Janurary 2019

C-147 Registration Package for Landes Recycling Containment and Recycling Facility Section 22, T25-S, R28-E, Eddy County

View to northeast near the southern boundary of the property owned by Solaris that will be the location of the containment and recycling facility.

Prepared for:
Solaris Midstream LLC
9811 Katy Freeway Suite 900
Houston, TX 77024

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

January 4, 2019

Mr. Jim Griswold
Mr. Mike Bratcher
NMOCD District 2
Via E-Mail

RE: Solaris Midstream LLC – Landes Containment and Recycling Facility

Dear Mr. Griswold and Mr. Bratcher:

On behalf of Solaris Midstream LLC, Hicks Consultants submits the attached registration. The package follows the order of Form 147 to allow for an easier review. The following elements of the submission are germane to your review.

A. This is a commercial facility and according to 19.15.34.15 Solaris must "furnish financial assurance acceptable to the division in the amount of the recycling containment's estimated closure cost or $25,000, whichever is greater". The closure cost estimate and the proposed financial assurance instrument is attached to this letter.
B. We elected to clear the environmental setbacks of Rule 36 for a 40-acre parcel that is owned by Solaris. The proposed containment will lie within the "area of interest".
C. Construction will not commence immediately and the precise location of the recycling facility has not been fixed. The location of the containment(s) is approximate.
D. One of the impoundments shown in the design drawings will be used for fresh water while the other impoundment will be used to store produced water. At this time, Solaris has not determined which impoundment will be the containment and which will be a fresh water pond.
E. As built engineering drawings stamped by a NM Registered Engineer will be provided to NMOCD prior to storage of produced water.
F. In compliance with 19.15.34.10 of the Rule, this submission is copied to Solaris, who is the surface owner of the surface upon which the containment will be constructed.
G. Site specific information demonstrates compliance with siting criteria for the location.
H. Water well logs from the OSE database and the logs from the geotechnical borings are included as appendices at the end of the submission.
I. Photographs of the site and environs are attached to this cover letter to provide assistance in the review

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.

This submission refers to the following elements that some reviewers have considered variances:

1. An equivalency demonstration written by experts for the proposed 40-mil HDPE secondary liner has been previously approved by OCD. We maintain that the language of the Rule is clear[1] and a variance is not required. The previously-submitted equivalency demonstration is lengthy and we can submit it under separate cover if requested by OCD.

[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. 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
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 order to follow Best Management Practices and comply with the Rule.

Our review of the Rule suggests that this submission is a registration and not a permit, provided that Solaris provides financial assurance that is acceptable to the Division. 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: Solaris Midstream, LLC
Solaris, landowner

[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.

Closure Cost Estimate and Financial Assurance

For the reasons discussed below, Hicks Consultants proposes that the existing bond (attached) for Solaris as an operator should be "acceptable to the division" for financial assurance for the proposed containment.

The Rule States

> *19.15.34.15 FINANCIAL ASSURANCE REQUIREMENTS FOR RECYCLING CONTAINMENTS:*
> *A. Financial assurance.*
> *(1) Containment operators without existing financial assurance pursuant to 19.15.8 NMAC shall furnish financial assurance acceptable to the division in the amount of the recycling containment's estimated closure cost or $25,000, whichever is greater*
> *(2) Containment operators providing the division with an existing financial assurance pursuant to 19.15.8 NMAC do not require additional financial assurance. These containments are limited to only the wells owned or operated by the owners of the containment. Containments delivering fluids to wells not owned or operated by the owners or operators of the containment must provide financial assurance pursuant to Paragraph (1) of Subsection A of 19.15.34.15 NMAC.*

Solaris owns and operates 13 SWDs that have financial assurance pursuant to 19.15.8 NMAC that is "acceptable to the division". Solaris also owns the property on which the containment(s) will be located.

Regarding closure, Section 19.15.34.14 discusses the various requirements. Subsection A of this portion of the Rule states:

> *19.15.34.14 CLOSURE AND SITE RECLAMATION REQUIREMENTS FOR RECYCLING CONTAINMENTS:*
> *A. Once the operator has ceased operations, the operator shall 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 division district office may grant an extension for the removal of all fluids not to exceed two months. The division district office may grant an extension to close the containment not to exceed six months. If the operator wants to use the containment for a purpose other than recycling then the operator must have that use approved or permitted by the division in accordance with the appropriate rules.*

Solaris owns the surface at the containment site. The fresh water pond will be constructed first. Given these facts, Hicks Consultants contends that the estimated closure cost could be significantly less than $25,000.

Sampling beneath the containment in accordance with Subsection C of 19.15.34.14 Rule is required. The sampling program could include an EM survey, which would cost about $6500. The EM survey would identify any high salinity soil beneath the liner, levee. EM evaluation of the nearby pasture would provide a baseline to compare findings. Sampling below the liner would be prudent areas where the EM survey suggests high salinity. This sampling would require cutting the liner to expose the liner foundation and a small, shallow boring. The sampling program with laboratory analysis would cost less than $5,000.

Subsection E of 19.15.34.14 states:

> *E. Once the operator has closed the recycling containment, the operator shall reclaim the containment's location to a safe and stable condition that blends with the surrounding undisturbed area. 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. The disturbed area shall then be reseeded in the first favorable growing season following closure of a recycling containment. The operator shall substantially restore the impacted surface area to the condition that existed prior to the construction of the recycling containment.*

The Rule suggests that after the containment is closed reclamation begins. Thus, we are uncertain if the "closure cost" includes reclamation and revegetation to the condition that existed prior to construction. Because Solaris owns the property, the issue reclamation costs are is moot, as described below.

Because the fresh water pond will be constructed first, the "condition that existed prior to the construction of the recycling facility" and containment is a water storage facility. The design of the impoundments as well as appropriate operation and maintenance will achieve erosion control, long-term stability. Because no watercourses exist in the area, preservation of surface water flow patterns is assured.

As the property owner, Solaris may elect to use both ponds as a water park or a Tilapia farm. Exactly how or why Solaris *must have that use approved or permitted by the division in accordance with the appropriate rules* is unclear. We believe the purpose of the reclamation and revegetation requirements are intended to protect the SLO, BLM or other property owners who do not also own the containment.

FORM O & G B-B
Adopted 6-17-77
Revised 4-20-2009

STATE OF NEW MEXICO

$50,000 BLANKET PLUGGING BOND

BOND NO. SUR0038617

File with the OIL CONSERVATION DIVISION, 1220 South St. Francis, Santa Fe, New Mexico 87505

KNOW ALL MEN BY THESE PRESENTS:

That Solaris Midstream, LLC, (an individual – **If dba, must read – Example: John Doe dba ABC Services**) (a corporation) (a general partnership), (a limited liability company) (a limited partnership) organized in the State of Delaware, and authorized to do business in the state of New Mexico, as PRINCIPAL, and Argonaut Insurance Company, a corporation organized and existing under the laws of the State of Illinois and authorized to do business in the State of New Mexico, as SURETY, are firmly bound unto the State of New Mexico for the use and benefit of the Oil Conservation Division of the Energy, Minerals and Natural Resources Department (or successor agency) (the DIVISION) pursuant to NMSA 1978, Section 70-2-14, as amended, in the sum of **Fifty Thousand Dollars ($50,000)** for the payment of which the PRINCIPAL and SURETY hereby bind themselves and their successors, jointly and severally, firmly by these presents.

The conditions of this obligation are such that:

WHEREAS, the PRINCIPAL has commenced or may commence the drilling of a well or wells to prospect for and/or produce oil or gas, carbon dioxide gas, helium gas or brine minerals, or an injection or other service well or wells related to such exploration or production, on privately owned or state owned lands within the State of New Mexico, or does own or operate, or may acquire, own or operate such a well or such wells, the identification and location of said wells being expressly waived by both PRINCIPAL and SURETY.

NOW, THEREFORE, if the PRINCIPAL and SURETY or either of them or their successors or assigns, or any of them, shall cause all of said wells to be properly plugged and abandoned when dry or when no longer productive or useful for other beneficial purpose, in accordance with the rules and orders of the DIVISION, including but not limited to Rules 8.9 [19.15.8.9 NMAC] and 25.10 [19.15.25.10 NMAC], as such rules now exist or may hereafter be amended;

THEN AND IN THAT EVENT, this obligation shall be null and void; otherwise, and in default of complete compliance with any and all of said obligations, the same shall remain in full force and effect.

PROVIDED HOWEVER, that 30 days after receipt by the DIVISION of written notice of cancellation from the SURETY, the obligation of the SURETY shall terminate as to wells acquired, drilled or started, or of which PRINCIPAL assumes operation, after said 30-day period, but shall continue in effect, notwithstanding said notice, as to wells theretofore acquired, drilled, started or operated.

Solaris Midstream, LLC
PRINCIPAL

8901 Gaylord Drive, Suite 210, Houston, TX 77024
Address

By _____
Signature

Vice President & Secretary
Title

If PRINCIPAL is a corporation, affix corporate seal here

Argonaut Insurance Company
SURETY

P.O. Box 469011, San Antonio, TX 78246
Address

By _____
Attorney-in-Fact
John L. Hohlt

Corporate surety affix corporate seal here

Form O & G B-B

ACKNOWLEDGMENT FORM FOR INDIVIDUAL
(If dba, must read – Example: John Doe dba ABC Services)

STATE OF _____)
SS.
COUNTY OF_____)

This Instrument was acknowledged before me on this _____day of _____,

by_____.
(Name of Individual)

_____
Notary Public

SEAL

_____
My Commission Expires

ACKNOWLEDGMENT FORM FOR CORPORATION, PARTNERSHIP, OR LIMITED LIABILITY COMPANY

STATE OF Texas)
SS.
COUNTY OF Harris)

This Instrument was acknowledged before me on this 27th day September 2016

by Cindy Durrett as Vice President and Secretary
(Name of Person Signing Instrument) (Capacity, e.g. President, Partner, Manager, Member)

of Solaris Midstream, LLC.
(Name of Corporation, Partnership, Limited Liability Company)

BONNIE KAPLAN
Notary Public, State of Texas
Comm. Expires 06-03-2020
Notary ID 10427193

Bonnie Kaplan
Notary Public

SEAL

6/3/20
My Commission Expires

ACKNOWLEDGMENT FORM FOR CORPORATE SURETY

STATE OF Texas)
SS.
COUNTY OF Harris)

This Instrument was acknowledged before me on this 27th day of September 2016

by John L. Hohlt, as Attorney-in-Fact for Argonaut Insurance Company
(Name of Attorney-in-Fact) (Name of Corporate Surety)

JESSICA RICHMOND
NOTARY PUBLIC,
STATE OF TEXAS
My Commission Expires
MAY 07, 2019

JRichmond
Notary Public

SEAL

May 7, 2019
My Commission Expires

Corporate surety attach power of attorney

APPROVED BY:

Oil Conservation Division of New Mexico

By_____

Date_____

AS-0098164

Argonaut Insurance Company
Deliveries Only: 225 W. Washington, 24th Floor
Chicago, IL 60606
United States Postal Service: P.O. Box 469011, San Antonio, TX 78246

POWER OF ATTORNEY

KNOW ALL MEN BY THESE PRESENTS: That the Argonaut Insurance Company, a Corporation duly organized and existing under the laws of the State of Illinois and having its principal office in the County of Cook, Illinois does hereby nominate, constitute and appoint:

Philip N. Bair, Eric S. Feighl, Joyce A. Johnson, Janie Cermeno, Jessica Richmond, John L. Hohlt

Their true and lawful agent(s) and attorney(s)-in-fact, each in their separate capacity if more than one is named above, to make, execute, seal and deliver for and on its behalf as surety, and as its act and deed any and all bonds, contracts, agreements of indemnity and other undertakings in suretyship provided, however, that the penal sum of any one such instrument executed hereunder shall not exceed the sum of:

$39,000,000.00

This Power of Attorney is granted and is signed and sealed under and by the authority of the following Resolution adopted by the Board of Directors of Argonaut Insurance Company:

"RESOLVED, That the President, Senior Vice President, Vice President, Assistant Vice President, Secretary, Treasurer and each of them hereby is authorized to execute powers of attorney, and such authority can be executed by use of facsimile signature, which may be attested or acknowledged by any officer or attorney, of the Company, qualifying the attorney or attorneys named in the given power of attorney, to execute in behalf of, and acknowledge as the act and deed of the Argonaut Insurance Company, all bond undertakings and contracts of suretyship, and to affix the corporate seal thereto."

IN WITNESS WHEREOF, Argonaut Insurance Company has caused its official seal to be hereunto affixed and these presents to be signed by its duly authorized officer on the 18th day of July, 2013.

Argonaut Insurance Company

ARGONAUT INSURANCE COMPANY CORPORATE SEAL 1948 ILLINOIS

by: _____

Joshua C. Betz, Senior Vice President

STATE OF TEXAS
COUNTY OF HARRIS SS:

On this 18th day of July, 2013 A.D., before me, a Notary Public of the State of Texas, in and for the County of Harris, duly commissioned and qualified, came THE ABOVE OFFICER OF THE COMPANY, to me personally known to be the individual and officer described in, and who executed the preceding instrument, and he acknowledged the execution of same, and being by me duly sworn, deposed and said that he is the officer of the said Company aforesaid, and that the seal affixed to the preceding instrument is the Corporate Seal of said Company, and the said Corporate Seal and his signature as officer were duly affixed and subscribed to the said instrument by the authority and direction of the said corporation, and that Resolution adopted by the Board of Directors of said Company, referred to in the preceding instrument is now in force.

IN TESTIMONY WHEREOF, I have hereunto set my hand, and affixed my Official Seal at the County of Harris, the day and year first above written.

NOTARY PUBLIC STATE OF TEXAS
KATHLEEN M MEEKS
NOTARY PUBLIC
STATE OF TEXAS
MY COMM. EXP. 07-15-2017

Kathleen M. Meeks

(Notary Public)

I, the undersigned Officer of the Argonaut Insurance Company, Illinois Corporation, do hereby certify that the original POWER OF ATTORNEY of which the foregoing is a full, true and correct copy is still in full force and effect and has not been revoked.

IN WITNESS WHEREOF, I have hereunto set my hand, and affixed the Seal of said Company, on the 27th day of September, 2016.

ARGONAUT INSURANCE COMPANY CORPORATE SEAL 1948 ILLINOIS

Sarah Heineman, VP-Underwriting Surety

THIS DOCUMENT IS NOT VALID UNLESS THE WORDS ARGO POWER OF ATTORNEY AND THE SERIAL NUMBER IN THE UPPER RIGHT HAND CORNER ARE IN BLUE, AND THE DOCUMENT IS ISSUED ON WATERMARKED PAPER. IF YOU HAVE QUESTIONS ON AUTHENTICITY OF THIS DOCUMENT CALL (210) 321 - 8400.

Site Photographs

Figure 1: This view north is from the northern edge of production location that lies south of the proposed recycling facility and containment. It shows the nature of the vegetation on this gently sloping surface.

Figure 2 – The image below is from geotechnical boring report and shows approximate locations (tip of arrow) of Figure 1, 3-5 in relation to the proposed containment and recycling facility. The arrow points in the direction of view.

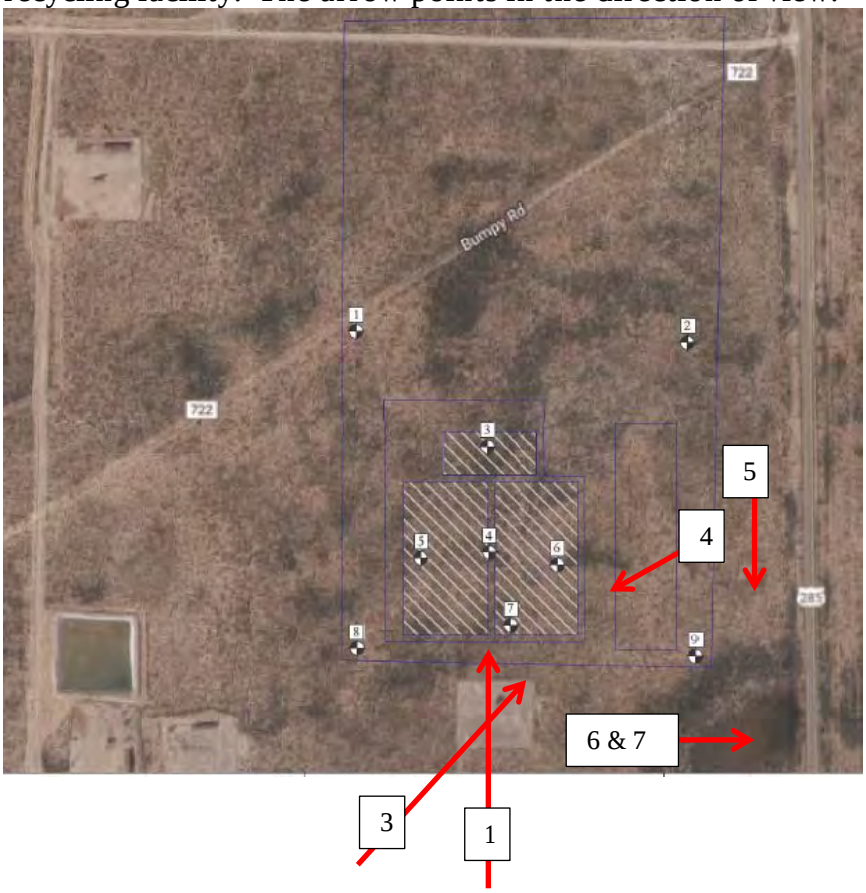


Figure 3 – This view shows the northeast corner of the production pad shown in Figure 1. Route 285 traffic is visible just below the horizon.

Figure 4 – This view to the southwest shows the pump jack at the formerly-mentioned production pad. A thin veneer of sand is present throughout the area with some grass but mainly brush vegetation. The area in the middle of the photograph shows the nature of drainage at the site that conveys storm water to a ponding area southeast of the site.

Figure 5 – This view south from pipeline right of way east of the proposed recycling facility area shows the ponding area to the west of Route 285. The sign visible on the east side of the highway is the entrance to the rock quarry.

Figure 6 – The culvert beneath the highway will drain water into a mapped watercourse on the east side of the highway. Note that the water level (dashed blue line) appears below the culvert. Signage on the highway is obvious behind the culvert. The rocks in the background are associated with the quarry.

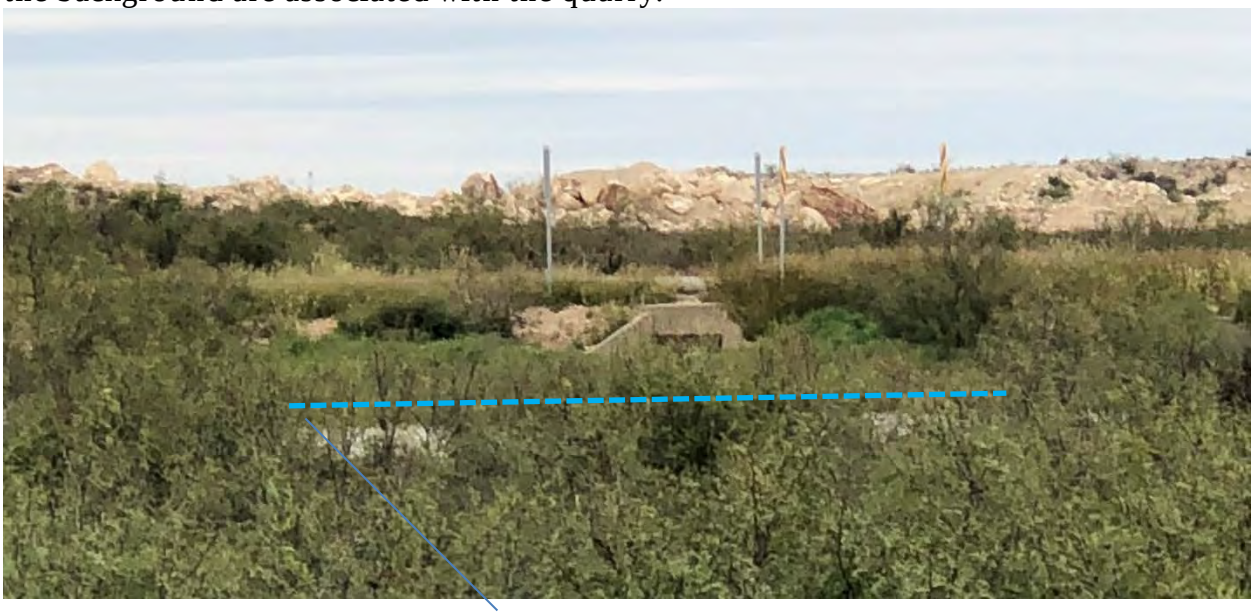


Figure 7 – The warning sign on the highway is above the culvert. The lowest elevation of the culvert appears to be the same elevation as the bench below the dashed red line.

