Incised

Analysis 2

Multiple Stability Analysis

Method: Bishop Simplified

Surface: Circular

Results

Critical Factor of Safety: 2.26

Project 192-3247 Rincon III Pond Berms
Enduring Rincon Pond - 5.0:1 Outside, w/Seismic

File: P:\Eng\Project 2019\192-3247 Rincon III Pond\Engineering\Slope Stability\Rincon Pond RF 5.0to1 OUTSIDE C-5.gmf

Edited: 17 May 2019
Processed: 17 May 2019

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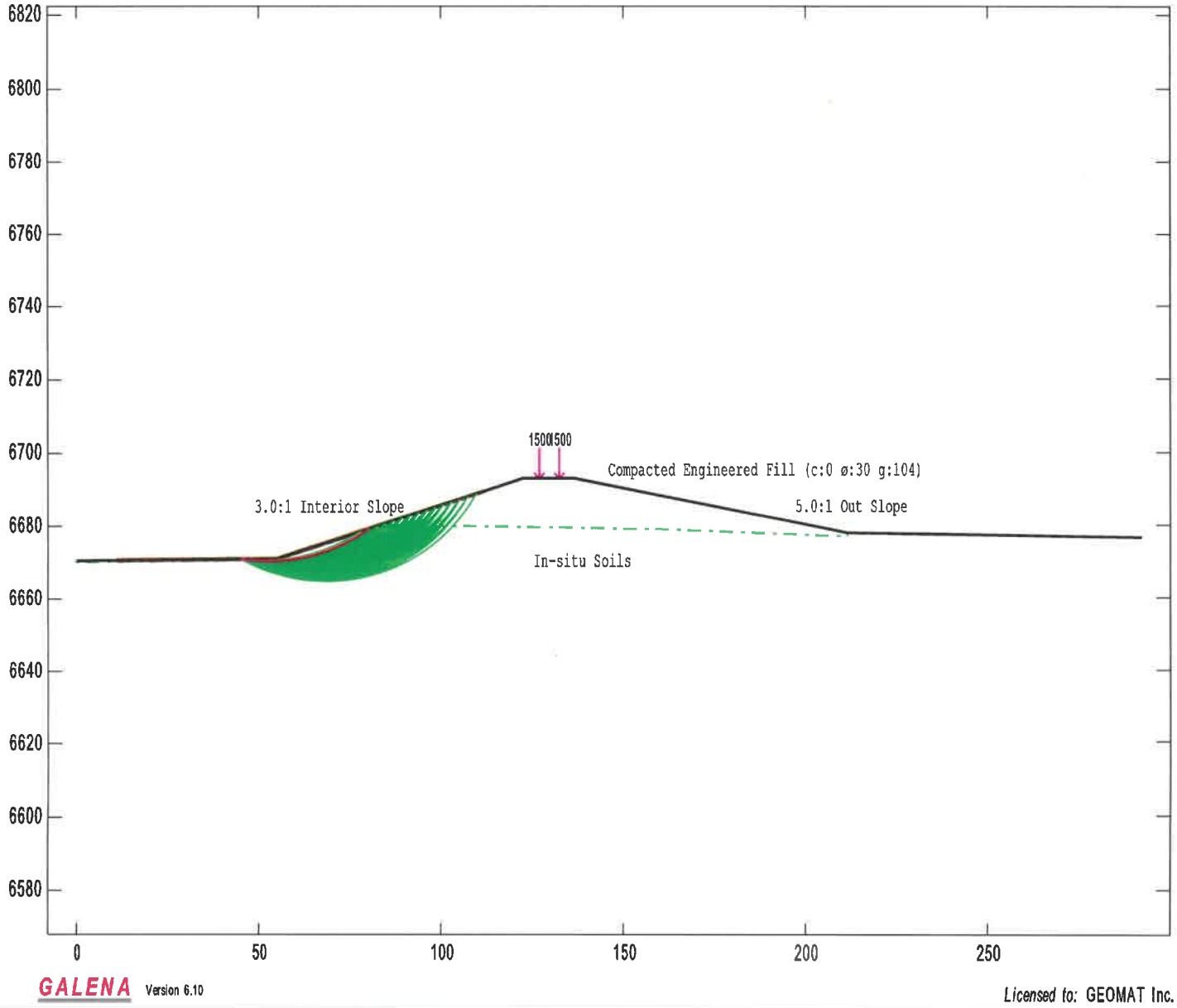

