CHISHOLM TRAIL DISPOSAL LANDFILL
WISE COUNTY, TEXAS
TCEQ PERMIT NO. MSW 2421

TYPE IV PERMIT APPLICATION

VOLUME 3 OF 3

Prepared for

Chisholm Trail Disposal, LLC

September 2025
Technically Complete

GREGORY W. ADAMS
73356

Biggs & Mathews Environmental, Inc.
Firm Registration No. F-256

9/23/2025

Prepared by

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PART III – SITE DEVELOPMENT PLAN
ATTACHMENT E
GEOLOGY REPORT

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For Sections 2.3 and 5.1
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2045

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CONTENTS

1 REGIONAL GEOLOGIC/HYDROGEOLOGIC INFORMATION

30 TAC §§330.57(f)(2), 330.63(e)(1)

This geology and technical report has been prepared by Elizabeth Floyd, P.G., a qualified groundwater scientist, for the Chisholm Trail Disposal Landfill (CTD) consistent with 30 Texas Administrative Code (TAC) §330.57(f)(2) and 330.63(e). The purpose of this report is to provide the geologic and hydrogeologic information and interpretations necessary to design a groundwater monitoring system.

1.1 Regional Physiography and Topography

This project is located in the physiographic subdivision known as the Grand Prairie. More specifically, the site has been identified to be situated within the West Cross Timbers region which partially comprises the Grand Prairie subdivision. In general, the West Cross Timbers topography is characterized by hilly terrain, with sandstone and limestone escarpments, steeps slopes, and irregular surface features (Cross Timbers and Prairies Ecological Region, n.d.). Soils are neutral to slightly acidic, highly erodible, and were formed in weakly cemented sandstones and on unconsolidated loamy material of the Cretaceous Age (Ressel, 1989). Abundant vegetation, particularly post oak and blackjack oak, is supported by the sandy soils on the West Cross Timbers.

The nearest surface water bodies to the site include the northern portion of Eagle Mountain Lake, located approximately 2.3 miles south/southeast of the site, and the West Fork of the Trinity River, the predominate drainage way in the vicinity of the project site. The main channel of the West Fork is located approximately 1/2 mile west of the site and about 1/3 mile south of the site and generally flows from west to east.

1.2 Regional Geology and Lithology

Formations of the Cretaceous System were deposited by seas advancing northward over primarily Paleozoic strata. The Comanche and Gulf Series of the Cretaceous System represent two major shoreline shifts in the direction of the land of the Cretaceous seas. The site in underlain by strata of the Comanche Series. Toward the end of the Cretaceous Period, marine deposition ceased as general uplift to the west and opening of the Gulf of Mexico resulted in a southward retreat of the seas. Subsequent erosion of the Cretaceous System deposits has occurred throughout the Cenozoic Era. The eroding streams have also deposited sand, gravel, and clay in their valleys.

Cretaceous and Quaternary stratigraphy comprise the geologic units as shown in the Regional Stratigraphic Table (Table 1). The site is located on an outcrop of Quaternary-aged alluvium underlain by the Cretaceous-aged Paluxy Formation (see Drawings E1.1 and E1.2). The Paluxy Formation is the youngest strata that completes the Trinity Group. Paluxy deposits were derived from sedimentary rocks to the north, and they accumulated in the shoreface and coastal plain environments associated with irregular southward regression of the shoreline (Caughey, 1977). The Paluxy Formation crops out in an irregular band about 40 miles wide trending north from Burnet County to Wise County.

In Wise County, the Glen Rose Formation enters from the extreme southwest corner and thins considerably to the northwest. The Glen Rose Formation gradually transitions from limestone to more clay than limestone, allowing the formation to pinch out and subsequently can no longer be traced (Armstrong & Scott, 1932). Due to the thinning of the Glen Rose Formation in Wise County, the Paluxy and Twin Mountains Formations become indistinguishable in this region and are collectively referred to as the Antlers Formation (see Drawing E1.3). The Antlers Formation crops out mainly in Cooke, Montague, and Wise Counties and represents the lateral equivalent of both formations (Nordstrom, 1982).

Table 1
Regional Stratigraphy
Modified from Nordstrom, 1982 & Nordstrom, 1987

System	Series	Group	Stratigraphic Units			Approximate Maximum Thickness Within the Region (feet)		Lithologic Characteristics	
Quaternary	Recent		Alluvium			60		Gravel, sand, silt, and clay.	
Cretaceous	Comanche	Washita (Grayson Marl and Main Street Limestone)				750		Fossiliferous limestones, shale, chert, marl, and some calcareous clay.	
		Fredericksburg							
		Trinity	Antlers Formation	Paluxy Formation		250	100	Sand, gravel, shale, sandstone, and clay.	Fine-grained quartz sands, thin beds of limestone, shale and clay.
				Glen Rose Formation			330		Alternating beds of limestone and shale, massive shale and clay with sand lenses.
				Travis Peak Formation	Upper Unit		185		Fine to coarse-grained sand, gravel, sandstone, shale and clay.
					Middle Unit		60		Clay, sandy clay, shale, and local sand lenses.
					Lower Unit		125		Medium to coarse-grained sand, gravel, sandstone, clay, and conglomerate (siliceous).

2 GEOLOGIC PROCESSES

30 TAC §§330.63(e)(2), 330.61(j)(2)

2.1 Faulting

The property on which the proposed CTD Landfill is to be located was examined for the presence of faulting according to §330.555 criteria. A fault study was conducted which included the review of aerial photographs for the site and available geologic literature and maps of the area. Additionally, site reconnaissance was conducted as well as an examination of site-specific boring data.

The site was examined for the presence of faulting according to 30 TAC §330.555 criteria.

The site and immediate area were investigated for:

- Structural damage to constructed facilities (roadways, railways, and buildings).
- Scarps in natural ground.
- Presence of surface depressions (sag ponds and ponded water).
- Structural control of natural streams.
- Vegetation changes.
- Open cell excavations (visual examinations to detect changes in subsoil lithology indicating stratigraphic offsets).
- Presence of lineations on aerial maps and topographic sheets. The following historical imagery (aerial photographs) were reviewed:

12/1985	7/2008	10/1014	9/2017 (2)	11/2020	6/2022
1/1995	12/2009	3/2015	3/2018	5/2021	2/2023
2/1995	6/2011	7/2015	8/2018	10/2021	3/2024
9/2004	4/2012 (2)	1/2016 (2)	11/2018	4/2022	10/2024
10/2005	4/2013	1/2017	10/2019	5/2022	

An experienced geologist conducted a site walkover to identify possible physical evidence caused by faulting. No unusual scarps or topographic breaks were interpreted within 200 feet of the site. The site was examined for indications of faulting in accordance with 30 TAC §330.555(b)(1-12). No evidence of faulting was found by examination of the area roadways; no structural influence of stream courses was found; and no unusual relief or topographic features, such as sag ponds or truncated alluvial spurs, were observed on the site.

The streets within a half-mile of the site were driven to look for evidence of repairs, sags, or abrupt changes of grade that could indicate subsidence faulting in the site vicinity. The streets were generally asphalt-paved and were in good condition. No evidence of subsidence faulting was observed. In addition, facades of buildings and houses in the same area were viewed for structural damage that could have resulted from subsidence faulting. None was observed.

A map of Quaternary faults was reviewed for fault locations in the vicinity of the facility (see Drawing E4.4). The Quaternary period includes both the Holocene time period (present to 10,000 years ago) and the Pleistocene period (10,000 years ago to 1,650,000 years ago). There were no faults within 200 feet of the facility shown on the map.

No fault scarps were observed at the surface within 200 feet of the site and there was no evidence of vertical subsidence observed. No vertical displacement or stratigraphic offsets indicative of faults were observed in outcrops or any of the cores from the exploratory borings. In addition, no Holocene faults were shown on a published map of Quaternary faults in the U.S. generated the U.S. Geological Survey (USGS) in conjunction with the Texas Bureau of Economic Geology.

In summary, based on the review of regional data, aerial photographs, and subsurface geologic structure maps, there are no geologic faults with Holocene-age displacements in the vicinity and there is no faulting activity or differential subsidence that could adversely affect the landfill. The site complies with 30 TAC §330.555(a).

Wise County is located in the Bend Arch-Fort Worth Basin. The stratigraphy of the Bend Arch-Fort Worth Basin is characterized by sedimentary strata and includes limestones, sandstones, and shales (Beak et al., 2015). In Wise County, gas reserves have been developed in the Barnett Shale which is an unconventional shale deposit in the Fort Worth Basin adjoining the Bend Arch. The Barnett Shale is of Mississippian-age (320 to 360 million years ago) and extends throughout the Bend Arch-Fort Worth Basin. The top of the Barnett Shale is approximately 6,000 to 7,000 feet below ground surface (bgs) in the vicinity of the site (Patterson, 2010). In the northeastern portion of the Fort Worth Basin, the Barnett Shale is divided by the Forestburg Limestone, but this formation tapers out towards the southern edge of Wise County (Bruner & Smosna, 2011). The Barnett Shale is bounded by the Chappel Limestone below it and the Marble Falls Limestone above it (Bruner & Smosna, 2011).

2.2 Seismic Impact Zones

Consistent with §330.61(j)(3) and §330.557, seismic impact zones documentation is provided to demonstrate that the CTD Landfill meets the location restriction for seismic impact zones.

TCEQ regulations state that no new municipal solid waste landfill (MSWLF) units or lateral expansions shall be located in seismic impact zones unless the owner or operator demonstrates that all containment structures, including liners, leachate collection systems, and surface water control systems are designed to resist the maximum horizontal acceleration in lithified earth for the site.

The seismic impact zone as defined by §330.557 is an area with a 10 percent or greater probability that the maximum horizontal acceleration in lithified earthen material, expressed as a percentage of the earth's gravitational pull (g), will exceed 0.10 g in 250 years. The facility lies in an area where the peak gravitational acceleration, with a 2% probability of being exceeded in 50 years, is less than 10% gravity (less than 0.1 g). This is equivalent to a 10% probability in 250 years. Appendix E4, Drawing E4.1 shows the site location on the USGS 2014 Seismic Hazard Maps. The proposed CTD Landfill is not located within a seismic impact zone.

2.3 Unstable Areas

Consistent with §§330.63(e)(2), 330.61(j)(4), and 330.559, unstable areas documentation is provided to demonstrate that the CTD Landfill meets the location restriction for unstable areas.

TCEQ regulations require that owners or operators of new MSWLF units, existing MSWLF units, and lateral expansions located in an unstable area shall demonstrate that engineering measures have been incorporated into the MSWLF unit's design to ensure that the integrity of the structural components of the MSWLF unit will not be disrupted.

An unstable area is defined by the TCEQ as a location that is susceptible to natural or human-induced events or forces capable of impairing the integrity of some or all of the landfill's structural components responsible for preventing releases from a landfill. An unstable area can exhibit poor foundation conditions, areas susceptible to mass movement, and karst terrains.

The determination of potential unstable areas at the landfill site is based on site observations and a review of existing documentation for the site. Based on this review, the foundation conditions and the geological formations are stable. In addition, there is no evidence to suspect mass movement of natural formations of earthen material on or in the vicinity of this site. The proposed landfill components were evaluated with respect to settlement, heave, and slope stability. The detailed analysis is included in Part III, Attachment D5. Based on the results of these analyses, the existing and proposed human-made features have been predicted to have adequate factors of safety with respect to stability.

Based on site observations, a review of existing geological data, and geotechnical analysis of the structural components of the landfill development, the site is not located in an unstable area and the integrity of the landfill is not expected to become impaired by natural or human-induced events.

3 REGIONAL AQUIFERS

30 TAC §330.63(e)(3)

3.1 Paluxy Aquifer

The Paluxy Aquifer is the upper member of the Trinity Group south of the Glen Rose pinchout. It crops out in Hood, Parker, Tarrant, and Wise Counties. The dip is easterly at an average rate of 30 feet per mile, increasing to 80 feet per mile near the downdip limit of fresh to slightly saline water (Beak & Mravik, 2015). The Paluxy is composed of predominately fine to coarse-grained, friable, homogeneous, white quartz sand interbedded with sandy, silty, calcareous clay or shale. In general, coarse-grained sand is in the lower part of the formation. The Paluxy grades upward into fine-grained sand with variable amounts of shale and clay. The sands are usually well sorted, poorly cemented, and cross-bedded.

The primary source of recharge to the Paluxy is precipitation on the outcrop. Secondary sources include recharge from streams flowing across the outcrop and surface-water seepage from lakes. The Brazos and Trinity River systems, Eagle Mountain Reservoir, and Lake Worth are examples (Nordstrom, 1982). Only a small fraction of the amount of precipitation is available as effective recharge due to runoff and evapotranspiration. Thickness of the Paluxy varies considerably from a maximum of 400 feet in the northern areas to less than 40 feet in the south and southeast extent.

Water in the outcrop area is under water-table conditions. In downdip areas, water is under artesian conditions and is confined under hydrostatic pressure from overlying formations. The average rate of movement of water in the Paluxy amounts to less than 2 feet per year in an easterly direction. Hydraulic conductivity of the Paluxy averages 78 gal/day/ft^2 (Nordstrom, 1982). Drawing E1.4 is a regional potentiometric surface map of the Paluxy Aquifer. Discharge from the Paluxy occurs naturally through springs and evapotranspiration and artificially through pumping. Transmissivity of the Paluxy averages 3,700 gal/day/ft (Nordstrom, 1982). Permeabilities likely increase from the outcrop in a downdip direction and from south to north.

The Paluxy yields small to moderate amounts of fresh to slightly saline water to public, industrial, domestic, and livestock wells. Wells completed in the Paluxy have water with chemical quality that is generally better than water from other Cretaceous aquifers (Nordstrom, 1982). The Paluxy generally exhibits chemical signatures of slightly high $CaCO_3$ with fluoride levels increasing in the downdip part of the aquifer; total dissolved solids are approximately 600 mg/L in the groundwater (Nordstrom, 1982). The hydraulic properties of the Paluxy Aquifer are summarized in Table 2.

3.2 Antlers Aquifer

The Antlers Aquifer combines groundwater availability of both the Paluxy and Twin Mountains Aquifers. The Antlers crops out mainly in Cooke, Montague, and Wise Counties. The Antlers dips to the southeast at an average rate of 20 feet per mile near its outcrop to 70 feet per mile near its southeastern limit (Beak & Mravik, 2015). A typical section of the Antlers consists of a basal conglomerate and gravel overlain by a fine white to gray poorly consolidated sand in massive cross-bedded layers interbedded with layers of red, purple, or gray clay in discontinuous lenses scattered throughout the formation. A middle section of Antlers contains considerably more clay beds than the upper or lower sections, and to the south (near the up-dip limit of the Glen Rose) limestone beds also occur.

The top sections can be characterized by fine white to yellow packed sand with thin beds of multicolored clay resting on a basal layer of gravel (Nordstrom, 1982).

Total thickness of the Antlers varies from approximately 400 feet near the outcrop to about 900 feet near the up-dip limit of the Glen Rose Limestone in southeast Grayson County. The primary source of groundwater in the Antlers is precipitation on the outcrop. Surface water seepage from lakes and streams on the outcrop is also a source of groundwater. Water in the outcrop area is under water table conditions. Down-dip from the outcrop, the water is confined under hydrostatic pressure and is under artesian conditions (Nordstrom, 1982).

The average rate of movement through the Antlers is approximately 1 to 2 feet per year. Groundwater moves slowly downdip in an east-southeast direction with a hydraulic conductivity ranging 25 to 53 gal/day/ft^2 (Nordstrom, 1982). Drawing E1.5 is a potentiometric surface map of the Antlers and Twin Mountains Aquifers. Water from the Antlers is used for municipal (public) supply, as well as for irrigation. The water quality of the Antlers derived from the outcrop is mostly hard to very hard, while water from the downdip location is generally soft. High iron concentrations near the outcrop are also characteristic of the water. Total dissolved solids range from 200 to 1,000 mg/L in the groundwater. Water quality is generally regarded as "excellent" for most purposes (Nordstrom, 1982). Hydraulic properties are summarized in Table 2.

Table 2
Hydraulic Properties of Regional Aquifers
Compiled from Texas Water Department Board (TWDB), 1990 and 1999; Nordstrom, 1982

Parameters	Paluxy Aquifer	Antlers Aquifer
Composition	Sand and shale	Sandstone, sand, limestone
Transmissivity	Average 3,700 gal/day/ft	Average range 5,000 to 10,000 gal/day/ft
Hydraulic Conductivity	Average 78 gal/day/ft^2	Average range 25 to 53 gal/day/ft^2
Water Table / Confined	Water Table and Confined	Water Table and Confined
Groundwater Flow Rate	< 2 feet per year	1 to 2 feet per year
Water Quality Total Dissolved Solids	606.7 mg/L	200 to 1000 mg/L
Recharge Zones	Outcrop area in Hood, Parker, Tarrant, and Wise counties & additional recharge from lakes & streams on the outcrop	Outcrop area in Cooke County
Regional Water Table	See Drawing E1.4	See Drawing E1.5
Present Use of Water	Municipal, industrial, irrigation, domestic	Public water supply and domestic
Identification of Water Wells Within 1 Mile	See Drawing E1.6	See Drawing E1.6

3.3 Water-Well Locations

3.3.1 Wells Within One Mile

A search was conducted in 2024 to identify water wells within a one-mile radius around the site. The water well search included the following sources:

- Texas Water Development Board (TWDB) Water Data Interactive (https://www3.twdb.texas.gov/apps/waterdatainteractive/groundwaterdataviewer)
- TCEQ Water Well Report Viewer, Plotted Wells by Grid Number: 19-60-8, 19-60-5, 16-60-6, 19-60-9 (https://www.tceq.texas.gov/gis/waterwellview)
- Upper Trinity Groundwater Conservation District
- A windshield search for potential water well locations

The 2024 database search identified 72 water wells that were clearly located within one mile of the site. An additional 78 water wells that could possibly be located within one mile were identified through the TCEQ database.

