



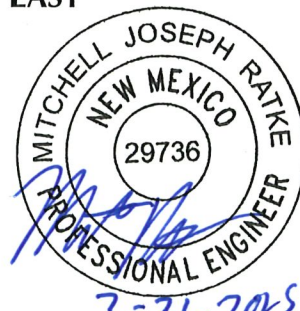
QUALITY ACTIONS FOR QUALITY CLIENTS

WATERBRIDGE STATELINE, LLC.
NORTH BRININSTOOL RECYCLE FACILITY
C-147 FLUID RECYCLING FACILITY APPLICATION

SECTION 29, TOWNSHIP 23 SOUTH, RANGE 33 EAST

LEA COUNTY, NEW MEXICO

MARCH 2025



025078-00

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: WaterBridge Stateline LLC (For multiple operators attach page with information) OGRID #: 330129
Address: 5555 San Felipe Suite 1200, Houston, TX 77056
Facility or well name (include API# if associated with a well): WaterBridge North Brininstool Recycle Facility East AST
OCD Permit Number: 1RF-538 (For new facilities the permit number will be assigned by the district office)
U/L or Qtr/Qtr _____ Section 29 Township 23 South Range 33 East County: Lea
Surface Owner: ☐ Federal ☐ State ☒ Private ☐ Tribal Trust or Indian Allotment

2.
☒ **Recycling Facility:**
Location of recycling facility (if applicable): Latitude 32.277999° Longitude -103.591776° NAD83
Proposed Use: ☒ Drilling* ☒ Completion* ☒ Production* ☒ Plugging*
**The re-use of produced water may NOT be used until fresh water zones are cased and cemented*
☐ Other, *requires permit for other uses. Describe use, process, testing, volume of produced water and ensure there will be no adverse impact on groundwater or surface water.*
☒ Fluid Storage
☒ Above ground tanks ☒ Recycling containment ☐ Activity permitted under 19.15.17 NMAC explain type _____
☐ Activity permitted under 19.15.36 NMAC explain type: _____ ☐ Other explain _____
☐ For multiple or additional recycling containments, attach design and location information of each containment
☐ **Closure Report (required within 60 days of closure completion):** ☐ Recycling Facility Closure Completion Date: _____

3.
☒ **Recycling Containment:**
☐ Annual Extension after initial 5 years (attach summary of monthly leak detection inspections for previous year)
Center of Recycling Containment (if applicable): Latitude 32.278006° Longitude -103.592989° NAD83
☐ For multiple or additional recycling containments, attach design and location information of each containment
☒ Lined ☐ Liner type: Thickness 40/40 mil ☒ LLDPE ☐ HDPE ☐ PVC ☐ Other _____
☐ String-Reinforced
Liner Seams: ☒ Welded ☐ Factory ☐ Other _____ Volume: 60,000 bbl Dimensions: L _____ x W 191 x D 12
☐ 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 \$ 2,211,965.95 (work on these facilities cannot commence until bonding amounts are approved)
- ☒ Attach closure cost estimate and documentation on how the closure cost was calculated.

5.

Fencing:

- ☐ Four foot height, four strands of barbed wire evenly spaced between one and four feet
- ☒ Alternate. Please specify 8-ft Tall Wire Mesh Game Fence

6.

Signs:

- ☒ 12"x 24", 2" lettering, providing Operator's name, site location, and emergency telephone numbers
- ☐ Signed in compliance with 19.15.16.8 NMAC

7.

Variances:

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

Check the below box only if a variance is requested:

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

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

8.

Siting Criteria for Recycling Containment

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

General siting**Ground water is less than 50 feet below the bottom of the Recycling Containment.**

NM Office of the State Engineer - iWATERS database search; USGS; Data obtained from nearby wells

☐ Yes ☒ No
☐ NA

Within incorporated municipal boundaries or within a defined municipal fresh water well field covered under a municipal ordinance adopted pursuant to NMSA 1978, Section 3-27-3, as amended.

☐ Yes ☒ No
☐ NA

- Written confirmation or verification from the municipality; written approval obtained from the municipality

Within the area overlying a subsurface mine.

☐ Yes ☒ No

- Written confirmation or verification or map from the NM EMNRD-Mining and Minerals Division

Within an unstable area.

☐ Yes ☒ No

- Engineering measures incorporated into the design; NM Bureau of Geology & Mineral Resources; USGS; NM Geological Society; topographic map

Within a 100-year floodplain. FEMA map

☐ Yes ☒ No

Within 300 feet of a continuously flowing watercourse, or 200 feet of any other significant watercourse, or lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark).

☐ Yes ☒ No

- Topographic map; visual inspection (certification) of the proposed site

Within 1000 feet from a permanent residence, school, hospital, institution, or church in existence at the time of initial application.

☐ Yes ☒ No

- Visual inspection (certification) of the proposed site; aerial photo; satellite image

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.

☐ Yes ☒ No

- NM Office of the State Engineer - iWATERS database search; visual inspection (certification) of the proposed site

Within 500 feet of a wetland.

☐ Yes ☒ No

- US Fish and Wildlife Wetland Identification map; topographic map; visual inspection (certification) of the proposed site

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): JAKE FERENZ Title: VP, Government Affairs
 Signature: [Signature] Date: 04.01.25
 e-mail address: Jake.ferez@hobridge.com Telephone: (214) 733-9919

11.

OCD Representative Signature: Victoria Venegas Approval Date: 04/10/2025

Title: Environmental Specialist OCD Permit Number: 1RF-538

- ☒ OCD Conditions
☒ Additional OCD Conditions on Attachment

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: WaterBridge Stateline LLC (For multiple operators attach page with information) OGRID #: 330129
Address: 5555 San Felipe Suite 1200, Houston, TX 77056
Facility or well name (include API# if associated with a well): WaterBridge North Brininstool Recycle Facility West AST
OCD Permit Number: 1RF-538 (For new facilities the permit number will be assigned by the district office)
U/L or Qtr/Qtr _____ Section 29 Township 23 South Range 33 East County: Lea
Surface Owner: ☐ Federal ☐ State ☒ Private ☐ Tribal Trust or Indian Allotment

2.
☒ **Recycling Facility:**
Location of recycling facility (if applicable): Latitude 32.277999° Longitude -103.591776° NAD83
Proposed Use: ☒ Drilling* ☒ Completion* ☒ Production* ☒ Plugging *
**The re-use of produced water may NOT be used until fresh water zones are cased and cemented*
☐ Other, *requires permit for other uses. Describe use, process, testing, volume of produced water and ensure there will be no adverse impact on groundwater or surface water.*
☒ Fluid Storage
☒ Above ground tanks ☒ Recycling containment ☐ Activity permitted under 19.15.17 NMAC explain type _____
☐ Activity permitted under 19.15.36 NMAC explain type: _____ ☐ Other explain _____
☐ For multiple or additional recycling containments, attach design and location information of each containment
☐ **Closure Report (required within 60 days of closure completion):** ☐ Recycling Facility Closure Completion Date: _____

3.
☒ **Recycling Containment:**
☐ Annual Extension after initial 5 years (attach summary of monthly leak detection inspections for previous year)
Center of Recycling Containment (if applicable): Latitude 32.278002° Longitude -103.592229° NAD83
☐ For multiple or additional recycling containments, attach design and location information of each containment
☒ Lined ☐ Liner type: Thickness 40/40 mil ☒ LLDPE ☐ HDPE ☐ PVC ☐ Other _____
☐ String-Reinforced
Liner Seams: ☒ Welded ☐ Factory ☐ Other _____ Volume: 60,000 bbl Dimensions: L _____ x W 191 x D 12
☐ 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 \$ 2,211,965.95 (work on these facilities cannot commence until bonding amounts are approved)
- ☒ Attach closure cost estimate and documentation on how the closure cost was calculated.

5.

Fencing:

- ☐ Four foot height, four strands of barbed wire evenly spaced between one and four feet
- ☒ Alternate. Please specify 8-ft Tall Wire Mesh Game Fence

6.

Signs:

- ☒ 12"x 24", 2" lettering, providing Operator's name, site location, and emergency telephone numbers
- ☐ Signed in compliance with 19.15.16.8 NMAC

7.

Variances:

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

Check the below box only if a variance is requested:

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

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

8.

Siting Criteria for Recycling Containment

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

General siting**Ground water is less than 50 feet below the bottom of the Recycling Containment.**

NM Office of the State Engineer - iWATERS database search; USGS; Data obtained from nearby wells

☐ Yes ☒ No
☐ NA

Within incorporated municipal boundaries or within a defined municipal fresh water well field covered under a municipal ordinance adopted pursuant to NMSA 1978, Section 3-27-3, as amended.

☐ Yes ☒ No
☐ NA

- Written confirmation or verification from the municipality; written approval obtained from the municipality

Within the area overlying a subsurface mine.

☐ Yes ☒ No

- Written confirmation or verification or map from the NM EMNRD-Mining and Minerals Division

Within an unstable area.

☐ Yes ☒ No

- Engineering measures incorporated into the design; NM Bureau of Geology & Mineral Resources; USGS; NM Geological Society; topographic map

Within a 100-year floodplain. FEMA map

☐ Yes ☒ No

Within 300 feet of a continuously flowing watercourse, or 200 feet of any other significant watercourse, or lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark).

☐ Yes ☒ No

- Topographic map; visual inspection (certification) of the proposed site

Within 1000 feet from a permanent residence, school, hospital, institution, or church in existence at the time of initial application.

☐ Yes ☒ No

- Visual inspection (certification) of the proposed site; aerial photo; satellite image

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.

☐ Yes ☒ No

- NM Office of the State Engineer - iWATERS database search; visual inspection (certification) of the proposed site

Within 500 feet of a wetland.

☐ Yes ☒ No

- US Fish and Wildlife Wetland Identification map; topographic map; visual inspection (certification) of the proposed site

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): JAKE FERENZ Title: VP, Government Affairs
Signature: [Signature] Date: 04.10.25
e-mail address: Jake.ferez@hobridge.com Telephone: (214) 733-9919

11.

OCD Representative Signature: Victoria Venegas Approval Date: 04/10/2025

Title: Environmental Specialist OCD Permit Number: 1RF-538

- ☒ OCD Conditions _____
- ☒ Additional OCD Conditions on Attachment _____

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: WaterBridge Stateline LLC (For multiple operators attach page with information) OGRID #: 330129
Address: 5555 San Felipe Suite 1200, Houston, TX 77056
Facility or well name (include API# if associated with a well): WaterBridge North Brininstool Recycle East Containment
OCD Permit Number: 1RF-538 (For new facilities the permit number will be assigned by the district office)
U/L or Qtr/Qtr _____ Section 29 Township 23 South Range 33 East County: Lea
Surface Owner: ☐ Federal ☐ State ☒ Private ☐ Tribal Trust or Indian Allotment

2.
☒ **Recycling Facility:**
Location of recycling facility (if applicable): Latitude 32.473678° Longitude -104.105515° NAD83
Proposed Use: ☒ Drilling* ☒ Completion* ☒ Production* ☒ Plugging*
**The re-use of produced water may NOT be used until fresh water zones are cased and cemented*
☐ Other, *requires permit for other uses. Describe use, process, testing, volume of produced water and ensure there will be no adverse impact on groundwater or surface water.*
☒ Fluid Storage
☒ Above ground tanks ☒ Recycling containment ☐ Activity permitted under 19.15.17 NMAC explain type _____
☐ Activity permitted under 19.15.36 NMAC explain type: _____ ☐ Other explain _____
☐ For multiple or additional recycling containments, attach design and location information of each containment
☐ **Closure Report (required within 60 days of closure completion):** ☐ Recycling Facility Closure Completion Date: _____

3.
☒ **Recycling Containment:**
☐ Annual Extension after initial 5 years (attach summary of monthly leak detection inspections for previous year)
Center of Recycling Containment (if applicable): Latitude 32.276565° Longitude -103.590669° NAD83
☐ For multiple or additional recycling containments, attach design and location information of each containment
☒ Lined ☐ Liner type: Thickness 60/40 mil ☐ LLDPE ☒ HDPE ☐ PVC ☐ Other _____
☐ String-Reinforced
Liner Seams: ☒ Welded ☐ Factory ☐ Other _____ Volume: 603,382 bbl Dimensions: L 600 x W 525 x D 20
☐ 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 \$2,211,965.95 (work on these facilities cannot commence until bonding amounts are approved)
- ☒ Attach closure cost estimate and documentation on how the closure cost was calculated.

5.

Fencing:

- ☐ Four foot height, four strands of barbed wire evenly spaced between one and four feet
- ☒ Alternate. Please specify 8-ft Tall Wire Mesh Game Fence

6.

Signs:

- ☒ 12"x 24", 2" lettering, providing Operator's name, site location, and emergency telephone numbers
- ☐ Signed in compliance with 19.15.16.8 NMAC

7.

Variances:

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

Check the below box only if a variance is requested:

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

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

8.

Siting Criteria for Recycling Containment

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

General siting**Ground water is less than 50 feet below the bottom of the Recycling Containment.**

NM Office of the State Engineer - iWATERS database search; USGS; Data obtained from nearby wells

☐ Yes ☒ No
☐ NA

Within incorporated municipal boundaries or within a defined municipal fresh water well field covered under a municipal ordinance adopted pursuant to NMSA 1978, Section 3-27-3, as amended.

☐ Yes ☒ No
☐ NA

- Written confirmation or verification from the municipality; written approval obtained from the municipality

Within the area overlying a subsurface mine.

☐ Yes ☒ No

- Written confirmation or verification or map from the NM EMNRD-Mining and Minerals Division

Within an unstable area.

☐ Yes ☒ No

- Engineering measures incorporated into the design; NM Bureau of Geology & Mineral Resources; USGS; NM Geological Society; topographic map

Within a 100-year floodplain. FEMA map

☐ Yes ☒ No

Within 300 feet of a continuously flowing watercourse, or 200 feet of any other significant watercourse, or lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark).

☐ Yes ☒ No

- Topographic map; visual inspection (certification) of the proposed site

Within 1000 feet from a permanent residence, school, hospital, institution, or church in existence at the time of initial application.

☐ Yes ☒ No

- Visual inspection (certification) of the proposed site; aerial photo; satellite image

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.

☐ Yes ☒ No

- NM Office of the State Engineer - iWATERS database search; visual inspection (certification) of the proposed site

Within 500 feet of a wetland.

☐ Yes ☒ No

- US Fish and Wildlife Wetland Identification map; topographic map; visual inspection (certification) of the proposed site

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): JAKE FERENZ Title: VP, Government Affairs
Signature: [Signature] Date: 04.04.25
e-mail address: Jake.ferez@hrobbridge.com Telephone: (214) 733-9919

11.

OCD Representative Signature: Victoria Venegas Approval Date: 04/10/2025

Title: Environmental Specialist OCD Permit Number: 1RF-538

- ☒ OCD Conditions _____
- ☒ Additional OCD Conditions on Attachment _____

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: WaterBridge Stateline LLC (For multiple operators attach page with information) OGRID #: 330129
Address: 5555 San Felipe Suite 1200, Houston, TX 77056
Facility or well name (include API# if associated with a well): WaterBridge North Brininstool Recycle West Containment
OCD Permit Number: 1RF-538 (For new facilities the permit number will be assigned by the district office)
U/L or Qtr/Qtr _____ Section 29 Township 23 South Range 33 East County: Lea
Surface Owner: ☐ Federal ☐ State ☒ Private ☐ Tribal Trust or Indian Allotment

2.
☒ **Recycling Facility:**
Location of recycling facility (if applicable): Latitude 32.473678° Longitude -104.105515° NAD83
Proposed Use: ☒ Drilling* ☒ Completion* ☒ Production* ☒ Plugging*
**The re-use of produced water may NOT be used until fresh water zones are cased and cemented*
☐ Other, *requires permit for other uses. Describe use, process, testing, volume of produced water and ensure there will be no adverse impact on groundwater or surface water.*
☒ Fluid Storage
☒ Above ground tanks ☒ Recycling containment ☐ Activity permitted under 19.15.17 NMAC explain type _____
☐ Activity permitted under 19.15.36 NMAC explain type: _____ ☐ Other explain _____
☐ For multiple or additional recycling containments, attach design and location information of each containment
☐ **Closure Report (required within 60 days of closure completion):** ☐ Recycling Facility Closure Completion Date: _____

3.
☒ **Recycling Containment:**
☐ Annual Extension after initial 5 years (attach summary of monthly leak detection inspections for previous year)
Center of Recycling Containment (if applicable): Latitude 32.32.276576° Longitude -103.592480° NAD83
☐ For multiple or additional recycling containments, attach design and location information of each containment
☒ Lined ☐ Liner type: Thickness 60/40 mil ☐ LLDPE ☒ HDPE ☐ PVC ☐ Other _____
☐ String-Reinforced
Liner Seams: ☒ Welded ☐ Factory ☐ Other _____ Volume: 603,382 bbl Dimensions: L 600 x W 525 x D 20
☐ 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 \$ 2,211,965.95 (work on these facilities cannot commence until bonding amounts are approved)
- ☒ Attach closure cost estimate and documentation on how the closure cost was calculated.

5.

Fencing:

- ☐ Four foot height, four strands of barbed wire evenly spaced between one and four feet
- ☒ Alternate. Please specify 8-ft Tall Wire Mesh Game Fence

6.

Signs:

- ☒ 12"x 24", 2" lettering, providing Operator's name, site location, and emergency telephone numbers
- ☐ Signed in compliance with 19.15.16.8 NMAC

7.

Variances:

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

Check the below box only if a variance is requested:

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

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

8.

Siting Criteria for Recycling Containment

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

General siting**Ground water is less than 50 feet below the bottom of the Recycling Containment.**

NM Office of the State Engineer - iWATERS database search; USGS; Data obtained from nearby wells

☐ Yes ☒ No
☐ NA

Within incorporated municipal boundaries or within a defined municipal fresh water well field covered under a municipal ordinance adopted pursuant to NMSA 1978, Section 3-27-3, as amended.

☐ Yes ☒ No
☐ NA

- Written confirmation or verification from the municipality; written approval obtained from the municipality

Within the area overlying a subsurface mine.

☐ Yes ☒ No

- Written confirmation or verification or map from the NM EMNRD-Mining and Minerals Division

Within an unstable area.

☐ Yes ☒ No

- Engineering measures incorporated into the design; NM Bureau of Geology & Mineral Resources; USGS; NM Geological Society; topographic map

Within a 100-year floodplain. FEMA map

☐ Yes ☒ No

Within 300 feet of a continuously flowing watercourse, or 200 feet of any other significant watercourse, or lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark).

☐ Yes ☒ No

- Topographic map; visual inspection (certification) of the proposed site

Within 1000 feet from a permanent residence, school, hospital, institution, or church in existence at the time of initial application.

☐ Yes ☒ No

- Visual inspection (certification) of the proposed site; aerial photo; satellite image

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.

☐ Yes ☒ No

- NM Office of the State Engineer - iWATERS database search; visual inspection (certification) of the proposed site

Within 500 feet of a wetland.

☐ Yes ☒ No

- US Fish and Wildlife Wetland Identification map; topographic map; visual inspection (certification) of the proposed site

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): JAKE FERENZ Title: VP, Government Affairs
Signature: [Signature] Date: 04.04.25
e-mail address: Jake.ferez@hobridge.com Telephone: (214) 733-9919

11.

OCD Representative Signature: Victoria Venegas Approval Date: 04/10/2025

Title: Environmental Specialist OCD Permit Number: 1RF-538

- ☒ OCD Conditions
- ☒ Additional OCD Conditions on Attachment



March 31, 2025

Ms. Victoria Venegas
New Mexico EMNRD
Oil Conservation Division

RE: Rule 34 Variance Request –Produced Water Recycling Containment

Ms. Venegas:

WaterBridge Stateline is requesting a variance to Rule 34 Part 12(A)(3) requiring "The edges of all liners shall be anchored in the bottom of a compacted earth-filled trench."

WaterBridge is requesting approval to use Above Ground Storage Tanks (AST) as containment structures at the WaterBridge Brininstool North Recycle Facility. Based on our experience AST's work well for this purpose, they are structurally sound and easy to maintain. Clips will be used at the top of the steel walls to secure the liner. These clips are specifically designed to hold the AST liner in place and provide the same type of liner security as an anchor trench. It should also be noted that this variance has been granted on past sites.

Should you have any questions or require additional information, please contact me by phone at 580-234-8780 or by email at mratke@envirotechconsulting.com at your convenience.

Thank you for your consideration.
Best regards,

Envirotech Engineering & Consulting, Inc.

Mitchell Ratke, P.E.
Senior Project Engineer, Energy Infrastructure



3-31-2025



March 31, 2025

Ms. Victoria Venegas
New Mexico EMNRD
Oil Conservation Division

RE: Rule 34 Variance Request –Produced Water Impoundment Bird Netting

Ms. Venegas:

WaterBridge Stateline is requesting a variance to Rule 34-Part 12(E) Netting to ensure the recycling facility is protected from wildlife. Based on our experience from previous projects, we believe audible bird deterrents provide equal or better protection when compared to netting. In addition, they require less inspection, maintenance, and repair over the life of the facility.

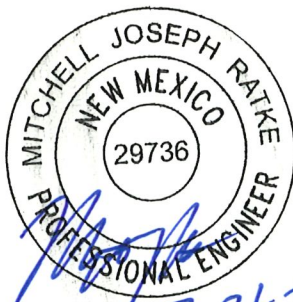
WaterBridge is proposing to use the "Bird-X Mega Blaster Pro" system. This system will replace the netting required by the current rule. It should be noted that this variance has been granted on previous sites.

Should you have any questions or require additional information, please contact me by phone at 580-234-8780 or by email at mratke@envirotechconsulting.com at your convenience.

Thank you for your consideration.
Best regards,

ENVIROTECH ENGINEERING & CONSULTING, INC.

Mitchell Ratke, P.E.
Senior Project Engineer, Energy Infrastructure





March 31, 2025

Ms. Victoria Venegas
New Mexico EMNRD
Oil Conservation Division

RE: Rule 34 Variance Request –Produced Water Recycling Containment

Ms. Venegas:

WaterBridge Stateline is requesting a variance to Rule 34 Part 12(A)(2) requiring "...The levee shall have an outside grade no steeper than three horizontal feet to one vertical foot (3H:1V)."

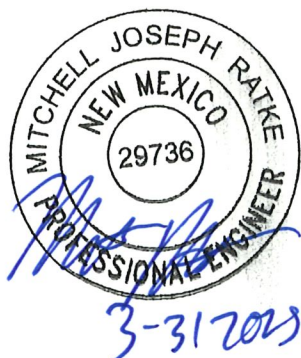
WaterBridge is requesting approval to use two Above Ground Storage Tanks (AST's) as containment structures at the WaterBridge North Brininstool Recycle Facility. Based on our experience AST's work well for this purpose, they are structurally sound and easy to maintain. This AST will have vertical walls on both interior and exterior sides and thus requires a variance for use. The AST will, however, be double lined like other containments to limit the risk of leakage. It should also be noted that this variance has been granted on past sites.

Should you have any questions or require additional information, please contact me by phone at 580-234-8780 or by email at mratke@envirotechconsulting.com at your convenience.

Thank you for your consideration.
Best regards,

Envirotech Engineering & Consulting, Inc.

Mitchell Ratke, P.E.
Senior Project Engineer, Energy Infrastructure





March 31, 2025

Ms. Victoria Venegas
New Mexico EMNRD
Oil Conservation Division

RE: Rule 34 Variance Request –Produced Water Impoundment Fencing

Ms. Venegas:

WaterBridge Stateline is requesting a variance to C-147 Fencing requirement for requiring a fence four foot in height, with four strands of barbed wire evenly spaced between one and four feet. WaterBridge is requesting approval to a wire mesh, game fence, eight (8) feet in height. Based on our experience, we feel that the requested fencing will provide greater security to the facility for excluding animals and unauthorized individual access. Details for this type of fence can be found on Sheet 11 of 12 in Appendix C Engineering Drawings.

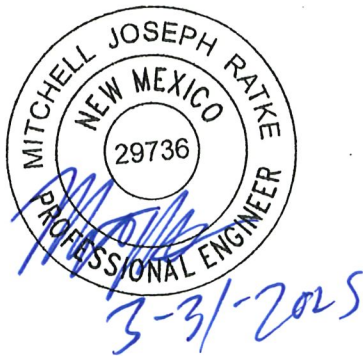
The proposed fencing has been approved for other C-147 facilities and used extensively on similar projects in New Mexico and Texas with outstanding success in deterring unauthorized entry by both humans and wildlife. It should be noted that this variance request has been approved on previous sites.

Should you have any questions or require additional information, please contact me by phone at 580-234-8780 or by email at mratke@envirotechconsulting.com at your convenience.

Thank you for your consideration.
Best regards,

ENVIROTECH ENGINEERING & CONSULTING, INC.

Mitchell Ratke, P.E.
Senior Project Engineer, Energy Infrastructure





March 31, 2025

Ms. Victoria Venegas
New Mexico EMNRD
Oil Conservation Division

RE: Rule 34 Variance Request –Produced Water Recycling Containment

Ms. Venegas:

WaterBridge Stateline is requesting a variance to Rule 34 Part 12(A)(2) requiring "... *The operator shall construct the containment in a levee with an inside grade no steeper than two horizontal feet to one vertical foot (2H:1V).*"

WaterBridge is requesting approval to use two Above Ground Storage Tanks (AST's) as containment structures at the WaterBridge Brininstool North Recycle Facility. Based on our experience AST's work well for this purpose, they are structurally sound and easy to maintain. This AST's will have vertical walls on both interior and exterior sides and thus requires a variance for use. The AST's will, however, be double lined like other containments to limit the risk of leakage. It should also be noted that this variance has been granted on past sites.

Should you have any questions or require additional information, please contact me by phone at 580-234-8780 or by email at mratke@envirotechconsulting.com at your convenience.

Thank you for your consideration.
Best regards,

Envirotech Engineering & Consulting, Inc.

Mitchell Ratke, P.E.
Senior Project Engineer, Energy Infrastructure





March 31, 2025

Ms. Victoria Venegas
New Mexico EMNRD
Oil Conservation Division

RE: Rule 34 Variance Request –Produced Water Recycling Containment Primary Liner

Ms. Venegas:

WaterBridge Stateline is requesting a variance to Rule 34 Part 12(A)(4) requiring primary liners to be 45-mil string reinforced LLDPE. WaterBridge is requesting approval to use 40-mil LLDPE in place of the specified material in an above ground storage tank (AST). Based on our experience, we feel that the requested material will allow us to provide equal environmental protection in our impoundments.

Due to the construction of the 45-mil reinforced LLDPE material, nondestructive QA/QC testing cannot be performed. The proposed 40-mil LLDPE will be seamed in a manner that will allow nondestructive pressure testing of the seams to ensure proper sealing.

The proposed LLDPE is appropriate material for the proposed use in the impoundment and is compatible with the material that will be stored. This material will provide equal or better environmental protection as the specified 45-mil reinforced LLDPE.

The proposed new liner system for the ASTs cross-section is as follows: prepare subgrade, 10 oz. geotextile, 40-mil LLDPE, 200 mil geonet, 40-mil LLDPE. This will replace the cross-section required by the current rule. It should also be noted that this variance has been granted on past sites.

Should you have any questions or require additional information, please contact me by phone at 580-234-8780 or by email at mratke@envirotechconsulting.com at your convenience.

Thank you for your consideration.
Best regards,

ENVIROTECH ENGINEERING & CONSULTING, INC.

Mitchell Ratke, P.E.
Senior Project Engineer, Energy Infrastructure





March 31, 2025

Ms. Victoria Venegas
New Mexico EMNRD
Oil Conservation Division

RE: Rule 34 Variance Request –Produced Water Recycling Containment Secondary Liner

Ms. Venegas:

WaterBridge Stateline is requesting a variance to Rule 34 Part 12(A)(4) requiring secondary liners to be 30-mil string reinforced LLDPE. WaterBridge is requesting approval to use 40-mil HDPE in place of the specified material in the proposed Recycle Containment and 40-mil LLDPE Liner in the proposed ASTs. Based on our experience, we feel that the requested material will allow us to provide equal environmental protection in our impoundments.

Due to the construction of the 30-mil reinforced LLDPE material, nondestructive QA/QC testing cannot be performed. The proposed 40-mil HDPE and 40-mil LLDPE will be seamed in a manner that will allow nondestructive pressure testing of the seams to ensure proper sealing.

The proposed HDPE and LLDPE are appropriate material for the proposed use in the impoundments and is compatible with the material that will be stored. This material will provide equal or better environmental protection as the specified 30-mil reinforced LLDPE.

The proposed new liner system cross-section for the earthen containment is as follows: prepared subgrade, 10 oz. geotextile, 40-mil HDPE, 200-mil geonet, 60-mil HDPE. This will replace the cross-section required by the current rule. It should also be noted that this variance has been granted on past sites.

The proposed new liner system cross-section for the ASTs is as follows: prepared subgrade, 10 oz. geotextile, 40-mil LLDPE, 200-mil geonet, 40-mil LLDPE. This will replace the cross-section required by the current rule. It should also be noted that this variance has been granted on past sites.

Should you have any questions or require additional information, please contact me by phone at 580-234-8780 or by email at mratke@envirotechconsulting.com at your convenience.

Thank you for your consideration.
Best regards,

Envirotech Engineering & Consulting, Inc.

Mitchell Ratke, P.E.
Senior Project Engineer, Energy Infrastructure



3-31-2025

**WATERBRIDGE**

NORTH BRININSTOOL RECYCLE FACILITY
SECTION 29, TOWNSHIP 23 SOUTH, RANGE 33 EAST
LEA COUNTY, NEW MEXICO
025078-00

TABLE OF CONTENTS

| | | |
|------|---|---|
| 1.0 | LOCATION..... | 1 |
| 2.0 | DISTANCE TO GROUNDWATER..... | 1 |
| 2.1 | GROUNDWATER WELLS | 1 |
| 2.2 | AQUIFERS | 2 |
| 2.3 | GEOLOGY | 2 |
| 3.0 | DISTANCE TO MUNICIPALITIES AND FRESHWATER FIELDS | 2 |
| 4.0 | DISTANCE TO SUBSURFACE MINES..... | 2 |
| 5.0 | DISTANCE TO HIGH OR CRITICAL KARST AREAS (UNSTABLE AREAS) | 3 |
| 6.0 | DISTANCE TO 100-YEAR FLOOD PLAIN..... | 3 |
| 7.0 | DISTANCE TO SURFACE WATER | 3 |
| 8.0 | DISTANCE TO PERMANENT RESIDENCE OR STRUCTURES | 3 |
| 9.0 | DISTANCE TO NON-PUBLIC WATER SUPPLY | 3 |
| 10.0 | DISTANCE TO WETLANDS | 4 |

APPENDICES:

| | |
|------------|---------------------------------|
| APPENDIX A | BANKS WATER WELL REPORT |
| APPENDIX B | GEOTECHNICAL ENGINEERING REPORT |
| APPENDIX C | ENGINEERING DRAWINGS |
| APPENDIX D | DESIGN AND CONSTRUCTION PLAN |
| APPENDIX E | MATERIAL SPECIFICATION |
| APPENDIX F | OPERATING AND MAINTENANCE PLAN |
| APPENDIX G | AST'S |
| APPENDIX H | CLOSURE PLAN |



SITE CRITERIA FOR RECYCLING CONTAINMENT

1.0 LOCATION

WaterBridge Stateline, LLC. is proposing to construct a recycle facility, North Brininstool Recycle Facility, located in Section 29, Township 23 South, Range 33 East in Lea County, New Mexico. An aerial photographic map, *Figure 1*, shows the location of the proposed facility. This study was performed on the proposed location to evaluate whether the proposed facility location would be in accordance with the 19.15.34.11 NMAC Siting Requirements for Recycling Containments.

2.0 DISTANCE TO GROUNDWATER

2.1 GROUNDWATER WELLS

Banks Environmental Data (Banks) was contracted to search the New Mexico Office of State Engineers (OSE) records for water wells within a 1.0-mi. radius of the proposed facility location. According to Banks, four water wells were identified within a 1.0-mi radius of the proposed facility. The average groundwater depth that was recorded in the Banks Water Well Report is 400-ft. below ground surface. The Banks Water Well Report is included as *Appendix A*, and *Figure 2.1* illustrates that there are 21 water wells located within the 1.0-mi. radius of the proposed facility.

The New Mexico Oil and Gas Division (NMOCD) requires that groundwater (freshwater as defined by NMOCD rules) at the location be greater than 50-ft below the containment bottom. *Figure 2.1* demonstrates the following to meet these criteria:

1. The location of the proposed facility shown on the United States Geologic Survey (USGS) Tip Top Wells quadrangle, NM 7.5 Minute Series Topographic Map.
2. A 1.0-mile radius from the site, and location of water wells in comparison to that radius. It should be noted, OSE wells can be mis-located as older wells are plotted in the center of the quarter, quarter, quarter section, township, and range.
3. The Banks search of the OSE records show there were four water wells located within a 1.0-mi radius from the boundary of the proposed facility.

During onsite investigation, conducted by COZ Engineering, LLC. on February 26, 2025, five (5) total borings were advanced on the proposed facility location. Four (4) borings were drilled to a total depth of approximately 26-ft. bgs., and one (1) boring was drilled to a total depth of approximately 75-ft. bgs. The groundwater table was not encountered during the field investigation. The geotechnical engineering report prepared by COZ Engineering, LLC is included in *Appendix B*.



2.2 AQUIFERS

Information reviewed from the Bureau of Land Management (BLM) Carlsbad Field Office shows the proposed facility is located within an aquifer system labeled "Other". *Figure 2.2* shows the site location in reference to Bureau of Land Management Declared Aquifers in the State of New Mexico.

2.3 GEOLOGY

A geological map of New Mexico was obtained from the United States Geological Survey (USGS) to review the geologic setting for the proposed containment location. Based on the review of the geologic map, the proposed facility lies within the Eolian and Piedmont Deposits. These deposits are Interlayered eolian sands and piedmont-slope deposits along the eastern flank of the Pecos River valley, primarily between Roswell and Carlsbad. Typically capped by thin eolian deposits.

Figure 2.3 is reproduction of the USGS New Mexico Geologic Map. *Figure 2.3* shows the following:

1. Location of the proposed Containment
2. Geologic setting of the Containment

Area stratigraphy to a depth of approximately 65-ft. bgs. was obtained from five (5) geotechnical borings conducted on the site by COZ Engineering, LLC on February 26, 2025. The borings identified the site conditions to be composed of silty sands. Soils were composed of silty sand, silty sand with gravel, and poorly graded sand with silt.

3.0 DISTANCE TO MUNICIPALITIES AND FRESHWATER FIELDS

Figure 3 demonstrates that the location is not located within incorporated municipal boundaries or within a defined municipal freshwater field covered under a municipal ordinance adopted pursuant to NMSA 1978, Section 3-27-3. *Figure 3* illustrates the following:

1. The closest municipality to the proposed facility is Eunice City, New Mexico, located approximately 23.75-mi. to the northeast.
2. The closest freshwater field to the proposed facility is the Carlsbad Municipal Water System, located approximately 13.6-mi. to the northwest of the facility.

4.0 DISTANCE TO SUBSURFACE MINES

According to the New Mexico Mining and Minerals Division there are no subsurface mines near the proposed facility. The proposed facility location is not within an area overlying a subsurface mine. *Figure 4* illustrates the following:

1. The nearest registered subsurface mine is the Nash Draw Mine, an active mining site. The subsurface potash mine is located approximately 17.9-mi. to the northwest of the proposed facility location.



5.0 DISTANCE TO LOW , MEDIUM, OR HIGH KARST AREAS (UNSTABLE AREAS)

The Bureau of Land Management Carlsbad Field Office Cave Potential map was reviewed for the proposed facility. *Figure 5* illustrates the following:

1. The proposed facility is located in a “low” karst potential area.

6.0 DISTANCE TO 100-YEAR FLOOD PLAIN

The Federal Emergency Management Agency (FEMA) Flood Map Service Center was utilized to review the flood map for the proposed facility location. The proposed facility is located on FEMA flood map panel number 35025C1750D, “Zone D” and was effective on 12/16/2008. *Figure 6* demonstrates the area of the site is not located within a mapped flood plain.

1. The proposed facility is located within “Zone D.” FEMA defines Zone D as an area with possible but undetermined flood hazards. No flood hazard analysis has been conducted.

7.0 DISTANCE TO SURFACE WATER

After review of the Tip Top Wells, NM, USGS 7.5-Minute Series Topographic map, *Figure 7*, there is no continuously flowing surface water located on or near the proposed facility. *Figure 7* illustrates the following:

1. No continuously flowing surface waters or other water bodies defined by NMOCD are located on the proposed facility.
2. The closest surface waterbody is Bell Lake located approximately 2.75 miles southeast of the proposed facility.

8.0 DISTANCE TO PERMANENT RESIDENCE OR STRUCTURES

The aerial image provided in *Figure 8*, demonstrates:

1. The proposed facility is not within 1,000-ft. of an occupied permanent residence, school, hospital, institution, church, or other permanent structure. The only items of interest found were existing oil and gas infrastructure. No churches, schools, or residential structures were identified.
2. *Figure 8* and *Figure 1* show that the nearest structure to the site is oil and gas infrastructure.
3. It should be noted that there is a permanent structure southeast of the facility’s south eastern boundary, however it falls outside of the 1,000-ft. buffer area.

9.0 DISTANCE TO NON-PUBLIC WATER SUPPLY

The proposed facility must not be within 500-ft. horizontally of a spring or freshwater well used for domestic or stock watering purposes, in existence at the time of initial application. *Figure 9* demonstrates the following:

1. The proposed facility is not located within 500-ft. horizontally of a spring or freshwater well.



C-147 APPLICATION PACKAGE
NORTH BRININSTOOL RECYCLE FACILITY
SECTION 29, TOWNSHIP 23 SOUTH, RANGE 33 EAST
LEA COUNTY, NEW MEXICO
025078-00

2. No springs were identified within the proposed facility location.
3. The closest water well (C-04595-POD1) to the facility is approximately 2.1-mi. to the southeast of the facilities south eastern corner.

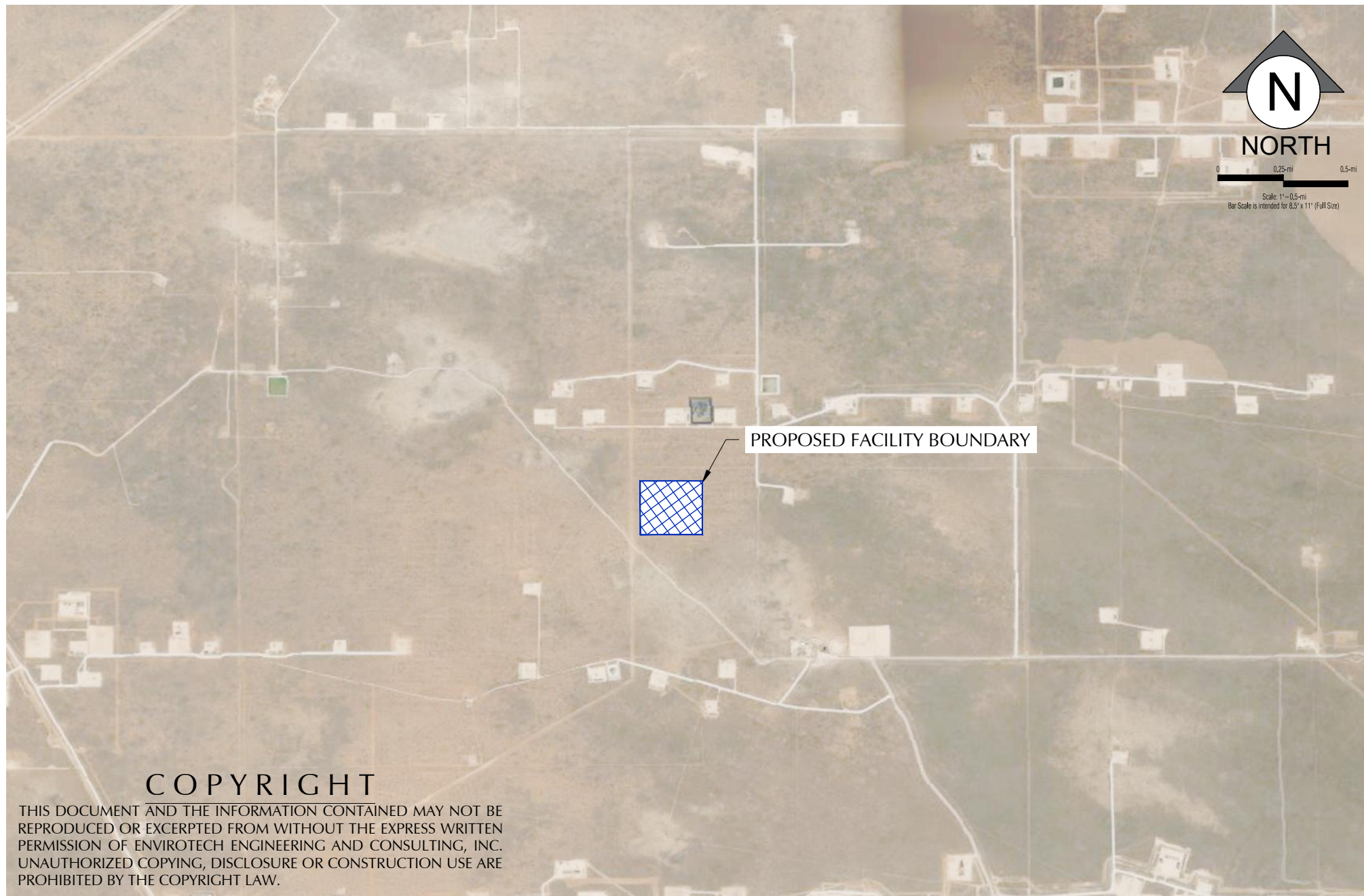
In addition, *Figure 2.1 (Groundwater Wells Map)* illustrates that the proposed facility location is not located within 500-ft. of known domestic water wells and that there are four groundwater or domestic water wells located within 1.0-mi. of the proposed facility.

10.0 DISTANCE TO WETLANDS

The United States Fish and Wildlife National Wetlands Inventory Maps were reviewed for the area of the proposed facility. *Figure 10* confirms the proposed facility is not located within an area of a potential wetland. In addition, *Figure 10* illustrates the following:

1. The nearest potential wetland is located approximately 2.2-mi. southeast of the proposed facility location. The potential wetland closest to the proposed facility is labeled as a "Riverine" with a wetland code "R4SBJ."
2. The National Wetlands Inventory Maps do not show a potential wetland located within 500-ft. of the proposed facility location.

It should be noted the United States Fish and Wildlife Service generates the NWI maps through infrared aerial imagery and aerial photograph interpretation; no actual field reconnaissance was conducted in the making of the maps. As such, the NWI maps do not always accurately identify wetlands or the extent of those wetlands; therefore, the maps are used for preliminary analysis only.



COPYRIGHT

THIS DOCUMENT AND THE INFORMATION CONTAINED MAY NOT BE REPRODUCED OR EXCERPTED FROM WITHOUT THE EXPRESS WRITTEN PERMISSION OF ENVIROTECH ENGINEERING AND CONSULTING, INC. UNAUTHORIZED COPYING, DISCLOSURE OR CONSTRUCTION USE ARE PROHIBITED BY THE COPYRIGHT LAW.



