October 2018

C-147 Registration Package for Estelle Recycling Containment and Recycling Facility Sections 33 & 34, T24-S, R35-E, Lea County

View to west at eastern edge of proposed Estelle produced water containment showing low dunes stabilized by vegetation.

Prepared for:
TAP ROCK OPERATING, LLC
602 Park Point Drive
Golden, CO 80401

Prepared by:
R.T. Hicks Consultants, Ltd.
901 Rio Grande NW F-142
Albuquerque, New Mexico

R. T. HICKS CONSULTANTS, LTD.

901 Rio Grande Blvd NW ▲ Suite F-142 ▲ Albuquerque, NM 87104 ▲ 505.266.5004 ▲ Fax: 505.266-0745
Artesia ▲ Carlsbad ▲ Durango ▲ Midland

October 3, 2018

Ms. Olivia Yu
Mr. Bradford Billings
NMOCD District
1625 French Drive
Hobbs, NM 88240
Via E-Mail

RE: Tap Rock Resources, LLD – Estelle Containment

Dear Ms. Yu and Mr. Billings:

On behalf of Tap Rock Resources , Hicks Consultants submits the attached registration. The package follows the order of Form 147 to allow for an easier review. Initial construction commenced last week and lining of the containment should occur in the middle of this month.

No variances from the Rule are necessary and this submittal demonstrates compliance with all mandates of the Rule for the containment. Since the recycling facility meets the criteria of 19.15.34.9.B.7, the facility also requires a registration. Thus, the Rule does not require approval by OCD in advance of using the containment. However, we understand that OCD desires to track the containments in New Mexico that do not employ the specific words or numerical values in the Rule. To that end, the C-147 shows that the "permit" box is checked as is the "variance" box.

This submission refers to the following elements that, for the purpose of OCD statistics, would be listed as variances:

1. An equivalency demonstration written by experts for the proposed 40-mil HDPE secondary liner, which has been previously approved by OCD. We maintain that the language of the Rule is clear[1] and a variance is not required. For OCD statistics, this would be considered a variance. The previously-submitted demonstration is lengthy and we can submit it under separate cover if requested by OCD.
2. OCD has approved the proposed Avian Protection Plan (Bird-X Mega Blaster Pro) for other containments. Thus, the plan meets the requirement of the rule that the "otherwise protective of wildlife, including migratory birds" and a variance is not required. For OCD statistics, this would be considered a variance. Specifications for the MegaBlaster Pro can be provided in a separate transmission.
3. Using a 6-foot high chain link and/or game fence in lieu of a 4-strand barbed wire fence is not a variance. Because feral pigs, javelena and deer are present in the area, a fence is required in order to comply with Section 19.15.34.12 D.1 of the Rule[2]. The specification for fencing provided in 19.15.34.12 D.2 contradicts D.1 because pigs will move beneath the lower strand of a 4-strand, 4-foot high barbed wire fence and deer will jump over. Thus, compliance with D.2 results in a violation of D.1. We maintain that compliance with D.1 is the critical component of the Rule and operators need not be required to submit a variance request in

[1] Secondary liners shall be 30-mil LLDPE string reinforced or equivalent with a hydraulic conductivity no greater than 1 x 10-9 cm/sec

[2] The operator shall fence or enclose a recycling containment in a manner that deters unauthorized wildlife and human access and shall maintain the fences in good repair.

order to follow Best Management Practices and comply with the Rule. For OCD statistics, employing a game fence or 6-foot high chain link fence would be considered a variance.

Site specific information demonstrates compliance with siting criteria for the location.

In compliance with 19.15.34.10 of the Rule, this submission is copied to the New Mexico Ten LLP who is the surface owner of the surface upon which the containment will be constructed.

If you have any questions or concerns regarding this registration or the attached C-147, please contact me. As always, we appreciate your work ethic and attention to detail.

Sincerely,
R.T. Hicks Consultants

Randall Hicks
Principal

Copy: Tap Rock Resources, LLD
New Mexico Ten LLP, texastenpb@gmail.com

C-147

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

Recycling Facility and/or Recycling Containment

Type of Facility: ☒ Recycling Facility ☒ Recycling Containment*****

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

*** 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: : Tap Rock Resources, LLC, OGRID #:__372043_____

Address: ___602 Park Point Drive, Suite 200, Golden, CO 80401 _____

Facility or well name (include API# if associated with a well): ____Estelle Containment_____

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

U/L or Qtr/Qtr ____ _____ Section ___15-16_____ Township __24S_____ Range ____33E_____ County: ____Lea_____

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

2.

☒ **Recycling Facility:**

Location of (if applicable): Latitude _32.17474_____ Longitude -103.36422___ 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 _32.17580_____ Longitude __-103.36422__ NAD83

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

☒ Lined ☐ Liner type: Thickness __Secondary 40_mil Primary 60 mil ☐ LLDPE ☒ HDPE ☐ PVC ☐ Other _____

☐ String-Reinforced

Liner Seams: ☒ Welded ☐ Factory ☐ Other ___ Volume: _592,764_bbl Dimensions: L__491_ x W 497__ x D_22' below levee__14' (below grade)

☐ Recycling Containment Closure Completion Date:_____

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__Game fence or chain link _____

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. BOX CHECKED FOR OCD STATISTICS ONLY.

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 FIGURES 1-2	☐ 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 FIGURE 3	☐ Yes ☒ No ☐ NA
Within the area overlying a subsurface mine. - Written confirmation or verification or map from the NM EMNRD-Mining and Minerals Division FIGURE 4	☐ Yes ☒ No
Within an unstable area. - Engineering measures incorporated into the design; NM Bureau of Geology & Mineral Resources; USGS; NM Geological Society; topographic map FIGURE 5	☐ Yes ☒ No
Within a 100-year floodplain. FEMA map FIGURE 6	☐ 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 FIGURE 7	☐ 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 FIGURE 8	☐ 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. FIGURES 1 and 7 - NM Office of the State Engineer - iWATERS database search; visual inspection (certification) of the proposed site	☐ Yes ☒ No
Within 500 feet of a wetland. FIGURE 9 - 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): Josh Mathews Title: Operations Engineer

Signature: Josh Mathews Date: October 3, 2018

e-mail address jmathews@taprk.com Telephone: 720-460-3318

11.

OCD Representative Signature: [signature] **Approval Date:** 24Oct18

Title: Hydrologist **OCD Permit Number:**

☒ OCD Conditions limit volume of containment to 467,069 bbls to provide three feet of freeboard

☐ Additional OCD Conditions on Attachment

SURVEY FOR CONTAINMENT AND RECYCLING FACILITY

2.

☒ **Recycling Facility:**

Location of (if applicable): Latitude _____ Longitude ___ NAD83

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

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☐ 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.*

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☐ 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:_____

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☒ **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 _32.17580_____ Longitude __-103.36422__ NAD83

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☒ Lined ☐ Liner type: Thickness __Secondary 40_mil Primary 60 mil ☐ LLDPE ☒ HDPE ☐ PVC ☐ Other _____

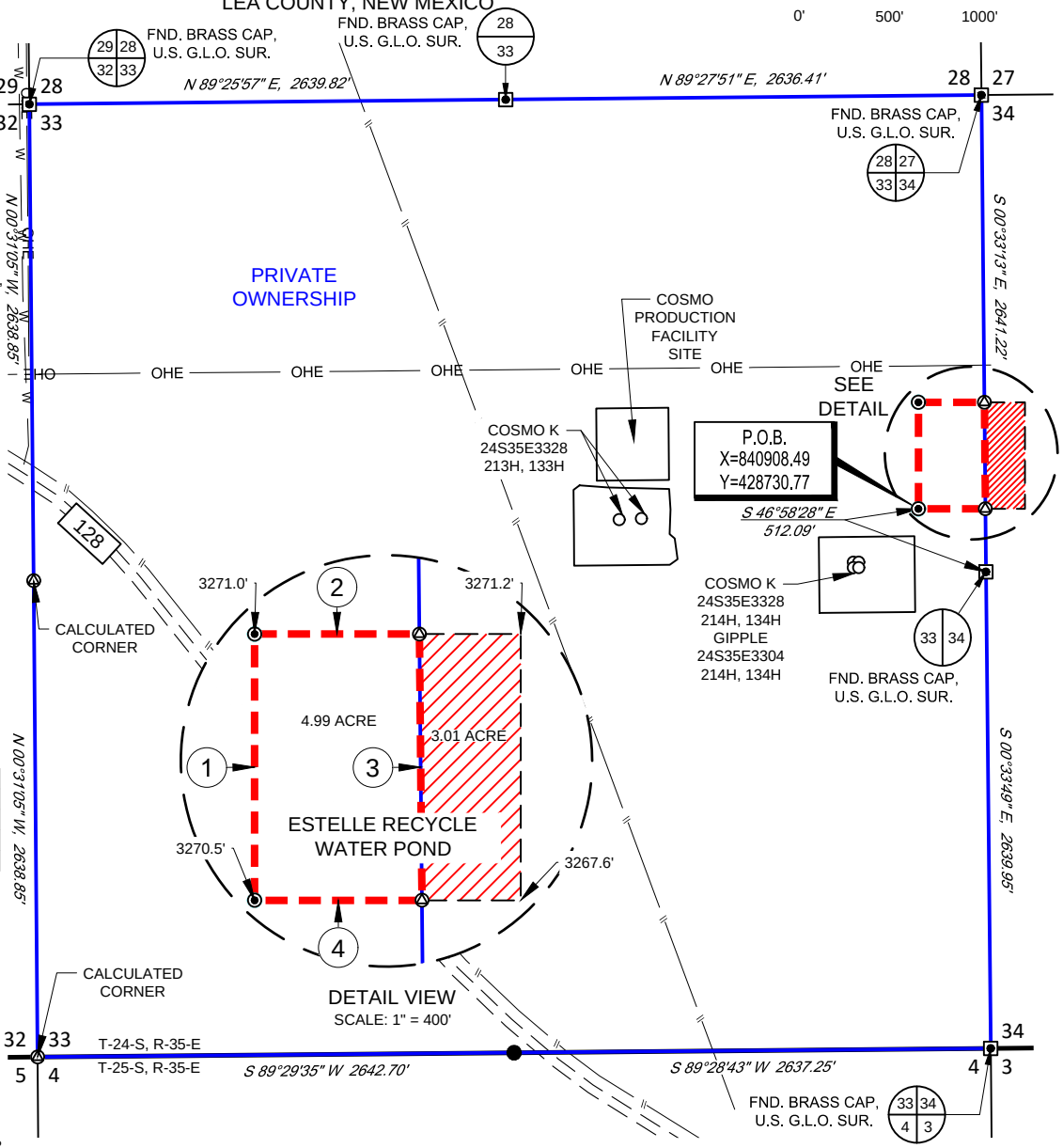
☐ String-Reinforced

Liner Seams: ☒ Welded ☐ Factory ☐ Other _____ Volume:_____bbl Dimensions: L_____ x W_____ x D_____

☐ Recycling Containment Closure Completion Date:_____

SECTION 33, TOWNSHIP 24-S, RANGE 35-E, N.M.P.M.
LEA COUNTY, NEW MEXICO

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



ESTELLE RECYCLE WATER POND

Metes and Bounds Description of a proposed 4.99 acre site located within Section 33, Township 24 South, Range 35 East, N.M.P.M., in Lea County, New Mexico.

BEGINNING at a 1/2" iron rod with cap stamped "Topographic" set for the Southwest corner of this site, from whence a brass cap found for the East quarter corner of said Section 33, bears: S 46°58'28" E, a distance of 512.09 feet;

Thence N 00°00'00" W, a distance of 590.00 feet to a 1/2" iron rod with cap stamped "Topographic" set for the Northwest corner of this site;

Thence N 90°00'00" E, a distance of 365.28 feet to a point on the East line of said Section 33, for the Northeast corner of this site;

Thence S 00°33'13" E, along the East, a distance of 590.03 feet to a point on the East line of said Section 33, for the Southeast corner of this site;

Thence N 90°00'00" W, a distance of 370.98 feet to the Point of Beginning.