There is one water well location that was verbally communicated to the applicant. This possible water well location is included in Table 3 and shown on Drawing E1.6.

An attempt was made to locate wells visible from the roadway within one mile of the proposed facility. The windshield survey did not identify other sites that are likely to be water wells based on the visual identification of the surface equipment, such as well houses, pump handles, windmills or pressure tanks, etc.

The information about each of the wells is summarized in Table 3. Located wells are shown on Drawing E1.6 in Appendix E1.

Available references were checked for locations of springs within one mile of the site (Brune, 1975 and 2002), and none were found. In addition, no springs were identified on site.

Table 3
Water Wells Within One Mile

The well use abbreviations are: A – Agriculture, D – Domestic, Ind – Industrial, Irr – Irrigation, L – Livestock, Mu – Municipal, O – Other, R – Rig Supply, U – Unused, Unk – Unknown

Source	State ID or Grid Number	Map ID	Latitude	Longitude	Date	Depth	Well Use	Completion Formation *
Texas Water Development Board Groundwater Database (TWDB)- 2024								
TWDB	1960602	1960602	33.051	-97.527	4/3/1975	115	Ind	Paluxy
TWDB	1960804	1960804	33.025	-97.545	2022	140	D	Glen Rose
Upper Trinity Groundwater Conservation District (UTGCD) - 2024								
UTGCD	18402	1960804	33.025	-97.545	2022	140	D, L	Glen Rose/Antlers
UTGCD	1783	198636	33.055	-97.5625	9/24/09	300	D	Antlers
UTGCD	2509	225970	33.03889	-97.534167	6/29/10	Unk	D	Antlers
UTGCD	2626	229208	33.03983	-97.526611	8/11/10	240	L	Antlers
UTGCD	2818	2818	33.05641	-97.53279	11/9/10	Unk	D	Antlers
UTGCD	3199	3199	33.04101	-97.53509	6/1/11	Unk	D	Antlers
UTGCD	4078	317954	33.03227	-97.54175	1/6/12	290	D	Antlers
UTGCD	4111	4111	33.04718	-97.563483	1/23/12	420	O	Antlers
UTGCD	4458	304929	33.0385	-97.524133	9/30/12	340	D	Antlers
UTGCD	4495	327996	33.03285	-97.551617	6/15/12	347	D	Antlers
UTGCD	4546	4546	33.03292	-97.551633	7/11/12	Unk	D	Antlers
UTGCD	5060	313481	33.03817	-97.529778	2/10/13	Unk	D	Antlers
UTGCD	5288	5288	33.0382	-97.531967	5/14/13	380	D	Antlers
UTGCD	7038	381767	33.03683	-97.530517	10/16/14	Unk	D	Antlers
UTGCD	7126	7126	33.05408	-97.520899	Unk	Unk	Mu	Antlers
UTGCD	7127	7127	33.05345	-97.527328	Unk	Unk	Mu	Antlers

Table 3
Water Wells Within One Mile (continued)

The well use abbreviations are: A – Agriculture, D – Domestic, Ind – Industrial, Irr – Irrigation, L – Livestock, Mu – Municipal, O – Other, R – Rig Supply, U – Unused, Unk – Unknown

Source	State ID or Grid Number	Map ID	Latitude	Longitude	Date	Depth	Well Use	Completion Formation *
UTGCD (Continued) - 2024								
UTGCD	7128	7128	33.05396	-97.520887	Unk	Unk	U	Antlers
UTGCD	7129	7129	33.05376	-97.520873	Unk	Unk	Mu	Antlers
UTGCD	8815	430530	33.04545	-97.53015	6/18/16	Unk	D	Antlers
UTGCD	9161	463295	33.05942	-97.5511	10/12/16	175	D	Antlers
UTGCD	9379	448015	33.02544	-97.535	3/14/17	375	D	Antlers
UTGCD	9769	447535	33.05795	-97.54866	4/19/17	300	D	Antlers
UTGCD	10323	467092	33.05892	-97.551912	10/17/17	300	D	Antlers
UTGCD	10361	468462	33.05516	-97.530742	10/17/17	175	D	Antlers
UTGCD	10739	476330	33.05611	-97.54865	2/27/18	370	D	Antlers
UTGCD	10754	470854	33.05237	-97.54945	2/9/18	360	D	Antlers
UTGCD	10904	10904	33.05541	-97.526739	Unk	Unk	D	Antlers
UTGCD	10927	483513	33.03515	-97.53515	4/24/18	355	D	Antlers
UTGCD	11004	503762	33.05308	-97.534433	5/8/18	360	D	Antlers
UTGCD	12147	513978	33.02926	-97.550943	5/14/19	380	D	Antlers
UTGCD	12618	523568	33.03895	-97.536966	8/7/19	400	D	Antlers
UTGCD	13334	544103	33.05886	-97.54862	3/1/20	360	D	Antlers
UTGCD	13807	556975	33.03856	-97.53661	8/17/20	420	D	Antlers
UTGCD	13954	13954	33.02903	-97.535783	8/5/20	160	L	Antlers
UTGCD	14544	579656	33.0586	-97.54787	1/28/21	370	D	Antlers
UTGCD	14942	567964	33.04451	-97.53163	2/24/21	160	D	Antlers
UTGCD	16564	591477	33.05574	-97.530547	12/10/21	230	D	Antlers
UTGCD	16747	16747	33.0436	-97.5458	Unk	125	U	Antlers
UTGCD	17176	634220	33.05908	-97.550778	3/16/23	320	D	Antlers
UTGCD	17198	619485	33.03927	-97.53054	9/26/22	240	D	Antlers
UTGCD	18168	18168	33.05995	-97.552623	7/24/23	340	D	Antlers
UTGCD	18364	623148	33.03972	-97.533024	9/9/22	400	D	Antlers
UTGCD	19178	650818	33.04146	-97.52052	10/11/23	200	D	Antlers
UTGCD	20520	662456	33.04158	-97.533421	2/26/24	240	D	Antlers
UTGCD	21281	21281	33.03973	-97.536191	7/23/24	360	D	Antlers
UTGCD	21295	21295	33.05385	-97.52081	Unk	Unk	Mu	Antlers
State of Texas Well Reports – State Drilling Report (SDR) - 2024								
SDR	11823	11823	33.037	-97.524	6/26/2002	400	D	Unk
SDR	13287	13287	33.041	-97.531	8/10/2002	155	D	Unk
SDR	32465	32465	33.059	-97.523	12/3/2003	200	D	Unk
SDR	32897	32897	33.029	-97.550	4/9/2003	400	D	Unk
SDR	44224	44224	33.051	-97.542	6/18/2004	220	Irr	Unk
SDR	44235	44235	33.051	-97.542	6/22/2004	220	Irr	Unk
SDR	48065	48065	33.044	-97.536	8/6/2004	140	D	Unk

Table 3
Water Wells Within One Mile (continued)

The well use abbreviations are: A – Agriculture, D – Domestic, Ind – Industrial, Irr – Irrigation, L – Livestock, Mu – Municipal, O – Other, R – Rig Supply, U – Unused, Unk – Unknown

Source	State ID or Grid Number	Map ID	Latitude	Longitude	Date	Depth	Well Use	Completion Formation *
SDR - 2024 (Continued)								
SDR	93635	93635	33.026	-97.533	7/7/2006	180	D	Unk
SDR	101510	101510	33.029	-97.554	8/22/2006	380	D	Unk
SDR	107373	107373	33.063	-97.546	4/27/2005	360	D	Unk
SDR	131392	131392	33.038	-97.534	1/8/2008	145	D	Paluxy
SDR	136694	136694	33.028	-97.529	1/31/2008	180	D	Unk
SDR	143311	143311	33.037	-97.535	2/28/2008	180	D	Unk
SDR	153862	153862	33.040	-97.529	9/17/2008	336	D	Unk
SDR	181304	181304	33.059	-97.562	4/7/2006	310	D	Unk
SDR	193301	193301	33.054	-97.526	3/17/2008	320	D	Unk
SDR	196731	196731	33.051	-97.521	3/25/2003	180	Irr	Unk
SDR	198364	198364	33.058	-97.533	8/7/2008	320	D	Unk
SDR	198636	198636	33.055	-97.563	9/24/2009	300	D	Unk
SDR	222513	222513	33.054	-97.528	3/22/2007	165	D	Unk
SDR	225970	225970	33.039	-97.534	6/29/2010	305	D	Unk
SDR	229208	229208	33.040	-97.527	8/9/2010	240	D	Unk
SDR	281568	281568	33.047	-97.563	1/16/2012	460	R	Unk
SDR	304929	304929	33.039	-97.524	9/25/2012	340	D	Unk
SDR	313481	313481	33.038	-97.530	2/9/2013	360	D	Unk
SDR	317954	317954	33.032	-97.542	1/6/2012	290	D	Unk
SDR	321729	321729	33.038	-97.532	5/13/2013	380	D	Unk
SDR	324004	324004	33.052	-97.523	9/13/2012	320	D	Unk
SDR	327996	327996	33.033	-97.552	7/11/2012	347	D	Unk
SDR	328979	328979	33.049	-97.528	6/24/2006	350	D	Unk
SDR	381767	381767	33.037	-97.531	10/10/2014	320	D	Unk
SDR	450530	450530	33.045	-97.530	6/18/2016	260	D	Unk
SDR	445275	445275	33.041	-97.521	2/20/2017	260	D	Unk
SDR	447535	447535	33.058	-97.549	4/19/2017	300	D	Unk
SDR	448015	448015	33.025	-97.535	3/14/2017	380	D	Unk
SDR	463295	463295	33.059	-97.551	10/16/2016	175	D	Unk
SDR	467092	467092	33.059	-97.552	10/17/2017	300	D	Unk
SDR	468462	468462	33.055	-97.531	10/17/2017	180	D	Unk
SDR	470854	470854	33.052	-97.549	2/9/2018	360	D	Unk
SDR	476330	476330	33.056	-97.549	2/27/2018	380	D	Unk
SDR	483513	483513	33.035	-97.535	4/23/2018	355	D	Unk
SDR	503762	503762	33.053	-97.534	5/8/2018	360	D	Unk
SDR	513978	513978	33.029	-97.551	5/14/2018	380	D	Unk
SDR	523568	523568	33.039	-97.537	8/7/2019	400	D	Unk
SDR	544103	544103	33.059	-97.549	2/28/2020	360	D	Unk

Table 3
Water Wells Within One Mile (continued)

The well use abbreviations are: A – Agriculture, D – Domestic, Ind – Industrial, Irr – Irrigation, L – Livestock, Mu – Municipal, O – Other, R – Rig Supply, U – Unused, Unk – Unknown

Source	State ID or Grid Number	Map ID	Latitude	Longitude	Date	Depth	Well Use	Completion Formation *
SDR - 2024 (Continued)								
SDR	556975	556975	33.039	-97.536	8/3/2020	420	D	Unk
SDR	567964	567964	33.045	-97.532	2/22/2021	160	D	Unk
SDR	576956	576956	33.059	-97.548	1/28/2021	370	D	Unk
SDR	591477	591477	33.056	-97.531	12/10/2021	240	D	Unk
SDR	619485	619485	33.039	-97.531	9/23/2022	240	D	Unk
SDR	623148	623148	33.040	-97.533	9/9/2022	400	D	Unk
SDR	634220	634220	33.059	-97.551	3/16/2023	320	D	Unk
SDR	647050	647050	33.060	-97.553	7/24/2023	340	D	Unk
SDR	650818	650818	33.025	-97.545	10/11/2023	200	D	Unk
SDR	662465	662465	33.042	-97.533	2/26/2024	260	D	Unk
Verbal Identification - 2024								
Verbal	NA	P1	Unk	Unk	Unk	Unk	Unk	Unk
Wells likely within one mile but not clearly located from TCEQ Well Reports by Grid Number - 2024								
TCEQ	19-60-8	NA	NA	NA	1967	230	D	Unk
TCEQ	19-60-8	NA	NA	NA	7/28/1971	360	D	Unk
TCEQ	19-60-8	NA	NA	NA	5/5/1974	300	D	Unk
TCEQ	19-60-8	NA	NA	NA	5/15/1975	135	D	Unk
TCEQ	19-60-8	NA	NA	NA	6/4/1975	105	D	Unk
TCEQ	19-60-8	NA	NA	NA	12/23/1975	242	D	Unk
TCEQ	19-60-8	NA	NA	NA	10/23/1984	360	D	Unk
TCEQ	19-60-8	NA	NA	NA	9/8/1985	145	D	Unk
TCEQ	19-60-8	NA	NA	NA	9/18/1985	400	D	Unk
TCEQ	19-60-8	NA	NA	NA	11/2/1987	60	D	Unk
TCEQ	19-60-8	NA	NA	NA	11/5/1987	290	D	Unk
TCEQ	19-60-8	NA	NA	NA	12/7/1988	165	D	Unk
TCEQ	19-60-8	NA	NA	NA	4/16/2002	380	D	Unk
TCEQ	19-60-8	NA	NA	NA	6/25/2002	390	D	Unk
TCEQ	19-60-5	NA	NA	NA	1972	320	D	Unk
TCEQ	19-60-5	NA	NA	NA	1975	283	D	Unk
TCEQ	19-60-5	NA	NA	NA	1977	312	D	Unk
TCEQ	19-60-5	NA	NA	NA	1980	350	D	Unk
TCEQ	19-60-5	NA	NA	NA	1984	295	D	Unk
TCEQ	19-60-5	NA	NA	NA	1985	155	D	Unk
TCEQ	19-60-5	NA	NA	NA	1986	345	D	Unk
TCEQ	19-60-5	NA	NA	NA	1987	200	D	Unk
TCEQ	19-60-5	NA	NA	NA	1994	340	D	Unk
TCEQ	19-60-5	NA	NA	NA	4/6/1966	255	D	Unk
TCEQ	19-60-5	NA	NA	NA	8/17/1970	300	D	Unk

Table 3
Water Wells Within One Mile (continued)

The well use abbreviations are: A – Agriculture, D – Domestic, Ind – Industrial,
Irr – Irrigation, L – Livestock, Mu – Municipal, O – Other, R – Rig Supply, U – Unused, Unk – Unknown

Source	State ID or Grid Number	Map ID	Latitude	Longitude	Date	Depth	Well Use	Completion Formation *
Wells likely within one mile but not clearly located from TCEQ Well Reports by Grid Number (Continued) - 2024								
TCEQ	19-60-5	NA	NA	NA	11/3/1970	100	D	Unk
TCEQ	19-60-5	NA	NA	NA	11/8/1972	96	D	Unk
TCEQ	19-60-5	NA	NA	NA	12/1/1973	260	D	Unk
TCEQ	19-60-5	NA	NA	NA	12/15/1973	260	D	Unk
TCEQ	19-60-5	NA	NA	NA	11/26/1975	275	D	Unk
TCEQ	19-60-5	NA	NA	NA	8/1/1980	280	D	Unk
TCEQ	19-60-5	NA	NA	NA	7/13/1984	330	D	Unk
TCEQ	19-60-5	NA	NA	NA	3/31/1987	300	D	Unk
TCEQ	19-60-5	NA	NA	NA	11/17/1987	100	D	Unk
TCEQ	19-60-5	NA	NA	NA	12/25/1987	140	D	Unk
TCEQ	19-60-5	NA	NA	NA	4/8/1988	355	D	Unk
TCEQ	19-60-5	NA	NA	NA	7/14/1988	280	D	Unk
TCEQ	19-60-5	NA	NA	NA	7/20/1988	295	D	Unk
TCEQ	19-60-5	NA	NA	NA	8/31/1990	340	D	Unk
TCEQ	19-60-5	NA	NA	NA	2/20/1995	340	D	Unk
TCEQ	19-60-5	NA	NA	NA	4/16/1997	150	D	Unk
TCEQ	19-60-5	NA	NA	NA	5/6/1998	150	D	Unk
TCEQ	19-60-6	NA	NA	NA	1967	240	D	Unk
TCEQ	19-60-6	NA	NA	NA	1970	312	Unk	Unk
TCEQ	19-60-6	NA	NA	NA	1971	140	Unk	Unk
TCEQ	19-60-6	NA	NA	NA	1977	180	D	Unk
TCEQ	19-60-6	NA	NA	NA	1978	180	D	Unk
TCEQ	19-60-6	NA	NA	NA	1983	120	D	Unk
TCEQ	19-60-6	NA	NA	NA	1985	295	D	Unk
TCEQ	19-60-6	NA	NA	NA	1985	200	D	Unk
TCEQ	19-60-6	NA	NA	NA	1988	190	D	Unk
TCEQ	19-60-6	NA	NA	NA	1994	165	D	Unk
TCEQ	19-60-6	NA	NA	NA	1996	200	D	Unk
TCEQ	19-60-6	NA	NA	NA	1996	150	D	Unk
TCEQ	19-60-6	NA	NA	NA	1998	200	D	Unk
TCEQ	19-60-6	NA	NA	NA	1999	260	D	Unk
TCEQ	19-60-6	NA	NA	NA	4/10/1963	240	D	Unk
TCEQ	19-60-6	NA	NA	NA	5/14/1973	182	D	Unk
TCEQ	19-60-6	NA	NA	NA	12/10/1979	175	D	Unk
TCEQ	19-60-6	NA	NA	NA	12/12/1979	180	D	Unk
TCEQ	19-60-6	NA	NA	NA	11/29/1981	100	D	Unk
TCEQ	19-60-6	NA	NA	NA	5/18/1985	110	D	Unk
TCEQ	19-60-6	NA	NA	NA	6/9/1986	280	D	Unk