2500 N. Eleventh Street Enid, OK 73701 • 580.234.8780 • envirotechconsulting.com
P.E. #29736 - Expiration Date: 12-31-2026

SITE MAP

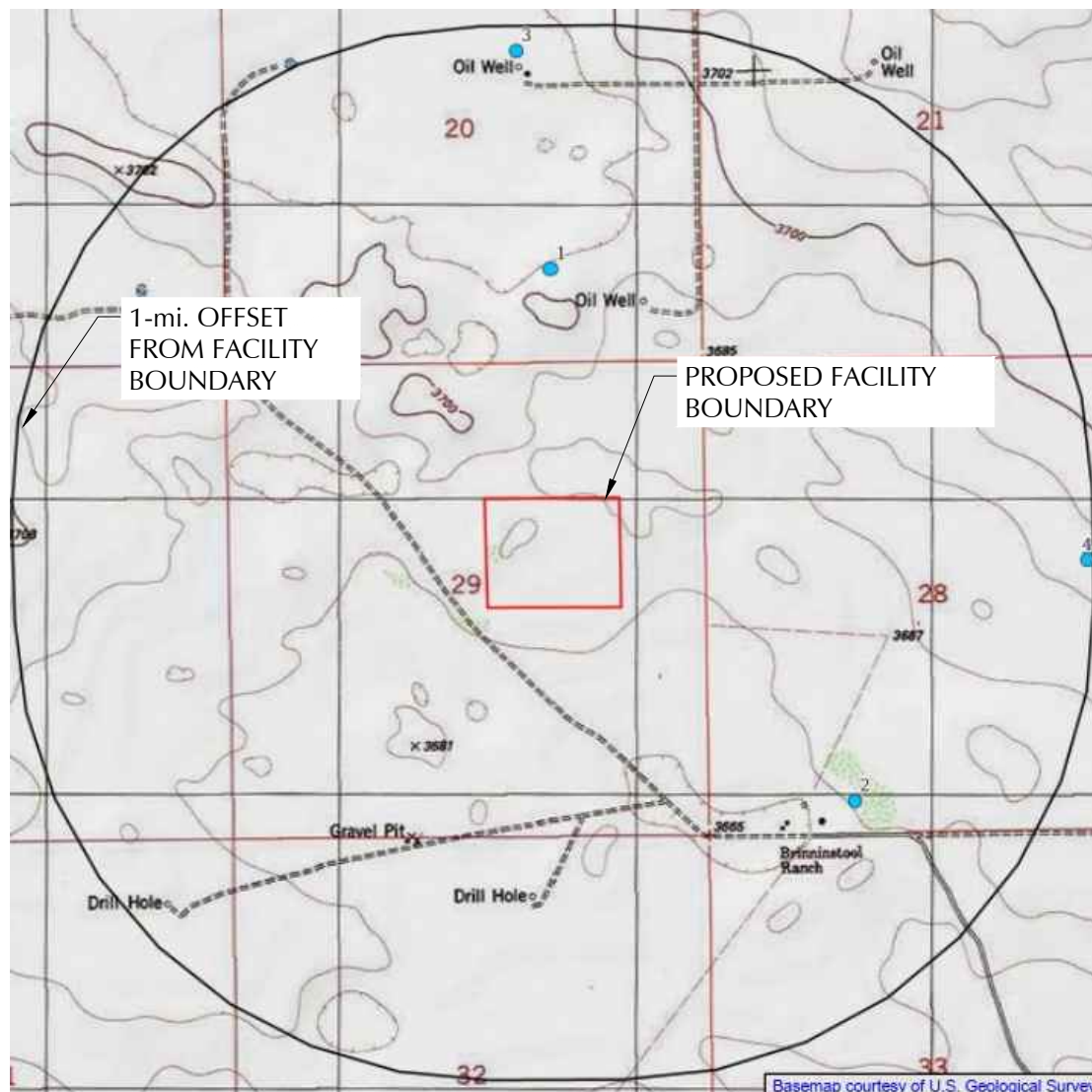
BRINSTOOL NORTH RECYCLE FACILITY
SECTION 29, TOWNSHIP 23 SOUTH, RANGE 33 EAST
LEA COUNTY, NEW MEXICO



WATERBRIDGE

Project No.
25078-00

Figure 1



North Brininstool Recycle Facility

COPYRIGHT

THIS DOCUMENT AND THE INFORMATION CONTAINED MAY NOT BE REPRODUCED OR EXCERPTED FROM WITHOUT THE EXPRESS WRITTEN PERMISSION OF ENVIROTECH ENGINEERING AND CONSULTING, INC. UNAUTHORIZED COPYING, DISCLOSURE OR CONSTRUCTION USE ARE PROHIBITED BY THE COPYRIGHT LAW.

GROUNDWATER WELLS MAP

BRININSTOOL NORTH RECYCLE FACILITY
SECTION 29, TOWNSHIP 23 SOUTH, RANGE 33 EAST
LEA COUNTY, NEW MEXICO



WATERBRIDGE

Project No.
25078-00

Figure 2.1

ENVIROTECH
ENGINEERING

2500 N. Eleventh Street Enid, OK 73701 • 580.234.8780 • envirotechconsulting.com
P.E. #29736 - Expiration Date: 12-31-2026



2500 N. Eleventh Street Enid, OK 73701 • 580.234.8780 • envirotechconsulting.com
P.E. #29736 - Expiration Date: 12-31-2026

NEW MEXICO AQUIFERS MAP

BRINSTOOL NORTH RECYCLE FACILITY
SECTION 29, TOWNSHIP 23 SOUTH, RANGE 33 EAST
LEA COUNTY, NEW MEXICO



WATERBRIDGE

Project No.
25078-00

Figure 2.2



NEW MEXICO GEOLOGICAL MAP

BRINSTOOL NORTH RECYCLE FACILITY
SECTION 29, TOWNSHIP 23 SOUTH, RANGE 33 EAST
LEA COUNTY, NEW MEXICO



WATERBRIDGE

Project No.
25078-00

Figure 2.3



2500 N. Eleventh Street Enid, OK 73701 • 580.234.8780 • envirotechconsulting.com
P.E. #29736 - Expiration Date: 12-31-2026

**MUNICIPALITIES & FRESHWATER
FIELDS MAP**
BRINSTOOL NORTH RECYCLE FACILITY
SECTION 29, TOWNSHIP 23 SOUTH, RANGE 33 EAST
LEA COUNTY, NEW MEXICO



Project No.
25078-00

Figure 3



2500 N. Eleventh Street Enid, OK 73701 • 580.234.8780 • envirotechconsulting.com
P.E. #29736 - Expiration Date: 12-31-2026

**NEW MEXICO REGISTERED
MINES MAP**
BRINSTOOL NORTH RECYCLE FACILITY
SECTION 29, TOWNSHIP 23 SOUTH, RANGE 33 EAST
LEA COUNTY, NEW MEXICO



Project No.
25078-00

Figure 4



KARST AND CAVE POTENTIAL MAP

BRINSTOOL NORTH RECYCLE FACILITY
SECTION 29, TOWNSHIP 23 SOUTH, RANGE 33 EAST
LEA COUNTY, NEW MEXICO



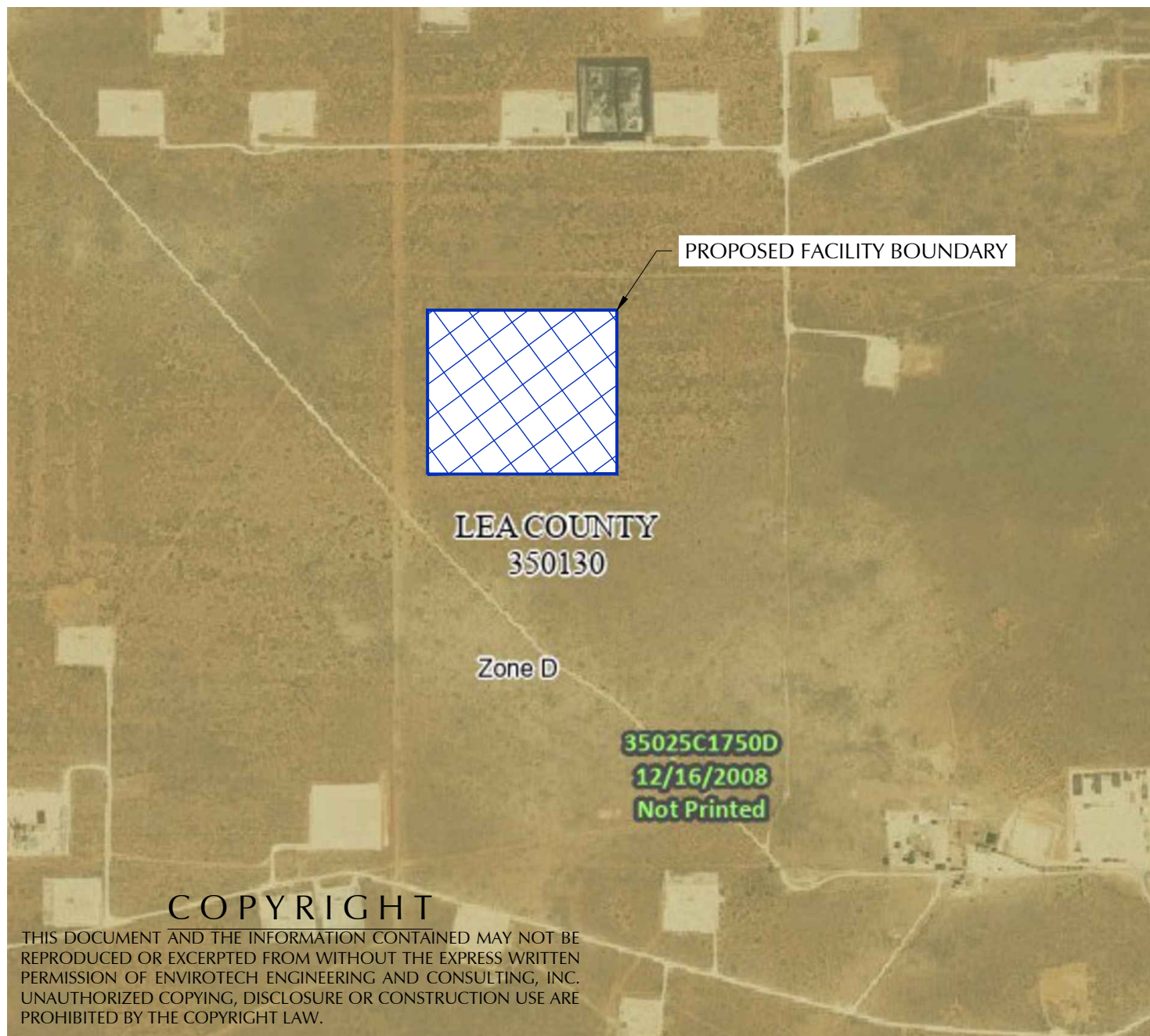
WATERBRIDGE

Project No.
25078-00

Figure 5

ENVIROTECH
ENGINEERING

2500 N. Eleventh Street Enid, OK 73701 • 580.234.8780 • envirotechconsulting.com
P.E. #29736 - Expiration Date: 12-31-2026



Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

| | | |
|-----------------------------|--|---|
| SPECIAL FLOOD HAZARD AREAS | | Without Base Flood Elevation (BFE) Zone A, V, AE9 |
| | | With BFE or Depth Zone AE, AO, AH, VE, AH |
| | | Regulatory Floodway |
| OTHER AREAS OF FLOOD HAZARD | | 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X |
| | | Future Conditions 1% Annual Chance Flood Hazard Zone X |
| | | Area with Reduced Flood Risk due to Levee. See Notes, Zone X |
| | | Area with Flood Risk due to Levee Zone D |
| OTHER AREAS | | NO SCREEN Area of Minimal Flood Hazard Zone X |
| | | Effective LOMRs |
| GENERAL STRUCTURES | | Area of Undetermined Flood Hazard Zone D |
| | | Channel, Culvert, or Storm Sewer |
| OTHER FEATURES | | Levee, Dike, or Floodwall |
| | | Cross Sections with 1% Annual Chance Water Surface Elevation |
| MAP PANELS | | Coastal Transect |
| | | Base Flood Elevation Line (BFE) |
| OTHER FEATURES | | Limit of Study |
| | | Jurisdiction Boundary |
| OTHER FEATURES | | Coastal Transect Baseline |
| | | Profile Baseline |
| OTHER FEATURES | | Hydrographic Feature |
| | | Digital Data Available |
| MAP PANELS | | No Digital Data Available |
| | | Unmapped |



FEMA FLOOD MAP

BRINSTOOL NORTH RECYCLE FACILITY
SECTION 29, TOWNSHIP 23 SOUTH, RANGE 33 EAST
LEA COUNTY, NEW MEXICO



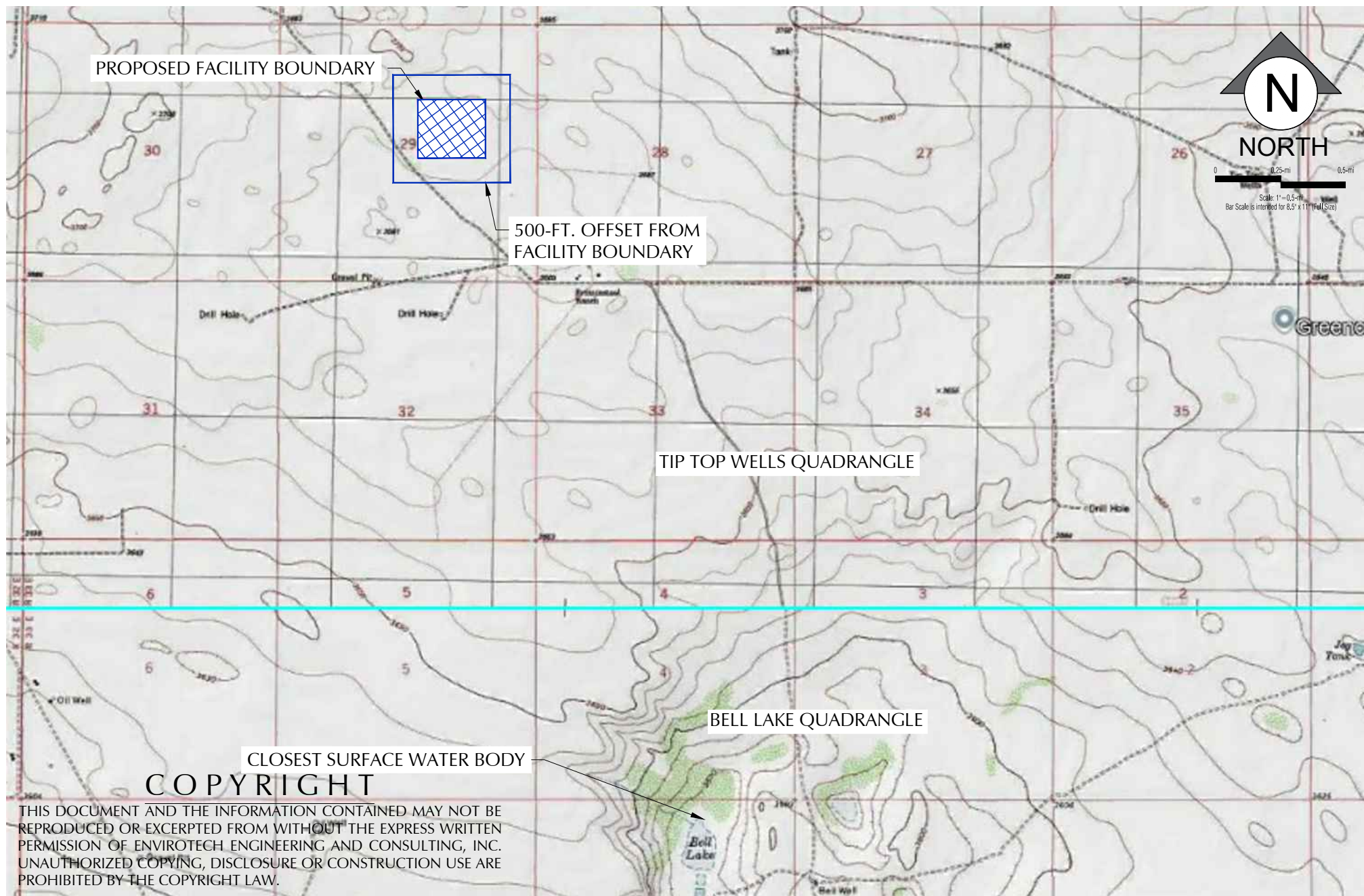
WATERBRIDGE

Project No.
25078-00

Figure 6

ENVIROTECH
ENGINEERING

2500 N. Eleventh Street Enid, OK 73701 • 580.234.8780 • envirotechconsulting.com
P.E. #29736 - Expiration Date: 12-31-2026



SURFACE WATER MAP

BRINSTOOL NORTH RECYCLE FACILITY
SECTION 29, TOWNSHIP 23 SOUTH, RANGE 33 EAST
LEA COUNTY, NEW MEXICO

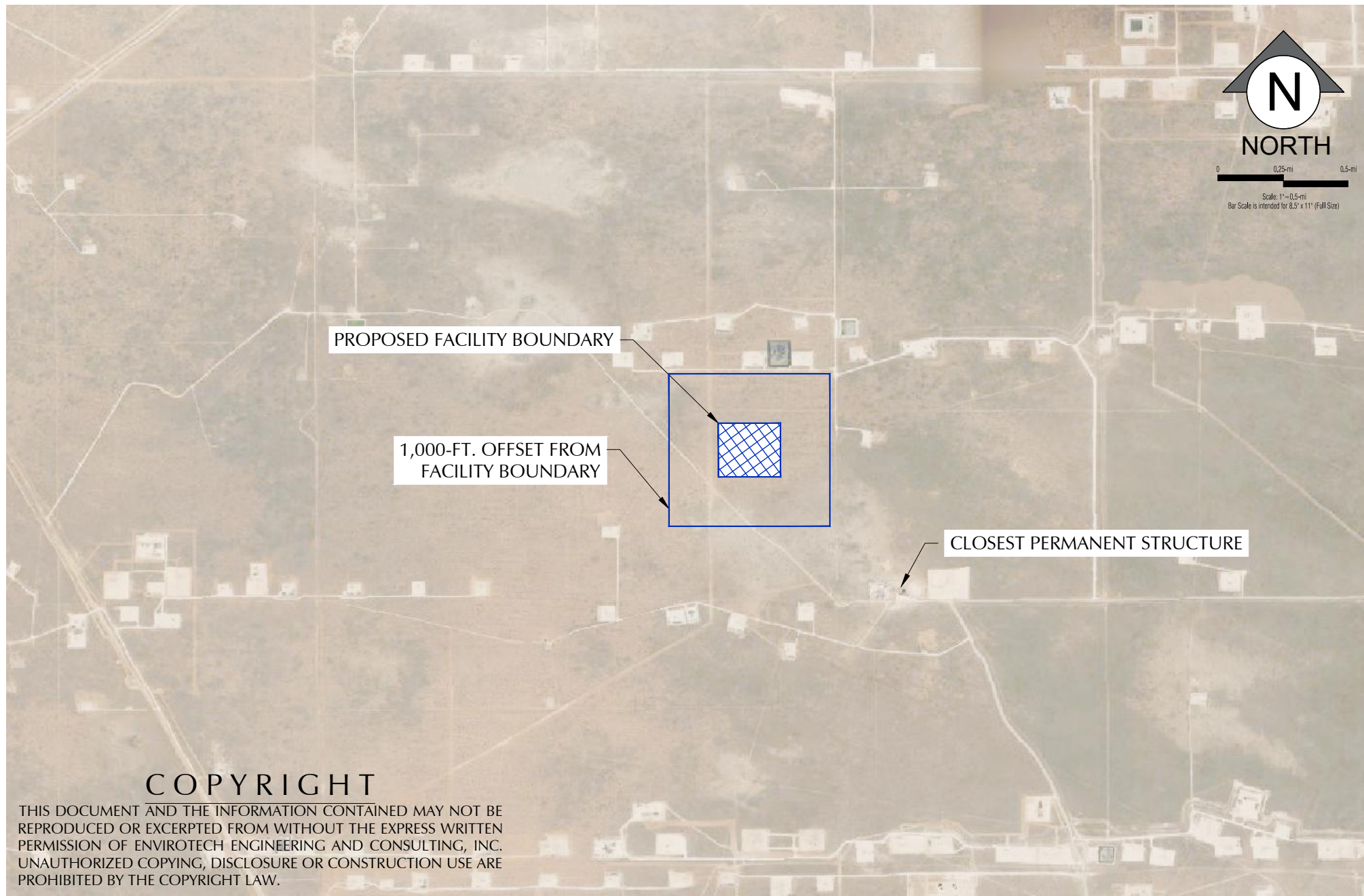


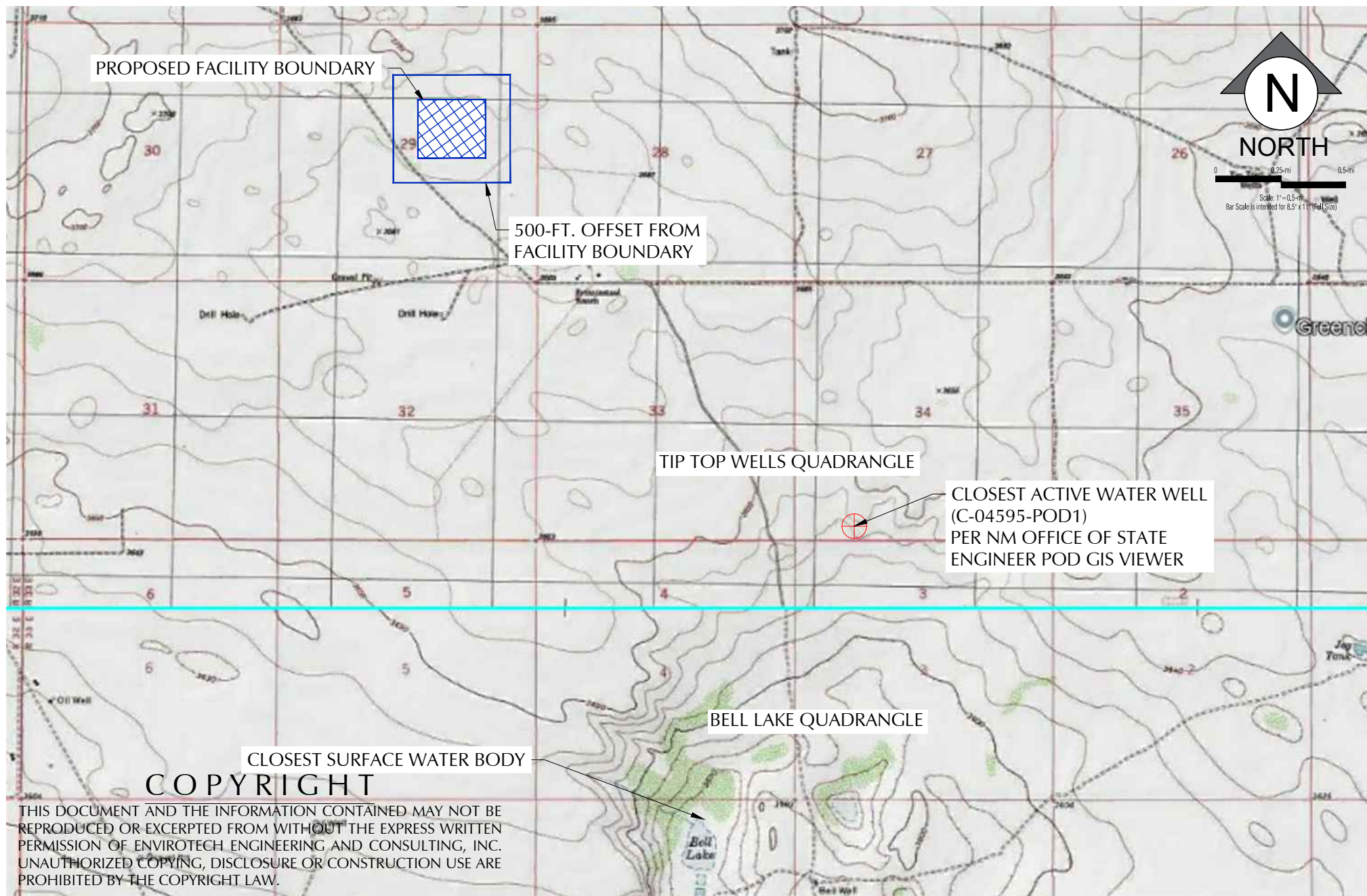
2500 N. Eleventh Street Enid, OK 73701 • 580.234.8780 • envirotechconsulting.com
P.E. #29736 - Expiration Date: 12-31-2026



Project No.
25078-00

Figure 7







2500 N. Eleventh Street Enid, OK 73701 • 580.234.8780 • envirotechconsulting.com
P.E. #29736 - Expiration Date: 12-31-2026

NWI WETLANDS MAP

BRINSTOOL NORTH RECYCLE FACILITY
SECTION 29, TOWNSHIP 23 SOUTH, RANGE 33 EAST
LEA COUNTY, NEW MEXICO



WATERBRIDGE

Project No.
25078-00

Figure 10



C-147 APPLICATION PACKAGE
NORTH BRININSTOOL RECYCLE FACILITY
SECTION 29, TOWNSHIP 23 SOUTH, RANGE 33 EAST
LEA COUNTY, NEW MEXICO
025078-00

APPENDIX A

BANKS WELL REPORT(S)

Prepared for:
ENVIROTECH ENGINEERING & CONSULTING, INC. -
OKC
2500 N. 11th St
Enid, OK 73701



Water Well Report

North Brininstool Recycle Facility

NM

Lea County

PO #: 025078-00

ES-145419

Thursday, March 06, 2025

Table of Contents

| | |
|---|----|
| Geographic Summary | 3 |
| Water Well Dataset Summary | 4 |
| Summary Map - 1.0 Mile Radius | 5 |
| Topographic Overlay Map - 1.0 Mile Radius | 6 |
| Current Imagery Overlay Map - 1.0 Mile Radius | 7 |
| Zip Code Map - 1.0 Mile Radius | 8 |
| Water Well Summary | 9 |
| Water Well Details | 10 |
| Dataset Descriptions | 14 |
| Disclaimer | 15 |

Geographic Summary**Location**

Lea County, NM

Subject property is 41.01 acres, 0.064 square miles, and has a 1.02 mile perimeter

Coordinates (centroid)

Lat/Long in Degrees Minutes Seconds 32° 16' 37.23", -103° 35' 28.48"

Lat/Long in Decimal Degrees 32.277008108443454, -103.59124371163949

X/Y in NAD83 / UTM Zone 13N 632668.741941255, 3572012.7377148997

Elevation (centroid)

Subject Property lies 3686.98 feet above sea level.

Zip Codes Searched**Search Distance Zip Codes**

Subject Property 88252

1.0 miles 88252

Topos Searched**Search Distance Topo Name**

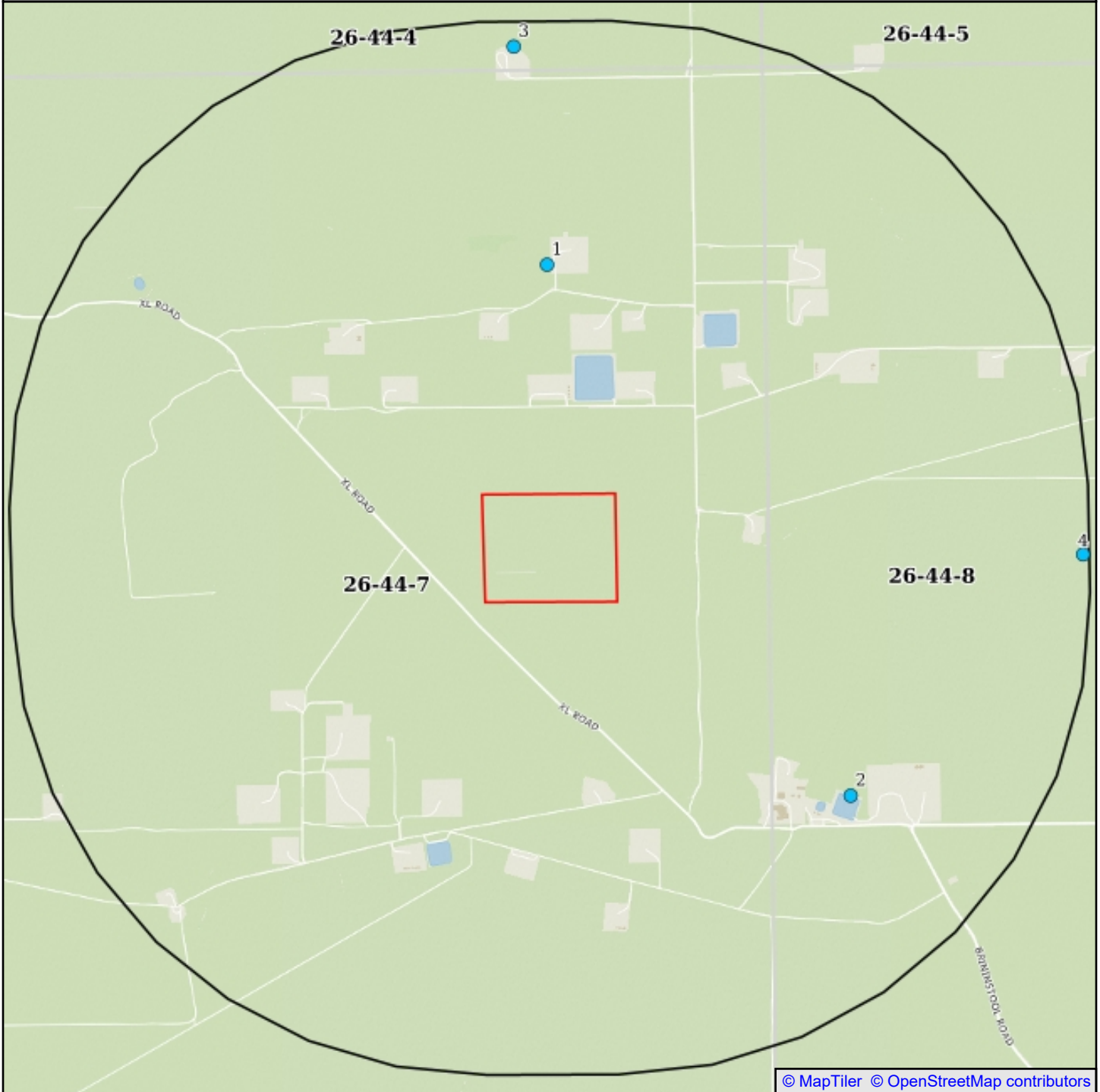
Subject Property Tip Top Wells

1.0 miles Tip Top Wells

Water Well Summary

| Datasets Searched | Distance | Total |
|--------------------|----------|-------|
| US Water Well (WW) | 1.0 | 0 |
| NM Water Well (WW) | 1.0 | 4 |
| Total Wells Found | | 4 |

Summary Map - 1.0 Mile Radius

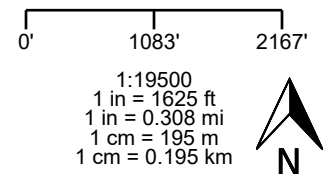


North Brininstool Recycle Facility

● Single Water Well ● Water Well Cluster

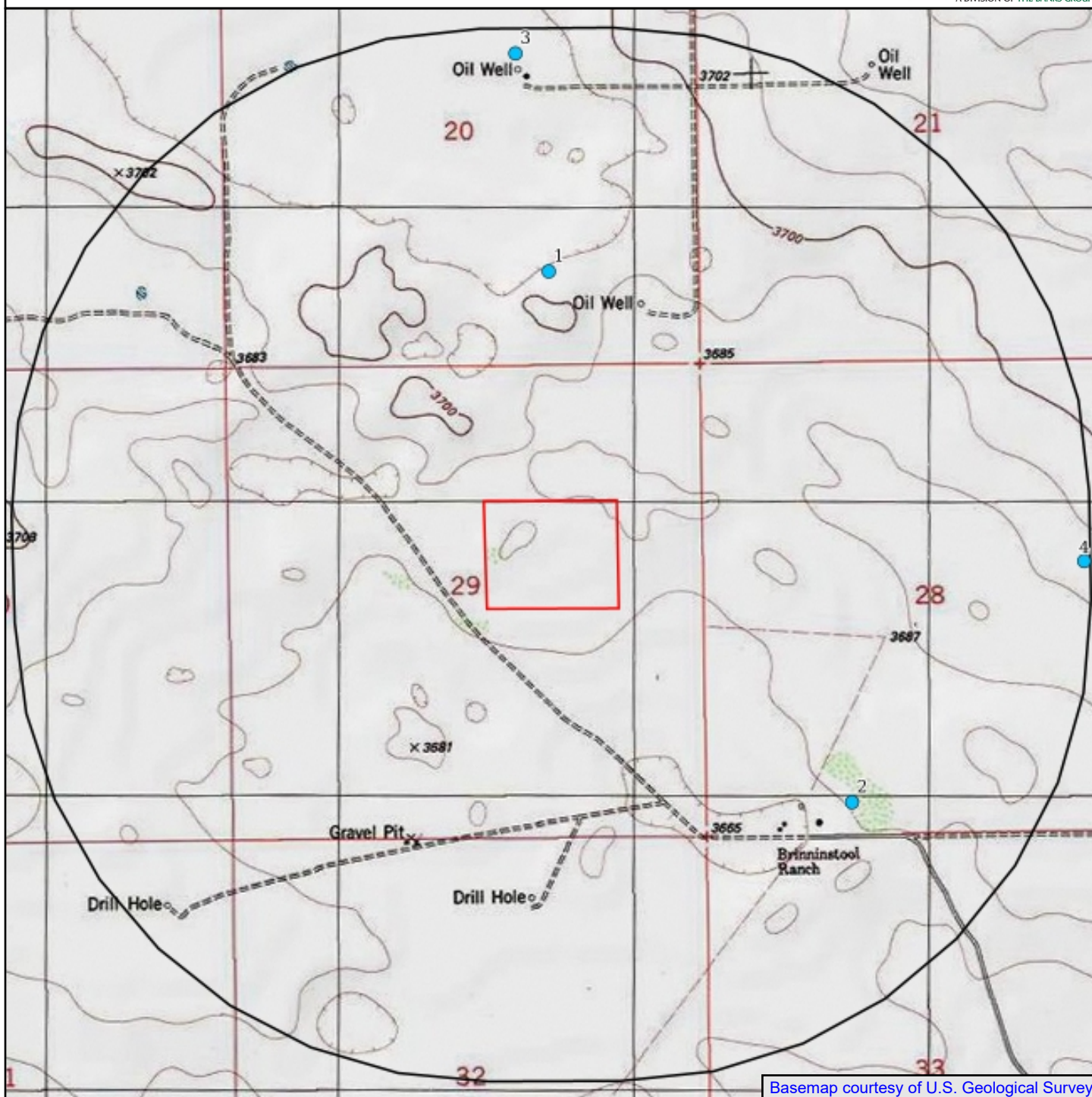
US WW, NM WW

- Subject Site
- Search Buffer
- Texas Quad Index



NAD83 / UTM Zone 13N
 North American Datum 1983
 Western Meridian: 108 0' 00" West
 Eastern Meridian: 102 0' 00" West
 Latitude of Origin: 0 0' 00" North

Topographic Overlay Map - 1.0 Mile Radius



North Brininstool Recycle Facility

Subject Property Quad Name(s)
See Geographic Summary

● Single Water Well ● Water Well Cluster

US WW, NM WW

□ Subject Site
□ Search Buffer

0' 1083' 2167'

1:19500
1 in = 1625 ft
1 in = 0.308 mi
1 cm = 195 m
1 cm = 0.195 km



NAD83 / UTM Zone 13N
North American Datum 1983
Western Meridian: 108 0' 00" West
Eastern Meridian: 102 0' 00" West
Latitude of Origin: 0 0' 00" North

Current Imagery Overlay Map - 1.0 Mile Radius



© MapTiler © OpenStreetMap contributors

North Brininstool Recycle Facility

● Single Water Well ● Water Well Cluster

US WW, NM WW

■ Subject Site
■ Search Buffer

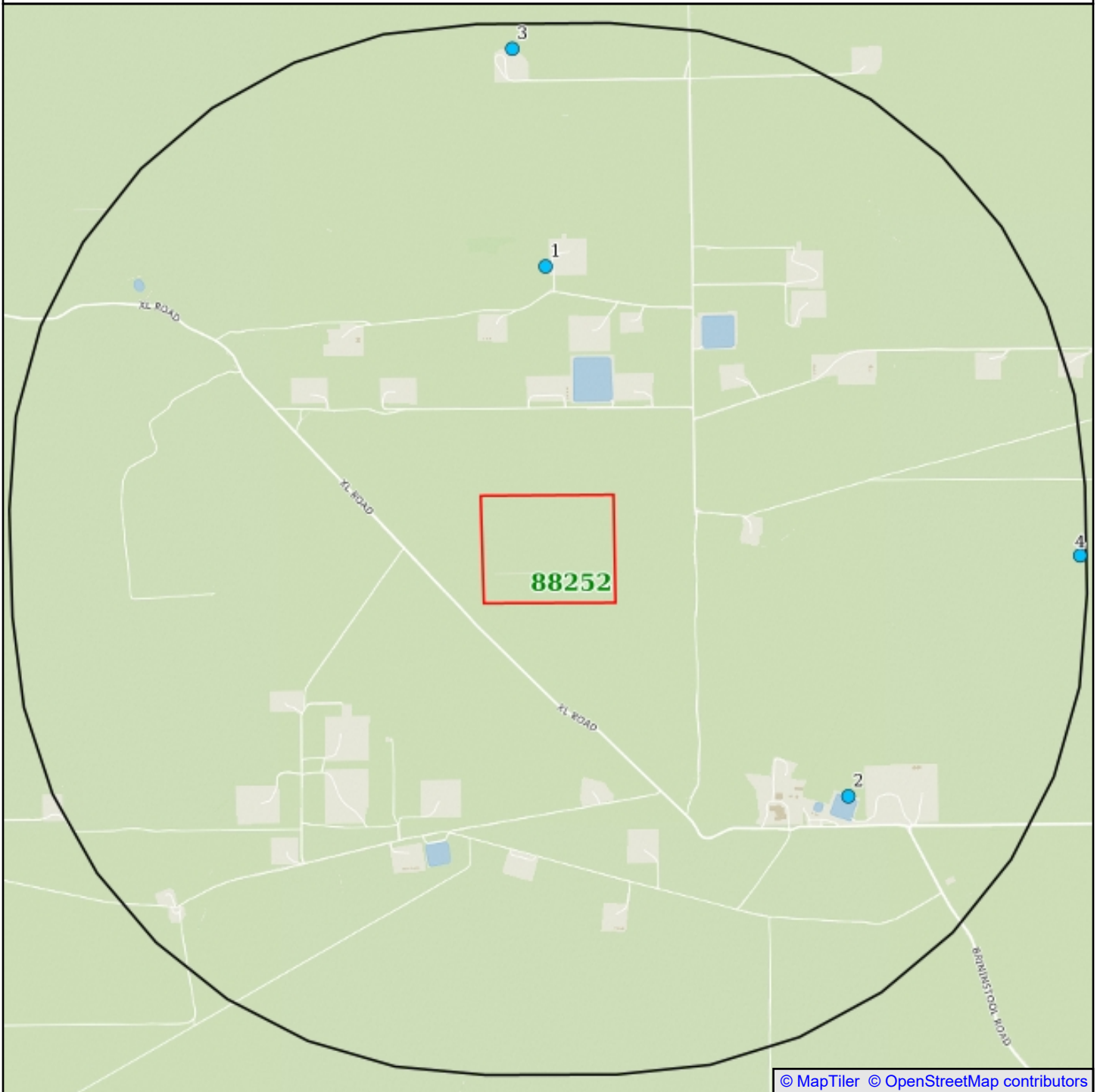
0' 1083' 2167'

1:19500
1 in = 1625 ft
1 in = 0.308 mi
1 cm = 195 m
1 cm = 0.195 km



NAD83 / UTM Zone 13N
North American Datum 1983
Western Meridian: 108 0' 00" West
Eastern Meridian: 102 0' 00" West
Latitude of Origin: 0 0' 00" North

Zip Code Map - 1.0 Mile Radius



© MapTiler © OpenStreetMap contributors

North Brininstool Recycle Facility

● Single Water Well ● Water Well Cluster

US WW, NM WW

- Subject Site
- Search Buffer
- Zip Code Boundary

0' 1083' 2167'

1:19500
 1 in = 1625 ft
 1 in = 0.308 mi
 1 cm = 195 m
 1 cm = 0.195 km



NAD83 / UTM Zone 13N
 North American Datum 1983
 Western Meridian: 108 0' 00" West
 Eastern Meridian: 102 0' 00" West
 Latitude of Origin: 0 0' 00" North

Water Well Summary

| Map ID | Source ID | Dataset | Owner | Well Type | Drill Depth | Static Level | Completion Date | Distance | Elevation | Details Page # |
|--------|---------------|---------|--------------------------|-----------|-------------|--------------|-----------------|-----------|-----------|----------------|
| 1 | C-02277 | WW | Brininstool XI Ranch Llc | | 550 | 400 | 1974-12-31 | 0.49mi N | +6.69 ft | 10 |
| 2 | C-02279 | WW | Hughes Properties Llc | | 650 | 400 | 1981-12-31 | 0.64mi SE | -5.84 ft | 11 |
| 3 | C-04159-PO D1 | WW | Hughes Properties Llc | | | | | 0.95mi N | +4.76 ft | 12 |
| 4 | C-02278 | WW | Brininstool XI Ranch Llc | | 650 | 400 | 1981-12-31 | 0.99mi E | -1.25 ft | 13 |

End of Water Well Summary

Map ID 1: WW

Source: New Mexico Office of the
State Engineer

Map ID: 1

POD File Number: C-02277

WW - Water Well

Banks ID: C-02277

Well Address: NM

Rel. Loc.: 0.49mi N

Completion Date: 1974-12-31

Drill Depth: 550.0

Owner: Brininstool XI Ranch Llc

Elevation: 3693.67 ft (+6.69 ft)

Well Description: COMMERCIAL

Owner Address: 1523 Butler Rd

Owner City: San Angelo

Owner State: TX

Owner Zip: 76904

Contact Last Name: Brininstool, Mortgagee

Contact First Name: Christine

Pod Status:

Digital Log: [Go to webpage](#)

Well Status: PMT

Plug Date:

Aquifer:

Other Location:

Map ID 2: WW

Source: New Mexico Office of the
State Engineer

Map ID: 2

POD File Number: C-02279

WW - Water Well

Banks ID: C-02279

Well Address: NM

Rel. Loc.: 0.64mi SE

Completion Date: 1981-12-31

Drill Depth: 650.0

Owner: Hughes Properties Llc

Elevation: 3681.14 ft (-5.84 ft)

Well Description: COMMERCIAL

Owner Address: Po Box 5097

Owner City: Carlsbad

Owner State: NM

Owner Zip: 88221

Contact Last Name: Hughes

Contact First Name: Trey

Pod Status:

Digital Log: [Go to webpage](#)

Well Status: PMT

Plug Date:

Aquifer:

Other Location:

Map ID 3: WW

Source: New Mexico Office of the
State Engineer

Map ID: 3

POD File Number: C-04159-POD1

WW - Water Well

Banks ID: C-04159-POD1

Well Address: NM

Rel. Loc.: 0.95mi N

Completion Date:

Drill Depth:

Owner: Hughes Properties Llc

Elevation: 3691.73 ft (+4.76 ft)

| | |
|---------------------|-------------------------------|
| Well Description: | EXPLORATION |
| Owner Address: | 910 W Pierce St #138 |
| Owner City: | Carlsbad |
| Owner State: | NM |
| Owner Zip: | 88220 |
| Contact Last Name: | Stapleton |
| Contact First Name: | Mike |
| Pod Status: | PEN |
| Digital Log: | Go to webpage |
| Well Status: | PMT |
| Plug Date: | |
| Aquifer: | |
| Other Location: | Hp#1 |

Map ID 4: WW

Source: New Mexico Office of the
State Engineer

Map ID: 4

POD File Number: C-02278

WW - Water Well

Banks ID: C-02278

Well Address: NM

Rel. Loc.: 0.99mi E

Completion Date: 1981-12-31

Drill Depth: 650.0

Owner: Brininstool XI Ranch Llc

Elevation: 3685.73 ft (-1.25 ft)

Well Description: COMMERCIAL

Owner Address: 1523 Butler Rd

Owner City: San Angelo

Owner State: TX

Owner Zip: 76904

Contact Last Name: Brininstool, Mortgagee

Contact First Name: Christine

Pod Status:

Digital Log: [Go to webpage](#)

Well Status: PMT

Plug Date:

Aquifer:

Other Location:

Dataset Descriptions and Sources



| Dataset | Source | Dataset Description | Update Schedule | Requested Date | Received Date | Update Date | Source Update Date |
|----------------------|---|---|-----------------|----------------|---------------|-------------|--------------------|
| WW - Water Well (US) | U.S. Geological Survey | This dataset contains groundwater well records from the U.S. Geological Survey. | Quarterly | 2024-12-12 | 2024-12-12 | 2024-12-12 | 2024-12-12 |
| WW - Water Well (NM) | New Mexico Office of the State Engineer | The NM Office of the State Engineer (OSE) "Point of Diversions" (POD) layer includes well locations, surface declarations, or surface permits updated on a monthly basis. These data were extracted from the OSE W.A.T.E.R.S. (Water Administration Technical Engineering Resource System) database and geo-located (mapped). These data have varying degrees of accuracy and have not been validated. Data included in this dataset only includes PODs that have coordinates located within the State of New Mexico. | Quarterly | 2025-02-11 | 2025-02-11 | 2025-02-11 | 2025-02-10 |

Disclaimer

The Banks Environmental Data Water Well Report was prepared from existing state water well databases and/or additional file data/records research conducted at the state agency and the U.S. Geological Survey. Banks Environmental Data has performed a thorough and diligent search of all groundwater well information provided and recorded. All mapped locations are based on information obtained from the source. Although Banks performs quality assurance and quality control on all research projects, we recognize that any inaccuracies of the records and mapped well locations could possibly be traced to the appropriate regulatory authority or the actual driller. It may be possible that some water well schedules and logs have never been submitted to the regulatory authority by the water driller and, thus, may explain the possible unaccountability of privately drilled wells. It is uncertain if the above listing provides 100% of the existing wells within the area of review. Therefore, Banks Environmental Data cannot fully guarantee the accuracy of the data or well location(s) of those maps and records maintained by the regulatory authorities.