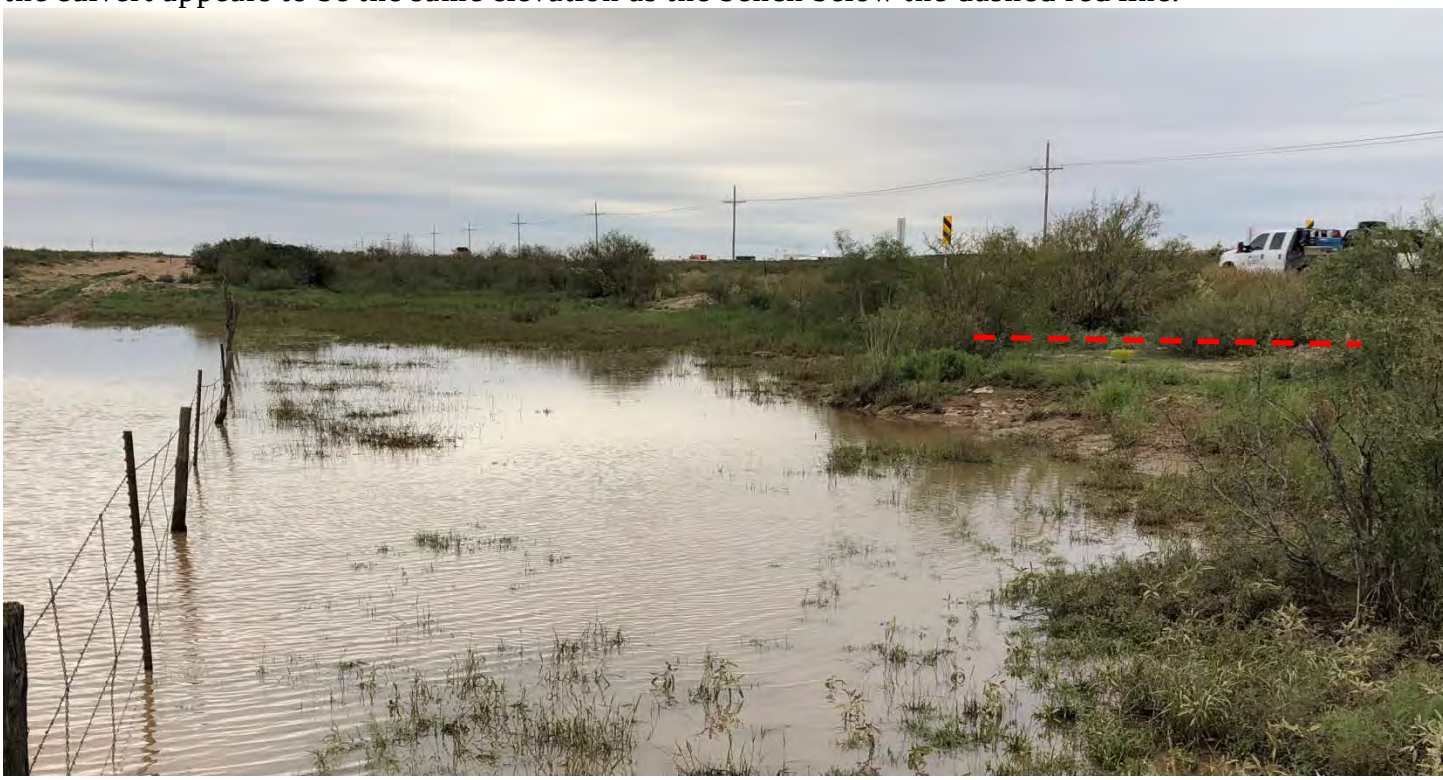


Figure 8 –This view to the west is an exposure of faulted bedrock in quarry due east of Route 285. On the left of the fault line is red clay or siltstone of the Rustler Formation and on the right is east dipping beds of what appears to be sandy dolomite. The sandy dolomite is mined for road base. Figure 9 shows the location of the image.

Figure 9 – The 2014 Google Earth image shows the location of the photograph displayed above. A large-scale displacement of bedrock is not apparent in this image. Thus, we believe it is possible that the sandy dolomite being mined in the quarry may be present beneath the proposed Solaris containment.

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 ☒ 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: : Solaris Water Midstream, LLC OGRID #:__ 371643____

Address: ___9811 Katy Freeway Suite 900, Houston, TX 77024 _____

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

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

U/L or Qtr/Qtr ____ _____ Section ___22_____ Township __25S_____ Range ____28E_____ County: ____Eddy_____

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

2.

☒ **Recycling Facility:**

Location of (if applicable): Latitude _32.115957_____ Longitude -104.0754905 NAD83 (Approximate)

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:** Each of the two containments will have these characteristics

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

Center of Recycling Containment (if applicable) Latitude _32.115957_____ Longitude -104.077415__ NAD83 (Approximate)

☐ 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: _1,764,735_bbl Dimensions: L__785_ x W 485__ x D_21' below levee__12' (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 $__$25,000_____ **(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.

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): Bradley Todd Carpenter Title: Operations Manager

Signature: Bradley Todd Carpenter Date: January 2, 2019

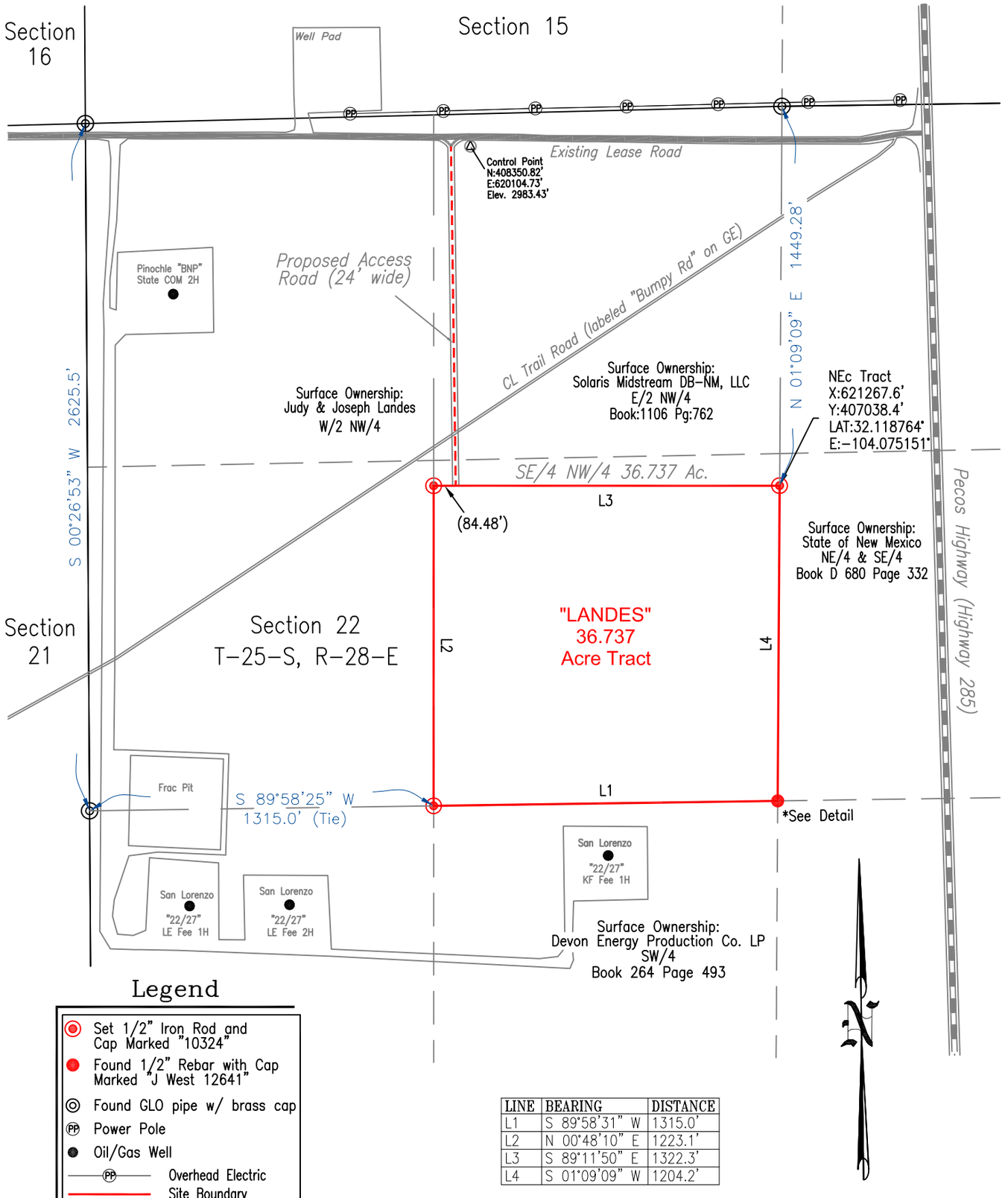
e-mail address Todd Carpenter <todd.carpenter@solarismidstream.com> Telephone: 432 203 9020

11.
OCD Representative Signature: _____ **Approval Date:** _____

Title: _____ **OCD Permit Number:** _____

☐ OCD Conditions _____
☐ Additional OCD Conditions on Attachment

SURVEY FOR CONTAINMENT AND RECYCLING FACILITY



Legend

- Set 1/2" Iron Rod and Cap Marked "10324"
- Found 1/2" Rebar with Cap Marked "J West 12641"
- Found GLO pipe w/ brass cap
- Power Pole
- Oil/Gas Well
- Overhead Electric
- Site Boundary
- Public Road Access
- Proposed Road Access

LINE	BEARING	DISTANCE
L1	S 89°58'31" W	1315.0'
L2	N 00°48'10" E	1223.1'
L3	S 89°11'50" E	1322.3'
L4	S 01°09'09" W	1204.2'

* Note: Ownership information as per Eddy County C.A.D. as of 7-11-2018.

OPUS calibration June 06, 2018 from 17:02:00 - 20:08:00
Overall RMS 0.017(m)
BASE STATIONS USED
PID DESIGNATION
DM4702 TXMH MONAHANS CORS ARP
DG6517 NMRO ROSWELL CORS ARP
DM4161 TXKM KERMIT CORS ARP

I, Mike Stanford, New Mexico Professional Surveyor No. 10324, do hereby certify that this Boundary Survey Plat and the actual survey on the ground upon which it is based were performed by me or under my direct supervision; that I am responsible for this survey; that this survey meets the Minimum Standards for Surveying in New Mexico; and that it is true and correct to the best of my knowledge and belief. I further certify that this survey is not a land division or subdivision as defined in the New Mexico Subdivision Act and that this instrument is a Boundary Survey Plat of an existing tract or tracts.

MICHAEL L. STANFORD NEW MEXICO 10324 REGISTERED PROFESSIONAL LAND SURVEYOR

Mike Stanford PS No. 10324 Date: 7-12-2018

BASIS OF BEARINGS is the New Mexico State Plane Coordinate System East Zone NAD 83. Bearings are Grid North. CGF = 0.999791043

7.4 Miles South of Malaga, NM.

Date Surveyed July 9, 2018

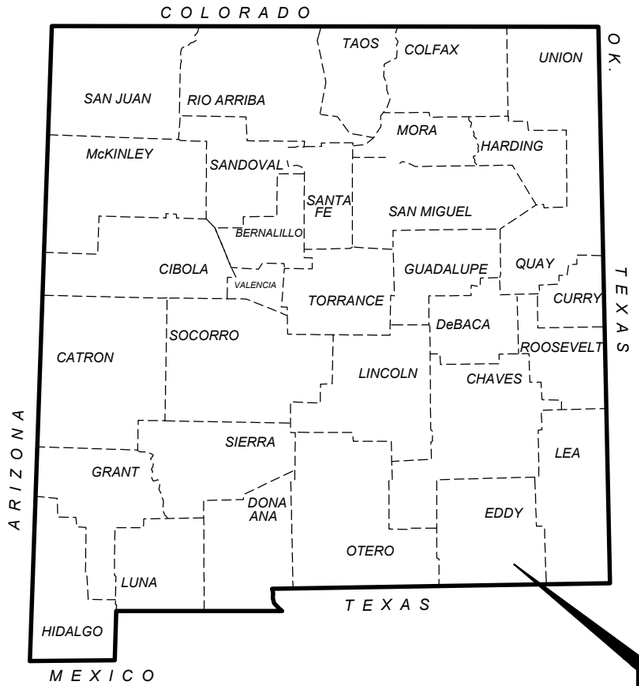
500 0 500 1000 1500 Feet

Solaris Midstream DB-NM, LLC
36.737 Acre Tract of Land "Landes Site" Located in
Section 22, T-25-S, R-28-E, N.M.P.M.
Eddy County, New Mexico

STANFORD SURVEYING CO.
P.O. BOX 8490
MIDLAND, TEXAS 79708-8490
TBPLS Firm No. 10128400 432-699-5708
Est. 1992

DRAWN BY	DATE	SCALE	FILE NAME
Andrew Potter	7-16-2018	1" = 500'	A-12317

RECYCLING CONTAINMENT DESIGN DRAWINGS



SOLARIS WATER MIDSTREAM, LLC

LANDES PRODUCED WATER RECYCLING FACILITY
S22 T25S R28E
EDDY COUNTY, NM

INDEX OF SHEETS

GENERAL NOTES

1. ALL BOUNDARY, TOPOGRAPHIC AND UTILITY INFORMATION SHOWN ARE BASED ON SURVEY INFORMATION FURNISHED BY SOLARIS WATER MIDSTREAM, LLC.
2. THE CONTRACTOR SHALL IDENTIFY AND LOCATE UTILITY LINES, MONITORING WELLS, SURVEY MONUMENTS, AND OTHER NEARBY STRUCTURES PRIOR TO PERFORMING WORK.
3. COORDINATE INFORMATION IS BASED ON STATE PLANE COORDINATES, NEW MEXICO EAST, NAD 83. THE CONTRACTOR SHALL IDENTIFY ANY DISCREPANCIES PRIOR TO PROCEEDING WITH CONSTRUCTION.

DRAFT SET FOR REVIEW

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)		

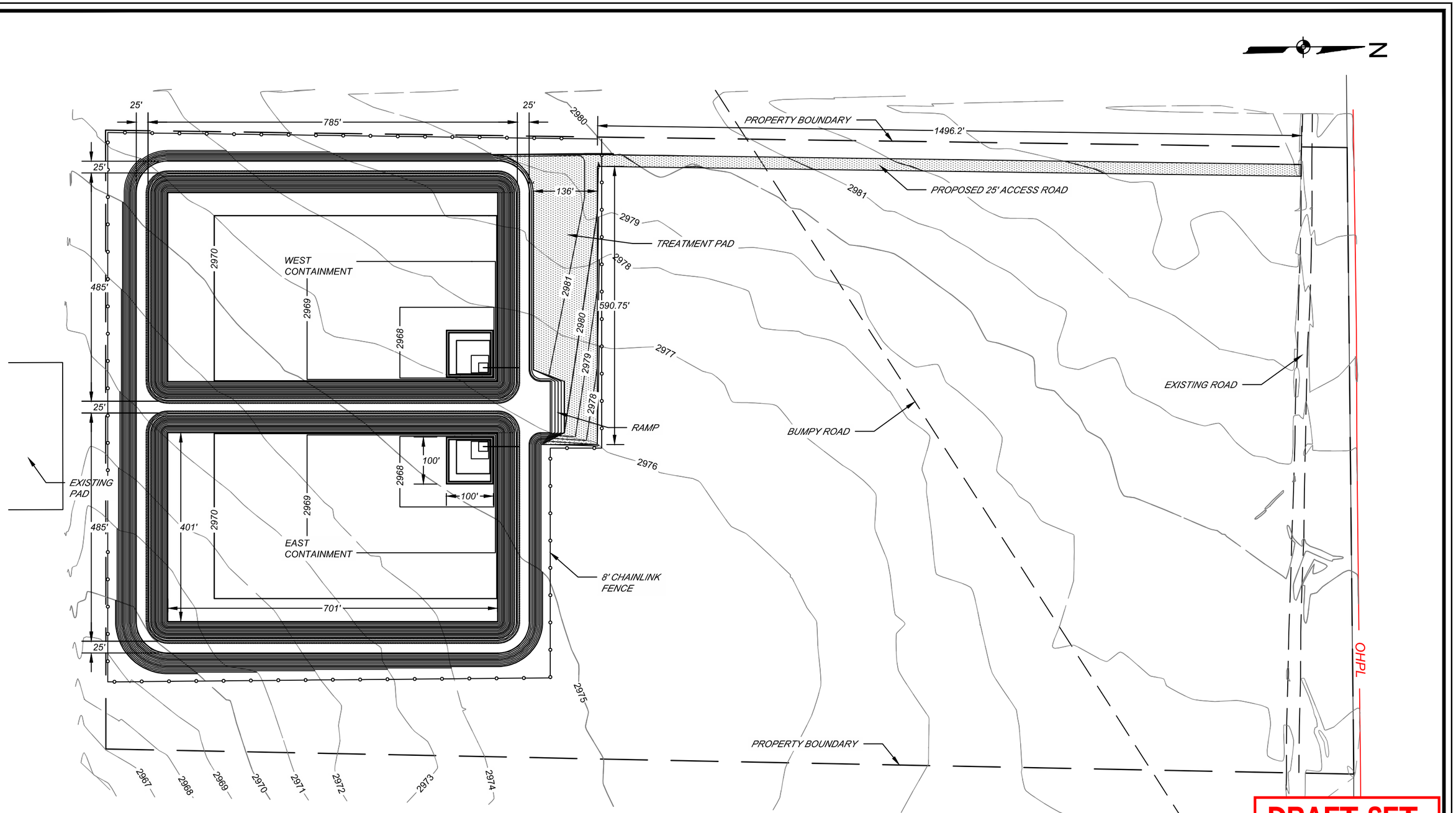
Solaris Water Midstream, LLC
907 Tradewinds Boulevard
Midland, TX 79701
432-203-9020
www.solarismidstream.com

LANDES PRODUCED WATER TREATMENT FACILITY
S22 T25S R28E
EDDY COUNTY, NM
SOLARIS WATER MIDSTREAM, LLC

COVER SHEET

HORIZONTAL SCALE: NTS	VERTICAL SCALE: NTS
PRINT DATE: 11/12/2018	DESIGNED BY: CSC
PROJECT NO. 18-113	CHECKED BY: EMH
SUBSET: COVER	SHEET: 1COVER

Drawing File: Z:\18-113 Solaris_Landes\04_CIVIL\CADD\Design\Drawings\18-113 Cover.dwg



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EDDY COUNTY, NM
SOLARIS WATER MIDSTREAM, LLC

SITE PLAN

HORIZONTAL SCALE: 1"=200'	VERTICAL SCALE: NTS
PRINT DATE: 11/12/2018	DESIGNED BY: CSC
PROJECT NO. 18-113	CHECKED BY: EMH
SUBSET: HORIZONTAL LAYOUT	SHEET: 1HL01