Table 3
Water Wells Within One Mile (continued)

The well use abbreviations are: A – Agriculture, D – Domestic, Ind – Industrial, Irr – Irrigation, L – Livestock, Mu – Municipal, O – Other, R – Rig Supply, U – Unused, Unk – Unknown

Source	State ID or Grid Number	Map ID	Latitude	Longitude	Date	Depth	Well Use	Completion Formation *
Wells likely within one mile but not clearly located from TCEQ Well Reports by Grid Number (Continued) - 2024								
TCEQ	19-60-6	NA	NA	NA	2/13/1989	280	D	Unk
TCEQ	19-60-6	NA	NA	NA	2/17/1994	200	D	Unk
TCEQ	19-60-6	NA	NA	NA	9/26/1997	165	D	Unk
TCEQ	19-60-6	NA	NA	NA	7/30/1998	180	D	Unk
TCEQ	19-60-6	NA	NA	NA	8/30/1998	200	Test	Unk
TCEQ	19-60-6	NA	NA	NA	9/28/2000	270	D	Unk
TCEQ	19-60-6	NA	NA	NA	3/13/2002	220	D	Unk
TCEQ	19-60-6	NA	NA	NA	8/8/2002	160	D	Unk
TCEQ	19-60-9	NA	NA	NA	1996	200	D	Unk
TCEQ	19-60-9	NA	NA	NA	2000	200	D	Unk
TCEQ	19-60-9	NA	NA	NA	5/21/1996	115	D	Unk
TCEQ	19-60-9	NA	NA	NA	2/11/1999	275	D	Unk
TCEQ	19-60-9	NA	NA	NA	1/21/2001	170	D	Unk
TCEQ	19-60-9	NA	NA	NA	10/18/2001	140	D	Unk
TCEQ	19-60-9	NA	NA	NA	11/19/2001	133	D	Unk

* Completion formation information obtained from TWDB database, UTGCD, and/or SDR forms.
Shaded fill indicates duplicate entries.
NA – Not Available
Unk - Unknown

3.3.2 Oil and Gas Well Locations

An oil and gas well search of state records was conducted in February 2024 to identify locations of existing or abandoned on-site crude oil or natural gas wells, or other wells associated with mineral recovery that are under the jurisdiction of the Railroad Commission (RRC). As shown on Drawing E4.3, within the facility boundary, there are bottom hole locations for two existing gas wells, Well #44 (API 37169) and Well #3 (API 36307) and the surface location for one plugged gas well, Well #3 (API 35300).

4 SUBSURFACE INVESTIGATION REPORT

30 TAC §330.63(e)(4)(A)-(H)

4.1 Field Investigation

The site characterization investigation of the geology, geotechnical properties, and hydrogeology of the site has resulted in over 50 borings and piezometers. Based on the site characterization, a sufficient number of borings were drilled to establish subsurface site stratigraphy and to determine the geotechnical properties of the soils beneath the site. Geologic strata have been characterized by depths of more than 108 feet. Based on correlation of strata identified in the borings, the uppermost aquifer and lower confining unit were identified.

Borings were drilled in accordance with the TCEQ approved boring plan and established field exploration methods. The installation, abandonment, and plugging of borings were performed in accordance with current TCEQ rules.

4.1.1 Soil Boring Plan

Drilling activities for the recent site investigation were performed in accordance with the boring plan for this site that was approved in compliance with 30 TAC §330.63(e)(4) by a letter dated March 12, 2024, from the TCEQ (pages E2.1a and E2.1b). A boring location map is shown in Appendix E2, Drawing E2.2. The depths of borings and piezometers range from 51 feet to 110 feet. A summary of the borings is provided in Table 4.

The approved Soil Boring Plan (SBP) proposed to drill 29 borings and install 12 piezometers. In the approved SBP, the Elevation of Deepest Excavation (EDE) was stated as 609 feet above mean sea level (ft/msl). The EDE has since been revised to 619.62 ft/msl. The borings (BME-1 through BME-29) were drilled to depths of at least 5 feet or 30 feet below the original proposed EDE (609 ft/msl) and the revised EDE (619.62 ft/msl).

During the field investigation it was determined that additional borings were needed to further define the shallow stratigraphy on the eastern perimeter of the site. Five additional borings (BME-30 through BME-34) were drilled for a total of 34 soil borings. Eight additional piezometers were installed for a total of 20 piezometers.

In addition, ten exploratory borings (B-1 through B-10) were logged by visually examining cuttings. These borings were done in order to determine availability of construction materials on site. The logs of these borings are included in Appendix E2.

4.1.2 Drilling Operations

Field drilling and sampling of the 34 borings (see Table 4), completed May 2024 to July 2024, in accordance with TCEQ approved boring plan and established field exploration methods. The field exploration program was under the direct supervision of a certified professional geologist. Borings were field-logged by a qualified geologist at the time of drilling in general accordance with ASTM D 2488. The data generated during the field exploration program are presented on the final logs of borings provided in Appendix E2 of this attachment. General notes supplementing the logs are on page E2.3.

Piezometers were installed adjacent to borings during July and August of 2024. Seven piezometers were installed in Unit I: P-3(S), P-11(S), P-24(S), P-31(S), P-32(S), P-33(S), and P-34(S). Four piezometers were installed in Unit III; P-3(M), P-11(M), P-32(M), and P-34(M). Seven piezometers were installed in Unit V; P-3(D), P-4(D), P-5(D), P-11(D), P-24(D), P-32(D), and P-34(D). Two piezometers were installed in Unit VII; P-6-VII and P-24-VII.

Table 4
Boring Details

Boring Number	Northing	Easting	Surface Elevation (ft/msl)	Total Depth of Boring (ft)	Bottom of Boring Elevation (ft/msl)	Depth Above (+) or Below (-) the EDE*
BME 2024 Borings						
BME-1	7064074.04	2260833.17	682.22	104.0	578.22	-41.40
BME-2	7064620.56	2260734.78	682.22	79.0	603.22	-16.40
BME-3	7065141.76	2260529.1	682.99	107.0	575.99	-43.63
BME-4	7065480.37	2260708.88	686.53	108.0	578.53	-41.09
BME-5	7066377.38	2260671.3	681.50	90.0	591.50	-28.12
BME-6	7066444.87	2261130.49	680.50	101.0	579.50	-40.12
BME-7	7066041.4	2261133.08	683.41	80.0	603.41	-16.21
BME-8	7065570.32	2261111.52	681.11	106.0	575.11	-44.51
BME-9	7064570.56	2261101.94	679.02	102.0	577.02	-42.60
BME-10	7063962.44	2261162.82	672.99	70.0	602.99	-16.63
BME-11	7064102.01	2261568.57	677.74	100.0	577.74	-41.88
BME-12	7064582.24	2251646.13	673.92	95.0	578.92	-40.70
BME-13	7065089.15	2261219.5	683.85	110.0	573.85	-45.77
BME-14	7066590.94	2261655.71	680.95	105.0	575.95	-43.67
BME-15	7066180.21	2262026.57	683.01	105.0	578.01	-41.61
BME-16	7065658.96	2262000.96	654.65	51.0	603.65	-15.97
BME-17	7064648.75	2262135.24	682.09	105.0	577.09	-42.53
BME-18	7064100.12	2262165.57	684.50	106.0	578.50	-41.12
BME-19	7063463.33	2262057.42	678.61	100.0	578.61	-41.01
BME-20	7063470.92	2262655.19	669.64	70.0	599.64	-19.98
BME-21	7064651.41	2262551.73	683.24	80.0	603.24	-16.38
BME-22	7064992.98	2262677.89	670.18	67.0	603.18	-16.44
BME-23	7065360.3	2262543.1	667.38	65.0	602.38	-17.24
BME-24	7066576.61	2262635.3	681.35	104.0	577.35	-42.27
BME-25	7066390.09	2263157.02	657.21	54.0	603.21	-16.41
BME-26	7064729.93	2263363.5	680.87	105.0	575.87	-43.75
BME-27	7064589.29	2262836	681.14	80.0	601.14	-18.48

Table 4
Boring Details (continued)

Boring Number	Northing	Easting	Surface Elevation (ft/msl)	Total Depth of Boring (ft)	Bottom of Boring Elevation (ft/msl)	Depth Above (+) or Below (-) the EDE*
BME 2024 Borings						
BME-28	7064049.637	2262980.52	668.10	90.0	578.10	-41.52
BME-29	7063212.67	2263120.12	664.12	65.0	599.12	-20.50
BME-30	7066558.45	2263409.87	688.42	38.0	650.42	+30.80
BME-31	7065874.74	2263418.41	683.55	37.5	646.05	+26.43
BME-32	7064671.12	2263448.92	682.06	89.5	592.56	-27.06
BME-33	7062877.7	2263446.52	681.60	31.0	650.60	+30.98
BME-34	7064381.12	2263444.34	682.62	88.0	594.62	-25.00

*Elevation of Deepest Excavation (EDE): 619.62 ft/msl.

4.2 Site Stratigraphy

Seven geologic units have been identified in the subsurface beneath the site. They are identified in Table 5 and described in the section below. Nine geologic cross sections of the site illustrate generalized subsurface conditions and interpreted correlations of the geologic and hydrogeologic units at the site (Drawings E3.2 through E3.10). The cross sections are based on lithologic and stratigraphic data from the logs of borings provided in Appendix E2. Drawing E3.1 shows the locations of the cross sections on a site map.

Table 5
Generalized Site Stratigraphy

Geologic Unit	Lithology	Average Depth to top of Unit (ft)	Average Thickness of Unit (ft)	Hydrogeologic Unit
Unit I	Alluvium	Surface	30.8	Perched Water Zone
Unit II	Limestone	28.2	5.0	Confining Unit (where present)
Unit III	Sandstone, Sandstone with Silt, Siltstone, Sandy Shale	33.0	18.2	Upper Groundwater Zone
Unit IV	Limestone and Shale	51.1	14.3	Upper Confining Unit to the Uppermost Aquifer (Base of landfill founded in this Unit).
Unit V	Sand, Sandstone, Sand with Silt, Sandy Shale	64.7	12.4	Uppermost Aquifer
Unit VI	Limestone, Shale, Shale with Silt	76.7	14.0*	Lower Confining Unit (Aquiclude) to Uppermost Aquifer
Unit VII	Sandstone, Siltstone, Sand with Silt, and Sand with Clay	88.3	11.8*	Lower Groundwater Zone

* Unit VI and Unit VII were not fully penetrated throughout the site.
** There is a Unit VIII that was encountered in 5 borings composed of Limestone and Shale with Sand.

4.2.1 Unit I – Alluvium

The site is currently used for an active soil mining operation. Most of the site had been excavated to varying depths within Unit I at the time of drilling. Lithologies observed in Unit I have been disturbed as part of the excavation process. After soil excavation, the over burden was returned back into the excavation, as such this Unit is primarily considered fill material. Material encountered in Unit I include the following: silty clay, sand with clay, sand, and gravel. Unit I was encountered from the surface to a maximum depth of 43 feet. The average thickness of this unit is approximately 30 feet.

4.2.2 Unit II – Limestone and Shale

Unit II is a hard massive bed of limestone and shale. The limestone layer was absent in ten borings BME-1, 2, 5, 6, 9, 14, 15, 18, 19, and 26. This Unit, where present, was encountered from 15 to 43 feet below ground surface (bgs). The thickness of Unit II ranges from 1 foot to 13 feet thick. A structural contour map of the top of Unit II is shown in Drawing E3.11.

4.2.3 Unit III – Sandstone, Sandstone with Silt, Siltstone, Sandy Shale

Unit III is composed of individual layers of sandy shale, sandstone, sandstone with silt, siltstone, silt, sand, and some interbeds of sandy shale. Unit III ranges from 2 to 56 feet thick with an approximate average thickness of 18 feet. Unit III is found on average at 33 feet bgs. This layer is present and correlatable across the site. A structural contour map is shown on Drawing E3.12.

4.2.4 Unit IV – Limestone and Shale

Unit IV is composed of individual layers of limestone and shale. Unit IV is present and correlatable across the site. Unit IV ranges from 5 to 27 feet thick with an average approximate thickness of 14 feet. The depth to Unit IV ranges between 23 and 72 feet deep with an average depth of approximately 51 feet bgs. A structural contour map of the top of Unit IV is provided as Drawing E3.13. The base of the landfill excavation will be primarily founded in this layer.

4.2.5 Unit V – Sand, Sandstone, Sand with Silt, Sandy Shale

Unit V is composed of individual layers of sand, sandstone, sand with silt, and with some interbeds of sandy shale. Unit V is present and correlatable across the site. Unit V ranges from 1 to 36 feet in thickness with an average thickness of 12.4 feet. Unit V is encountered at depths ranging between 37 and 85 feet deep. On average, Unit V can be found at approximately 64 feet bgs. A structural contour map on Unit V is provided as Drawing E3.14

4.2.6 Unit VI – Limestone, Shale with Sand, Shale with Silt

Unit VI is composed of individual layers of limestone, shale with sand, and shale with silt. Unit VI is correlatable across the site. Unit VI was not penetrated in all borings. The depth of the top of Unit VI ranges from 50 to 105 feet bgs, with an approximate average depth of the layer at 76 feet bgs. Where Unit VI was fully penetrated, the thickness ranges from 3.5 to 20 feet, with an approximate average thickness of 14 feet. A structural contour map of the top of Unit VI is shown in Drawing E3.15.

4.2.7 Unit VII – Sandstone, Siltstone, Sand with Silt, and Sand with Clay

Unit VII is composed of individual layers of sandstone, siltstone, sand with silt, and sand with clay. The average thickness is approximately 11.8 feet where this Unit was fully penetrated. Unit VII was present in borings in thickness that ranged between 5 and 19 feet. Unit VII is found at depths ranging from 90 to 108 feet deep, with an approximate average depth of 99 feet. There is a deeper Unit VIII encountered in five borings (BME-6, 8, 13, 14, and 17). where layers composed of limestone and shale with sand were encountered during drilling.

5 GEOTECHNICAL AND HYDROGEOLOGIC DATA

30 TAC §330.63(e)(5)(A)-(F)

5.1 Geotechnical Data

Laboratory tests were performed to determine the geotechnical properties of the subsurface materials that will be encountered in the excavation and to evaluate the suitability of the materials for the proposed waste management unit design. Samples of cohesive materials from each unit that will form the bottom and sides of the excavation and from the units at least 30 feet below the lowest excavation were tested to determine the soil characteristics and to provide a typical profile. Permeability tests were performed on undisturbed samples in accordance with 330.63(e)(5)(B)(i). Falling head permeability tests were performed on all of the samples because undisturbed samples could only be obtained from the low permeability materials such as shale and limestone but not from the coarser sands and gravels. The summary of material characteristics and the standard test methods are provided in Appendix E6.

Soils will be required for construction of the compacted soil liner and protective cover components of the liner system, and for the infiltration layer and erosion layer components of the final cover system. Soils will also be required for operational cover (weekly and intermediate) and general earthfill. Typical material requirements for the various landfill components are listed below.

Table 6
Typical Material Requirements for Landfill Construction

Landfill Component	Classification	LL	PI	% - 200	Hydraulic Conductivity cm/sec
Soil Liner	SC, CL, CH, MH	30 min	15 min	30 min	1 x 10^{-7} max
Infiltration Layer	SC, CL, CH, MH	30 min	15 min	30 min	1 x 10^{-7} max
General Fill, Protective Cover, Operational Cover	SC, CL, CH, ML, CL-ML, MH	No large rocks, not mixed with waste			
Erosion Layer	SC, CL, CH, SM, ML, CL-ML	Suitable to support plant growth			

The soil liner and final cover infiltration layer must be constructed from soils that can be compacted to form a low hydraulic conductivity barrier. The test results indicate that suitable materials are available in Units I and III. General fill, protective cover, operational cover and erosion layer soils should not contain large rocks or be mixed with waste. Erosion layer material must be capable of sustaining vegetation. The test results and boring logs indicate that any of the soil material excavated from the site will be suitable for use as general earthfill, operational and protective cover and that the surficial soils will be suitable for use as the final cover system erosion layer.

5.2 Groundwater Observation Points – Piezometers

Data from the 20 piezometers were used to characterize site hydrogeology. Details of the piezometers are provided in Table 7. Groundwater elevation levels for the site's piezometers are summarized in Table 8, included in Appendix E5.

Piezometer locations are shown on Drawing E2.2 of this attachment. Proposed monitoring well details are provided in Attachment 5.