C-147 APPLICATION PACKAGE
NORTH BRININSTOOL RECYCLE FACILITY
SECTION 29, TOWNSHIP 23 SOUTH, RANGE 33 EAST
LEA COUNTY, NEW MEXICO
025078-00

APPENDIX B

GEOTECHNICAL ENGINEERING REPORT

COZ Engineering, LLC

GEOTECHNICAL ENGINEERING REPORT

NORTH BRINSTOOL RECYCLING FACILITY

LEA COUNTY, NEW MEXICO

Project No. 4225043

March 22, 2025

Prepared for:

ENVIROTECH ENGINEERING & CONSULTING, INC.

Enid, Oklahoma

Prepared by:

COZ ENGINEERING, LLC

Las Cruces, New Mexico

COZ Engineering, LLC

PO Box 13331
Las Cruces, New Mexico 88013
Cell: 575.642.7671
Email: thecoz42@gmail.com

March 22, 2025

Envirotech Engineering & Consulting, Inc.
2500 North Eleventh Street
Enid, OK 73701

Attn. Mitchell Ratke, P.E.
P: 580.234.8780
E: mratke@envirotechconsulting.com

**Re: Geotechnical Engineering Report
North Brininstool Recycling Facility
32.279123, -103.594175, XI Road
Lea County, New Mexico
COZ Report No. 4225043**

Dear Mr. Ratke:

The following is a geotechnical engineering report for the proposed North Brininstool Recycling Facility in Lea County, New Mexico. Recommendations for earthwork, embankments and other geotechnical considerations are presented in the report.

Thank you for the opportunity to provide this geotechnical engineering report. If you have any questions or concerns, please contact me at (575)-642-7671.

Sincerely,

COZ Engineering, LLC



Dan Cosper, P.E.

North Brininstool Recycling Facility

March 22, 2025

COZ Report No. 4225043

| | |
|---|-----------------|
| <i>Site Investigation:</i> | <i>1</i> |
| <i>Site Conditions:</i> | <i>1</i> |
| <i>Planned Construction:</i> | <i>1</i> |
| <i>Site Grading:</i> | <i>1</i> |
| <i>Soil Improvements:</i> | <i>2</i> |
| <i>Fill Material:</i> | <i>2</i> |
| <i>Excavation of Embankment Areas:</i> | <i>3</i> |
| <i>Embankment Placement:</i> | <i>3</i> |
| <i>Seismic Site Classification:</i> | <i>4</i> |
| <i>Testing and Inspection:</i> | <i>4</i> |
| <i>Report Limitations:</i> | <i>5</i> |

Appendix:

Site Plan

Boring Logs

Laboratory Results

North Brininstool Recycling Facility

March 22, 2025

COZ Report No. 4225043

Site Investigation:

A subsurface investigation was performed for the proposed North Brininstool Recycling Facility to be located at Lat.: 32.279123° Long.: -103.594175° north of XI Road in Lea County, New Mexico. Five (5) test borings were advanced within the proposed facility near client requested locations. The borings were advanced to depths of 25 and 75 feet below ground surface (bgs).

Site Conditions:

The ground surface was exposed native subgrade with dense vegetation consisting of brush and native grasses. Soils investigated at this site were comprised of silty sand with varying amounts of gravel from the surface to depths of 20 to 25 feet bgs. The upper soils were underlain by poorly graded sand with silt to the total explored depth of 75 feet bgs.

The groundwater table was not encountered during the field investigation.

Planned Construction:

Based on the information provided, the project will include the construction of a recycling facility.

Site Grading:

Areas for planned construction should be clear of debris, vegetation and any oversized or deleterious material prior to grading operations. Fill construction shall not be allowed on

North Brininstool Recycling Facility

March 22, 2025

COZ Report No. 4225043

surfaces that contain vegetation or rocks larger than four inches in greatest dimension. No fill shall be placed that contains vegetative material as decomposition of that material can cause voids and possibly result in surface settlement. Voids in the soil matrix created or encountered during grading operations shall be backfilled with compacted fill material.

Positive drainage away from embankments should be provided throughout the life of the project. Areas adjacent to embankments that could retain water should be sealed or eliminated.

Soil Improvements:

Subgrade preparation (beneath embankments and engineered fills) should consist of scarifying the native soil surface a minimum thickness of 10 inches, moisture conditioning (+/- 2% of optimum moisture content per ASTM D-698) and compaction to a minimum of 95% of standard Proctor density (per ASTM D-698). Engineered fill materials should be placed in 10-inch maximum lifts, moisture conditioned to within 2% of optimum moisture content (per ASTM D-698) and compacted to a minimum of 95% of standard Proctor density (per ASTM D-698).

Fill Material:

Engineered fill material for this project should meet the following gradation criteria:

| <u>Sieve</u> | <u>% Passing</u> |
|---------------------|-------------------------|
| 4" | 100 |
| ¾" | 70-100 |
| #4 | 50-100 |
| #200 | 50 max. |

North Brininstool Recycling Facility

March 22, 2025

COZ Report No. 4225043

The plasticity index of the minus #40 sieve portion should not exceed twenty (20). The on-site soils tested meet the above specifications.

Excavation of Embankment Areas:

Difficult excavations due to very dense cemented soils will require particular attention in the design and construction.

The soils below the new embankments should be scarified ten inches, moisture conditioned and compacted. The interior/exterior width of subgrade preparation should extend to the intersection of the slopes of the embankment fill. Once the subgrade preparation has been observed and approved by the geotechnical engineer, embankment fill operations can initiate.

Embankment Placement:

Once the subgrade has been prepared, on-site embankment material stockpiles should be moisture conditioned in preparation for lift placement. The embankments should be constructed as a unit from the bottom elevation to the rim elevation.

The distal slopes of the embankments should be overbuilt and cut to final grade to provide compaction to these edges of the embankments. The embankments should be constructed in strict accordance with the project plans and specifications.

North Brininstool Recycling Facility

March 22, 2025

COZ Report No. 4225043

Seismic Site Classification:

The seismic site classification is based upon the soil profile in the upper 100 feet as defined by the weighted average of standard penetration blow-counts or shear wave velocity in accordance with Section 20.4 of the ASCE 7 and the International Building Code (IBC). Based upon my field investigation, it is my opinion that the Seismic Site Classification is C (**"Very Dense Soils or Soft Rock"**). The maximum depth of the borings advanced at the site was 75 feet. Therefore, soil properties below the maximum boring depth to 100 feet were estimated based on my experience with the general area. Deeper borings or geophysical testing would be required to confirm the conditions below the current boring depth.

Testing and Inspection:

It is recommended that all site grading operations be inspected by a geotechnical engineer. The inspecting engineer should be responsible for immediately reporting any site or soil conditions that vary significantly from this report.

The testing of materials should be made at the following:

- 1) One (1) soil density every 5,000 square feet of prepared subgrade and embankment fill areas (ASTM D-1556, ASTM D-2167, or ASTM D-2922, ASTM D-3017).
- 2) One (1) sieve analysis and plasticity index per material used according to ASTM D-422 and ASTM D-4318.
- 3) One (1) proctor per each type of material used according to ASTM D-698.

North Brininstool Recycling Facility

March 22, 2025

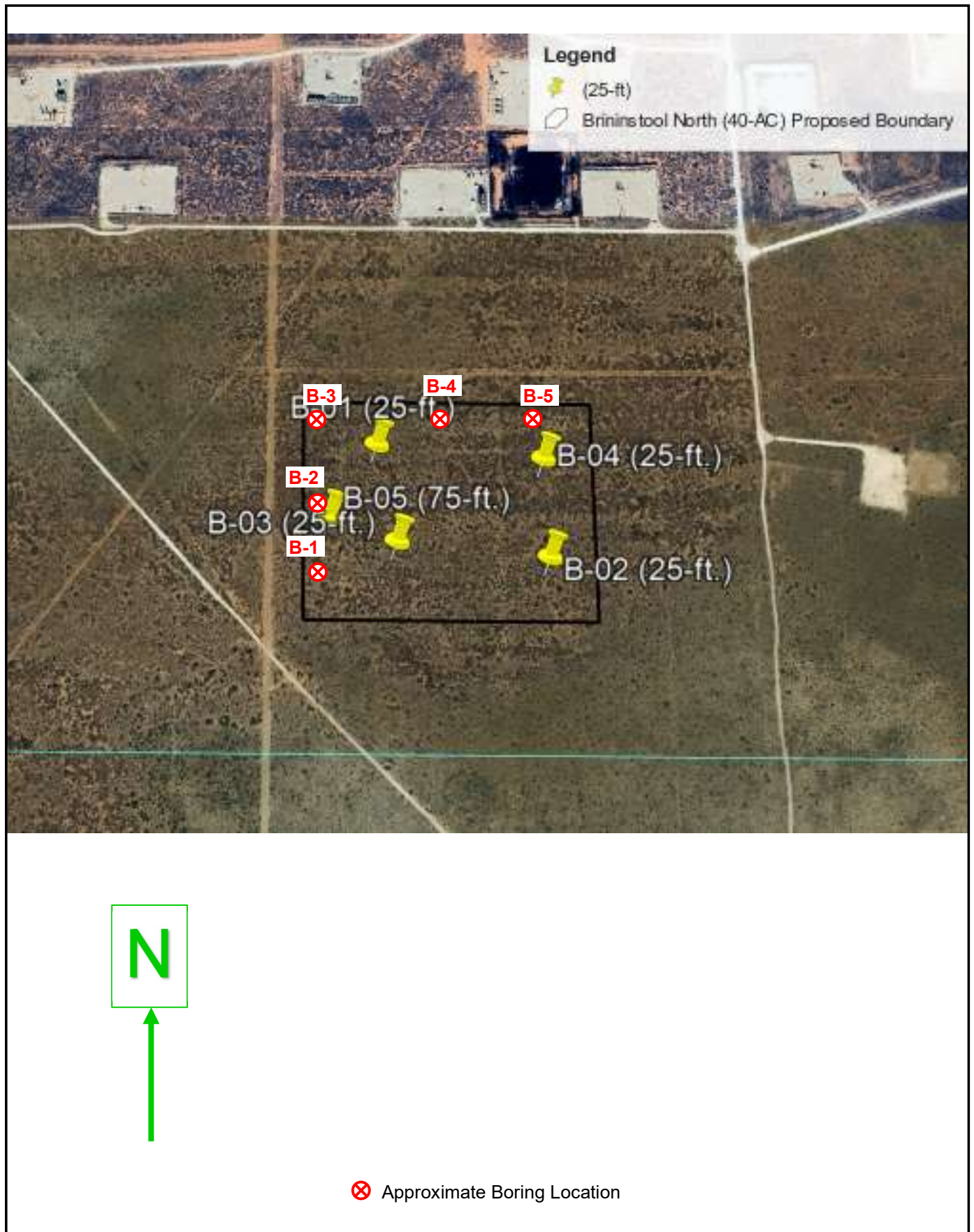
COZ Report No. 4225043

Report Limitations:

The conclusions, recommendations and opinions presented herein are:

- 1) Based upon evaluation and interpretation of the findings of the field and laboratory program.
- 2) Based upon an interpolation of soil conditions between and beyond the explorations.
- 3) Subject to confirmation of the conditions encountered during construction.
- 4) Based upon the assumption that sufficient observation and testing will be provided during construction.

There is no other warranty, either express or implied. Any person using this report for bidding or construction purposes should perform such independent investigation as he deems necessary to satisfy himself as to the surface and subsurface conditions to be encountered and the procedures to be used in the performance of work on this project. If conditions are encountered during construction that appear to differ from those indicated in this report, I should be notified immediately.









| | | | | |
|------------------------|------------------------|---|---|---------|
| Project Manager: DC | Project No. 4225043 | COZ Engineering, LLC PO Box 13331 Las Cruces, NM 88013 | BORING LOCATION PLAN North Brininstool Recycling Facility Lat.: 32.279123° Long.: -103.594175° Lea County, New Mexico | Exhibit |
| Drawn by: DC | Scale: AS SHOWN | | | 1 |
| Checked by: DC | File Name: Figures | | | |
| Approved by: DC | Date: 3-22-25 | | | |

Project: **North Brininstool Recycling Facility**
 Project Location: **32.279123 -103.594175, Lea County, NM**
 Project Number: **4225043**

Log of Boring B-1
Sheet 1 of 1

| | | |
|---|--|---|
| Date(s) Drilled 2-26-25 | Logged By RC | Checked By COZ |
| Drilling Method hollow-stem auger | Drill Bit Size/Type | Total Depth of Borehole 26.5 feet bgs |
| Drill Rig Type CME-75 | Drilling Contractor Southlands | Approximate Surface Elevation |
| Groundwater Level and Date Measured not encountered | Sampling Method(s) SPT | Hammer Data |
| Borehole Backfill cuttings | Location see boring plan | |



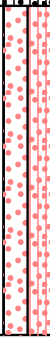
| Elevation (feet) | Depth (feet) | Sample Type | Sample Number | Sampling Resistance, blows/ft | Material Type | Graphic Log | MATERIAL DESCRIPTION | Water Content, % | Percent Fines | LL, % | PI, % |
|------------------|--------------|-------------|---------------|-------------------------------|---------------|---|--|------------------|---------------|-------|-------|
| 0 | 0 | | | | SM |  | SILTY SAND: red brown, dry, dense | | | | |
| 1 | 1 | | | | | | | | | | |
| 2 | 2 | | | | | | | | | | |
| 3 | 3 | | | | | | | | | | |
| 4 | 4 | | | | | | | | | | |
| 5 | 5 | | | | | | | | | | |
| 6 | 6 | 1 | 18\25\20 | | |  | | | | | |
| 7 | 7 | | | | | | | | | | |
| 8 | 8 | | | | | | | | | | |
| 9 | 9 | | | | | | | | | | |
| 10 | 10 | | | | | | | | | | |
| 11 | 11 | 2 | 20\24\28 | | |  | white, very dense, carbonate indurated | | | | |
| 12 | 12 | | | | | | | | | | |
| 13 | 13 | | | | | | | | | | |
| 14 | 14 | | | | | | | | | | |
| 15 | 15 | 3 | 50 | | GP-GM |  | POORLY GRADED GRAVEL WITH SILT AND SAND: white, dry, very dense, carbonate indurated | | | | |
| 16 | 16 | | | | | | | | | | |
| 17 | 17 | | | | | | | | | | |
| 18 | 18 | | | | | | | | | | |
| 19 | 19 | | | | | | | | | | |
| 20 | 20 | 4 | 50 | | |  | | 11.1 | 9.9 | | NP |
| 21 | 21 | | | | | | | | | | |
| 22 | 22 | | | | | | | | | | |
| 23 | 23 | | | | | | | | | | |
| 24 | 24 | | | | | | | | | | |
| 25 | 25 | | | | | | | | | | |
| 26 | 26 | 5 | 15\15\21 | | SM |  | SILTY SAND: light red brown, dry, dense | | | | |
| 27 | 27 | | | | | | Bottom of Boring | | | | |
| 28 | 28 | | | | | | | | | | |
| 29 | 29 | | | | | | | | | | |
| 30 | 30 | | | | | | | | | | |
| 31 | 31 | | | | | | | | | | |
| 32 | 32 | | | | | | | | | | |
| 33 | 33 | | | | | | | | | | |
| 34 | 34 | | | | | | | | | | |
| 35 | 35 | | | | | | | | | | |

C:\Users\theco\AppData\Local\Temp\borings_temp\Impfile.bgs[COZ Engineering 1.tpl]

Project: **North Brininstool Recycling Facility**
 Project Location: **32.279123 -103.594175, Lea County, NM**
 Project Number: **4225043**

Log of Boring B-2
Sheet 1 of 2

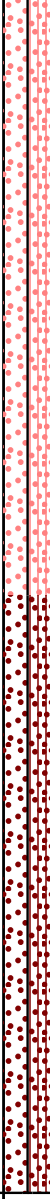

| | | |
|---|--|---|
| Date(s) Drilled 2-26-25 | Logged By RC | Checked By COZ |
| Drilling Method hollow-stem auger | Drill Bit Size/Type | Total Depth of Borehole 75 feet bgs |
| Drill Rig Type CME-75 | Drilling Contractor Southlands | Approximate Surface Elevation |
| Groundwater Level and Date Measured not encountered | Sampling Method(s) | Hammer Data |
| Borehole Backfill cuttings | Location see boring plan | |

| Elevation (feet) | Depth (feet) | Sample Type | Sample Number | Sampling Resistance, blows/ft | Material Type | Graphic Log | MATERIAL DESCRIPTION | Water Content, % | Percent Fines | LL, % | PI, % |
|------------------|--------------|-------------|---------------|-------------------------------|---------------|---|---|------------------|---------------|-------|-------|
| | 0 | | | | SM |  | SILTY SAND: red brown, dry | | | | |
| | 1 | | | | | | | | | | |
| | 2 | | | | | | | | | | |
| | 3 | | | | | | | | | | |
| | 4 | | | | | | | | | | |
| | 5 | | | | SM |  | SILTY SAND WITH GRAVEL: white, dry, carbonate indurated | | | | |
| | 6 | | | | | | | | | | |
| | 7 | | | | | | | | | | |
| | 8 | | | | | | | | | | |
| | 9 | | | | | | | | | | |
| | 10 | | | | | | | | | | |
| | 11 | | | | | | | | | | |
| | 12 | | | | | | | | | | |
| | 13 | | | | | | | | | | |
| | 14 | | | | | | | | | | |
| | 15 | | | | | | | | | | |
| | 16 | | | | | | | | | | |
| | 17 | | | | | | | | | | |
| | 18 | | | | | | | | | | |
| | 19 | | | | | | | | | | |
| | 20 | | | | | | | | | | |
| | 21 | | | | | | | | | | |
| | 22 | | | | | | | | | | |
| | 23 | | | | | | | | | | |
| | 24 | | | | | | | | | | |
| | 25 | | | | SP-SM |  | POORLY GRADED SAND WITH SILT: light red brown, dry | | | | |
| | 26 | | | | | | | | | | |
| | 27 | | | | | | | | | | |
| | 28 | | | | | | | | | | |
| | 29 | | | | | | | | | | |
| | 30 | | | | | | | | | | |
| | 31 | | | | | | | | | | |
| | 32 | | | | | | | | | | |
| | 33 | | | | | | | | | | |
| | 34 | | | | | | | | | | |
| | 35 | | | | | | | | | | |

C:\Users\theco\AppData\Local\Temp\boring_logs_temp\Impfile.bgs[COZ Engineering 1.jpj]

Project: **North Brininstool Recycling Facility**
 Project Location: **32.279123 -103.594175, Lea County, NM**
 Project Number: **4225043**

Log of Boring B-2
Sheet 2 of 2








| Elevation (feet) | Depth (feet) | Sample Type | Sample Number | Sampling Resistance, blows/ft | Material Type | Graphic Log | MATERIAL DESCRIPTION | Water Content, % | Percent Fines | LL, % | PI, % |
|------------------|--------------|-------------|---------------|-------------------------------|---------------|---|--|------------------|---------------|-------|-------|
| | 35 | | | | SP-SM |  | POORLY GRADED SAND WITH SILT: light red brown, dry | | | | |
| | 40 | | | | | | | | | | |
| | 45 | | | | | | | | | | |
| | 50 | | | | | | | | | | |
| | 55 | | | | |  | red brown | | | | |
| | 60 | | | | | | | | | | |
| | 65 | | | | | | | | | | |
| | 70 | | | | | | | | | | |
| | 75 | | | | | | Bottom of Boring | | | | |
| | 80 | | | | | | | | | | |

C:\Users\theo\AppData\Local\Temp\borings_temp\Impfile.bgs[COZ Engineering 1.jpj]

Project: **North Brininstool Recycling Facility**
 Project Location: **32.279123 -103.594175, Lea County, NM**
 Project Number: **4225043**

Log of Boring B-3
Sheet 1 of 1









| | | |
|---|--|---|
| Date(s) Drilled 2-26-25 | Logged By RC | Checked By COZ |
| Drilling Method hollow-stem auger | Drill Bit Size/Type | Total Depth of Borehole 26.5 feet bgs |
| Drill Rig Type CME-75 | Drilling Contractor Southlands | Approximate Surface Elevation |
| Groundwater Level and Date Measured not encountered | Sampling Method(s) SPT | Hammer Data |
| Borehole Backfill cuttings | Location see boring plan | |

| Elevation (feet) | Depth (feet) | Sample Type | Sample Number | Sampling Resistance, blows/ft | Material Type | Graphic Log | MATERIAL DESCRIPTION | Water Content, % | Percent Fines | LL, % | PI, % |
|------------------|--------------|---|---------------|-------------------------------|---------------|---|---|------------------|---------------|-------|-------|
| 0 | 0 | | | | SM |  | SILTY SAND: red brown, dry, very dense | | | | |
| 1 | 1 | | | | | | | | | | |
| 2 | 2 | | | | | | | | | | |
| 3 | 3 | | | | | | | | | | |
| 4 | 4 | | | | | | | | | | |
| 5 | 5 |  | 1 | 50 | | | | 3.3 | 15.8 | | NP |
| 6 | 6 | | | | | | | | | | |
| 7 | 7 | | | | | | | | | | |
| 8 | 8 | | | | | | | | | | |
| 9 | 9 | | | | | | | | | | |
| 10 | 10 |  | 2 | 30\31\33 | SM |  | SILTY SAND WITH GRAVEL: white, dry, very dense, carbonate indurated | | | | |
| 11 | 11 | | | | | | | | | | |
| 12 | 12 | | | | | | | | | | |
| 13 | 13 | | | | | | | | | | |
| 14 | 14 | | | | | | | | | | |
| 15 | 15 |  | 3 | 10\10\12 | | | medium dense | | | | |
| 16 | 16 | | | | | | | | | | |
| 17 | 17 | | | | | | | | | | |
| 18 | 18 | | | | | | | | | | |
| 19 | 19 | | | | | | | | | | |
| 20 | 20 |  | 4 | 50 | | | very dense | | | | |
| 21 | 21 | | | | | | | | | | |
| 22 | 22 | | | | | | | | | | |
| 23 | 23 | | | | | | | | | | |
| 24 | 24 | | | | | | | | | | |
| 25 | 25 |  | 5 | 8\27\50 | | | | | | | |
| 26 | 26 | | | | | | | | | | |
| 27 | 27 | | | | | | Bottom of Boring | | | | |
| 28 | 28 | | | | | | | | | | |
| 29 | 29 | | | | | | | | | | |
| 30 | 30 | | | | | | | | | | |
| 31 | 31 | | | | | | | | | | |
| 32 | 32 | | | | | | | | | | |
| 33 | 33 | | | | | | | | | | |
| 34 | 34 | | | | | | | | | | |
| 35 | 35 | | | | | | | | | | |

C:\Users\theco\AppData\Local\Temp\borings_temp\Impfile.bgs[COZ Engineering 1.jpj]

| | |
|--|---|
| Project: North Brininstool Recycling Facility | Log of Boring B-4 Sheet 1 of 1 |
| Project Location: 32.279123 -103.594175, Lea County, NM | |
| Project Number: 4225043 | |

| | | |
|--|---------------------------------------|--|
| Date(s) Drilled 2-26-25 | Logged By RC | Checked By COZ |
| Drilling Method hollow-stem auger | Drill Bit Size/Type | Total Depth of Borehole 26.5 feet bgs |
| Drill Rig Type CME-75 | Drilling Contractor Southlands | Approximate Surface Elevation |
| Groundwater Level and Date Measured not encountered | Sampling Method(s) SPT | Hammer Data |
| Borehole Backfill cuttings | Location see boring plan | |






| Elevation (feet) | Depth (feet) | Sample Type | Sample Number | Sampling Resistance, blows/ft | Material Type | Graphic Log | MATERIAL DESCRIPTION | Water Content, % | Percent Fines | LL, % | PI, % |
|------------------|--------------|---|---------------|-------------------------------|---------------|---|---|------------------|---------------|-------|-------|
| 0 | 0 | | | | SM |  | SILTY SAND: red brown, dry, very dense, trace gravel | | | | |
| 1 | 1 | | | | | | | | | | |
| 2 | 2 | | | | | | | | | | |
| 3 | 3 | | | | | | | | | | |
| 4 | 4 | | | | | | | | | | |
| 5 | 5 |  | 1 | 50 | | | | | | | |
| 6 | 6 | | | | | | | | | | |
| 7 | 7 | | | | | | | | | | |
| 8 | 8 | | | | | | | | | | |
| 9 | 9 | | | | | | | | | | |
| 10 | 10 |  | 2 | 50 | GM |  | SILTY GRAVEL WITH SAND: white, dry, very dense, carbonate indurated | | | | |
| 11 | 11 | | | | | | | | | | |
| 12 | 12 | | | | | | | | | | |
| 13 | 13 | | | | | | | | | | |
| 14 | 14 | | | | | | | | | | |
| 15 | 15 |  | 3 | 35\50 | | | | 4.4 | 13.7 | | NP |
| 16 | 16 | | | | | | | | | | |
| 17 | 17 | | | | | | | | | | |
| 18 | 18 | | | | | | | | | | |
| 19 | 19 | | | | | | | | | | |
| 20 | 20 |  | 4 | 6\10\12 | SP-SM |  | POORLY GRADED SAND WITH SILT: light red brown, dry, medium dense | | | | |
| 21 | 21 | | | | | | | | | | |
| 22 | 22 | | | | | | | | | | |
| 23 | 23 | | | | | | | | | | |
| 24 | 24 | | | | | | | | | | |
| 25 | 25 |  | 5 | 12\22\50 | | | very dense | | | | |
| 26 | 26 | | | | | | | | | | |
| 27 | 27 | | | | | | Bottom of Boring | | | | |
| 28 | 28 | | | | | | | | | | |
| 29 | 29 | | | | | | | | | | |
| 30 | 30 | | | | | | | | | | |
| 31 | 31 | | | | | | | | | | |
| 32 | 32 | | | | | | | | | | |
| 33 | 33 | | | | | | | | | | |
| 34 | 34 | | | | | | | | | | |
| 35 | 35 | | | | | | | | | | |

C:\Users\theco\AppData\Local\Temp\borings_temp\Impfile.bgs[COZ Engineering 1.jp]

Project: **North Brininstool Recycling Facility**
 Project Location: **32.279123 -103.594175, Lea County, NM**
 Project Number: **4225043**

Log of Boring B-5
Sheet 1 of 1

| | | |
|---|--|-------------------------------|
| Date(s) Drilled 2-26-25 | Logged By RC | Checked By COZ |
| Drilling Method hollow-stem auger | Drill Bit Size/Type | Total Depth of Borehole |
| Drill Rig Type CME-75 | Drilling Contractor Southlands | Approximate Surface Elevation |
| Groundwater Level and Date Measured not encountered | Sampling Method(s) | Hammer Data |
| Borehole Backfill cuttings | Location see boring plan | |

| Elevation (feet) | Depth (feet) | Sample Type | Sample Number | Sampling Resistance, blows/ft | Material Type | Graphic Log | MATERIAL DESCRIPTION | Water Content, % | Percent Fines | LL, % | PI, % |
|------------------|--------------|-------------|---------------|-------------------------------|---------------|---|--|------------------|---------------|-------|-------|
| 0 | 0 | | | | SM |  | SILTY SAND: red brown, dry, dense | | | | |
| 1 | 1 | | | | | | | | | | |
| 2 | 2 | | | | | | | | | | |
| 3 | 3 | | | | | | | | | | |
| 4 | 4 | | | | | | | | | | |
| 5 | 5 | | | | | | | | | | |
| 6 | 6 | 1 | 18\20\16 | | SM |  | SILTY SAND WITH GRAVEL: white, dry, dense, carbonate indurated | | | | |
| 7 | 7 | | | | | | | | | | |
| 8 | 8 | | | | | | | | | | |
| 9 | 9 | | | | | | | | | | |
| 10 | 10 | 2 | 25\50 | | |  | very dense | 11.2 | 17.1 | | NP |
| 11 | 11 | | | | | | | | | | |
| 12 | 12 | | | | | | | | | | |
| 13 | 13 | | | | | | | | | | |
| 14 | 14 | | | | | | | | | | |
| 15 | 15 | 3 | 50 | | | | | | | | |
| 16 | 16 | | | | | | | | | | |
| 17 | 17 | | | | | | | | | | |
| 18 | 18 | | | | | | | | | | |
| 19 | 19 | | | | | | | | | | |
| 20 | 20 | 4 | 10\8\8 | | SP-SM |  | POORLY GRADED SAND WITH SILT: light brown, dry, medium dense | | | | |
| 21 | 21 | | | | | | | | | | |
| 22 | 22 | | | | | | | | | | |
| 23 | 23 | | | | | | | | | | |
| 24 | 24 | | | | | | | | | | |
| 25 | 25 | 5 | 15\20\21 | | |  | red brown, dense | | | | |
| 26 | 26 | | | | | | | | | | |
| 27 | 27 | | | | | | Bottom of Boring | | | | |
| 28 | 28 | | | | | | | | | | |
| 29 | 29 | | | | | | | | | | |
| 30 | 30 | | | | | | | | | | |
| 31 | 31 | | | | | | | | | | |
| 32 | 32 | | | | | | | | | | |
| 33 | 33 | | | | | | | | | | |
| 34 | 34 | | | | | | | | | | |
| 35 | 35 | | | | | | | | | | |

C:\Users\theco\AppData\Local\Temp\borings_temp\Impfile.bgs[COZ Engineering 1.tpl]

Project: **North Brininstool Recycling Facility**
 Project Location: **32.279123 -103.594175, Lea County, NM**
 Project Number: **4225043**

Key to Log of Boring

Sheet 1 of 1

| Elevation (feet) | Depth (feet) | Sample Type | Sample Number | Sampling Resistance, blows/ft | Material Type | Graphic Log | MATERIAL DESCRIPTION | Water Content, % | Percent Fines | LL, % | PI, % |
|------------------|--------------|-------------|---------------|-------------------------------|---------------|-------------|----------------------|------------------|---------------|-------|-------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |

COLUMN DESCRIPTIONS

- 1** Elevation (feet): Elevation (MSL, feet).
2 Depth (feet): Depth in feet below the ground surface.
3 Sample Type: Type of soil sample collected at the depth interval shown.
4 Sample Number: Sample identification number.
5 Sampling Resistance, blows/ft: Number of blows to advance driven sampler one foot (or distance shown) beyond seating interval using the hammer identified on the boring log.
6 Material Type: Type of material encountered.
7 Graphic Log: Graphic depiction of the subsurface material encountered.
8 MATERIAL DESCRIPTION: Description of material encountered. May include consistency, moisture, color, and other descriptive text.
9 Water Content, %: Water content of the soil sample, expressed as percentage of dry weight of sample.
10 Percent Fines: The percent fines (soil passing the No. 200 Sieve) in the sample. WA indicates a Wash Sieve, SA indicates a Sieve Analysis.
11 LL, %: Liquid Limit, expressed as a water content.
12 PI, %: Plasticity Index, expressed as a water content.

FIELD AND LABORATORY TEST ABBREVIATIONS

CHEM: Chemical tests to assess corrosivity
 COMP: Compaction test
 CONS: One-dimensional consolidation test
 LL: Liquid Limit, percent

PI: Plasticity Index, percent
 SA: Sieve analysis (percent passing No. 200 Sieve)
 UC: Unconfined compressive strength test, Qu, in ksf
 WA: Wash sieve (percent passing No. 200 Sieve)

MATERIAL GRAPHIC SYMBOLS



Silty GRAVEL (GM)



Poorly graded GRAVEL with Silt (GP-GM)



Silty SAND (SM)



Poorly graded SAND with Silt (SP-SM)

TYPICAL SAMPLER GRAPHIC SYMBOLS



Auger sampler



Bulk Sample



3-inch-OD California w/ brass rings



CME Sampler



Grab Sample



2.5-inch-OD Modified California w/ brass liners



Pitcher Sample



2-inch-OD unlined split spoon (SPT)



Shelby Tube (Thin-walled, fixed head)

OTHER GRAPHIC SYMBOLS



Water level (at time of drilling, ATD)



Water level (after waiting)



Minor change in material properties within a stratum



Inferred/gradational contact between strata

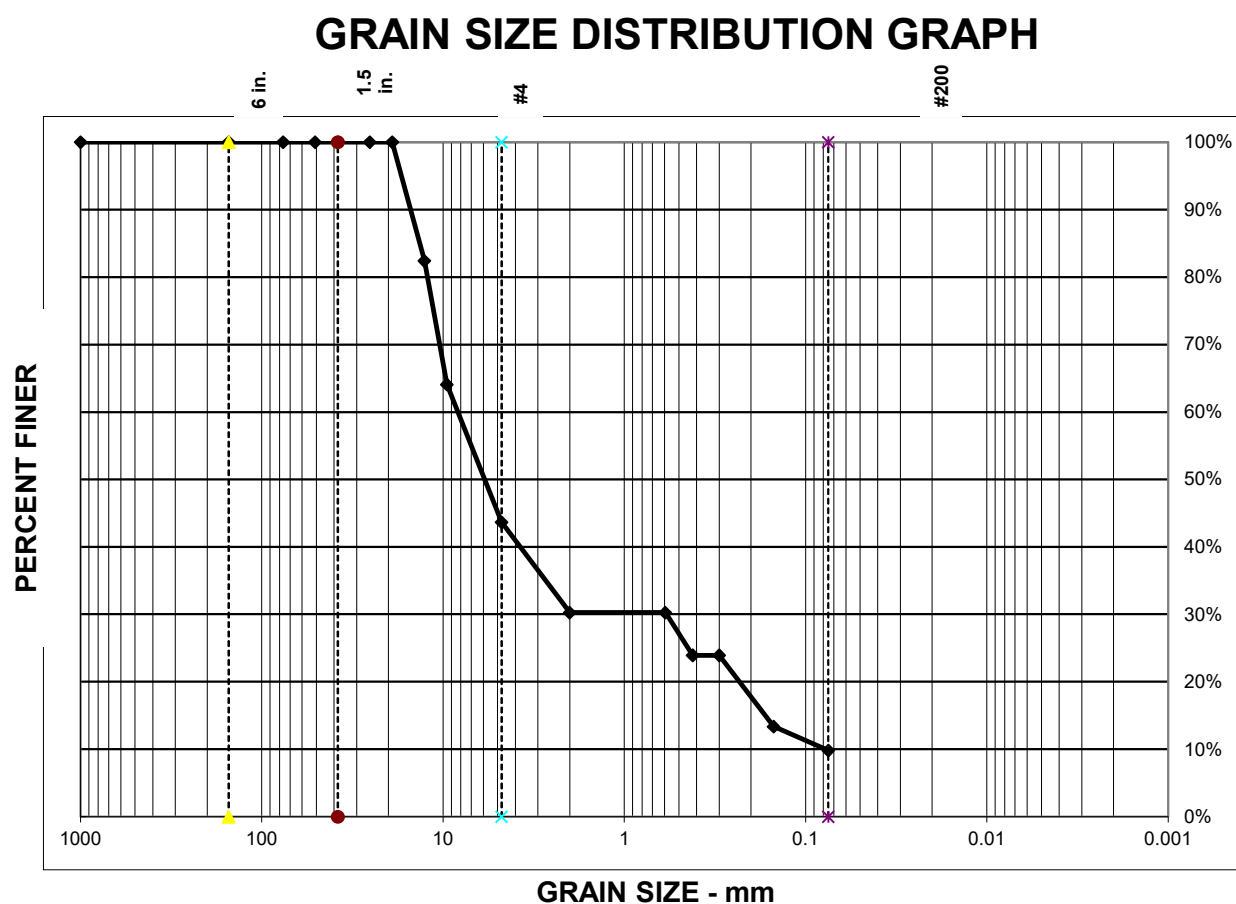


Queried contact between strata

GENERAL NOTES

- 1: Soil classifications are based on the Unified Soil Classification System. Descriptions and stratum lines are interpretive, and actual lithologic changes may be gradual. Field descriptions may have been modified to reflect results of lab tests.
 2: Descriptions on these logs apply only at the specific boring locations and at the time the borings were advanced. They are not warranted to be representative of subsurface conditions at other locations or times.