LINE TABLE

LINE	BEARING	DISTANCE
1	N 00°00'00" W	590.00'
2	N 90°00'00" E	365.28'
3	S 00°33'13" E	590.03'
4	N 90°00'00" W	370.98'

LEGEND

- TOWNSHIP LINE
- SECTION LINE
- TRACT BORDER
- ROAD WAY
- PROPOSED SITE
- OHE — OVERHEAD ELECTRIC
- EXISTING PIPELINE
- W — WATERLINE
- MONUMENT
- CALCULATED CORNER
- IRON ROD SET
- IRON ROD FOUND

TOPOGRAPHIC
LOYALTY INNOVATION LEGACY
1400 EVERMAN PARKWAY, Ste. 146 • FT. WORTH, TEXAS 76140
TELEPHONE: (817) 744-7512 • FAX (817) 744-7554
2903 NORTH BIG SPRING • MIDLAND, TEXAS 79705
TELEPHONE: (432) 682-1653 OR (800) 767-1653 • FAX (432) 682-1743
WWW.TOPOGRAPHIC.COM

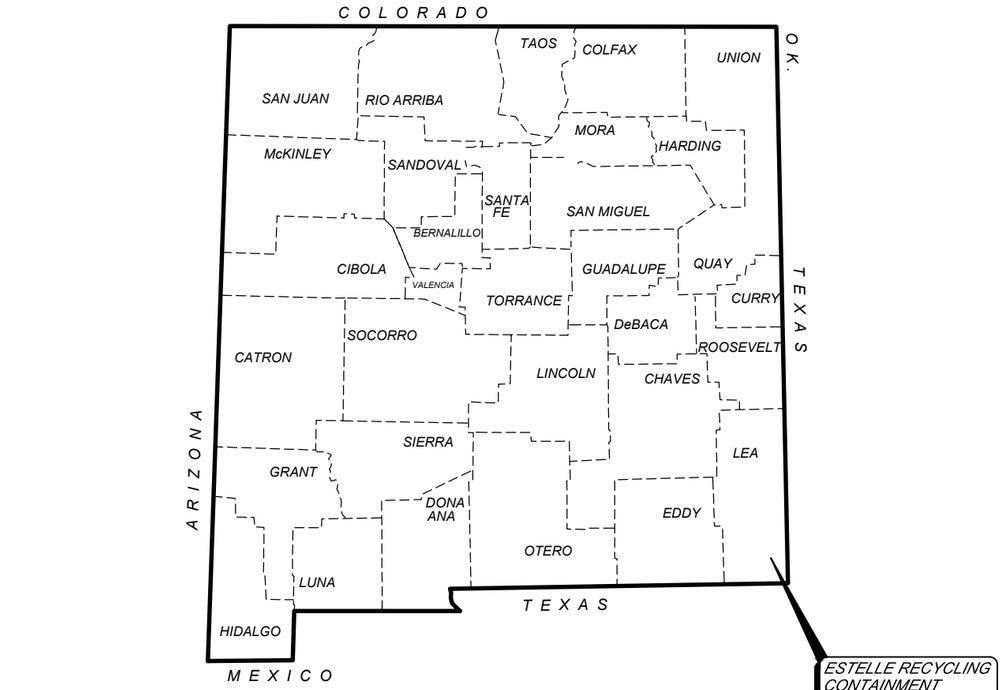
STAN W. LLOYD NEW MEXICO 19642 PROFESSIONAL SURVEYOR

Stan W. Lloyd, P.S. No. 19642
SEPTEMBER 10, 2018

ESTELLE RECYCLE WATER POND	REVISION:	
	BT	9/10/2018
DATE: 09/04/18		
FILE: BO_COSMO_K_FRAC_POND_1_SEC_33_REV1		
DRAWN BY: EAH		
SHEET : 1 OF 1		

NOTES:
1. ORIGINAL DOCUMENT SIZE: 8.5" X 11"
2. ALL BEARINGS, DISTANCES, AND COORDINATE VALUES CONTAINED HEREIN ARE GRID BASED UPON THE NEW MEXICO COORDINATE SYSTEM OF 1983, EAST ZONE, U.S. SURVEY FEET.
3. CERTIFICATION IS MADE ONLY TO THE LOCATION OF THIS EASEMENT, IN RELATION TO THE EVIDENCE FOUND DURING A FIELD SURVEY, MADE ON THE GROUND, UNDER MY SUPERVISION, AND USING DOCUMENTATION PROVIDED BY TAP ROCK OPERATING, LLC. ONLY UTILITIES/EASEMENTS THAT WERE VISIBLE ON THE DATE OF THIS SURVEY, WITHIN/ADJOINING THIS EASEMENT, HAVE BEEN LOCATED AS SHOWN HEREON OF WHICH I HAVE KNOWLEDGE. THIS CERTIFICATION IS LIMITED TO THOSE PERSONS OR ENTITIES SHOWN ON THE FACE OF THIS PLAT AND IS NON-TRANSFERABLE, AND MADE FOR THIS TRANSACTION ONLY.
4. B.O.L./P.O.B. = BEGINNING OF LINE/POINT OF BEGINNING
5. E.O.L./P.O.E. = END OF LINE/POINT OF EXIT

RECYCLING CONTAINMENT DESIGN DRAWINGS



TAP ROCK RESOURCES, LLC

ESTELLE RECYCLING CONTAINMENT
S33 & S34 T24S R35E
LEA COUNTY, NM

INDEX OF SHEETS

GENERAL NOTES

1. ALL BOUNDARY, TOPOGRAPHIC AND UTILITY INFORMATION SHOWN ARE BASED ON SURVEY INFORMATION FURNISHED BY TAP ROCK RESOURCES, LLC.

2. REFERENCE SURVEY DOCUMENTS PREPARED BY TOPOGRAPHIC (09-26-2018):
"BO_COSMO_K_FRAC_POND_1_SEC_33_REV2",
"BO_COSMO_K_FRAC_POND_1_SEC_34_REV2",
"EP_COSMO_K_FRAC_POND_2_ROAD_REV2",
"EP_COSMO_K_FRAC_POND_1_ROAD_SEC_34_REV2",
"EP_COSMO_K_FRAC_POND_1_ROAD_SEC_33_REV2",

3. THE CONTRACTOR SHALL IDENTIFY AND LOCATE UTILITY LINES, MONITORING WELLS, SURVEY MONUMENTS, AND OTHER NEARBY STRUCTURES PRIOR TO PERFORMING WORK.

4. COORDINATE INFORMATION IS BASED ON STATE PLANE COORDINATES, NEW MEXICO EAST, NAD 83. THE CONTRACTOR SHALL IDENTIFY ANY DISCREPANCIES PRIOR TO PROCEEDING WITH CONSTRUCTION.

CLAUDIUS SANCHEZ CZYZEWSKA
NEW MEXICO
22897
PROFESSIONAL ENGINEER

10/2/2018

Magrym Consulting P.C.
6547 N. Academy Blvd. #1113
Colorado Springs, CO 80918
(719) 332-8665
www.magrym.com
TBPE F-19848

R-X	DESCRIPTION	DATE	BY

REVISIONS (OR CHANGE NOTICES)

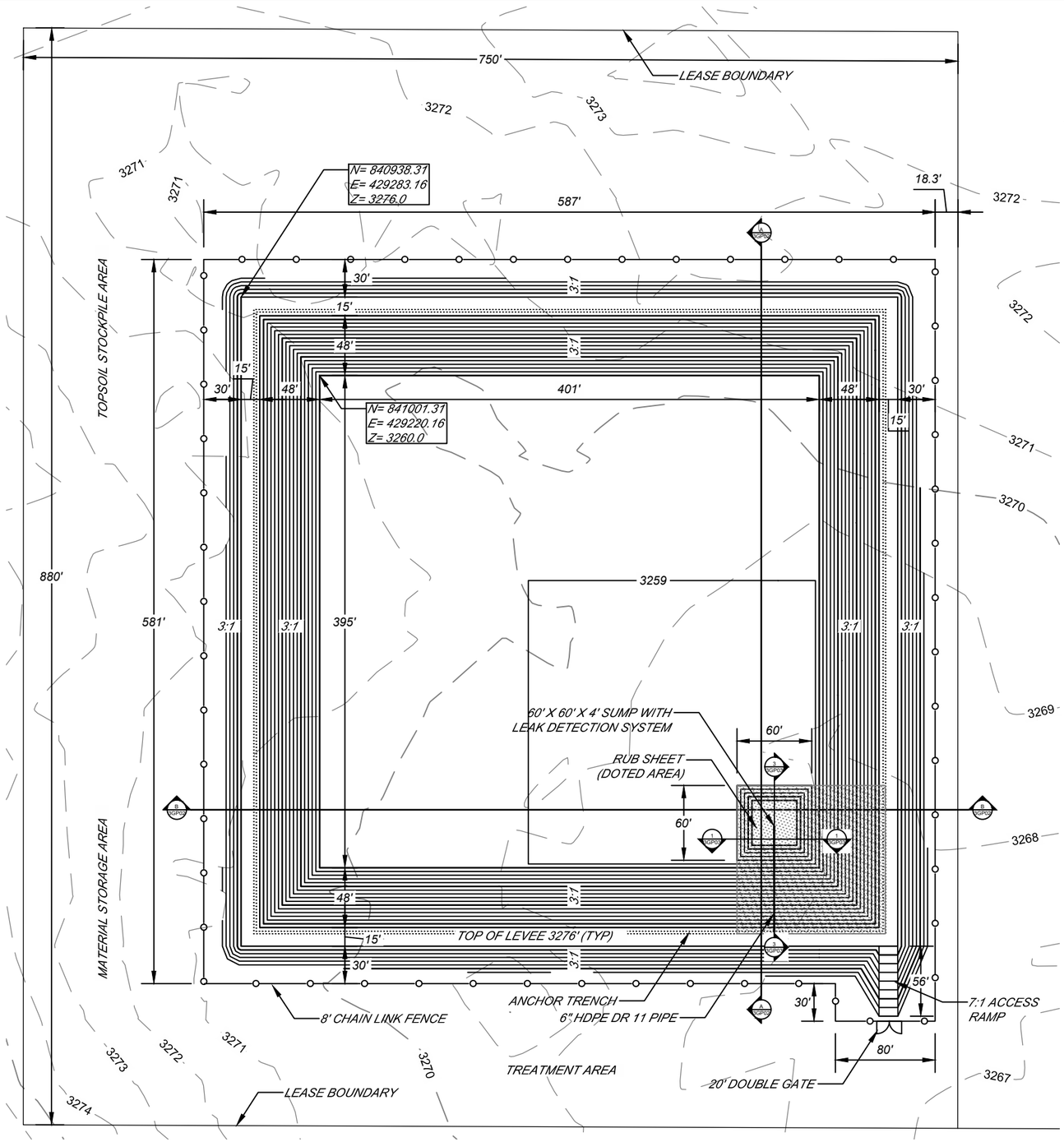
Tap Rock Resources, LLC
602 Park Point Drive, Ste. 200
Golden, CO 80401
(720) 772-5090
www.taprk.com

ESTELLE RECYCLING CONTAINMENT
S33 & S34 T24S R35E
LEA COUNTY, NM
TAP ROCK RESOURCES, LLC

COVER SHEET

HORIZONTAL SCALE: NTS	VERTICAL SCALE: NTS
PRINT DATE: 10/2/2018	DESIGNED BY: CSC
PROJECT NO. 18-102	CHECKED BY: EMH
SUBSET: GRADING PLANS	SHEET: 1COVER

Drawing File: C:\Users\MAGRYM CSC\Documents\Travel\Estelle\CADD\18-102 Cover.dwg



SUMMARY OF QUANTITIES	
ITEM	*QTY*
ESTIMATED TOPSOIL VOLUME (AVG. 1')	*12,725 CY (BANK)*
ESTIMATED CUT (INCLUDING TOPSOIL)	*70,940 CY (BANK)*
ESTIMATED FILL (ABOVE EXISTING GRADE)	*14,920 CY (BANK)*
20' DOUBLE GATE CHAIN LINK	*1 UNIT*
8' CHAIN LINK FENCE	*2396 FT*
10 OZ. GEOTEXTILE	*254,100 SF*
60 MIL HDPE PRIMARY LINER	*254,100 SF*
200 MIL GEONET	*254,100 SF*
40 MIL HDPE SECONDARY LINER	*254,100 SF*
6" HDPE DR11 PIPE WITH PERFORATIONS IN SUMP	*88 FT*

STAGE-STORAGE	
ELEVATION (FT)	*VOLUME (BBL)*
3254	*0*
3255	*271*
3256	*633*
3257	*1,096*
3258	*1,676*
3259	*5,818*
3260	*23,746*
3261	*52,385*
3262	*81,887*
3263	*112,266*
3264	*143,533*
3265	*175,703*
3266	*208,787*
3267	*242,799*
3268	*277,752*
3269	*313,657*
3270	*350,529*
3271	*388,380*
3272	*427,222*
3273	*467,069*
3274	*507,933*
3275	*549,827*
3276	*592,764*

CLAUDIUS SANCHEZ CZYZEWSKA
NEW MEXICO
22897
PROFESSIONAL ENGINEER

10/2/2018

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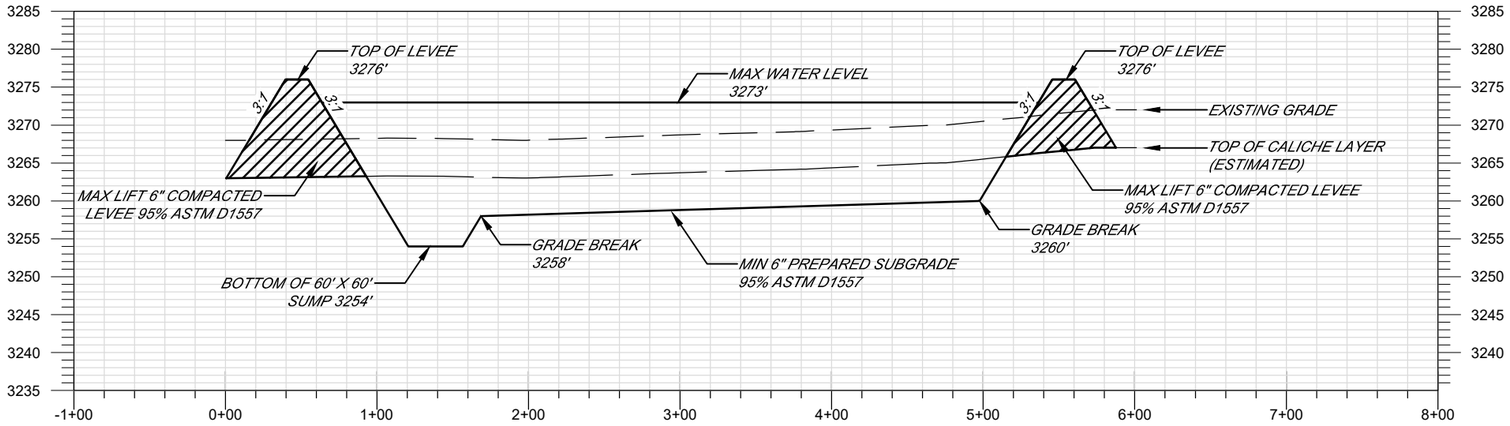
Tap Rock Resources, LLC
602 Park Point Drive, Ste. 200
Golden, CO 80401
(720) 772-5090
www.taprk.com