Table 7
Piezometer Details

Piezometer No.	Date Installed	Total Depth (ft)	Surface Elevation (ft/msl)	Top of Casing Elevation (ft/msl)	Filter Pack Elevations (ft/msl)	Screened Elevations (ft/msl)	Unit Screened
BME 2024 Piezometers							
P-3S	8/02/2024	27.5	682.47	685.02	667.47 - 654.97	665.47 - 655.97	I
P-3M	8/10/2024	70.0	682.25	684.83	626.25 - 612.25	623.25 - 613.25	III
P-3D	8/10/2024	90.5	681.61	684.34	598.61 - 591.11	596.61 - 591.61	V
P-4D	8/11/2024	90.5	681.18	683.69	598.18 - 590.68	596.18 - 591.18	V
P-5D	8/09/2024	66.0	681.46	684.02	628.46 - 615.46	626.46 - 616.46	V
P-6VII	8/13/2024	91.0	679.98	682.48	596.98 - 588.98	594.98 - 589.98	VII
P-11S	8/02/2024	24.0	677.23	679.68	666.23 - 653.23	664.23 - 654.23	I
P-11M	8/08/2024	42.0	677.22	679.64	642.22 - 635.22	641.22 - 636.22	III
P-11D	8/07/2024	71.0	677.04	679.43	619.04 - 606.04	617.04 - 607.04	V
P-24S	8/02/2024	31.0	682.86	685.49	665.36 - 651.86	663.36 - 653.36	I
P-24D	8/10/2024	75.5	682.47	685.20	613.97 - 606.97	612.47 - 607.47	V
P-24VII	8/11/2024	105.0	682.33	684.77	585.33 - 577.33	583.33 - 578.33	VII
P-31S	8/01/2024	37.5	684.14	686.85	659.14 - 646.64	657.14 - 647.14	I
P-32S	8/01/2024	37.5	681.79	684.32	656.79 - 644.29	654.79 - 644.79	I
P-32M	8/11/2024	71.0	682.10	684.57	624.10 - 611.10	622.10 - 612.10	III
P-32D	8/11/2024	89.5	682.63	685.47	600.63 - 593.13	599.63 - 594.63	V
P-33S	7/30/2024	31.0	682.55	685.02	665.05 - 651.55	662.55 - 652.55	I
P-34S	7/30/2024	34.5	682.83	685.37	661.83 - 648.33	658.83 - 648.83	I
P-34M	8/09/2024	50.0	682.98	685.47	639.98 - 632.98	638.98 - 633.98	III
P-34D	8/09/2024	88.0	683.08	685.38	602.58 - 595.08	600.58 - 595.58	V

5.2.1 Water Level Measurements

Water levels at the site have been measured from August 2024 to present in site piezometers. This data is compiled in Table 8 and are included in Appendix E5. Measurements of water levels were made to 0.01 foot using an electronic water level indicator. Water level elevations were calculated using measured water levels and surveyed well elevations (top of casing).

The cross sections in Appendix E3 are annotated to document the level at which stabilized groundwater levels were obtained from site piezometers. Borehole water level data are noted on the logs when present. Borehole fluid level data were not used in engineering calculations because the piezometers were properly constructed and screened to provide water level data on individual strata; these data are much more reliable than borehole data.

5.3 Groundwater Monitoring Historical Analytical Data

This site is not permitted and thus does not have any existing groundwater monitoring wells. Therefore, there is no existing analytical data.

5.4 Hydrogeologic Units

5.4.1 Unit I – Perched Water Zone – Alluvium

Groundwater is contained in the Unit I alluvium. Groundwater enters Unit I as meteoric water infiltration from the surface. Current excavation activities have altered the natural flow of groundwater at the site.

Water levels in piezometers screened in Unit I range from 658.77 to 663.18 ft/msl. Groundwater present in this unit is under water table conditions. Groundwater flows toward the north-northwest in the northern portion of the site. Groundwater also flows toward the south-southwest in the southwest portion of the site. Potentiometric surface maps of Unit I are included in Appendix E5 as Drawings E5.2a through E5.2d. Slug tests were conducted in Unit I piezometers. The geometric mean of hydraulic conductivity values (K) calculated from the Unit I slug tests is 1.87 $\times 10^{-4}$ centimeters per second (cm/sec). The estimated flow velocity in Unit I is 1.17 feet per year (ft/yr).

5.4.2 Unit II – Confining Unit – Limestone and Shale

Unit II consists of hard beds of limestone and shale and ranges from 1 to 13 feet thick. This layer was missing from ten borings (BME-1, 2, 5, 6, 9, 14, 15, 18, 19, and 26). When present, the lithologic and hydrogeological characteristics of this unit act as a lower confining unit to Unit I and an upper confining unit to Unit III. A laboratory permeability test was run on an undisturbed sample of Unit II (BME-3). The hydraulic conductivity was calculated to be 2.8×10^{-8} cm/sec. The hydraulic conductivity worksheet is included in Appendix E6 as Drawing E6.2.

Where Unit II is absent, Unit I and Unit III are in direct communication.

5.4.3 Unit III – Upper Groundwater Zone – Sandstone, Sandstone with Silt, Siltstone, and Sandy Shale

Groundwater is contained in Unit III strata which is comprised of sandstone, sandstone with silt, sand, and some sandy shale interbeds. Groundwater enters Unit III on the outcrop of the Paluxy Sand Formation. Water levels in piezometers screened in Unit III range from 652.34 to 662.42 ft/msl. Groundwater present in this unit is under confined conditions where Unit II is present. Groundwater flow in Unit III flows toward the northwest. Potentiometric surface maps of Unit III are included in Appendix E5 as Drawings E5.3a through E5.3d. Slug tests conducted in Unit III had a geometric mean of hydraulic conductivity values (K) of 1.56×10^{-4} cm/sec. The estimated flow velocity in Unit III is 3.26 ft/yr.

Unit II acts as a lower confining unit to Unit I and an upper confining unit to Unit III. As previously discussed, Unit II is absent in borings BME-1, 2, 5, 6, 9, 14, 15, 18, 19, and 26. Units I and III are in direct communication with one another where Unit II is absent. Groundwater in these areas flows to the northwest.

5.4.4 Unit IV – Confining Unit – Limestone and Shale

Unit IV consists of layers of limestone and shale. This unit ranges from 5 to 27 feet across the site. The lithological and hydrogeological characteristics of this unit indicate that it serves as the lower confining unit for Unit III and an upper confining unit for the underlying Unit V.

Two undisturbed samples were submitted for laboratory permeability testing on the Unit IV strata (BME-18, BME-28). Results for hydraulic conductivity calculated were less than 4.3 x 10^{-9} and 1.00 x 10^{-9} cm/sec, respectively. The hydraulic conductivity worksheets are included in Appendix E6 as Drawings E6.10 and E6.14.

5.4.5 Unit V – Uppermost Aquifer – Sand, Sandstone, Sand with Silt, and Sandy Shale

Groundwater enters Unit V strata at its outcrop east of the site. Water levels in piezometers screened in Unit V range from 628.25 to 659.14 ft/msl. Groundwater present in this unit is under confined conditions. Groundwater is confined in Unit V by the overlying limestone of Unit IV and by the underlying limestone, shale with sand, and shale with silt of Unit VI. Potentiometric surface maps of Unit V are included in Appendix E5 as Drawings E5.4a through E5.4d. Groundwater flow is generally toward the west toward piezometers P-3 and P-4. In this area, groundwater is directed to its localized area in Unit V because of a depression in Unit III through Unit VI, as shown on Cross Sections B-B' and E-E' (see Drawings E3.3 and E3.6). The geometric mean of the hydraulic conductivity values (K) calculated from the Unit V slug tests is 4.60 x 10^{-5} cm/sec. The estimated groundwater flow velocity in Unit V is approximately 6.32 ft/yr.

5.4.6 Unit VI – Lower Confining Unit – Limestone, Shale with Sand, Shale with Silt

Unit VI consists of layers of limestone, shale with sand, and shale with silt. An average of approximately 14 feet and a maximum of 20 feet of this layer was penetrated by site borings. Two undisturbed samples were submitted for laboratory permeability testing on the Unit VI strata (BME-8 and BME-17). The hydraulic conductivity was calculated as 4.5 x 10^{-9} and less than 1.00 x 10^{-9} cm/sec, respectively. The laboratory hydraulic conductivity worksheets are included in Appendix E6 as Drawings E6.6 and E6.9. The lithological and hydrogeologic characteristics of this unit indicate that Unit VI serves as the lower confining unit to Unit V, the uppermost aquifer. This layer serves as the aquiclude to Unit V, the uppermost aquifer.

5.4.7 Unit VII – Sandstone, Siltstone, Sand with Silt, and Sand with Clay

Unit VII is composed of individual layers of sandstone, siltstone, sand with silt, and sand with clay. The bulk of the site subsurface investigation was focused on Units I through Unit VI because the landfill subgrade is to be founded in Layer IV. However, two piezometers were installed in Unit VII. Water levels in these piezometers range from 634.59 to 643.45 ft/msl. Slug tests were also conducted in these piezometers screened in Unit VII. The geometric mean of hydraulic conductivity values (K) from Unit VII is 2.66 x 10^{-6}.

5.5 Field Permeability (Slug) Tests & Hydraulic Conductivity

Slug tests were performed in October of 2024. The test results are summarized in Table 9 below. Graphs of slug test data are presented in Appendix E5. Locations where slug testing was performed are represented on Drawing E5.8.

Table 9
Hydraulic Conductivity Values From Slug Testing

Piezometer No.	Unit Screened	Lithology Screened	Hydraulic Conductivity* (cm/sec)
P-31S	I	Sand, silty	7.45×10^{-5}
P-32S	I	Sand, silty	1.81×10^{-4}
P-34S	I	Sand, silty	4.81×10^{-4}
P-3M	III	Sandstone	1.48×10^{-4}
P-11M	III	Sandstone with clay lenses	9.02×10^{-5}
P-32M	III	Sandstone and sand, silty	9.03×10^{-5}
P-34M	III	Sand, silty	4.92×10^{-4}
P-4D	V	Siltstone	7.44×10^{-5}
P-11D	V	Sandstone	3.76×10^{-5}
P-24D	V	Siltstone	3.48×10^{-5}
P-6 VII	VII	Sandstone with silt	1.40×10^{-6}
P-24 VII	VII	Siltstone	5.07×10^{-6}
Calculated Hydraulic Conductivity Values			
Geometric Mean	I	Perched Water Zone	1.87×10^{-4}
Geometric Mean	III	Upper Groundwater Zone	1.56×10^{-4}
Geometric Mean	V	Uppermost Aquifer	4.60×10^{-5}
Geometric Mean	VII	Unit VII	2.66×10^{-6}

*Values were calculated using the equation: $K = (K_{RH}K_{FH})^{1/2}$, where RH is the rising head value and FH is the falling head value. This equation provides the "best" hydraulic conductivity estimate based on the two values which can vary by up to a factor of 100 (Nielsen, 1991). Individual RH and FH values for slug tests can be found in Appendix 5, E5.9a through E5.9w.

Slug tests were conducted by measuring the rising head or falling head of water levels with time following removal of a water column using a bailer or addition of a slug displacing a water volume. At each piezometer, a depth to static water level was measured to the nearest 0.01-foot prior to testing. A pressure transducer probe was placed near the base of the well to record initial water column heights and changes in water column heights as water levels fell or rose to static water levels. Data were recorded using a Level Troll 700.

Hydraulic conductivity values were calculated using the Bouwer-Rice method for confined and unconfined aquifers. Calculated values for the six slug test results for Unit I (perched water zone) range from 7.45×10^{-5} to 4.81×10^{-4} cm/sec and have a geometric mean of 1.87×10^{-4} cm/sec. The calculated values for the seven test results for Unit III zone range from 9.02×10^{-5} to 4.92×10^{-4} cm/sec and have a geometric mean of 1.56×10^{-4} cm/sec.

Calculated values for the six tests results for Unit V (uppermost aquifer) range from 3.48×10^{-5} cm/sec to 7.44×10^{-5} cm/sec, with a geometric mean of 4.60×10^{-5} cm/sec.

5.6 Groundwater Gradient Evaluation and Flow Rate

5.6.1 Groundwater Gradient Evaluation

The facility was evaluated for site-wide groundwater gradient occurrence in the groundwater bearing units; Unit I, III, and V. The evaluation was conducted using potentiometric surface maps for each of the groundwater bearing units.

Based on this evaluation, three groundwater flow gradient lines were identified in Unit I that are representative of the range of gradient variability in this layer. The three representative flowlines are shown on Drawing E5.5. Each hydraulic gradient was determined from individual potentiometric surface maps at each of the flow lines and is tabulated in Table 10. The average hydraulic gradient for each flow line is included in Table 10. Using an average gradient for all flowlines, groundwater velocity was calculated for Unit I. The calculated groundwater velocity for Unit I is shown on Drawing E5.10a – Groundwater Velocity Calculation Sheet- Unit I.

Table 10

Hydraulic Gradient Values for Units I, III, V (ft/ft)

Unit I				
Date	Line 1i	Line 2i	Line 3i	
August 2024	0.0021	0.0013	0.0024	
September 2024	0.0020	0.0013	0.0027	
October 2024	0.0027	0.0015	0.0021	
November 2024	0.0027	0.0015	0.0021	
Average	0.0024	0.0014	0.0023	
Unit I Hydraulic Gradient Average: **0.0020 ft/ft**				
Unit III				
Date	Line 1i	Line 2i	Line 3i	
August 2024	0.0050	0.0042	0.0033	
September 2024	0.0050	0.0042	0.0033	
October 2024	0.0050	0.0042	0.0033	
November 2024	0.0050	0.0042	0.0033	
Average	0.0050	0.0042	0.0033	
Unit III Hydraulic Gradient Average: **0.0042 ft/ft**				
Unit V				
Date	Line 1i	Line 2i	Line 3i	Line 4i
August 2024	0.0091	0.0120	0.0114	0.0400
September 2024	0.0092	0.0141	0.0130	0.0350
October 2024	0.0095	0.0149	0.0120	0.0400
November 2024	0.0098	0.0153	0.0120	0.0400
Average	0.0094	0.0140	0.0121	0.0388
Unit V Hydraulic Gradient Average: **0.0186 ft/ft**				

Three groundwater flow gradient lines were identified in Unit IIII that are representative of the range of gradient variability in this layer. The three representative flow lines are shown on Drawing E5.6. Each hydraulic gradient was determined from individual potentiometric surface maps at each of the flow lines. The average gradient shown for each flowline is included in Table 10. Using an average hydraulic gradient for all flowlines, a groundwater velocity was calculated for Unit III. The calculated groundwater velocity for Unit III is shown on Drawing E5.10b and E5.10c – Groundwater Velocity Calculation Sheet - Unit III.

Four groundwater flow gradient lines were identified in Unit V that are representative of the range of gradient variability in this layer. The four representative flowlines are shown on Drawing E5.7. Each gradient was determined from individual potentiometric surface maps at each of the flowlines and is tabulated in Table 10. The average hydraulic gradient shown for each flowline is included in Table 10. Using an average gradient for all flowlines, a groundwater velocity was calculated for Unit V. The calculated groundwater velocity for Unit V is shown on Drawing E5.10d – Groundwater Velocity Calculation Sheet - Unit V.

5.6.2 Groundwater Flow Rate

Groundwater flow directions and rates have been determined for the uppermost aquifer (Unit V) and for shallower groundwater zones (Unit I and Unit III). Potentiometric surface maps have been constructed for each unit and are included in Appendix E5.

Based on potentiometric surface maps constructed from water levels obtained from site piezometers, groundwater in Unit V (uppermost aquifer) flows to the west. Groundwater flow in Unit V is controlled by the exaggerated dip in strata at boring BME-14 and the proximity of the West Fork of the Trinity River located west of the proposed facility. Unit V groundwater flow is calculated to be 6.32 ft/yr (see Groundwater Velocity Calculations, Appendix E5, Drawing E5.10d). Recharge to the Unit V sands occurs where the sands outcrop at the surface surrounding the facility.

Based on potentiometric surface maps constructed from water levels observed in site piezometers, groundwater in Unit I flows generally northwest, west, and south-southwest. Groundwater flow velocity is estimated to range from 1.17 ft/yr in Unit I (see Appendix E5, Drawing E5.10a).

Based on potentiometric surface maps constructed from water levels observed in site piezometers, groundwater in Unit III flows generally to the northwest. Groundwater flow within Unit III is estimated to flow at an average of 3.26 ft/yr (see Appendix E5, Drawings E5.10b and E5.10c).

6 ARID EXEMPTION

30 TAC §330.63(e)(6)

This applicant is not seeking an arid exemption for the landfill unit; therefore, 30 TAC §330.63(e)(6) is not applicable to this application.