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Material Keys

Compacted berm from site mat'l

Sand /Shale Mix - Insitu Incised

Analysis 1

Multiple Stability Analysis

Method: Bishop Simplified

Surface: Circular

Results

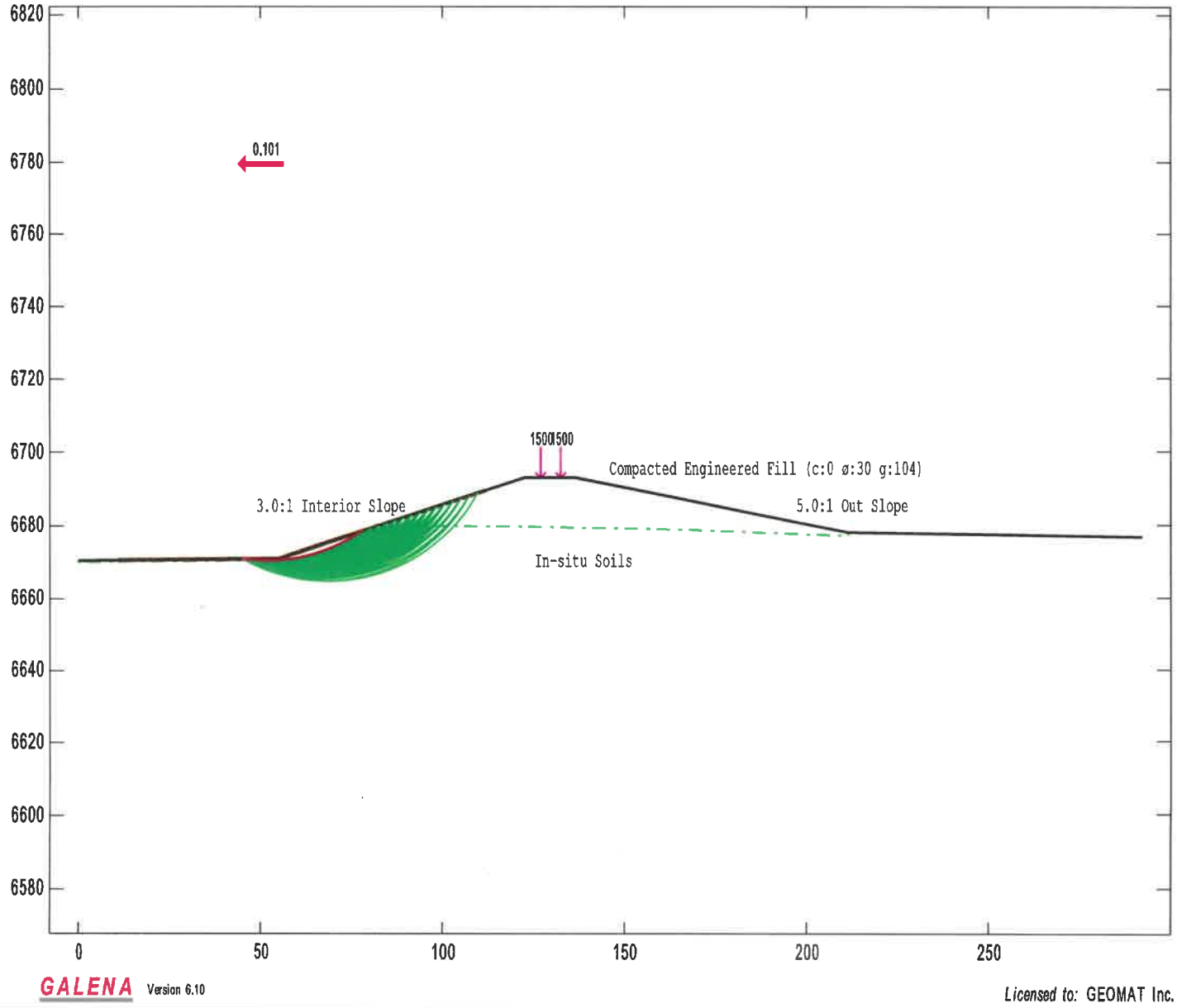
Critical Factor of Safety: 2.08

Project 192-3247 Rincon III Pond INSIDE Berm
Enduring Rincon Pond - 3.0:1 INSIDE

File: P:\Eng\Project 2019\192-3247 Rincon III Pond\Engineering\Slope Stability\Rincon Pond RF 3.0to1 INTERIOR.gmf

Edited: 17 May 2019
Processed: 17 May 2019

GEOMAT Inc.