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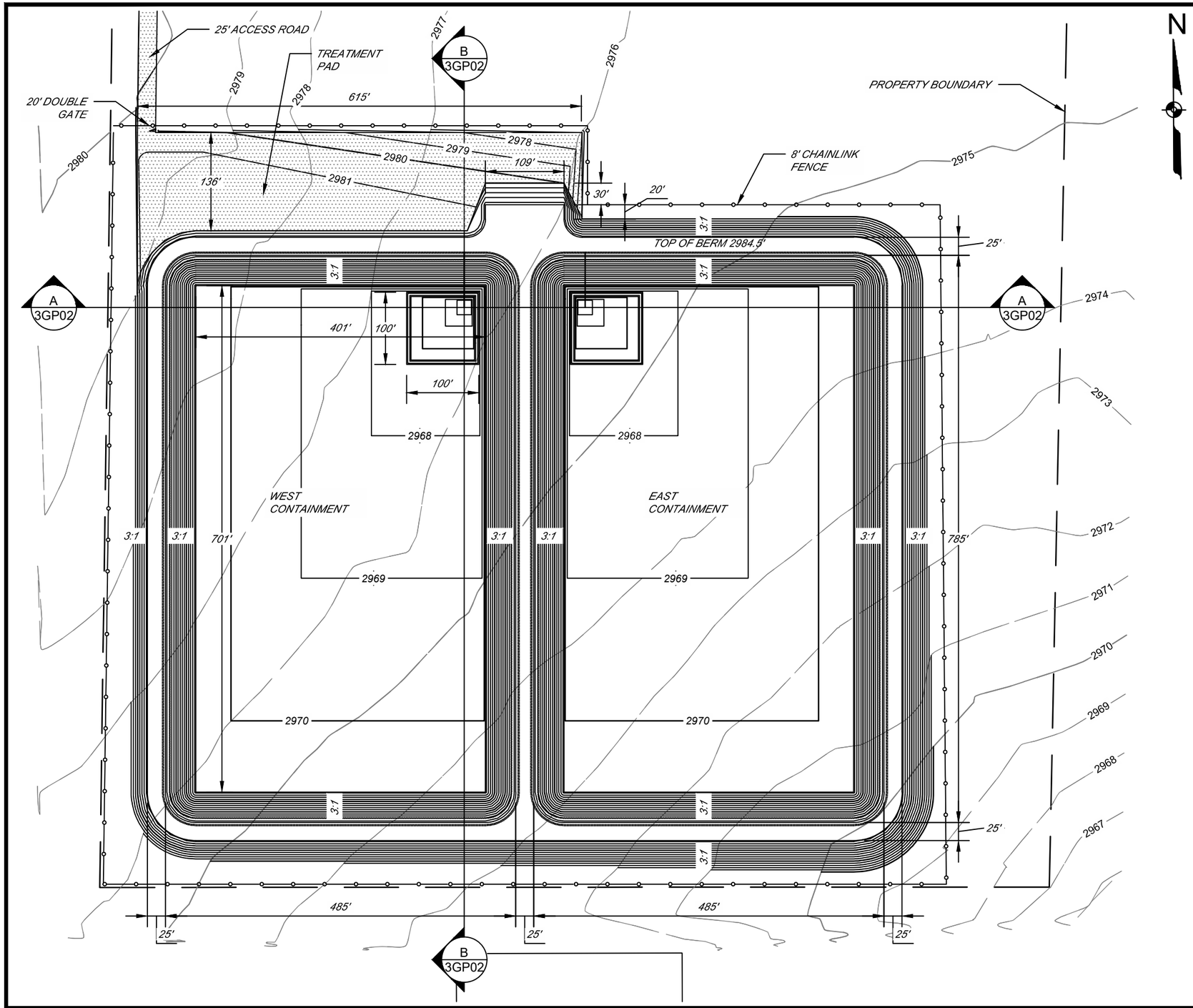

SUMMARY OF QUANTITIES	
ITEM	QTY
ESTIMATED TOPSOIL VOLUME (AVG. 0.5')	21,400 CY (BANK)
ESTIMATED CUT (INCLUDING TOPSOIL)	124,455 CY (BANK)
ESTIMATED FILL (ABOVE EXISTING GRADE)	100,142 CY (BANK)
20' DOUBLE GATE CHAIN LINK	1 UNIT
8' CHAIN LINK FENCE	4410 FT
10 OZ. GEOTEXTILE	820,000 SF
60 MIL HDPE PRIMARY LINER	820,000 SF
200 MIL GEONET	820,000 SF
40 MIL HDPE SECONDARY LINER	820,000 SF
6" HDPE DR11 PIPE WITH PERFORATIONS IN SUMP	160 FT

STAGE-STORAGE		
ELEVATION (FT)	VOLUME PER CONTAINMENT (BBL)	TOTAL VOLUME (BBL)
2963.5	0	0
2964	74	149
2965	611	1,222
2966	1,889	3,779
2967	3,464	6,927
2968	6,037	12,074
2969	17,051	34,103
2970	44,161	88,322
2971	91,163	182,327
2972	142,365	284,730
2973	194,711	389,421
2974	248,209	496,419
2975	302,870	605,704
2976	358,701	717,403
2977	415,713	831,425
2978	473,913	947,826
2979	533,311	1,066,621
2980	593,916	1,187,831
2981	655,736	1,311,472
2981.5	687,105	1,374,210
2982	718,781	1,437,563
2982.5	750,766	1,501,532
2983	783,060	1,566,121
2984	848,830	1,697,659
2984.5	882,368	1,764,735

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907 Tradewinds Boulevard
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432-203-9020
www.solarismidstream.com

LANDES PRODUCED WATER TREATMENT FACILITY
S22 T25S R28E
EDDY COUNTY, NM
SOLARIS WATER MIDSTREAM, LLC

GRADING PLAN

HORIZONTAL SCALE: 1"=150'	VERTICAL SCALE: NTS
PRINT DATE: 11/12/2018	DESIGNED BY: CSC
PROJECT NO. 18-113	CHECKED BY: EMH
SUBSET: GRADING PLANS	SHEET: 3GP01

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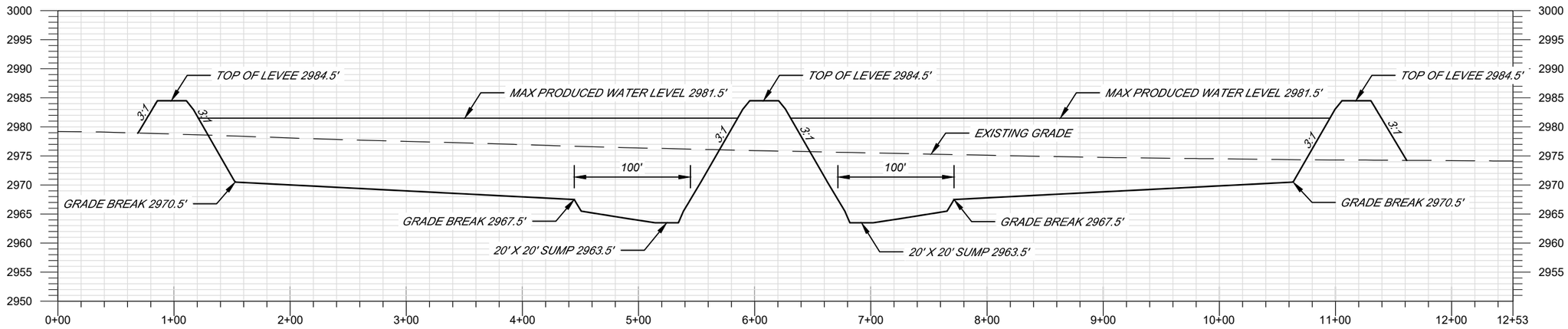
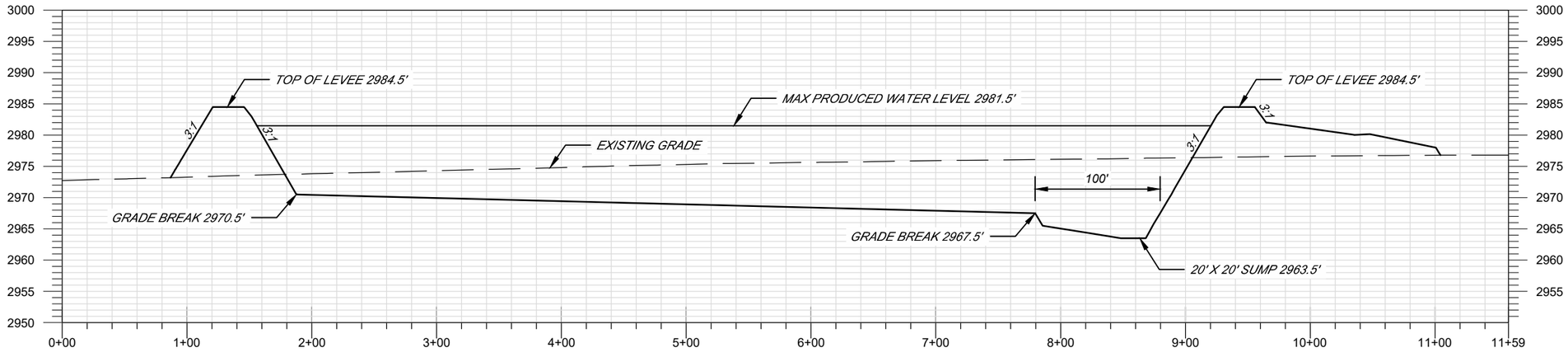


SECTION A



SECTION B

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FOR REVIEW

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LANDES PRODUCED WATER TREATMENT FACILITY
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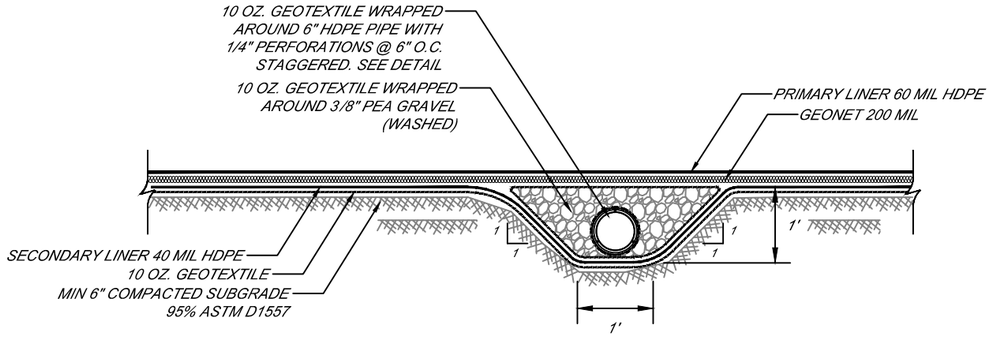
EDDY COUNTY, NM
SOLARIS WATER MIDSTREAM, LLC

CROSS SECTIONS

HORIZONTAL SCALE: 1"=100'	VERTICAL SCALE: 1" = 20'
PRINT DATE: 11/12/2018	DESIGNED BY: CSC
PROJECT NO. 18-113	CHECKED BY: EMH
SUBSET: GRADING PLANS	SHEET: 3GP02

Drawing File: Z:\18-113 Solaris_Landes\04_CIVIL\CADD\Design\Drawings\18-113 Grading.dwg



1 3GP03 LEAK DETECTION SYSTEM SECTION A
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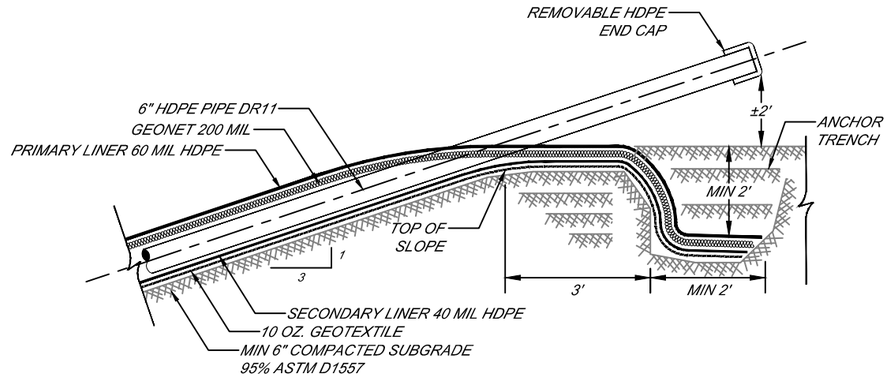

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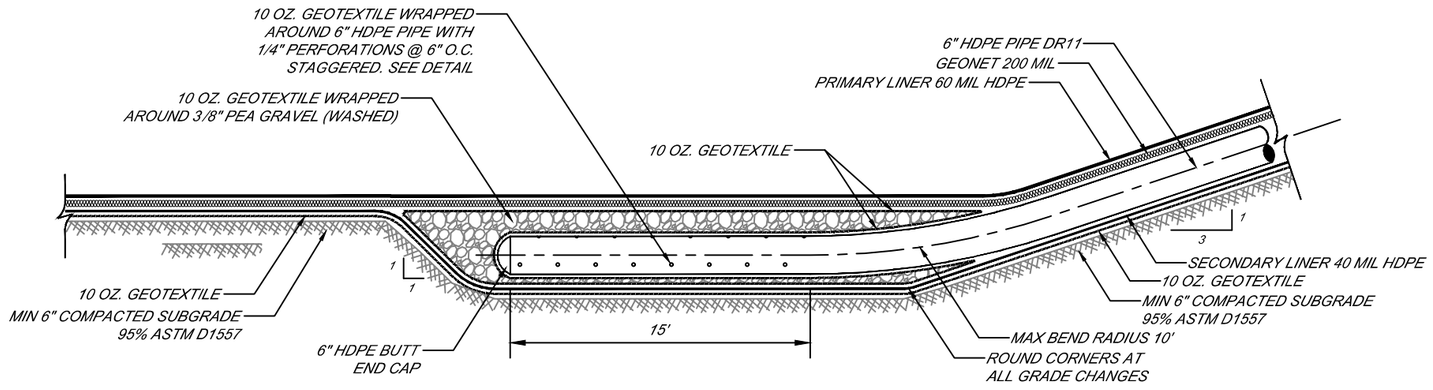

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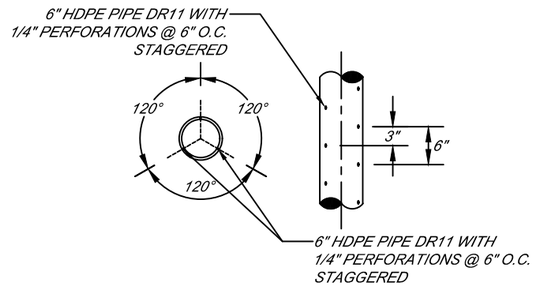

4 3GP03 LEAK DETECTION SYSTEM PERFORATED PIPE
NOT TO SCALE

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LANDES PRODUCED WATER TREATMENT FACILITY
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EDDY COUNTY, NM
SOLARIS WATER MIDSTREAM, LLC

DETAILS

HORIZONTAL SCALE: NTS	VERTICAL SCALE: NTS
PRINT DATE: 11/12/2018	DESIGNED BY: CSC
PROJECT NO. 18-113	CHECKED BY: EMH
SUBSET: GRADING PLANS	SHEET: 3GP03

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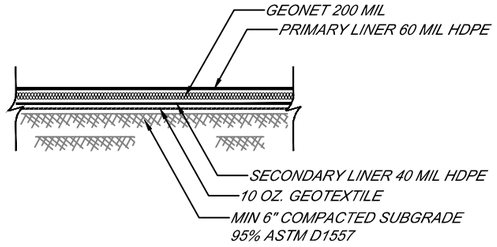

1 / 3GP04 **TYPICAL POND BOTTOM LINER**
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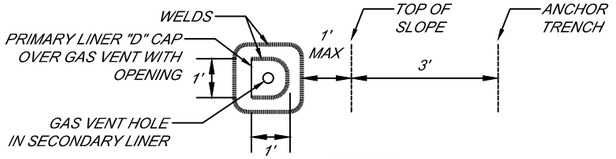
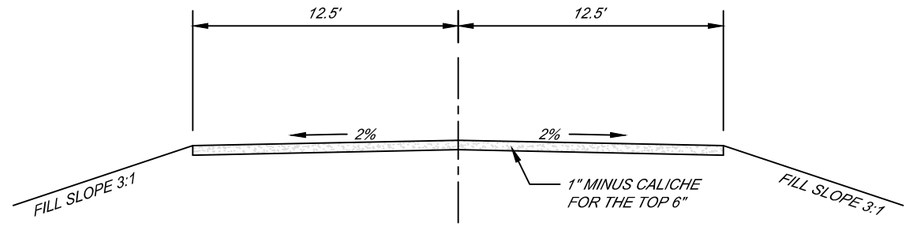


TOP VIEW



5 / 3GP04 **PROPOSED ACCESS ROAD**
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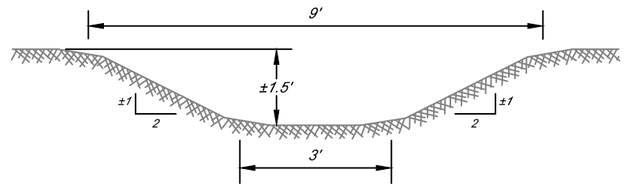

6 / 3GP04 **TYPICAL DRAINAGE DITCH**
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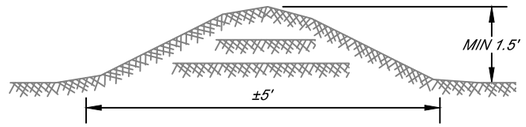

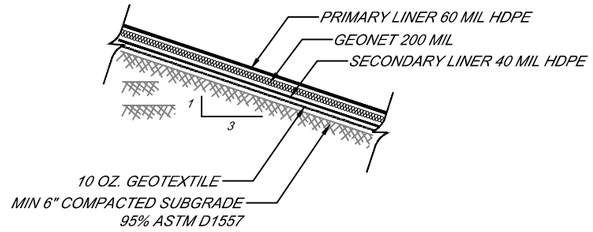

2 / 3GP04 **TYPICAL POND SLOPE LINER**
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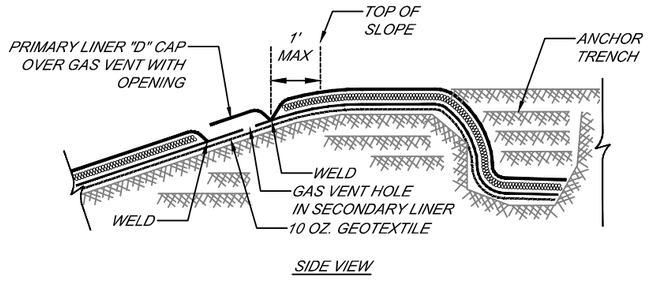
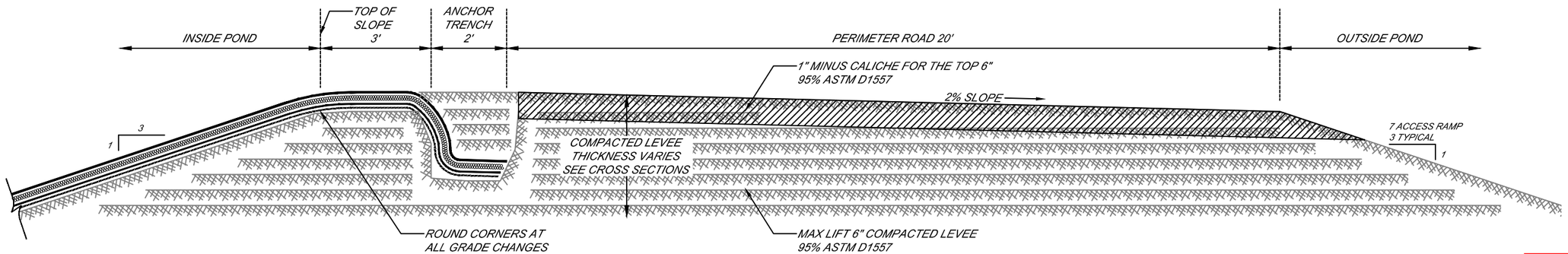


SIDE VIEW

4 / 3GP04 **TYPICAL GAS VENT**
NOT TO SCALE

7 / 3GP04 **TYPICAL EROSION PROTECTION BERM**
NOT TO SCALE



3 / 3GP04 **TYPICAL LEVEE COMPACTION**
NOT TO SCALE

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R-X	DESCRIPTION	DATE	BY

REVISIONS (OR CHANGE NOTICES)