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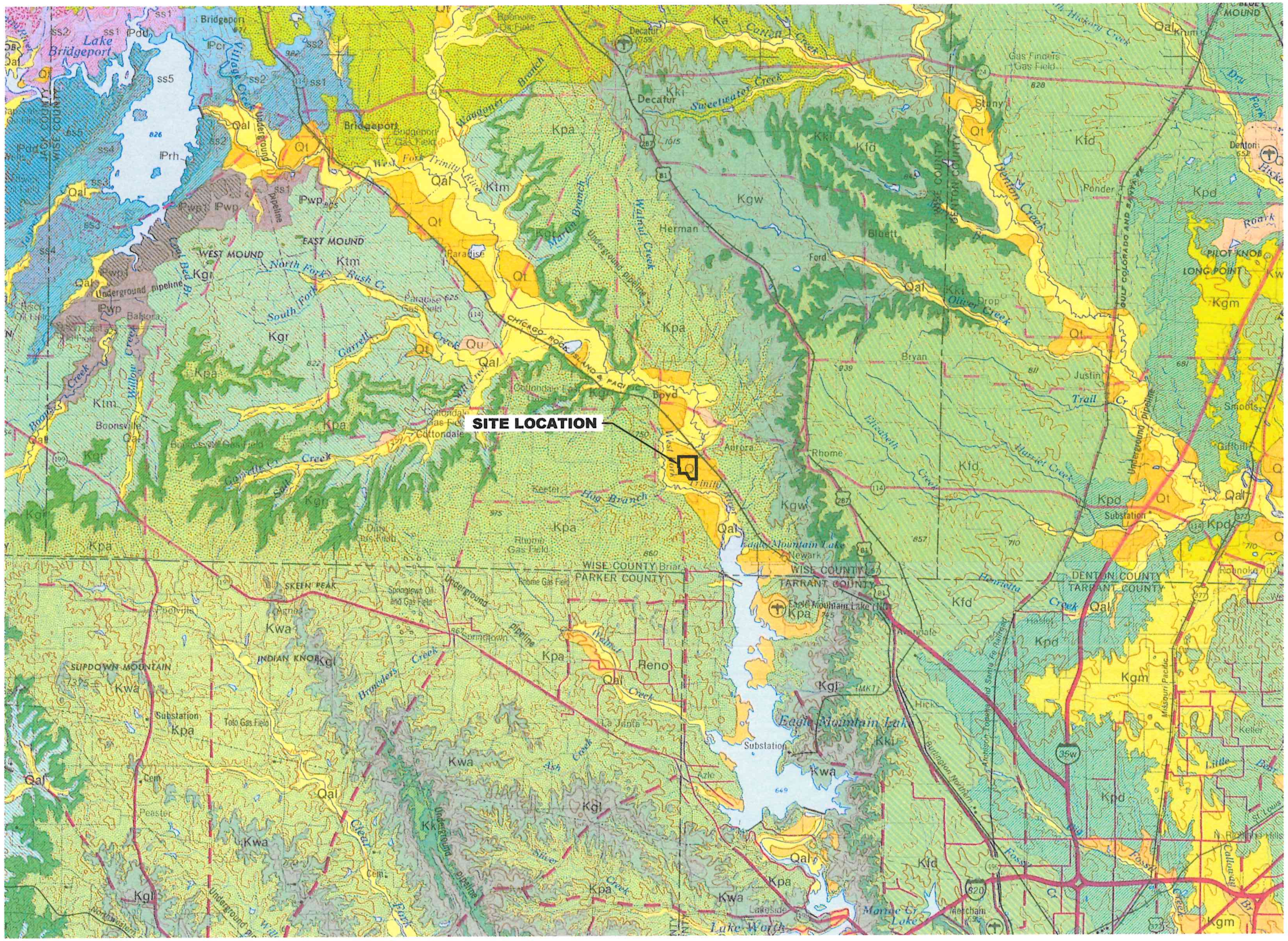
APPENDIX E1

REGIONAL GEOLOGIC/HYDROGEOLOGIC DATA



VIRGIL E. BARNES, PROJECT DIRECTOR

Geologic mapping by Shell Oil Company, Humble Oil & Refining Company, Dallas Geological Society, Fort Worth Geological Society, Shell Development Company, J. H. McGowen, C. V. Proctor, Jr., W. T. Haenggi, D. F. Reaser, and sources shown on the Index of Geologic Mapping. J. H. McGowen, C. V. Proctor, Jr., W. T. Haenggi, and D. F. Reaser compiled the geologic mapping on high altitude aerial photographs, compiled unmapped areas photogeologically, and field checked all mapping. V. E. Barnes remapped, but did not field check, Quaternary deposits of Dallas and Tarrant counties using U. S. Geological Survey 7.5-minute quadrangles. Geologic mapping reviewed by Geologic Atlas Project Committees of the Dallas Geological Society, R. J. Cordell (Sun Oil Company), Chairman, E. G. Wermund (Mobil Research and Development Corporation), and R. L. Laury (Southern Methodist University); and the Fort Worth Geological Society, W. J. Nolte (Independent Geologist), Chairman, Leo Hendricks (Texas Christian University), and Edward Heuer. Cartographic revisions by R. L. Dillon and J. T. Ames.

CONTOUR INTERVAL 50 FEET
TRANSVERSE MERCATOR PROJECTION

1991 MAGNETIC DECLINATION FOR THE CENTER OF THE SHEET IS 5°59'20".
MEAN ANNUAL CHANGE IS 5'40" WESTWARD.

GEOLOGIC ATLAS OF TEXAS, SHERMAN SHEET

WALTER SCOTT ADKINS MEMORIAL EDITION

REVISED 1991

CONTOUR INTERVAL 50 FEET
TRANSVERSE MERCATOR PROJECTION

1974 MAGNETIC DECLINATION FOR THE CENTER OF THIS SHEET IS 6°20' EAST.
MEAN ANNUAL CHANGE IS 5'42" WESTWARD.

GEOLOGIC ATLAS OF TEXAS, DALLAS SHEET

GAYLE SCOTT MEMORIAL EDITION

REVISED 1987

Prepared by the Army Map Service (AJEE), Corps of Engineers, U.S. Army, Washington, D.C. Compiled in 1954 by photogrammetric methods. Horizontal and vertical control by USC & GS and USGS. Aerial photography 1952-53. Photography field annotated 1954.

Scale 1:250,000

5 0 5 10 15 20 Statute Miles

5 0 5 10 15 20 25 30 Kilometers

5 0 5 10 Nautical Miles

Elizabeth Floyd
GEOLOGY
2045
LICENSED

Elizabeth Floyd

9/23/2025

FOR PERMITTING PURPOSES

GEOLOGIC VICINITY MAP

CHISHOLM TRAIL DISPOSAL, LLC
CHISHOLM TRAIL DISPOSAL LANDFILL

BIGGS & MATHEWS ENVIRONMENTAL
1700 ROBERT ROAD, STE. 100
MANSFIELD, TEXAS 76063
817-563-1144

TBPE FIRM NO. F-256
TBPG FIRM NO. 50222

DRAWING
E1.1

O:\Green Group\Wise County\Solid Waste\Type IV\P\Drawings\ATT E\E1-1&2_GeoVicinity.dwg Layout: E1-1_VICINITY User: awhite

O:\Green Group\Wise County\Solid Waste\Type IV\P\Drawings\AIT E\E1-1&2_GeoVicinity.dwg Layout: E1-2_LEGEND User: awhite

Holocene

Pleistocene

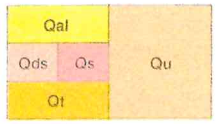
Paleocene

Upper Cretaceous

QUATERNARY

TERTIARY

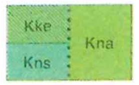
CRETACEOUS



Alluvium, Qal, windblown deposits, Qds and Qs, fluviatile terrace deposits, Qt, and surficial deposits undivided, Qu

Rk

Kincaid Formation



Kemp Clay, Kke, Nacatoch Sand, Kns, and Navarro Group (undivided.) Kna

Kne

Neylandville Marl

Kmb

Marlbrook Marl

Kpg

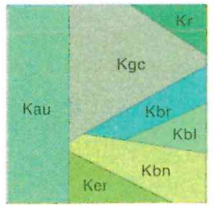
Pecan Gap Chalk

Kwc

Wolfe City Sand

Ko

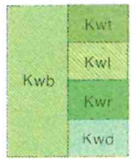
Ozan Formation



Austin Group, Kau, Roxton Limestone, Kr, Gober Chalk, Kg, Brownstown Marl, Kbr, Blossom Sand, Kbl, Bonham Marl, Kbn, and Ector Chalk, Ker

Kef

Eagle Ford Formation



Woodbine Formation, Kwb, and Templeton, Kwt, Lewisville, Kwl, Red Branch, Kwr, and Dexter, Kwd, Members of the Woodbine Formation

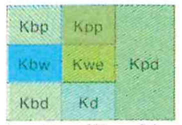
Lower Cretaceous

Leonard Series

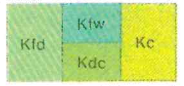
Wichita Group (revised)

PERMIAN

Grayson Marl and Main Street Limestone, Kgm, Grayson Marl and Bennington Limestone, Kgb, and Bennington Limestone, Kb



Pawpaw Formation, Kpp, Weno Limestone, Kwe, and Denton Clay, Kd, each composing members of the Bokchito Formation in Oklahoma, and undivided in Texas, Kpd



Fort Worth Limestone, Kfw, and Duck Creek Formation, Kdc, composing Caddo Formation, Kc, in Oklahoma

Kki

Kiamichi Formation

Kgw

Goodland Limestone and Walnut Clay (undivided)

Paluxy Sand, Kpa, Glen Rose Limestone, Kgr, and Twin Mountains Formation, Ktm, and Antlers Sand, Ka

Petrolia Formation (new), Pp

Wolfcamp Series

Virgil Series

?

?

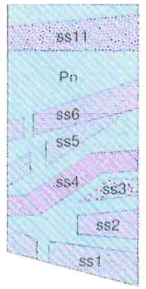
Cisco Group

Wichita Group (revised)

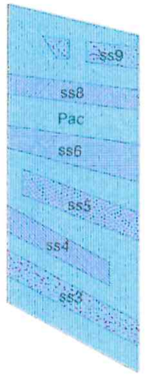
Bowie Group (new)

?

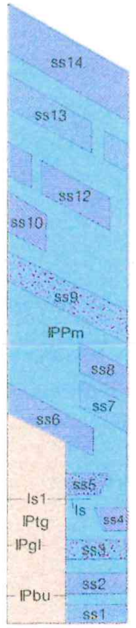
PERMIAN



Nocona Formation (new) Pn



Archer City Formation (new), Pac



Markley Formation (new), IPm, and Thrifty and Graham Formations (undivided), IPtg

Missouri Series

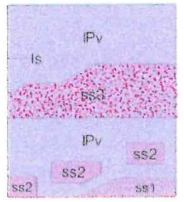
Canyon Group

PENNSYLVANIAN

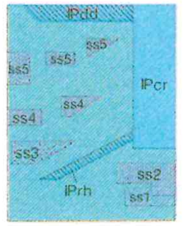
Colony Creek Shale, IPcc

IPr

Ranger Limestone



Ventioner Formation (revised), IPv



Jasper Creek Formation (revised), IPjc, and Chico Ridge Limestone (revised), IPcr

Willow Point Formation (revised), IPwp

CONTOUR INTERVAL 50 FEET
TRANSVERSE MERCATOR PROJECTION

1974 MAGNETIC DECLINATION FOR THE CENTER OF THIS SHEET IS 6'20' EAST.
MEAN ANNUAL CHANGE IS 5'42" WESTWARD.

GEOLOGIC ATLAS OF TEXAS, DALLAS SHEET

GAYLE SCOTT MEMORIAL EDITION

REVISED 1987

CONTOUR INTERVAL 50 FEET
TRANSVERSE MERCATOR PROJECTION

1991 MAGNETIC DECLINATION FOR THE CENTER OF THE SHEET IS 5'59'20".
MEAN ANNUAL CHANGE IS 5'40" WESTWARD.

GEOLOGIC ATLAS OF TEXAS, SHERMAN SHEET

WALTER SCOTT ADKINS MEMORIAL EDITION

REVISED 1991

Elizabeth Floyd
GEOLOGY
2045

Elizabeth Floyd

9/23/2025

FOR PERMITTING PURPOSES

GEOLOGIC VICINITY LEGEND

CHISHOLM TRAIL DISPOSAL, LLC
CHISHOLM TRAIL DISPOSAL LANDFILL

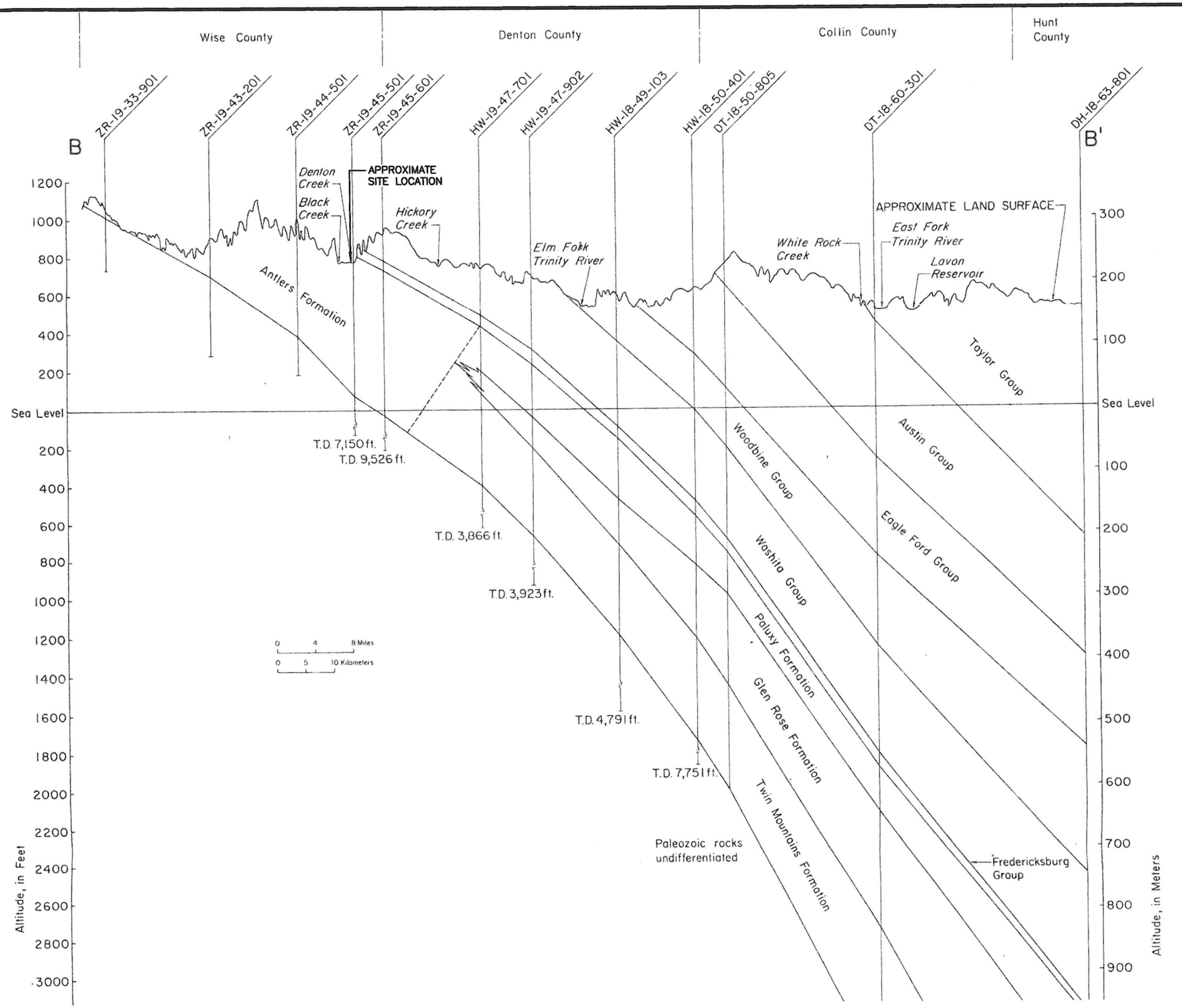
BME

BIGGS & MATHEWS ENVIRONMENTAL
1700 ROBERT ROAD, STE. 100
MANSFIELD, TEXAS 76063
817-563-1144

TBPE FIRM NO. F-256
TBPG FIRM NO. 50222

DRAWING
E1.2

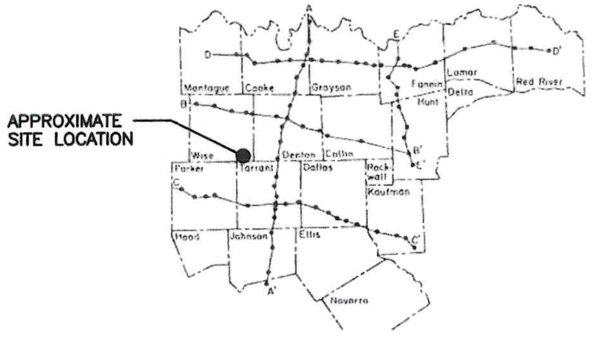
O:\Green Group\Wise County\Solid Waste\Type IV\P\Drawings\ATT E\E1-3_Regional Geologic Cross Section.dwg Layout: Layout3 User: awhite



0 6 12
SCALE IN MILES

REFERENCE:

NORDSTROM, P.L. OCCURRENCE, AVALLABILITY, AND CHEMICAL QUALITY OF GROUNDWATER IN THE CRETACEOUS AQUIFERS OF NORTH-CENTRAL TEXAS, 2 VOL., TEXAS DEPARTMENT OF WATER RESOURCES, REPORT 269, 1982.