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Material Keys

Compacted berm from site mat'l

Sand /Shale Mix - Insitu Incised

Analysis 2

Multiple Stability Analysis

Method: Bishop Simplified

Surface: Circular

Results

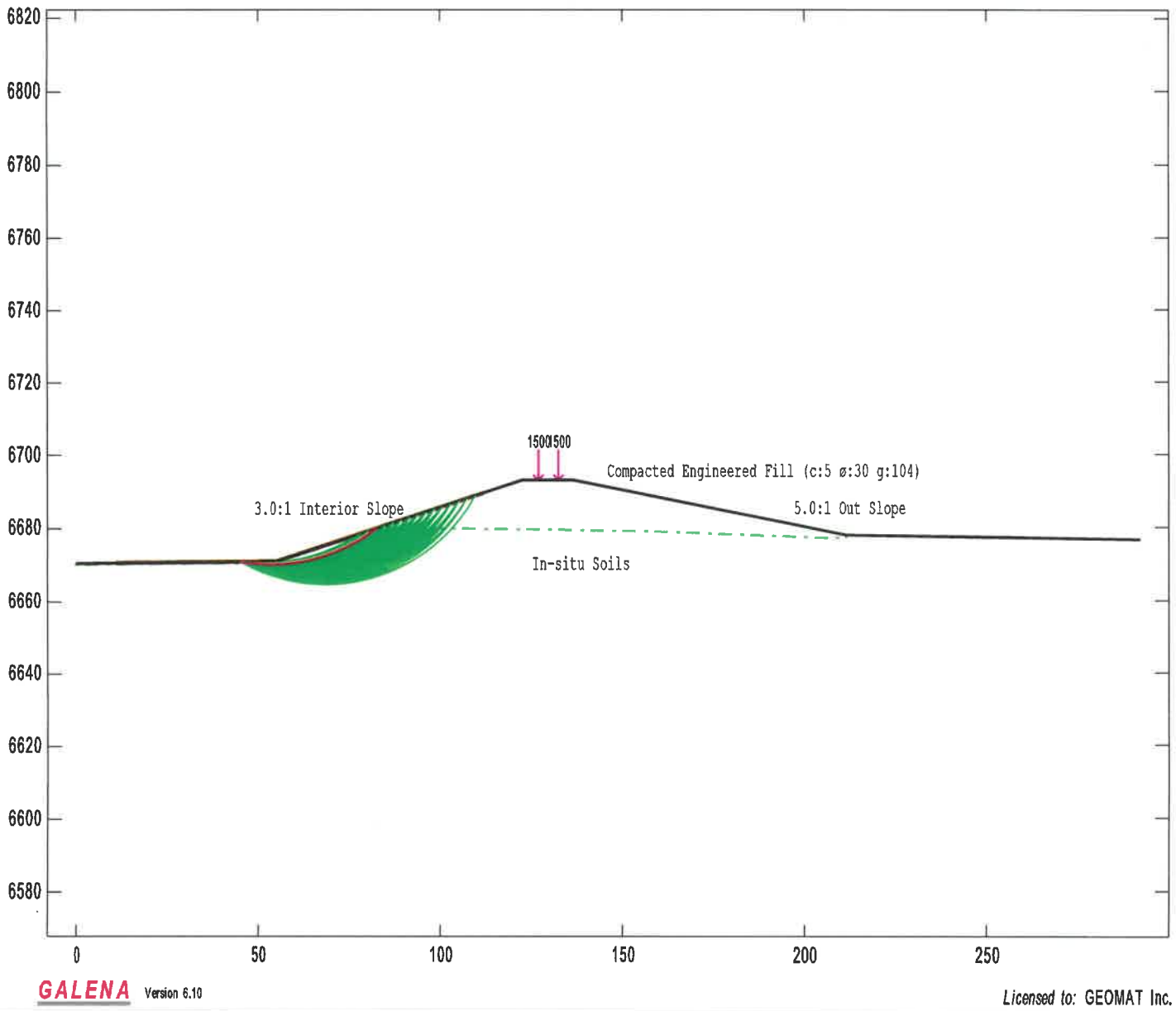
Critical Factor of Safety: 1.50

Project 192-3247 Rincon III Pond INSIDE Berm
Enduring Rincon Pond - 3.0:1 INSIDE w/Seismic

File: P:\Eng\Project 2019\192-3247 Rincon III Pond\Engineering\Slope Stability\Rincon Pond RF 3.0to1 INTERIOR.gmf

Edited: 17 May 2019
Processed: 17 May 2019

GEOMAT Inc.