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www.solarismidstream.com

LANDES PRODUCED WATER TREATMENT FACILITY
S22 T25S R28E
EDDY COUNTY, NM
SOLARIS WATER MIDSTREAM, LLC

DETAILS	
HORIZONTAL SCALE: NTS	VERTICAL SCALE: NTS
PRINT DATE: 11/12/2018	DESIGNED BY: CSC
PROJECT NO. 18-113	CHECKED BY: EMH
SUBSET: GRADING PLANS	SHEET: 3GP04

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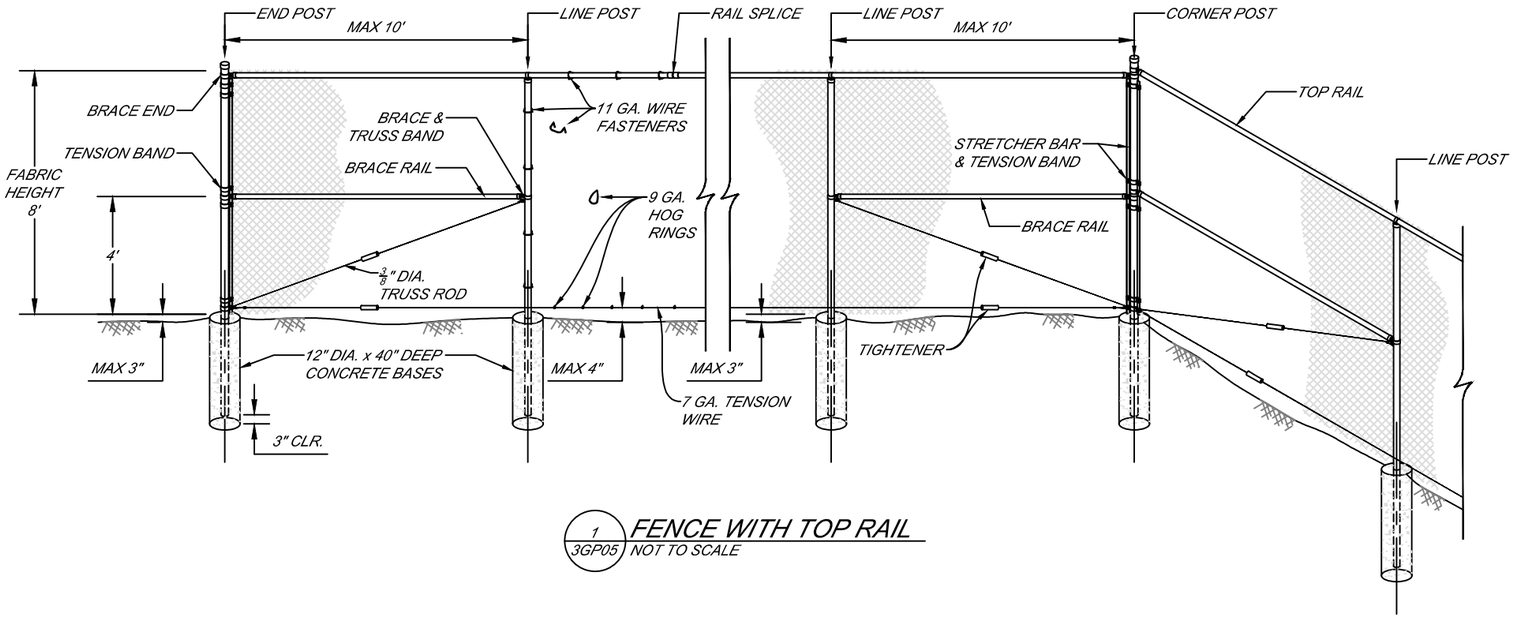
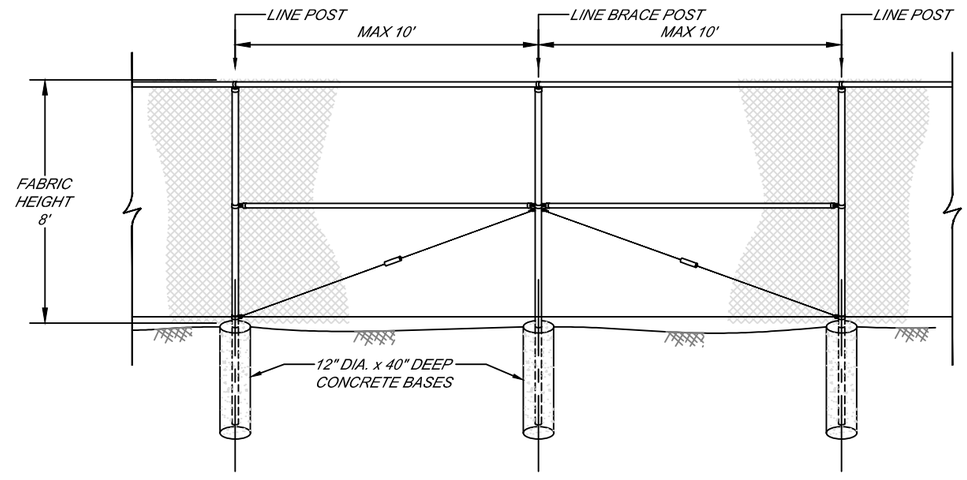


1 / 3GP05 FENCE WITH TOP RAIL
NOT TO SCALE

FENCE MATERIAL	
FABRIC HEIGHT (FT)	8
COMPONENT	ROUND PIPE I.D. (IN)
END, CORNER AND LINE BRACE POSTS	3
LINE POSTS	2
TOP AND BRACE RAILS	1.5
STRAIN POSTS	4
GATE FRAME	2
BRACING PIPE	2



2 / 3GP05 LINE BRACE SECTION
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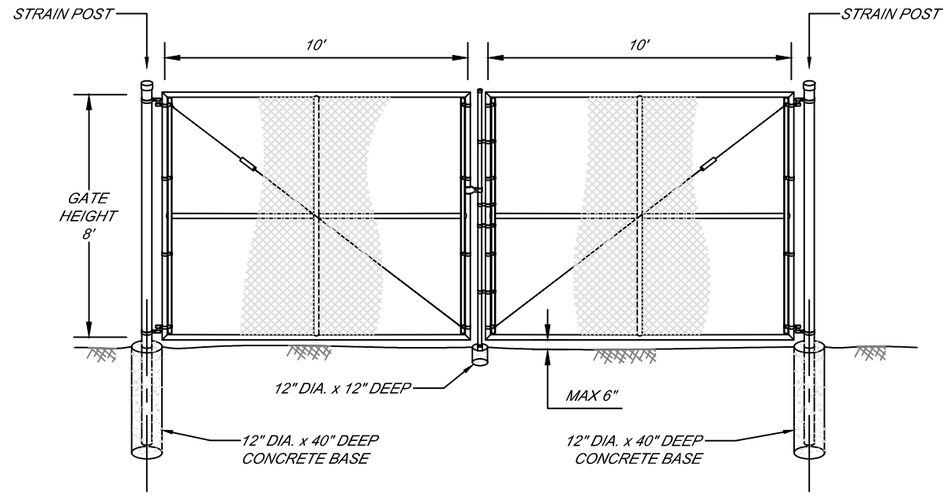

3 / 3GP05 DOUBLE GATE
NOT TO SCALE

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DETAILS	
HORIZONTAL SCALE: NTS	VERTICAL SCALE: NTS
PRINT DATE: 11/12/2018	DESIGNED BY: CSC
PROJECT NO. 18-113	CHECKED BY: EMH
SUBSET: GRADING PLANS	SHEET: 3GP05

Drawing File: Z:\18-113 Solaris_Landes\04_CIVIL\CADD\Design\Drawings\18-113 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) is greater than 50 feet beneath the 40-acre area of interest that is the location of the proposed recycling containment

Figure 1 is a geologic/ topographic map that shows:

1. The Landes Containment and recycling facility area is owned by Solaris Midstream and this 40 acre parcel is identified by the blue square.
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. OSE wells showing no depth to water and no date are typically issued permits for wells that may or not be in existence at the time of writing this submission (e.g. C-1433 that is about 1 mile north of the Landes site). Well C-1522, is a plugged and abandoned boring that encountered some water at 125 feet (See Appendix WELL LOGS)
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 (Misc. wells).
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 Landes Containment and recycling facility area owned by Solaris identified by the blue square with the estimated surface elevations noted (2979 at northwest corner and 2965 at southeast corner).
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

The geologic map of New Mexico shows that the Permian Rustler (Pr) Formation is exposed at the surface in the area. Our field examination (see site inspection photographs included in the transmittal letter) documented the Rustler Formation exposed in a quarry on the east side of Route 285, due east of the recycling area. Throughout the recycling area, a thin veneer of wind-blown sand underlain by sandy clay is present. This sand does not obscure the Rustler exposures to the east. As indicated in the photographs, evidence of faulting of the Rustler is present in the quarry. The bedrock dips to the east-southeast toward the central axis of the Delaware Basin.

Beneath the Landes site, the Rustler is composed of red siltstone or dolomite, as suggested in the exposure at the adjacent quarry. The geotechnical borings (see Appendix GEOTECHNICAL) suggest that weathered Rustler siltstone (described as brown clayey-sand) is present from ground surface to 5-10 feet below grade. In most of the borings, a unit described as light brown (or

gray), dense silty sand or clayey sand underlies the surface unit. This dense silty sand may be the same competent sand or dolomite that is mined in the quarry to the east. This dense silty sand appears to be 10-35 feet thick in the southern portion of the recycling facility area, which is the location of the proposed containments.

Topographically, the area around the proposed containment slopes gently to the east-southeast toward the Pecos River. On the east side of Rt. 285 where the Rustler is well-exposed at the surface, the slope is influenced by the Pecos River and forms small benches, dropping to the east.

Groundwater Data

We relied upon the most recent data measured by the USGS and wells measured by Hicks Consultants data (Misc. 170 and 171) to create the water table elevation map shown in Figure 2. 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 accurate.

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:

- Since the mid-20th century, water levels have dropped by about 13 feet east of Rt. 285 (USGS 9010 v USGS 9004) and more than 50 feet about 1 mile west of the containment at USGS-9008 and Misc-171, which we believe is the same well.
- The elevation of the groundwater surface beneath the area in which the Landes Containment will be constructed is estimated from the data as 2910 feet above mean sea level.
- Using these data, distance between ground surface and the potentiometric surface of the regional aquifer is (2962-2910=) 52 feet.
- The deepest geotechnical boring (Boring 4) that is located in the center of the proposed containment did not encounter groundwater at total depth (66.5 feet).
- The plugged and abandoned well boring (C-1522), which is reported to be in the northwest ¼ of Section 22, describes encountering groundwater at 125 feet. As this boring was drilled with cable tool methods, the depth to water measurement is probably very good.
- The site-specific data demonstrate that the distance between the proposed bottom of the containment (elevation 2951) and the groundwater surface is at least 50 feet and may be as much as 110 feet.

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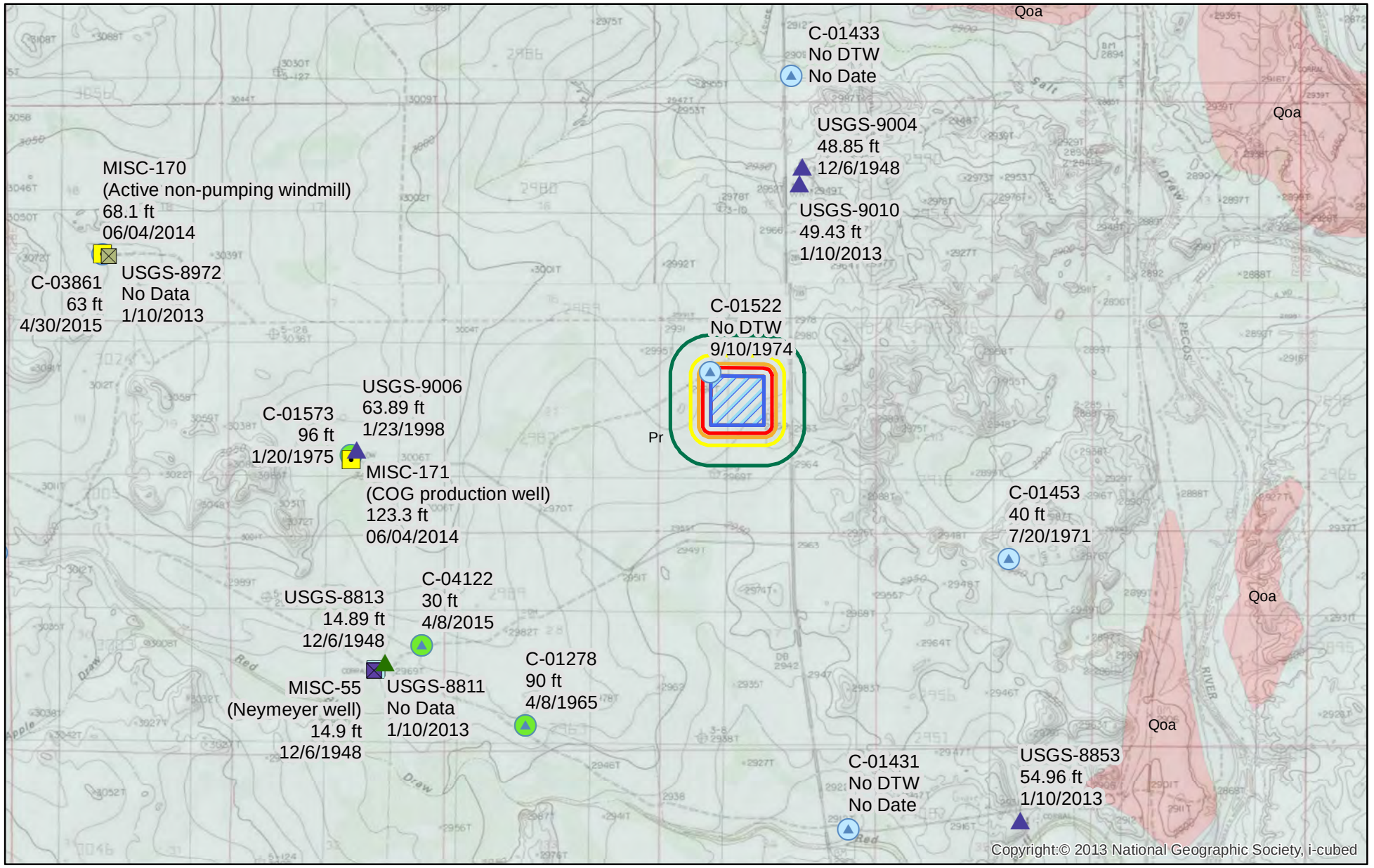

N
W
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0 0.25 0.5 Miles

R.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104 Ph: 505.266.5004	Depth to Groundwater and Geology Solaris Midstream Landes Recycle Facility	Figure 1 November 2018

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Legend

Containment

Distanace from Containment

- 200 ft
- 300 ft
- 500 ft
- 1000 ft

USGS Gauging Station (DTW, Date)

Aquifer Code, Well Status

- Alluvium/Bolsom
- 110AVMB, Obstruction was encountered in the well (no water level was recorded).
- Rustler
- 312RSLR, Obstruction was encountered in the well (no water level was recorded).

Misc. Water Wells (Well ID, DTW)

Well Depth (ft)

- No Data
- <= 150

OSE Water Wells (DTW, Date)

Well Depth (ft)

- <= 150
- 151 - 350

NM Geology

Map Unit, Description

- Pr, Paleozoic-Ruster Formation; siltstone, gypsum, sandstone, and dolomite; Upper Permian
- Qoa, Quaternary-Older Alluvial Deposits

R.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104 Ph: 505.266.5004	Depth to Groundwater and Geology	Figure 1 Legend
	Solaris Midstream Landes Recycle Facility	November 2018

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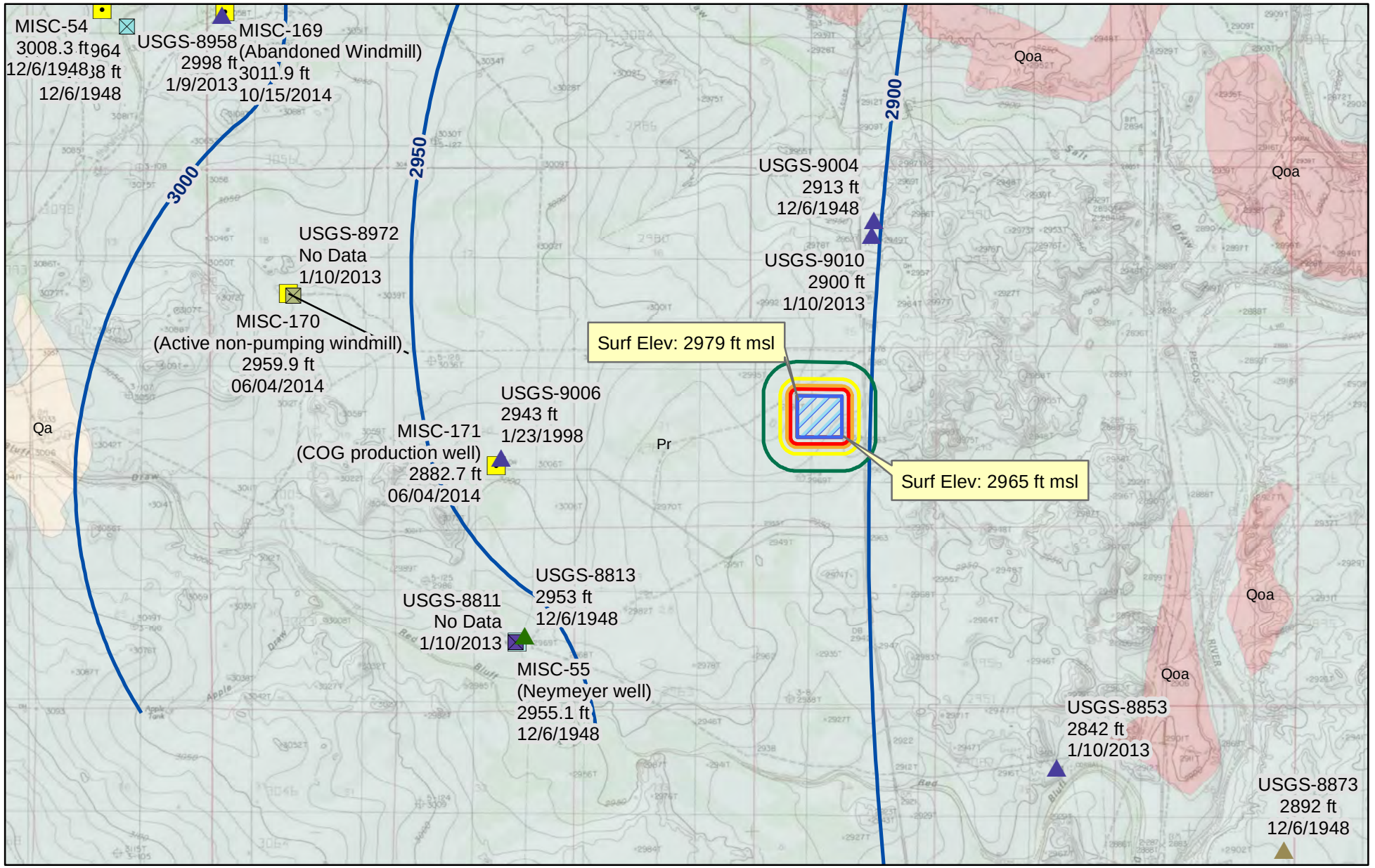

R.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104 Ph: 505.266.5004	Groundwater Elevation and Geology Solaris Midstream Landes Recycle Facility	Figure 2 November 2018

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Legend

Containment

Distanace from Containment

200 ft

300 ft

500 ft

1000 ft

Potentiometric Surface (ft msl)

Isocontours

Isocontour

USGS Gauging Station (GW Elev, Date)

Aquifer Code, Well Status

Alluvium/Bolsom

110AVMB, Obstruction was encountered in the well (no water level was recorded).

Rustler

312RSLR, Obstruction was encountered in the well (no water level was recorded).