ESTELLE RECYCLING CONTAINMENT
S33 & S34 T24S R35E
LEA COUNTY, NM
TAP ROCK RESOURCES, LLC

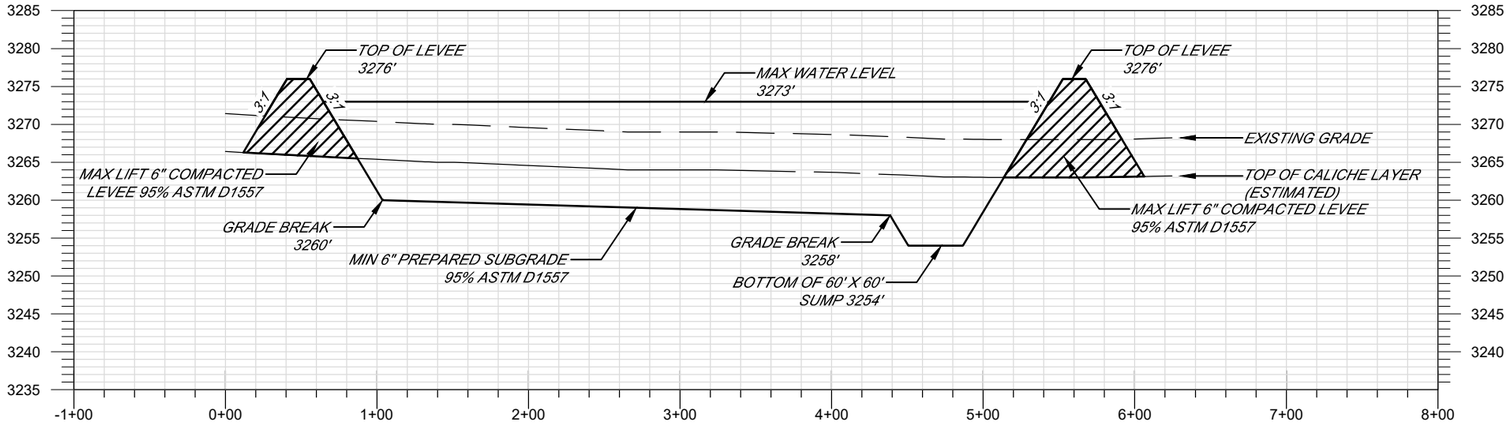
GRADING PLAN

HORIZONTAL SCALE: 1"=100'	VERTICAL SCALE: NTS
PRINT DATE: 10/2/2018	DESIGNED BY: CSC
PROJECT NO. 18-102	CHECKED BY: EMH
SUBSET: GRADING PLANS	SHEET: 3GP01

Drawing File: C:\Users\MAGRYM CSC\Documents\Travel\Estelle\CADD\18-102 Grading REV1.dwg



SECTION A



SECTION B

CLAUDIUS SANCHEZ CZYZEWSKA
NEW MEXICO
22897
PROFESSIONAL ENGINEER

10/2/2018

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Tap Rock Resources, LLC
602 Park Point Drive, Ste. 200
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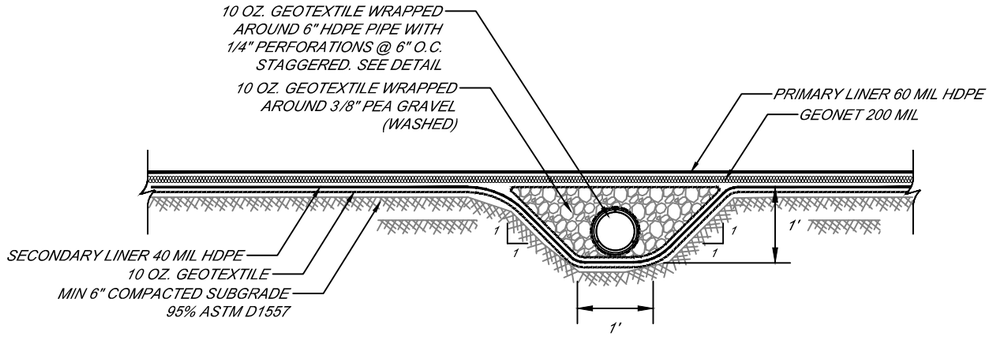
(720) 772-5090
www.taprk.com

ESTELLE RECYCLING CONTAINMENT
S33 & S34 T24S R35E
LEA COUNTY, NM
TAP ROCK RESOURCES, LLC

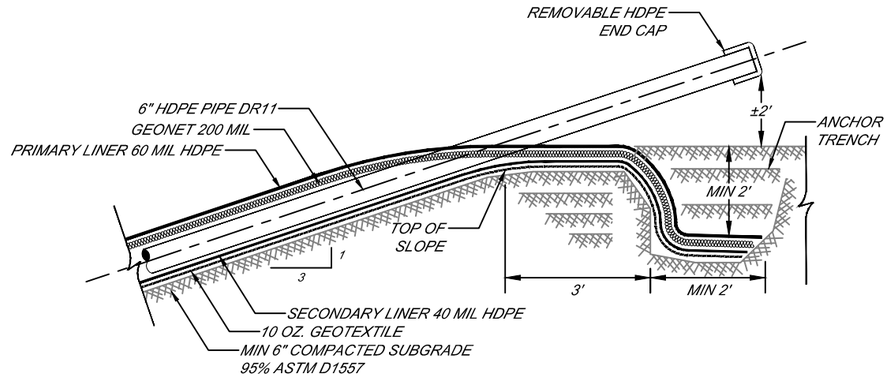
CROSS SECTIONS

HORIZONTAL SCALE: 1"=100'	VERTICAL SCALE: 1"=20'
PRINT DATE: 10/2/2018	DESIGNED BY: CSC
PROJECT NO. 18-102	CHECKED BY: EMH
SUBSET: GRADING PLANS	SHEET: 3GP02

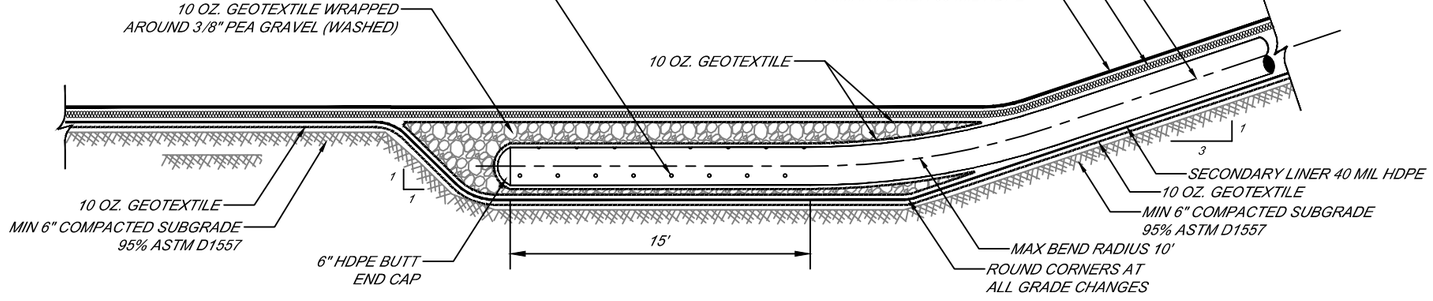
Drawing File: C:\Users\MAGRYM CSC\Documents\Travel\Estelle\CADD\18-102 Grading REV1.dwg



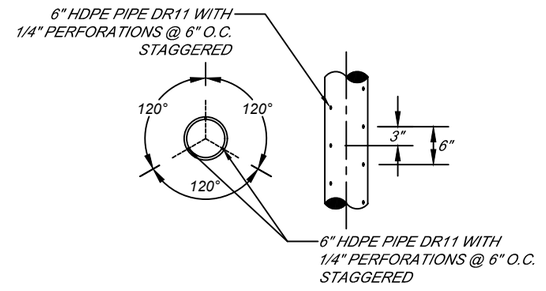
1 3GP03 **LEAK DETECTION SYSTEM SECTION A**
NOT TO SCALE



2 3GP03 **LEAK DETECTION SYSTEM PIPE RISER**
NOT TO SCALE



3 3GP03 **LEAK DETECTION SYSTEM SECTION B**
NOT TO SCALE



4 3GP03 **LEAK DETECTION SYSTEM PERFORATED PIPE**
NOT TO SCALE

CLAUDIUS SANCHEZ CZYZEWSKA
NEW MEXICO
22897
PROFESSIONAL ENGINEER
10/2/2018

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ESTELLE RECYCLING CONTAINMENT
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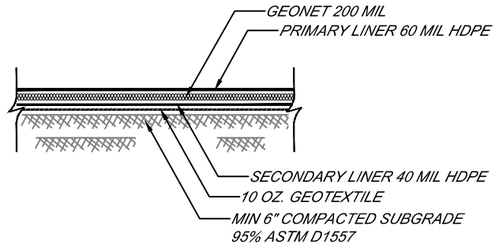
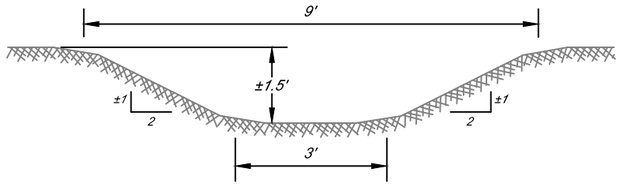
DETAILS

HORIZONTAL SCALE: NTS	VERTICAL SCALE: NTS
PRINT DATE: 10/2/2018	DESIGNED BY: CSC
PROJECT NO. 18-102	CHECKED BY: EMH
SUBSET: GRADING PLANS	SHEET: 3GP03

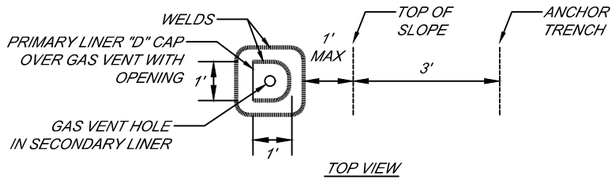
Drawing File: C:\Users\MAGRYM CSC\Documents\Travel\Estelle\CADD\18-102 Details.dwg

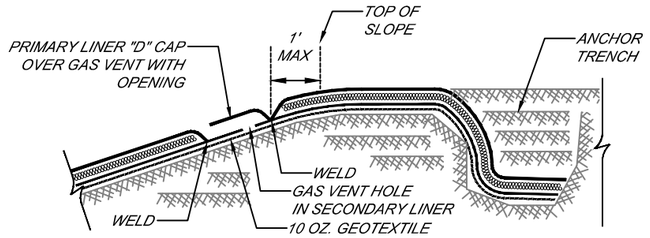


1 / 3GP03 **TYPICAL POND BOTTOM LINER**
NOT TO SCALE

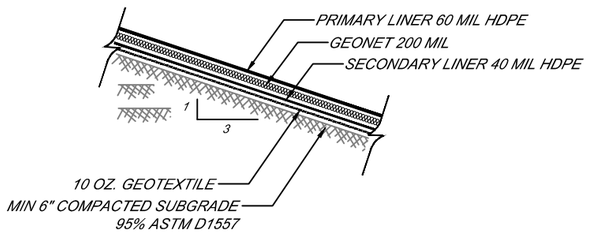


4 / 3GP03 **TYPICAL DRAINAGE DITCH**
NOT TO SCALE





6 / 3GP03 **TYPICAL GAS VENT**
NOT TO SCALE



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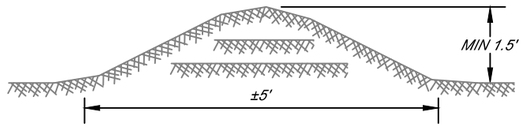
NOT TO SCALE



5 / 3GP03 **TYPICAL EROSION PROTECTION BERM**
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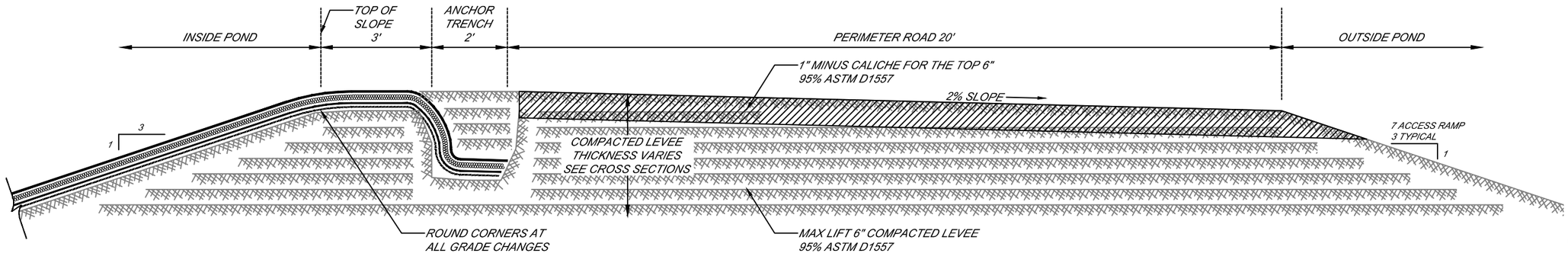

3 / 3GP03 **TYPICAL LEVEE COMPACTION**
NOT TO SCALE

CLAUDIUS SANCHEZ CZYZEWSKA
NEW MEXICO
22897
PROFESSIONAL ENGINEER

10/2/2018

Magrym Consulting P.C.
6547 N. Academy Blvd. #1113
Colorado Springs, CO 80918
(719) 332-8665
www.magrym.com
TBPE F-19848

R-X	DESCRIPTION	DATE	BY
	REVISIONS (OR CHANGE NOTICES)		

Tap Rock Resources, LLC
602 Park Point Drive, Ste. 200
Golden, CO 80401
(720) 772-5090
www.taprk.com

ESTELLE RECYCLING CONTAINMENT
S33 & S34 T24S R35E
LEA COUNTY, NM
TAP ROCK RESOURCES, LLC

DETAILS

HORIZONTAL SCALE: NTS	VERTICAL SCALE: NTS
PRINT DATE: 10/2/2018	DESIGNED BY: CSC
PROJECT NO. 18-102	CHECKED BY: EMH
SUBSET: GRADING PLANS	SHEET: 3GP04