Index Map

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GENERALIZED REGIONAL GEOLOGIC CROSS SECTION

CHISHOLM TRAIL DISPOSAL, LLC
CHISHOLM TRAIL DISPOSAL LANDFILL

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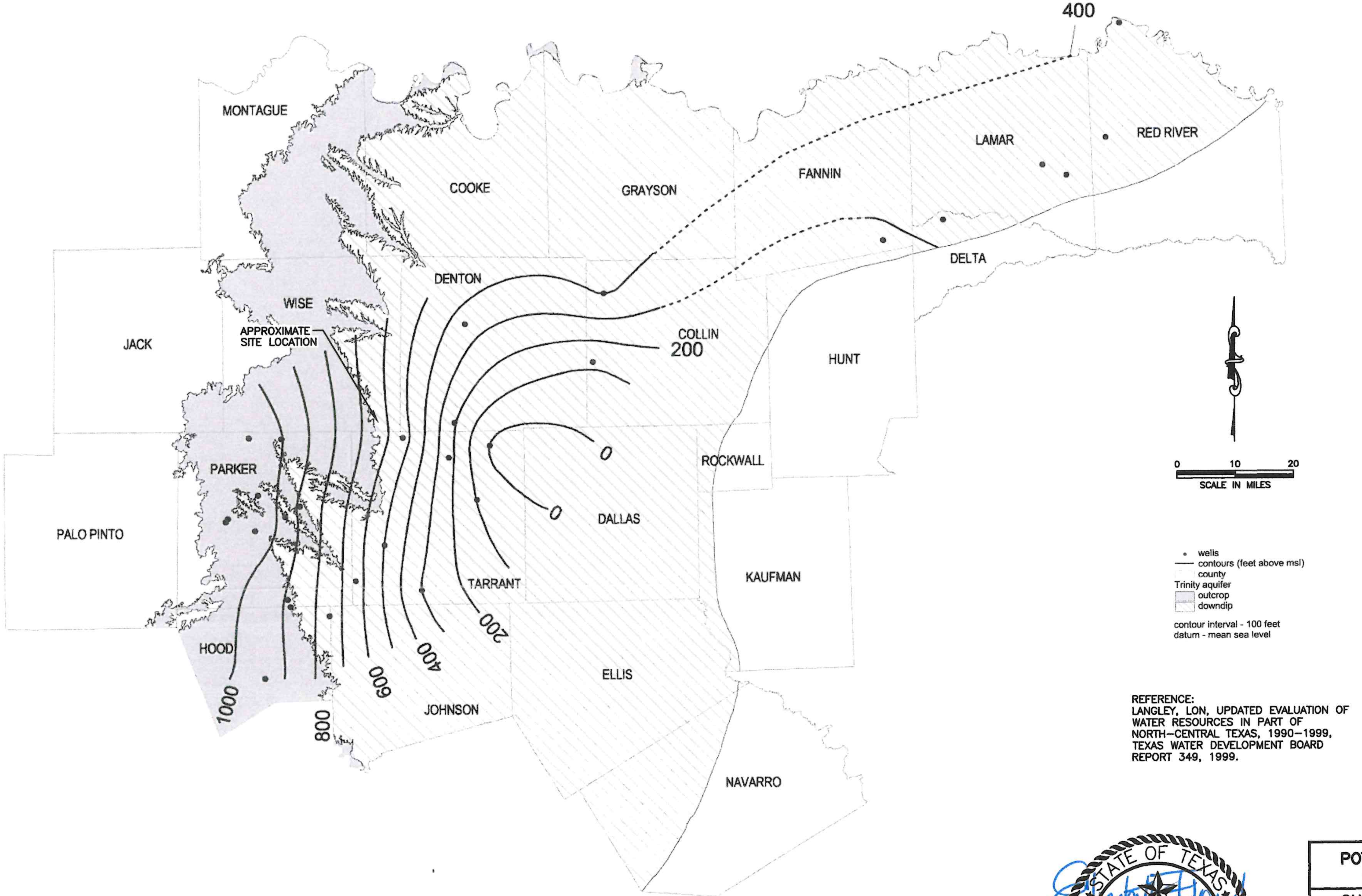
BIGGS & MATHEWS ENVIRONMENTAL
1700 ROBERT ROAD, STE. 100
MANSFIELD, TEXAS 76063
817-563-1144

TBPE FIRM NO. F-256
TBPG FIRM NO. 50222

DRAWING
E1.3



REFERENCE:
LANGLEY, LON, UPDATED EVALUATION OF WATER RESOURCES IN PART OF NORTH-CENTRAL TEXAS, 1990–1999, TEXAS WATER DEVELOPMENT BOARD REPORT 349, 1999.

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2045

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FOR PERMITTING PURPOSES

POTENTIOMETRIC SURFACE MAP OF THE PALUXY AQUIFER

CHISHOLM TRAIL DISPOSAL, LLC
CHISHOLM TRAIL DISPOSAL LANDFILL

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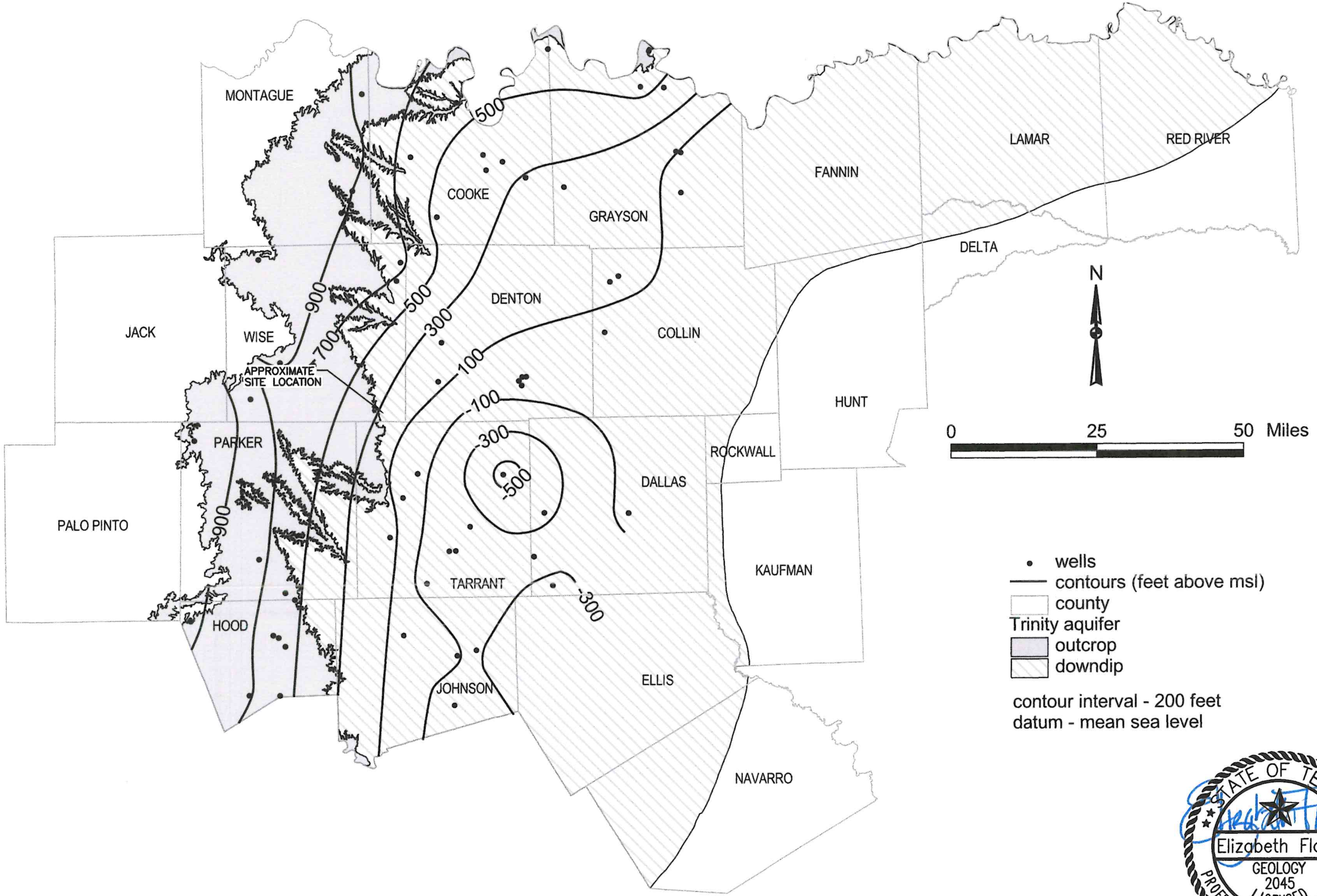
BIGGS & MATHEWS ENVIRONMENTAL
1700 ROBERT ROAD, STE. 100
MANSFIELD, TEXAS 76063
817–563–1144

TBPE FIRM NO. F–256
TBPG FIRM NO. 50222

DRAWING
E1.4



- ● wells
- — contours (feet above msl)
- ☐ county

Trinity aquifer

- ▨ outcrop
- ▨ downdip

contour interval - 200 feet
datum - mean sea level

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2045

9/23/2025

MODIFIED FROM LANGLEY, 1999.

POTENTIOMETRIC SURFACE MAP OF THE ANTLERS & TWIN MOUNTAINS AQUIFERS

CHISHOLM TRAIL DISPOSAL, LLC
CHISHOLM TRAIL DISPOSAL LANDFILL

BME

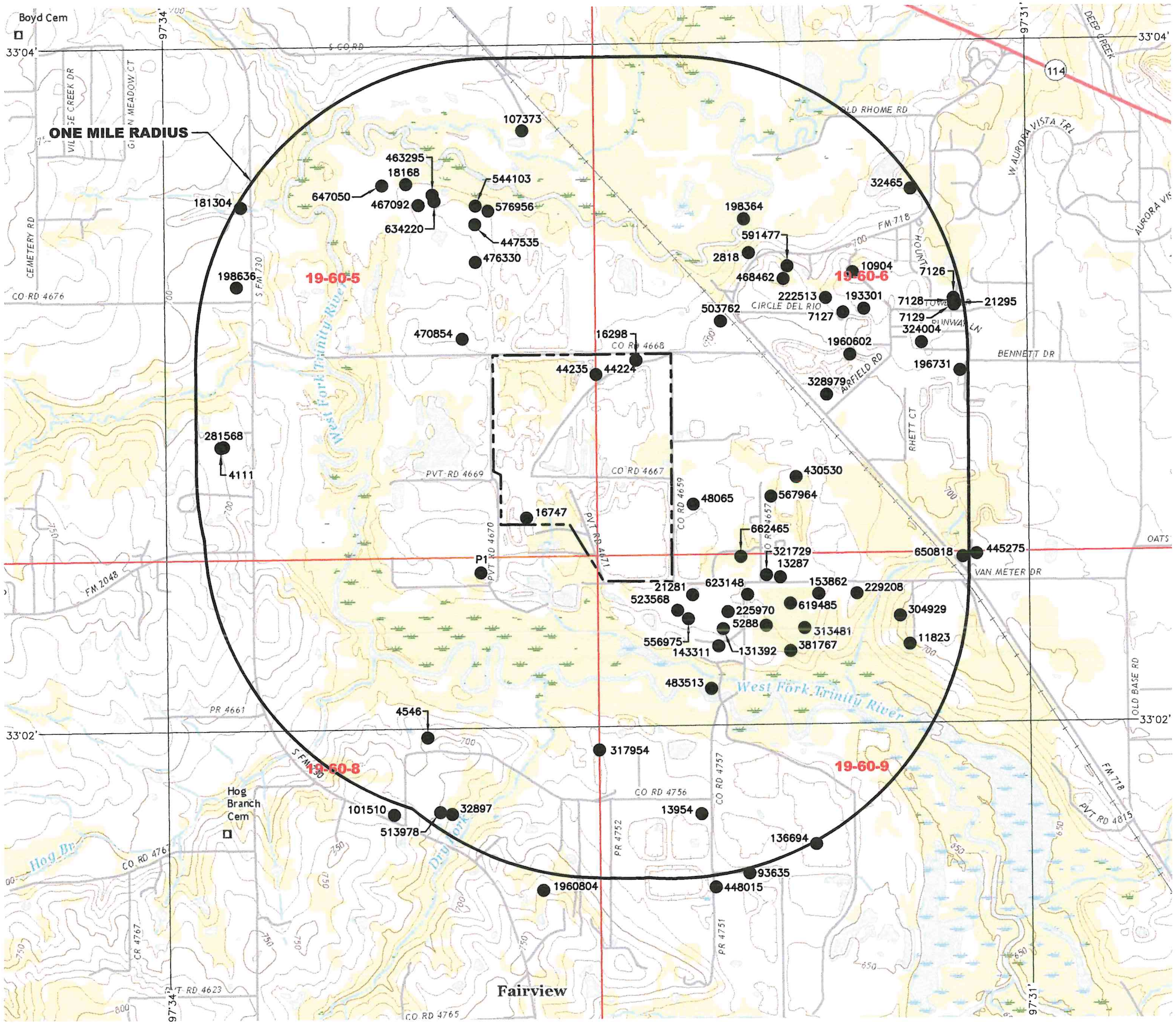
BIGGS & MATHEWS ENVIRONMENTAL
1700 ROBERT ROAD, STE. 100
MANSFIELD, TEXAS 76063
817-563-1144

TBPE FIRM NO. F-256
TBPG FIRM NO. 50222

DRAWING
E1.5

ISSUED FOR PERMITTING PURPOSES ONLY

O:\Green Group\Wise County\Solid Waste\Type IV\P\Drawings\ATT E\E1-5_AntlersTwinMtn.dwg Layout: Layout1 User: awhite



0 1000 2000
SCALE IN FEET

LEGEND

——— - - ———	PERMIT BOUNDARY
———	ONE MILE RADIUS
—700—	EXISTING 10' GROUND CONTOUR
	SURFACE WATER BODY OR OTHER WATER
———	WATER WELL ID GRID
19-60-6	WATER WELL GRID NUMBER
▲	HISTORICAL WATER WELL
●	WATER WELL

BOYD, TEX
2022

ROAD CLASSIFICATION

Expressway	———	Local Connector	———
Secondary Hwy	———	Local Road	———
Ramp	———	4WD	- - -
Interstate Route		US Route	
State Route	○		

NOTES:

1. BASE MAP IS A PORTION OF THE 7.5 MINUTE TOPOGRAPHIC BASE MAP FOR BOYD, TEX DOWNLOADED FROM USGS WEBSITE ON MAY 15, 2023.
2. WATER WELLS IDENTIFIED FROM ONLINE STATE RECORDS.
3. THERE ARE NO KNOWN SPRINGS LOCATED WITHIN ONE MILE OF THE FACILITY BOUNDARY.

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2045

9/23/2025

FOR PERMITTING PURPOSES

REVISIONS

REV	DATE	DESCRIPTION	DWN BY

WATER WELL LOCATION MAP

CHISHOLM TRAIL DISPOSAL, LLC
CHISHOLM TRAIL DISPOSAL LANDFILL

BME

BIGGS & MATHEWS ENVIRONMENTAL
1700 ROBERT ROAD, STE. 100
MANSFIELD, TEXAS 76063
817-563-1144

TBPE FIRM NO. F-256
TBPG FIRM NO. 50222

DRAWING
E1.6

O:\Green Group\Wise County\Solid Waste\Type IV\P\Drawings\ATT E\E1-6_WaterWellLocationMap.dwg Layout: Layout 1 User: awhite

APPENDIX E2

SITE EXPLORATION DATA

STATE OF TEXAS
Elizabeth Floyd
GEOLOGY
2045
LICENSED
PROFESSIONAL GEOSCIENTIST

Elizabeth Floyd

Biggs & Mathews Environmental, Inc.
Firm Registration No. 50222
9/23/2025

Jon Niermann, *Chairman*
Bobby Janecka, *Commissioner*
Catarina R. Gonzales, *Commissioner*
Kelly Keel, *Executive Director*

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

March 12, 2024

Mr. Thad Owings
Vice President
134 Riverstone Terrace
Suite 203
Canton, GA 30114

Via email

Subject: Proposed Chisholm Trail Disposal Landfill – Wise County
Municipal Solid Waste – Permit No. 2421
Proposed Site Investigation – Soil Boring Plan
Tracking No. 29632712; RN111930335/CN606237394

Dear Mr. Owings:

On February 27, 2024, we received a soil boring plan (SBP) dated February 26, 2024, for the referenced MSW Type IV landfill. Our review of the plan indicates that it complies with the MSW regulations. This letter constitutes approval of your plan.

The SBP proposes 29 borings in an approximately 251.62-acre project area of which approximately 169 acres are being considered for waste footprint. Twelve of the borings will be drilled to an elevation at least 5 feet below the elevation of the deepest excavation (EDE), which is proposed at 609 feet above sea level. Seventeen borings will be drilled to an elevation at least 30 feet below the EDE. Based on the site topography, the lowest surface elevation of the proposed 29 borings is BME-16 at 654 feet above sea level. This boring will be drilled to a depth of 50 feet, which is 5 feet below the EDE. The highest surface elevation is BME-13 at 687 feet above sea level. This boring will be drilled to a depth of 108 feet, which is 30 feet below the EDE. Based on a phone conversation with Beth Floyd at Biggs and Mathews on March 7, 2024, the depth for installing the piezometers will be decided once the hydrogeological parameters from the borings are obtained.