Misc. Water Wells (GW Elev, Date)

Well Depth (ft)

No Data

<= 150

NM Geology

Map Unit, Description

Pr, Paleozoic-Ruster Formation; siltstone, gypsum, sandstone, and dolomite; Upper Permian

Qa, Quaternary Alluvium

Qoa, Quaternary-Older Alluvial Deposits

R.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104 Ph: 505.266.5004	Groundwater Elevation and Geology	Figure 2 Legend
	Solaris Midstream Landes Recycle Facility	November 2018

Distance to Municipal Boundaries and Fresh Water Fields

Figure 3 demonstrates that the area of interest 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 Malaga, NM approximately 7.5 miles to the north.
- The closest mapped public well field belongs to the Village of Loving about 14 miles to the north-west.

Distance to Subsurface Mines

Figure 4 and our general reconnaissance of the area demonstrate that the nearest mines are rock quarries. The area of interest is not within an area overlying a subsurface mine.

- The nearest quarry is located about 1000 feet east of the area of interest, across Rt. 285.

Distance to High or Critical Karst Areas

Figure 5 shows the area of interest of the containment with respect to BLM Karst areas.

- The area of interest is located within a "moderate" potential karst area.
- The nearest "high" potential karst area is located approximately 1 mile to the northeast and 1.5 miles to the south 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.
- The geotechnical boring report provides evidence of stable ground.

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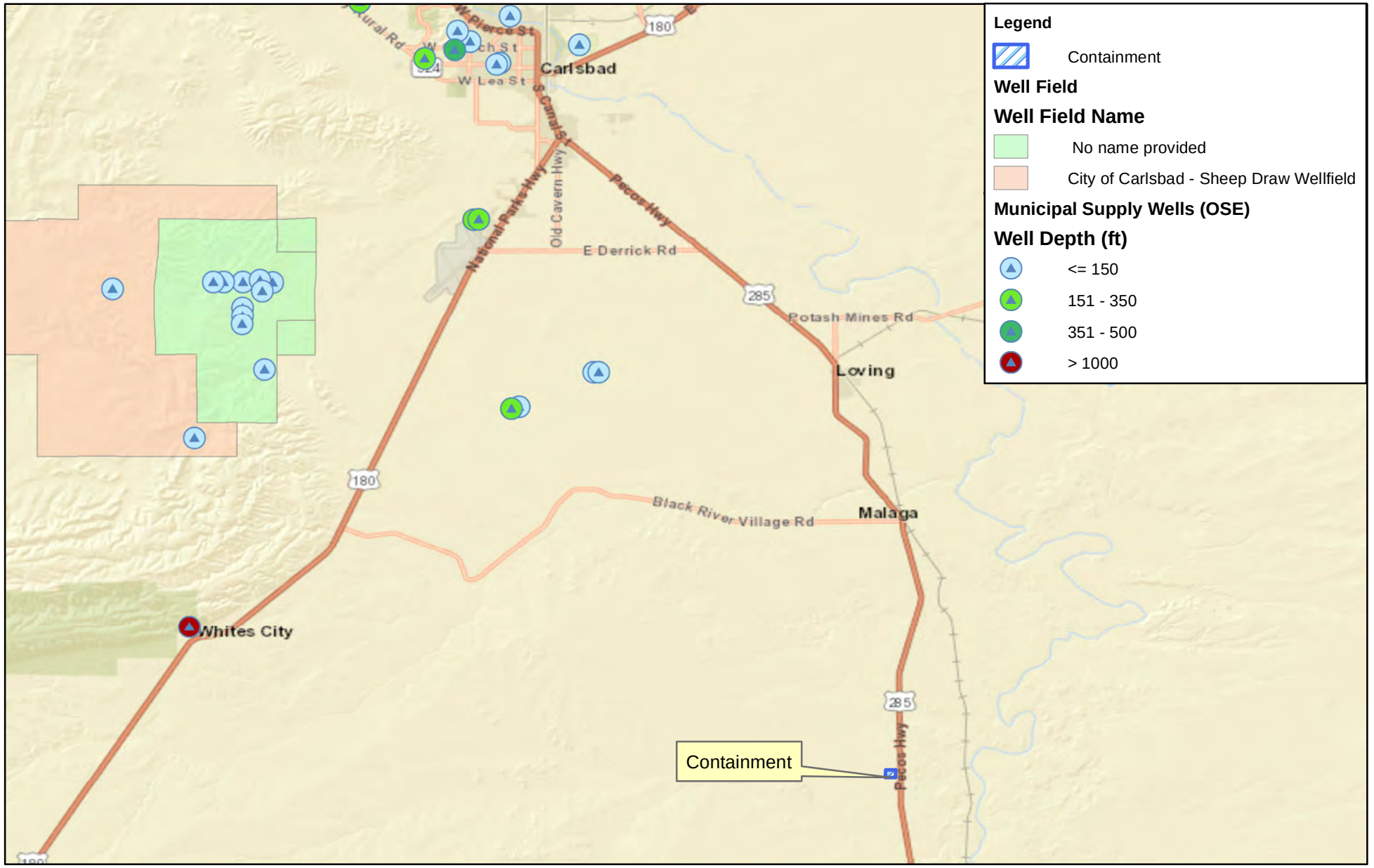

R.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104 Ph: 505.266.5004	Nearby Municipalities and Well Fields Solaris Midstream Landes Recycle Facility	Figure 3 November 2018

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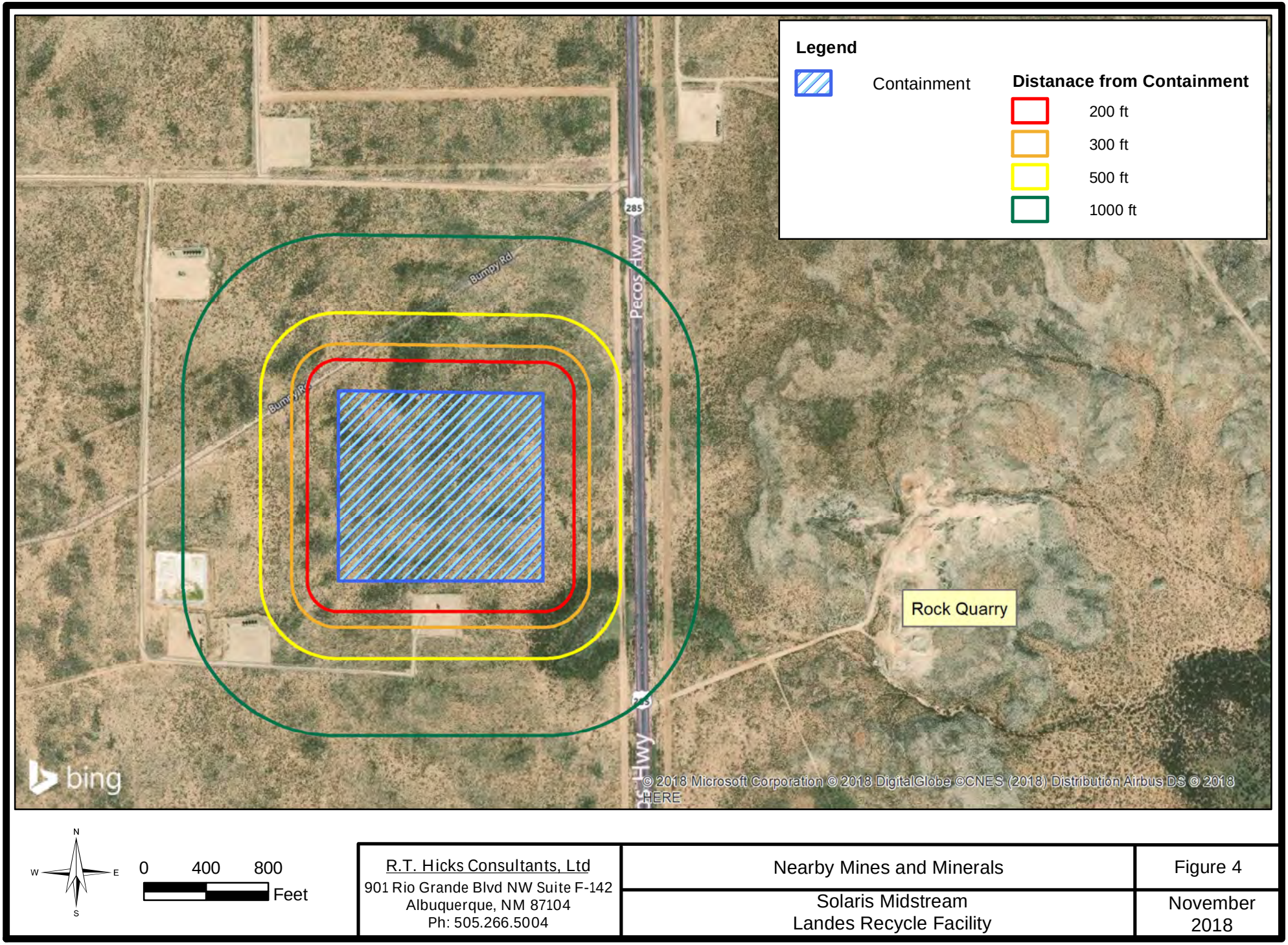

R.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104 Ph: 505.266.5004	Nearby Mines and Minerals	Figure 4
	Solaris Midstream Landes Recycle Facility	November 2018

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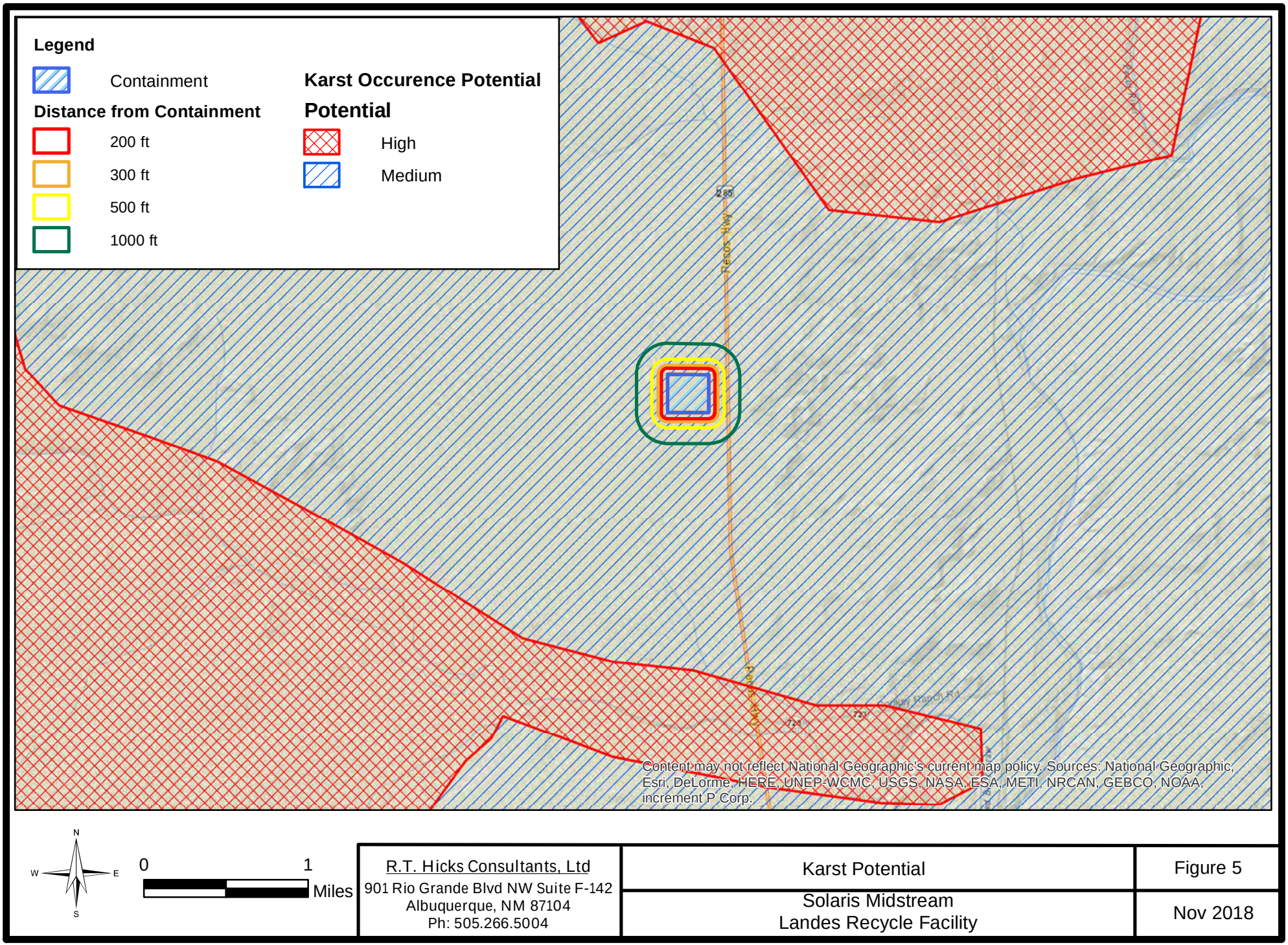

R.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104 Ph: 505.266.5004	Karst Potential	Figure 5
	Solaris Midstream Landes Recycle Facility	Nov 2018

Distance to 100-Year Floodplain

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

- Zone X is described as Areas Outside the 0.2% Annual Chance Floodplain.
- Our field inspection and examination of the topography permits a conclusion that the area of interest is not within any floodplain and has low risk for flooding.
- A water pooling area is obvious by a change in vegetation and the site photos on the uphill side of Rt. 285 about 200-750 feet southeast of the boundary of the property owned by Solaris that will house the recycling facility and containment. During large rainfall events, this area will be flooded.

Distance to Surface Water

Figure 7 and the site visit demonstrates that the area of interest 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 about 700 feet southeast of the boundary of the property owned by Solaris. This stream terminates at Rt. 285.
- We examined the low area which is uphill of the terminus of the intermittent stream. While a culvert beneath Rt. 285 exists in the general area, there is no evidence of a watercourse. Standing water did exist in this area as the road culvert is located slightly north and uphill of the depression that retains storm water against the road bed of Rt. 285.
- 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, which is in the southwestern quadrant of the property owned by Solaris.
- No springs were identified in Figure 7 or in the site visit
- No playa lakes or lakebeds were identified by the site visit or databases

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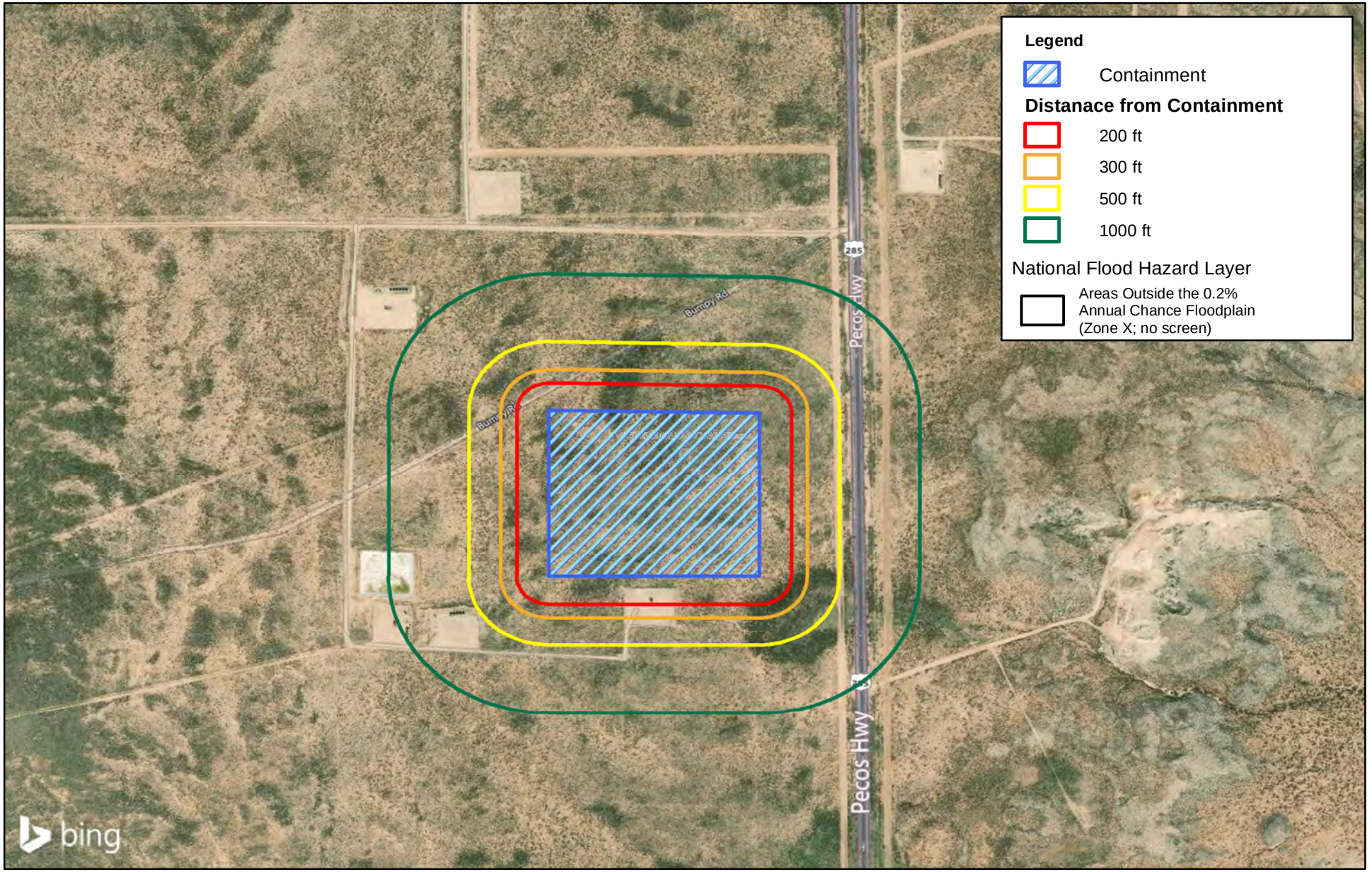

N
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Feet

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
	Solaris Midstream Landes Recycle Facility	November 2018

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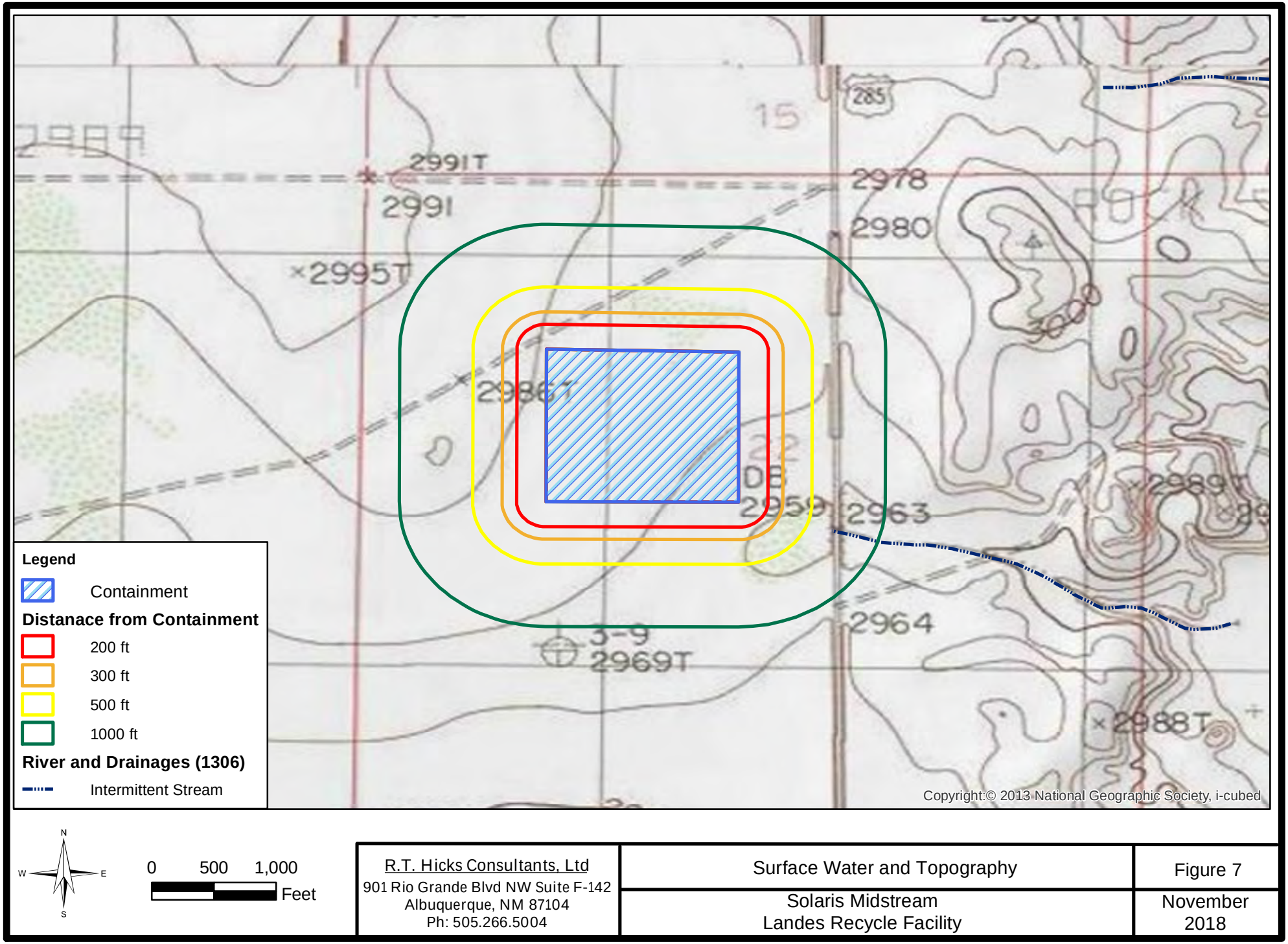

R.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104 Ph: 505.266.5004	Surface Water and Topography Solaris Midstream Landes Recycle Facility	Figure 7 November 2018

Distance to Permanent Residence or Structures

Figure 8 and the site visit demonstrates that the area of interest 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 are oil wells and tank batteries

Distance to Non-Public Water Supply

Figures 1 and 7 demonstrates that the area of interest 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, plugged or planned (permit location in OSE database).
- The nearest water well is USGS well 9010, located about 0.8 miles north of the recycling facility area. This well provides fresh water for oilfield operations and previously for irrigation.
- OSE water well C 01522 shown at the northwest corner of the containment area was drilled in 1974. No depth to water information was recorded. Online records show that the boring was dry (See Appendix WELL LOGS).
- No domestic water wells are located within 1,000 feet of the recycling area.
- No springs were identified within the mapping area (see Figure 7)

Distance to Wetlands

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

- The nearest designated wetland is a stock pond identified as “other” located approximately 1.8 mile to the northeast
- Natural wetlands (riverine and fresh water emergent along the Pecos River lie about 2 miles to the east.