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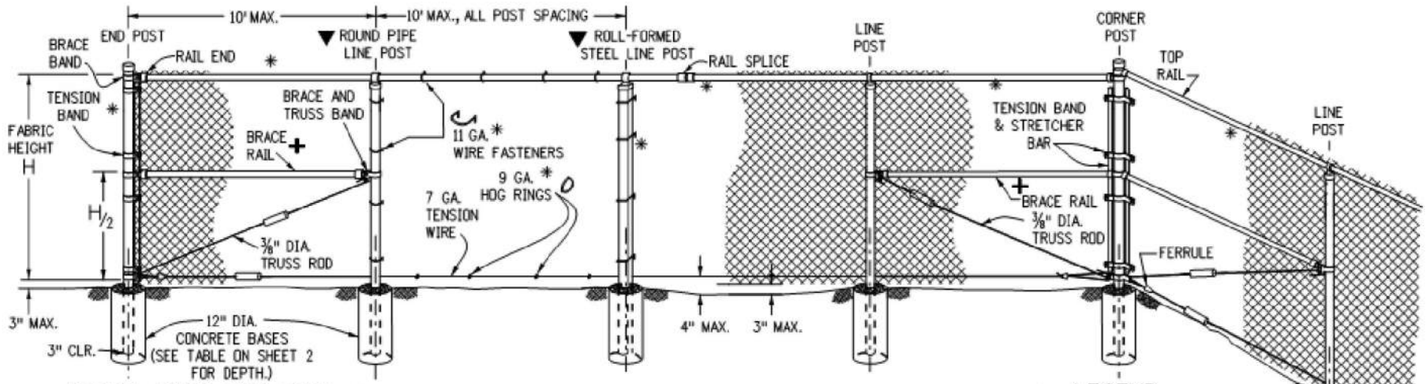
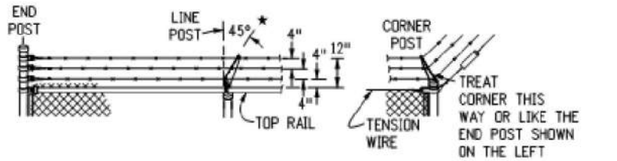


FENCE WITH TOP RAIL (USE ONLY AT SPECIAL LOCATIONS BEYOND CLEAR ZONE WHEN THE TOP RAIL IS SPECIFIED ON PLANS)



BARBED WIRE TOP (USE ONLY WHEN SPECIFIED ON PLANS)

★ CASE 1. TO KEEP INSIDERS IN, SLOPE TOP IN 45°

★ CASE 2. TO KEEP OUTSIDERS OUT, SLOPE TOP OUT 45° BARBED WIRE OVER GATES SHALL NOT BE SLOPED

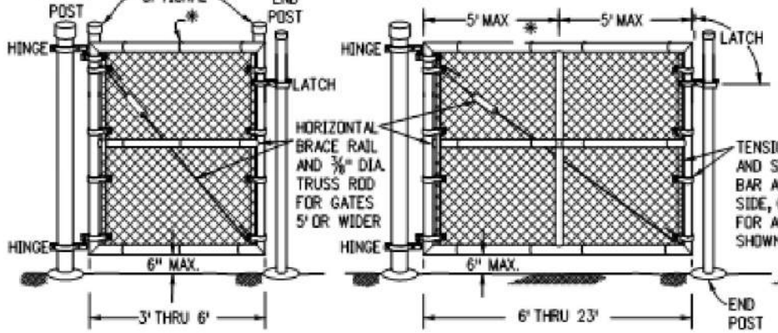
LEGEND

* ATTACH FABRIC TO ALL FENCE & GATE STRUCTURES AT 12 IN. INTERVALS VERTICALLY AND AT 20 IN. HORIZONTALLY.

TIGHTENER OR TURNBUCKLE SYMBOL, (SEE DETAILS ON SHEETS 2 AND 3).

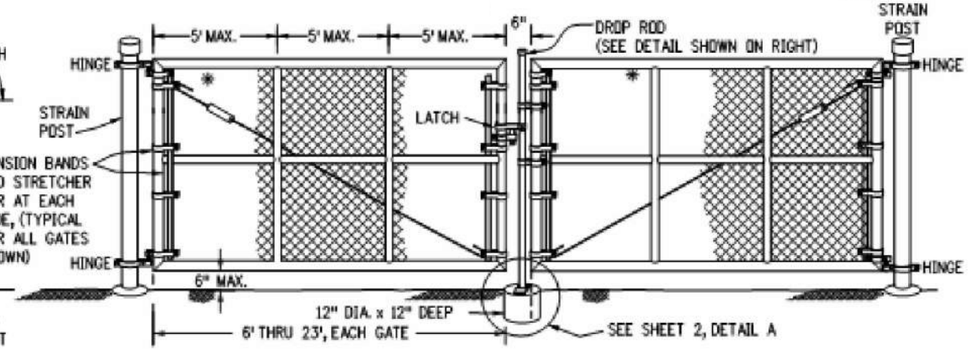
▼ TYPE OF LINE POST (ROUND PIPE OR ROLL-FORMED STEEL) SHALL BE AT THE OPTION OF THE CONTRACTOR UNLESS OTHERWISE SHOWN ON THE PLANS.

\+ BRACE RAIL IS NOT REQUIRED FOR 36 IN., 42 IN., OR 48 IN. FABRIC HEIGHTS. BRACE RAIL FOR FENCE WITH ROLL-FORMED STEEL ELEMENTS IS 12 IN. BELOW THE TOP RAIL, (SEE SHEET 3).



WALK GATE

SINGLE GATE



DOUBLE GATE

FENCE MATERIAL

FABRIC HEIGHT	END, CORNER AND LINE BRACE POSTS		LINE POSTS		TOP & BRACE RAILS	
H	ROUND PIPE I.D.	ROLL-FORMED STEEL	ROUND PIPE I.D.	ROLL-FORMED STEEL	ROUND PIPE I.D.	ROLL-FORMED STEEL
FEET	INCHES		INCHES		INCHES	
3 THRU 6	2.5	3.5 x 3.5	1.5	1.875 x 1.625	1.25	1.25 x 1.625
> 6 THRU 8	2.5	3.5 x 3.5	2.0	1.875 x 1.625	1.25	1.25 x 1.625
> 8 THRU 12	2.5	3.5 x 3.5	2.0	2.250 x 1.625	1.25	1.25 x 1.625

FABRIC HEIGHT	△ CONCRETE BASE			
	DEPTH	DIA.	DEPTH	DIA.
H				
FEET	INCHES		INCHES	
3 THRU 4	34	12	28	12
> 4 THRU 12	40	12	40	12

△ ALL POSTS 3 IN CLEAR FROM BOTTOM OF CONCRETE BASE

GATE MATERIAL

GATE FRAME WIDTH	STRAIN POST		△ CONCRETE BASE	
	ROUND I.D.	ROLL-FORMED	DEPTH	DIA.
FEET	INCHES		INCHES	
3 THRU 6	2.5	3.5 x 3.5	36	12
> 6 THRU 13	3.5		42	12
> 13 THRU 18	6.0		48	18
> 18 THRU 23	8.0		48	24

GATE FRAME		FRAME PIPE	BRACING PIPE
WIDTH	HEIGHT	I.D.	I.D.
FEET		INCHES	
3 THRU 8	3 THRU 6	1.25	1.25
> 8 THRU 23	6	1.50	1.25
> 8 THRU 23	> 6 THRU 12	1.50	1.50

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DETAILS

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PRINT DATE: 10/2/2018	DESIGNED BY: CSC
PROJECT NO. 18-102	CHECKED BY: EMH
SUBSET: GRADING PLANS	SHEET: 3GP05

Drawing File: C:\Users\MAGRYM CSC\Documents\Travel\Estelle\CADD\18-102 Details.dwg

General Siting Criteria Demonstration and Site Specific Groundwater Data

8.
Siting Criteria for Recycling Containment

Instructions: The applicant must provide attachments that demonstrate compliance for each siting criteria below as part of the applica 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 FIGURES 1-2

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 FIGURE 3

Within the area overlying a subsurface mine.
- Written confirmation or verification or map from the NM EMNRD-Mining and Minerals Division FIGURE 4

Within an unstable area.
- Engineering measures incorporated into the design; NM Bureau of Geology & Mineral Resources; USGS; NM Geological Society; topographic map FIGURE 5

Within a 100-year floodplain. FEMA map FIGURE 6

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 FIGURE 7

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 FIGURE 8

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. FIGURES 1 and 7
- NM Office of the State Engineer - iWATERS database search; visual inspection (certification) of the proposed site

Within 500 feet of a wetland. FIGURE 9
- US Fish and Wildlife Wetland Identification map; topographic map; visual inspection (certification) of the proposed site

Distance to Groundwater

Figure 1, Figure 2, and the discussion below demonstrates that groundwater (fresh water as defined by NMOCD Rules) at the location is greater than 100 feet beneath the recycling containment (AST) that will contain fluids that cannot be classified as "low-chloride."

Figure 1 is a geologic/ topographic map that shows:
1. The Estelle Containment identified by the blue square with the estimated surface elevation noted.
2. Water wells from the OSE database as a blue triangle inside colored circles that indicate well depth. OSE wells are often miss-located in the WATERS database as older wells are plotted in the center of the quarter, quarter, quarter, of the Section Township and Range.
3. Water wells from the USGS database as large triangles color-coded to the formation from which the well draws water.
4. Water wells, which are not documented in the public databases but were identified by field inspection or other published reports as colored squares.
5. The depth-to-water from the most recent available measurement for each well is provided adjacent to the well symbol.

Figure 2 is an area topographic map that shows:
1. The Estelle Containment identified by the blue square with the estimated surface elevation noted.
2. Water wells measured by the USGS, the year of the measurement and the calculated elevation of the groundwater surface.
3. Water wells measured by professionals and documented in published reports or by staff of Hicks Consultants.
4. Isocontour lines displaying the elevation of the groundwater surface.

Geology

Quaternary Age eolian and piedmont deposits (Qe/Qp on Figure 1) are the dominant exposed material in the area (see Site Photographs). These deposits are generally a thin covering of the underlying Tertiary Ogallala Formation or, in some places, the redbeds of the Dockum Group. The Ogallala Formation (To) is locally exposed in the northeast quadrant of Figure 2. It consists primarily of sand with some clay, silt and gravel, generally capped by caliche. Excavation of the fresh water pond that lies adjacent to the proposed containment exposed caliche about 4-feet below the dune sand.

Based on information from Ground-Water Report 6 (GWR-6) *Geology and Ground-Water Conditions in Southern Lea County, New Mexico* by Alexander Nicholson and Alfred Clebsch (1961), the top of the redbeds in the area of the Estelle containment is about 3075 feet above sea level (see Plate 1 of GWR-6). Given the 3270-foot elevation of ground surface at the Estelle site, the thickness of the Ogalalla should be about (3270-3075=) 200 feet. Figure 2 shows the Chinle/Dockum Formation (T(c) cu) exposed at the surface about 3 miles southeast of the Estelle location, therefore the thickness of the Ogallala here is zero.

Topographically, the area around the proposed containment slopes gently to the southwest toward a tributary of Antelope Draw. The drainage divide between the main branch of Antelope Draw and the tributary lies about ¾ mile west and ½ mile south of the site.

Groundwater Data

We relied upon the most recent data measured by the USGS and published data to create the water table elevation map shown in Figure 2. While the "Misc" well data (see Figure 1) are generally measured water levels, this dataset contains errors (generally of location) that are not present in the USGS data. Water level data from the OSE database rely upon observed water levels by drillers during the completion of the water well. The OSE dataset provides some useful data in certain areas. Based upon our field survey and examination of Google Earth images, we are confident that the wells shown Figure 2 are located within ¼ mile of the plotted point.

For the potentiometric surface map (Figure 2), we honored all data that we know are accurate to the best of our knowledge. From the data presented, we conclude:

- The elevation of the groundwater surface beneath the area in which the Estelle Containment will be constructed is about 3150 feet above mean sea level.
- Wells nearest (east) of the proposed containment lie proximal to the unnamed tributary of Antelope Draw, which is probably a local area of recharge to the underlying Ogallala.
- The distance between the bottom of the containment and the potentiometric surface of the regional aquifer is approximately (3270-3150-25=) 95 feet.