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Material Keys

Compacted berm from site mat'l

Sand /Shale Mix - Insitu Incised

Analysis 1

Multiple Stability Analysis

Method: Bishop Simplified

Surface: Circular

Results

Critical Factor of Safety: 2.10

Project 192-3247 Rincon III Pond INSIDE Berm
Enduring Rincon Pond - 3.0:1 INSIDE

File: P:\Eng\Project 2019\192-3247 Rincon III Pond\Engineering\Slope Stability\Rincon Pond RF 3.0to1 INTERIOR C-0.gmf

Edited: 17 May 2019
Processed: 17 May 2019

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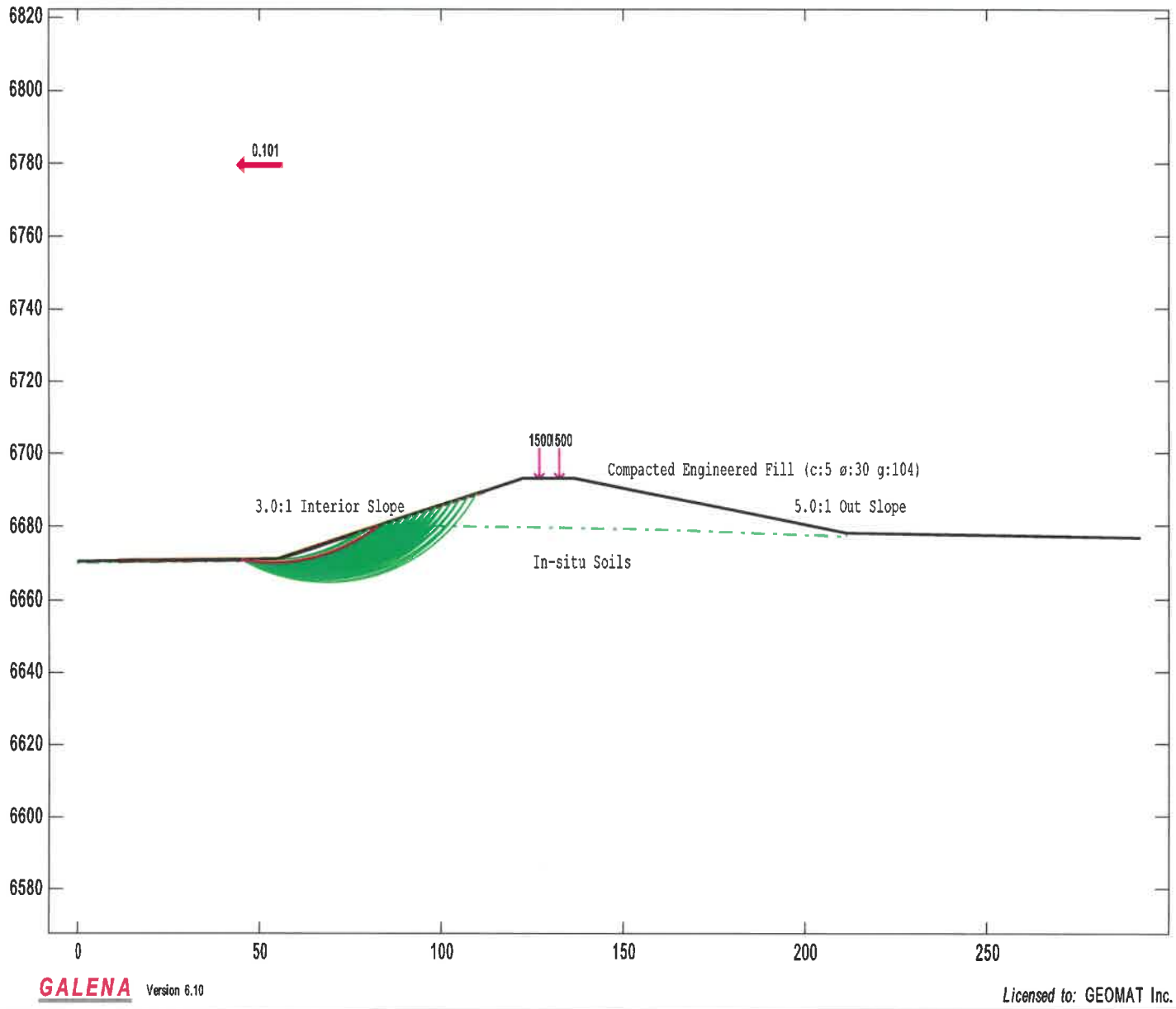