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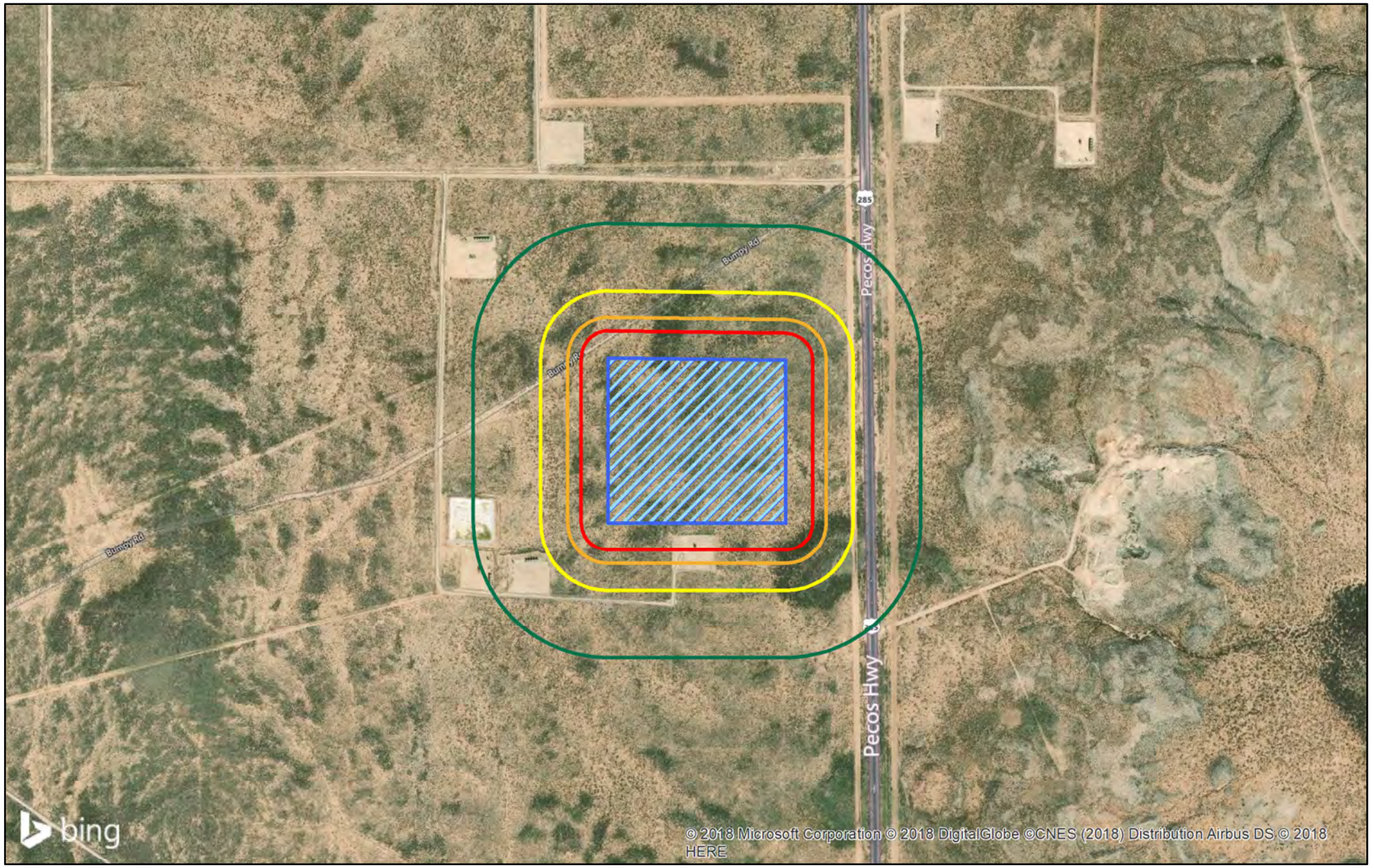

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Feet

R.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104 Ph: 505.266.5004	Nearby Structures	Figure 8
	Solaris Midstream Landes Recycle Facility	Nov 2018

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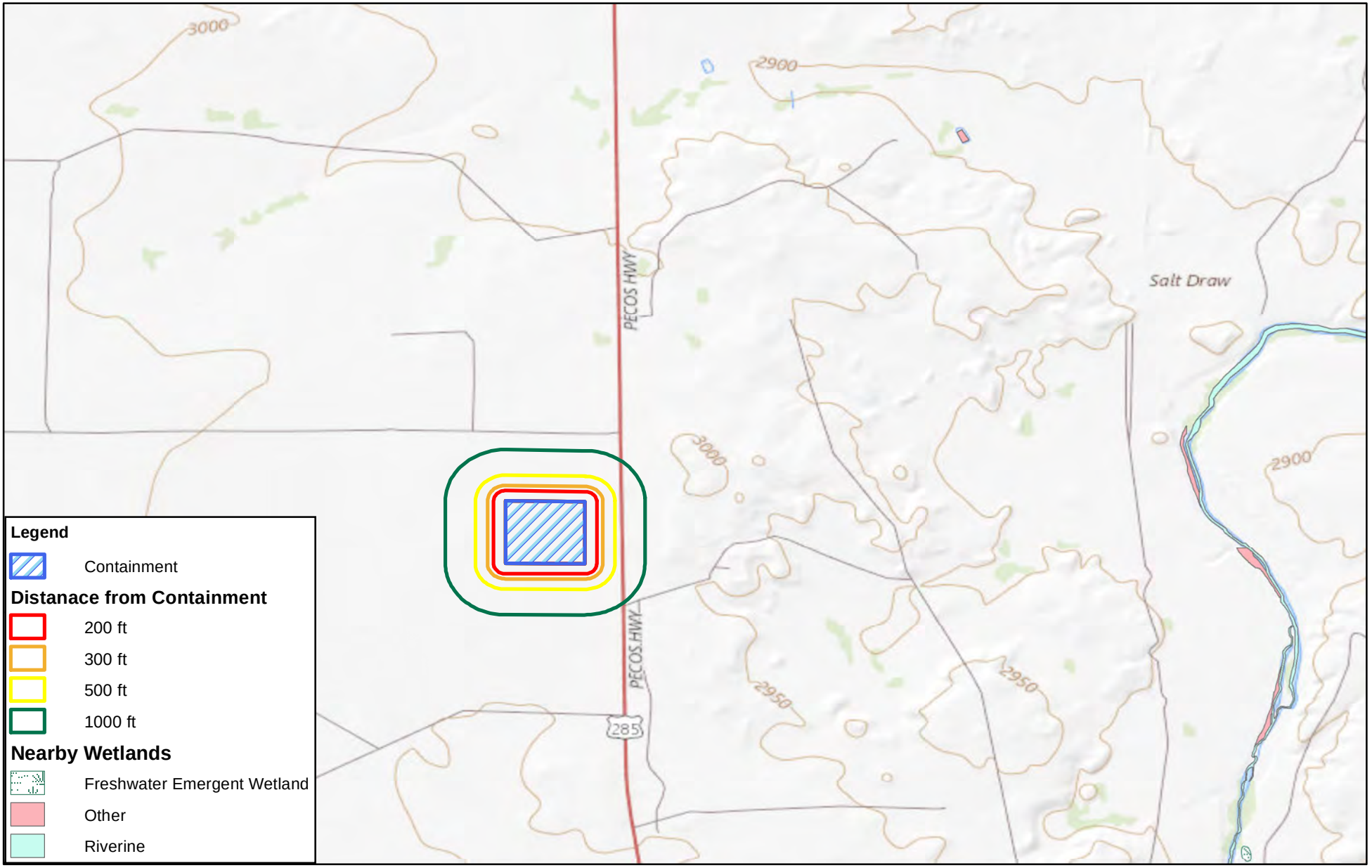

R.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104 Ph: 505.266.5004	Nearby Wetlands	Figure 9
	Solaris Midstream Landes Recycle Facility	November 2018

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 Consulting, P.C is providing the design of the containment and their preliminary plans are presented in this submission. 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. Solaris 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 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, produced water is removed from the containment for E&P operations. At this time, 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 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 produced water to the containment.
II. Accelerate re-use of the produced water for purposes approved by the Division.
III. Transfer 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 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.

Example Inspection Log

Month October

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,~~ [NOT APPLICABLE]

The surface owner (Solaris) will impose a closure design that conforms to their needs for the site. If the owner wants to use the containment for a purpose other than recycling then the operator [owner] must have that use approved or permitted by the division in accordance with the appropriate rules. If OCD Rules do not apply to the desired future use, such as a fresh water storage facility, fish farm, etc., then the owner will notify the division of the proposed future use and submit a closure report.

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. Liners will be removed only if the future use of the facility does not require liners.
4. After the removal of the containment contents, 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. An EM survey beneath the lined containment may be performed to identify areas of potential seepage if the liners are not removed.
5. 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 requestafter approval by OCD or notification to OCD if the proposed future use is not regulated by the division.

Reclamation and Re-vegetation

The following work elements will be performed if the owner elects to reclaim the site for future use.

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.

If revegetation is necessary, the [owner] 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.

APPENDIX OSE WELL LOGS

Revised June 1972

STATE ENGINEER OFFICE

WELL RECORD

463522

FIELD ENGR. LOG

Section 1. GENERAL INFORMATION

(A) Owner of well Milton R. Wolfson Owner's Well No. _____

Street or Post Office Address 1408 Mission Lane - La Huerta

City and State Carlsbad, N.M.88220

Well was drilled under Permit No. C-1522 and is located in the:

a. ____ ¼ ____ ¼ ____ ¼ N W ¼ of Section 22 Township 25 Range 28 N.M.P.M.

b. Tract No. _____ of Map No. _____ of the _____

c. Lot No. _____ of Block No. _____ of the _____
Subdivision, recorded in _____ County.

d. X= _____ feet, Y= _____ feet, N.M. Coordinate System _____ Zone in the _____ Grant.

(B) Drilling Contractor Emmett Barron License No. W.D.30

Address 307 South Tenth St. Carlsbad, N.M. 88220

Drilling Began July 15 Completed Sept. 10 Type tools Cable Size of hole 9" in.

Elevation of land surface or _____ at well is _____ ft. Total depth of well 150' ft.

Completed well is ☒ shallow ☐ artesian. Depth to water upon completion of well NONE ft.

Section 2. PRINCIPAL WATER-BEARING STRATA

Depth in Feet From	Depth in Feet To	Thickness in Feet	Description of Water-Bearing Formation	Estimated Yield (gallons per minute)
			No water - Anhydrite formation	

Section 3. RECORD OF CASING

Diameter (inches)	Pounds per foot	Threads per in.	Depth in Feet Top	Depth in Feet Bottom	Length (feet)	Type of Shoe	Perforations From	Perforations To
N			N			N		
o			o			o		
n			N			N		
e			E			E		

Section 4. RECORD OF MUDDING AND CEMENTING

Depth in Feet From	Depth in Feet To	Hole Diameter	Sacks of Mud	Cubic Feet of Cement	Method of Placement

Section 5. PLUGGING RECORD

Plugging Contractor _____

Address _____

Plugging Method _____

Date Well Plugged _____

Plugging approved by:

_____
State Engineer Representative

No.	Depth in Feet Top	Depth in Feet Bottom	Cubic Feet of Cement
1			
2			
3			
4			

FOR USE OF STATE ENGINEER ONLY

Date Received

Quad _____ FWL _____ FSL _____

File No. C-1522 Use Dom-STK Location No. 25.28.22.1440

Section 6. LOG OF HOLE

Depth in Feet From	Depth in Feet To	Thickness in Feet	Color and Type of Material Encountered
0	5	5	Top soil
5	35	30	Pink sandy clay
35	120	85	Brown sandy clay
120	125	5	Slight lime & gypsum
125	150	25	Anhydrite & gypsum
			Dry hole

Section 7. REMARKS AND ADDITIONAL INFORMATION

Water showing at 125' slight, not enough to test for salt. Deeper hole did not seem promising after 150'.

1974 OCT -3 AM 8:31
STATE ENGINEER OFFICE
DISTRICT II
ROSWELL, N. MEX.

1974 OCT -8 AM 8:14
STATE ENGINEER OFFICE
DISTRICT II
ROSWELL, N. MEX.

The undersigned hereby certifies that, to the best of his knowledge and belief, the foregoing is a true and correct record of the above described hole.

Emmett D. Barron

Emmett D. Barron
Driller

INSTRUCTIONS: This form should be executed in triplicate, preferably typewritten, and submitted to the appropriate district office of the State Engineer. All sections, except Section 5, shall be answered as completely and accurately as possible when any well is drilled, repaired or deepened. When this form is used as a plugging record, only Section 1(a) and Section 7 need be completed.

APPENDIX GEOTECHNICAL BORINGS

Approximate Boring Location
Proposed Construction

NOT TO SCALE

Geotechnical
Environmental
Inspections
Materials

Western Technologies Inc.
The Quality People
Since 1955

PROJECT:	LANDES RECYCLING FACILITY
JOB NO.:	3228JJ040

BORING LOCATION DIAGRAM

PLATE
1

Allowable Soil Bearing Capacity	The recommended maximum contact stress developed at the interface of the foundation element and the supporting material.
Backfill	A specified material placed and compacted in a confined area.
Base Course	A layer of specified aggregate material placed on a subgrade or subbase.
Base Course Grade	Top of base course.
Bench	A horizontal surface in a sloped deposit.
Caisson/Drilled Shaft	A concrete foundation element cast in a circular excavation which may have an enlarged base (or belled caisson).
Concrete Slabs-On-Grade	A concrete surface layer cast directly upon base course, subbase or subgrade.
Crushed Rock Base Course	A base course composed of crushed rock of a specified gradation.
Differential Settlement	Unequal settlement between or within foundation elements of a structure.
Engineered Fill	Specified soil or aggregate material placed and compacted to specified density and/or moisture conditions under observations of a representative of a soil engineer.
Existing Fill	Materials deposited through the action of man prior to exploration of the site.
Existing Grade	The ground surface at the time of field exploration.
Expansive Potential	The potential of a soil to expand (increase in volume) due to absorption of moisture.
Fill	Materials deposited by the actions of man.
Finished Grade	The final grade created as a part of the project.
Gravel Base Course	A base course composed of naturally occurring gravel with a specified gradation.
Heave	Upward movement.
Native Grade	The naturally occurring ground surface.
Native Soil	Naturally occurring on-site soil.
Rock	A natural aggregate of mineral grains connected by strong and permanent cohesive forces. Usually requires drilling, wedging, blasting or other methods of extraordinary force for excavation.
Sand and Gravel Base Course	A base course of sand and gravel of a specified gradation.
Sand Base Course	A base course composed primarily of sand of a specified gradation.
Scarify	To mechanically loosen soil or break down existing soil structure.
Settlement	Downward movement.
Soil	Any unconsolidated material composed of discrete solid particles, derived from the physical and/or chemical disintegration of vegetable or mineral matter, which can be separated by gentle mechanical means such as agitation in water.
Strip	To remove from present location.
Subbase	A layer of specified material placed to form a layer between the subgrade and base course.
Subbase Grade	Top of subbase.
Subgrade	Prepared native soil surface.

COARSE-GRAINED SOILS

LESS THAN 50% FINES

GROUP SYMBOLS	DESCRIPTION	MAJOR DIVISIONS
GW	WELL-GRADED GRAVEL OR WELL-GRADED GRAVEL WITH SAND, LESS THAN 5% FINES	GRAVELS MORE THAN HALF OF COARSE FRACTION IS LARGER THAN NO. 4 SIEVE SIZE
GP	POORLY-GRADED GRAVEL OR POORLY-GRADED GRAVEL WITH SAND, LESS THAN 5% FINES	
GM	SILTY GRAVEL OR SILTY GRAVEL WITH SAND, MORE THAN 12% FINES	
GC	CLAYEY GRAVEL OR CLAYEY GRAVEL WITH SAND, MORE THAN 12% FINES	
SW	WELL-GRADED SAND OR WELL-GRADED SAND WITH GRAVEL, LESS THAN 5% FINES	SANDS MORE THAN HALF OF COARSE FRACTION IS SMALLER THAN NO. 4 SIEVE SIZE
SP	POORLY-GRADED SAND OR POORLY-GRADED SAND WITH GRAVEL, LESS THAN 5% FINES	
SM	SILTY SAND OR SILTY SAND WITH GRAVEL, MORE THAN 12% FINES	
SC	CLAYEY SAND OR CLAYEY SAND WITH GRAVEL, MORE THAN 12% FINES	

NOTE: Coarse-grained soils receive dual symbols if they contain 5% to 12% fines (e.g., SW-SM, GP-GC).

FINE-GRAINED SOILS

MORE THAN 50% FINES

GROUP SYMBOLS	DESCRIPTION	MAJOR DIVISIONS
ML	SILT, SILT WITH SAND OR GRAVEL, SANDY SILT, OR GRAVELLY SILT	SILTS AND CLAYS LIQUID LIMIT LESS THAN 50
CL	LEAN CLAY OF LOW TO MEDIUM PLASTICITY, SANDY CLAY, OR GRAVELLY CLAY	
OL	ORGANIC SILT OR ORGANIC CLAY OF LOW TO MEDIUM PLASTICITY	
MH	ELASTIC SILT, SANDY ELASTIC SILT, OR GRAVELLY ELASTIC SILT	SILTS AND CLAYS LIQUID LIMIT MORE THAN 50
CH	FAT CLAY OF HIGH PLASTICITY, SANDY FAT CLAY, OR GRAVELLY FAT CLAY	
OH	ORGANIC SILT OR ORGANIC CLAY OF HIGH PLASTICITY	
PT	PEAT AND OTHER HIGHLY ORGANIC SOILS	HIGHLY ORGANIC SOILS

NOTE: Fine-grained soils may receive dual classification based upon plasticity characteristics (e.g. CL-ML).