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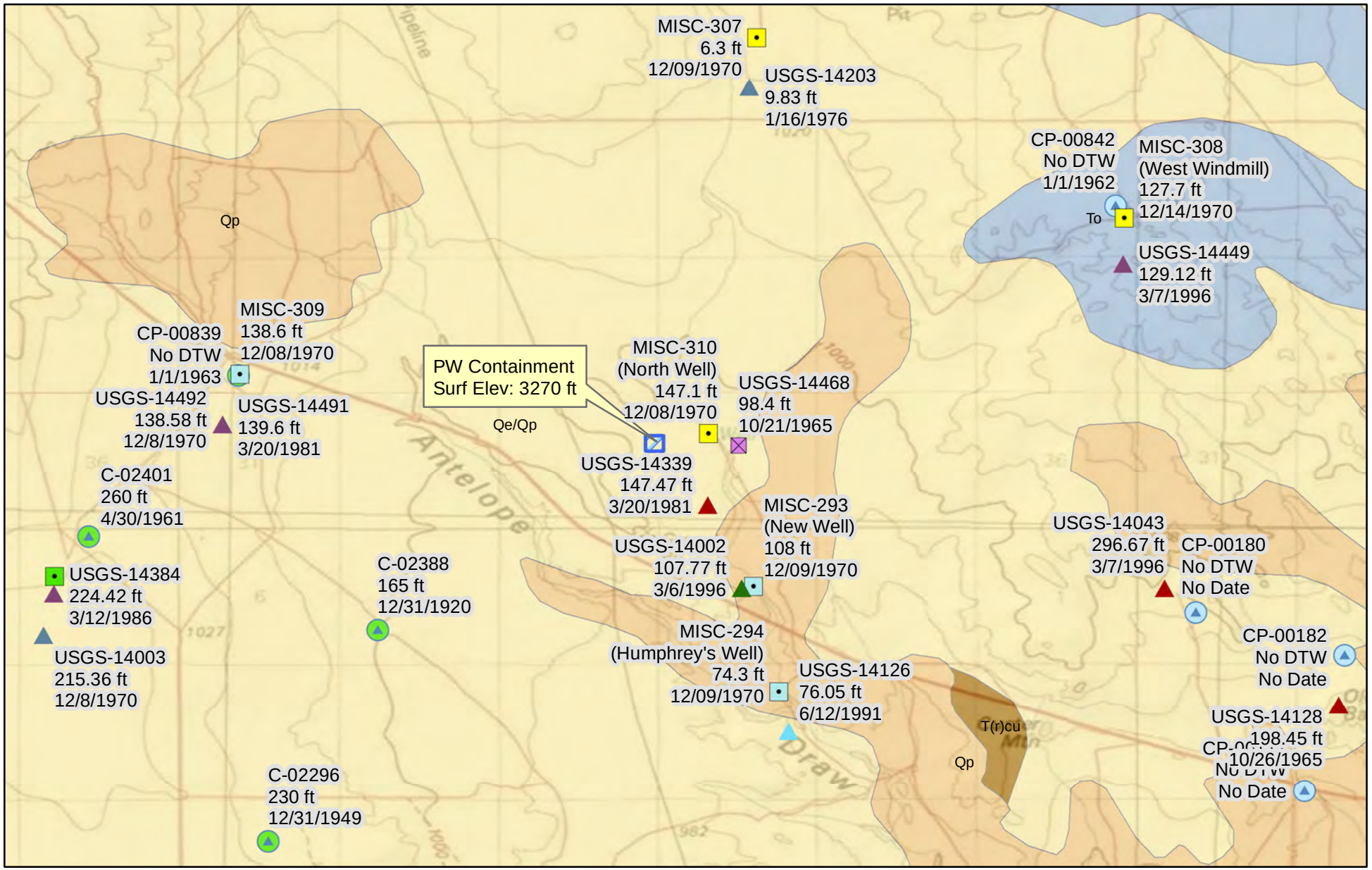

0 0.5 1 Miles

R.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104 Ph: 505.266.5004	Depth To Water and Geology	Figure 1
	Tap Rock Resources Estelle Recycle PW Containment	September 2018

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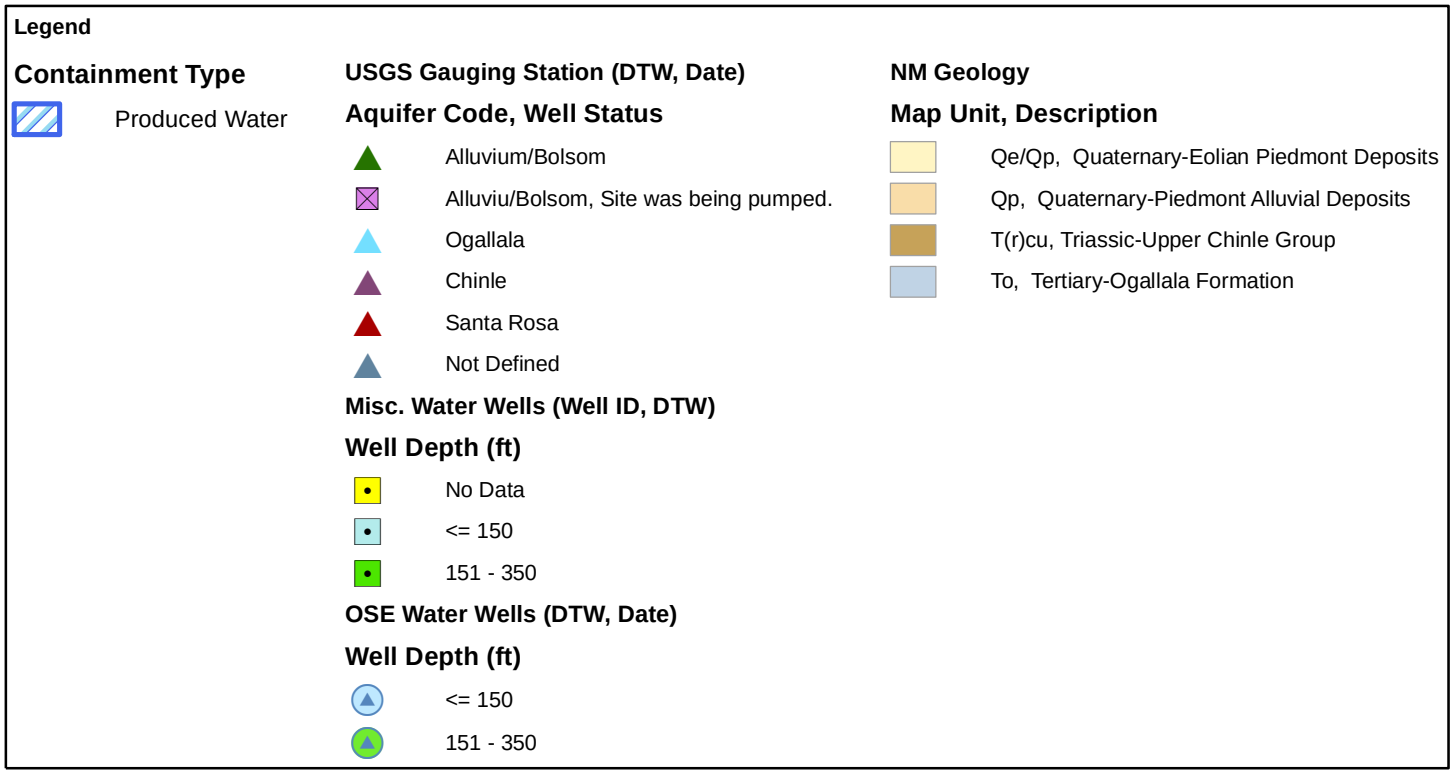

R.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104 Ph: 505.266.5004	Depth To Water and Geology	Figure 1 LEGEND
	Tap Rock Resources Estelle Recycle PW Containment	September 2018

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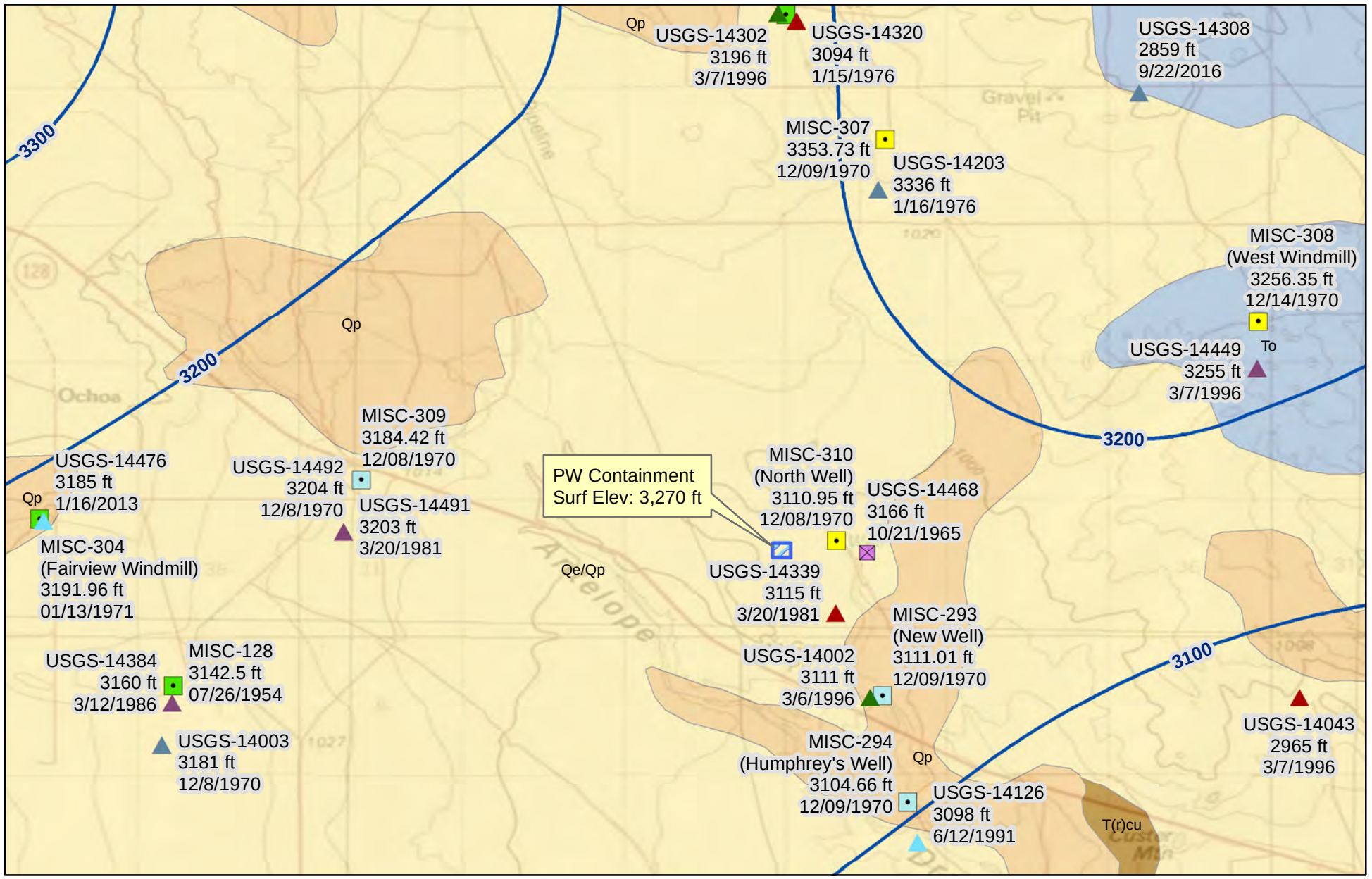

R.T. Hicks Consultants, Ltd
901 Rio Grande Blvd NW Suite F-142
Albuquerque, NM 87104
Ph: 505.266.5004

Potentiometric Surface and Groundwater Elevation

Figure 2

Tap Rock Resources
Estelle Recycle PW Containment

September 2018

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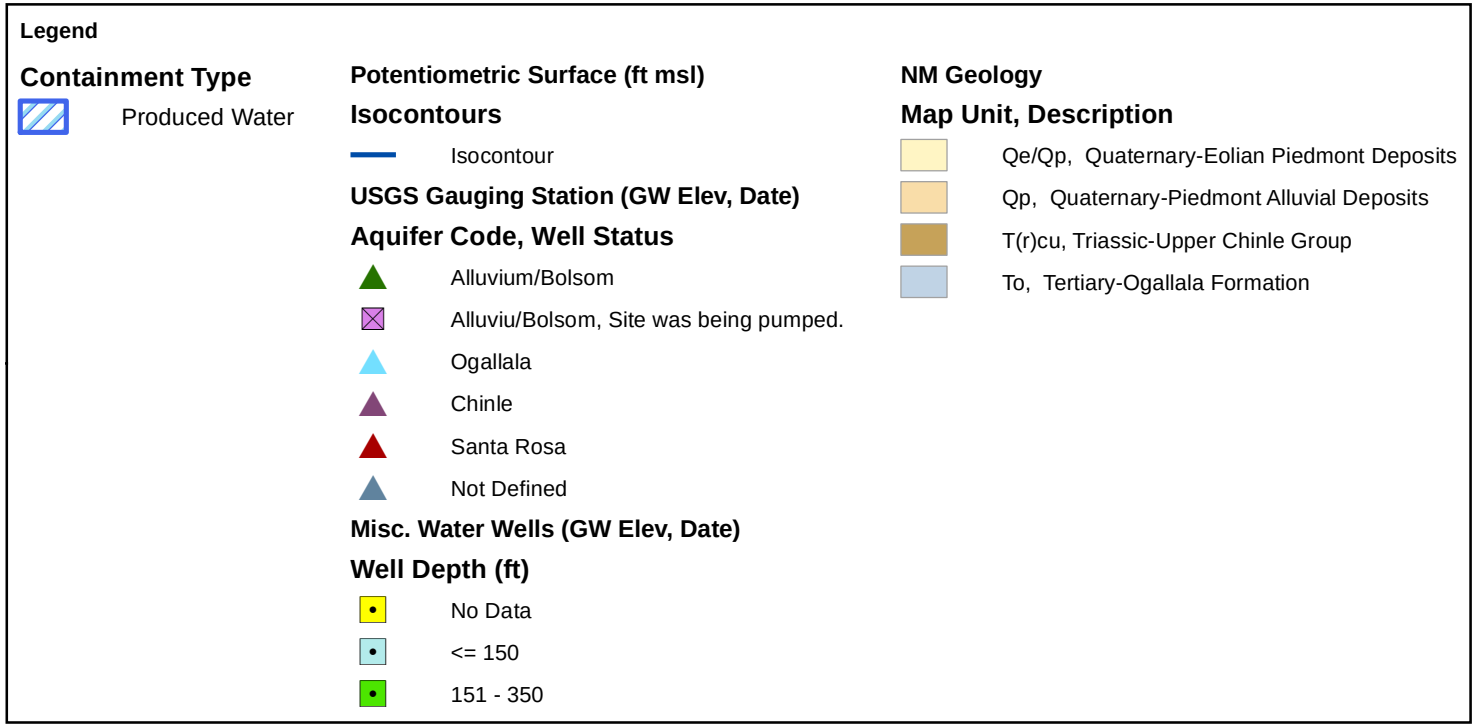

R.T. Hicks Consultants, Ltd
901 Rio Grande Blvd NW Suite F-142
Albuquerque, NM 87104
Ph: 505.266.5004

Potentiometric Surface and Groundwater Elevation

Tap Rock Resources
Estelle Recycle PW Containment

Figure 2
LEGEND

September
2018

Distance to Municipal Boundaries and Fresh Water Fields

Figure 3 demonstrates that the location is not within incorporated municipal boundaries or within defined municipal fresh water well fields covered under a municipal ordinance adopted pursuant to NMSA 1978, Section 3-27-3, as amended.