Figure B-1



TEST SUMMARY (ASTM C136)

| | | | | | | | | |
|-------------------------------|--------|------|------|-----|-----|-----|------|------|
| Sieve Size | 1 1/2" | 3/4" | 3/8" | #4 | #10 | #40 | #100 | #200 |
| % Passing (Cumulative) | 100% | 100% | 64% | 44% | 30% | 24% | 13% | 9.9% |
| Specification | | | | | | | | |

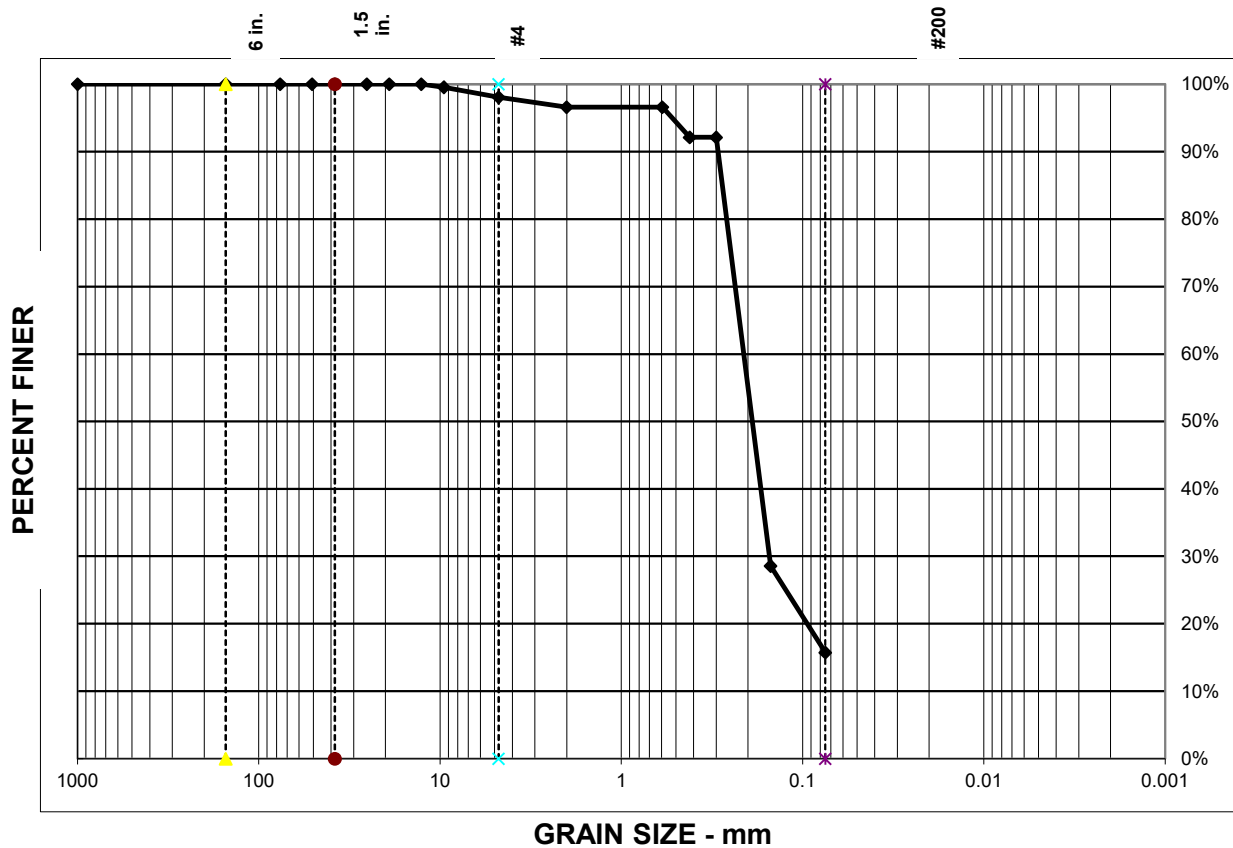
| | | | |
|-----------------|-----|------------------------|------------------------|
| % GRAVEL = | 56% | D ₈₅ = 13.5 | D ₁₅ = 0.2 |
| % SAND = | 34% | D ₆₀ = 8.3 | D ₁₀ = 0.1 |
| % SILT & CLAY = | 10% | D ₅₀ = 5.9 | C _U = 107.5 |
| | | D ₃₀ = 0.6 | C _C = 0.5 |

Sample Date: 2/26/25
Project No.: 4225043
Project Name: North Brininstool Recycling Facility
Report Date: 3/22/25
Sample Location: B-1 at 20'
Liquid Limit: **Plasticity Index:** NP
USCS Classification: GP-GM
Material Description: Poorly Graded Gravel with Silt and Sand
Moisture Content: 11.1%

COZ Engineering, LLC

PO Box 13331
Las Cruces, NM 88013
(575) 642-7671

GRAIN SIZE DISTRIBUTION GRAPH



TEST SUMMARY (ASTM C136)

| Sieve Size | 1 1/2" | 3/4" | 3/8" | #4 | #10 | #40 | #100 | #200 |
|------------------------|--------|------|------|-----|-----|-----|------|-------|
| % Passing (Cumulative) | 100% | 100% | 100% | 98% | 97% | 92% | 29% | 15.8% |
| Specification | | | | | | | | |

% GRAVEL = 2%
 % SAND = 82%
 % SILT & CLAY = 16%

$D_{85} = 0.3$

$D_{15} =$

$D_{60} = 0.2$

$D_{10} =$

$D_{50} = 0.2$

$C_U =$

$D_{30} = 0.2$

$C_C =$

Sample Date: 2/26/25

Project No.: 4225043

Project Name: North Brininstool Recycling Facility

Report Date: 3/22/25

Sample Location: B-3 at 5'

Liquid Limit:

Plasticity Index: NP

USCS Classification: SM

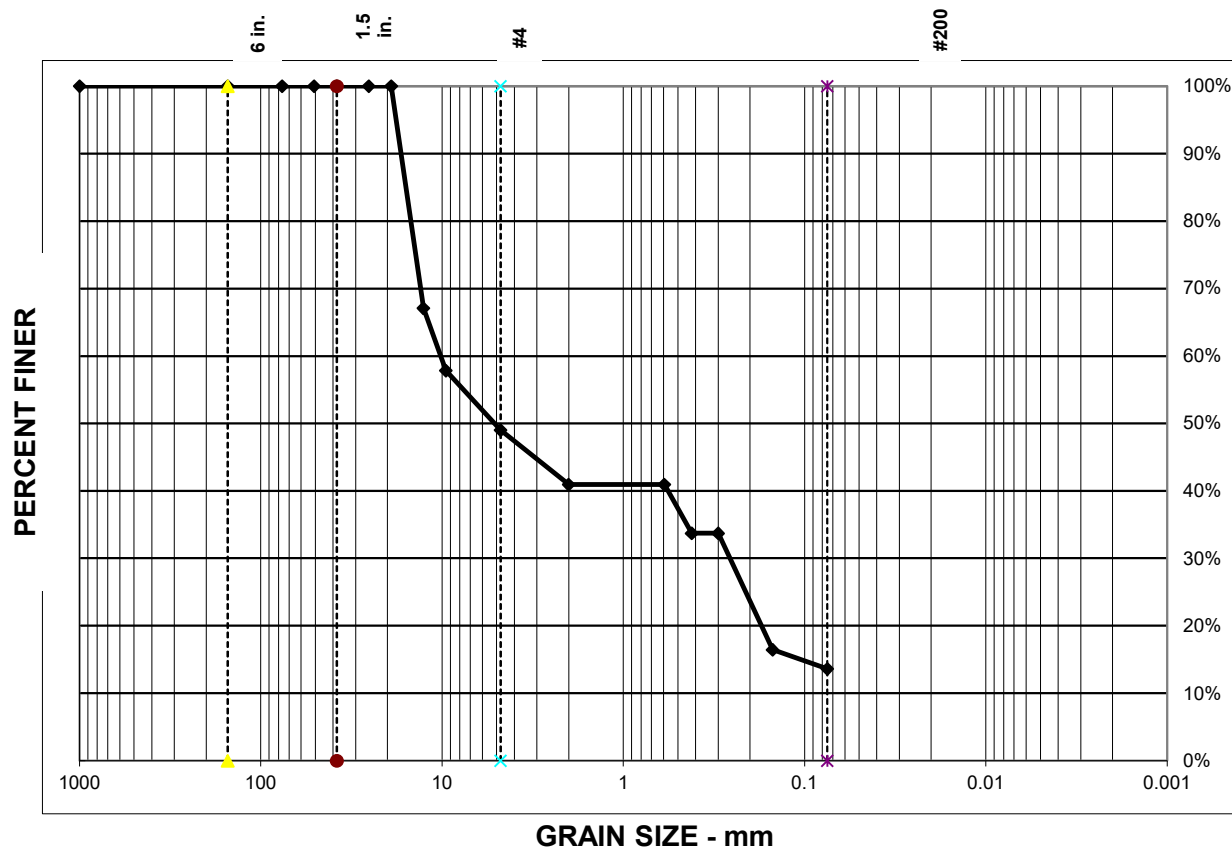
Material Description: Silty Sand

Moisture Content: 3.3%

COZ Engineering, LLC

PO Box 13331
 Las Cruces, NM 88013
 (575) 642-7671

GRAIN SIZE DISTRIBUTION GRAPH



TEST SUMMARY (ASTM C136)

| Sieve Size | 1 1/2" | 3/4" | 3/8" | #4 | #10 | #40 | #100 | #200 |
|------------------------|--------|------|------|-----|-----|-----|------|-------|
| % Passing (Cumulative) | 100% | 100% | 58% | 49% | 41% | 34% | 16% | 13.7% |
| Specification | | | | | | | | |

% GRAVEL = 51%

$D_{85} = 15.8$

$D_{15} = 0.1$

% SAND = 35%

$D_{60} = 10.2$

$D_{10} =$

% SILT & CLAY = 14%

$D_{50} = 5.1$

$C_U =$

$D_{30} = 0.3$

$C_C =$

Sample Date: 2/26/25

Project No.: 4225043

Project Name: North Brininstool Recycling Facility

Report Date: 3/22/25

Sample Location: B-4 at 15'

Liquid Limit:

Plasticity Index: NP

USCS Classification: GM

Material Description: Silty Gravel with Sand

Moisture Content: 4.4%

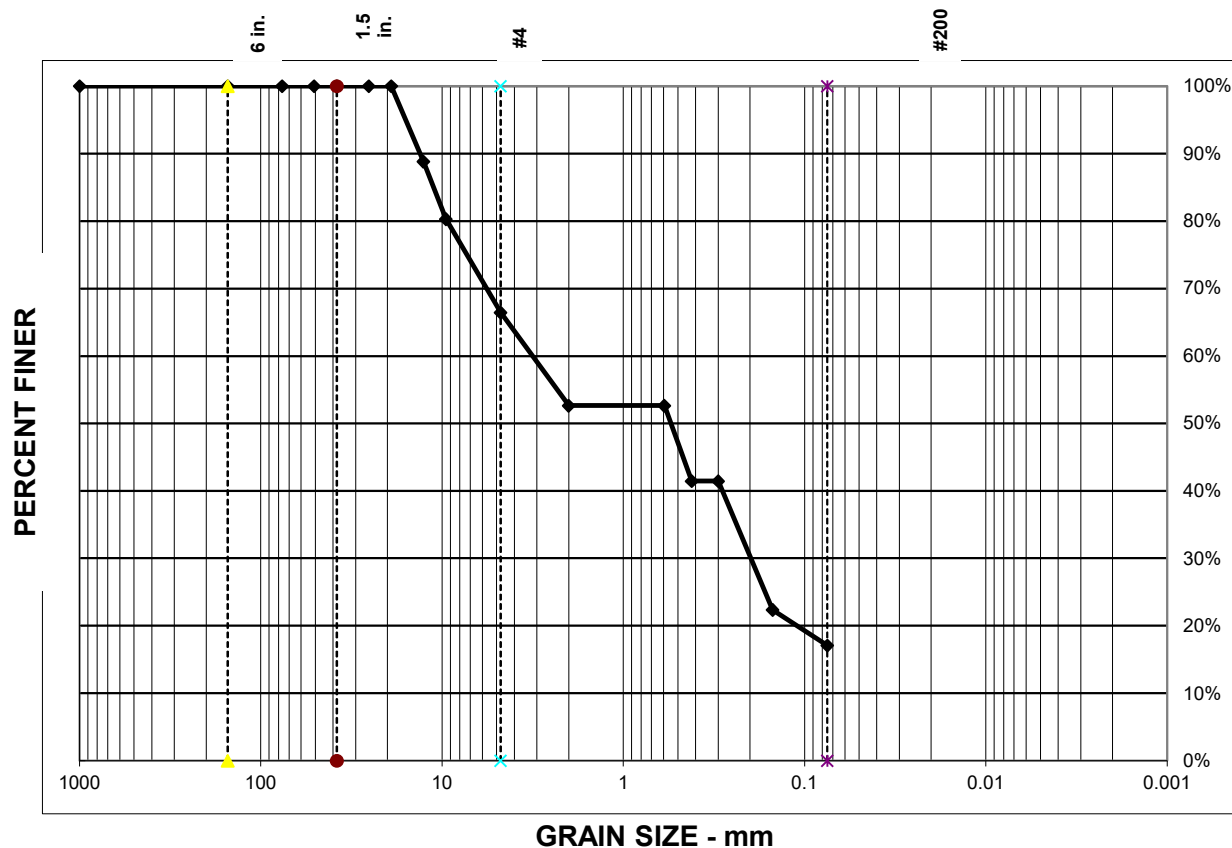
COZ Engineering, LLC

PO Box 13331

Las Cruces, NM 88013

(575) 642-7671

GRAIN SIZE DISTRIBUTION GRAPH



TEST SUMMARY (ASTM C136)

| Sieve Size | 1 1/2" | 3/4" | 3/8" | #4 | #10 | #40 | #100 | #200 |
|------------------------|--------|------|------|-----|-----|-----|------|-------|
| % Passing (Cumulative) | 100% | 100% | 80% | 66% | 53% | 41% | 22% | 17.1% |
| Specification | | | | | | | | |

% GRAVEL = 34%

$D_{85} = 11.2$

$D_{15} =$

% SAND = 49%

$D_{60} = 3.2$

$D_{10} =$

% SILT & CLAY = 17%

$D_{50} = 0.5$

$C_U =$

$D_{30} = 0.2$

$C_C =$

Sample Date: 2/26/25

Project No.: 4225043

Project Name: North Brininstool Recycling Facility

Report Date: 3/22/25

Sample Location: B-5 at 10'

Liquid Limit:

Plasticity Index: NP

USCS Classification: SM

Material Description: Silty Sand with Gravel

Moisture Content: 11.2%

COZ Engineering, LLC

PO Box 13331

Las Cruces, NM 88013

(575) 642-7671

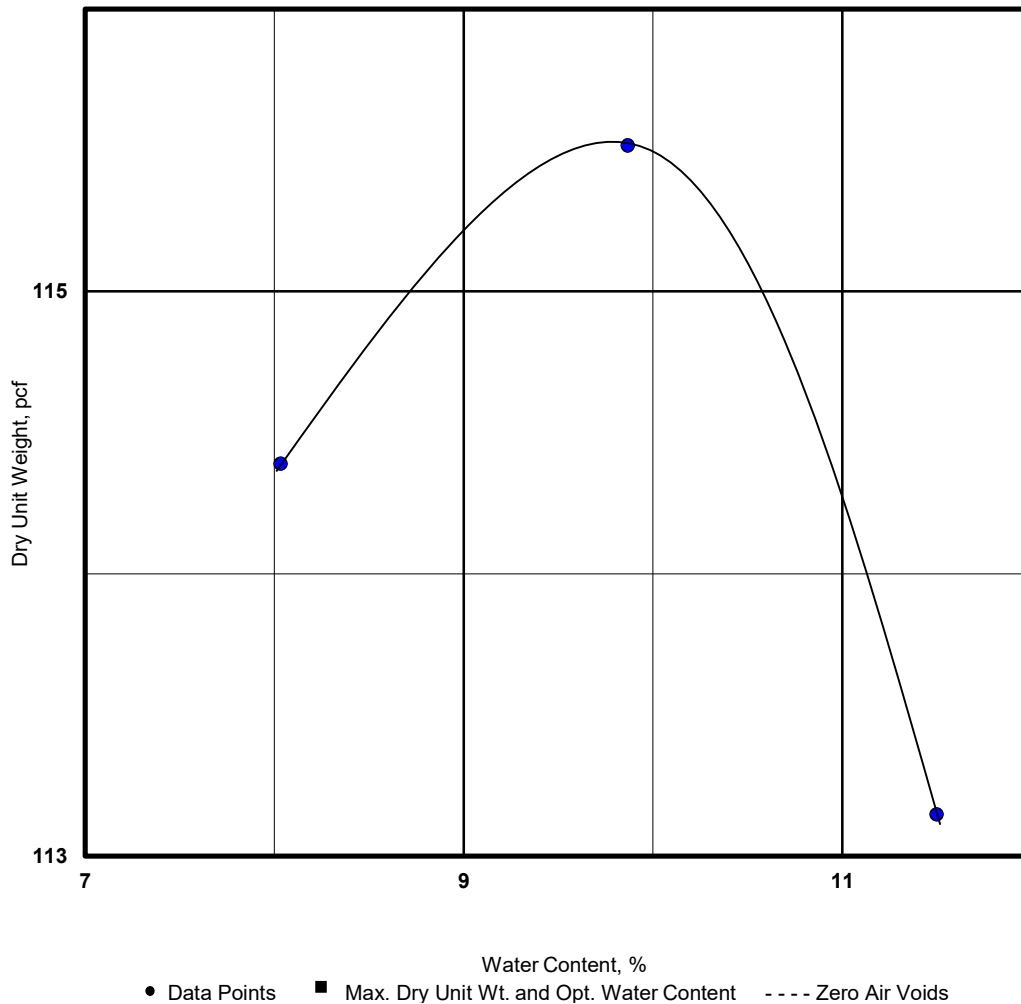
Laboratory Compaction Characteristics of Soil

COZ Engineering, LLC

P. O. Box 13331
Las Cruces, NM 88013
575-642-7671

Client Name: EnvirotechProject Name: North Brininstool Recycling FacilityLocation: Lat.: 32.279123, Long.: -103.594175Lea County, New MexicoSource Material: B-3 at 0-5'Sample Description: Silty SandProctor #1Material Designation: SM Sample date: 2/26/2025Test Method: ASTM-698Test Procedure: ASample Preparation: COZRammer: Mechanical X ManualProject No.: 4225043 Date: 3/22/2025

TEST RESULTS

Maximum Dry Unit Wt.: 115.5 pcfOptimum Water Content: 9.8 %Liquid Limit: Plastic Limit: Plasticity Index: NP% passing # 200 sieve: 16Reviewed by: Dan Cosper, P. E.

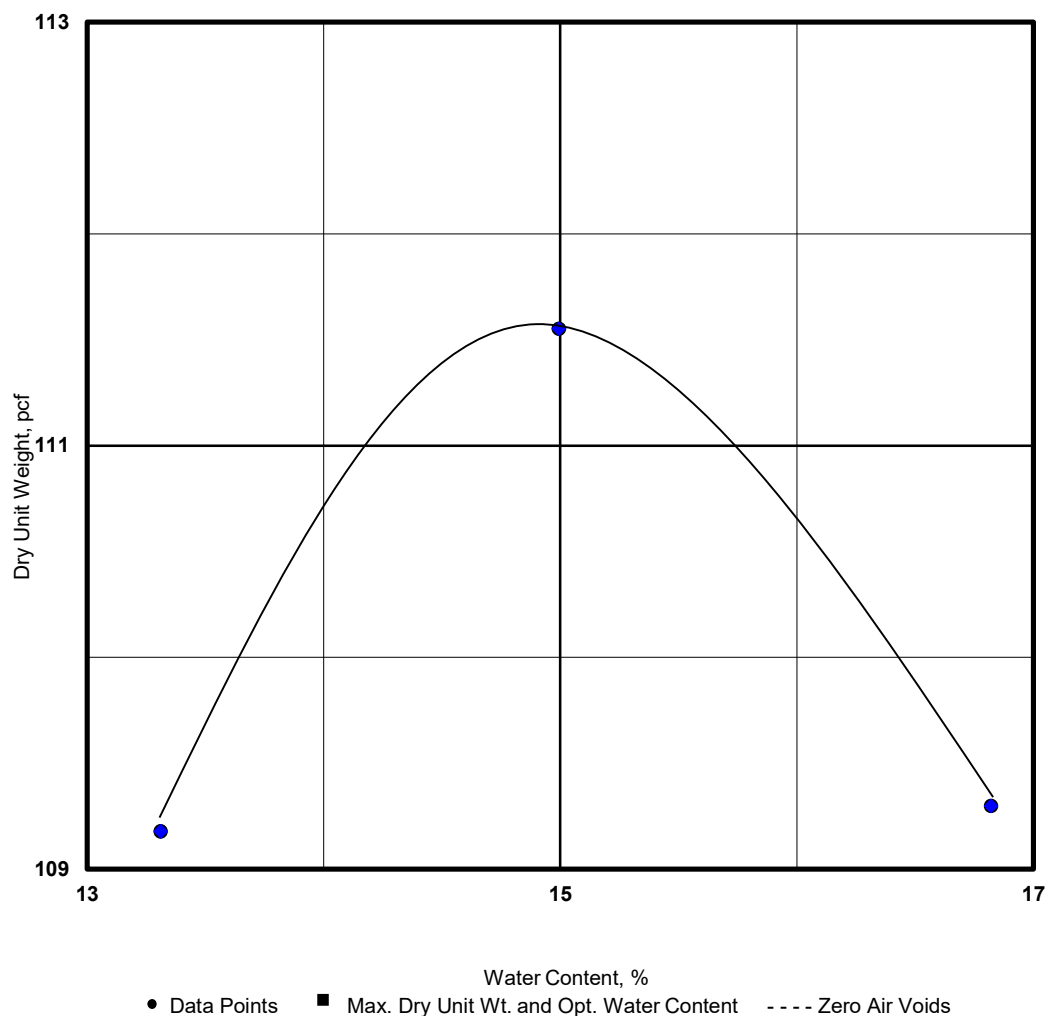
Laboratory Compaction Characteristics of Soil

COZ Engineering, LLC

P. O. Box 13331
Las Cruces, NM 88013
575-642-7671

Client Name: EnvirotechProject Name: North Brininstool Recycling FacilityLocation: Lat.: 32.279123, Long.: -103.594175Lea County, New MexicoSource Material: B-5 at 5'-10'Sample Description: Silty Sand with GravelProctor #2Material Designation: SM Sample date: 2/26/2025Test Method: ASTM-698Test Procedure: CSample Preparation: COZRammer: Mechanical X ManualProject No.: 4225043 Date: 3/22/2025

TEST RESULTS

Maximum Dry Unit Wt.: 111.5 pcfOptimum Water Content: 14.9 %Liquid Limit: Plastic Limit: Plasticity Index: NP% passing # 200 sieve: 17Reviewed by: Dan Cosper, P. E.



C-147 APPLICATION PACKAGE
NORTH BRININSTOOL RECYCLE FACILITY
SECTION 29, TOWNSHIP 23 SOUTH, RANGE 33 EAST
LEA COUNTY, NEW MEXICO
025078-00

APPENDIX C

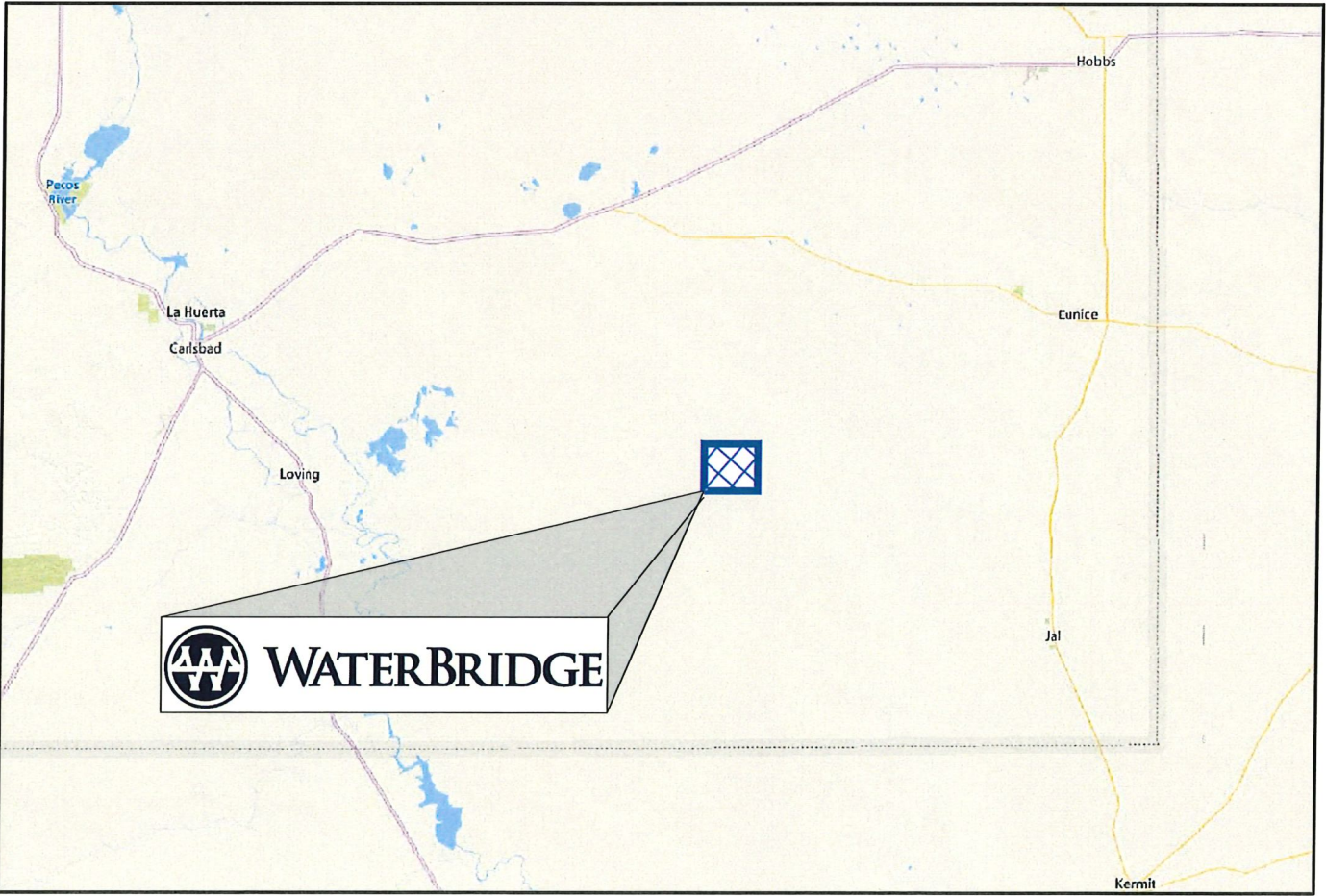
ENGINEERING DRAWINGS

NORTH BRININSTOOL RECYCLE FACILITY

WATERBRIDGE STATELINE, LLC.

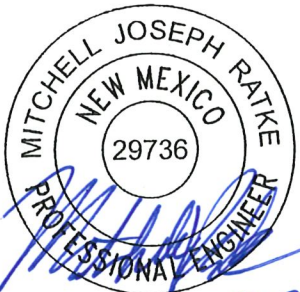
SECTION 29, TOWNSHIP 23 SOUTH, RANGE 33 EAST
LEA COUNTY, NEW MEXICO

32° 16' 40.7964" N, 103° 35' 30.3930" W
32.277999°, -103.591776°

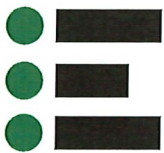


INDEX TO DRAWINGS

| SHEET NO. | DESCRIPTION |
|-----------|-------------------------|
| 1 | COVER |
| 2 | PROJECT LOCATION |
| 3 | EXISTING SITE FEATURES |
| 4 | SITE PLAN |
| 5 | PIT CAPACITIES |
| 6 | RUBSHEET & FENCE PLAN |
| 7 | CROSS SECTION A |
| 8 | CROSS SECTIONS B & C |
| 9 | SUMP DETAILS |
| 10 | LINER DETAILS |
| 11 | FENCE DETAILS |
| 12 | AST LEAK DETECTION PLAN |



3-31-2025



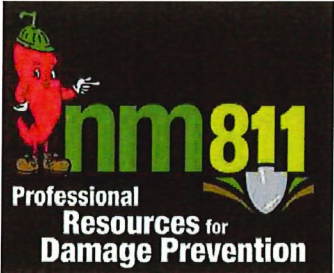
ENVIROTECH

ENGINEERING

2500 N. Eleventh Street Enid, OK 73701 • 580.234.8780 • envirotechconsulting.com
P.E. 29736 - Expiration Date: 12/31/2026

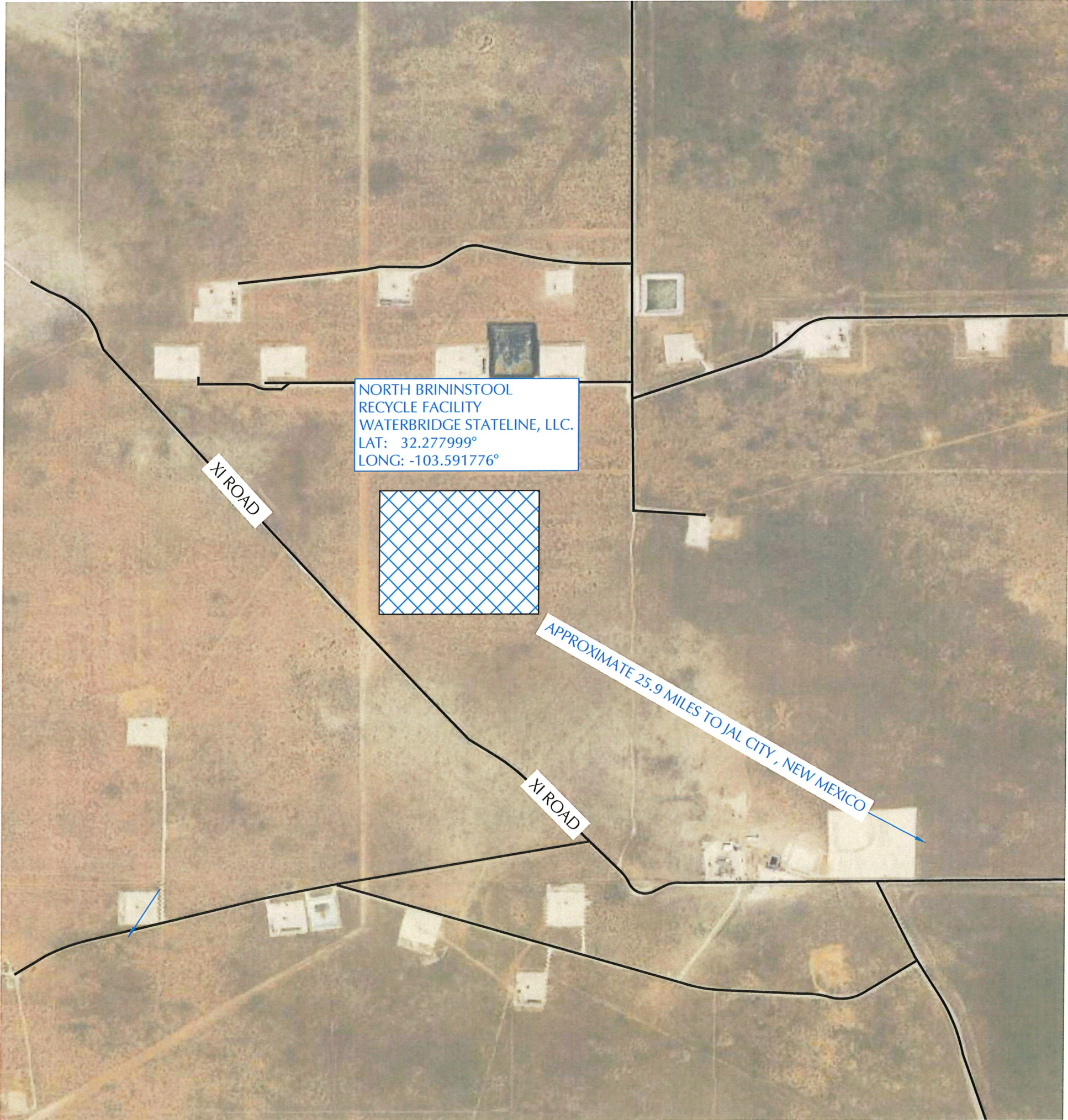
CONTACTS

JAKE FERENZ - WATERBRIDGE STATELINE - (214)-733-9919
ENVIROTECH ENGINEERING & CONSULTING - ROSHAN MOHAN (580)-234-8780
(DESIGN ENGINEER)
ENVIROTECH ENGINEERING & CONSULTING - MITCHELL RATKE, PE (580)-234-8780
(SUPERVISING ENGINEER)

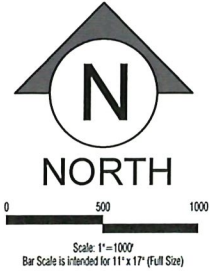


UTILITY CAUTION

THE CONTRACTOR IS CAUTIONED THE LOCATION AND DEPTH OF EXISTING UTILITIES AS SHOWN ON THESE PLANS ARE BASED ON PUBLICLY AVAILABLE RECORDS OF THE VARIOUS UTILITY COMPANIES AND FIELD MEASUREMENTS. THE INFORMATION PROVIDED IS NOT TO BE RELIED ON AS BEING PRECISE OR COMPLETE. THE CONTRACTOR MUST CONTACT THE LOCAL UTILITY LOCATION CENTER AT LEAST 72 HOURS BEFORE ANY EXCAVATION TO REQUEST EXACT FIELD LOCATIONS OF THE UTILITIES.



NORTH BRININSTOOL
RECYCLE FACILITY
WATERBRIDGE STATELINE, LLC.
LAT: 32.277999°
LONG: -103.591776°



**ENVIROTECH
ENGINEERING**
2500 North Eleventh Street
Enid, Oklahoma
580.234.8700
envirotechconsulting.com
P.E. #29736 - Expiration Date: 12-31-2026

COPYRIGHT
This document and the information contained may NOT be reproduced or excerpted from without the express written permission of Envirotech Engineering and Consulting, Inc. Unauthorized copying, disclosure or construction use are prohibited by the copyright law.

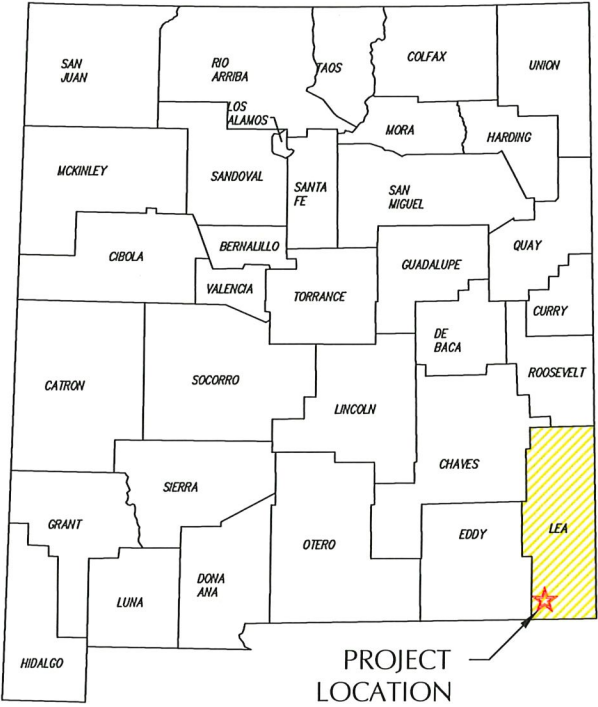
| | | |
|-----|------|-------------|
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| NO. | DATE | DESCRIPTION |

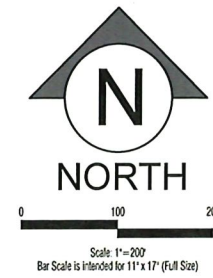
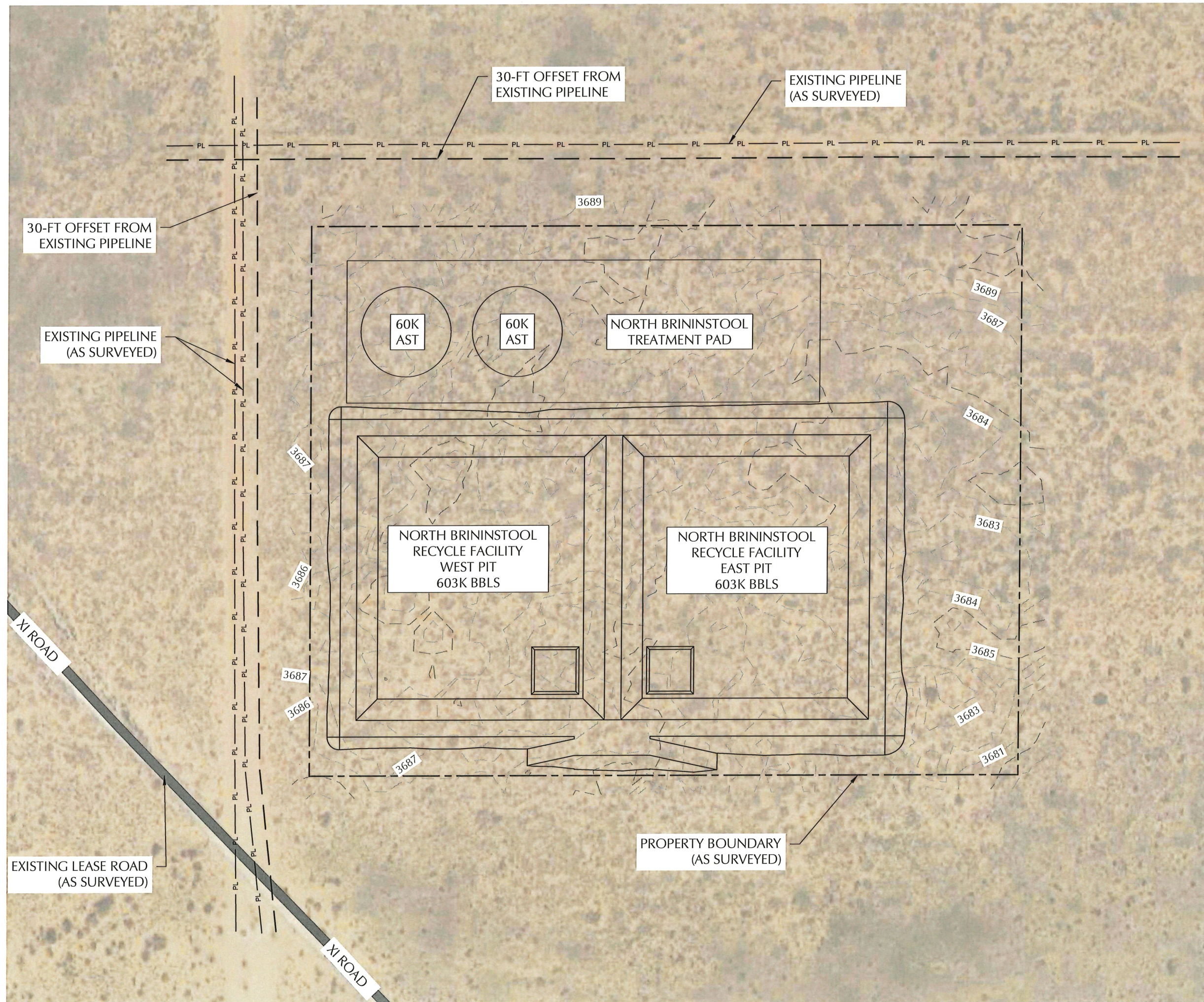
WATERBRIDGE

PROJECT LOCATION
NORTH BRININSTOOL RECYCLE FACILITY
WATERBRIDGE STATELINE, LLC.
SECTION 29, TOWNSHIP 23 SOUTH, RANGE 33 EAST
LEA COUNTY, NEW MEXICO

| | |
|--------------|------------|
| DATE: | MARCH 2025 |
| SCALE: | 1" = 1000' |
| DESIGNED BY: | R. MOHAN |
| DRAWN BY: | K. TALBOTT |
| CHECKED BY: | M. RATKE |
| PROJECT NO. | 025078-00 |
| SHEET NO. | 2 OF 12 |

3-31-2025





COPYRIGHT
This document and the information contained may NOT be reproduced or excerpted from without the express written permission of Envirotech Engineering and Consulting, Inc. Unauthorized copying, disclosure or construction use are prohibited by the copyright law.

| | | |
|-----|------|-------------|
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| NO. | DATE | DESCRIPTION |


WATERBRIDGE

EXISTING SITE FEATURES

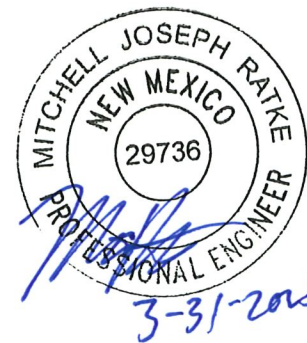
NORTH BRININSTOOL RECYCLE FACILITY

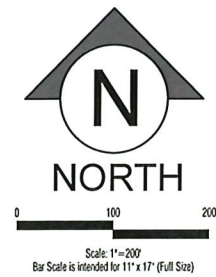
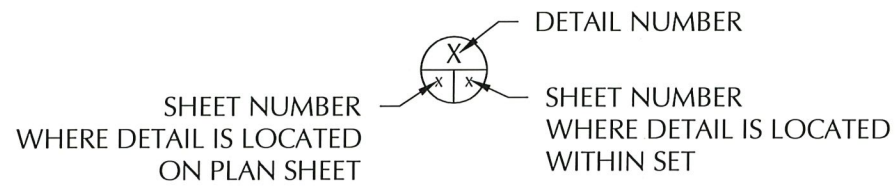
WATERBRIDGE STATELINE, LLC.

SECTION 29, TOWNSHIP 23 SOUTH, RANGE 33 EAST


LEA COUNTY, NEW MEXICO

| | |
|--------------|------------|
| DATE: | MARCH 2025 |
| SCALE: | 1" = 200' |
| DESIGNED BY: | R. MOHAN |
| DRAWN BY: | K. TALBOTT |
| CHECKED BY: | M. RATKE |
| PROJECT NO. | 025078-00 |
| SHEET NO. | 3 OF 12 |





NOTE:
THE TREATMENT PAD LINE WORK
SHOWN IS FOR LAYOUT PURPOSES
ONLY. GRADING AND/OR DESIGN
OF THE TREATMENT PAD IS NOT
INCLUDED.



**ENVIROTECH
ENGINEERING**
2500 North Eleventh Street
Enid, Oklahoma
500.234.8780
envirotechconsulting.com
P.E. #29736 - Expiration Date: 12-31-2026

COPYRIGHT
This document and the information contained may NOT be reproduced or excerpted from without the express written permission of Envirotech Engineering and Consulting, Inc. Unauthorized copying, disclosure or construction use are prohibited by the copyright law.

| | | |
|-----|------|-------------|
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| NO. | DATE | DESCRIPTION |



WATERBRIDGE

SITE PLAN

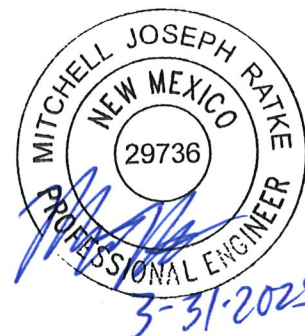
NORTH BRININSTOOL RECYCLE FACILITY

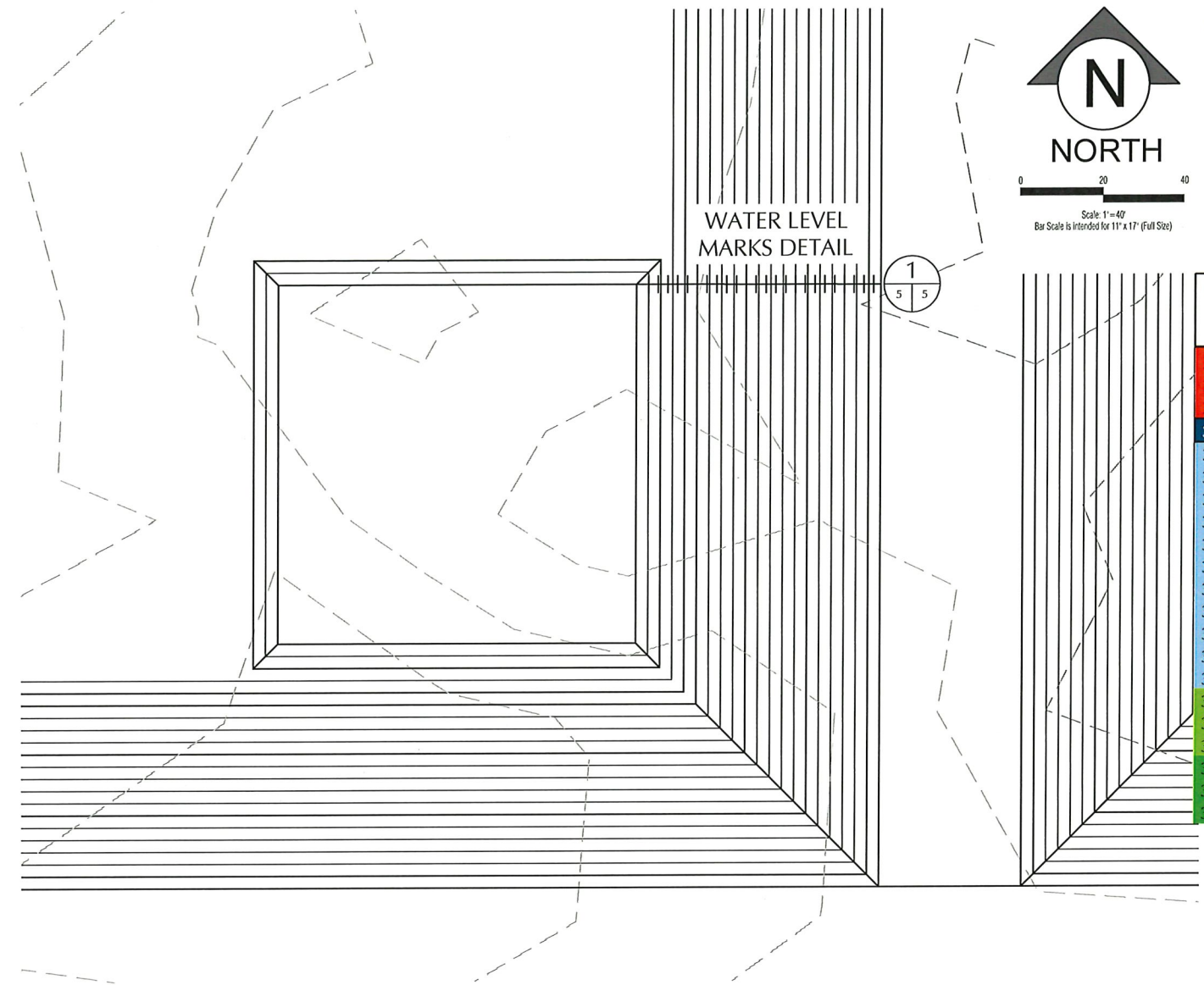
WATERBRIDGE STATELINE, LLC.