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Material Keys

Compacted berm from site mat'l

Sand /Shale Mix - Insitu Incised

Analysis 2

Multiple Stability Analysis

Method: Bishop Simplified

Surface: Circular

Results

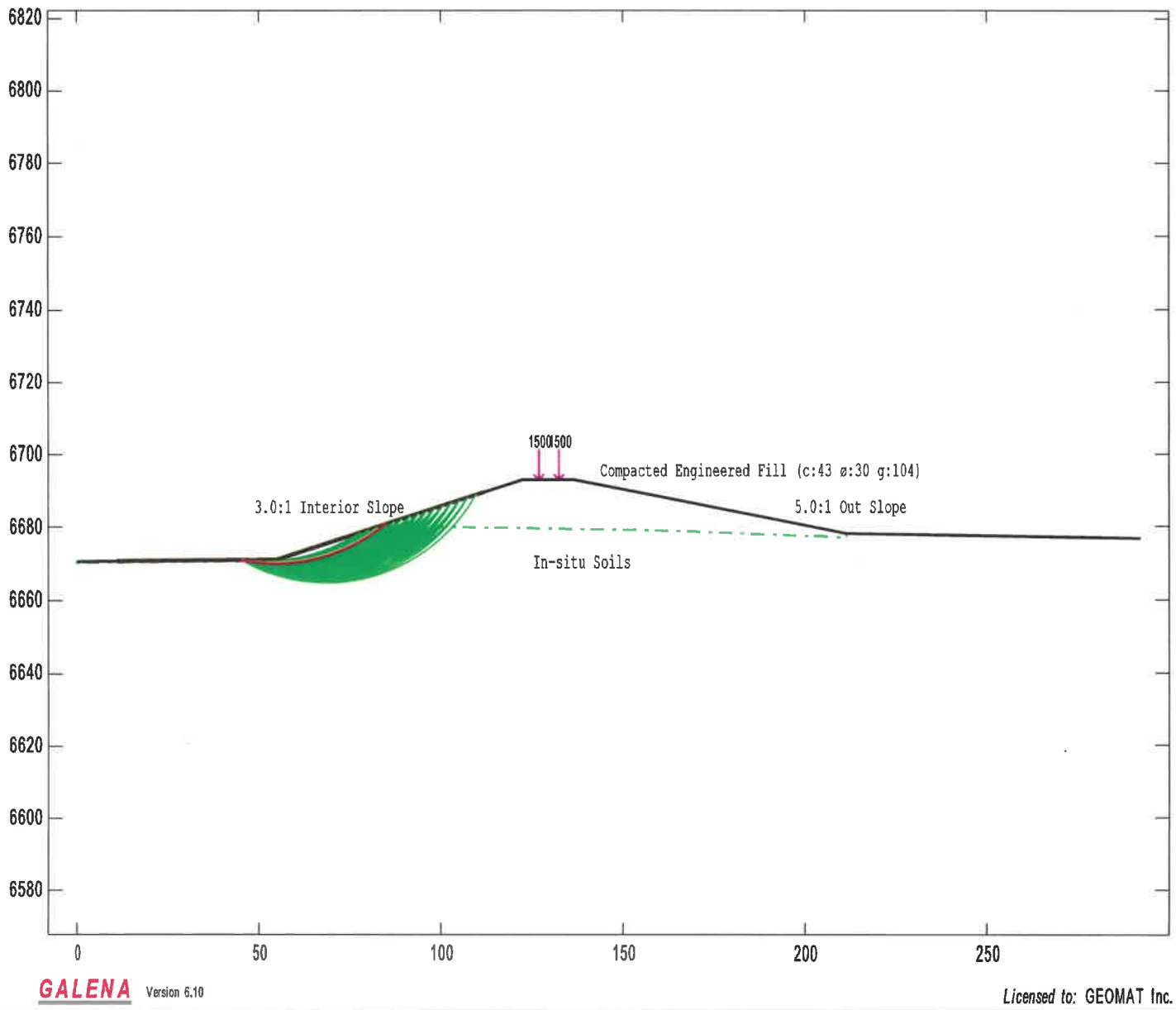
Critical Factor of Safety: 1.52

Project 192-3247 Rincon III Pond INSIDE Berm
Enduring Rincon Pond - 3.0:1 INSIDE w/Seismic

File: P:\Eng\Project 2019\192-3247 Rincon III Pond\Engineering\Slope Stability\Rincon Pond RF 3.0to1 INTERIOR C-0.gmf

Edited: 17 May 2019
Processed: 17 May 2019

GEOMAT Inc.