- The closest municipality is Jal, NM approximately 28 miles to the southeast.
- The closest public well fields (2) belong to the City of Jal and one is within Jal and the second is about 7 miles southwest of Jal.

Distance to Subsurface Mines

Figure 4 and our general reconnaissance of the area demonstrate that the nearest mines are caliche pits. This location is not within an area overlying a subsurface mine.

- The nearest mapped caliche pit is located about 3/4 mile south.

Distance to High or Critical Karst Areas

Figure 5 shows the location of the temporary pits with respect to BLM Karst areas.

- The proposed temporary pit is located within a "low" potential karst area.
- The nearest "high" or "critical" potential karst area is located approximately 33 miles west of the site.
- No evidence of solution voids were observed near the site during the field inspection.
- No evidence of unstable ground was observed in the area.

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R.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104 Ph: 505.266.5004	Nearby Municipalities and Well Fields	Figure 3
	Tap Rock Resources Estelle Recycle PW Containment	September 2018

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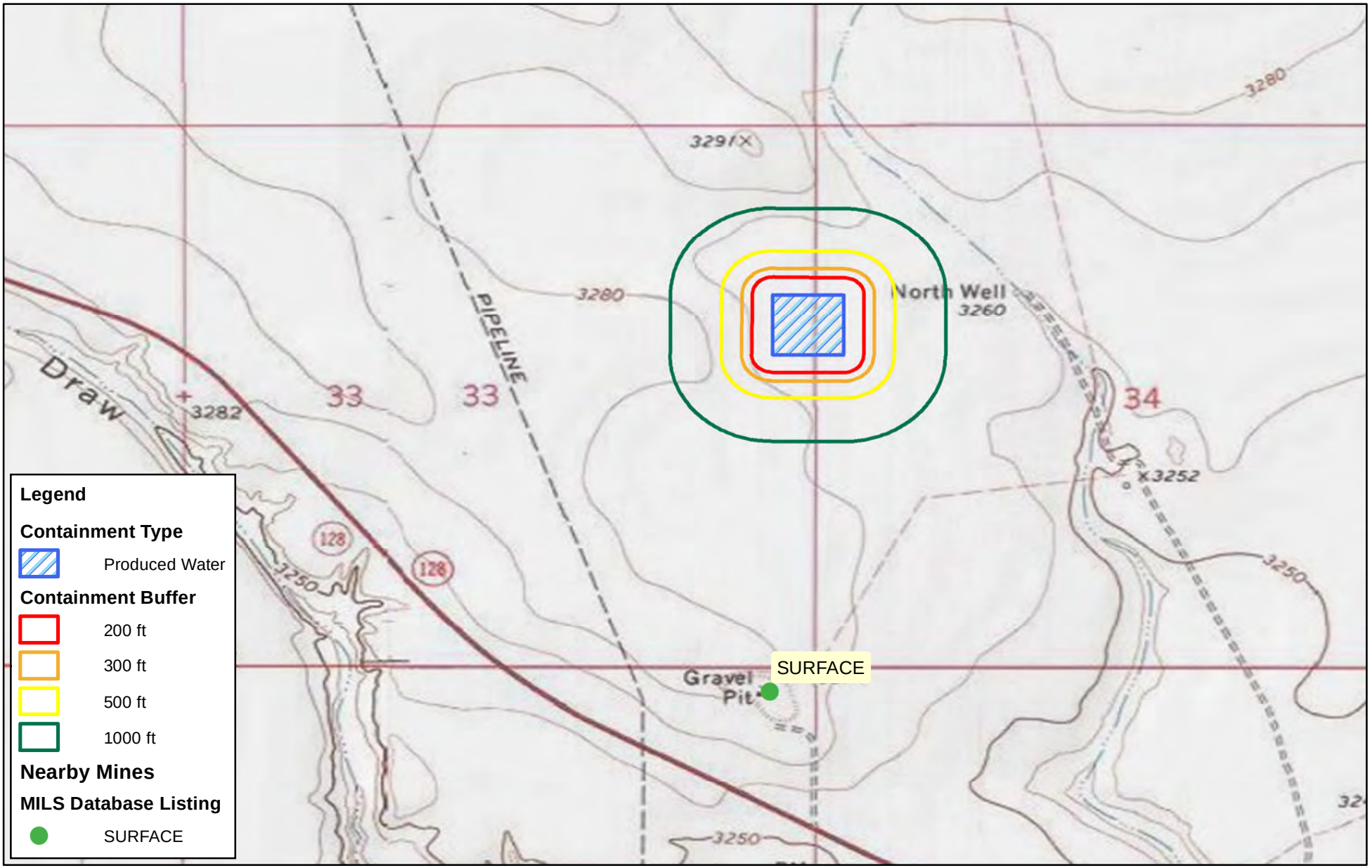

R.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104 Ph: 505.266.5004	Nearby Mines and Minerals	Figure 4
	Tap Rock Resources Estelle Recycle PW Containment	September 2018

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R.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104 Ph: 505.266.5004	Karst Potential	Figure 5
	Tap Rock Resources Estelle Recycle PW Containment	September 2018

Distance to 100-Year Floodplain

Figure 6 demonstrates that the location is within Zone D as designated by the Federal Emergency Management Agency with respect to the Flood Insurance Rate 100-Year Floodplain.

- Zone D is described as areas with possible but undetermined flood hazards. No flood hazard analysis has been conducted.
- Our field inspection and examination of the topography permits a conclusion that the location is not within any floodplain and has low risk for flooding.

Distance to Surface Water

Figure 7 and the site visit demonstrates that the location is not within 300 feet of a continuously flowing watercourse or 200-feet of any other significant watercourse, lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark) or spring.

- The map depicts an "intermittent stream" located ½ to ¼ mile east of the Estelle site. This is the unnamed tributary of Antelope Draw discussed previously.
- No continuously-flowing watercourses, significant watercourse or other water bodies, as defined by NMOCD Rules, exist within the prescribed setback criteria for the siting of a recycling containment.
- No springs were identified in Figure 7 or in the site visit
- No play lakes or lakebeds were identified by the site visit or databases
- The area is characterized by low sand dunes that are stabilized by vegetation and lack of watercourses is typical of such geomorphology.

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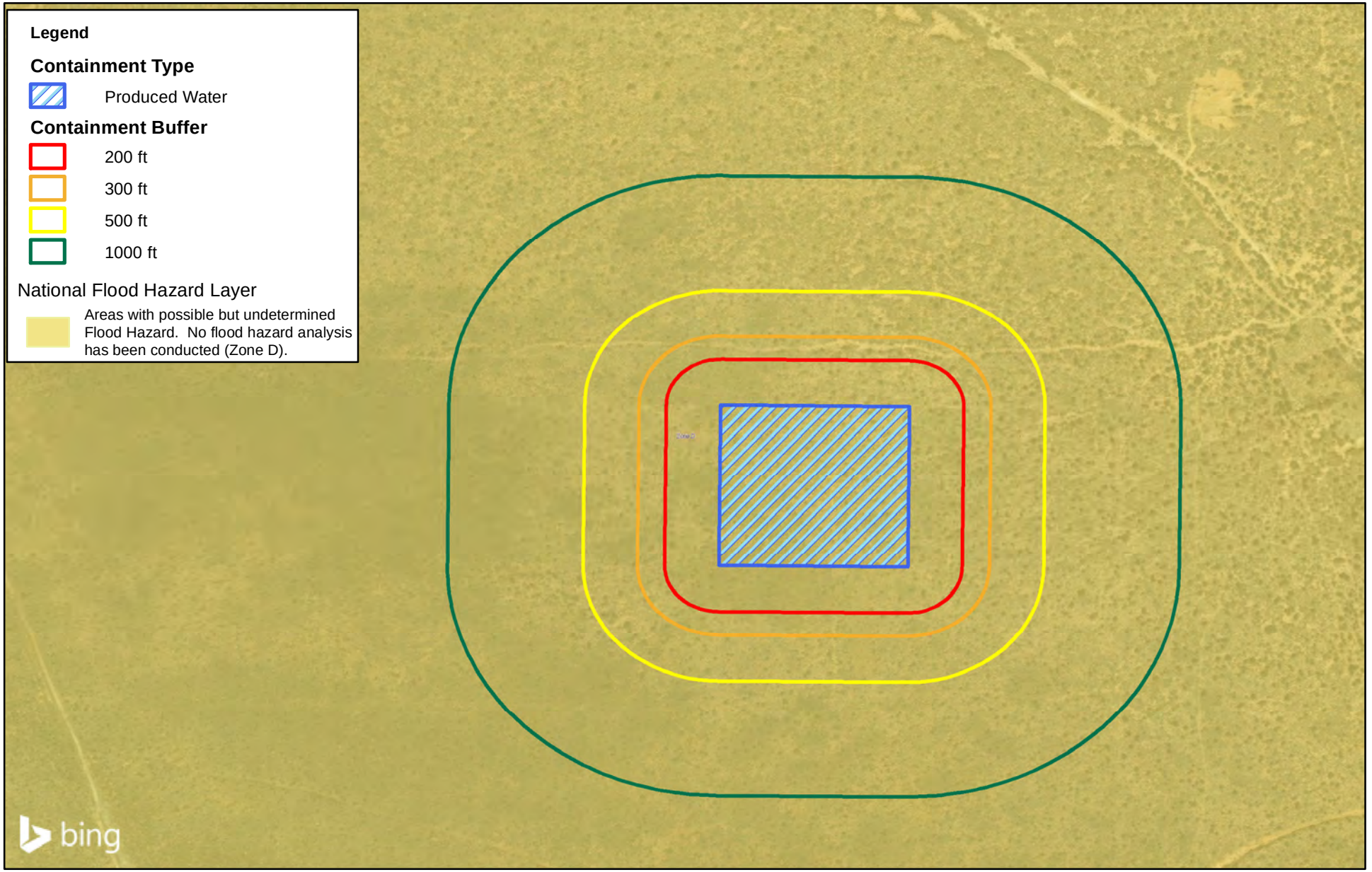

N
W
E
S

0 250 500
Feet

R.T. Hicks Consultants, Ltd
901 Rio Grande Blvd NW Suite F-142
Albuquerque, NM 87104
Ph: 505.266.5004

FEMA Flood Map

Figure 6

Tap Rock Resources
Estelle Recycle PW Containment

September 2018

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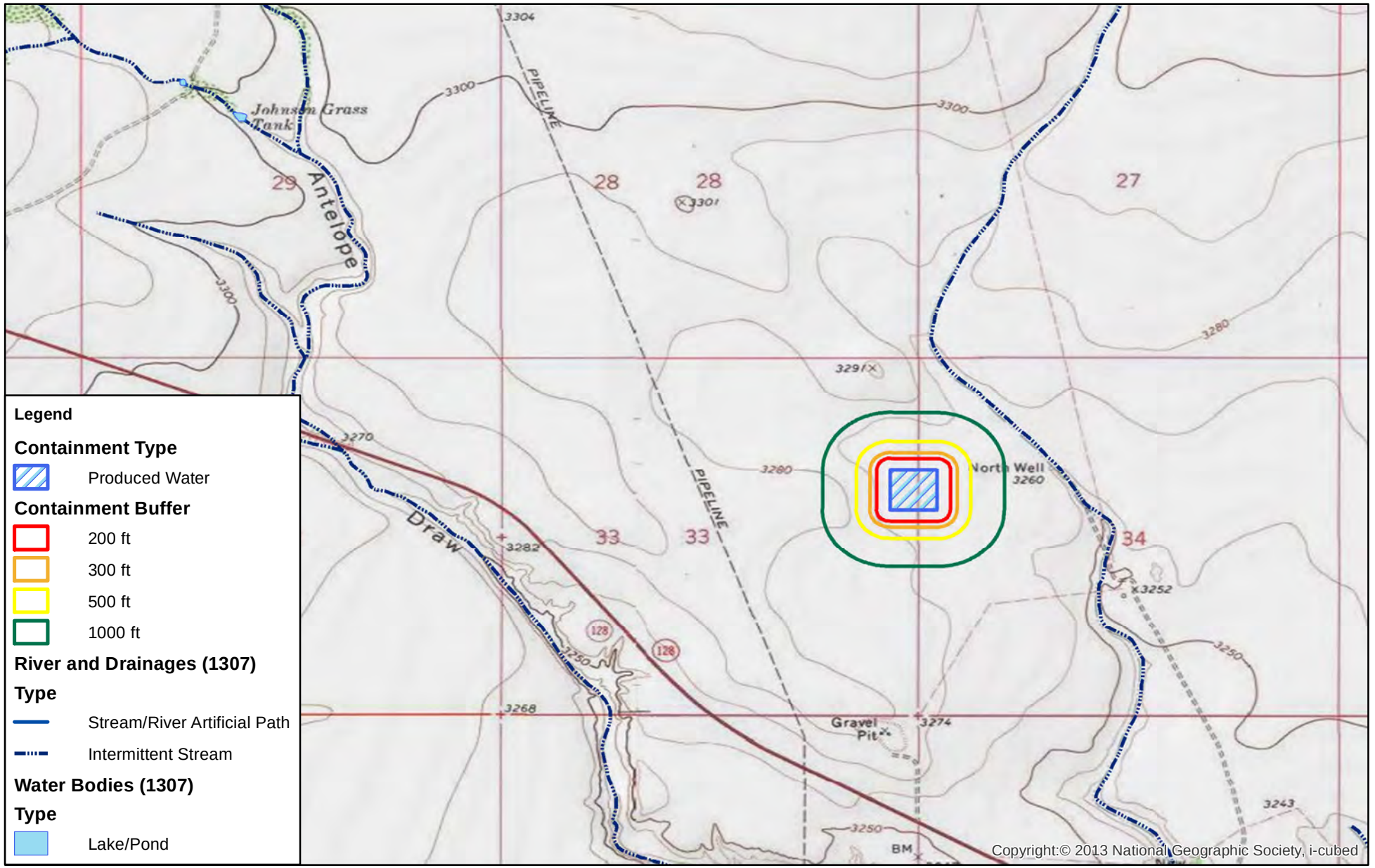

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W E
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0 1,000 2,000
Feet

R.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104 Ph: 505.266.5004	Surface Water and Topography	Figure 7
	Tap Rock Resources Estelle Recycle PW Containment	September 2018

Distance to Permanent Residence or Structures

Figure 8 and the site visit demonstrates that the location is not within 1000 feet from an occupied permanent residence, school, hospital, institution, church, or other structure in existence at the time of initial application.