SECTION 29, TOWNSHIP 23 SOUTH, RANGE 33 EAST

LEA COUNTY, NEW MEXICO

| | |
|--------------|------------|
| DATE: | MARCH 2025 |
| SCALE: | 1" = 200' |
| DESIGNED BY: | R. MOHAN |
| DRAWN BY: | K. TALBOTT |
| CHECKED BY: | M. RATKE |
| PROJECT NO. | 025078-00 |
| SHEET NO. | 4 OF 12 |

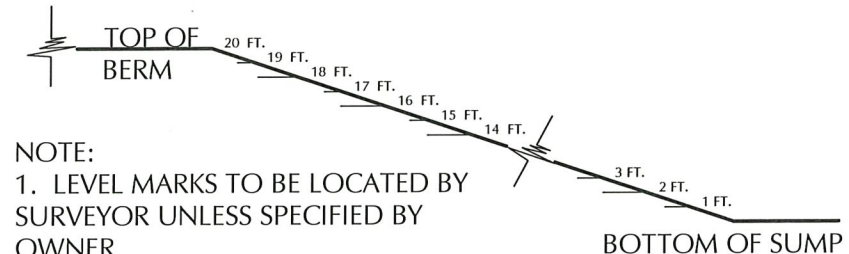
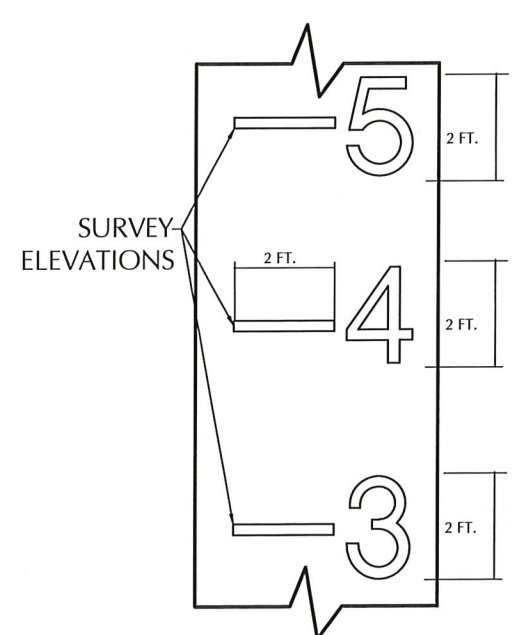




| | | | |
|--------------------------|-----------------------------------|--------|----------------|
| Owner | WATERBRIDGE STATELINE, LLC | | |
| Site Name | NORTH BININSTOOL RECYCLE FACILITY | | |
| Lagoon Features | Top | Bottom | Max Liq. Level |
| Side slope Ratio | 3 | | 3 |
| Maximum Depth (ft) | 20 | | 17.0 |
| Lagoon Top Width (ft) | 525 | 435 | 507 |
| Lagoon Top Length (ft) | 600 | 510 | 582 |
| Maximum Total Vol (ft³) | 4,302,346 | | 3,387,519 |
| Maximum Total Vol (bbls) | 766,330 | | 603,382 |

| |
|------------------|
| Freeboard |
| Maximum Capacity |
| Storage Volume |
| Floor |
| Sump |

| Elevation ft | Lagoon Liq Depth ft | Storage ft | Remaining Stor Vol ft³ | Gallons Storage gal | BBLS Storage bbls | Percent of Total Volume % | Vol in lagoon ft³ | Gallons Storage gal | Vol in Lagoon bbls | Vol in Lagoon ac-ft | Percent Total Vol % |
|-----------------|---------------------------|---------------|------------------------------|---------------------------|-------------------------|---------------------------------|-------------------------|---------------------------|--------------------------|---------------------------|---------------------------|
| 3696.00 | 20.0 | 0.0 | - | - | - | 0.0% | 4,302,346 | 32,185,848 | 766,330 | 98.77 | 100% |
| 3695.00 | 19.0 | 1.0 | 311,595 | 2,331,045 | 55,501 | 7.2% | 3,990,750 | 29,854,804 | 710,829 | 91.62 | 93% |
| 3694.00 | 18.0 | 2.0 | 616,513 | 4,612,136 | 109,813 | 14.3% | 3,685,832 | 27,573,712 | 656,517 | 84.62 | 86% |
| 3693.00 | 17.0 | 3.0 | 914,827 | 6,843,819 | 162,948 | 21.3% | 3,387,519 | 25,342,030 | 603,382 | 77.77 | 79% |
| 3692.00 | 16.0 | 4.0 | 1,206,607 | 9,026,624 | 214,920 | 28.0% | 3,095,739 | 23,159,224 | 551,410 | 71.07 | 72% |
| 3691.00 | 15.0 | 5.0 | 1,491,925 | 11,161,093 | 265,740 | 34.7% | 2,810,420 | 21,024,755 | 500,589 | 64.52 | 65% |
| 3690.00 | 14.0 | 6.0 | 1,770,855 | 13,247,768 | 315,423 | 41.2% | 2,531,490 | 18,938,080 | 450,907 | 58.12 | 59% |
| 3689.00 | 13.0 | 7.0 | 2,043,468 | 15,287,182 | 363,981 | 47.5% | 2,258,878 | 16,898,666 | 402,349 | 51.86 | 53% |
| 3688.00 | 12.0 | 8.0 | 2,309,835 | 17,279,875 | 411,426 | 53.7% | 1,992,511 | 14,905,973 | 354,904 | 45.74 | 46% |
| 3687.00 | 11.0 | 9.0 | 2,570,029 | 19,226,390 | 457,771 | 59.7% | 1,732,316 | 12,959,458 | 308,559 | 39.77 | 40% |
| 3686.00 | 10.0 | 10.0 | 2,824,122 | 21,127,260 | 503,030 | 65.6% | 1,478,223 | 11,058,588 | 263,300 | 33.94 | 34% |
| 3685.00 | 9.0 | 11.0 | 3,072,186 | 22,983,024 | 547,215 | 71.4% | 1,230,160 | 9,202,824 | 219,115 | 28.24 | 29% |
| 3684.00 | 8.0 | 12.0 | 3,314,293 | 24,794,225 | 590,339 | 77.0% | 988,053 | 7,391,623 | 175,991 | 22.68 | 23% |
| 3683.00 | 7.0 | 13.0 | 3,550,514 | 26,561,397 | 632,414 | 82.5% | 751,831 | 5,624,451 | 133,915 | 17.26 | 17% |
| 3682.00 | 6.0 | 14.0 | 3,780,922 | 28,285,080 | 673,454 | 87.9% | 521,423 | 3,900,769 | 92,875 | 11.97 | 12% |
| 3681.00 | 5.0 | 15.0 | 4,005,589 | 29,965,815 | 713,472 | 93.1% | 296,756 | 2,220,033 | 52,858 | 6.81 | 7% |
| 3680.00 | 4.0 | 16.0 | 4,174,304 | 31,227,968 | 743,523 | 97.0% | 128,042 | 957,880 | 22,807 | 2.94 | 3% |
| 3679.00 | 3.0 | 17.0 | 4,257,152 | 31,847,755 | 758,280 | 98.9% | 45,194 | 338,093 | 8,050 | 1.04 | 1% |
| 3678.00 | 2.0 | 18.0 | 4,284,652 | 32,053,482 | 763,178 | 99.6% | 17,694 | 132,367 | 3,152 | 0.41 | 0% |
| 3677.00 | 1.0 | 19.0 | 4,294,063 | 32,123,885 | 764,854 | 99.8% | 8,283 | 61,963 | 1,475 | 0.19 | 0% |
| 3676.00 | 0.0 | 20.0 | 4,302,346 | 32,185,848 | 766,330 | 100.0% | - | - | - | - | 0% |



- NOTE:
1. LEVEL MARKS TO BE LOCATED BY SURVEYOR UNLESS SPECIFIED BY OWNER
 2. MARKS TO BE MADE BY AN EXTRUSION WELDER USING BLACK FILAMENT (OR WHITE FILAMENT ON BLACK LINER).
 3. MARKS SHOULD BEGIN AT THE TOP OF BERM AND CONTINUE TO THE BOTTOM OF THE SUMP. (TOP OF BERM SHOULD READ 20-FT, BOTTOM OF SUMP +1-FT SHOULD READ 1-FT)
 4. REFERENCE PIT CAPACITY TABLES FOR ACCURATE ELEVATIONS

WATER LEVEL MARKS DETAIL
NOT TO SCALE

ENVIROTECH ENGINEERING
2500 North Eleventh Street
Enid, Oklahoma
580.234.8780
envirotechconsulting.com
P.E. #29736 - Expiration Date: 12-31-2026

COPYRIGHT

This document and the information contained may NOT be reproduced or accepted from without the express written permission of Envirotech Engineering and Consulting, Inc. Unauthorized copying, disclosure or construction use are prohibited by the copyright law.

NO. DATE DESCRIPTION

WATERBRIDGE

PIT CAPACITIES

NORTH BRININSTOOL RECYCLE FACILITY

WATERBRIDGE STATELINE, LLC.

SECTION 29, TOWNSHIP 23 SOUTH, RANGE 33 EAST

LEA COUNTY, NEW MEXICO

DATE: MARCH 2025

SCALE: 1" = 40'

DESIGNED BY: R. MOHAN

DRAWN BY: K. TALBOTT

CHECKED BY: M. RATKE

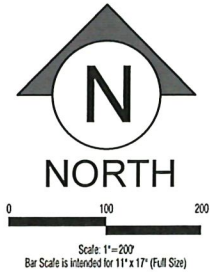
PROJECT NO. 025078-00

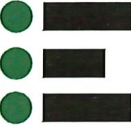
SHEET NO. 5 OF 12

3-31-2025

Released to Imaging: 4/10/2025 10:48:15 AM

NOTE:
THE TREATMENT PAD LINE WORK
SHOWN IS FOR LAYOUT PURPOSES
ONLY. GRADING AND/OR DESIGN
OF THE TREATMENT PAD IS NOT
INCLUDED.






**ENVIROTECH
ENGINEERING**
2500 North Eleventh Street
Enid, Oklahoma
580.234.8780
envirotechconsulting.com
P.E. #29736 - Expiration Date: 12-31-2026

COPYRIGHT
This document and the information
contained may NOT be reproduced or
excepted from without the express written
permission of Envirotech Engineering and
Consulting, Inc. Unauthorized copying,
disclosure or construction use are prohibited
by the copyright law.

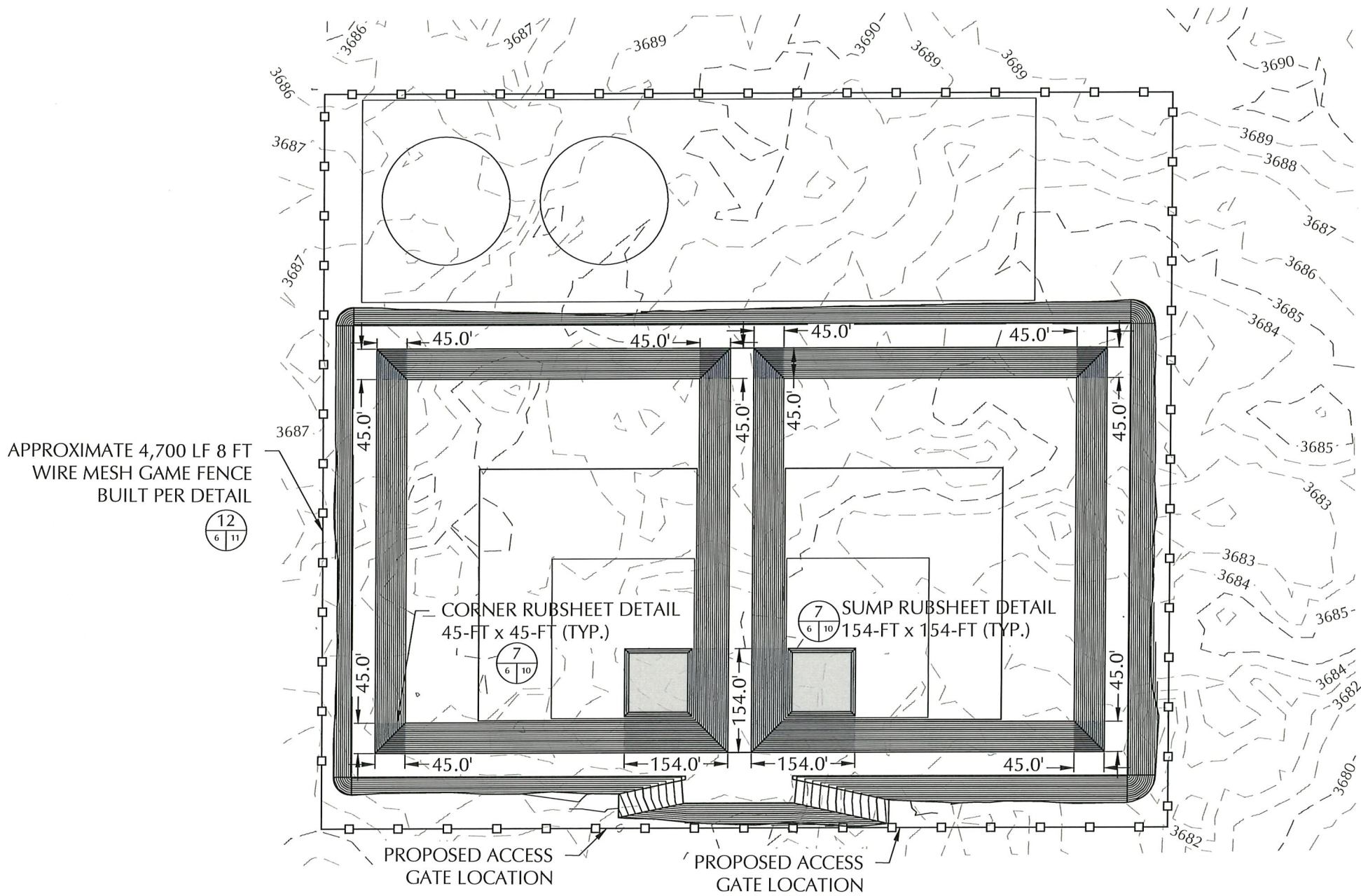
| NO. | DATE | DESCRIPTION |
|-----|------|-------------|
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

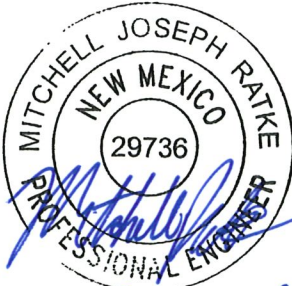


WATERBRIDGE

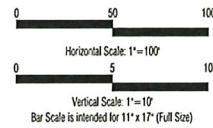
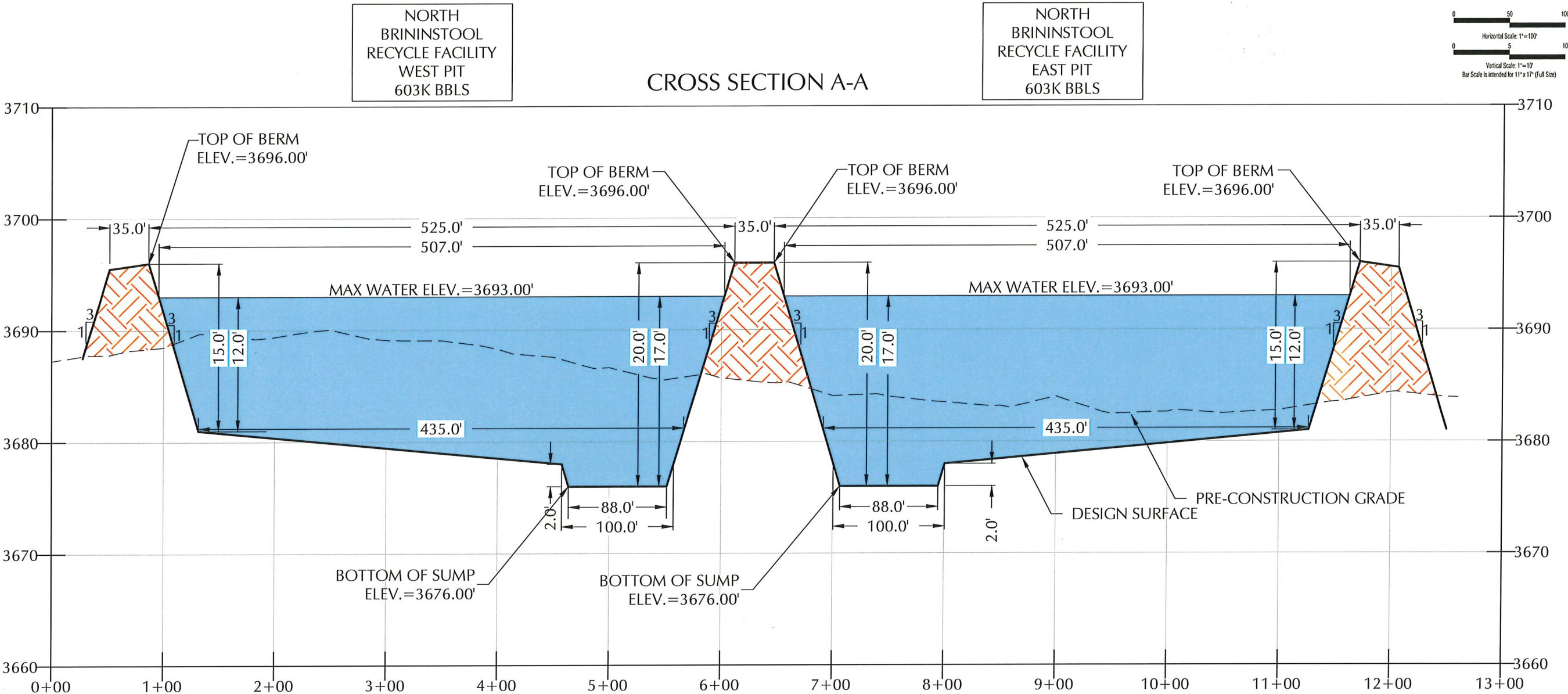
RUBSHEET & FENCE PLAN
NORTH BRININSTOOL RECYCLE FACILITY
WATERBRIDGE STATELINE, LLC.
SECTION 29, TOWNSHIP 23 SOUTH, RANGE 33 EAST
LEA COUNTY, NEW MEXICO

| | |
|--------------|------------|
| DATE: | MARCH 2025 |
| SCALE: | 1" = 200' |
| DESIGNED BY: | R. MOHAN |
| DRAWN BY: | K. TALBOTT |
| CHECKED BY: | M. RATKE |
| PROJECT NO. | 025078-00 |
| SHEET NO. | 6 OF 12 |





3-31-2025



ENVIROTECH ENGINEERING
2500 North Eleventh Street
Enid, Oklahoma
580.234.8780
envirotechconsulting.com
P.E. #29736 - Expiration Date: 12-31-2026

COPYRIGHT
This document and the information contained may NOT be reproduced or excerpted from without the express written permission of Envirotech Engineering and Consulting, Inc. Unauthorized copying, disclosure or construction use are prohibited by the copyright law.

| NO. | DATE | DESCRIPTION |
|-----|------|-------------|
| | | |
| | | |
| | | |
| | | |
| | | |

WATERBRIDGE

CROSS SECTION A

NORTH BRININSTOOL RECYCLE FACILITY

WATERBRIDGE STATELINE, LLC.

SECTION 29, TOWNSHIP 23 SOUTH, RANGE 33 EAST

LEA COUNTY, NEW MEXICO

DATE: MARCH 2025

SCALE: HORIZONTAL 1"=100'

VERTICAL 1"=10'

DESIGNED BY: R. MOHAN

DRAWN BY: K. TALBOTT

CHECKED BY: M. RATKE

PROJECT NO. 025078-00

SHEET NO. 7 OF 12

MITCHELL JOSEPH RATKE

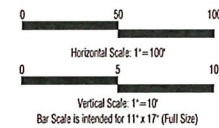
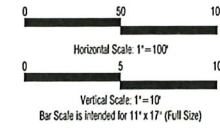
NEW MEXICO

29736

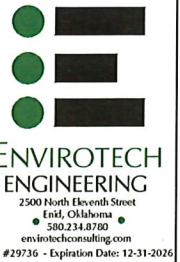
PROFESSIONAL ENGINEER

3-31-2025

NOTE:
THE TREATMENT PAD LINE WORK
SHOWN IS FOR LAYOUT PURPOSES
ONLY. GRADING AND/OR DESIGN
OF THE TREATMENT PAD IS NOT
INCLUDED.



NOTE:
THE TREATMENT PAD LINE WORK
SHOWN IS FOR LAYOUT PURPOSES
ONLY. GRADING AND/OR DESIGN
OF THE TREATMENT PAD IS NOT
INCLUDED.



COPYRIGHT
This document and the information contained herein may NOT be reproduced or transmitted in any form without the express written permission of Envirotech Engineering and Consulting, Inc. Unauthorized copying, distribution, or construction use are prohibited by the copyright law.

| | | |
|-----|------|-------------|
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| NO. | DATE | DESCRIPTION |



WATERBRIDGE

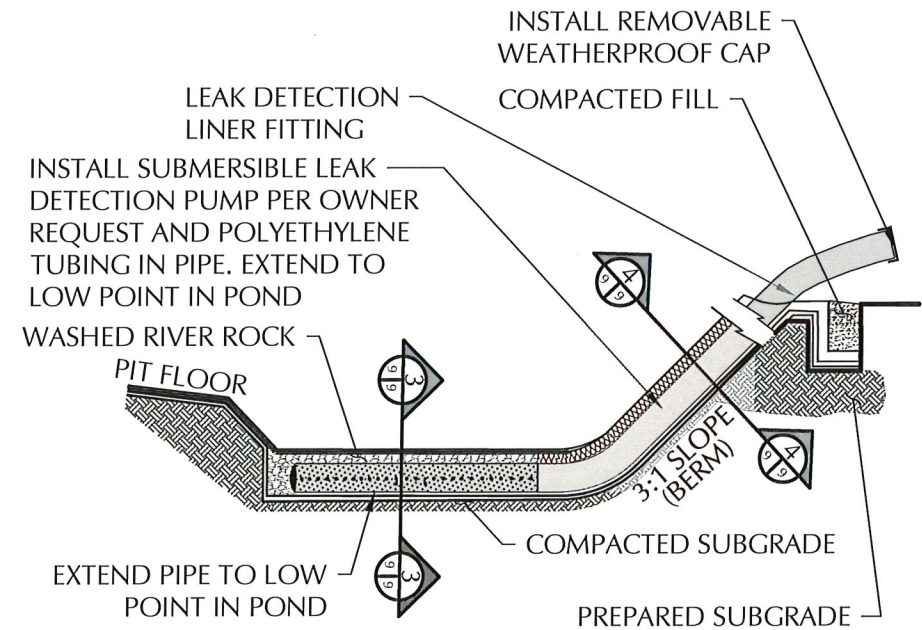
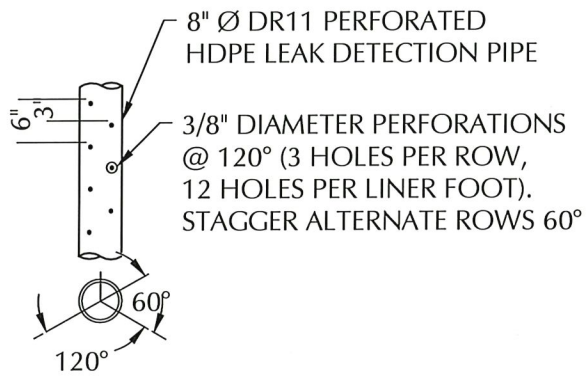
CROSS SECTIONS B & C

NORTH BRININSTOOL RECYCLE FACILITY

WATERBRIDGE STATELINE, LLC.

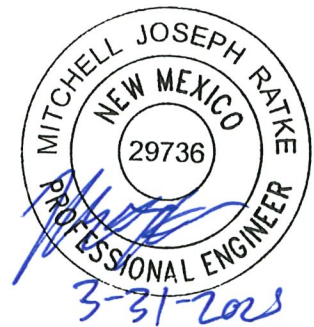
SECTION 29, TOWNSHIP 23 SOUTH, RANGE 33 EAST
LEA COUNTY, NEW MEXICO

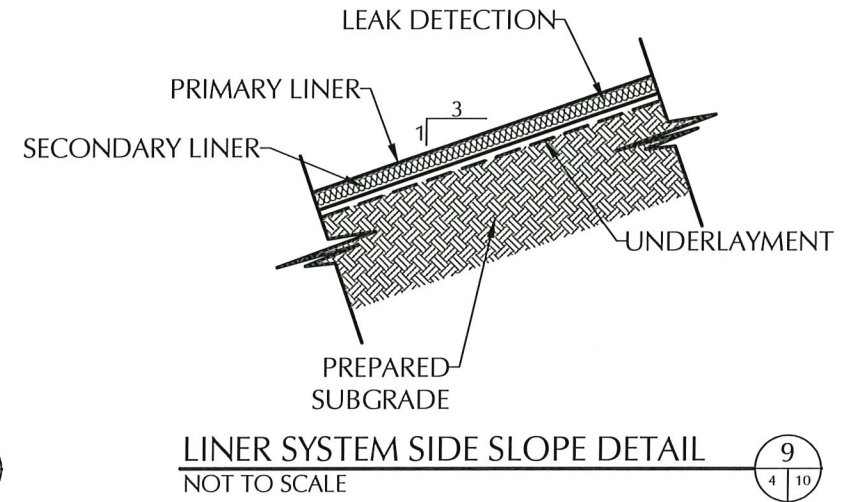
| | |
|--------------|---------------------------------------|
| DATE: | MARCH 2025 |
| SCALE: | HORIZONTAL 1"=100' VERTICAL 1"=10' |
| DESIGNED BY: | R. MOHAN |
| DRAWN BY: | K. TALBOTT |
| CHECKED BY: | M. RATKE |
| PROJECT NO. | 025078-00 |
| SHEET NO. | 8 OF 12 |



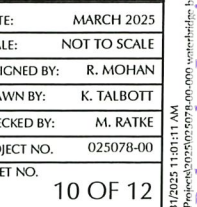
| PROPOSED PIT REFERENCE TABLE | |
|------------------------------|---|
| <u>DETAIL</u> | <u>DESCRIPTION</u> |
| PRIMARY LINER | 60- MIL HDPE SMOOTH LINER |
| LEAK DETECTION | 200-MIL GEONET |
| SECONDARY LINER | 40-MIL HDPE SMOOTH LINER |
| UNDERLAYMENT | 10 OZ GEOTEXTILE |
| SUMP | 3676.00-FT ELEVATION |
| BERM (ROAD CREST) | DESIGN ELEV. 3696.00 FT- RD CREST (35-FT) |
| LEAK DETECTION PIPING | 8-IN DR11.X PERFORATED HDPE LEAK DETECTION PIPE |

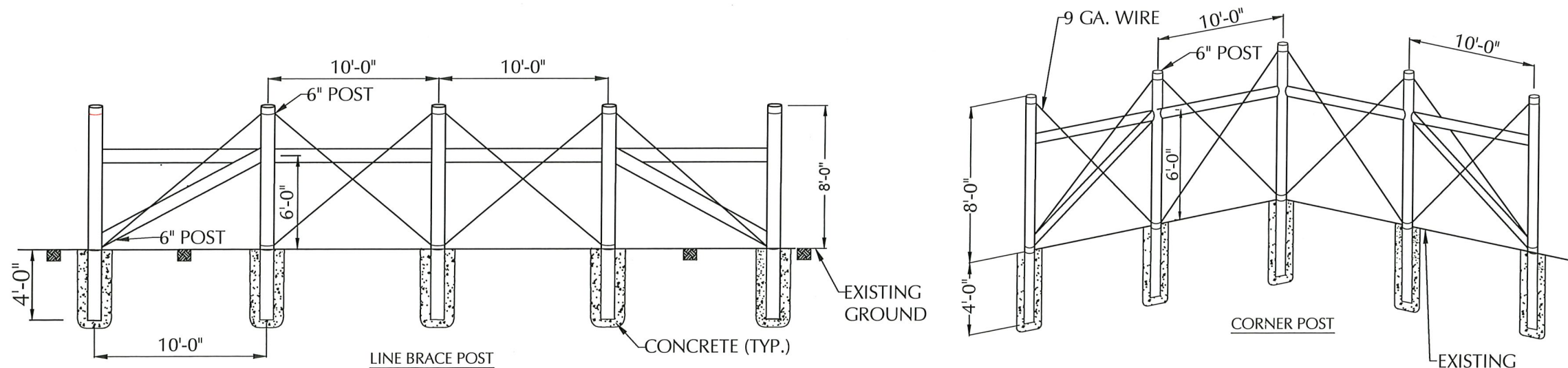
- NOTES:
1. LEAK DETECTION SYSTEM TO BE INSTALLED BY OWNER.
 2. PERFORATED PIPE TO BE ALONG THE BOTTOM OF THE POND. SOLID PIPE ON THE SIDE SLOPE.
 3. CONSTRUCT COMPACTED SUBGRADE TO 95% STANDARD PROCTOR AS PER ASTM D-698.
 4. EXTEND 60 MIL. RUB SHEET 1.0-FT PAST TOP OF SHOULDER OF SUMP.
 5. WASH RIVER ROCK SHALL BE 3/4" MIN. & 2" MAX.






1. SEE REFERENCE TABLES SHEET 9 FOR LINER SPECIFICATIONS
2. PREPARED SUBGRADE MEANS COMPACTED SMOOTH SUBGRADE FREE OF ROCK, ROOTS, WOOD DEBRIS, CONCRETE RUBBLE AND ANY SHARP OBJECTS THAT MIGHT PUNCTURE THE HDPE LINER.
3. ALL INTERIOR SLOPES AND TOP OF BERMS TO BE SMOOTH DRUM ROLLED.
4. ALL EMBANKMENT SLOPES SHALL HAVE A RATIO OF 3:1, COMPACTED EARTH EMBANKMENTS TO BE CONSTRUCTED WITH 8 INCH (MAXIMUM LOOSE LIFTS), COMPACTED TO 95% STANDARD PROCTOR DENSITY (ASTM D698), AND MOISTURE CONDITIONS TO +/- 2% OPTIMUM MOISTURE (ASTM D698)
5. PERFORM GEOTECHNICAL ANALYSIS ON EXISTING SOIL TO CONFIRM SOIL IS SUITABLE FOR USE IN THE LEVEE.
6. ALL BOTTOM OF PITS SHALL SLOPE TO THE SUMP.






Not to Scale

$$\left(\begin{array}{c|c} 6 & 11 \end{array} \right)$$

- 
**ENVIROTECH
ENGINEERING**
2500 North Eleventh Street
Enkl, Oklahoma
500.234.8700
envirotechconsulting.com
P.E. #29736 - Expiration Date: 12-31-2026

COPYRIGHT
This document and the information contained may NOT be reproduced or excerpted from without the express written permission of Envirotech Engineering and Consulting, Inc. Unauthorized copying, disclosure or construction use are prohibited by the copyright law.

| | | |
|-----|------|-------------|
| | | |
| | | |
| | | |
| | | |
| | | |
| NO. | DATE | DESCRIPTION |


WATERBRIDGE

FENCE DETAILS

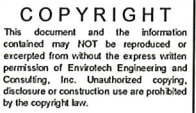
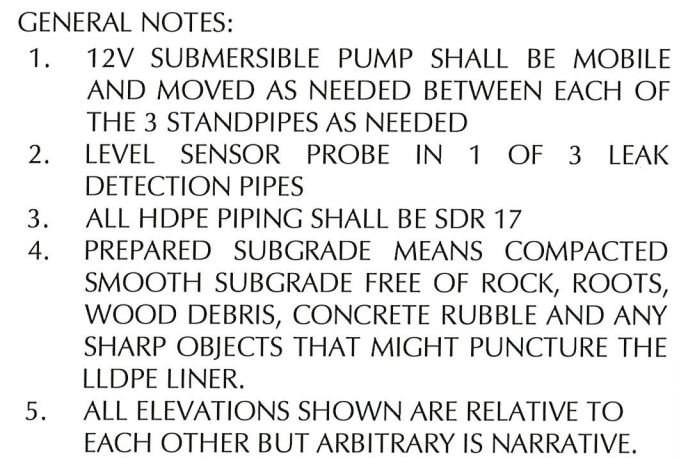
NORTH BRININSTOOL RECYCLE FACILITY

WATERBRIDGE STATELINE, LLC.

SECTION 29, TOWNSHIP 23 SOUTH, RANGE 33 EAST
LEA COUNTY, NEW MEXICO

| | |
|--------------|--------------|
| DATE: | MARCH 2025 |
| SCALE: | NOT TO SCALE |
| DESIGNED BY: | R. MOHAN |
| DRAWN BY: | K. TALBOTT |
| CHECKED BY: | M. RATKE |
| PROJECT NO. | 025078-00 |
| SHEET NO. | 11 OF 12 |

\\projects\2025\025078-00-000 waterbridge bininstool north recycle\permit package\CAD\permit set\DETAILS\12 FENCE DETAILS.dwg



| | | |
|-----|------|-------------|
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| NO. | DATE | DESCRIPTION |



WATERBRIDGE

AST LEAK DETECTION PLAN
NORTH BRININSTOOL RECYCLE FACILITY
WATERBRIDGE STATELINE, LLC.
SECTION 29, TOWNSHIP 23 SOUTH, RANGE 33 EAST
LEA COUNTY, NEW MEXICO

| | |
|--------------|--------------|
| DATE: | MARCH 2025 |
| SCALE: | NOT TO SCALE |
| DESIGNED BY: | R. MOHAN |
| DRAWN BY: | K. TALBOTT |
| CHECKED BY: | M. RATKE |
| PROJECT NO. | 025078-00 |
| SHEET NO. | 12 OF 12 |



C-147 APPLICATION PACKAGE
NORTH BRININSTOOL RECYCLE FACILITY
SECTION 29, TOWNSHIP 23 SOUTH, RANGE 33 EAST
LEA COUNTY, NEW MEXICO
025078-00

APPENDIX D

DESIGN AND CONSTRUCTION PLAN



DESIGN AND CONSTRUCTION PLAN
WATERBRIDGE STATELINE, LLC.
NORTH BRINSTOOL RECYCLE FACILITY
LEA COUNTY, NEW MEXICO
025078-00

WaterBridge Stateline, LLC. is proposing to construct two (2) earthen containments and two (2) Above Ground Storage Tanks (AST's) in Section 29, Township 23 South, Range 33 East, Lea County, New Mexico. The North Brininstool Recycle Facility shall consist of four (4) containments with a total operational volume of approximately 1,326,764-bbl.

OPERATION AND MAINTENANCE PROCEDURES

Applicable mandates in Rule 34 are underlined. This plan addresses construction of lined earthen containments and an above ground storage tank. WaterBridge intends to operate the AST's the same way as an earthen containment. *Appendix C* presents Engineering Design Plans. *Appendix E* provides liner and geotextile specifications.

Field conditions may create the need for minor modification of the containment designs (e.g. changing the length, width, or depth.)

Dike Protection and Structural Integrity

Design elements are addressed in the section of this submission containing the foundation recommendations. The recommendations are based on site-specific data. The operator, engineer, and selected contractor will review the recommendations prior to beginning the earthwork and adhere to the specific recommendations.

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 (berm) and diversion ditch to prevent run-on of surface water.

Stockpile Topsoil

Where topsoil is present, prior to constructing containment, the operator will strip and stockpile the topsoil for use as the final cover or fill at the time of closure. The top soil will be stockpiled adjacent to a perimeter fence surrounding the containments or incorporated into the levee.

Signage

The design calls for an upright sign no less than 12-in by 24-in 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:

1. The operator's name,
2. The location of the site by quarter-quarter or unit letter, section, township and range, and
3. Emergency telephone numbers.



Fencing

The design provides for a fence to enclose the Recycling Containments in a manner that deters unauthorized wildlife and human access. The design calls for a 8-ft tall wire mesh game fence around the containments to exclude wildlife (see detail contained in engineering design drawings). This fence provides greater wildlife (and human) deterrence than the minimum required barbed wire fence with four strands evenly spaced in an interval between one foot and four feet above ground level. The fence will be gated to provide access for maintenance and placement of pumps and other necessary equipment. 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.

Netting and Protection of Wildlife

The game fence around the containments will be effective in excluding antelope, deer, coyotes, and most other terrestrial wildlife.

The Recycling Containment is otherwise protective of wildlife, including migratory birds. The containments will contain treated produced water that has not shown to be a material threat to birds due to hydrogen sulfide gas or floating, free-phase hydrocarbons. 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.

The containments 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 C shows for earthen containments;

1. The levee has an inside grade no steeper than three horizontal feet to one vertical foot (3H:1V).
2. The levee outside grade is no steeper than three horizontal feet to one vertical foot (3H:1V).
3. The top of the levee is wide enough to install an anchor trench and provide adequate room for inspection and maintenance.
4. The caliche gravel placed on the outside levee provides additional erosion control.

Field conditions may create the need for changes to the design. Any changes to the construction or grade requirements due to unforeseen conditions will be reviewed and approved prior to initiating installation of the liner system. Any design change that does not conform to the NMOCD Rule will be the subject of a variance request and will be submitted **to the OCD for review and approval**.



LINER AND DRAINAGE GEOTEXTILE INSTALLATION

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

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. 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. This slope, combined with the highly transmissive geonet drainage layer, provides for the earliest possible leak detection.

The liners and drainage material will be installed consistent with the manufacture's specifications (See *Appendix E*). In addition to any specifications of the manufacturer, protocols for liner installation include measures to:

1. Minimize liner seams and orient them up and down, not across, a slope of the levee.
2. Use factory welded seams where possible.
3. Field seams in geosynthetic material are thermally seamed; prior to field seaming, overlap liner four to six inches.
4. Minimize the number of field seams and corners and irregularly shaped areas.
5. Provide for no horizontal seams within five feet of the slope's toe.
6. Use qualified personnel to perform field welding and testing.
7. Avoid excessive stress-strain on the liner.
8. The edges of all liners are anchored in the bottom of a compacted earth-filled trench that is at least 18-in deep.

At points of discharge into the lined earthen containments, 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 containments to hydraulic fracturing operations is the responsibility of stimulation contractors. Typically, numerous lines are permanently placed in the containment with floats attached



to prevent damage to the liner system. The containments may be equipped with permanent HDPE stinger (supported by a sacrificial liner or geotextile) for withdrawal of fluid during operations, if the owner deems necessary. External discharge or suction lines do not penetrate the liner.

LEAK DETECTION AND FLUID REMOVAL SYSTEM INSTALLATION

The leak detection system contains the following design elements:

1. The 200-mil geonet drainage material between the primary and secondary liner is sufficiently permeable to allow the transport of fluids to the observation ports (*Appendix C*).
2. The containment floor, sloped towards the monitoring riser pipe, facilitates the earliest possible leak detection of the containment bottom. A pump may be placed in an observation port to provide for fluid removal.
3. Piping will withstand chemical attack from any seepage, structural loading from stresses and disturbances from overlying water, cover materials, equipment operation, and expansion or contraction (see *Appendix C*).
4. The slope of the interior subgrade should be great enough to facilitate drainage.



C-147 APPLICATION PACKAGE
NORTH BRININSTOOL RECYCLE FACILITY
SECTION 29, TOWNSHIP 23 SOUTH, RANGE 33 EAST
LEA COUNTY, NEW MEXICO
025078-00

APPENDIX E

MATERIAL SPECIFICATIONS



WaterBridge Stateline, LLC. is proposing to construct two (2) earthen containments and two (2) Above Ground Storage Tanks (AST's) in Section 29, Township 23 South, Range 33 East, Lea County, New Mexico. The North Brinstool Recycle Facility shall consist of four (4) containments with a total operational volume of approximately 1,326,764-bbl.

GEOMEMBRANE SPECIFICATION

This specification covers the technical requirements for the Manufacturing and Installation of the geomembrane. All materials meet or exceed the requirements of this specification, and all work will be performed in accordance with the procedures provided in these project specifications.

1.1 REFERENCES

- A. American Society for Testing and Materials (ASTM)
 - 1. D 1004 Test Method for Initial Tear Resistance of Plastic Film and Sheet
 - 2. D 1238 Standard Test Method for Flow Rates of Thermoplastics by Extrusion Plastometer
 - 3. D 1505 Test Method for Density of Plastics by the Density-Gradient Technique
 - 4. D 1603 Test Method for Carbon Black in Olefin Plastics
 - 5. D 3895 Standard Test Method for Oxidative-Induction Time of Polyolefins by Differential Scanning Calorimetry
 - 6. D 4218 Standard Test Method for Determination of Carbon Black in Polyethylene Compounds
 - 7. D 4833 Standard Test Method for Index Puncture Resistance of Geotextiles, Geomembranes, and Related Products
 - 8. D 5199 Standard Test Method for Measuring Nominal Thickness of Geotextiles and Geomembranes
 - 9. D 5397 Standard Test Method for Evaluation of Stress Crack Resistance of Polyolefin Geomembranes Using Notched Constant Tensile Load Test
 - 10. D 5596 Standard Test Method for Microscopic Evaluation of the Dispersion of Carbon Black in Polyolefin Geosynthetics
 - 11. D 5994 Standard Test Method for Measuring Core Thickness of Textured Geomembranes
 - 12. D 6392 Standard Test Method for Determining the Integrity of Nonreinforced Geomembrane Seams Produced Using Thermo-Fusion Methods
 - 13. D 6693 Standard Test Method for Determining Tensile Properties of Nonreinforced Polyethylene and Nonreinforced Flexible Polypropylene Geomembranes
 - 14. D 7240 Standard Practice for Leak Location using Geomembranes with an Insulating Layer in Intimate Contact with a Conductive Layer via Electrical Capacitance Technique (Conductive Geomembrane Spark Test)
- B. Geosynthetic Research Institute
 - 1. GRI GM 13 Test Properties, Testing Frequency and Recommended Warranty for High Density Polyethylene (HDPE) Smooth and Textured Geomembranes
 - 2. GRI GM 17 Test Properties, Testing Frequency and Recommended Warranty for Linear Low Density Polyethylene (LLDPE) Smooth and Textured Geomembranes



1.2 DEFINITIONS

- A. Lot - A quantity of resin (usually the capacity of one rail car) used in the manufacture of geomembranes. Finished roll will be identified by a roll number traceable to the resin lot used.
- B. Construction Quality Assurance Consultant (CONSULTANT) – The Party, independent from MANUFACTURER and INSTALLER, that is responsible for observing and documenting activities related to quality assurance during the lining system construction.
- C. ENGINEER- The individual or firm responsible for the design and preparation of the project's Contract Drawings and Specifications.
- D. Geomembrane Manufacturer (MANUFACTURER) - The party responsible for manufacturing the geomembrane rolls.
- E. Geosynthetic Quality Assurance Laboratory (TESTING LABORATORY) – The Party, independent from the OWNER, MANUFACTURER, and INSTALLER, responsible for conducting laboratory tests on samples of geosynthetics obtained at the site or during manufacturing, usually under the direction of the OWNER.
- F. INSTALLER- The Party responsible for field handling, transporting, storing, deploying, seaming, and testing of the geomembrane seams.
- G. Panel- Unit area of geomembrane that will be seamed in the field that is larger than 100-ft².
- H. Patch - Unit area of geomembrane that will be seamed in the field that is less than 100-ft².
- I. Subgrade Surface - Soil layer surface which immediately underlies the geosynthetic material(s).