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Material Keys

Compacted berm from site mat'l

Sand /Shale Mix - Insitu Incised

Analysis 1

Multiple Stability Analysis

Method: Bishop Simplified

Surface: Circular

Results

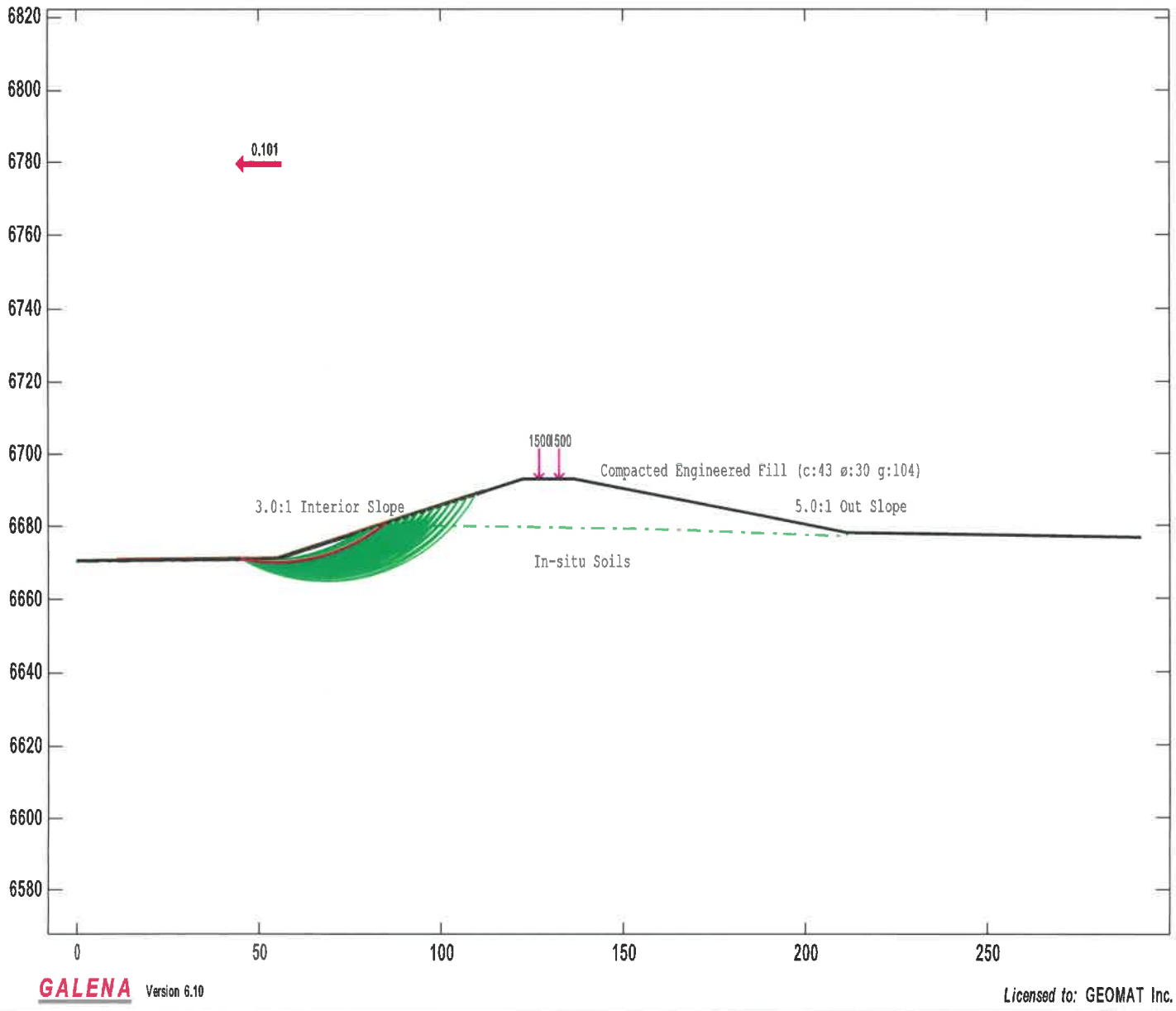
Critical Factor of Safety: 2.16

Project 192-3247 Rincon III Pond INSIDE Berm
Enduring Rincon Pond - 3.0:1 INSIDE

File: P:\Eng\Project 2019\192-3247 Rincon III Pond\Engineering\Slope Stability\Rincon Pond RF 3.0to1 INTERIOR C-5.gmf

Edited: 17 May 2019
Processed: 17 May 2019

GEOMAT Inc.



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Material Keys

Compacted berm from site mat'l

Sand /Shale Mix - Insitu Incised

Analysis 2

Multiple Stability Analysis

Method: Bishop Simplified

Surface: Circular

Results

Critical Factor of Safety: 1.57

Project 192-3247 Rincon III Pond INSIDE Berm
Enduring Rincon Pond - 3.0:1 INSIDE w/Seismic

File: P:\Eng\Project 2019\192-3247 Rincon III Pond\Engineering\Slope Stability\Rincon Pond RF 3.0to1 INTERIOR C-5.gmf

Edited: 17 May 2019
Processed: 17 May 2019

GEOMAT INC.