- The nearest structures
  - An abandoned water tank adjacent to the "North Well" shown on Figure 3, which is about 2500 feet due east of the containment
  - Occupied residential unit(s) such as a trailer and house that are located about 3000 feet to the southeast, within shallow valley of the unnamed tributary of Antelope Draw
- Recent activity not shown on Figure 4 are drilling pads and lease roads constructed by Tap Rock.

Distance to Non-Public Water Supply

Figures 1 and 7 demonstrates that the location is not 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.

- Figure 1 shows the locations of all area water wells, active or plugged.
- The nearest water well is the North Well, about 2500 feet east of the containment
- The next closest active well is at the residential units described above, about 3000 feet southeast of the containment.
- There are no known domestic water wells located within 1,000 feet of the proposed AST.
- No springs were identified within the mapping area (see Figure 7)

Distance to Wetlands

Figure 9 demonstrates the location is not within 300 feet of wetlands.

- The nearest designated wetland is a "freshwater pond" located approximately ½ mile to the east. This appears to be associated with the North Well
- Natural wetlands (freshwater ponds) lie about 2 miles to the northwest.

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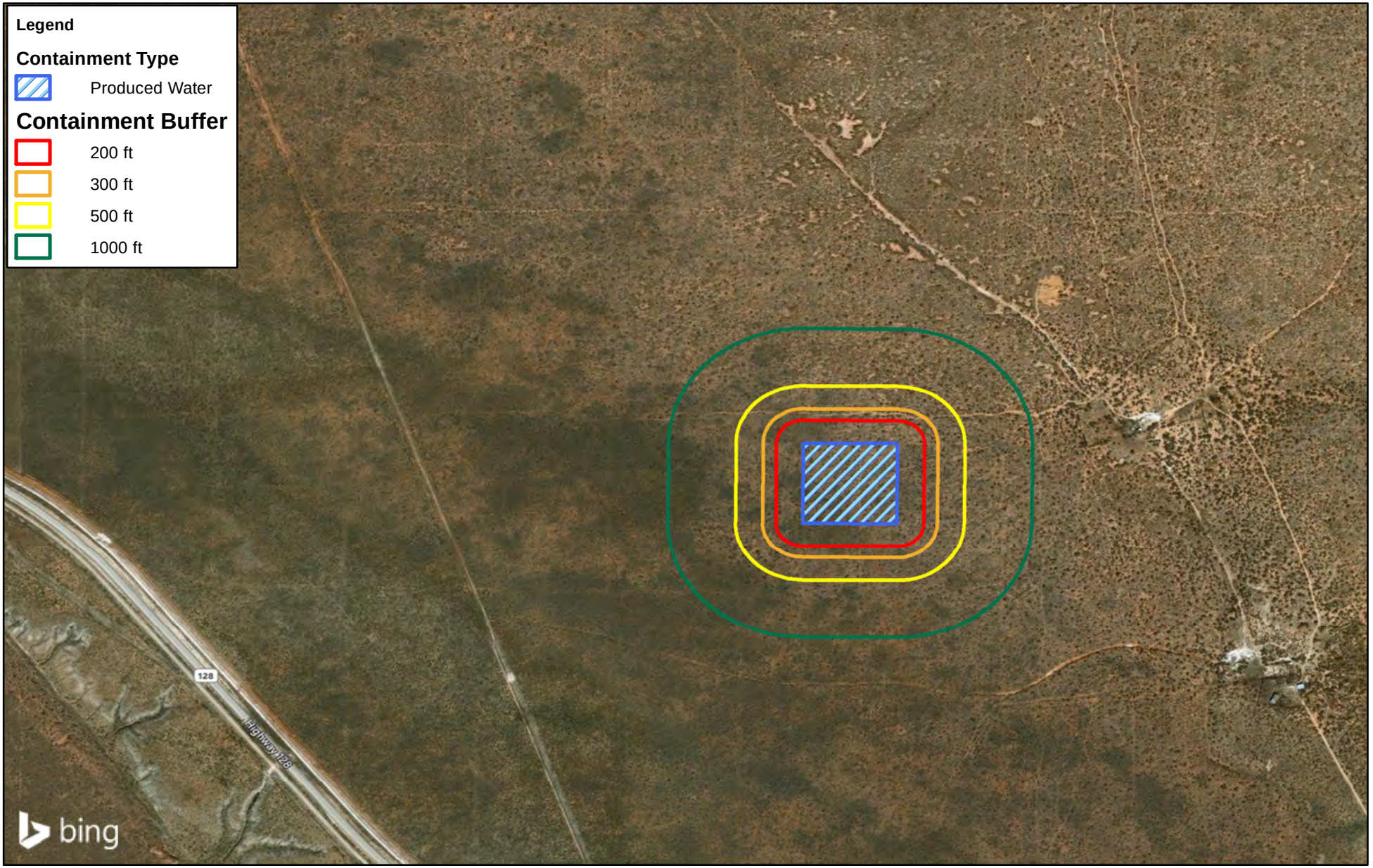

N
W
E
S

0 500 1,000
Feet

R.T. Hicks Consultants, Ltd
901 Rio Grande Blvd NW Suite F-142
Albuquerque, NM 87104
Ph: 505.266.5004

Nearby Structures

Figure 8

Tap Rock Resources
Estelle Recycle PW Containment

September 2018

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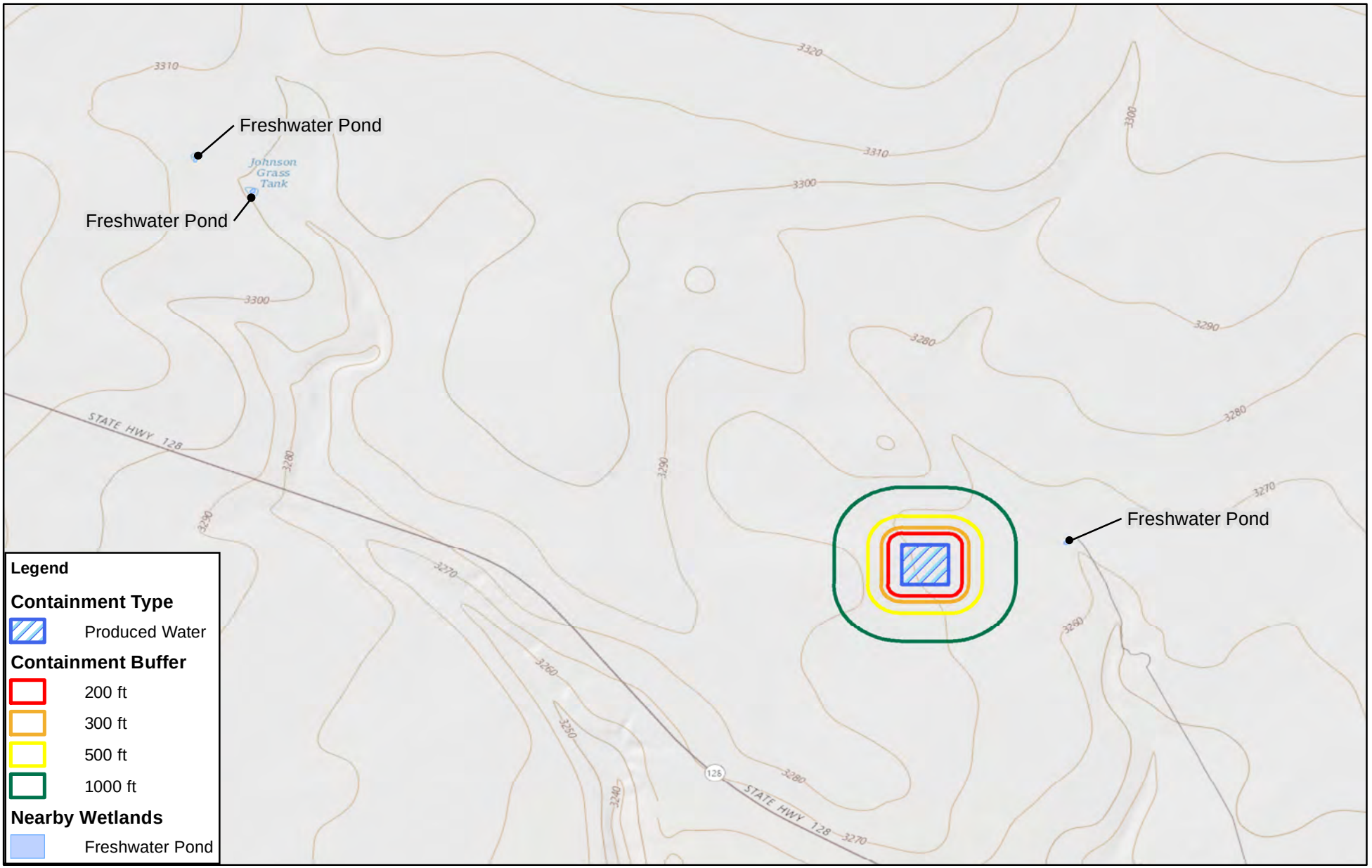

R.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104 Ph: 505.266.5004	Nearby Wetlands	Figure 9
	Tap Rock Resources Estelle Recycle PW Containment	September 2018

DESIGN PLAN

OPERATION AND MAINTENANCE PLAN

CLOSURE PLAN

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)**

Applicable mandates in Rule 34 are underlined. This plan addresses construction of the earthen containments.

Magrym Engineers is providing the design of the containment will conduct a geotechnical evaluation of the liner foundation and levees for the operator. Stamped "as built" drawings showing all design elements will be submitted to OCD prior to storage of produced water.

Dike Protection and Structural Integrity

The design and operation provide for the confinement of produced water, to prevent releases and to prevent overtopping due to wave action or rainfall. Additionally, the design prevents run-on of surface water as the containment is surrounded by an above-grade levee (a berm) and/or diversion ditch (between the levee and the soil stockpile) to prevent run-on of surface water.

Stockpile Topsoil

Where topsoil was present, prior to constructing containment, the operator stripped and stockpiled the topsoil for use as the final cover or fill at the time of closure.

Signage

The operator will place an upright sign no less than 12 inches by 24 inches with lettering not less than two inches in height in a conspicuous place on the fence surrounding the containment. The sign is posted in a manner and location such that a person can easily read the legend. The sign will provide the following information:

- the operator's name,
- the location of the site by quarter-quarter or unit letter, section, township and range, and
- emergency telephone numbers

Fencing

The operator will provide for a fence to enclose the recycling containment in a manner that deters unauthorized wildlife and human access. Tap Rock will employ a game fence rather than a a four foot fence that has at least four strands evenly spaced in the interval between one foot and four feet above ground level. Because feral pigs, javelena and deer are present in the area, a chain link or game fence is required in order to comply with Section 19.15.34.12 D.1 of the Rule[1]. The specification for fencing provided in 19.15.34.12 D.2 contradicts D.1 because pigs will move beneath the lower strand of a 4-strand, 4-foot high barbed wire fence and deer will jump over. Thus, compliance with D.2 results in a violation of D.1. Compliance with D.1 is the critical component of the Rule and operators need not submit a variance request in order to follow Best Management Practices and comply with the Rule. As stated in the O&M plan, the operator will ensure that all gates associated with the fence are closed and locked when responsible personnel are not onsite.

[1] The operator shall fence or enclose a recycling containment in a manner that deters unauthorized wildlife and human access and shall maintain the fences in good repair.

Netting and Protection of Wildlife

The perimeter game fence will be effective in excluding stock and most terrestrial wildlife. If requested by the surface owner, the game fence can include a fine mesh from the base to 1 foot above the ground to exclude the small reptiles (e.g. dune sagebrush lizard).

The recycling containment will be protective of wildlife, including migratory birds through the implementation of an Avian Protection Plan, routine inspections and the perimeter fence.

The avian protection plan includes the use of a Bird-X Mega Blaster Pro[2] as a primary hazing program for avian species. The device will be equipped with sounds suitable for the Permian Basin environment. In addition to this sonic device, staff will routinely inspect the containment for the presence of avian species and, if detected, will use a blank cartridge or shell in a handgun, starter pistol or shotgun as additional hazing. Decoys of birds of prey may be placed on the game fence and other roosts around the open water to provide additional hazing.

The O&M plan calls for the operator to inspect 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.

Earthwork

The containment will have a properly constructed foundation and interior slopes consisting of a firm, unyielding base, smooth and free of rocks, debris, sharp edges or irregularities to prevent the liner's rupture or tear. Geotextile may be placed under the liner when needed to reduce localized stress-strain or protuberances that otherwise may compromise the liner's integrity.

Appendix A provide the stamped drawings for the containment will have the following design/construction specifications:

a) levee has inside grade no steeper than two horizontal feet to one vertical foot (2H: 1V).
b) levee outside grade is no steeper than three horizontal feet to one vertical foot (3H: 1V)
c) top of the levee is wide enough to install an anchor trench and provide adequate room for inspection and maintenance.
d) The containment floor design calls for a slope toward the sump in the southeast corner.