SOIL SIZES

COMPONENT	SIZE RANGE
BOULDERS	Above 12 in.
COBBLES	3 in. – 12 in.
GRAVEL	No. 4 – 3 in.
Coarse	¾ in. – 3 in.
Fine	No. 4 – ¾ in.
SAND	No. 200 – No. 4
Coarse	No. 10 – No. 4
Medium	No. 40 – No. 10
Fine	No. 200 – No. 40
Fines (Silt or Clay)	Below No. 200

NOTE: Only sizes smaller than three inches are used to classify soils

CONSISTENCY

CLAYS & SILTS	BLOWS PER FOOT
VERY SOFT	0 – 2
SOFT	3 – 4
FIRM	5 – 8
STIFF	9 – 15
VERY STIFF	16 – 30
HARD	OVER 30

RELATIVE DENSITY

SANDS & GRAVELS	BLOWS PER FOOT
VERY LOOSE	0 – 4
LOOSE	5 – 10
MEDIUM DENSE	11 – 30
DENSE	31 – 50
VERY DENSE	OVER 50

NOTE: Number of blows using 140-pound hammer falling 30 inches to drive a 2-inch-OD (1⅜-inch ID) split-barrel sampler (ASTM D1586).

PLASTICITY OF FINE GRAINED SOILS

PLASTICITY INDEX	TERM
0	NON-PLASTIC
1 – 7	LOW
8 – 20	MEDIUM
Over 20	HIGH

DEFINITION OF WATER CONTENT

DRY
SLIGHTLY DAMP
DAMP
MOIST
WET
SATURATED

The number shown in **"BORING NO."** refers to the approximate location of the same number indicated on the "Boring Location Diagram" as positioned in the field by pacing or measurement from property lines and/or existing features, or through the use of Global Positioning System (GPS) devices. The accuracy of GPS devices is somewhat variable.

"DRILLING TYPE" refers to the exploratory equipment used in the boring wherein **HSA = hollow stem auger**, and the dimension presented is the outside diameter of the HSA used.

"N" in "BLOW COUNTS" refers to a 2-inch outside diameter split-barrel sampler driven into the ground with a 140 pound drop-hammer dropped 30 inches repeatedly until a penetration of 18 inches is achieved or until refusal. The number of blows, or "blow count", of the hammer is recorded for each of three 6-inch increments totaling 18 inches. The number of blows required for advancing the sampler for the last 12 inches (2nd and 3rd increments) is defined as the Standard Penetration Test (SPT) "**N**"-Value. Refusal to penetration is considered more than 50 blows per 6 inches. (Ref. ASTM D1586).

"R" in "BLOW COUNTS" refers to a 3-inch outside diameter ring-lined split barrel sampler driven into the ground with a 140 pound drop-hammer dropped 30 inches repeatedly until a penetration of 12 inch is achieved or until refusal. The number of blows required to advance the sampler 12 inches is defined as the "**R**" blow count. The "**R**" blow count requires an engineered conversion to an equivalent SPT N-Value. Refusal to penetration is considered more than 50 blows per foot. (Ref. ASTM D3550).

"CS" in "BLOWS/FT." refers to a 2½-in. outside diameter California style split-barrel sampler, lined with brass sleeves, driven into the ground with a 140-pound hammer dropped 30 inches repeatedly until a penetration of 18 inches is achieved or until refusal. The number of blows of the hammer is recorded for each of the three 6-inch increments totaling 18 inches. The number of blows required for advancing the sampler for the last 12 inches (2nd and 3rd increments) is defined as the "CS" blow count. The "CS" blow count requires an engineered conversion to an equivalent SPT N-Value. Refusal to penetration is considered more than 50 blows for a 6-inch increment. (Ref. ASTM D 3550)

"SAMPLE TYPE" refers to the form of sample recovery, in which **N** = Split-barrel sample, **R** = Ring-lined sample, **"CS"** = California style split-barrel sample, **G** = Grab sample, **B** = Bucket sample, **C** = Core sample (ex. diamond bit rock coring).

"DRY DENSITY (LBS/CU FT)" refers to the laboratory-determined dry density in pounds per cubic foot. The symbol **"NR"** indicates that no sample was recovered.

"WATER (MOISTURE) CONTENT" (% of Dry Wt.) refers to the laboratory-determined water content in percent using the standard test method ASTM D2216.

"USCS" refers to the "Unified Soil Classification System" Group Symbol for the soil type as defined by ASTM D2487 and D2488. The soils were classified visually in the field, and where appropriate, classifications were modified by visual examination of samples in the laboratory and/or by appropriate tests.

These notes and boring logs are intended for use in conjunction with the purposes of our services defined in the text. Boring log data should not be construed as part of the construction plans nor as defining construction conditions.

Boring logs depict our interpretations of subsurface conditions at the locations and on the date(s) noted. Variations in subsurface conditions and characteristics may occur between borings. Groundwater levels may fluctuate due to seasonal variations and other factors.

The stratification lines shown on the boring logs represent our interpretation of the approximate boundary between soil or rock types based upon visual field classification at the boring location. The transition between materials is approximate and may be more or less gradual than indicated.

DATE DRILLED: **6-4-18**
LOCATION: **See Location Diagram**
ELEVATION: **Not Determined**

BORING NO. 1

EQUIPMENT TYPE: **CME-75**
DRILLING TYPE: **7"HSA**
FIELD ENGINEER: **K. Newberry**

MOISTURE CONTENT (% OF DRY WT.)	DRY DENSITY (LBS/CU FT)	SAMPLE TYPE	SAMPLE	BLOW COUNTS	DEPTH (FEET)	USCS	GRAPHIC	SOIL DESCRIPTION
		N		29		SC		Clayey SAND; light brown, medium dense, damp, moderate cementation
		N		28	5			
		N		77	10	SM		Silty SAND; light brown, very dense, damp
		N		79/10"	15			
		N		66/10"	20			
								Bottom of Boring at 21 Feet

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

N- STANDARD PENETRATION TEST
R- RING SAMPLE
NR- NO SAMPLE RECOVERY
G- GRAB SAMPLE
B- BUCKET SAMPLE

NOTES: **Groundwater Not Encountered**

Geotechnical Environmental Inspections Materials

Western Technologies Inc.
The Quality People
Since 1955

PROJECT: **LANDES RECYCLING FACILITY**
JOB NO.: **3228JJ040D**

PLATE **A-**

BORING LOG

DATE DRILLED: **6-4-18**
LOCATION: **See Location Diagram**
ELEVATION: **Not Determined**

BORING NO. 2

EQUIPMENT TYPE: **CME-75**
DRILLING TYPE: **7"HSA**
FIELD ENGINEER: **K. Newberry**

MOISTURE CONTENT (% OF DRY WT.)	DRY DENSITY (LBS/CU FT)	SAMPLE TYPE	SAMPLE	BLOW COUNTS	DEPTH (FEET)	USCS	GRAPHIC	SOIL DESCRIPTION
		N		11		SC		Clayey SAND; light brown, medium dense, damp, moderate cementation
		N		10	5	SM		Silty SAND; light brown, medium dense, damp
		G						
		N		29	10			
		N		81/11"	15			very dense
		N		64/11"	20			
								Bottom of Boring at 21 Feet

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

N- STANDARD PENETRATION TEST
R- RING SAMPLE
NR- NO SAMPLE RECOVERY
G- GRAB SAMPLE
B- BUCKET SAMPLE

NOTES: **Groundwater Not Encountered**

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PROJECT: **LANDES RECYCLING FACILITY**
JOB NO.: **3228JJ040D**

PLATE **A-**

BORING LOG

DATE DRILLED: **6-4-18**
LOCATION: **See Location Diagram**
ELEVATION: **Not Determined**

BORING NO. 3

EQUIPMENT TYPE: **CME-75**
DRILLING TYPE: **7"HSA**
FIELD ENGINEER: **K. Newberry**

MOISTURE CONTENT (% OF DRY WT.)	DRY DENSITY (LBS/CU FT)	SAMPLE TYPE	SAMPLE	BLOW COUNTS	DEPTH (FEET)	USCS	GRAPHIC	SOIL DESCRIPTION
		N		20		SM		Silty SAND; light brown, very dense, damp
		N		28	5			
		N		32	10	SC		Clayey SAND; light brown, medium dense, damp, moderate cementation
		N		32	15			
		N		55	20			
								Bottom of Boring at 21.5 Feet

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

N- STANDARD PENETRATION TEST
R- RING SAMPLE
NR- NO SAMPLE RECOVERY
G- GRAB SAMPLE
B- BUCKET SAMPLE

NOTES: **Groundwater Not Encountered**

Geotechnical Environmental Inspections Materials
Western Technologies Inc.
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Since 1955

PROJECT: **LANDES RECYCLING FACILITY**
JOB NO.: **3228JJ040D**

PLATE **A-**

BORING LOG

DATE DRILLED: **6-4-18**
LOCATION: **See Location Diagram**
ELEVATION: **Not Determined**

BORING NO. 4

EQUIPMENT TYPE: **CME-75**
DRILLING TYPE: **7"HSA**
FIELD ENGINEER: **K. Newberry**

MOISTURE CONTENT (% OF DRY WT.)	DRY DENSITY (LBS/CU FT)	SAMPLE TYPE	SAMPLE	BLOW COUNTS	DEPTH (FEET)	USCS	GRAPHIC	SOIL DESCRIPTION
		G				SM		Silty SAND; light brown, medium dense, damp
		N		13				
		N		16	5			red brown
		N		87/11"	10			very dense
		N		77	15			tan
		N		56	20			
		N		84/9"	25			
		N		50/5"	30			
		N		87/8"	35	SC		Clayey SAND; red brown, very dense, damp,
		N		93/8"	40			
		N		50/5"	45			
		N		82	50			
		N		50/6"	55			
		N		80/11"	60			
		N		73/8"	65			
								Bottom of Boring at 66.5 Feet

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

N- STANDARD PENETRATION TEST
R- RING SAMPLE
NR- NO SAMPLE RECOVERY
G- GRAB SAMPLE
B- BUCKET SAMPLE

NOTES: **Groundwater Not Encountered**

Geotechnical Environmental Inspections Materials
Western Technologies Inc. The Quality People Since 1955

PROJECT: **LANDES RECYCLING FACILITY**
JOB NO.: **3228JJ040D**

PLATE **A-**

BORING LOG

DATE DRILLED: **6-4-18**
LOCATION: **See Location Diagram**
ELEVATION: **Not Determined**

BORING NO. 5

EQUIPMENT TYPE: **CME-75**
DRILLING TYPE: **7"HSA**
FIELD ENGINEER: **K. Newberry**

MOISTURE CONTENT (% OF DRY WT.)	DRY DENSITY (LBS/CU FT)	SAMPLE TYPE	SAMPLE	BLOW COUNTS	DEPTH (FEET)	USCS	GRAPHIC	SOIL DESCRIPTION
		G				SC		Clayey SAND; light brown, loose, damp, moderate cementation
		N		10				
		N		16	5			medium dense
		N		71/11"	10	SM		Silty SAND; light brown, very dense, damp
		N		59	15			
		N		54	20			
								Bottom of Boring at 21.5 Feet

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

N- STANDARD PENETRATION TEST
R- RING SAMPLE
NR- NO SAMPLE RECOVERY
G- GRAB SAMPLE
B- BUCKET SAMPLE

NOTES: **Groundwater Not Encountered**

Geotechnical Environmental Inspections Materials
Western Technologies Inc.
The Quality People
Since 1955

PROJECT: **LANDES RECYCLING FACILITY**
JOB NO.: **3228JJ040D**

PLATE **A-**

BORING LOG

DATE DRILLED: **6-4-18**
LOCATION: **See Location Diagram**
ELEVATION: **Not Determined**

BORING NO. 6

EQUIPMENT TYPE: **CME-75**
DRILLING TYPE: **7"HSA**
FIELD ENGINEER: **K. Newberry**

MOISTURE CONTENT (% OF DRY WT.)	DRY DENSITY (LBS/CU FT)	SAMPLE TYPE	SAMPLE	BLOW COUNTS	DEPTH (FEET)	USCS	GRAPHIC	SOIL DESCRIPTION
		G				CL		Sandy CLAY; light brown, stiff, moist
		N		13				
		N		13	5			
						SC		Clayey SAND; light brown, medium dense, damp, moderate cementation
		N		67/11"	10	SM		Silty SAND; grey, very dense, damp
		N		85/9"	15			light brown
		N		63	20			
								Bottom of Boring at 21.5 Feet

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

N- STANDARD PENETRATION TEST
R- RING SAMPLE
NR- NO SAMPLE RECOVERY
G- GRAB SAMPLE
B- BUCKET SAMPLE

NOTES: **Groundwater Not Encountered**

Geotechnical Environmental Inspections Materials
Western Technologies Inc.
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Since 1955

PROJECT: **LANDES RECYCLING FACILITY**
JOB NO.: **3228JJ040D**

PLATE **A-**

BORING LOG

DATE DRILLED: **6-4-18**
LOCATION: **See Location Diagram**
ELEVATION: **Not Determined**

BORING NO. 7

EQUIPMENT TYPE: **CME-75**
DRILLING TYPE: **7"HSA**
FIELD ENGINEER: **K. Newberry**

MOISTURE CONTENT (% OF DRY WT.)	DRY DENSITY (LBS/CU FT)	SAMPLE TYPE	SAMPLE	BLOW COUNTS	DEPTH (FEET)	USCS	GRAPHIC	SOIL DESCRIPTION
		G				SC		Clayey SAND; light brown, medium dense, damp, moderate cementation
		N		12				
		N		12	5			
						CL		Sandy CLAY; light brown, very stiff to hard, damp
		N		93/10"	10			
		N		77/11"	15			
						SM		Silty SAND; light brown, very dense, damp
		N		79/11"	20			
								Bottom of Boring at 21 Feet

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

N- STANDARD PENETRATION TEST
R- RING SAMPLE
NR- NO SAMPLE RECOVERY
G- GRAB SAMPLE
B- BUCKET SAMPLE

NOTES: **Groundwater Not Encountered**

Geotechnical Environmental Inspections Materials
Western Technologies Inc.
The Quality People
Since 1955

PROJECT: **LANDES RECYCLING FACILITY**
JOB NO.: **3228JJ040D**

PLATE **A-**

BORING LOG

DATE DRILLED: **6-4-18**
LOCATION: **See Location Diagram**
ELEVATION: **Not Determined**

BORING NO. 8

EQUIPMENT TYPE: **CME-75**
DRILLING TYPE: **7"HSA**
FIELD ENGINEER: **K. Newberry**

MOISTURE CONTENT (% OF DRY WT.)	DRY DENSITY (LBS/CU FT)	SAMPLE TYPE	SAMPLE	BLOW COUNTS	DEPTH (FEET)	USCS	GRAPHIC	SOIL DESCRIPTION
		N		16		SC		Clayey SAND; light brown, medium dense, damp, moderate cementation
		N		22	5	CL		Sandy CLAY; light brown, very stiff to hard, damp
		N		82	10	SC		Clayey SAND; light brown, very dense, damp
		N		67/11"	15			moderate cementation
		N		79/11"	20			
								Bottom of Boring at 21 Feet

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

N- STANDARD PENETRATION TEST
R- RING SAMPLE
NR- NO SAMPLE RECOVERY
G- GRAB SAMPLE
B- BUCKET SAMPLE

NOTES: **Groundwater Not Encountered**

Geotechnical Environmental Inspections Materials
Western Technologies Inc.
The Quality People
Since 1955

PROJECT: **LANDES RECYCLING FACILITY**
JOB NO.: **3228JJ040D**

PLATE **A-**

BORING LOG

DATE DRILLED: **6-4-18**
LOCATION: **See Location Diagram**
ELEVATION: **Not Determined**

BORING NO. 9

EQUIPMENT TYPE: **CME-75**
DRILLING TYPE: **7"HSA**
FIELD ENGINEER: **K. Newberry**

MOISTURE CONTENT (% OF DRY WT.)	DRY DENSITY (LBS/CU FT)	SAMPLE TYPE	SAMPLE	BLOW COUNTS	DEPTH (FEET)	USCS	GRAPHIC	SOIL DESCRIPTION
		N		10		SC		Clayey SAND; light brown, medium dense, damp, moderate cementation
		N		17	5			
		N		49	10	SM		Silty SAND; grey to tan, dense, damp
		N		76	15			very dense
		N		67/11"	20			
								Bottom of Boring at 21 Feet

N- STANDARD PENETRATION TEST
R- RING SAMPLE
NR- NO SAMPLE RECOVERY
G- GRAB SAMPLE
B- BUCKET SAMPLE

NOTES: **Groundwater Not Encountered**

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

Geotechnical Environmental Inspections Materials
Western Technologies Inc.
The Quality People
Since 1955

PROJECT: **LANDES RECYCLING FACILITY**
JOB NO.: **3228JJ040D**

PLATE **A-**

BORING LOG

Venegas, Victoria, EMNRD

From: Venegas, Victoria, EMNRD
Sent: Tuesday, April 13, 2021 8:15 AM
To: Michael Incerto; Teena Robbins; Griswold, Jim, EMNRD; Hernandez, Emily, EMNRD
Cc: r@rthicksconsult.com
Subject: Landes Recycling Containment & Myox AST.

Mr. Incerto,
The OCD is currently reviewing the following applications submitted by Solaris:

1. **Landes Recycling Containment and Recycling Facility** – Submitted January 2019 & resubmitted via OCD.online on March 05, 2021.
   - Location: Section 22, T25S, R28E, Eddy County.
2. **Myox Above Ground Storage Tank** – Submitted June 2019 & resubmitted via OCD.online on March 05, 2021.
   - Location: Section 32, T25S, R28E, Eddy County.

The Landes Recycling Containment and Recycling Facility and the Myox Above Ground Storage Tank are two separate and distinct facilities in two different locations and will be given separate permit numbers. However, based on OCD records, Solaris has provided financial assurance for both facilities under a single bond. The OCD will move forward and accept a single bond for both facilities, if and only if a separate closure cost estimate for each facility is provided to the OCD by April 30, 2021.

Please let me know if you have any questions.

Thank you,

Victoria Venegas ● Environmental Specialist
Environmental Bureau
EMNRD - Oil Conservation Division
811S. First St. | Artesia, NM 88210
(575) 909-0269 | Victoria.Venegas@state.nm.us
http://www.emnrd.state.nm.us/OCD/

R. T. HICKS CONSULTANTS, LTD.

901 Rio Grande Blvd NW ▲ Suite F-142 ▲ Albuquerque, NM 87104 ▲ 505.266.5004 ▲ Since 1996

June 22, 2021

Mr. Mike Bratcher
NMOCD District II
811 S. First St.
Artesia, NM 88210
Via E-Mail

Ms. Victoria Venegas
NMOCD District II
811 S. First St.
Artesia, NM 88210
Via E-Mail

RE: Closure Cost Estimate
Landes Recycling Containments 1 & 2 2RF-134

Dear Mr. Bratcher and Ms. Venegas:

On behalf of Solaris Water Midstream LLC, Hicks Consultants is pleased to provide the following revision to the closure cost estimate for the above-referenced recycling containments. After OCD approved of the attached July 5, 2019 cost estimate, Solaris transmitted to Mr. Daniel Sanchez of OCD:

ARGONAUT INSURANCE COMPANY Bond # SUR0056456 for the sum of $410,000.

As described in the attachment, this 2019 bond provides for the closure of Landes Containments #1 and the Myox AST Containment as outlined below:

$198,463	Removal and disposal/recycling of the liner system for Landes #1
$166,837	Reclamation of Landes Containment #1 only
$30,000	Restoration and Reclamation of Myox Pad
$11,500	Closure sampling and reporting for Myox and Landes
406,800	Total

Since OCD approval of the 2019 cost estimate,
1. prices for construction in the Permian Basin have decreased considerably,
2. both Landes containments are used for produced water.