1.3 SUBMITTALS POST-AWARD

- A. Furnish the following product data, in writing, to ENGINEER prior to installation of the geomembrane material:
 - 1. Resin Data shall include the following:
 - a. Certification stating that the resin meets the specification requirements (see *Table 1.9B*).
 - 2. Geomembrane Roll
 - a. Statement certifying no recycled polymer and no more than 10% rework of the same type of material is added to the resin (product run may be recycled).
- B. The INSTALLER shall furnish the following information to the ENGINEER and OWNER prior to installation:
 - 1. Installation layout drawings
 - 2. Must show proposed panel layout including field seams and details
 - 3. Must be approved prior to installing the geomembrane
 - 4. Approved drawings will be for concept only; actual panel placement will be determined by site conditions
 - 5. Installer's Geosynthetic Field Installation Quality Assurance Plan

**WATERBRIDGE**

MATERIAL SPECIFICATIONS PLAN
WATERBRIDGE STATELINE, LLC.
NORTH BRININSTOOL RECYCLE FACILITY
LEA COUNTY, NEW MEXICO
025078-00

- C. The INSTALLER will submit the following to the ENGINEER upon completion of installation:
1. Certificate stating the geomembrane has been installed in accordance with the Contract Documents
 2. Material and installation warranties
 3. As-built drawings showing actual geomembrane placement and seams including typical anchor trench detail

1.4 QUALITY ASSURANCE

- A. The OWNER will engage and pay for the services of a Geosynthetic Quality Assurance Consultant and Laboratory to monitor geomembrane installation.

1.5 QUALIFICATIONS

A. MANUFACTURER

1. Geomembrane shall be manufactured by the following:
 - a. GSE Lining Technology, LLC
 - b. approved equal
2. MANUFACTURER shall have manufactured a minimum of 10,000,000 square feet of polyethylene geomembrane during the last year.

B. INSTALLER

1. Installation shall be performed by one of the following installation companies (or approved equal)
 - a. GSE Lining Technology, LLC
 - b. GSE Approved Installers
2. INSTALLER shall have installed a minimum of 5,000,000-ft² of HDPE geomembrane during the last two years.
3. INSTALLER shall have worked in a similar capacity on at least 5 projects similar in complexity to the project described in the contract documents, and with at least 500,000-ft² of HDPE geomembrane installation on each project.
4. The Installation Supervisor shall have worked in a similar capacity on projects similar in size and complexity to the project described in the Contract Documents.
5. The INSTALLER shall provide a minimum of one Master Seamer for work on the project.
6. Must have completed a minimum of 1,000,000-ft² of geomembrane seaming work using the type of seaming apparatus proposed for the use on this Project.

1.6 MATERIAL LABELING, DELIVERY, STORAGE AND HANDLING

- A. LABELING - Each roll of geomembrane delivered to the site shall be labeled by the MANUFACTURER. The label will identify:
1. manufacturer's name
 2. product identification
 3. thickness
 4. length
 5. width
 6. roll number


WATERBRIDGE

MATERIAL SPECIFICATIONS PLAN
WATERBRIDGE STATELINE, LLC.
NORTH BRININSTOOL RECYCLE FACILITY
LEA COUNTY, NEW MEXICO
025078-00

- B. DELIVERY - Rolls of liner will be prepared to ship by appropriate means to prevent damage to the material and to facilitate off-loading.
- C. STORAGE - The on-site storage location for geomembrane material, provided by the CONTRACTOR to protect the geomembrane from punctures, abrasions and excessive dirt and moisture, should have the following characteristics:
 - 1. level (no wooden pallets)
 - 2. smooth
 - 3. dry
 - 4. protected from theft and vandalism
 - 5. adjacent to the area being lined
- D. Handling- Materials are to be handled so as to prevent damage.

1.7 WARRANTY

- A. Material shall be warrantied, on a pro-rata basis, against Manufacturer's defects for a period of 5 years from the date of geomembrane installation.
- B. Installation shall be warrantied against defects in workmanship for a period of 1 year from the date of geomembrane completion.

1.8 GEOMEMBRANE PROPERTIES

- A. Material shall be smooth/textured polyethylene geomembrane as shown on the drawings.
- B. Resin
 - 1. Resin shall be new, first quality, compounded and manufactured specifically for producing geomembrane.
 - 2. Natural resin (without carbon black) shall meet the following requirements:

| Table 1.9B RAW MATERIAL PROPERTIES | | | |
|------------------------------------|---------------------------|--------------|--------------|
| Property | Test Method | HDPE | LLDPE |
| Density (g/cm ³) | ASTM D 1505 | ≥ 0.932 | ≥ 0.915 |
| Melt Flow Index (g/10 min) | ASTM D 1238 (190/2.16) | ≤ 1.0 | ≤ 1.0 |
| OIT (minutes) | ASTM D 3895 (1 atm/200°C) | ≥ 100 | ≥ 100 |

- C. Geomembrane Rolls
 - 1. Do not exceed a combined maximum total of 1 percent by weight of additives other than carbon black.
 - 2. Geomembrane shall be free of holes, pinholes as verified by on-line electrical detection, bubbles, blisters, excessive contamination by foreign matter, and nicks and cuts on roll edges.
 - 3. Geomembrane material is to be supplied in roll form. Each roll is to be identified with labels indicating roll number, thickness, length, width, and MANUFACTURER.


WATERBRIDGE

MATERIAL SPECIFICATIONS PLAN
WATERBRIDGE STATELINE, LLC.
NORTH BRININSTOOL RECYCLE FACILITY
LEA COUNTY, NEW MEXICO
025078-00

-
4. All liner sheets produced at the factory shall be inspected prior to shipment for compliance with the physical property requirements listed in section 1.09 D and be tested by an acceptable method of inspecting for pinholes. If pinholes are located, identified and indicated during manufacturing, these pinholes may be corrected during installation.
- D. Smooth surfaced geomembrane shall meet the requirements shown in the following data sheets below:
1. *Table 1.1* for Black HDPE
 2. *Table 1.2* for Green HDPE
 3. *Table 1.3* for White HDPE
 - a. The geomembrane shall be a white-surfaced, coextruded geomembrane.
 - b. The white surface shall be installed upwards.
 4. *Table 1.4* for Smooth Leak Location Liner HDPE
 - a. The geomembrane shall have a coextruded, electrically conductive layer.
 - b. The conductive layer is installed downward.
 - c. Electrical testing shall be performed after liner installation by the INSTALLER.
 5. *Table 1.5* for Smooth White Leak Location Liner HDPE
 - a. The geomembrane shall have a coextruded, electrically conductive layer.
 - b. The conductive layer is installed downward.
 - c. The geomembrane shall be a white-surfaced, coextruded geomembrane.
 - d. The white surface shall be installed upwards.
 - e. Electrical testing shall be performed after liner installation by the INSTALLER.
 6. *Table 1.6* for Black LLDPE
 7. *Table 1.7* for White-surfaced LLDPE
 - a. The geomembrane shall be a white-surfaced, coextruded geomembrane.
 - b. The white surface shall be installed upwards.
 8. *Table 1.8* for Leak Location Liner LLDPE
 - a. The geomembrane shall have a coextruded, electrically conductive layer.
 - b. The conductive layer is installed downward.
 - c. Electrical testing shall be performed after liner installation by the INSTALLER.
 9. *Table 1.9* for White Leak Location Liner LLDPE
 - a. The geomembrane shall be a white-surfaced, coextruded geomembrane.
 - b. The white surface shall be installed upwards.
 - c. The geomembrane shall have a coextruded, electrically conductive layer.
 - d. The conductive layer is installed downward.
 - e. Electrical testing shall be performed after liner installation by the INSTALLER.



MATERIAL SPECIFICATIONS PLAN
WATERBRIDGE STATELINE, LLC.
NORTH BRININSTOOL RECYCLE FACILITY
LEA COUNTY, NEW MEXICO
025078-00

| TABLE 1.1: GSE HD SMOOTH GEOMEMBRANE | | | | | | | |
|---|---|-------------|------------------------|------------------------|-------------------------|-------------------------|-------------------------|
| Tested Property | Test Method | Frequency | Minimum Average Values | | | | |
| | | | 30 mil | 40 mil | 60 mil | 80 mil | 100 mil |
| Thickness, mil Lowest individual reading | ASTM D 5199 | every roll | 30 27 | 40 36 | 60 54 | 80 72 | 100 90 |
| Density, g/cm ³ , (min.) | ASTM D 1505 | 200,000 lbs | 0.940 | 0.940 | 0.940 | 0.940 | 0.940 |
| Tensile Properties (each direction) Strength at Break, lb/in-width Strength at Yield, lb/in-width Elongation at Break, % Elongation at Yield, % | ASTM D 6693, Type IV Dumbbell, 2 ipm G.L. 2.0 in G.L. 1.3 in | 20,000 lbs | 114 63 700 12 | 152 84 700 12 | 228 126 700 12 | 304 168 700 12 | 380 210 700 12 |
| Tear Resistance, lb | ASTM D 1004 | 45,000 lbs | 21 | 28 | 42 | 56 | 70 |
| Puncture Resistance, lb | ASTM D 4833 | 45,000 lbs | 54 | 72 | 108 | 144 | 180 |
| Carbon Black Content, % (Range) | ASTM D 1603*/4218 | 20,000 lbs | 2.0 - 3.0 | 2.0 - 3.0 | 2.0 - 3.0 | 2.0 - 3.0 | 2.0 - 3.0 |
| Carbon Black Dispersion | ASTM D 5596 | 45,000 lbs | Note ⁽¹⁾ | Note ⁽¹⁾ | Note ⁽¹⁾ | Note ⁽¹⁾ | Note ⁽¹⁾ |
| Notch Constant Tensile Load, hr | ASTM D 5397, Appendix | 200,000 lbs | 300 | 300 | 300 | 300 | 300 |
| Oxidative Induction Time, min | ASTM D 3895, 200°C; O ₂ , 1 atm | 200,000 lbs | >100 | >100 | >100 | >100 | >100 |
| Typical Roll Dimensions | | | | | | | |
| Roll Length ⁽²⁾ , ft | | | 1,120 | 870 | 560 | 430 | 340 |
| Roll Width ⁽²⁾ , ft | | | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 |
| Roll Area, ft ² | | | 25,200 | 19,575 | 12,600 | 9,675 | 7,650 |

- NOTES:
 - ⁽¹⁾Dispersion only applies to near spherical agglomerates. 9 of 10 views shall be Category 1 or 2. No more than 1 view from Category 3.
 - ⁽²⁾Roll lengths and widths have a tolerance of $\pm 1\%$.
 - GSE HD Smooth is available in rolls weighing approximately 4,000 lb.
 - All GSE geomembranes have dimensional stability of $\pm 2\%$ when tested according to ASTM D 1204 and LTB of $< -77^{\circ}\text{C}$ when tested according to ASTM D 746.
 - *Modified.



MATERIAL SPECIFICATIONS PLAN
WATERBRIDGE STATELINE, LLC.
NORTH BRININSTOOL RECYCLE FACILITY
LEA COUNTY, NEW MEXICO
025078-00

| TABLE 1.2: GSE GREEN SMOOTH GEOMEMBRANE | | | | | | | |
|--|---|-------------|------------------------|------------------------|-------------------------|-------------------------|-------------------------|
| Tested Property | Test Method | Frequency | Minimum Average Values | | | | |
| | | | 30 mil | 40 mil | 60 mil | 80 mil | 100 mil |
| Thickness, mil Lowest individual reading | ASTM D 5199 | every roll | 30 27 | 40 36 | 60 54 | 80 72 | 100 90 |
| Density, g/cm ³ , (min.) | ASTM D 1505 | 200,000 lbs | 0.940 | 0.940 | 0.940 | 0.940 | 0.940 |
| Tensile Properties (each direction) Strength at Break, lb/in-width Strength at Yield, lb/in-width Elongation at Break, % Elongation at Yield, % | ASTM D 6693, Type IV Dumbbell, 2 ipm G.L. 2.0 in G.L. 1.3 in | 20,000 lbs | 114 63 700 12 | 152 84 700 12 | 228 126 700 12 | 304 168 700 12 | 380 210 700 12 |
| Tear Resistance, lb | ASTM D 1004 | 45,000 lbs | 21 | 28 | 42 | 56 | 70 |
| Puncture Resistance, lb | ASTM D 4833 | 45,000 lbs | 54 | 72 | 108 | 144 | 180 |
| Carbon Black Content ⁽¹⁾ , % (Range) | ASTM D 1603*/4218 | 20,000 lbs | 2.0 - 3.0 | 2.0 - 3.0 | 2.0 - 3.0 | 2.0 - 3.0 | 2.0 - 3.0 |
| Carbon Black Dispersion | ASTM D 5596 | 45,000 lbs | Note ⁽²⁾ | Note ⁽²⁾ | Note ⁽²⁾ | Note ⁽²⁾ | Note ⁽²⁾ |
| Notch Constant Tensile Load, hr | ASTM D 5397, Appendix | 200,000 lbs | 300 | 300 | 300 | 300 | 300 |
| Oxidative Induction Time, min | ASTM D 3895, 200°C; O ₂ , 1 atm | 200,000 lbs | >100 | >100 | >100 | >100 | >100 |
| Typical Roll Dimensions | | | | | | | |
| Roll Length ⁽³⁾ , ft | | | 1,120 | 870 | 560 | 430 | 340 |
| Roll Width ⁽³⁾ , ft | | | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 |
| Roll Area, ft ² | | | 25,200 | 19,575 | 12,600 | 9,675 | 7,650 |


WATERBRIDGE

**MATERIAL SPECIFICATIONS PLAN
WATERBRIDGE STATELINE, LLC.
NORTH BRININSTOOL RECYCLE FACILITY
LEA COUNTY, NEW MEXICO
025078-00**

- NOTES:
 - ⁽¹⁾GSE Green Smooth may have an overall ash content of 3.0% due to the green layer. These values apply to the black layer only.
 - ⁽²⁾Dispersion applies to near spherical agglomerates. 9 of 10 views shall be Category 1 or 2. No more than 1 view from Category 3.
 - ⁽³⁾Roll lengths and widths have a tolerance of $\pm 1\%$.
 - GSE Green Smooth is available in rolls weighing approximately 4,000 lb.
 - All GSE geomembranes have dimensional stability of $\pm 2\%$ when tested according to ASTM D 1204 and LTB of $< -77^{\circ}\text{C}$ when tested according to ASTM D 746.
 - *Modified.

| TABLE 1.3: GSE WHITE SMOOTH GEOMEMBRANE | | | | | | | |
|---|---|-------------|------------------------|------------------------|-------------------------|-------------------------|-------------------------|
| Tested Property | Test Method | Frequency | Minimum Average Values | | | | |
| | | | 30 mil | 40 mil | 60 mil | 80 mil | 100 mil |
| Thickness, mil Lowest individual reading | ASTM D 5199 | every roll | 30 27 | 40 36 | 60 54 | 80 72 | 100 90 |
| Density, g/cm ³ , (min.) | ASTM D 1505 | 200,000 lbs | 0.940 | 0.940 | 0.940 | 0.940 | 0.940 |
| Tensile Properties (each direction) Strength at Break, lb/in-width Strength at Yield, lb/in-width Elongation at Break, % Elongation at Yield, % | ASTM D 6693, Type IV Dumbbell, 2 ipm G.L. 2.0 in G.L. 1.3 in | 20,000 lbs | 114 63 700 12 | 152 84 700 12 | 228 126 700 12 | 304 168 700 12 | 380 210 700 12 |
| Tear Resistance, lb | ASTM D 1004 | 45,000 lbs | 21 | 28 | 42 | 56 | 70 |
| Puncture Resistance, lb | ASTM D 4833 | 45,000 lbs | 54 | 72 | 108 | 144 | 180 |
| Carbon Black Content ⁽¹⁾ , % (Range) | ASTM D 1603*/4218 | 20,000 lbs | 2.0 - 3.0 | 2.0 - 3.0 | 2.0 - 3.0 | 2.0 - 3.0 | 2.0 - 3.0 |
| Carbon Black Dispersion | ASTM D 5596 | 45,000 lbs | Note ⁽²⁾ | Note ⁽²⁾ | Note ⁽²⁾ | Note ⁽²⁾ | Note ⁽²⁾ |
| Notch Constant Tensile Load, hr | ASTM D 5397, Appendix | 200,000 lbs | 300 | 300 | 300 | 300 | 300 |
| Oxidative Induction Time, min | ASTM D 3895, 200°C; O ₂ , 1 atm | 200,000 lbs | >100 | >100 | >100 | >100 | >100 |
| Typical Roll Dimensions | | | | | | | |
| Roll Length ⁽³⁾ , ft | | | 1,120 | 870 | 560 | 430 | 340 |
| Roll Width ⁽³⁾ , ft | | | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 |



**MATERIAL SPECIFICATIONS PLAN
WATERBRIDGE STATELINE, LLC.
NORTH BRININSTOOL RECYCLE FACILITY
LEA COUNTY, NEW MEXICO
025078-00**

| | | | | | |
|----------------------------|--------|--------|--------|-------|-------|
| Roll Area, ft ² | 25,200 | 19,575 | 12,600 | 9,675 | 7,650 |
|----------------------------|--------|--------|--------|-------|-------|

- NOTES:
 - ⁽¹⁾GSE White Smooth may have an overall ash content of 3.0% due to the white layer. These values apply to the black layer only.
 - ⁽²⁾Dispersion applies to near spherical agglomerates. 9 of 10 views shall be Category 1 or 2. No more than 1 view from Category 3.
 - ⁽³⁾Roll lengths and widths have a tolerance of $\pm 1\%$.
 - GSE White Smooth is available in rolls weighing approximately 4,000 lb.
 - All GSE geomembranes have dimensional stability of $\pm 2\%$ when tested according to ASTM D1204 and LTB of $< -77^{\circ}\text{C}$ when tested according to ASTM D 746.
 - *Modified.

| TABLE 1.4: GSE LEAK LOCATION SMOOTH GEOMEMBRANE | | | | | | |
|---|--|-------------|------------------------|-------------------------|-------------------------|-------------------------|
| Tested Property | Test Method | Frequency | Minimum Average Values | | | |
| | | | 40 mil | 60 mil | 80 mil | 100 mil |
| Thickness, mil Lowest individual reading | ASTM D 5199 | every roll | 40 36 | 60 54 | 80 72 | 100 90 |
| Density, g/cm ³ , (min.) | ASTM D 1505 | 200,000 lbs | 0.940 | 0.940 | 0.940 | 0.940 |
| Tensile Properties (each direction) Strength at Break, lb/in-width Strength at Yield, lb/in-width Elongation at Break, % Elongation at Yield, % | ASTM D 6693, Type IV Dumbbell, 2 ipm G.L. 2.0 in G.L. 1.3 in | 20,000 lbs | 152 84 700 12 | 228 126 700 12 | 304 168 700 12 | 380 210 700 12 |
| Tear Resistance, lb | ASTM D 1004 | 45,000 lbs | 28 | 42 | 56 | 70 |
| Puncture Resistance, lb | ASTM D 4833 | 45,000 lbs | 72 | 108 | 144 | 180 |
| Carbon Black Content ⁽¹⁾ , % (Range) | ASTM D 1603*/4218 | 20,000 lbs | 2.0 - 3.0 | 2.0 - 3.0 | 2.0 - 3.0 | 2.0 - 3.0 |
| Carbon Black Dispersion | ASTM D 5596 | 45,000 lbs | Note ⁽²⁾ | Note ⁽²⁾ | Note ⁽²⁾ | Note ⁽²⁾ |
| Notch Constant Tensile Load, hr | ASTM D 5397, Appendix | 200,000 lbs | 300 | 300 | 300 | 300 |
| Oxidative Induction Time, min | ASTM D 3895, 200°C; O ₂ , 1 atm | 200,000 lbs | >100 | >100 | >100 | >100 |
| Typical Roll Dimensions | | | | | | |
| Roll Length ⁽³⁾ , ft | | | 870 | 560 | 430 | 340 |
| Roll Width ⁽³⁾ , ft | | | 22.5 | 22.5 | 22.5 | 22.5 |



MATERIAL SPECIFICATIONS PLAN
WATERBRIDGE STATELINE, LLC.
NORTH BRININSTOOL RECYCLE FACILITY
LEA COUNTY, NEW MEXICO
 025078-00

| | | | | |
|----------------------------|--------|--------|-------|-------|
| Roll Area, ft ² | 19,575 | 12,600 | 9,675 | 7,650 |
|----------------------------|--------|--------|-------|-------|

- NOTES:
 - ⁽¹⁾GSE Leak Location Smooth may have an overall ash content of 3.0% due to the conductive layer. These values apply to the non-conductive black layer only.
 - ⁽²⁾Dispersion applies to near spherical agglomerates. 9 of 10 views shall be Category 1 or 2. No more than 1 view from Category 3.
 - ⁽³⁾Roll lengths and widths have a tolerance of $\pm 1\%$.
 - GSE Leak Location Smooth is available in rolls weighing approximately 4,000 lb.
 - All GSE geomembranes have dimensional stability of $\pm 2\%$ when tested according to ASTM D 1204 and LTB of $< -77^{\circ}\text{C}$ when tested according to ASTM D746.
 - *Modified.



MATERIAL SPECIFICATIONS PLAN
WATERBRIDGE STATELINE, LLC.
NORTH BRININSTOOL RECYCLE FACILITY
LEA COUNTY, NEW MEXICO
025078-00

| TABLE 1.5: GSE LEAK LOCATION WHITE SMOOTH GEOMEMBRANE | | | | | | |
|--|--|----------------|------------------------|-------------------------|-------------------------|-------------------------|
| Tested Property | Test Method | Frequency | Minimum Average Values | | | |
| | | | 40 mil | 60 mil | 80 mil | 100 mil |
| Thickness, mil Lowest individual reading | ASTM D 5199 | every roll | 40 36 | 60 54 | 80 72 | 100 90 |
| Density, g/cm ³ , (min.) | ASTM D 1505 | 200,000 lbs | 0.940 | 0.940 | 0.940 | 0.940 |
| Tensile Properties (each direction) Strength at Break, lb/in- width Strength at Yield, lb/in- width Elongation at Break, % Elongation at Yield, % | ASTM D 6693, Type IV Dumbbell, 2 ipm G.L. 2.0 in G.L. 1.3 in | 20,000 lbs | 152 84 700 12 | 228 126 700 12 | 304 168 700 12 | 380 210 700 12 |
| Tear Resistance, lb | ASTM D 1004 | 45,000 lbs | 28 | 42 | 56 | 70 |
| Puncture Resistance, lb | ASTM D 4833 | 45,000 lbs | 72 | 108 | 144 | 180 |
| Carbon Black Content ⁽¹⁾ , % (Range) | ASTM D 1603*/4218 | 20,000 lbs | 2.0 - 3.0 | 2.0 - 3.0 | 2.0 - 3.0 | 2.0 - 3.0 |
| Carbon Black Dispersion | ASTM D 5596 | 45,000 lbs | Note ⁽²⁾ | Note ⁽²⁾ | Note ⁽²⁾ | Note ⁽²⁾ |
| Notch Constant Tensile Load, hr | ASTM D 5397, Appendix | 200,000 lbs | 300 | 300 | 300 | 300 |
| Oxidative Induction Time, min | ASTM D 3895, 200°C; O ₂ , 1 atm | 200,000 lbs | >100 | >100 | >100 | >100 |
| Typical Roll Dimensions | | | | | | |
| Roll Length ⁽³⁾ , ft | | | 870 | 560 | 430 | 340 |
| Roll Width ⁽³⁾ , ft | | | 22.5 | 22.5 | 22.5 | 22.5 |
| Roll Area, ft ² | | | 19,575 | 12,600 | 9,675 | 7,650 |

- NOTES:
 - ⁽¹⁾GSE Leak Location White Smooth may have an overall ash content of 3.0% due to the white and conductive layers. These values apply to the black layer only.
 - ⁽²⁾Dispersion applies to near spherical agglomerates. 9 of 10 views shall be Category 1 or 2. No more than 1 view from Category 3.
 - ⁽³⁾Roll lengths and widths have a tolerance of $\pm 1\%$.
 - GSE Leak Location White Smooth is available in rolls weighing approximately 4,000 lb.
 - All GSE geomembranes have dimensional stability of $\pm 2\%$ when tested according to ASTM D 1204 and LTB of $<-77^{\circ}\text{C}$ when tested according to ASTM D 746.
 - *Modified.



MATERIAL SPECIFICATIONS PLAN
WATERBRIDGE STATELINE, LLC.
NORTH BRININSTOOL RECYCLE FACILITY
LEA COUNTY, NEW MEXICO
025078-00

| TABLE 1.6: GSE ULTRAFLEX SMOOTH GEOMEMBRANE | | | | | | |
|---|---|-------------|-----------------------|---------------------|---------------------|---------------------|
| Tested Property | Test Method | Frequency | Minimum Average Value | | | |
| | | | 40 mil | 60 mil | 80 mil | 100 mil |
| Thickness, mil Lowest individual reading | ASTM D 5199 | every roll | 40 36 | 60 54 | 80 72 | 100 90 |
| Density, g/cm ³ (max.) | ASTM D 1505 | 200,000 lbs | 0.939 | 0.939 | 0.939 | 0.939 |
| Tensile Properties (each direction) Strength at Break, lb/in-width Elongation at Break, % | ASTM D 6693, Type IV Dumbbell, 2 ipm G.L. 2.0 in | 20,000 lbs | 152 800 | 228 800 | 304 800 | 380 800 |
| Tear Resistance, lb | ASTM D 1004 | 45,000 lbs | 22 | 33 | 44 | 55 |
| Puncture Resistance, lb | ASTM D 4833 | 45,000 lbs | 56 | 84 | 112 | 140 |
| Carbon Black Content, % (Range) | ASTM D 1603*/4218 | 20,000 lbs | 2.0 - 3.0 | 2.0 - 3.0 | 2.0 - 3.0 | 2.0 - 3.0 |
| Carbon Black Dispersion | ASTM D 5596 | 45,000 lbs | Note ⁽¹⁾ | Note ⁽¹⁾ | Note ⁽¹⁾ | Note ⁽¹⁾ |
| Oxidative Induction Time, min | ASTM D 3895, 200°C; O ₂ , 1 atm | 200,000 lbs | >100 | >100 | >100 | >100 |
| Typical Roll Dimensions | | | | | | |
| Roll Length ⁽²⁾ , ft | | | 870 | 560 | 430 | 340 |
| Roll Width ⁽²⁾ , ft | | | 22.5 | 22.5 | 22.5 | 22.5 |
| Roll Area, ft ² | | | 19,575 | 12,600 | 9,675 | 7,650 |

- NOTES:
 - ⁽¹⁾Dispersion only applies to near spherical agglomerates. 9 of 10 views shall be Category 1 or 2. No more than 1 view from Category 3.
 - ⁽²⁾Roll lengths and widths have a tolerance of ± 1 %.
 - GSE UltraFlex is available in rolls weighing approximately 4,000 lb.
 - All GSE geomembranes have dimensional stability of ± 2 % when tested according to ASTM D 1204 and LTB of $< -77^{\circ}\text{C}$ when tested according to ASTM D 746.
 - *Modified.



**MATERIAL SPECIFICATIONS PLAN
WATERBRIDGE STATELINE, LLC.
NORTH BRININSTOOL RECYCLE FACILITY
LEA COUNTY, NEW MEXICO
025078-00**

| TALBE 1.7: GSE ULTRAFLEX WHITE SMOOTH GEOMEMBRANE | | | | | | |
|---|---|-------------|-----------------------|---------------------|---------------------|---------------------|
| Tested Property | Test Method | Frequency | Minimum Average Value | | | |
| | | | 40 mil | 60 mil | 80 mil | 100 mil |
| Thickness, mil Lowest individual reading | ASTM D 5199 | every roll | 40 36 | 60 54 | 80 72 | 100 90 |
| Density, g/cm ³ (max.) | ASTM D 1505 | 200,000 lbs | 0.939 | 0.939 | 0.939 | 0.939 |
| Tensile Properties (each direction) Strength at Break, lb/in-width Elongation at Break, % | ASTM D 6693, Type IV Dumbbell, 2 ipm G.L. 2.0 in | 20,000 lbs | 152 800 | 228 800 | 304 800 | 380 800 |
| Tear Resistance, lb | ASTM D 1004 | 45,000 lbs | 22 | 33 | 44 | 55 |
| Puncture Resistance, lb | ASTM D 4833 | 45,000 lbs | 56 | 84 | 112 | 140 |
| Carbon Black Content ⁽¹⁾ , % (Range) | ASTM D 1603*/4218 | 20,000 lbs | 2.0 - 3.0 | 2.0 - 3.0 | 2.0 - 3.0 | 2.0 - 3.0 |
| Carbon Black Dispersion | ASTM D 5596 | 45,000 lbs | Note ⁽²⁾ | Note ⁽²⁾ | Note ⁽²⁾ | Note ⁽²⁾ |
| Oxidative Induction Time, min | ASTM D 3895, 200°C; O ₂ , 1 atm | 200,000 lbs | >100 | >100 | >100 | >100 |
| Typical Roll Dimensions | | | | | | |
| Roll Length ⁽³⁾ , ft | | | 870 | 560 | 430 | 340 |
| Roll Width ⁽³⁾ , ft | | | 22.5 | 22.5 | 22.5 | 22.5 |
| Roll Area, ft ² | | | 19,575 | 12,600 | 9,675 | 7,650 |

- NOTES:
 - ⁽¹⁾GSE UltraFlex White Smooth may have an overall ash content greater than 3.0% due to the white layer. These values apply to the black layer only.
 - ⁽²⁾ Dispersion only applies to near spherical agglomerates. 9 of 10 views shall be Category 1 or 2. No more than 1 view from Category 3.
 - ⁽³⁾Roll lengths and widths have a tolerance of $\pm 1\%$.
 - GSE UltraFlex White Smooth is available in rolls weighing approximately 4,000 lb.
 - All GSE geomembranes have dimensional stability of $\pm 2\%$ when tested according to ASTM D 1204 and LTB of $< -77^{\circ}\text{C}$ when tested according to ASTM D 746.
 - *Modified.



**MATERIAL SPECIFICATIONS PLAN
WATERBRIDGE STATELINE, LLC.
NORTH BRININSTOOL RECYCLE FACILITY
LEA COUNTY, NEW MEXICO
025078-00**

| TABLE 1.8: GSE ULTRAFLEX LEAK LOCATION LINER SMOOTH GEOMEMBRANE | | | | | | |
|---|--|-------------|-----------------------|---------------------|---------------------|---------------------|
| Tested Property | Test Method | Frequency | Minimum Average Value | | | |
| | | | 40 mil | 60 mil | 80 mil | 100 mil |
| Thickness, mil Lowest individual reading | ASTM D 5199 | every roll | 40 36 | 60 54 | 80 72 | 100 90 |
| Density, g/cm ³ (max.) | ASTM D 1505 | 200,000 lbs | 0.939 | 0.939 | 0.939 | 0.939 |
| Tensile Properties (each direction) Strength at Break, lb/in-width Elongation at Break, % | ASTM D 6693, Type IV Dumbbell, 2 ipm G.L. 2.0 in | 20,000 lbs | 152 800 | 228 800 | 304 800 | 380 800 |
| Tear Resistance, lb | ASTM D 1004 | 45,000 lbs | 22 | 33 | 44 | 55 |
| Puncture Resistance, lb | ASTM D 4833 | 45,000 lbs | 56 | 84 | 112 | 140 |
| Carbon Black Content ⁽¹⁾ , % (Range) | ASTM D 1603*/4218 | 20,000 lbs | 2.0 - 3.0 | 2.0 - 3.0 | 2.0 - 3.0 | 2.0 - 3.0 |
| Carbon Black Dispersion | ASTM D 5596 | 45,000 lbs | Note ⁽²⁾ | Note ⁽²⁾ | Note ⁽²⁾ | Note ⁽²⁾ |
| Oxidative Induction Time, min | ASTM D 3895, 200°C; O ₂ , 1 atm | 200,000 lbs | >100 | >100 | >100 | >100 |
| Typical Roll Dimensions | | | | | | |
| Roll Length ⁽³⁾ , ft | | | 870 | 560 | 430 | 340 |
| Roll Width ⁽³⁾ , ft | | | 22.5 | 22.5 | 22.5 | 22.5 |
| Roll Area, ft ² | | | 19,575 | 12,600 | 9,675 | 7,650 |

- NOTES:
 - ⁽¹⁾GSE UltraFlex Leak Location Smooth may have an overall ash content greater than 3.0% due to the conductive layer. These values apply to the non-conductive black layer only.
 - ⁽²⁾Dispersion only applies to near spherical agglomerates. 9 of 10 views shall be Category 1 or 2. No more than 1 view from Category 3.
 - ⁽³⁾Roll lengths and widths have a tolerance of $\pm 1\%$.
 - GSE UltraFlex Leak Location Smooth is available in rolls weighing approximately 4,000 lb.
 - All GSE geomembranes have dimensional stability of $\pm 2\%$ when tested according to ASTM D 1204 and LTB of $< -77^{\circ}\text{C}$ when tested according to ASTM D 746.
 - *Modified.



**MATERIAL SPECIFICATIONS PLAN
WATERBRIDGE STATELINE, LLC.
NORTH BRININSTOOL RECYCLE FACILITY
LEA COUNTY, NEW MEXICO
025078-00**

| TABLE 1.9: GSE ULTRAFLEX LEAK LOCATION LINER WHITE SMOOTH GEOMEMBRANE | | | | | | |
|--|---|----------------|-----------------------|---------------------|---------------------|---------------------|
| Tested Property | Test Method | Frequency | Minimum Average Value | | | |
| | | | 40 mil | 60 mil | 80 mil | 100 mil |
| Thickness, mil Lowest individual reading | ASTM D 5199 | every roll | 40 36 | 60 54 | 80 72 | 100 90 |
| Density, g/cm ³ (max.) | ASTM D 1505 | 200,000 lbs | 0.939 | 0.939 | 0.939 | 0.939 |
| Tensile Properties (each direction) Strength at Break, lb/in- width Elongation at Break, % | ASTM D 6693, Type IV Dumbbell, 2 ipm G.L. 2.0 in | 20,000 lbs | 152 800 | 228 800 | 304 800 | 380 800 |
| Tear Resistance, lb | ASTM D 1004 | 45,000 lbs | 22 | 33 | 44 | 55 |
| Puncture Resistance, lb | ASTM D 4833 | 45,000 lbs | 56 | 84 | 112 | 140 |
| Carbon Black Content ⁽¹⁾ , % (Range) | ASTM D 1603*/4218 | 20,000 lbs | 2.0 - 3.0 | 2.0 - 3.0 | 2.0 - 3.0 | 2.0 - 3.0 |
| Carbon Black Dispersion | ASTM D 5596 | 45,000 lbs | Note ⁽²⁾ | Note ⁽²⁾ | Note ⁽²⁾ | Note ⁽²⁾ |
| Oxidative Induction Time, min | ASTM D 3895, 200°C; O ₂ , 1 atm | 200,000 lbs | >100 | >100 | >100 | >100 |
| Typical Roll Dimensions | | | | | | |
| Roll Length ⁽³⁾ , ft | | | 870 | 560 | 430 | 340 |
| Roll Width ⁽³⁾ , ft | | | 22.5 | 22.5 | 22.5 | 22.5 |
| Roll Area, ft ² | | | 19,575 | 12,600 | 9,675 | 7,650 |

- NOTES:
 - ⁽¹⁾GSE UltraFlex Leak Location White Smooth may have an overall ash content greater than 3.0% due to the white and conductive layers. These values apply to the non-conductive black layer only.
 - ⁽²⁾Dispersion only applies to near spherical agglomerates. 9 of 10 views shall be Category 1 or 2. No more than 1 view from Category 3.
 - ⁽³⁾Roll lengths and widths have a tolerance of $\pm 1\%$.
 - GSE UltraFlex Leak Location White Smooth is available in rolls weighing approximately 4,000 lb.
 - All GSE geomembranes have dimensional stability of $\pm 2\%$ when tested according to ASTM D 1204 and LTB of $< -77^{\circ}\text{C}$ when tested according to ASTM D 746.
 - *Modified.


WATERBRIDGE

MATERIAL SPECIFICATIONS PLAN
WATERBRIDGE STATELINE, LLC.
NORTH BRININSTOOL RECYCLE FACILITY
LEA COUNTY, NEW MEXICO
025078-00

- E. Textured surfaced geomembrane shall meet the requirements shown in the following data sheets below.
1. *Table 2.1* for Black coextruded textured HDPE
 2. *Table 2.2* for Green coextruded textured HDPE
 3. *Table 2.3* for White coextruded textured HDPE
 - a. The geomembrane shall be a white-surfaced, coextruded geomembrane.
 - b. The white surface shall be installed upwards.
 4. *Table 2.4* for Leak Location Liner coextruded textured HDPE
 - a. The geomembrane shall be a white-surfaced, coextruded geomembrane.
 - b. The white surface shall be installed upwards.
 5. *Table 2.5* for White Leak Location Liner coextruded textured HDPE
 - a. The geomembrane shall be a white-surfaced, coextruded geomembrane.
 - b. The white surface shall be installed upwards.
 6. *Table 2.6* for Black coextruded textured LLDPE
 7. *Table 2.7* for White coextruded textured LLDPE
 - a. The geomembrane shall be a white-surfaced, coextruded geomembrane.
 - b. The white surface shall be installed upwards.
 8. *Table 2.8* for Leak Location Liner coextruded textured LLDPE
 - a. The geomembrane shall have a coextruded, electrically conductive layer.
 - b. The conductive layer is installed downward.
 - c. Electrical testing shall be performed after liner installation by the INSTALLER.
 9. *Table 2.9* for White Leak Location Liner coextruded textured LLDPE
 - a. The geomembrane shall be a white-surfaced, coextruded geomembrane.
 - b. The white surface shall be installed upwards.
 - c. The geomembrane shall have a coextruded, electrically conductive layer.
 - d. The conductive layer is installed downward.
 - e. Electrical testing shall be performed after liner installation by the INSTALLER.



MATERIAL SPECIFICATIONS PLAN
WATERBRIDGE STATELINE, LLC.
NORTH BRININSTOOL RECYCLE FACILITY
LEA COUNTY, NEW MEXICO
025078-00

| TABLE 2.1: GSE HD TEXTURED GEOMEMBRANE | | | | | | | |
|---|--|-------------|------------------------|-----------------------|------------------------|-------------------------|-------------------------|
| Tested Property | Test Method | Frequency | Minimum Average Values | | | | |
| | | | 30 mil | 40 mil | 60 mil | 80 mil | 100 mil |
| Thickness, mil Lowest individual reading | ASTM D 5994 | every roll | 30 27 | 40 36 | 60 54 | 80 72 | 100 90 |
| Density, g/cm ³ , (min.) | ASTM D 1505 | 200,000 lbs | 0.940 | 0.940 | 0.940 | 0.940 | 0.940 |
| Tensile Properties (each direction) Strength at Break, lb/in-width Strength at Yield, lb/in-width Elongation at Break, % Elongation at Yield, % | ASTM D 6693, Type IV Dumbbell, 2 ipm G.L. 2.0 in G.L. 1.3 in | 20,000 lbs | 45 63 100 12 | 60 84 100 12 | 90 126 100 12 | 120 168 100 12 | 150 210 100 12 |
| Tear Resistance, lb | ASTM D 1004 | 45,000 lbs | 21 | 28 | 42 | 56 | 70 |
| Puncture Resistance, lb | ASTM D 4833 | 45,000 lbs | 45 | 60 | 90 | 120 | 150 |
| Carbon Black Content, % (Range) | ASTM D 1603*/4218 | 20,000 lbs | 2.0 - 3.0 | 2.0 - 3.0 | 2.0 - 3.0 | 2.0 - 3.0 | 2.0 - 3.0 |
| Carbon Black Dispersion | ASTM D 5596 | 45,000 lbs | Note ⁽¹⁾ | Note ⁽¹⁾ | Note ⁽¹⁾ | Note ⁽¹⁾ | Note ⁽¹⁾ |
| Asperity Height, mil | ASTM D 7466 | second roll | 16 | 18 | 18 | 18 | 18 |
| Notch Constant Tensile Load ⁽²⁾ , hr | ASTM D 5397, Appendix | 200,000 lbs | 300 | 300 | 300 | 300 | 300 |
| Oxidative Induction Time, min | ASTM D 3895, 200°C; O ₂ , 1 atm | 200,000 lbs | >100 | >100 | >100 | >100 | >100 |
| Typical Roll Dimensions | | | | | | | |
| Roll Length ⁽³⁾ , ft | Double-Sided | Textured | 830 | 700 | 520 | 400 | 330 |
| | Single-Sided | Textured | 1,010 | 780 | 540 | 410 | 330 |
| Roll Width ⁽³⁾ , ft | | | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 |
| Roll Area, ft ² | Double-Sided | Textured | 18,675 | 15,750 | 11,700 | 9,000 | 7,425 |
| | Single-Sided | Textured | 22,725 | 17,550 | 12,150 | 9,225 | 7,425 |



MATERIAL SPECIFICATIONS PLAN
WATERBRIDGE STATELINE, LLC.
NORTH BRININSTOOL RECYCLE FACILITY
LEA COUNTY, NEW MEXICO
025078-00

- NOTES:
 - ⁽¹⁾Dispersion only applies to near spherical agglomerates. 9 of 10 views shall be Category 1 or 2. No more than 1 view from Category 3.
 - ⁽²⁾NCTL for GSE HD Textured is conducted on representative smooth geomembrane samples.
 - ⁽³⁾Roll lengths and widths have a tolerance of $\pm 1\%$.
 - GSE HD Textured is available in rolls weighing approximately 4,000 lb.
 - All GSE geomembranes have dimensional stability of $\pm 2\%$ when tested according to ASTM D1204 and LTB of $< -77^{\circ}\text{C}$ when tested according to ASTM D 746.
 - *Modified.

| TABLE 2.2 GSE GREEN TEXTURED GEOMEMBRANE | | | | | | | |
|---|--|-------------|------------------------|-----------------------|------------------------|-------------------------|-------------------------|
| Tested Property | Test Method | Frequency | Minimum Average Values | | | | |
| | | | 30 mil | 40 mil | 60 mil | 80 mil | 100 mil |
| Thickness, mil Lowest individual reading | ASTM D 5994 | every roll | 30 27 | 40 36 | 60 54 | 80 72 | 100 90 |
| Density, g/cm ³ , (min.) | ASTM D 1505 | 200,000 lbs | 0.940 | 0.940 | 0.940 | 0.940 | 0.940 |
| Tensile Properties (each direction) Strength at Break, lb/in-width Strength at Yield, lb/in-width Elongation at Break, % Elongation at Yield, % | ASTM D 6693, Type IV Dumbbell, 2 ipm G.L. 2.0 in G.L. 1.3 in | 20,000 lbs | 45 63 100 12 | 60 84 100 12 | 90 126 100 12 | 120 168 100 12 | 150 210 100 12 |
| Tear Resistance, lb | ASTM D 1004 | 45,000 lbs | 21 | 28 | 42 | 56 | 70 |
| Puncture Resistance, lb | ASTM D 4833 | 45,000 lbs | 45 | 60 | 90 | 120 | 150 |
| Carbon Black Content ⁽¹⁾ , % (Range) | ASTM D 1603*/4218 | 20,000 lbs | 2.0 - 3.0 | 2.0 - 3.0 | 2.0 - 3.0 | 2.0 - 3.0 | 2.0 - 3.0 |
| Carbon Black Dispersion | ASTM D 5596 | 45,000 lbs | Note ⁽²⁾ | Note ⁽²⁾ | Note ⁽²⁾ | Note ⁽²⁾ | Note ⁽²⁾ |
| Asperity Height, mil | ASTM D 7466 | second roll | 16 | 18 | 18 | 18 | 18 |
| Notch Constant Tensile Load ⁽³⁾ , hr | ASTM D 5397, Appendix | 200,000 lbs | 300 | 300 | 300 | 300 | 300 |
| Oxidative Induction Time, min | ASTM D 3895, 200°C; O ₂ , 1 atm | 200,000 lbs | >100 | >100 | >100 | >100 | >100 |
| Typical Roll Dimensions | | | | | | | |
| Roll Length ⁽⁴⁾ , ft | Double-Sided Single-Sided Textured | Textured | 830 1,010 | 700 780 | 520 540 | 400 410 | 330 330 |
| Roll Width ⁽⁴⁾ , ft | | | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 |



MATERIAL SPECIFICATIONS PLAN
WATERBRIDGE STATELINE, LLC.
NORTH BRININSTOOL RECYCLE FACILITY
LEA COUNTY, NEW MEXICO
025078-00

| | | | | | | | |
|----------------------------|---------------------------------------|----------|--------|--------|--------|-------|-------|
| Roll Area, ft ² | Double-Sided Single-Sided Textured | Textured | 18,675 | 15,750 | 11,700 | 9,000 | 7,425 |
| | | | 22,725 | 17,550 | 12,150 | 9,225 | 7,425 |

- NOTES:
 - ⁽¹⁾GSE Green may have an overall ash content greater than 3.0% due to the green layer. These values apply to the black layer only.
 - ⁽²⁾Dispersion only applies to near spherical agglomerates. 9 of 10 views shall be Category 1 or 2. No more than 1 view from Category 3.
 - ⁽³⁾NCTL for GSE Green Textured is conducted on representative smooth geomembrane samples.
 - ⁽⁴⁾Roll lengths and widths have a tolerance of $\pm 1\%$.
 - GSE Green Textured is available in rolls weighing approximately 4,000 lb.
 - All GSE geomembranes have dimensional stability of $\pm 2\%$ when tested according to ASTM D 1204 and LTB of $< -77^{\circ}\text{C}$ when tested according to ASTM D 746.
 - *Modified.