Liner and Drainage Geotextile Installation

The containment has a primary (upper) liner and a secondary (lower) liner with a leak detection system appropriate to the site's conditions.

[2] https://bird-x.com/bird-products/electronic/sonic/mega-blaster-pro/

The primary (upper) liner is a geomembrane liner composed of an impervious, synthetic material that is resistant to ultraviolet light, petroleum hydrocarbons, salts and acidic and alkaline solutions. It is 60-mil HDPE. The secondary liner is 40-mil HDPE and is equivalent to 30-mil LLDPEr. Liner compatibility meets or exceeds a subsequent relevant publication to EPA SW -846 method 9090A.

The recycling containment design has a leak detection system between the upper and lower geomembrane liners of 200-mil geonet 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. The containment floor design calls for a slope toward the sump in the southeast corner. This slope combined with the highly transmissive geonet drainage layer provide for rapid leak detection.

The liners and drainage material will be installed consistent with the Manufacture's specifications. In addition to any specifications of the Manufacturer, protocols for liner installation include measures to:

i. minimizing liner seams and orient them up and down, not across, a slope of the levee.
ii. use factory-welded seams where possible.
iii. use field seams in geosynthetic material that are thermally seamed and prior to field seaming, overlap liners four to six inches.
iv. minimize the number of field seams and comers and irregularly shaped areas.
v. provide for no horizontal seams within five feet of the slope's toe.
vi. use qualified personnel to perform field welding and testing.
vii. avoid excessive stress-strain on the liner
viii. The edges of all liners are anchored in the bottom of a compacted earth-filled trench that is at least 18 inches deep

At points of discharge into the lined earthen containment the pipe configuration effectively protects the liner from excessive hydrostatic force or mechanical damage during filling.

The design shows that at any point of discharge into or suction from the recycling containment, the liner is protected from excessive hydrostatic force or mechanical damage. External discharge or suction lines do not penetrate the liner.

Pumping from the containment to hydraulic fracturing operations is the responsibility of stimulation contractors. Typically, lines are permanently placed in the containment with floats attached to prevent damage to the liner system. The containment may be equipped with permanent HDPE stinger (supported by a sacrificial liner or geotextile) for withdrawal of fluid if the owner deems necessary during operations.

Leak Detection and Fluid Removal System Installation

The leak detection system, contains the following design elements

a. The 200-mil HyperNet Geonet drainage material between the primary and secondary liner that is sufficiently permeable to allow the transport of fluids to the observation ports (Appendix A).
b. The containment floor is sloped towards the monitoring riser pipe to facilitate the earliest possible leak detection of the containment bottom. A pump may be placed in the observation port to provide for fluid removal.
c. Piping will withstand chemical attack from any seepage; structural loading from stresses and disturbances from overlying water, cover materials, equipment operation or expansion or contraction (see Appendix A).

Operating and Maintenance Procedures

In this plan, underlined text represents the language of the Rule.

The operator will operate and maintain the lined earthen containment to contain liquids and solids (blow sand and minimal precipitates from the treated produced water) and maintain the integrity of the liner system in a manner that prevents contamination of fresh water and protects public health and the environment as described below. The purpose of the lined earthen containment is to facilitate recycling, reuse and reclamation of produced water derived from nearby oil and gas wells. During periods when water for E&P operations is not needed, produced water will discharge to one of the injection wells in the operator's SWD system. The containment will not be used for the disposal of produced water or other oilfield waste.

The operation of the containment is summarized below.

A. Via pipeline, produced water generated from nearby oil and gas wells is delivered to a treatment system located as indicated in the C-147.
B. After treatment, the produced water discharges into the containment.
C. When required, treated produced water is removed from the containment for E&P operations. At this time, treated produced water will be used for drilling beneath the fresh water zones (beneath surface casing), for well stimulation (e.g. hydraulic fracturing) and other E&P uses as approved by OCD.
D. Whenever the maximum fluid capacity of the containment is reached, treatment and discharge to the containment ceases (see Freeboard and Overtopping Plan, below).
E. The operator will keep accurate records and shall report monthly to the division the total volume of water received for recycling, with the amount of fresh water received listed separately, and the total volume of water leaving the facility for disposition by use on form C-148.
F. The operator will maintain accurate records that identify the sources and disposition of all recycled water that shall be made available for review by the division upon request.
G. The containment shall be deemed to have ceased operations if less than 20% of the total fluid capacity is used every six months following the first withdrawal of produced water for use. The operator will report cessation of operations to the appropriate division district office. The appropriate division district office may grant an extension to this determination of cessation of operations not to exceed six months.

The operation of the lined earthen containment will follow the mandates listed below:

1. The operator will not discharge into or store any hazardous waste (as defined by 40 CFR 261 and NMAC 19.15.2.7.H.3) in the containments.
2. If the containment's primary liner is compromised above the fluid's surface, the operator will repair the damage or initiate replacement of the primary liner within 48 hours of discovery or seek an extension of time from the division district office.
3. If the primary liner is compromised below the fluid's surface, the operator will remove all fluid above the damage or leak within 48 hours of discovery, notify the division district office and repair the damage or replace the primary liner.
4. If any penetration of the containment liner is confirmed by sampling of fluid in the leak detection system (see Monitoring, Inspection, and Reporting Plan; below), the operator will:

   a. Begin and maintain fluid removal from the leak detection/pump-back system,
   b. Notify the district office within 48 hours (phone or email) of the discovery,
   c. Identify the location of the leak, and
   d. Repair the damage or, if necessary, replace the containment liner.
5. The operator will install, or maintain on site, an oil absorbent boom or other device to contain an unanticipated release and the operator will remove any visible layer of oil from the surface of the recycling containment.
6. The operator will report releases of fluid in a manner consistent with NMAC 19.15.29
7. The containment will be operated to prevent the collection of surface water run-on.
8. The operator will maintain the containment free of miscellaneous solid waste or debris.
9. The operator will maintain at least three feet of freeboard for the containment and will use a free-standing staff gauge to allow easy determination of the required 3-foot of freeboard.
10. As described in the design/construction plan, the injection or withdrawal of fluids from the containment is accomplished through hardware that prevents damage to the liner by erosion, fluid jets or impact from installation and removal of hoses or pipes.
11. The operator shall ensure that all gates associated with the fence are closed and locked when responsible personnel are not onsite.
12. The operator will maintain the fences in good repair.

Monitoring, Inspection, and Reporting Plan

The operator will inspect the recycling containment and associated leak detection systems weekly while it contains fluids. The operator shall maintain a current log of such inspections and make the log available for review by the division upon request.

Weekly inspections consist of:

- reading and recording the fluid height of staff gauges,
- recording any evidence that the pond surface shows visible oil,
- visually inspecting the containment's exposed liners, and
- checking the leak detection system for any evidence of a loss of integrity of the primary liner.

As stated above, if a liner's integrity is compromised, or if any penetration of the liner occurs above the water surface, then the operator will notify the District office within 48 hours (phone or email).

Monthly, the operator will:

A. Inspect diversion ditches and berms around the containment to check for erosion and collection of surface water run-on.
B. Inspect the leak detection system for evidence of damage or malfunction and monitor for leakage.
C. Inspect the containment for dead migratory birds and other wildlife. 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.
D. Report to the division the total volume of water received for recycling, with the amount of fresh water received listed separately, and the total volume of water leaving the facility for disposition by use on form C-148.
E. Record sources and disposition of all recycled water

The operator will maintain a log of all inspections and make the log available for the appropriate Division district office's review upon request. An example of the log is attached to this section of the permit application.

Freeboard and Overtopping Prevention Plan

The method of operation of the containment allows for maintaining freeboard with very few potential problems. When the capacity of the containment is reached (3-feet of freeboard), the discharge of treated produced water ceases and the produced water generated by nearby oil and gas wells is managed by an injection well(s).

If rising water levels suggest that 3-feet of freeboard will not be maintained, the operator will implement one or more of the following options:

I. Cease discharging treated produced water to the containment.
II. Accelerate re-use of the treated produced water for purposes approved by the Division.
III. Transfer treated produced water from the containment to injection wells.

The reading of the staff gauge typically occurs daily when treatment operations are ongoing and weekly when discharge to the containment is not occurring.

Protocol for Leak Detection Monitoring, Fluid Removal and Reporting

As shown in Appendix A, the leak detection system includes a monitoring system. Any fluid released from the primary liner will flow to the collection sump where fluid level monitoring is possible at the monitoring riser pipe associated with the leak detection system.

Staff may employ a portable electronic water level meter to determine if fluid exists in the monitoring riser pipe. Obtaining accurate readings of water levels in a sloped pipe beneath a containment can be a challenge. An electrician's wire snake may be required to push the probe to the bottom of the port and the probe may be fixed in a 2-inch pipe "dry housing" to avoid false readings due to water condensation on the pipe. There are many techniques to determine the existence of water in the sumps – including low flow pumps and a simple small bailer affixed to an electrician's snake. The operator will use the method that works best for this containment.

If seepage from the containment into the leak detection system is suspected by a positive fluid level measurement, the operator will:

1. Re-measure fluid levels in the monitoring riser pipe on a daily basis for one week to determine the rate of seepage.
2. Collect a water sample from the monitoring riser pipe to confirm the seepage is treated produced water from the containment via electrical conductivity and chloride measurements.
3. Notify NMOCD of a confirmed positive detection in the system within 48 hours of sampling (initial notification).
4. Install a pump into the monitoring riser pipe sump to continually (manually on a daily basis or via automatic timers) remove fluids from the leak detection system into the containment until the liner is repaired or replaced.
5. Dispatch a liner professional to inspect the portion of the containment

suspected of leakage during a “low water” monitoring event.

6. Provide NMOCD a second report describing the inspection and/or repair within 20 days of the initial notification.

If the point of release is obvious from a low water inspection, the liner professional will repair the loss of integrity. If the point of release cannot be determined by the inspection, the liner professional will develop a more robust plan to identify the point(s) of release. The inspection plan and schedule will be submitted to OCD with the second report. The operator will implement the plan upon OCD approval.

Containment Inspection Form

Month **Oct-14**

Day	Weekly	Low Water	Activity	Monthly	Staff Gauge	Comments
1 - Wed						
2	x				8.75	Gate unlocked upon arrival - notified Jerry Smith, no birds in pit
3					10	
4					12	
5			x			Water transfer to frac - pipes are good
6			x			Water transfer to frac - pipes are good
7		x			2.5	No visible liner problems
8					3	
9	x				4	All OK - no oil on surface, no birds in pit
10					5	
11					5	
12					6	
13					7	
14					7.5	
15				x	8	No fluid in leak detection, outer berm and stormater diversion OK, H2S - no alarm,
16					9	
17					9	
18					9.5	
19	x				10	All OK
20					11	
21					12	
22			x			Water transfer to frac - no problems
23			x			Water transfer to frac - no problems
24		x			1.75	No visible liner problems
25					2.25	
26	x				3.75	High wind -liner is good, no birds
27					4.75	
28					5.5	
29					6.75	
30					7.75	
31					8.5	

In this plan, underlined text represents the language of the Rule.

After operations cease, the operator will remove all fluids within 60 days and close the containment within six months from the date the operator ceases operations from the containment for use.

The operator shall substantially restore the impacted surface area to

- the condition that existed prior to the construction of the recycling containment or
- to a condition imposed by federal, state trust land or tribal agencies on lands managed by those agencies as these provisions govern the obligations of any operator subject to those provisions,

The surface owner will impose a closure design that conforms to their needs for the site. The operator understands that a variance will be submitted to OCD to allow for any alternative closure protocol.

Excavation and Removal Closure Plan – Protocols and Procedures

The containment is expected to hold a small volume of solids, the majority of which will be windblown sand and dust with some mineral precipitates from the water

1. The operator will remove all liquids from the containment and either:
    a. Dispose of the liquids in a division-approved facility, or
    b. Recycle, reuse or reclaim the water for reuse in drilling and stimulation.
2. The operator will close the recycling containment by first removing all fluids, contents and synthetic liners and transferring these materials to a division approved facility.
3. After the removal of the containment contents and liners, soils beneath the containment will be tested by collection of a five-point (minimum) composite sample which includes stained or wet soils, if any, and that sample shall be analyzed for the constituents listed in Table I of 19.15.34.14.
4. After review of the laboratory results
    a. If any contaminant concentration is higher than the parameters listed in Table I, additional delineation may be required and the operator must receive approval before proceeding with closure.
    b. If all contaminant concentrations are less than or equal to the parameters listed in Table I, then the operator will proceed to
        i. backfill with non-waste containing, uncontaminated, earthen material. Or
        ii. undertake an alternative closure process pursuant to a variance request after approval by OCD

Reclamation and Re-vegetation

a. The operator will reclaim the containment's location to a safe and stable condition that blends with the surrounding undisturbed area.
b. Topsoils and subsoils shall be replaced to their original relative positions and contoured so as to achieve erosion control, long-term stability and preservation of surface water flow patterns.
c. The disturbed area shall then be reseeded in the first favorable growing season following closure of a recycling containment.

Closure Documentation

Within 60 days of closure completion, the operator shall submit a closure report on form C-147, including required attachments, to document all closure activities including sampling results and the details on any backfilling, capping or covering, where applicable. The closure report shall certify that all information in the report and attachments is correct and that the operator has complied with all applicable closure requirements and conditions specified in division rules or directives.

The operator shall notify the division when reclamation and re-vegetation are complete. Specifically the notice will document that all ground surface disturbing activities at the site have been completed, and a uniform vegetative cover has been established that reflects a life-form ratio of plus or minus fifty percent (50%) of pre-disturbance levels and a total percent plant cover of at least seventy percent (70%) of pre-disturbance levels, excluding noxious weeds.