Finally, Solaris requests OCD approval to maintain the earthen levees, liner foundation, fences and other associated structures for a purpose other than recycling pursuant to:

> 19.15.34.14 CLOSURE AND SITE RECLAMATION REQUIREMENTS FOR RECYCLING CONTAINMENTS:
> A. Once the operator has ceased operations, the operator shall 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....If the operator wants to use the containment for a purpose other than recycling then the operator must have that use approved or permitted by the division in accordance with the appropriate rules.

The Landes containments #1 and #2 are on private property owned by Solaris. Solaris desires to maintain the levees and liner foundation because these structures increase the value of the property for conversion to one or more uses, such as:

- Aquaculture using fresh or salt water,
- Recycling of produced water for agriculture or other uses in accordance with forthcoming regulations being developed by the NM Environment Department, or
- Biofuel production via algae or other aquatic microorganisms.

For Landes Containments 1 and 2. the cost estimate reflects the lower prices of oilfield construction and maintaining the levees, liner foundation, fences and associated structures (e.g., pad) for future use.

ITEM NO.	ITEM DESCRIPTION	UNITS	QTY	UNIT PRICE	TOTAL PRICE
	Landes Recyling Containment				
2	Liner Removal and Disposal	1	2	$40,000.00	$80,000.00
11	Assess soil for impacts	1	2	$2,500.00	$5,000.00
	Facility Decommision and Reclaim Site Subtotal:				**$85,000.00**

If you have questions concerning this revised cost estimate, please contact me or Todd Carpenter of Solaris. Pending OCD approval, Solaris will hand-deliver a new bond for the Landes containments to Mr. Sanchez in Santa Fe and collect the existing bond documents to return to the surety company.

Thank you for your attention to this matter and we await your response to the request to maintain the existing improvements to Solaris private property for future use. As the existing bond for the Landes 1&2 containments and the Myox AST containment is significantly higher than required, Solaris is fully compliant with Rule 34.

Sincerely,
R.T. Hicks Consultants

Randall Hicks, PG
Principal

Copy: Solaris Water Midstream

Venegas, Victoria, EMNRD

From: Venegas, Victoria, EMNRD
Sent: Thursday, July 29, 2021 3:39 PM
To: Teena Robbins; 'Michael Incerto'
Cc: r@rthicksconsult.com; Enviro, OCD, EMNRD
Subject: 2RF-134 - LANDES WATER RECYCLING FACILITY - Facility Number fAB1826252353

2RF-134 - LANDES WATER RECYCLING FACILITY - Facility Number fAB1826252353

Ms. Robbins,
NMOCD has reviewed the Closure Cost Estimate submitted by [371643] SOLARIS WATER MIDSTREAM, LLC on June 22, 2021 for 2RF-134 - LANDES WATER RECYCLING FACILITY - Facility Number fAB1826252353 in Unit Letter F, Section 29, Township 24S, Range 28E, Eddy County, New Mexico. Per NMAC 19.15.34.15.A.(1) operators without existing financial assurance pursuant to 19.15.8 NMAC shall furnish financial assurance acceptable to the division in the amount of the recycling containment's estimated closure cost.

The total closure cost estimate for 2RF-134 - LANDES WATER RECYCLING FACILITY - Facility Number fAB1826252353 consisting of two (2) inground containments in the amount of $85,000.00, does not satisfy the requirements of NMAC 19.15.34.15.A.(1). Please provide a complete itemized closure cost estimate for 2RF-134 - LANDES WATER RECYCLING FACILITY - Facility Number fAB1826252353 that includes all closure requirements per 19.15.34.14 CLOSURE AND SITE RECLAMATION REQUIREMENTS FOR RECYCLING CONTAINNMENTS. Specifically, OCD did not see any closure costs associated with fence removal, re-vegetation and reclamation activities.
Please let me know if you have any further questions.
Regards,

Victoria Venegas ● Environmental Specialist
Environmental Bureau
EMNRD - Oil Conservation Division
811S. First St. | Artesia, NM 88210
(575) 909-0269 | Victoria.Venegas@state.nm.us
http://www.emnrd.state.nm.us/OCD/

Venegas, Victoria, EMNRD

From: Teena Robbins <Teena.Robbins@solariswater.com>
Sent: Thursday, August 19, 2021 7:22 AM
To: Venegas, Victoria, EMNRD; Michael Incerto
Cc: r@rthicksconsult.com; Enviro, OCD, EMNRD
Subject: RE: 2RF-134 - LANDES WATER RECYCLING FACILITY - Facility Number fAB1826252353
Attachments: Closure Cost EstimateLandesRevisedAugust2021.pdf

Ms. Venegas:

Our consultant and Mr. Carpenter have revised the closure cost estimate for the Landes #1 and #2 containments. The estimate is based upon an approval from OCD to allow the levees and working pad to remain to allow Solaris to use this $1MM+ investment to be used in the future. We thank you for your attention to this matter.

Teena Robbins
Office Manager
Solaris Water Midstream, LLC
(432)203-9024 ofc
(432)425-0718 cell

From: Venegas, Victoria, EMNRD <Victoria.Venegas@state.nm.us>
Sent: Thursday, July 29, 2021 4:39 PM
To: Teena Robbins <Teena.Robbins@solariswater.com>; Michael Incerto <michael.incerto@solariswater.com>
Cc: r@rthicksconsult.com; Enviro, OCD, EMNRD <OCD.Enviro@state.nm.us>
Subject: 2RF-134 - LANDES WATER RECYCLING FACILITY - Facility Number fAB1826252353

2RF-134 - LANDES WATER RECYCLING FACILITY - Facility Number fAB1826252353

Ms. Robbins,
NMOCD has reviewed the Closure Cost Estimate submitted by [371643] SOLARIS WATER MIDSTREAM, LLC on June 22, 2021 for 2RF-134 - LANDES WATER RECYCLING FACILITY - Facility Number fAB1826252353 in Unit Letter F, Section 29, Township 24S, Range 28E, Eddy County, New Mexico. Per NMAC 19.15.34.15.A.(1) operators without existing financial assurance pursuant to 19.15.8 NMAC shall furnish financial assurance acceptable to the division in the amount of the recycling containment's estimated closure cost.

The total closure cost estimate for 2RF-134 - LANDES WATER RECYCLING FACILITY - Facility Number fAB1826252353 consisting of two (2) inground containments in the amount of $85,000.00, does not satisfy the requirements of NMAC 19.15.34.15.A.(1). Please provide a complete itemized closure cost estimate for 2RF-134 - LANDES WATER RECYCLING FACILITY - Facility Number fAB1826252353 that includes all closure requirements per 19.15.34.14 CLOSURE AND SITE RECLAMATION REQUIREMENTS FOR RECYCLING CONTAINNMENTS. Specifically, OCD did not see any closure costs associated with fence removal, re-vegetation and reclamation activities.

Please let me know if you have any further questions.
Regards,

Victoria Venegas ● Environmental Specialist
Environmental Bureau
EMNRD - Oil Conservation Division
811S. First St. | Artesia, NM 88210
(575) 909-0269 | Victoria.Venegas@state.nm.us
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R. T. HICKS CONSULTANTS, LTD.

901 Rio Grande Blvd NW ▲ Suite F-142 ▲ Albuquerque, NM 87104 ▲ 505.266.5004 ▲ Since 1996

August 16, 2021

Mr. Mike Bratcher
NMOCD District II
811 S. First St.
Artesia, NM 88210
Via E-Mail

Ms. Victoria Venegas
NMOCD District II
811 S. First St.
Artesia, NM 88210
Via E-Mail

RE: Closure Cost Estimate
Landes Recycling Containments 1 & 2 2RF-134

Dear Mr. Bratcher and Ms. Venegas:

On behalf of Solaris Water Midstream LLC, Hicks Consultants is pleased to provide the following August 2021 revision to the closure cost estimate for the above-referenced recycling containment. After OCD approved of the July 5, 2019, cost estimate, Solaris transmitted to Mr. Daniel Sanchez of OCD:

ARGONAUT INSURANCE COMPANY Bond # SUR0056456 for the sum of $410,000.

As described in the July 5, 2019, cost estimate, the bond provides for the closure of Landes Containments #1 and the Myox AST Containment as outlined below:

$198,463	Removal and disposal/recycling of the liner system for Landes #1
$166,837	Reclamation of Landes Containment #1 only
$30,000	Restoration and Reclamation of Myox Pad
$11,500	Closure sampling and reporting for Myox and Landes
406,800	Total

Since OCD approval of the 2019 cost estimate,
1. prices for construction in the Permian Basin have decreased considerably,
2. both Landes containments are used for produced water.

Finally, Solaris requests OCD approval to maintain the earthen levees, liner foundation, fences and other associated structures for a purpose other than recycling pursuant to:

> 19.15.34.14 CLOSURE AND SITE RECLAMATION REQUIREMENTS FOR RECYCLING CONTAINMENTS:
> A. Once the operator has ceased operations, the operator shall 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....If the operator wants to use the containment for a purpose other than recycling then the operator must have that use approved or permitted by the division in accordance with the appropriate rules.

The Landes containments #1 and #2 are on private property owned by Solaris. Solaris desires to maintain the levees and liner foundation because these structures increase the value of the property for conversion to one or more uses, such as:

- Aquaculture using fresh or salt water,
- Recycling of produced water for agriculture or other uses in accordance with forthcoming regulations being developed by the NM Environment Department, or
- Biofuel production via algae or other aquatic microorganisms.

For Landes Containments 1 and 2. the cost estimate reflects the lower prices of oilfield construction and maintaining the levees, liner foundation, fences, and associated structures (e.g., pad) for future use. The cost for closure sampling is $5,000 and the cost for removal and disposal of the liner system at the Landes #1 and #2 containments is $322,173. The attached bid from Patriot Environmental supports a closure cost estimate of $327,173.

If you have questions concerning this revised cost estimate, please contact me or Todd Carpenter of Solaris.

The closure cost estimate for the Myox AST ($73,500.00) is a separate submittal that was approved by OCD on 6/23/21. Thus, the existing bond for $$410,000 covers the estimated closure cost of the Myox AST, Landes #1 and Landes#2 Containments (327,173 + $73,500 =) $400,673.

Thank you for your attention to this matter and we await your response to the request to maintain the existing improvements to Solaris private property for future use. As the existing bond for the Landes 1&2 containments and the Myox AST containment is higher than required, Solaris is fully compliant with Rule 34. Pending OCD approval, Solaris will hand-deliver a new bond for the Landes containments to NMOCD in Santa Fe and a new bond for the Myox AST. Solaris must collect the existing bond documents to return to the surety company to avoid double bonding.

Sincerely,
R.T. Hicks Consultants

Randall Hicks, PG
Principal

Copy: Solaris Water Midstream

Patriot Environmental I
220 W. Carl Hubbell Blvd. #671
Meeker, OK 74855
USA

Voice: 405-279-6052
Fax:

PATRIOT ENVIRONMENTAL
AN ESI COMPANY

QUOTATION

Quote Number: 1680
Quote Date: Aug 4, 2021
Page: 1

Quoted To:
Solaris Water Midstream 9811 katy freeway suite 700 Houston, TX 77024 USA

Customer ID	Good Thru	Payment Terms	Sales Rep
Solaris	9/3/21	Net 30 Days	

Quantity	Item	Description	Unit Price	Amount
2533800.00	Labor - Liner	Landes Pits Tear out and dispose of 40 mil, 200 mil, and 60 mil in each pit Removal and Disposal of 3 layers in both ponds (422,300 per layer per pond)	0.120	304,056.00

Subtotal	304,056.00
Sales Tax	18,116.57
TOTAL	**322,172.57**

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 ☒ 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: : Solaris Water Midstream, LLC OGRID #:__ 371643____

Address: __9811 Katy Freeway Suite 900, Houston, TX 77024 _____

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

OCD Permit Number: __2RF-134_____(For new facilities the permit number will be assigned by the district office)

U/L or Qtr/Qtr ____ _____ Section ___22_____ Township __25S_____ Range ____28E_____ County: ____Eddy_____

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

2.

☒ **Recycling Facility:**

Location of (if applicable): Latitude _32.115957_____ Longitude -104.0754905 NAD83 (Approximate)

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:** Each of the two containments will have these characteristics

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

Center of Recycling Containment (if applicable) Latitude _32.115957_____ Longitude -104.077415__ NAD83 (Approximate)

☐ 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: _1,764,735_bbl Dimensions: L__785_ x W 485__ x D_21' below levee__12' (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 $__$25,000_____ **(work on these facilities cannot commence until bonding amounts are approved)** The total approved closure cost estimate for 2RF-134 - LANDES WATER RECYCLING FACILITY fAB1826252353 is $ $327,173.00

☒ 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.

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): Bradley Todd Carpenter Title: Operations Manager

Signature: Bradley Todd Carpenter Date: January 2, 2019

e-mail address Todd Carpenter <todd.carpenter@solarismidstream.com> Telephone: 432 203 9020

11.
OCD Representative Signature: Victoria Venegas **Approval Date:** 10/28/2021

Title: Environmental Specialist **OCD Permit Number:** 2RF-134

[x] OCD Conditions
[x] Additional OCD Conditions on Attachment

Venegas, Victoria, EMNRD

From: Venegas, Victoria, EMNRD
Sent: Thursday, October 28, 2021 2:40 PM
To: 'Teena Robbins'; Michael Incerto
Cc: r@rthicksconsult.com
Subject: RE: 2RF-134 - LANDES WATER RECYCLING FACILITY - Facility Number fAB1826252353
Attachments: C-147 Approved. 2RF-134 - LANDES WATER RECYCLING FACILITY fAB1826252353. 10.28.2021.pdf

2RF-134 - LANDES WATER RECYCLING FACILITY fAB1826252353.

Ms. Robbins,
NMOCD has reviewed the recycling containment permit application and related documents, submitted by [371643] SOLARIS WATER MIDSTREAM, LLC on 3/5/2021, and the closure cost estimate for this application submitted on 8/19/2021 for 2RF-134 - LANDES WATER RECYCLING FACILITY fAB1826252353 in Unit Letter F, Section 22, Township 25S, Range 28E, Eddy County, New Mexico.

The form C-147 and related documents for 2RF-134 - LANDES WATER RECYCLING FACILITY fAB1826252353 is approved with the following conditions of approval:

- [371643] SOLARIS WATER MIDSTREAM, LLC shall construct, operate, maintain, close, and reclaim the 2RF-134 - LANDES WATER RECYCLING FACILITY fAB1826252353 in compliance with 19.15.34 NMAC.
- 2RF-134 - LANDES WATER RECYCLING FACILITY fAB1826252353 is approved for five years of operation from the date the NMOCD received the first version of the permit application. 2RF-134 - LANDES WATER RECYCLING FACILITY fAB1826252353 permit expires on August 31, 2023. If [371643] SOLARIS WATER MIDSTREAM, LLC wishes to extend operations past five years, an annual permit extension request must be submitted using an OCD form C-147 through the OCD Online system by July 31, 2023.
- Per Rule 19.15.34.15.A.(1) operators without existing financial assurance pursuant to 19.15.8 NMAC shall furnish financial assurance acceptable to the division in the amount of the recycling containment's estimated closure cost. The total closure cost estimate for 2RF-134 - LANDES WATER RECYCLING FACILITY fAB1826252353 in the amount of $ $327,173.00, satisfies the requirements of NMAC 19.15.34.15.A.(1).
- A minimum of 3-feet freeboard must be maintained at all times during operations.
- If less than 20% of the total fluid capacity is utilized every six months, beginning from the first withdrawal, operation of the facility is considered ceased and notification of cessation of operations should be sent electronically to OCD Online. An extension to extend the cessation of operation, not to exceed six months, may be submitted using a C-147 form through OCD Online.
- [371643] SOLARIS WATER MIDSTREAM, LLC shall submit monthly reports of recycling and reuse of produced water drilling fluids, and liquid oil field waste on OCD form C-148 through OCD Online even if there is zero activity.
- [371643] SOLARIS WATER MIDSTREAM, LLC shall comply with 19.15.29 NMAC Releases in the event of any release of produced water or other oil field wastes at 2RF-134 - LANDES WATER RECYCLING FACILITY fAB1826252353

Note for your next submissions: PLEASE, DO NOT SUBMIT ANY TYPE OF FINANCIAL ASSURANCE UNTIL THE DIVISION HAS APPROVED, IN WRITING, THE CLOSURE COST ESTIMATE PROPOSED IN THE APPLICATION.
Please, let me know if you have any further questions or concerns.
Regards,

Victoria Venegas ● Environmental Specialist
Environmental Bureau

EMNRD - Oil Conservation Division
811S. First St. | Artesia, NM 88210
(575) 909-0269 | Victoria.Venegas@state.nm.us
http://www.emnrd.state.nm.us/OCD/

From: Teena Robbins <Teena.Robbins@solariswater.com>
Sent: Thursday, August 19, 2021 7:22 AM
To: Venegas, Victoria, EMNRD <Victoria.Venegas@state.nm.us>; Michael Incerto <michael.incerto@solariswater.com>
Cc: r@rthicksconsult.com; Enviro, OCD, EMNRD <OCD.Enviro@state.nm.us>
Subject: RE: 2RF-134 - LANDES WATER RECYCLING FACILITY - Facility Number fAB1826252353

Ms. Venegas:

Our consultant and Mr. Carpenter have revised the closure cost estimate for the Landes #1 and #2 containments. The estimate is based upon an approval from OCD to allow the levees and working pad to remain to allow Solaris to use this $1MM+ investment to be used in the future. We thank you for your attention to this matter.

Teena Robbins
Office Manager
Solaris Water Midstream, LLC
(432)203-9024 ofc
(432)425-0718 cell

From: Venegas, Victoria, EMNRD <Victoria.Venegas@state.nm.us>
Sent: Thursday, July 29, 2021 4:39 PM
To: Teena Robbins <Teena.Robbins@solariswater.com>; Michael Incerto <michael.incerto@solariswater.com>
Cc: r@rthicksconsult.com; Enviro, OCD, EMNRD <OCD.Enviro@state.nm.us>
Subject: 2RF-134 - LANDES WATER RECYCLING FACILITY - Facility Number fAB1826252353

2RF-134 - LANDES WATER RECYCLING FACILITY - Facility Number fAB1826252353

Ms. Robbins,
NMOCD has reviewed the Closure Cost Estimate submitted by [371643] SOLARIS WATER MIDSTREAM, LLC on June 22, 2021 for 2RF-134 - LANDES WATER RECYCLING FACILITY - Facility Number fAB1826252353 in Unit Letter F, Section 29, Township 24S, Range 28E, Eddy County, New Mexico. Per NMAC 19.15.34.15.A.(1) operators without existing financial

assurance pursuant to 19.15.8 NMAC shall furnish financial assurance acceptable to the division in the amount of the recycling containment's estimated closure cost.

The total closure cost estimate for 2RF-134 - LANDES WATER RECYCLING FACILITY - Facility Number fAB1826252353 consisting of two (2) inground containments in the amount of $85,000.00, does not satisfy the requirements of NMAC 19.15.34.15.A.(1). Please provide a complete itemized closure cost estimate for 2RF-134 - LANDES WATER RECYCLING FACILITY - Facility Number fAB1826252353 that includes all closure requirements per 19.15.34.14 CLOSURE AND SITE RECLAMATION REQUIREMENTS FOR RECYCLING CONTAINNMENTS. Specifically, OCD did not see any closure costs associated with fence removal, re-vegetation and reclamation activities.
Please let me know if you have any further questions.
Regards,

Victoria Venegas ● Environmental Specialist
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State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

CONDITIONS

Action 19781

CONDITIONS

Operator: SOLARIS WATER MIDSTREAM, LLC 907 Tradewinds Blvd, Suite B Midland, TX 79706	OGRID: 371643
	Action Number: 19781
	Action Type: [C-147] Water Recycle Long (C-147L)

CONDITIONS

Created By	Condition	Condition Date
vvenegas	None	10/28/2021