MATERIAL SPECIFICATIONS PLAN
WATERBRIDGE STATELINE, LLC.
NORTH BRININSTOOL RECYCLE FACILITY
LEA COUNTY, NEW MEXICO
025078-00

| TABLE 2.3: GSE WHITE TEXTURED GEOMEMBRANE | | | | | | | |
|---|--|-------------|------------------------|-----------------------|------------------------|-------------------------|-------------------------|
| Tested Property | Test Method | Frequency | Minimum Average Values | | | | |
| | | | 30 mil | 40 mil | 60 mil | 80 mil | 100 mil |
| Thickness, mil Lowest individual reading | ASTM D 5994 | every roll | 30 27 | 40 36 | 60 54 | 80 72 | 100 90 |
| Density, g/cm ³ , (min.) | ASTM D 1505 | 200,000 lbs | 0.940 | 0.940 | 0.940 | 0.940 | 0.940 |
| Tensile Properties (each direction) Strength at Break, lb/in-width Strength at Yield, lb/in-width Elongation at Break, % Elongation at Yield, % | ASTM D 6693, Type IV Dumbbell, 2 ipm G.L. 2.0 in G.L. 1.3 in | 20,000 lbs | 45 63 100 12 | 60 84 100 12 | 90 126 100 12 | 120 168 100 12 | 150 210 100 12 |
| Tear Resistance, lb | ASTM D 1004 | 45,000 lbs | 21 | 28 | 42 | 56 | 70 |
| Puncture Resistance, lb | ASTM D 4833 | 45,000 lbs | 45 | 60 | 90 | 120 | 150 |
| Carbon Black Content ⁽¹⁾ , % (Range) | ASTM D 1603*/4218 | 20,000 lbs | 2.0 - 3.0 | 2.0 - 3.0 | 2.0 - 3.0 | 2.0 - 3.0 | 2.0 - 3.0 |
| Carbon Black Dispersion | ASTM D 5596 | 45,000 lbs | Note ⁽²⁾ | Note ⁽²⁾ | Note ⁽²⁾ | Note ⁽²⁾ | Note ⁽²⁾ |
| Asperity Height, mil | ASTM D 7466 | second roll | 16 | 18 | 18 | 18 | 18 |
| Notch Constant Tensile Load ⁽³⁾ , hr | ASTM D 5397, Appendix | 200,000 lbs | 300 | 300 | 300 | 300 | 300 |
| Oxidative Induction Time, min | ASTM D 3895, 200°C; O ₂ , 1 atm | 200,000 lbs | >100 | >100 | >100 | >100 | >100 |
| Typical Roll Dimensions | | | | | | | |
| Roll Length ⁽⁴⁾ , ft | Double-Sided Textured Single-Sided Textured | | 830 1,010 | 700 780 | 520 540 | 400 410 | 330 330 |
| Roll Width ⁽⁴⁾ , ft | | | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 |
| Roll Area, ft ² | Double-Sided Textured Single-Sided Textured | | 18,675 22,725 | 15,750 17,550 | 11,700 12,150 | 9,000 9,225 | 7,425 7,425 |



**MATERIAL SPECIFICATIONS PLAN
WATERBRIDGE STATELINE, LLC.
NORTH BRININSTOOL RECYCLE FACILITY
LEA COUNTY, NEW MEXICO
025078-00**

- NOTES:
 - ⁽¹⁾GSE White may have an overall ash content greater than 3.0% due to the white layer. These values apply to the black layer only.
 - ⁽²⁾Dispersion only applies to near spherical agglomerates. 9 of 10 views shall be Category 1 or 2. No more than 1 view from Category 3.
 - ⁽³⁾NCTL for GSE White Textured is conducted on representative smooth geomembrane samples.
 - ⁽⁴⁾Roll lengths and widths have a tolerance of $\pm 1\%$.
 - GSE White Textured is available in rolls weighing approximately 4,000 lb.
 - All GSE geomembranes have dimensional stability of $\pm 2\%$ when tested according to ASTM D 1204 and LTB of $< -77^{\circ}\text{C}$ when tested according to ASTM D 746.
 - *Modified.



**MATERIAL SPECIFICATIONS PLAN
WATERBRIDGE STATELINE, LLC.
NORTH BRININSTOOL RECYCLE FACILITY
LEA COUNTY, NEW MEXICO
025078-00**

| TABLE 2.4: GSE LEAK LOCATION LINER TEXTURED GEOMEMBRANE | | | | | | |
|--|--|----------------|------------------------|------------------------|-------------------------|-------------------------|
| Tested Property | Test Method | Frequency | Minimum Average Values | | | |
| | | | 40 mil | 60 mil | 80 mil | 100 mil |
| Thickness, mil Lowest individual reading | ASTM D 5994 | every roll | 40 36 | 60 54 | 80 72 | 100 90 |
| Density, g/cm ³ , (min.) | ASTM D 1505 | 200,000 lbs | 0.940 | 0.940 | 0.940 | 0.940 |
| Tensile Properties (each direction) Strength at Break, lb/in- width Strength at Yield, lb/in- width Elongation at Break, % Elongation at Yield, % | ASTM D 6693, Type IV Dumbbell, 2 ipm G.L. 2.0 in G.L. 1.3 in | 20,000 lbs | 60 84 100 12 | 90 126 100 12 | 120 168 100 12 | 150 210 100 12 |
| Tear Resistance, lb | ASTM D 1004 | 45,000 lbs | 28 | 42 | 56 | 70 |
| Puncture Resistance, lb | ASTM D 4833 | 45,000 lbs | 60 | 90 | 120 | 150 |
| Carbon Black Content ⁽¹⁾ , % (Range) | ASTM D 1603*/4218 | 20,000 lbs | 2.0 - 3.0 | 2.0 - 3.0 | 2.0 - 3.0 | 2.0 - 3.0 |
| Carbon Black Dispersion | ASTM D 5596 | 45,000 lbs | Note ⁽²⁾ | Note ⁽²⁾ | Note ⁽²⁾ | Note ⁽²⁾ |
| Asperity Height, mil | ASTM D 7466 | second roll | 18 | 18 | 18 | 18 |
| Notch Constant Tensile Load ⁽³⁾ , hr | ASTM D 5397, Appendix | 200,000 lbs | 300 | 300 | 300 | 300 |
| Oxidative Induction Time, min | ASTM D 3895, 200°C; O ₂ , 1 atm | 200,000 lbs | >100 | >100 | >100 | >100 |
| Typical Roll Dimensions | | | | | | |
| Roll Length ⁽⁴⁾ , ft | Double-Sided | Textured | 700 | 520 | 400 | 330 |
| | Single-Sided | Textured | 780 | 540 | 410 | 330 |
| Roll Width ⁽⁴⁾ , ft | | | 22.5 | 22.5 | 22.5 | 22.5 |
| Roll Area, ft ² | Double-Sided | Textured | 15,750 | 11,700 | 9,000 | 7,425 |
| | Single-Sided | Textured | 17,550 | 12,150 | 9,225 | 7,425 |



**MATERIAL SPECIFICATIONS PLAN
WATERBRIDGE STATELINE, LLC.
NORTH BRININSTOOL RECYCLE FACILITY
LEA COUNTY, NEW MEXICO
025078-00**

-
- NOTES:
 - ⁽¹⁾GSE Leak Location may have an overall ash content greater than 3.0% due to the conductive layer. These values apply to the non-conductive layer only.
 - ⁽²⁾Dispersion only applies to near spherical agglomerates. 9 of 10 views shall be Category 1 or 2. No more than 1 view from Category 3.
 - ⁽³⁾NCTL for GSE Leak Location Textured is conducted on representative smooth geomembrane samples.
 - ⁽⁴⁾Roll lengths and widths have a tolerance of $\pm 1\%$.
 - GSE Leak Location Textured is available in rolls weighing approximately 4,000 lb.
 - All GSE geomembranes have dimensional stability of $\pm 2\%$ when tested according to ASTM D 1204 and LTB of $< -77^{\circ}\text{C}$ when tested according to ASTM D 746.
 - *Modified.



**MATERIAL SPECIFICATIONS PLAN
WATERBRIDGE STATELINE, LLC.
NORTH BRININSTOOL RECYCLE FACILITY
LEA COUNTY, NEW MEXICO
025078-00**

| TABLE 2.5: GSE LEAK LOCATION LINER WHITE TEXTURED GEOMEMBRANE | | | | | | |
|---|--|-------------|------------------------|---------------------|---------------------|---------------------|
| Tested Property | Test Method | Frequency | Minimum Average Values | | | |
| | | | 40 mil | 60 mil | 80 mil | 100 mil |
| Thickness, mil | ASTM D 5994 | every roll | 40 | 60 | 80 | 100 |
| Lowest individual reading | | | 36 | 54 | 72 | 90 |
| Density, g/cm ³ , (min.) | ASTM D 1505 | 200,000 lbs | 0.940 | 0.940 | 0.940 | 0.940 |
| Tensile Properties (each direction) | ASTM D 6693, Type IV | 20,000 lbs | | | | |
| Strength at Break, lb/in-width | Dumbbell, 2 ipm | | 60 | 90 | 120 | 150 |
| Strength at Yield, lb/in-width | | | 84 | 126 | 168 | 210 |
| Elongation at Break, % | G.L. 2.0 in | | 100 | 100 | 100 | 100 |
| Elongation at Yield, % | G.L. 1.3 in | | 12 | 12 | 12 | 12 |
| Tear Resistance, lb | ASTM D 1004 | 45,000 lbs | 28 | 42 | 56 | 70 |
| Puncture Resistance, lb | ASTM D 4833 | 45,000 lbs | 60 | 90 | 120 | 150 |
| Carbon Black Content ⁽¹⁾ , % (Range) | ASTM D 1603*/4218 | 20,000 lbs | 2.0 - 3.0 | 2.0 - 3.0 | 2.0 - 3.0 | 2.0 - 3.0 |
| Carbon Black Dispersion | ASTM D 5596 | 45,000 lbs | Note ⁽²⁾ | Note ⁽²⁾ | Note ⁽²⁾ | Note ⁽²⁾ |
| Asperity Height, mil | ASTM D 7466 | second roll | 18 | 18 | 18 | 18 |
| Notch Constant Tensile Load ⁽²⁾ , hr | ASTM D 5397, Appendix | 200,000 lbs | 300 | 300 | 300 | 300 |
| Oxidative Induction Time, min | ASTM D 3895, 200°C; O ₂ , 1 atm | 200,000 lbs | >100 | >100 | >100 | >100 |
| Typical Roll Dimensions | | | | | | |
| Roll Length ⁽⁴⁾ , ft | Double-Sided | Textured | 700 | 520 | 400 | 330 |
| | Single-Sided Textured | | 780 | 540 | 410 | 330 |
| Roll Width ⁽⁴⁾ , ft | | | 22.5 | 22.5 | 22.5 | 22.5 |
| Roll Area, ft ² | Double-Sided | Textured | 15,750 | 11,700 | 9,000 | 7,425 |
| | Single-Sided Textured | | 17,550 | 12,150 | 9,225 | 7,425 |



MATERIAL SPECIFICATIONS PLAN
WATERBRIDGE STATELINE, LLC.
NORTH BRININSTOOL RECYCLE FACILITY
LEA COUNTY, NEW MEXICO
025078-00

- NOTES:
 - ⁽¹⁾GSE Leak Location White may have an overall ash content greater than 3.0% due to the conductive and white layers. These values apply to the non-conductive black layer only.
 - ⁽²⁾Dispersion only applies to near spherical agglomerates. 9 of 10 views shall be Category 1 or 2. No more than 1 view from Category 3.
 - ⁽³⁾NCTL for GSE Leak Location White Textured is conducted on representative smooth geomembrane samples.
 - ⁽⁴⁾Roll lengths and widths have a tolerance of $\pm 1\%$.
 - GSE Leak Location White Textured is available in rolls weighing approximately 4,000 lb.
 - All GSE geomembranes have dimensional stability of $\pm 2\%$ when tested according to ASTM D 1204 and LTB of $< -77^{\circ}\text{C}$ when tested according to ASTM D 746.
 - *Modified.

| TABLE 2.6: GSE ULTRAFLEX TEXTURED GEOMEMBRANE | | | | | | |
|---|--|-------------|------------------------|---------------------|---------------------|---------------------|
| Tested Property | Test Method | Frequency | Minimum Average Values | | | |
| | | | 40 mil | 60 mil | 80 mil | 100 mil |
| Thickness, mil Lowest individual reading | ASTM D 5199 | every roll | 40 36 | 60 54 | 80 72 | 100 90 |
| Density, g/cm ³ (max.) | ASTM D 1505 | 200,000 lbs | 0.939 | 0.939 | 0.939 | 0.939 |
| Tensile Properties (each direction) Strength at Break, lb/in-width Elongation at Break, % | ASTM D 6693, Type IV Dumbbell, 2 ipm G.L. 2.0 in | 20,000 lbs | 60 250 | 90 250 | 120 250 | 150 250 |
| Tear Resistance, lb | ASTM D 1004 | 45,000 lbs | 22 | 33 | 44 | 55 |
| Puncture Resistance, lb | ASTM D 4833 | 45,000 lbs | 44 | 66 | 88 | 110 |
| Carbon Black Content, % (Range) | ASTM D 1603*/4218 | 20,000 lbs | 2.0 - 3.0 | 2.0 - 3.0 | 2.0 - 3.0 | 2.0 - 3.0 |
| Carbon Black Dispersion | ASTM D 5596 | 45,000 lbs | Note ⁽¹⁾ | Note ⁽¹⁾ | Note ⁽¹⁾ | Note ⁽¹⁾ |
| Asperity Height, mil | ASTM D 7466 | second roll | 18 | 18 | 18 | 18 |
| Oxidative Induction Time, min | ASTM D 3895, 200°C; O ₂ , 1 atm | 200,000 lbs | >100 | >100 | >100 | >100 |
| Typical Roll Dimensions | | | | | | |
| Roll Length ⁽²⁾ , ft | Double-Sided Textured Single-Sided Textured | | 700 650 | 520 420 | 400 320 | 330 250 |
| Roll Width ⁽²⁾ , ft | | | 22.5 | 22.5 | 22.5 | 22.5 |
| Roll Area, ft ² | Double-Sided Textured Single-Sided Textured | | 15,750 14,625 | 11,700 9,450 | 9,000 7,200 | 7,425 5,625 |



**MATERIAL SPECIFICATIONS PLAN
WATERBRIDGE STATELINE, LLC.
NORTH BRININSTOOL RECYCLE FACILITY
LEA COUNTY, NEW MEXICO
025078-00**

-
- NOTES:
 - ⁽¹⁾Dispersion only applies to near spherical agglomerates. 9 of 10 views shall be Category 1 or 2. No more than 1 view from Category 3.
 - ⁽²⁾Roll lengths and widths have a tolerance of $\pm 1\%$.
 - GSE UltraFlex Textured is available in rolls weighing approximately 4,000 lb.
 - All GSE geomembranes have dimensional stability of $\pm 2\%$ when tested according to ASTM D 1204 and LTB of $< -77^{\circ}\text{C}$ when tested according to ASTM D 746.
 - *Modified.


WATERBRIDGE

**MATERIAL SPECIFICATIONS PLAN
WATERBRIDGE STATELINE, LLC.
NORTH BRININSTOOL RECYCLE FACILITY
LEA COUNTY, NEW MEXICO
025078-00**

| TABLE 2.7: GSE ULTRAFLEX WHITE TEXTURED GEOMEMBRANE | | | | | | |
|---|---|-------------|------------------------|---------------------|---------------------|---------------------|
| Tested Property | Test Method | Frequency | Minimum Average Values | | | |
| | | | 40 mil | 60 mil | 80 mil | 100 mil |
| Thickness, mil Lowest individual reading | ASTM D 5199 | every roll | 40 36 | 60 54 | 80 72 | 100 90 |
| Density, g/cm ³ (max.) | ASTM D 1505 | 200,000 lbs | 0.939 | 0.939 | 0.939 | 0.939 |
| Tensile Properties (each direction) Strength at Break, lb/in-width Elongation at Break, % | ASTM D 6693, Type IV Dumbbell, 2 ipm G.L. 2.0 in | 20,000 lbs | 60 250 | 90 250 | 120 250 | 150 250 |
| Tear Resistance, lb | ASTM D 1004 | 45,000 lbs | 22 | 33 | 44 | 55 |
| Puncture Resistance, lb | ASTM D 4833 | 45,000 lbs | 44 | 66 | 88 | 110 |
| Carbon Black Content ⁽¹⁾ , % (Range) | ASTM D 1603*/4218 | 20,000 lbs | 2.0 - 3.0 | 2.0 - 3.0 | 2.0 - 3.0 | 2.0 - 3.0 |
| Carbon Black Dispersion | ASTM D 5596 | 45,000 lbs | Note ⁽²⁾ | Note ⁽²⁾ | Note ⁽²⁾ | Note ⁽²⁾ |
| Asperity Height, mil | ASTM D 7466 | second roll | 18 | 18 | 18 | 18 |
| Oxidative Induction Time, min | ASTM D 3895, 200°C; O ₂ , 1 atm | 200,000 lbs | >100 | >100 | >100 | >100 |
| Typical Roll Dimensions | | | | | | |
| Roll Length ⁽³⁾ , ft | Double-Sided | Textured | 700 | 520 | 400 | 330 |
| | Single-Sided | Textured | 650 | 420 | 320 | 250 |
| Roll Width ⁽³⁾ , ft | | | 22.5 | 22.5 | 22.5 | 22.5 |
| Roll Area, ft ² | Double-Sided | Textured | 15,750 | 11,700 | 9,000 | 7,425 |
| | Single-Sided | Textured | 14,625 | 9,450 | 7,200 | 5,625 |

• NOTES:

- ⁽¹⁾GSE UltraFlex White Textured may have an overall ash content greater than 3.0% due to the white layer. These values apply to the black layer only.
- ⁽²⁾Dispersion only applies to near spherical agglomerates. 9 of 10 views shall be Category 1 or 2. No more than 1 view from Category 3.
- ⁽³⁾Roll lengths and widths have a tolerance of $\pm 1\%$.
- GSE UltraFlex White Textured is available in rolls weighing approximately 4,000 lb.
- All GSE geomembranes have dimensional stability of $\pm 2\%$ when tested according to ASTM D 1204 and LTB of $< -77^{\circ}\text{C}$ when tested according to ASTM D 746.
- *Modified.


WATERBRIDGE

**MATERIAL SPECIFICATIONS PLAN
WATERBRIDGE STATELINE, LLC.
NORTH BRININSTOOL RECYCLE FACILITY
LEA COUNTY, NEW MEXICO
025078-00**

| TABLE 2.8: GSE ULTRAFLEX LEAK LOCATION TEXTURED GEOMEMBRANE | | | | | | |
|---|--|-------------|------------------------|---------------------|---------------------|---------------------|
| Tested Property | Test Method | Frequency | Minimum Average Values | | | |
| | | | 40 mil | 60 mil | 80 mil | 100 mil |
| Thickness, mil Lowest individual reading | ASTM D 5199 | every roll | 40 36 | 60 54 | 80 72 | 100 90 |
| Density, g/cm ³ (max.) | ASTM D 1505 | 200,000 lbs | 0.939 | 0.939 | 0.939 | 0.939 |
| Tensile Properties (each direction) Strength at Break, lb/in-width Elongation at Break, % | ASTM D 6693, Type IV Dumbbell, 2 ipm G.L. 2.0 in | 20,000 lbs | 60 250 | 90 250 | 120 250 | 150 250 |
| Tear Resistance, lb | ASTM D 1004 | 45,000 lbs | 22 | 33 | 44 | 55 |
| Puncture Resistance, lb | ASTM D 4833 | 45,000 lbs | 44 | 66 | 88 | 110 |
| Carbon Black Content ⁽¹⁾ , % (Range) | ASTM D 1603*/4218 | 20,000 lbs | 2.0 - 3.0 | 2.0 - 3.0 | 2.0 - 3.0 | 2.0 - 3.0 |
| Carbon Black Dispersion | ASTM D 5596 | 45,000 lbs | Note ⁽²⁾ | Note ⁽²⁾ | Note ⁽²⁾ | Note ⁽²⁾ |
| Asperity Height, mil | ASTM D 7466 | second roll | 18 | 18 | 18 | 18 |
| Oxidative Induction Time, min | ASTM D 3895, 200°C; O ₂ , 1 atm | 200,000 lbs | >100 | >100 | >100 | >100 |
| Typical Roll Dimensions | | | | | | |
| Roll Length ⁽³⁾ , ft | Double-Sided | Textured | 700 | 520 | 400 | 330 |
| | Single-Sided | Textured | 650 | 420 | 320 | 250 |
| Roll Width ⁽³⁾ , ft | | | 22.5 | 22.5 | 22.5 | 22.5 |
| Roll Area, ft ² | Double-Sided | Textured | 15,750 | 11,700 | 9,000 | 7,425 |
| | Single-Sided | Textured | 14,625 | 9,450 | 7,200 | 5,625 |

- NOTES:
 - ⁽¹⁾GSE UltraFlex Leak Location Textured may have an overall ash content greater than 3.0% due to the conductive layer. These values apply to the non-conductive black layer only.
 - ⁽²⁾Dispersion only applies to near spherical agglomerates. 9 of 10 views shall be Category 1 or 2. No more than 1 view from Category 3.
 - ⁽³⁾Roll lengths and widths have a tolerance of $\pm 1\%$.
 - GSE UltraFlex Leak Location Textured is available in rolls weighing approximately 4,000 lb.
 - All GSE geomembranes have dimensional stability of $\pm 2\%$ when tested according to ASTM D 1204 and LTb of $< -77^{\circ}\text{C}$ when tested according to ASTM D 746.
 - *Modified.



**MATERIAL SPECIFICATIONS PLAN
WATERBRIDGE STATELINE, LLC.
NORTH BRININSTOOL RECYCLE FACILITY
LEA COUNTY, NEW MEXICO
025078-00**

| TABLE 2.9: GSE ULTRAFLEX LEAK LOCATION WHITE TEXTURED GEOMEMBRANE | | | | | | |
|--|---|----------------|------------------------|---------------------|---------------------|---------------------|
| Tested Property | Test Method | Frequency | Minimum Average Values | | | |
| | | | 40 mil | 60 mil | 80 mil | 100 mil |
| Thickness, mil Lowest individual reading | ASTM D 5199 | every roll | 40 36 | 60 54 | 80 72 | 100 90 |
| Density, g/cm ³ (max.) | ASTM D 1505 | 200,000 lbs | 0.939 | 0.939 | 0.939 | 0.939 |
| Tensile Properties (each direction) Strength at Break, lb/in- width Elongation at Break, % | ASTM D 6693, Type IV Dumbbell, 2 ipm G.L. 2.0 in | 20,000 lbs | 60 250 | 90 250 | 120 250 | 150 250 |
| Tear Resistance, lb | ASTM D 1004 | 45,000 lbs | 22 | 33 | 44 | 55 |
| Puncture Resistance, lb | ASTM D 4833 | 45,000 lbs | 44 | 66 | 88 | 110 |
| Carbon Black Content ⁽¹⁾ , % (Range) | ASTM D 1603*/4218 | 20,000 lbs | 2.0 - 3.0 | 2.0 - 3.0 | 2.0 - 3.0 | 2.0 - 3.0 |
| Carbon Black Dispersion | ASTM D 5596 | 45,000 lbs | Note ⁽²⁾ | Note ⁽²⁾ | Note ⁽²⁾ | Note ⁽²⁾ |
| Asperity Height, mil | ASTM D 7466 | second roll | 18 | 18 | 18 | 18 |
| Oxidative Induction Time, min | ASTM D 3895, 200°C; O ₂ , 1 atm | 200,000 lbs | >100 | >100 | >100 | >100 |
| Typical Roll Dimensions | | | | | | |
| Roll Length ⁽³⁾ , ft | Double-Sided | Textured | 700 | 520 | 400 | 330 |
| | Single-Sided | Textured | 650 | 420 | 320 | 250 |
| Roll Width ⁽³⁾ , ft | | | 22.5 | 22.5 | 22.5 | 22.5 |
| Roll Area, ft ² | Double-Sided | Textured | 15,750 | 11,700 | 9,000 | 7,425 |
| | Single-Sided | Textured | 14,625 | 9,450 | 7,200 | 5,625 |

• NOTES:

- ⁽¹⁾GSE UltraFlex Leak Location White Textured may have an overall ash content greater than 3.0% due to the white and conductive layers. These values apply to the non-conductive black layer only.
- ⁽²⁾Dispersion only applies to near spherical agglomerates. 9 of 10 views shall be Category 1 or 2. No more than 1 view from Category 3.
- ⁽³⁾Roll lengths and widths have a tolerance of $\pm 1\%$.
- GSE UltraFlex Leak Location White Textured is available in rolls weighing approximately 4,000 lb.
- All GSE geomembranes have dimensional stability of $\pm 2\%$ when tested according to ASTM D 1204 and LTB of $< -77^{\circ}\text{C}$ when tested according to ASTM D 746.
- *Modified.



- F. Extrudate Rod or Bead
 - 1. Extrudate material shall be made from same type resin as the geomembrane.
 - 2. Additives shall be thoroughly dispersed.
 - 3. Materials shall be free of contamination by moisture or foreign matter.

1.9 EQUIPMENT

- A. Welding equipment and accessories shall meet the following requirements:
 - 1. Gauges showing temperatures in apparatus such as extrusion welder or fusion welder shall be present.
 - 2. An adequate number of welding apparatus shall be available to avoid delaying work.
 - 3. Power source must be capable of providing constant voltage under combined line load.

1.10 DEPLOYMENT

- A. Assign each panel a simple and logical identifying code. The coding system shall be subject to approval and shall be determined at the job site.
- B. Visually inspect the geomembrane during deployment for imperfections and mark faulty or suspect areas.
- C. Deployment of geomembrane panels shall be performed in a manner that will comply with the following guidelines:
 - 1. Geomembranes shall be installed according to site-specific specifications, and GSE Conductive should be installed with the Conductive layer down.
 - i. *Note: A spark tester or ohm meter can be used to determine Conductive layer.*
 - 2. Unroll geomembrane using methods that will not damage geomembrane and will protect underlying surface from damage (spreader bar, protected equipment bucket).
 - 3. Place ballast (commonly sandbags) on geomembrane which will not damage geomembrane to prevent wind uplift.
 - 4. Personnel walking on geomembrane shall not engage in activities or wear shoes that could damage it. Smoking will not be permitted on the geomembrane.
 - 5. Do not allow heavy vehicular traffic directly on geomembrane. Rubber-tired ATV's and trucks are acceptable if wheel contact is less than 8 psi.
 - 6. Protect geomembrane in areas of heavy traffic by placing protective cover over the geomembrane.
- D. Sufficient material (slack) shall be provided to allow for thermal expansion and contraction of the material.

1.11 FIELD SEAMING

- A. Seams shall meet the following requirements:

**WATERBRIDGE**

**MATERIAL SPECIFICATIONS PLAN
WATERBRIDGE STATELINE, LLC.
NORTH BRININSTOOL RECYCLE FACILITY
LEA COUNTY, NEW MEXICO
025078-00**

1. To the maximum extent possible, orient seams parallel to the line of the slope, i.e., down and not across slope.
 2. Minimize number of field seams in corners, odd-shaped geometric locations and outside corners.
 3. Slope seams (panels) shall extend a minimum of 5-ft beyond the grade break into the flat area.
 4. Use a sequential seam numbering system compatible with panel numbering system that is agreeable to the CONSULTANT and INSTALLER.
 5. Align seam overlaps consistent with the requirements of the welding equipment being used. A 6-in overlap is commonly suggested.
- B. During Welding Operations
1. Provide at least one Master Seamer who shall provide direct supervision over other welders as necessary.
- C. Extrusion Welding
1. Hot-air tack adjacent pieces together using procedures that do not damage the geomembrane.
 2. Clean geomembrane surfaces by disc grinder or equivalent.
 3. Purge welding apparatus of heat-degraded extrudate before welding.
- D. Hot Wedge Welding
1. Welding apparatus shall be a self-propelled device equipped with an electronic controller which displays applicable temperatures.
 2. Clean seam area of dust, mud, moisture and debris immediately ahead of hot wedge welder.
 3. Protect against moisture build-up between sheets.
- E. Trial Welds
1. Perform trial welds on geomembrane samples to verify welding equipment is operating properly.
 2. Make trial welds under the same surface and environmental conditions as the production welds, i.e., in contact with subgrade and similar ambient temperature.
 3. Minimum of two trial welds per day, per welding apparatus, one made prior to the start of work and one completed at mid shift.
 4. Cut four, one-inch wide by six-inch long test strips from the trial weld.
 5. Quantitatively test specimens for peel adhesion, and then for shear strength.
 6. Trial weld specimens shall pass when the results shown in the following tables for HDPE and LLDPE are achieved in both peel and shear test.



MATERIAL SPECIFICATIONS PLAN
WATERBRIDGE STATELINE, LLC.
NORTH BRININSTOOL RECYCLE FACILITY
LEA COUNTY, NEW MEXICO
025078-00

•

| TABLE 1.12.6A: MINIMUM WELD VALUES FOR HDPE GEOMEMBRANES | | | | | | | |
|--|-------------|----|----|-----|-----|-----|-----|
| Property | Test Method | 30 | 40 | 60 | 80 | 100 | 120 |
| Peel Strength (fusion), ppi | ASTM D 6392 | 49 | 65 | 98 | 130 | 162 | 196 |
| Peel Strength (extrusion), ppi | ASTM D 6392 | 39 | 52 | 78 | 104 | 130 | 157 |
| Shear Strength (fusion & ext.), ppi | ASTM D 6392 | 61 | 81 | 121 | 162 | 203 | 242 |

•

| TABLE 1.2.6B: MINIMUM WELD VALUES FOR LLDPE GEOMEMBRANES | | | | | | |
|--|-------------|----|----|----|-----|-----|
| Property | Test Method | 30 | 40 | 60 | 80 | 100 |
| Peel Strength (extrusion), ppi | ASTM D 6392 | 36 | 48 | 72 | 96 | 120 |
| Peel Strength (fusion), ppi | ASTM D 6392 | 38 | 50 | 75 | 100 | 125 |
| Shear Strength (fusion & ext.), ppi | ASTM D 6392 | 45 | 60 | 90 | 120 | 150 |

7. The break, when peel testing, occurs in the liner material itself, not through peel separation (FTB).
 8. The break is ductile.
 9. Repeat the trial weld, in its entirety, when any of the trial weld samples fail in either peel or shear.
 10. No welding equipment or welder shall be allowed to perform production welds until equipment and welders have successfully completed trial weld.
- F. Seaming shall not proceed when ambient air temperature or adverse weather conditions jeopardize the integrity of the liner installation. INSTALLER shall demonstrate that acceptable seaming can be performed by completing acceptable trial welds.
- G. Defects and Repairs
1. Examine all seams and non-seam areas of the geomembrane for defects, holes, blisters, undispersed raw materials, and any sign of contamination by foreign matter.
 2. Repair and non-destructively test each suspect location in both seam and non-seam areas. Do not cover geomembrane at locations that have been repaired until test results with passing values are available.



1.12 FIELD QUALITY ASSURANCE

- A. MANUFACTURER and INSTALLER shall participate in and conform to all terms and requirements of the Owner's quality assurance program. CONTRACTOR shall be responsible for assuring this participation.
- B. Quality assurance requirements are as specified in this Section and in the Field Installation Quality Assurance Manual if it is included in the contract.
- C. Field Testing
 - 1. Non-destructive testing may be carried out as the seaming progresses or at completion of all field seaming.
 - b. Vacuum Testing
 - 1) Shall be performed in accordance with ASTM D 5641, Standard Practice for Geomembrane Seam Evaluation by Vacuum Chamber.
 - b. Air Pressure Testing
 - 1) Shall be performed in accordance with ASTM D 5820, Standard Practice for Pressurized Air Channel Evaluation of Dual Seamed Geomembranes.
 - c. Spark Testing
 - 1. Shall be performed accordance with ASTM D 7240 Standard Practice for Leak Location using Geomembranes with an Insulating Layer in Intimate Contact with a Conductive Layer via Electrical Capacitance Technique (Conductive Geomembrane Spark Test).
 - d. Other approved methods.
 - 2. Destructive Testing (performed by CONSULTANT with assistance from INSTALLER)
 - b. Location and Frequency of Testing
 - 1) Collect destructive test samples at a frequency of one per every 500 lineal feet of seam length.
 - 2) Test locations will be determined after seaming.
 - 3) Exercise Method of Attributes as described by GRI GM-14 (Geosynthetic Research Institute, <http://www.geosynthetic-institute.org>) to minimize test samples taken.
 - c. Sampling Procedures are performed as follows:
 - 1) INSTALLER shall cut samples at locations designated by the CONSULTANT as the seaming progresses in order to obtain field laboratory test results before the geomembrane is covered.
 - 2) CONSULTANT will number each sample, and the location will be noted on the installation as-built.
 - a) Samples shall be 12-in wide by minimal length with the seam centered lengthwise.
 - b) Cut a 2-in wide strip from each end of the sample for field-testing.
 - c) Cut the remaining sample into two parts for distribution as follows:
 - d) One portion for INSTALLER, 12-in by 12-in



- e) One portion for the Third-Party laboratory, 12-in by 18-in
- f) Additional samples may be archived if required.
- 3) Destructive testing shall be performed in accordance with ASTM D 6392, Standard Test Method for Determining the Integrity of Non-Reinforced Geomembrane Seams Produced Using Thermo-Fusion Methods.
 - a) INSTALLER shall repair all holes in the geomembrane resulting from destructive sampling.
- 4) Repair and test the continuity of the repair in accordance with these Specifications.
- 3. Failed Seam Procedures
 - a. If the seam fails, INSTALLER shall follow one of two options:
 - 1) Reconstruct the seam between any two passed test locations.
 - 2) Trace the weld to intermediate location at least 10-ft minimum or where the seam ends in both directions from the location of the failed test.
 - b) The next seam welded using the same welding device is required to obtain an additional sample, i.e., if one side of the seam is less than 10-ft long.
 - c) If sample passes, then the seam shall be reconstructed or capped between the test sample locations.
 - d) If any sample fails, the process shall be repeated to establish the zone in which the seam shall be reconstructed.

1.13 REPAIR PROCEDURES

- A. Remove damaged geomembrane and replace with acceptable geomembrane materials if damage cannot be satisfactorily repaired.
- B. Repair any portion of unsatisfactory geomembrane or seam area failing a destructive or non-destructive test.
- C. INSTALLER shall be responsible for repair of defective areas.
- D. Agreement upon the appropriate repair method shall be decided between
 - 1. CONSULTANT and INSTALLER by using one of the following repair methods:
 - a. Patching- Used to repair large holes, tears, undispersed raw materials and contamination by foreign matter.
 - b. Abrading and Re-welding- Used to repair short section of a seam.
 - c. Spot Welding- Used to repair pinholes or other minor, localized flaws or where geomembrane thickness has been reduced.
 - d. Capping- Used to repair long lengths of failed seams.
 - e. Flap Welding- Used to extrusion weld the flap (excess outer portion) of a fusion weld in lieu of a full cap.
 - 1) Remove the unacceptable seam and replace with new material.
- E. The following procedures shall be observed when a repair method is used:
 - 1. All geomembrane surfaces shall be clean and dry at the time of repair.
 - 2. Surfaces of the polyethylene which are to be repaired by extrusion welds shall be lightly abraded to assure cleanliness.



**MATERIAL SPECIFICATIONS PLAN
WATERBRIDGE STATELINE, LLC.
NORTH BRININSTOOL RECYCLE FACILITY
LEA COUNTY, NEW MEXICO
025078-00**

-
3. Extend patches or caps at least 6 inches for extrusion welds and 4 inches for wedge welds beyond the edge of the defect, and around all corners of patch material.
- F. Repair Verification
1. Number and log each patch repair (performed by CONSULTANT).
 2. Non-destructively test each repair using methods specified in this Specification.



1.1 SCOPE

This specification covers the technical requirements for the Manufacturing and Installation of the nonwoven geotextile. All materials meet or exceed the requirements of this specification, and all work will be performed in accordance with the procedures provided in these project specifications.

1.2 REFERENCES

- A. American Society for Testing and Materials (ASTM)
 - 1. ASTM D 5261, Standard Test Method for Measuring Mass per Unit Area of Geotextiles
 - 2. ASTM D 4632, Standard Test Method for Grab Breaking Load and Elongation of Geotextiles
 - 3. ASTM D 4533, Standard Test Method for Index Trapezoidal Tearing Strength of Geotextiles
 - 4. ASTM D 4833, Standard Test Method for Index Puncture Resistance of Geotextiles, Geomembranes and Related Products
 - 5. ASTM D 4491, Standard Test Method for Water Permeability of Geotextiles by Permittivity
 - 6. ASTM D 4751, Standard Test Method for Determining Apparent Opening Size of a Geotextile
 - 7. ASTM D 4354, Standard Practice for Sampling of Geosynthetics for Testing
 - 8. ASTM D 4759, Standard Practice for Determining the Specifications Conformance of Geosynthetics

1.3 SUBMITTALS

- A. Prior to material delivery to project site, the contractor shall provide the engineer with a written certification or manufacturers quality control data which displays that the geotextile meets or exceeds minimum average roll values (MARV) specified herein.
- B. The contractor shall submit, if required by the engineer, manufacturer's quality control manual for the geotextile to be delivered to the site.

2. PRODUCT

2.1 GEOTEXTILE

- A. The nonwoven needle-punched geotextile specified herein shall be made from staple fiber.
- B. The geotextile shall be manufactured from prime quality virgin polymer.
- C. The geotextile shall be able to withstand direct exposure to ultraviolet radiation from Sun for up to 30 days without any noticeable effect on index or performance properties.
- D. Geotextile shall meet or exceed all material properties listed in *Table 1*.



MATERIAL SPECIFICATIONS PLAN
WATERBRIDGE STATELINE, LLC.
NORTH BRININSTOOL RECYCLE FACILITY
LEA COUNTY, NEW MEXICO
025078-00

| TABLE 1: GEOTEXTILE PROPERTIES | | | |
|---|--------------------|-------------------------|--------------|
| Property | Test Method | Test Frequency | Value |
| Mass per Unit Area, oz/yd ² | ASTM D 5261 | 90,000-ft ² | 12 |
| Grab Tensile Strength, lb | ASTM D 4632 | 90,000-ft ² | 320 |
| CBR Puncture Strength, lb | ASTM D 6241 | 540,000-ft ² | 925 |
| Grab Elongation, % | ASTM D 4632 | 90,000-ft ² | 50 |
| Trapezoidal Tear Strength, lb | ASTM D 4533 | 90,000-ft ² | 125 |
| UV Resistance, % retained after 500 hours | ASTM D 4355 | per formulation | 70 |

2.2 MANUFACTURE

- A. All rolls of the geotextile shall be identified with permanent marking on the roll or packaging, with the manufacturers name, product identification, roll number, and roll dimensions.

2.3 TRANSPORT

- A. Transportation of the geotextile shall be the responsibility of the contractor.
- B. During shipment, the geotextile shall be protected from ultraviolet light exposure, precipitation, mud, dirt, dust, puncture, or other damaging or deleterious conditions.
- C. Upon delivery at the job site, the contractor shall ensure that the geotextile rolls are handled and stored in accordance with the manufacturer's instructions as to prevent damage.

3. EXECUTION

3.1 QUALITY ASSURANCE

- A. The engineer shall examine the geotextile rolls upon delivery to the site and report any deviations from project specifications to the contractor.

3.2 INSTALLATION

**WATERBRIDGE**

**MATERIAL SPECIFICATIONS PLAN
WATERBRIDGE STATELINE, LLC.
NORTH BRININSTOOL RECYCLE FACILITY
LEA COUNTY, NEW MEXICO
025078-00**

- A. The geotextile shall be handled in such a manner as to ensure that it is not damaged in any way. Should the contractor damage the geotextile to the extent that it is no longer usable as determined by these specifications or by the engineer, the contractor shall replace the geotextile at his own cost.
- B. The geotextile shall be installed to the lines and grades as shown on the contract drawings and as described herein.
- C. The geotextile shall be rolled down the slope in such a manner as to continuously keep the geotextile in tension by self-weight. The geotextile shall be securely anchored in an anchor trench where applicable, or by other approved or specified methods.
- D. In the presence of wind, all geotextiles shall be weighted by sandbags or approved equivalent. Such anchors shall be installed during placement and shall remain in place until replaced with cover material.
- E. The contractor shall take necessary precautions to prevent damage to adjacent or underlying materials during placement of the geotextile. Should damage to such material occur due to the fault of the contractor, the latter shall repair the damaged materials at his own cost and to the satisfaction of the engineer.
- F. During placement of the geotextile, care shall be taken not to entrap soil, stones or excessive moisture that could hamper subsequent seaming of the geotextile as judged by the engineer.
- G. The geotextile shall not be exposed to precipitation prior to being installed and shall not be exposed to direct sunlight for more than 15 days after installation.
- H. The geotextile shall be seamed using heat seaming or stitching methods as recommended by the manufacturer and approved by the engineer. Sewn seams shall be made using polymeric thread with chemical resistance equal to or exceeding that of the geotextile. All sewn seams shall be continuous. Seams shall be oriented down slopes perpendicular to grading contours unless otherwise specified. For heat-seaming, fusion welding techniques recommended by the manufacturer shall be used.
- I. The contractor shall not use heavy equipment to traffic above the geotextile without approved protection.
- J. The geotextile shall be covered as soon as possible after installation and approval. Installed geotextile shall not be left exposed for more than 15 days.
- K. Material overlying the geotextile shall be carefully placed to avoid wrinkling or damage to the geotextile.



SINGLE SIDED GEOCOMPOSITE

1.1 SCOPE

This specification covers the technical requirements for the manufacturing and installation of the geocomposite drainage layer. All materials meet or exceed the requirements of this specification, and all work will be performed in accordance with the procedures provided in these project specifications.