Please be advised that under Title 30 Texas Administrative Code, Chapter 330, Section 330.63(e)(4)(B), the uppermost aquifer and any hydraulically interconnected aquifers below the site must be identified, as well as the underlying confining unit. It is anticipated that this SBP, when implemented, will accurately characterize the in-situ geologic, hydrologic, and engineering properties of the surface and subsurface strata at this site. Although this plan appears to comply with the MSW regulations concerning site investigations, additional soil borings and piezometers could be required if the data generated by this SBP are inconclusive.

If you find it necessary to modify this approved plan, another plan detailing any proposed modifications must be submitted for approval before implementation of the modifications.

P.O. Box 13087 • Austin, Texas 78711-3087 • 512-239-1000 • tceq.texas.gov

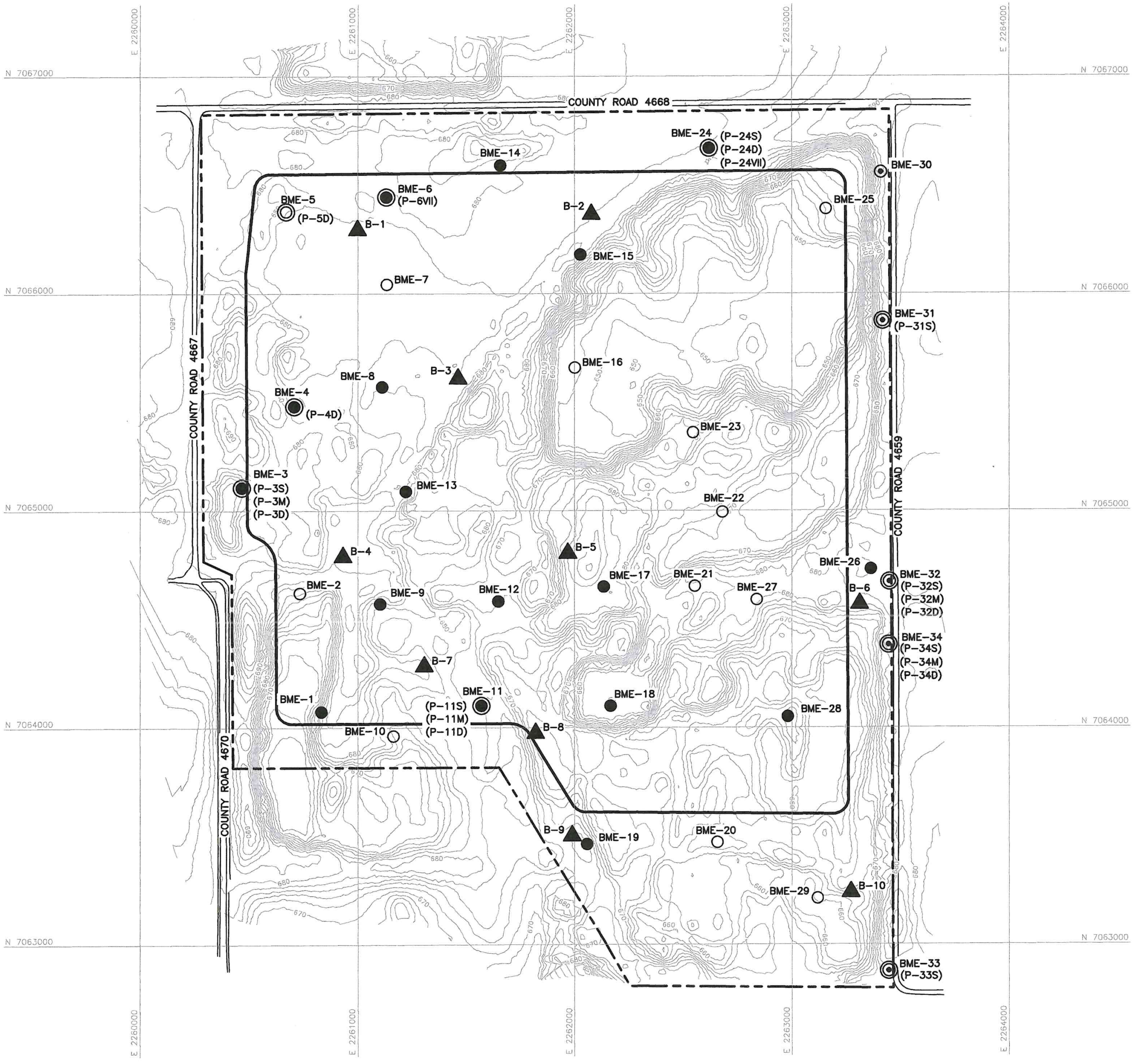
If you have questions regarding this letter, please contact me by telephone at (512) 239-0554, or henok.tewelde@tceq.texas.gov. When addressing written correspondence, please use mail code MC 124.

Sincerely,

Henok Tewelde P.G.
Municipal Solid Waste Permits Section
Waste Permits Division
Texas Commission on Environmental Quality

HT/drh

cc: Ms. Beth Floyd, Biggs & Mathews Environmental, Inc, Mansfield



LEGEND

▬ ▬ - - ▬ ▬	PERMIT BOUNDARY
▬▬▬▬	WASTE MANAGEMENT UNIT
——700——	10' CONTOUR
N 7062000	STATE PLANE COORDINATES
BME-2 ○	EXISTING BORING DRILLED TO 5 FT BELOW EDE
BME-1 ●	EXISTING BORING DRILLED TO 30 FT BELOW EDE
BME-30 ◉	ADDITIONAL BORING
P-3S ○	PIEZOMETER LOCATION
B-1 ▲	EXPLORATORY BORING

NOTES:

1. EXISTING CONTOURS TAKEN FROM DRONE SURVEY PROVIDED BY BIGGS AND MATHEWS ENVIRONMENTAL DATED APRIL 5, 2024.
2. PERMIT BOUNDARY INFORMATION FROM SURVEYING AND MAPPING, LLC.

STATE OF TEXAS
Elizabeth Floyd
GEOLOGY
2045
LICENSED
PROFESSIONAL GEOSCIENTIST

Elizabeth Floyd

9/23/2025

FOR PERMITTING PURPOSES

BORING AND PIEZOMETER LOCATION MAP

CHISHOLM TRAIL DISPOSAL, LLC
CHISHOLM TRAIL DISPOSAL LANDFILL

BME

BIGGS & MATHEWS ENVIRONMENTAL
1700 ROBERT ROAD, STE. 100
MANSFIELD, TEXAS 76063
817-563-1144

TBPE FIRM NO. F-256
TBPG FIRM NO. 50222

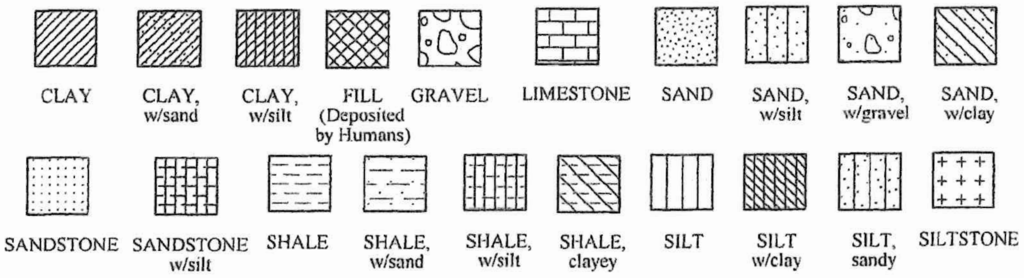
DRAWING
E2.2

O:\Green Group\Wise County\Solid Waste\Type IV\P\Drawings\ATT E\E2-2_Boring&PiezMap.dwg Layout: Layout 1 User: awhite

KEY TO SOIL CLASSIFICATION TERMS AND SYMBOLS

BME

SOIL OR ROCK TYPES (shown in symbols column)



SUBSURFACE CONDITIONS:

Soil and rock descriptions on the boring logs are a compilation of field data as well as from laboratory testing of samples on those strata for which laboratory classification test results are presented on the boring logs. These classifications are based only on the actual samples tested, and the classification is then assigned to the remainder of the stratum interval based on visual classification. If laboratory classification test results are not presented on the boring log for a particular stratum, then that stratum was classified by visual-manual procedures only. The stratification lines represent the approximate boundary between materials and the transition can be gradual.

Classification of soils based upon visual-manual procedures was performed in general accordance with ASTM Standard D 2488. Classification of soils based upon laboratory test results was performed in general accordance with ASTM Standard D 2487.

Water-level observations have been made in the borings at the times indicated. It must be noted that fluctuations in the groundwater level may occur due to variations in rainfall, hydraulic conductivity of soil strata, construction activity, and other factors.

ELEVATIONS:

Elevation of contact or bottom of borings/piezometers is shown on the right side of the material description column.

LOG OF BORING NO. BME-1

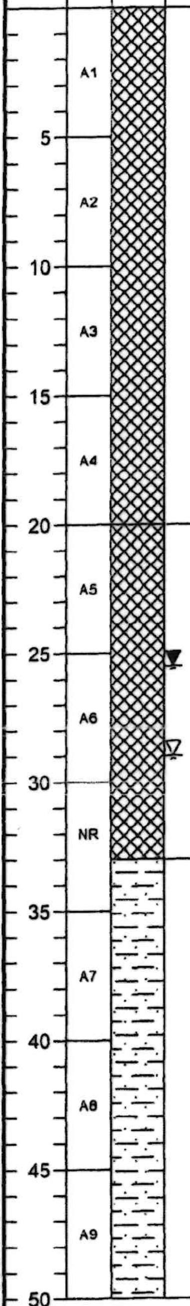
Project Description: **Chisholm Trail Disposal Landfill**

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-563-1144

Location: **E 2260833.17 N 7064074.04**

Surface El.: **682.22 ft. msl**
Completion Depth: 104.0 ft
Date Boring Started: 5/29/2024
Date Boring Completed: 5/29/2024

Depth, feet | Samples | Symbol / USCS | MATERIAL DESCRIPTION



Clay, silty, sandy, with gravel, brown (fill)

662.22

Sand, brown, coarse, with gravel (fill)

649.22

Shale, sandy, light greenish gray, very hard, with sand seams

632.22

Contractor: **H/ET**

Groundwater Observations

Date		Depth
5/29/24	▽	29
5/30/24	▼	25.5

Remarks: Borehole grouted upon completion.

Continued Next Page

The stratification lines represent approximate strata boundaries. In situ, the transition may be gradual.
LOGS ARE NOT INTENDED TO BE USED SEPARATELY FROM THE ORIGINAL REPORT.

LOG OF BORING NO. BME-1

Project Description: **Chisholm Trail Disposal Landfill**

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-563-1144

Location: **E 2260833.17 N 7064074.04**

Surface El.: **682.22 ft. msl**
Completion Depth: 104.0 ft.
Date Boring Started: 5/29/2024
Date Boring Completed: 5/29/2024

Depth, feet	Samples	Symbol / USCS	MATERIAL DESCRIPTION	
	A10	▤	Shale, sandy, abundant lignite seams, tan to gray - lignite	627.22
55	C11	▤	Shale, sandy, dark gray	622.22
60	C12	▦	Limestone, with clay seams, light gray to gray	617.22
65	C13	▤	Shale, sandy, with limestone partings, light gray to gray	612.22
70	C14	▤	Shale, sandy, light greenish gray, with sand seams	607.22
75	C15	▦	Limestone, tan to gray	
80	C16	▦		596.22
85	C17	▤	Shale, sandy, dark gray	592.22
90	C18	▦	Limestone, tan to gray	587.22
95	C19	+ + +	Siltstone, light greenish gray, well cemented, very hard	
100				

Contractor: H/ET

Groundwater Observations		
Date		Depth
5/29/24	∇	29
5/30/24	▼	25.5

Remarks: Borehole grouted upon completion.

Continued Next Page

The stratification lines represent approximate strata boundaries. In situ, the transition may be gradual.
LOGS ARE NOT INTENDED TO BE USED SEPARATELY FROM THE ORIGINAL REPORT.

LOG OF BORING NO. BME-1

Project Description: **Chisholm Trail Disposal Landfill**

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-563-1144

Location: **E 2260833.17 N 7064074.04**

Surface El.: **682.22 ft. msl**
Completion Depth: 104.0 ft.
Date Boring Started: 5/29/2024
Date Boring Completed: 5/29/2024

Depth, feet	Samples	Symbol / USCS	MATERIAL DESCRIPTION
	C20	+ + +	Siltstone, light greenish gray, well cemented, very hard *(continued)*
			578.22
105			
110			
115			
120			
125			
130			
135			
140			
145			
150			

Contractor: H/ET

Groundwater Observations

Date		Depth
5/29/24	▽	29
5/30/24	▼	25.5

Remarks: Borehole grouted upon completion.

BME

SKYLINE 2024 WISE COUNTY.GPJ B&M DATA TEMPLATE.GDT 12/13/24

The stratification lines represent approximate strata boundaries. In situ, the transition may be gradual.
LOGS ARE NOT INTENDED TO BE USED SEPARATELY FROM THE ORIGINAL REPORT.

LOG OF BORING NO. BME-2

Project Description: **Chisholm Trail Disposal Landfill**

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-563-1144

Location: **E 2260734.78 N 7064620.56**

Surface El.: **682.22 ft. msl**
Completion Depth: 79.0 ft.
Date Boring Started: 5/29/2024
Date Boring Completed: 5/29/2024

Depth, feet	Samples	Symbol / USCS	MATERIAL DESCRIPTION	
	A1		Clay, silty, with sand and gravel, brown (fill)	
5	A1			
10	A2			
15	A3		Sand, with cobbles, brown (fill)	
20	A4	▼ ▽		657.22
25	A5		Sand, and gravel, brown, medium to fine-grained	651.22
30			Shale, sandy, gray	
35	C6			642.22
40	C7		Sand, clayey, tan to greenish gray	
45	C8		- increasing clay	632.22
50				

Contractor: **H/ET**

Groundwater Observations

Date		Depth
5/29/24	▽	25
5/30/24	▼	23.6

Remarks: Borehole grouted upon completion.

Continued Next Page

The stratification lines represent approximate strata boundaries. In situ, the transition may be gradual.
LOGS ARE NOT INTENDED TO BE USED SEPARATELY FROM THE ORIGINAL REPORT.

LOG OF BORING NO. BME-2

Project Description: **Chisholm Trail Disposal Landfill**

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-563-1144

Location: **E 2260734.78 N 7064620.56**

Surface El.: **682.22 ft. msl**
Completion Depth: 79.0 ft.
Date Boring Started: 5/29/2024
Date Boring Completed: 5/29/2024

Depth, feet	Samples	Symbol / USCS	MATERIAL DESCRIPTION	
	C9		Shale, sandy, gray to greenish gray	
55				
	C10			
60				
	C11		- 3" limestone seam	
				617.22
65			Shale, sandy, greenish gray	
	C12			
				612.22
70			Sand, silty, light gray to tan	
	C13			
				607.22
75			Shale, sandy, dark gray	
	C14			
				603.22
80				
85				
90				
95				
100				

Contractor: H/ET

Groundwater Observations

Date		Depth
5/29/24	▽	25
5/30/24	▼	23.6

Remarks: Borehole grouted upon completion.

SKYLINE 2024 WISE COUNTY.GPJ B&M DATA TEMPLATE.GDT 12/13/24

The stratification lines represent approximate strata boundaries. In situ, the transition may be gradual.
LOGS ARE NOT INTENDED TO BE USED SEPARATELY FROM THE ORIGINAL REPORT.

LOG OF BORING NO. BME-3

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-563-1144

Project Description: **Chisholm Trail Disposal Landfill**

Location: **E 2260529.1 N 7065141.76**

Surface El.: **682.99 ft. msl**
Completion Depth: 107.0 ft.
Date Boring Started: 6/29/2024
Date Boring Completed: 6/29/2024

Depth, feet	Samples	Symbol / USCS	MATERIAL DESCRIPTION	
0			Sand, silty, with clay, brown and reddish brown (fill)	
	A1			
5	A2			
10	A3			
15	A4			
20	A5			
25	A6			
30	A7	∇		
35	A8			
40	C9			639.99
			Limestone, with shale, silty, light greenish gray to tan	638.99
			Shale, with some silt partings, with limestone, dark gray	
45	C10			
50				

Contractor: **H/ET**

Groundwater Observations

Date		Depth
6/29/24	∇	30

Remarks: Borehole grouted upon completion.

BME

Continued Next Page

The stratification lines represent approximate strata boundaries. In situ, the transition may be gradual.
LOGS ARE NOT INTENDED TO BE USED SEPARATELY FROM THE ORIGINAL REPORT.

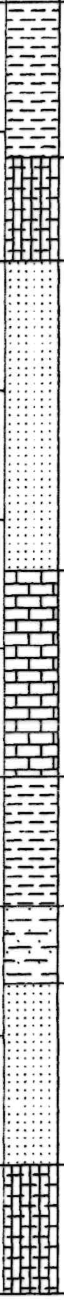
LOG OF BORING NO. BME-3

Project Description: **Chisholm Trail Disposal Landfill**

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-563-1144

Location: **E 2260529.1 N 7065141.76**

Surface El.: **682.99 ft. msl**
Completion Depth: 107.0 ft.
Date Boring Started: 6/29/2024
Date Boring Completed: 6/29/2024



Depth, feet	Samples	MATERIAL DESCRIPTION	
55	C11	Shale, with some silt partings, with limestone, dark gray *(continued)*	626.99
60	C12	Shale, silty, greenish gray	622.99
65 70	C13 C14	Sandstone, tan, with lignite, crossbedded - lignite seams	610.99
75 80	C15 C16	Limestone, with clay, sandy, tan to buff - sandstone seam	602.99
85	C17	Shale, with limestone, dark gray	597.99
	C18	Shale, sandy, light greenish gray to tan, hard	594.99
90 95	C19	Sandstone, greenish gray to tan - with lignite - with clay	587.99
100	C20	Shale, silty, with limestone, dark greenish gray to gray	

Contractor: H/ET

Groundwater Observations	
Date	Depth
6/29/24 ▽	30

Remarks: Borehole grouted upon completion.