GEOMAT INC.
915 Malta Avenue ◆ Farmington, NM 87401 ◆ Tel (505) 327-7928 ◆ Fax (505) 326-5721

Spreadsheet: Documentation of Seismic Coefficient for Galena Slope Stability

Project Name: Rincon III
Date: 13-May-19
Operator: R. Flegal

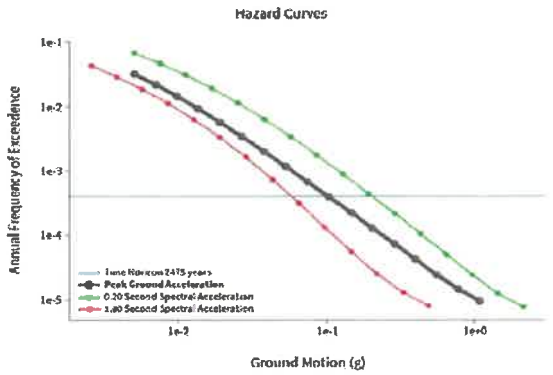
Conterminous 48 States
USGS Unified Hazard Tool: U.S. 2014 (v4.0.x)
Uniform Hazard Spectrum (UHS) fro 2% in 50 years
https://earthquake.usgs.gov/hazards/interactive/

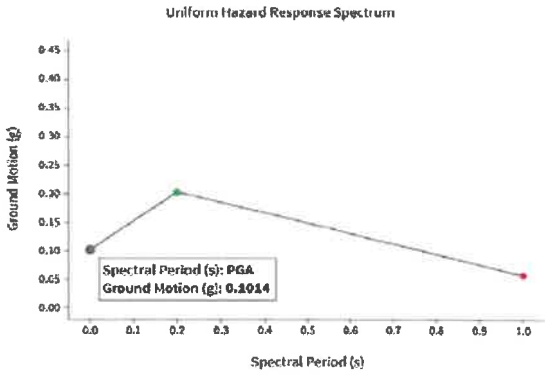
182-2992
36.539671°, -107.490588°

Peak Ground Acceleration
B/C boundary

From the resulting graph of data -
This value is used in Galena
Peak Earthquake Coefficient: 0.1014 g

Hazard Curve





View Raw Data

Appendix C

Important Information about This

Geotechnical-Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

The Geoprofessional Business Association (GBA) has prepared this advisory to help you – assumedly a client representative – interpret and apply this geotechnical-engineering report as effectively as possible. In that way, clients can benefit from a lowered exposure to the subsurface problems that, for decades, have been a principal cause of construction delays, cost overruns, claims, and disputes. If you have questions or want more information about any of the issues discussed below, contact your GBA-member geotechnical engineer. Active involvement in the Geoprofessional Business Association exposes geotechnical engineers to a wide array of risk-confrontation techniques that can be of genuine benefit for everyone involved with a construction project.

Geotechnical-Engineering Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical-engineering study conducted for a given civil engineer will not likely meet the needs of a civil-works constructor or even a different civil engineer. Because each geotechnical-engineering study is unique, each geotechnical-engineering report is unique, prepared *solely* for the client. *Those who rely on a geotechnical-engineering report prepared for a different client can be seriously misled.* No one except authorized client representatives should rely on this geotechnical-engineering report without first conferring with the geotechnical engineer who prepared it. *And no one – not even you – should apply this report for any purpose or project except the one originally contemplated.*

Read this Report in Full

Costly problems have occurred because those relying on a geotechnical-engineering report did not read it *in its entirety*. Do not rely on an executive summary. Do not read selected elements only. *Read this report in full.*

You Need to Inform Your Geotechnical Engineer about Change

Your geotechnical engineer considered unique, project-specific factors when designing the study behind this report and developing the confirmation-dependent recommendations the report conveys. A few typical factors include:

- the client's goals, objectives, budget, schedule, and risk-management preferences;
- the general nature of the structure involved, its size, configuration, and performance criteria;
- the structure's location and orientation on the site; and
- other planned or existing site improvements, such as retaining walls, access roads, parking lots, and underground utilities.

Typical changes that could erode the reliability of this report include those that affect:

- the site's size or shape;
- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light-industrial plant to a refrigerated warehouse;
- the elevation, configuration, location, orientation, or weight of the proposed structure;
- the composition of the design team; or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes – even minor ones – and request an assessment of their impact. *The geotechnical engineer who prepared this report cannot accept responsibility or liability for problems that arise because the geotechnical engineer was not informed about developments the engineer otherwise would have considered.*

This Report May Not Be Reliable

Do not rely on this report if your geotechnical engineer prepared it:

- for a different client;
- for a different project;
- for a different site (that may or may not include all or a portion of the original site); or
- before important events occurred at the site or adjacent to it; e.g., man-made events like construction or environmental remediation, or natural events like floods, droughts, earthquakes, or groundwater fluctuations.