1.2 REFERENCES

A. American Society for Testing and Materials (ASTM)

1. ASTM D 1238 Standard Test Method for Melt Flow Rates of Thermoplastics by Extrusion Plastometer
2. D 1505-98 Standard Test Method for Density of Plastics by the Density-Gradient Technique
3. ASTM D 4218, Standard Test Method for Determination of Carbon Black Content in Polyethylene Compounds by the Muffle Furnace Technique D 1603-94 Standard Test Method for Carbon Black in Olefin Plastics
4. D 4355-02 Standard Test Method for Deterioration of Geotextiles by Exposure to Light, Moisture and Heat in a Xenon Arc Type Apparatus
5. D 4491-99 Standard Test Method for Water Permeability of Geotextiles by Permittivity
6. D4533 Standard Test Method for Trapezoid Tearing Strength of Geotextiles
7. D 4716-00 Standard Test Method for Determining the (In-Plane) Flow Rate Per Unit Width and Hydraulic Transmissivity of a Geosynthetic Using a Constant Head
8. D 4751-99 Standard Test Method for Determining Apparent Opening Size of a Geotextile
9. D 6241 Standard Test Method for the Static Puncture Strength of Geotextiles and Geotextile- Related Products Using a 50-mm Probe D 4833-88 (1996) Standard Test Method for Index Puncture Resistance of Geotextiles, Geomembranes and Related Products
10. D 5261-92 (1996) Standard Test Method for Measuring the Mass Per Unit Area of Geotextiles
11. D7005-03 Determining The Bond Strength (Ply-Adhesion) of Geocomposites
12. D 7179 Standard Test Method for Determining Geonet Breaking Force

B. Relevant publications from the Environmental Protection Agency (EPA):

1. Daniel, D.E. and R.M. Koerner, (1993), Technical Guidance Document: Quality Assurance and Quality Control for Waste Containment Facilities, EPA/600/R-93/182.

**WATERBRIDGE**

**MATERIAL SPECIFICATIONS PLAN
WATERBRIDGE STATELINE, LLC.
NORTH BRININSTOOL RECYCLE FACILITY
LEA COUNTY, NEW MEXICO
025078-00**

1.3 DEFINITIONS

- A. Construction Quality Assurance Consultant (CONSULTANT) – The Party, independent from MANUFACTURER and INSTALLER, that is responsible for observing and documenting activities related to quality assurance during the lining system construction.
- B. ENGINEER - The individual or firm responsible for the design and preparation of the project's Contract Drawings and Specifications.
- C. Geocomposite Manufacturer (MANUFACTURER) - The party responsible for manufacturing the geocomposite rolls.
- D. Geosynthetic Quality Assurance Laboratory (TESTING LABORATORY) -The Party, independent from the MANUFACTURER and INSTALLER, responsible for conducting laboratory tests on samples of geosynthetics obtained at the site or during manufacturing, usually under the direction of the OWNER.
- E. INSTALLER- Party responsible for field handling, transporting, storing and deploying the geocomposite.
- F. Lot- A quantity of resin (usually the capacity of one rail car) used to manufacture polyethylene geocomposite rolls. The finished rolls will be identified by a roll number traceable to the resin lot.

1.4 QUALIFICATIONS

- A. MANUFACTURER
 - 1. Geocomposite shall be manufactured by the following:
 - a. GSE Lining Technology, Inc.
 - b. Approved Equal
 - 2. MANUFACTURER shall have manufactured a minimum of 10,000,000-ft² of polyethylene geocomposite material during the last year.
- B. INSTALLER
 - 1. INSTALLER shall have installed a minimum of 500,000 square feet of geocomposite in the last 3 years.
 - 2. INSTALLER shall have worked in a similar capacity on at least 5 projects similar in complexity to the project described in the contract documents, and within at least 50,000 square feet of geonet installation on each project.
 - 3. The Installation Supervisor shall have worked in a similar capacity on projects similar in size and complexity to the project described in the Contract Documents.

1.5 MATERIAL LABELING, DELIVERY, STORAGE AND HANDLING

- A. Labeling- Each roll delivered to the site shall be wrapped and labeled by the MANUFACTURER. The label will identify:
 - 1. Manufacturer's name
 - 2. Product identification
 - 3. Length
 - 4. Width
 - 5. Roll number



- C. Delivery- Rolls will be prepared to ship by appropriate means to prevent damage to the material and to facilitate off-loading.
- D. Storage- The on-site storage location provided by the CONTRACTOR to protect the geonet from abrasions, excessive dirt and moisture, shall have the following characteristics:
 - 1. Level (no wooden pallets)
 - 2. Smooth
 - 3. Dry
 - 4. Protected from theft and vandalism
 - 5. Adjacent to the area being lined
- E. Handling
 - 1. The CONTRACTOR and INSTALLER shall handle all rolls in such a manner to ensure they are not damaged in any way.
 - 2. The INSTALLER shall take any necessary precautions to prevent damage to underlying layers during placement of the drainage material.

1.6 WARRANTY

- A. Material shall be warranted, on a pro-rata basis against defects for a period of 1-year from the date of the geocomposite installation.
- B. Installation shall be warranted against defects in workmanship for a period of 1-year from the date of geocomposite completion.

2. PRODUCTS

2.1 GEOCOMPOSITE PROPERTIES

- A. A geocomposite shall be manufactured by extruding two crossing strands to form a bi-planar drainage net structure with a non-woven geotextile bonded to one or both sides.
- B. The geocomposite specified shall have properties that meet or exceed the values listed in the following data sheets below.



MATERIAL SPECIFICATIONS PLAN
WATERBRIDGE STATELINE, LLC.
NORTH BRININSTOOL RECYCLE FACILITY
LEA COUNTY, NEW MEXICO
025078-00

| TABLE 1: GEOCOMPOSITE PROPERTIES | | | |
|--|----------------------------------|---------------------------|-------------------------------|
| Property | Test Method | Frequency | Value |
| Geocomposite | | | |
| Transmissivity (1), gal/min/ft (m ² /sec) Single-Sided Composite | ASTM D 4716 | 1/540,000-ft ² | 6.2 (1.3 x 10 ⁻³) |
| Ply Adhesion, lb/in | ASTM D 7005 | 1/50,000-ft ² | 0.5 |
| Geonet | | | |
| Geonet Core Thickness, mil (1) | ASTM D 5199 | 1/50,000-ft ² | 270 |
| Transmissivity (2), gal/min/ft (m ² /sec) | ASTM D 4716 | 1/540,000-ft ² | 19 (4 x 10 ⁻³) |
| Compressive Strength, lbs/ft | ASTM D 6364 | 1/540,000-ft ² | 40,000 |
| Density, g/cm ³ | ASTM D 1505 | 1/50,000-ft ² | 0.94 |
| Tensile Strength (MD), lb/in | ASTM D 7179 | 1/50,000-ft ² | 100 |
| Carbon Black Content, % | ASTM D 4218 | 1/50,000-ft ² | 2.0 |
| 8 oz. Geotextile (prior to lamination) | | | |
| Mass per Unit Area, oz/yd ² | ASTM D 5261 | 1/90,000-ft ² | 8 |
| Grab Tensile Strength, lb | ASTM D 4632 | 1/90,000-ft ² | 220 |
| Grab Elongation | ASTM D 4632 | 1/90,000-ft ² | 50% |
| CBR Puncture Strength, lb | ASTM D 6241 | 1/540,000-ft ² | 575 |
| Trapezoidal Tear Strength, lb | ASTM D 4533 | 1/90,000-ft ² | 90 |
| AOS, US Sieve (mm) | ASTM D 4751 | 1/540,000-ft ² | 80 (0.180) |
| Permittivity, sec-1 | ASTM D 4491 | 1/540,000-ft ² | 1.3 |
| Water Flow Rate, gpm/ft ² | ASTM D 4491 | 1/540,000-ft ² | 95 |
| UV Resistance, % Retained | ASTM D 4355 (after 500 hours) | per formulation | 70 |

- Note: The design engineer shall prepare the table above based on the GSE product data sheet and then delete this note



C. Resin

1. Resin shall be new first quality, compounded polyethylene resin.
2. Natural resin (without carbon black) shall meet the following additional
 - a. minimum requirements:

| TABLE 2: RAW MATERIAL PROPERTIES | | |
|----------------------------------|----------------------------|-------|
| Property | Test Method ⁽¹⁾ | Value |
| Density (g/cm ³) | ASTM D 1505 | >0.94 |
| Melt Flow Index (g/10 min) | ASTM D 1238 | ≤ 1.0 |

¹GSE utilizes test equipment and procedures that enable effective and economical confirmation that the product will conform to specifications based on the noted procedures. Some test procedures have been modified for application to geosynthetics. All procedures and values are subject to change without prior notification.

2.2 MANUFACTURING QUALITY CONTROL

The geocomposite shall be manufactured in accordance with the Manufacturer's Quality Control Plan submitted to and approved by the ENGINEER.

The geocomposite shall be tested according to the test methods and frequencies listed on Table 1 which has been prepared based on product data sheets.

3. EXECUTION

3.1 FAMILIARIZATION

A. Inspection

1. Prior to implementing any of the work in the Section to be lined, the INSTALLER shall carefully inspect the installed work of all other Sections and verify that all Work is complete to the point where the installation of the Section may properly commence without adverse impact.
2. If the INSTALLER has any concerns regarding the installed work of other Sections, he shall notify the Project ENGINEER.

3.2 MATERIAL PLACEMENT

- A. The geocomposite roll should be installed in the direction of the slope and in the intended direction of flow unless otherwise specified by the ENGINEER.
1. If the project contains long, steep slopes, special care should be taken so that only full length rolls are used at the top of the slope.

**WATERBRIDGE**

**MATERIAL SPECIFICATIONS PLAN
WATERBRIDGE STATELINE, LLC.
NORTH BRININSTOOL RECYCLE FACILITY
LEA COUNTY, NEW MEXICO
025078-00**

- B. In the presence of wind, all geocomposites shall be weighted down with sandbags or the equivalent. Such sandbags shall be used during placement and remain until replaced with cover material.
- C. If the project includes an anchor trench at the top of the slopes, the geocomposite shall be properly anchored to resist sliding. Anchor trench compacting equipment shall not come into direct contact with the geocomposite.
- D. In applying fill material, no equipment can drive directly across the geocomposite. The specified fill material shall be placed and spread utilizing vehicles with a low ground pressure.
- E. The cover soil shall be placed in the geocomposite in a manner that prevents damage to the geocomposite. Placement of the cover soil shall proceed immediately following the placement and inspection of the geocomposite.

3.3 SEAMS AND OVERLAPS

- A. Each component of the geocomposite will be secured or seamed to the like component at overlaps.
- B. Geonet Components
 - 1. Adjacent edges of the geonet along the length of the geocomposite roll shall be placed with the edges of each geonet butted against each other.
 - 2. The overlaps shall be joined by tying the geonet structure with cable ties. These ties shall be spaced every 5-ft along the roll length.
 - 3. Adjoining geocomposite rolls (end to end) across the roll width should be shingled down in the direction of the slope, with the geonet portion of the top overlapping the geonet portion of the bottom geocomposite a minimum of 12-in across the roll width.
 - 4. The geonet portion should be tied every 6-in in the anchor trench or as specified by the ENGINEER.

3.4 REPAIR

- A. Prior to covering the deployed geocomposite, each roll shall be inspected for damage resulting from construction.
- B. Any rips, tears or damaged areas on the deployed geocomposite shall be removed and patched. The patch shall be secured to the original geonet by tying every 6-in with the approved tying devices. If the area to be repaired is more than 50 percent of the width of the panel, the damaged area shall be cut out and the two portions of the geonet shall be cut out and the two portions of the geonet shall be joined in accordance with *Subsection 3.03*.



WATERBRIDGE

C-147 APPLICATION PACKAGE
NORTH BRININSTOOL RECYCLE FACILITY
SECTION 29, TOWNSHIP 23 SOUTH, RANGE 33 EAST
LEA COUNTY, NEW MEXICO
025078-00

APPENDIX F

OPERATING AND MAINTENANCE PLAN


WATERBRIDGE

OPERATION AND MAINTENANCE PLAN
WATERBRIDGE STATELINE, LLC.
NORTH BRININSTOOL RECYCLE FACILITY
LEA COUNTY, NEW MEXICO
 025078-00

WaterBridge Stateline, LLC. is proposing to construct two (2) earthen containments and two (2) Above Ground Storage Tanks (AST's) in Section 29, Township 23 South, Range 33 East, Lea County, New Mexico. The North Brininstool Recycle Facility shall consist of four (4) containments with a total operational volume of approximately 1,326,764-bbl.

OPERATION AND MAINTENANCE PROCEDURES

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

The operator will operate and maintain the lined earthen containments and AST's to contain liquids and solids (blow sand and minimal precipitates from the treated produced water) and maintain the integrity of the liner system in a manner that prevents contamination of fresh water and protects public health and the environment as described below. The purpose of the lined earthen containment and AST's 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 Recycling Containment is summarized below:

1. Via pipeline, produced water generated from nearby oil and gas wells is delivered to a treatment system located as indicated in the C-147.
2. After treatment, the produced water discharges into the containment.
3. When required, treated produced water is removed from the containment for E&P operations. At this time, treated produced water will be used for drilling beneath the fresh water zones (beneath surface casing), for well stimulation (e.g. hydraulic fracturing) and other E&P uses as approved by OCD.
4. Whenever the maximum fluid capacity of the containment is reached, treatment and discharge to the containment ceases (see Freeboard and Overtopping Plan, below).
5. 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.
6. 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.
7. 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 discover, 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 Inspection and Monitoring Plan), 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 onsite, 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 3-ft of freeboard for the containment and will use a welded ladder gauge to allow easy determination of the required 3-ft 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:

1. Reading and recording the fluid height of staff gauges,
2. Recording any evidence that the pond surface shows visible oil,
3. Visually inspecting the containment's exposed liners, and
4. 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:

1. Inspect diversion ditches and berms around the containment to check for erosion and collection of surface water run-on.
2. Inspect the leak detection system for evidence of damage or malfunction and monitor for leakage.
3. Inspect the containment for 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

**WATERBRIDGE**

**OPERATION AND MAINTENANCE PLAN
WATERBRIDGE STATELINE, LLC.
NORTH BRININSTOOL RECYCLE FACILITY
LEA COUNTY, NEW MEXICO
025078-00**

and to the division district office in order to facilitate assessment and implementation of measures to prevent incidents from reoccurring.

4. 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.
5. 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.

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-ft of freeboard), the discharge of treated produced water ceases and the produced water generated by nearby oil and gas wells is managed by disposing of fluid at a local injection well.

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

1. Cease discharging treated produced water to the containment.
2. Accelerate re-use of the treated produced water for purposes approved by the Division.
3. Transfer treated produced water from the containment to a Division approved injection well.

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 C*, 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-in pipe "dry housing" to avoid false readings due to water condensation on the pipe. There are many techniques to determine the existence of water in the sumps, including low-flow pumps and a simple small bailer affixed to an electrician's snake. The operator will use the method that works best for this containment.

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

1. Re-measure fluid levels in the monitoring riser pipe on a daily basis for one week to determine the rate of seepage.
2. Collect a water sample from the monitoring riser pipe to confirm the seepage is treated produced water from the containment via field conductivity and chloride measurements.



WATERBRIDGE

**OPERATION AND MAINTENANCE PLAN
WATERBRIDGE STATELINE, LLC.
NORTH BRININSTOOL RECYCLE FACILITY
LEA COUNTY, NEW MEXICO
025078-00**

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.

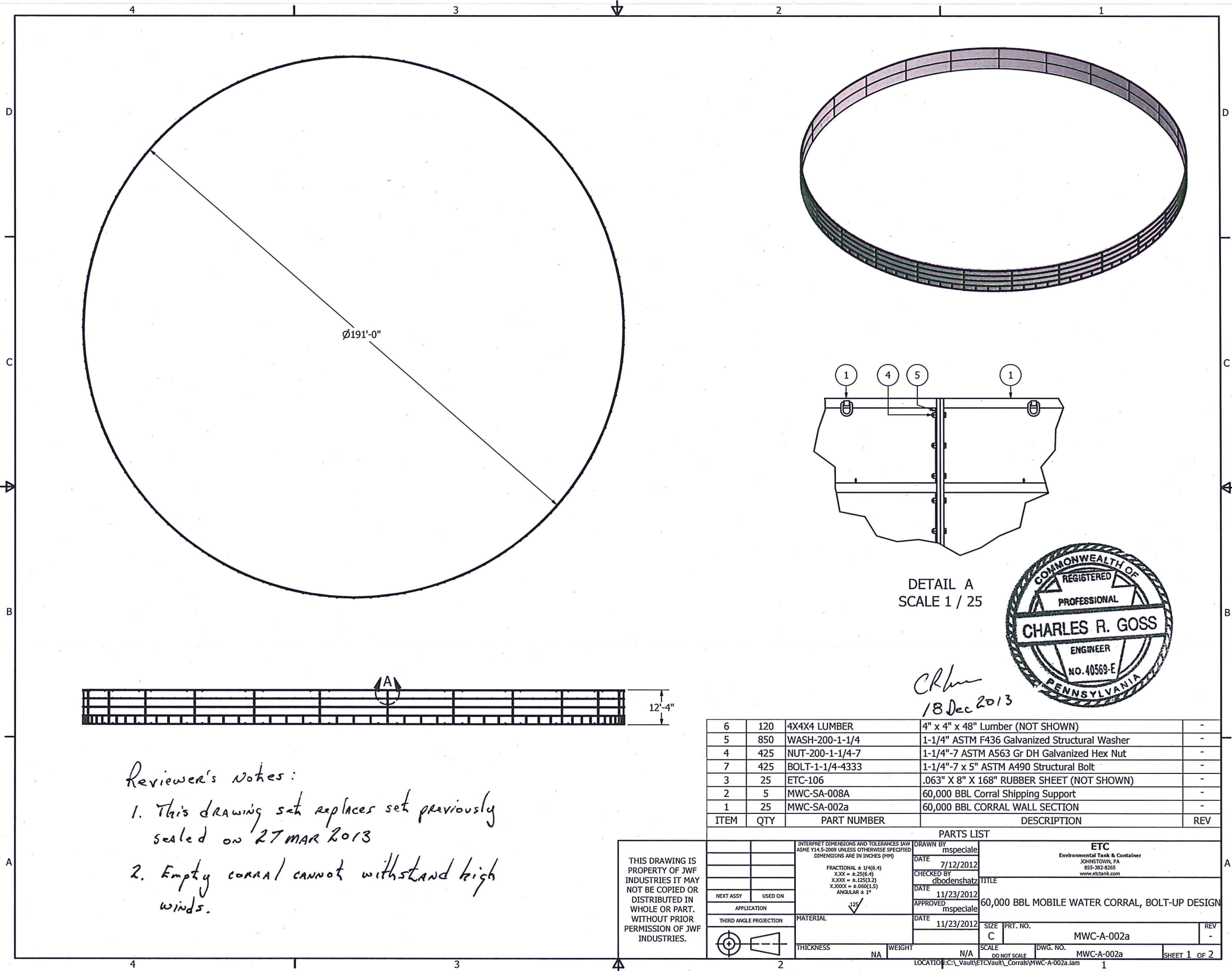
If the point of release is obvious from a low water inspection, the liner professional will repair the loss of integrity. If the point of release cannot be determined by the inspection, the liner professional will develop a more robust plan to identify the point(s) of release. The inspection plan and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



C-147 APPLICATION PACKAGE
NORTH BRINSTOOL RECYCLE FACILITY
SECTION 29, TOWNSHIP 23 SOUTH, RANGE 33 EAST
LEA COUNTY, NEW MEXICO
025078-00

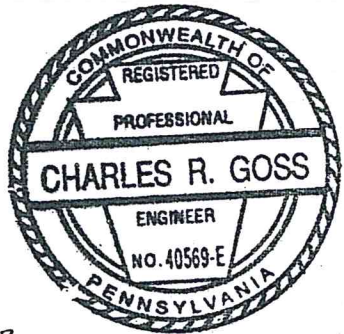
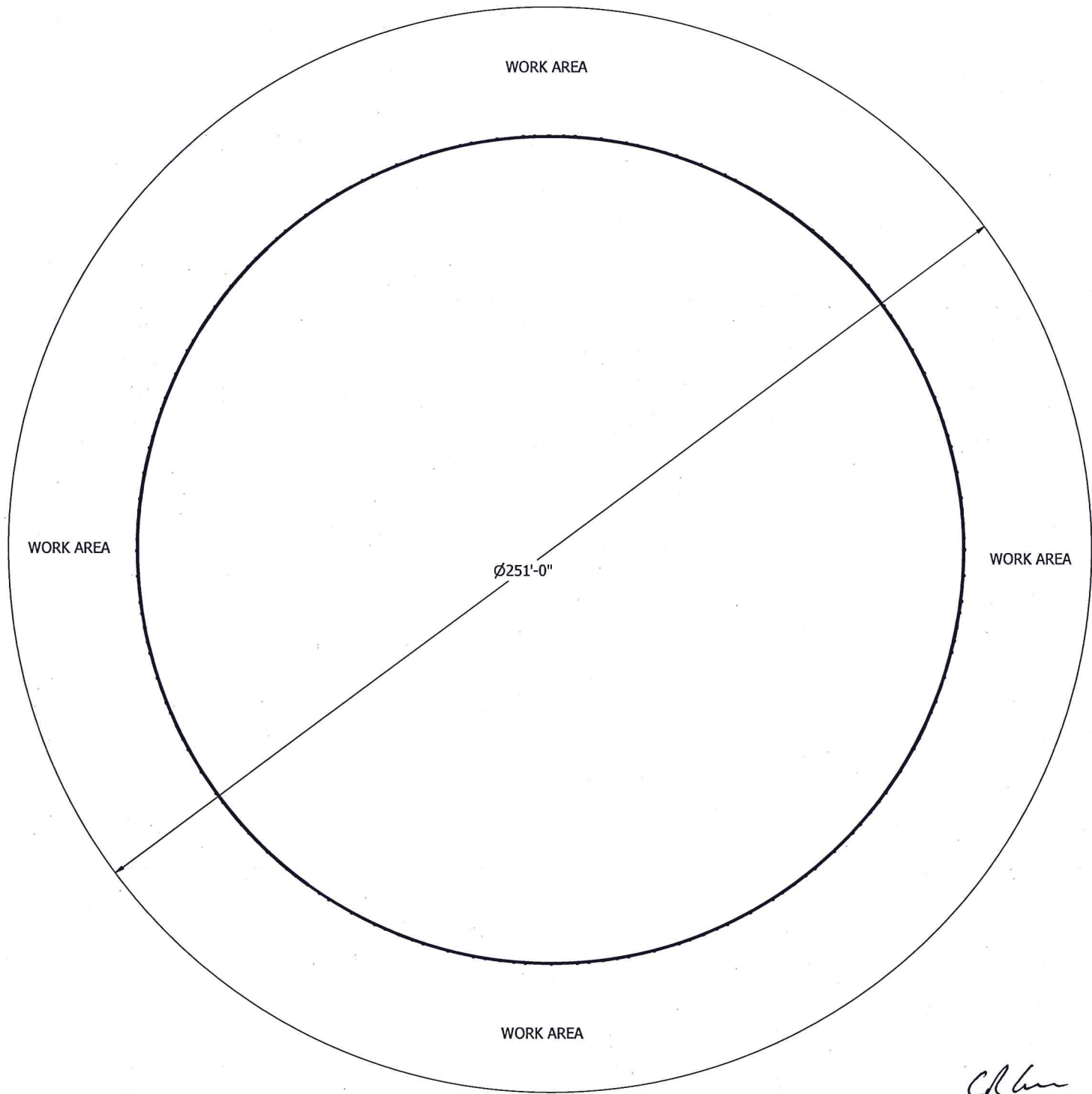
APPENDIX G

AST'S



NOTES:

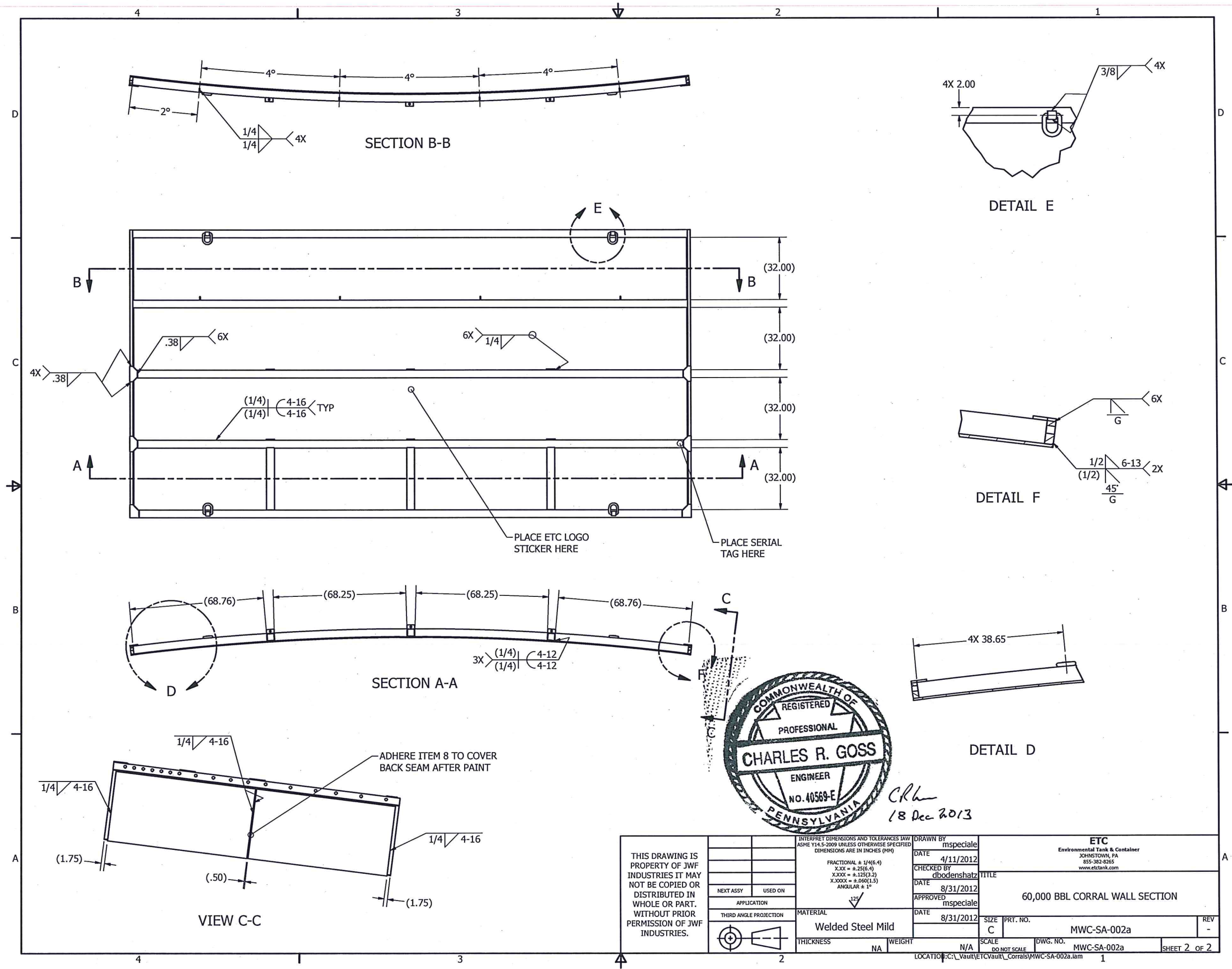
1. MINIMUM OF 30 FEET OF WORK AREA AROUND CORRAL
2. OVER ALL SITE MUST BE LEVEL TO +/- .50 INCH
3. RING AREA WHERE CORRAL PANELS WILL BE SETUP MUST BE LEVEL TO +/- .25 INCH
4. SOIL COMPACTION MUST MEET ASTM D-698A, 90% OR GREATER
5. BUILD A 12" X 12" SAND INSIDE CORNER RELIEF BEFORE INSTALLING LINER
6. MUST USE 1"-1/4"-7 X 4" GRADE A490 STRUCTURAL BOLTS
7. PANELS MUST HAVE ALL CONNECTING BOLTS TIGHTENED AND LINER FULLY SECURED BEFORE ADDING WATER
8. ALLOW FOR 6 INCHES OF FREEBOARD FROM TOP OF CORRAL



CR
18 Dec 2013

| | | | | | | | |
|--|--|--|--|--|--|--|--|
| THIS DRAWING IS PROPERTY OF JWF INDUSTRIES IT MAY NOT BE COPIED OR DISTRIBUTED IN WHOLE OR PART. WITHOUT PRIOR PERMISSION OF JWF INDUSTRIES. | | INTERPRET DIMENSIONS AND TOLERANCES IN INCHES (MM) | | DRAWN BY mspecial | | ETC Environmental Tank & Container JOHNSTOWN, PA 855-382-6265 www.etc-tank.com | |
| | | FRACTIONAL ± 1/4(6.4) | | DATE 7/12/2012 | | TITLE | |
| | | XXX ± .25(6.4) | | CHECKED BY dbodenshatz | | 60,000 BBL MOBILE WATER CORRAL, BOLT-UP DESIGN | |
| | | XXXX ± .125(3.2) | | DATE 11/23/2012 | | SIZE C | |
| XXXX ± .060(1.5) | | APPROVED mspecial | | DATE 11/23/2012 | | PRT. NO. MWC-A-002a | |
| ANGULAR ± 1° | | THIRD ANGLE PROJECTION | | THICKNESS NA | | SCALE DO NOT SCALE | |
| THICKNESS NA | | WEIGHT N/A | | LOCATION C:\Vault\ETC\Corrals\MWC-A-002a.lam | | DWG. NO. MWC-A-002a | |
| | | | | | | SHEET 2 OF 2 | |

| | | | | | | | | |
|--|------------------------|-------------------------------|---|---------------------------|---|-----------|-------------------------|----------|
| THIS DRAWING IS PROPERTY OF JWF INDUSTRIES IT MAY NOT BE COPIED OR DISTRIBUTED IN WHOLE OR PART. WITHOUT PRIOR PERMISSION OF JWF INDUSTRIES. | | | INTERPRET DIMENSIONS AND TOLERANCES LAW ASME Y14.5-2009 UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES (MM) FRACTIONAL ± 1/4(6.4) X.XX = ±.25(6.4) X.XXX = ±.125(3.2) X.XXXX = ±.050(1.5) ANGULAR ± 1° ✓.125 | DRAWN BY mspeciale | ETC Environmental Tank & Container JOHNSTOWN, PA 855-382-8265 www.etcTank.com | | | |
| | | | | DATE 4/11/2012 | TITLE 60,000 BBL CORRAL WELD SECTION | SIZE C | PRT. NO. MWC-SA-002a | REV - |
| | | | | CHECKED BY dbodenshatz | | | | |
| | | | | DATE 8/31/2012 | | | | |
| | NEXT ASSY | USED ON | | APPROVED mspeciale | | | | |
| | APPLICATION | | | DATE 8/31/2012 | | | | |
| | THIRD ANGLE PROJECTION | MATERIAL Welded Steel Mild | | | | | | |
|  | THICKNESS NA | WEIGHT N/A | SCALE DO NOT SCALE | DWG. NO. MWC-SA-002a | SHEET 1 of 2 | | | |
| LOCATION: C:_Vault\ETC\Vault\Corrals\MWC-SA-002a.lam | | | | | | | | |





C-147 APPLICATION PACKAGE
NORTH BRININSTOOL RECYCLE FACILITY
SECTION 29, TOWNSHIP 23 SOUTH, RANGE 33 EAST
LEA COUNTY, NEW MEXICO
025078-00

APPENDIX H

CLOSURE PLAN


WATERBRIDGE

CLOSURE PLAN
WATERBRIDGE STATELINE, LLC.
NORTH BRINSTOOL RECYCLE FACILITY
LEA COUNTY, NEW MEXICO
025078-00

WaterBridge Stateline, LLC. is proposing to construct two (2) earthen containments and two (2) Above Ground Storage Tanks (AST's) in Section 29, Township 23 South, Range 33 East, Lea County, New Mexico. The North Brinstool Recycle Facility shall consist of four (4) containments with a total operational volume of approximately 1,326,764-bbl.

CLOSURE PLAN

In this plan, the 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

1. The condition that existed prior to the construction of the recycling containment or
2. 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.

EXCAVATION AND REMOVAL CLOSURE PLAN - PROTOCOLS AND PROCEDURES

The storage pits and AST's are expected to contain a small volume of solids, the majority of which will be windblown sand and dust with some mineral precipitates from the water.

The operator will remove all liquids from the pits 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

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.

After the removal of the pit contents and liners, soils beneath the pit will be tested by collection of a five-point (minimum) composite sample, which includes stained or wet soils, if any. That sample shall be analyzed for the constituents listed in Table 1 of 19.15.34.14.

After review of the laboratory results:

- a. If any contaminant concentration is higher than the parameters listed in Table 1, 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 1, then the operator will proceed to:
 - i. Backfill with non-waste containing, uncontaminated earthen material or
 - ii. Undertake an alternative closure process pursuant to a variance request after approval by OCD.

The operator will 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.


WATERBRIDGE

CLOSURE PLAN
 WATERBRIDGE STATELINE, LLC.
 NORTH BRININSTOOL RECYCLE FACILITY
 LEA COUNTY, NEW MEXICO
 025078-00

The disturbed area shall then be reseeded in the first favorable growing season following closure of a recycling containment.

CLOSURE DOCUMENTATION

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

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



3-31-2025

**WaterBridge Stateline
North Brininstool Recycle Facility
Closure Cost Estimate**

| Item | Units | Quantity | \$/Unit | Estimate Cost |
|------|-------|----------|---------|---------------|
|------|-------|----------|---------|---------------|

Facility Closure

1 Fluid removal

| | | | | |
|--|------|---------|---------|---------------|
| North Brininstool Recycle West Containment (603K bbls) | bbls | 603,382 | \$ 0.65 | \$ 392,198.30 |
| North Brininstool Recycle East Containment (603K bbls) | bbls | 603,382 | \$ 0.65 | \$ 392,198.30 |
| North Brininstool East Recycle AST (60k bbls) | bbls | 60,000 | \$ 0.65 | \$ 39,000.00 |
| North Brininstool West Recycle AST (60k bbls) | bbls | 60,000 | \$ 0.65 | \$ 39,000.00 |

2 Vac truck (final fluid removal)

| | | | |
|-----|----|-----------|--------------|
| hrs | 80 | \$ 125.00 | \$ 10,000.00 |
|-----|----|-----------|--------------|

3 Liner removal (fold-in-place)

| | | | | |
|-----------------------------|----|-----------|---------|---------------|
| Covers removal and disposal | SF | 2,741,922 | \$ 0.18 | \$ 493,545.96 |
|-----------------------------|----|-----------|---------|---------------|

4 Equipment removal

| | | | | |
|---|-----|-----|--------------|---------------|
| Containment clean-out and residue haul-off | LS | 1 | \$ 20,000.00 | \$ 20,000.00 |
| Equipment removal (tanks, gun barrel, FWKO) | LS | 1 | \$ 7,500.00 | \$ 7,500.00 |
| Electrical decommissioning (pumps and panels) | LS | 1 | \$ 10,000.00 | \$ 10,000.00 |
| Misc equipment clean-up and removal | hrs | 200 | \$ 135.00 | \$ 27,000.00 |
| Removal of AST | EA | 2 | \$ 75,000.00 | \$ 150,000.00 |

5 Site Restoration

| | | | | |
|--|----|---------|-------------|---------------|
| Dozer - push in berms (bid) and final grading of the site | CY | 116,846 | \$ 5.00 | \$ 584,230.00 |
| Re-vegetation | AC | 32 | \$ 1,500.00 | \$ 47,293.39 |

Estimated Total

\$ 2,211,965.95

Assumptions

No Remediation will be necessary

Containment is full at time of closure

Containment berms above natural grade will be used to fill voids below natural grade



Venegas, Victoria, EMNRD

From: Venegas, Victoria, EMNRD
Sent: Thursday, April 10, 2025 10:43 AM
To: Jake.Ferenz@h2obridge.com; Mitchell Ratke; Heather Soto
Subject: 1RF-538 - WATERBRIDGE NORTH BRININSTOOL RECYCLE FACILITY [fVV2509951745]
Attachments: C-147 1RF-538 - WATERBRIDGE NORTH BRININSTOOL RECYCLE FACILITY [fVV2509951745].pdf

1RF-538 - WATERBRIDGE NORTH BRININSTOOL RECYCLE FACILITY [fVV2509951745]

Good morning Mr. Ferenz.

NMOCD has reviewed the recycling containment permit application and related documents, submitted by [330129] WaterBridge Stateline LLC on 04/04/2025, Application ID 448705, for 1RF-538 - WATERBRIDGE NORTH BRININSTOOL RECYCLE FACILITY [fVV2509951745] in K-29-23S-33E, Lea County, New Mexico. [330129] WaterBridge Stateline LLC requested variances from 19.15.34 NMAC for 1RF-538 - WATERBRIDGE NORTH BRININSTOOL RECYCLE FACILITY [fVV2509951745].

The following variances have been approved:

- The variance from 19.15.34.13.E NMAC for the installation of an audible “Bird-X Mega Blaster Pro” bird deterrence system is approved.
- The variance to NMAC 19.15.34.12.D to install a wire mesh, game fence, eight (8) feet in height is approved.
- The variance to 19.15.34.12.A.(2) NMAC for the no side-slope requirement for the AST containments with vertical walls is approved.
- The variance to 19.15.34.12.A.(3) NMAC for the liners to be anchored to the top of the ASTs steel walls and no anchor trenches is approved.
- The variance to 19.15.34.12.A.(4) NMAC for the installation on the AST containment of a 40-mil non-reinforced LLDPE secondary liner is approved.
- The variance to 19.15.34.12.A.(4) NMAC for the installation on the AST containment of a 40-mil non-reinforced LLDPE primary liner is approved. The proposed new liner system cross-section for the ASTs is as follows: prepare subgrade, 10 oz. geotextile, 40-mil LLDPE primary liner, 200-mil geonet, 40-mil LLDPE secondary liner.

The form C-147 and related documents for the 1RF-538 - WATERBRIDGE NORTH BRININSTOOL RECYCLE FACILITY [fVV2509951745] are approved with the following conditions of approval:

- The purpose of this permit is for oil and gas activities regulated under the NMAC 19.15.34.3 STATUTORY AUTHORITY: 19.15.34 NMAC is adopted pursuant to the Oil and Gas Act, Paragraph (15) of Section 70-2-12(B) NMSA 1978, which authorizes the division to regulate the disposition of water produced or used in connection with the drilling for or producing of oil and gas or both and Paragraph (21) of Section 70-2-12(B) NMSA 1978 which authorizes the regulation of the disposition of nondomestic wastes from the exploration, development, production or storage of crude oil or natural gas.
- [330129] WaterBridge Stateline LLC shall construct, operate, maintain, close, and reclaim the 1RF-538 - WATERBRIDGE NORTH BRININSTOOL RECYCLE FACILITY [fVV2509951745] in compliance with 19.15.34 NMAC.
- 1RF-538 - WATERBRIDGE NORTH BRININSTOOL RECYCLE FACILITY [fVV2509951745] is approved for five years of operation from the date of permit application. 1RF-538 - WATERBRIDGE NORTH BRININSTOOL RECYCLE FACILITY [fVV2509951745] permit expires on 04/04/2030.

- The 1RF-538 - WATERBRIDGE NORTH BRININSTOOL RECYCLE FACILITY [fVV2509951745] consists of two (2) earthen containments and two (2) AST containments with a total operational volume of approximately 1,326,764 bbl.
- Per NMAC 19.15.34.15.A.(1) operators without existing financial assurance pursuant to NMAC 19.15.8 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 1RF-538 - WATERBRIDGE NORTH BRININSTOOL RECYCLE FACILITY [fVV2509951745] in the amount of \$ 2,211,965.95, meets the requirements of NMAC 19.15.34.15.A.(1).
- The financial assurance bond should be mailed to the EMNRD - Oil Conservation Division, Administration and Compliance Bureau; 1220 South St Frances Drive; Santa Fe, NM 87505.
- [330129] WaterBridge Stateline LLC cannot receive produced water in the 1RF-538 - WATERBRIDGE NORTH BRININSTOOL RECYCLE FACILITY [fVV2509951745] until after the original copy of the financial assurance has been accepted by NMOCD.
- [330129] WaterBridge Stateline LLC shall notify NMOCD when construction of the 1RF-538 - WATERBRIDGE NORTH BRININSTOOL RECYCLE FACILITY [fVV2509951745] commences.
- [330129] WaterBridge Stateline LLC shall notify NMOCD when recycling operations commence and cease at 1RF-538 - WATERBRIDGE NORTH BRININSTOOL RECYCLE FACILITY [fVV2509951745].
- A minimum of 3-feet freeboard must be maintained 1RF-538 - WATERBRIDGE NORTH BRININSTOOL RECYCLE FACILITY [fVV2509951745] recycling containment, at all times during operations.
- [330129] WaterBridge Stateline LLC shall submit monthly reports of recycling and reuse of produced water, drilling fluids, and liquid oil field waste on NMOCD form C-148 even if there is zero activity.
- 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 Permitting. An extension to extend the cessation of operation, not to exceed six months, may be submitted using a C-147 form through OCD Permitting.
- [330129] WaterBridge Stateline LLC shall comply with 19.15.29 NMAC Releases in the event of any release of produced water or other oil field wastes at 1RF-538 - WATERBRIDGE NORTH BRININSTOOL RECYCLE FACILITY [fVV2509951745].
- According to Table 1 of NMAC 19.15.34.14, the closure criteria for 1RF-538 - WATERBRIDGE NORTH BRININSTOOL RECYCLE FACILITY [fVV2509951745] is for groundwater depth of 51 to 100 feet.

Please reference number 1RF-538 - WATERBRIDGE NORTH BRININSTOOL RECYCLE FACILITY [fVV2509951745] in all future communications.

Regards,

Victoria Venegas • Environmental Specialist Advanced
EMNRD - Oil Conservation Division
506 W. Texas Ave. Artesia, NM 88210
575.909.0269 | Victoria.Venegas@emnrn.nm.gov

Sante Fe Main Office
Phone: (505) 476-3441

General Information
Phone: (505) 629-6116

Online Phone Directory
<https://www.emnrd.nm.gov/ocd/contact-us>

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

CONDITIONS

Action 448705

CONDITIONS

| | |
|--|---|
| Operator: WaterBridge Stateline LLC 5555 San Felipe Houston, TX 77056 | OGRID: 330129 |
| | Action Number: 448705 |
| | Action Type: [C-147] Water Recycle Long (C-147L) |

CONDITIONS

| Created By | Condition | Condition Date |
|------------|--|----------------|
| vvenegas | • 1RF-538 - WATERBRIDGE NORTH BRININSTOOL RECYCLE FACILITY [fVV2509951745] permit expires on 04/04/2030. [330129] WaterBridge Stateline LLC shall construct, operate, maintain, close, and reclaim the 1RF-538 - WATERBRIDGE NORTH BRININSTOOL RECYCLE FACILITY [fVV2509951745] in compliance with 19.15.34 NMAC. • [330129] WaterBridge Stateline LLC shall comply with 19.15.29 NMAC Releases in the event of any release of produced water or other oil field wastes at 1RF-538 - WATERBRIDGE NORTH BRININSTOOL RECYCLE FACILITY [fVV2509951745]. | 4/10/2025 |