Note, too, that it could be unwise to rely on a geotechnical-engineering report whose reliability may have been affected by the passage of time, because of factors like changed subsurface conditions; new or modified codes, standards, or regulations; or new techniques or tools. *If your geotechnical engineer has not indicated an "apply-by" date on the report, ask what it should be*, and, in general, *if you are the least bit uncertain* about the continued reliability of this report, contact your geotechnical engineer before applying it. A minor amount of additional testing or analysis – if any is required at all – could prevent major problems.

Most of the "Findings" Related in This Report Are Professional Opinions

Before construction begins, geotechnical engineers explore a site's subsurface through various sampling and testing procedures. *Geotechnical engineers can observe actual subsurface conditions only at those specific locations where sampling and testing were performed.* The data derived from that sampling and testing were reviewed by your geotechnical engineer, who then applied professional judgment to form opinions about subsurface conditions throughout the site. Actual sitewide-subsurface conditions may differ – maybe significantly – from those indicated in this report. Confront that risk by retaining your geotechnical engineer to serve on the design team from project start to project finish, so the individual can provide informed guidance quickly, whenever needed.

This Report's Recommendations Are Confirmation-Dependent

The recommendations included in this report – including any options or alternatives – are confirmation-dependent. In other words, *they are not final*, because the geotechnical engineer who developed them relied heavily on judgment and opinion to do so. Your geotechnical engineer can finalize the recommendations *only after observing actual subsurface conditions* revealed during construction. If through observation your geotechnical engineer confirms that the conditions assumed to exist actually do exist, the recommendations can be relied upon, assuming no other changes have occurred. *The geotechnical engineer who prepared this report cannot assume responsibility or liability for confirmation-dependent recommendations if you fail to retain that engineer to perform construction observation.*

This Report Could Be Misinterpreted

Other design professionals' misinterpretation of geotechnical-engineering reports has resulted in costly problems. Confront that risk by having your geotechnical engineer serve as a full-time member of the design team, to:

- confer with other design-team members,
- help develop specifications,
- review pertinent elements of other design professionals' plans and specifications, and
- be on hand quickly whenever geotechnical-engineering guidance is needed.

You should also confront the risk of constructors misinterpreting this report. Do so by retaining your geotechnical engineer to participate in prebid and preconstruction conferences and to perform construction observation.

Give Constructors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can shift unanticipated-subsurface-conditions liability to constructors by limiting the information they provide for bid preparation. To help prevent the costly, contentious problems this practice has caused, include the complete geotechnical-engineering report, along with any attachments or appendices, with your contract documents, *but be certain to note conspicuously that you've included the material for informational purposes only.* To avoid misunderstanding, you may also want to note that "informational purposes" means constructors have no right to rely on the interpretations, opinions, conclusions, or recommendations in the report, but they may rely on the factual data relative to the specific times, locations, and depths/elevations referenced. Be certain that constructors know they may learn about specific project requirements, including options selected from the report, *only* from the design drawings and specifications. Remind constructors that they may perform their own studies if they want to, and *be sure to allow enough time* to permit them to do so. Only then might you be in a position to give constructors the information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions. Conducting prebid and preconstruction conferences can also be valuable in this respect.

Read Responsibility Provisions Closely

Some client representatives, design professionals, and constructors do not realize that geotechnical engineering is far less exact than other engineering disciplines. That lack of understanding has nurtured unrealistic expectations that have resulted in disappointments, delays, cost overruns, claims, and disputes. To confront that risk, geotechnical engineers commonly include explanatory provisions in their reports. Sometimes labeled "limitations," many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

Geoenvironmental Concerns Are Not Covered

The personnel, equipment, and techniques used to perform an environmental study – e.g., a "phase-one" or "phase-two" environmental site assessment – differ significantly from those used to perform a geotechnical-engineering study. For that reason, a geotechnical-engineering report does not usually relate any environmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated subsurface environmental problems have led to project failures.* If you have not yet obtained your own environmental information, ask your geotechnical consultant for risk-management guidance. As a general rule, *do not rely on an environmental report prepared for a different client, site, or project, or that is more than six months old.*

Obtain Professional Assistance to Deal with Moisture Infiltration and Mold

While your geotechnical engineer may have addressed groundwater, water infiltration, or similar issues in this report, none of the engineer's services were designed, conducted, or intended to prevent uncontrolled migration of moisture – including water vapor – from the soil through building slabs and walls and into the building interior, where it can cause mold growth and material-performance deficiencies. Accordingly, ***proper implementation of the geotechnical engineer's recommendations will not of itself be sufficient to prevent moisture infiltration.*** Confront the risk of moisture infiltration by including building-envelope or mold specialists on the design team. ***Geotechnical engineers are not building-envelope or mold specialists.***

GEOPROFESSIONAL BUSINESS ASSOCIATION

Telephone: 301/565-2733
e-mail: info@geoprofessional.org www.geoprofessional.org