Continued Next Page

LOG OF BORING NO. BME-3

Project Description: **Chisholm Trail Disposal Landfill**

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-563-1144

Location: **E 2260529.1 N 7065141.76**

Surface El.: **682.99 ft. msl**
Completion Depth: 107.0 ft.
Date Boring Started: 6/29/2024
Date Boring Completed: 6/29/2024

Depth, feet	Samples	Symbol / USCS	MATERIAL DESCRIPTION	
			Shale, silty, with limestone, dark greenish gray to gray *(continued)*	581.99
	C21		Sandstone, with lignite, tan, crossbedded	577.99
105	C22		Shale, gray	575.99
110				
115				
120				
125				
130				
135				
140				
145				
150				

Contractor: H/ET

Groundwater Observations

Date		Depth
6/29/24	⊻	30

Remarks: Borehole grouted upon completion.

BME

SKYLINE 2024 WISE COUNTY.GPJ B&M DATA TEMPLATE.GDT 12/13/24

The stratification lines represent approximate strata boundaries. In situ, the transition may be gradual.
LOGS ARE NOT INTENDED TO BE USED SEPARATELY FROM THE ORIGINAL REPORT.

LOG OF BORING NO. BME-4

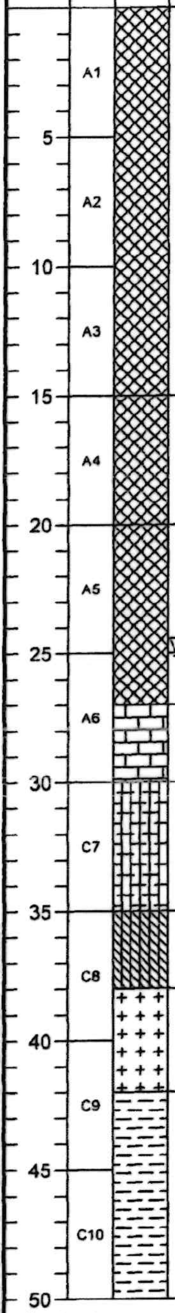
Project Description: **Chisholm Trail Disposal Landfill**

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-563-1144

Location: **E 2260708.88 N 7065480.37**

Surface El.: **686.53 ft. msl**
Completion Depth: 108.0 ft.
Date Boring Started: 6/28/2024
Date Boring Completed: 6/28/2024

Depth, feet	Samples	Symbol / USCS	MATERIAL DESCRIPTION	
	A1 A2 A3		Silt, clayey, reddish brown, with rootlets (fill)	671.53
15	A4		Clay, sandy, silty, brown with gray streaks (fill)	666.53
20	A5	∇ (25)	Sand, silty, with clay, brown to dark reddish brown, with pea gravel, moist (fill)	659.53
	A6		Limestone, tan and light greenish gray	656.53
30	C7		Shale, silty, increasing silt with depth, greenish gray	651.53
35	C8		Silt, clayey, with sand, moderately dense, with some unconsolidated zones, sand with shale partings	648.53
			Siltstone, tan to gray, with clay partings	644.53
	C9 C10		Shale, with limestone seams, dark gray (light gray limestone)	



Contractor: H/ET

Groundwater Observations	
Date	∇ Depth
6/28/24	25

Remarks: Borehole grouted upon completion.

Continued Next Page

LOG OF BORING NO. BME-4

Project Description: **Chisholm Trail Disposal Landfill**

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-563-1144

Location: **E 2260708.88 N 7065480.37**

Surface El.: **686.53 ft. msl**
Completion Depth: 108.0 ft.
Date Boring Started: 6/28/2024
Date Boring Completed: 6/28/2024

Depth, feet	Samples	Symbol / USCS	MATERIAL DESCRIPTION	
	C11		Shale, with limestone seams, dark gray (light gray limestone) *(continued)*	631.53
55	C12		Siltstone, light greenish gray, with sand, with silty clay, with sand seams	626.53
60	C13		Sandstone, crossbedded, tan to gray, with lignite	
65	C14		- clay seam	617.53
70	C15		Limestone, with clay and sand partings, tan to buff, with dark gray clay - siltstone and sandstone seam, tan to light gray	
75	C16			
80	C17			602.53
85	C18		Siltstone, tan and light greenish gray, with shale and sand seams and partings - clay seam	596.53
90	C19		Shale, with limestone seam, with sand, dark green to gray	591.53
95	C20		Shale, silty, with limestone, with siltstone seams, tan and light greenish gray	586.53
100				

Contractor: H/ET

Groundwater Observations

Date		Depth
6/28/24	⊻	25

Remarks: Borehole grouted upon completion.

Continued Next Page

The stratification lines represent approximate strata boundaries. In situ, the transition may be gradual.
LOGS ARE NOT INTENDED TO BE USED SEPARATELY FROM THE ORIGINAL REPORT.

LOG OF BORING NO. BME-4

Project Description: **Chisholm Trail Disposal Landfill**

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-563-1144

Location: **E 2260708.88 N 7065480.37**

Surface El.: **686.53 ft. msl**
Completion Depth: 108.0 ft.
Date Boring Started: 6/28/2024
Date Boring Completed: 6/28/2024

Depth, feet	Samples	Symbol / USCS	MATERIAL DESCRIPTION	
	C21	+ + +	Silstone, with sand, tan	582.53
105	C22	– – –	Shale, dark gray	578.53
110				
115				
120				
125				
130				
135				
140				
145				
150				

Contractor: **H/ET**

Groundwater Observations	
Date	Depth
6/28/24 ∇	25

Remarks: Borehole grouted upon completion.

BME

The stratification lines represent approximate strata boundaries. In situ, the transition may be gradual.
LOGS ARE NOT INTENDED TO BE USED SEPARATELY FROM THE ORIGINAL REPORT.

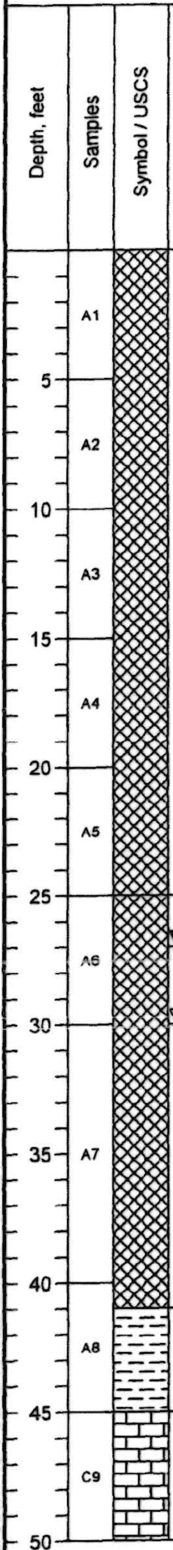
LOG OF BORING NO. BME-5

Project Description: **Chisholm Trail Disposal Landfill**

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-563-1144

Location: **E 2260671.3 N 7066377.38**

Surface El.: **681.50 ft. msl**
Completion Depth: 90.0 ft.
Date Boring Started: 5/23/2024
Date Boring Completed: 5/24/2024



MATERIAL DESCRIPTION	
Clay, silty, with sand and rock fragments, reddish brown (fill)	656.50
Sand, clayey, tan to light brown, moist (fill)	640.50
Shale, greenish gray	636.50
Limestone, light gray and dark gray	631.50

Contractor: **H/ET**

Groundwater Observations		
Date		Depth
5/23/24	▽	30
5/24/24	▼	27

Remarks: Borehole grouted upon completion.

Continued Next Page

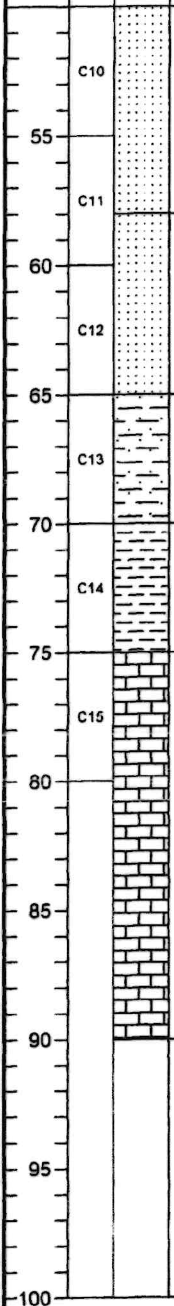
LOG OF BORING NO. BME-5

Project Description: **Chisholm Trail Disposal Landfill**

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-6892
Phone: 817-563-1144

Location: **E 2260671.3 N 7066377.38**

Surface El.: **681.50 ft. msl**
Completion Depth: 90.0 ft.
Date Boring Started: 5/23/2024
Date Boring Completed: 5/24/2024



MATERIAL DESCRIPTION

Sandstone, with clay lenses, light gray to gray

623.50

Sandstone, with silt, tan, with some clay partings

616.50

Shale, sandy, dark gray

611.50

Shale, with limestone seams, dark gray to light gray

606.50

Limestone, with clay seams, light gray to dark gray

591.50

Contractor: **H/ET**

Groundwater Observations	
Date	Depth
5/23/24 ∇	30
5/24/24 ▼	27

Remarks: Borehole grouted upon completion.

BME

The stratification lines represent approximate strata boundaries. In situ, the transition may be gradual.
LOGS ARE NOT INTENDED TO BE USED SEPARATELY FROM THE ORIGINAL REPORT.

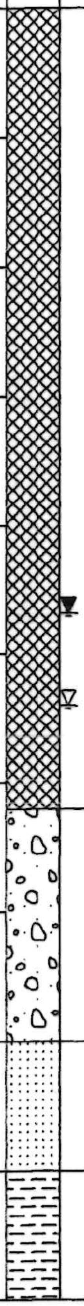
LOG OF BORING NO. BME-6

Project Description: **Chisholm Trail Disposal Landfill**

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-563-1144

Location: **E 2261130.49 N 7066444.87**

Surface El.: **680.50 ft. msl**
Completion Depth: 101.0 ft.
Date Boring Started: 5/22/2024
Date Boring Completed: 5/22/2024



Depth, feet	Samples	MATERIAL DESCRIPTION	
		Clay, silty, with sand, brown (fill)	
	A1		
5			
	A2		
10			
	A3		
15			
	A4		
20			
	A5		
25			
	A6		
30			649.50
		Sand, gravelly, light brown	
	A7		
35			
	C8		640.50
40		Sandstone, with silt, lightly crossbedded, greenish gray and tan	
	C9		635.50
45		Shale, with very fine grained sand seams, dark greenish gray to dark gray	
	C10		630.50
50			

Contractor: H/ET

Groundwater Observations

Date		Depth
5/22/24	▽	27
5/23/24	▼	23.4

Remarks: Borehole grouted upon completion.

Continued Next Page

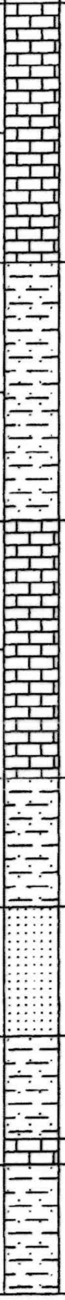
LOG OF BORING NO. BME-6

Project Description: **Chisholm Trail Disposal Landfill**

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-563-1144

Location: **E 2261130.49 N 7066444.87**

Surface El.: **680.50 ft. msl**
Completion Depth: 101.0 ft.
Date Boring Started: 5/22/2024
Date Boring Completed: 5/22/2024



Depth, feet	Samples	Symbol / USCS	MATERIAL DESCRIPTION	
	C11		Limestone, with clay seams, light gray to gray, dark gray clay seams	
55	C12			
60	C13		Shale, sandy, dark greenish gray	620.50
65	C14		- sand lenses	
70	C15		Limestone, with clay seams, light gray to gray	610.50
75	C16			
80	C17		Shale, sandy, light greenish gray to tan - with limestone seams	600.50
85	C18		Sandstone, with silt, tan - clay seam	595.50
90	C19		Shale, sandy, dark gray	590.50
			Limestone, tan hard	586.50
95	C20		Shale, sandy, with siltstone lenses, greenish gray	585.50
100				

Contractor: **H/ET**

Groundwater Observations

Date		Depth
5/22/24	∇	27
5/23/24	▼	23.4

Remarks: Borehole grouted upon completion.

Continued Next Page

LOG OF BORING NO. BME-6

Project Description: **Chisholm Trail Disposal Landfill**

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-6892
Phone: 817-563-1144

Location: **E 2261130.49 N 7066444.87**

Surface El.: **680.50 ft. msl**
Completion Depth: 101.0 ft.
Date Boring Started: 5/22/2024
Date Boring Completed: 5/22/2024

Depth, feet	Samples	Symbol / USCS	MATERIAL DESCRIPTION	
	C21		Shale, sandy, with siltstone lenses, greenish gray *(continued)*	578.50
105				
110				
115				
120				
125				
130				
135				
140				
145				
150				

Contractor: H/ET

Groundwater Observations	
Date	Depth
5/22/24 ▽	27
5/23/24 ▼	23.4

Remarks: Borehole grouted upon completion.

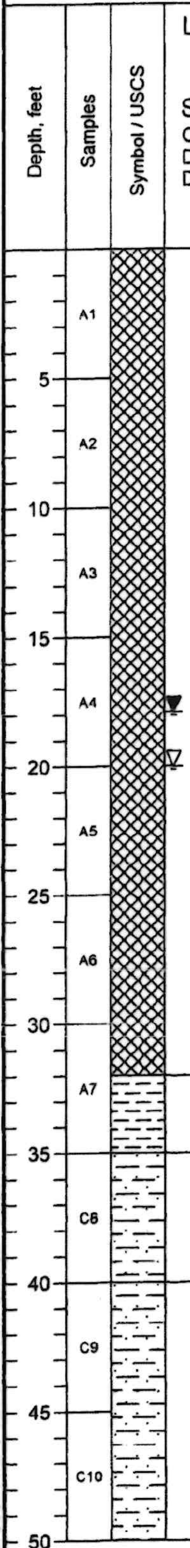
LOG OF BORING NO. BME-7

Project Description: **Chisholm Trail Disposal Landfill**

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-563-1144

Location: **E 2261133.08 N 7066041.94**

Surface El.: **683.41 ft. msl**
Completion Depth: 80.0 ft.
Date Boring Started: 5/21/2024
Date Boring Completed: 5/21/2024



MATERIAL DESCRIPTION

Clay, silty, with rock fragments, brown (fill)	651.41
Shale and limestone	648.41
Shale, sandy, light greenish gray, very hard	643.41
Shale, sandy, greenish gray and reddish brown	633.41

Contractor: **H/ET**

Groundwater Observations

Date		Depth
5/21/24	▽	20
5/22/24	▼	17.9

Remarks: Borehole grouted upon completion.

Continued Next Page

The stratification lines represent approximate strata boundaries. In situ, the transition may be gradual.
LOGS ARE NOT INTENDED TO BE USED SEPARATELY FROM THE ORIGINAL REPORT.

LOG OF BORING NO. BME-7

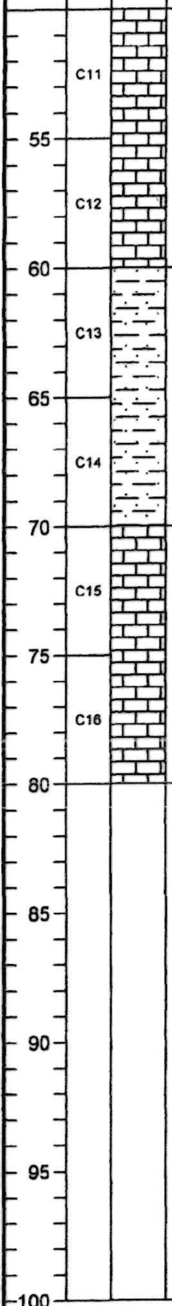
Project Description: **Chisholm Trail Disposal Landfill**

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-563-1144

Location: **E 2261133.08 N 7066041.94**

Surface El.: **683.41 ft. msl**
Completion Depth: 80.0 ft.
Date Boring Started: 5/21/2024
Date Boring Completed: 5/21/2024

MATERIAL DESCRIPTION



Limestone, with clay seams, light gray to gray

623.41

Shale, sandy, greenish gray

- with sand lenses and partings, dark gray

613.41

Limestone, tan to gray

- clay seam

603.41

Contractor: H/ET

Groundwater Observations	
Date	Depth
5/21/24 ▽	20
5/22/24 ▼	17.9

Remarks: Borehole grouted upon completion.

The stratification lines represent approximate strata boundaries. In situ, the transition may be gradual.
LOGS ARE NOT INTENDED TO BE USED SEPARATELY FROM THE ORIGINAL REPORT.

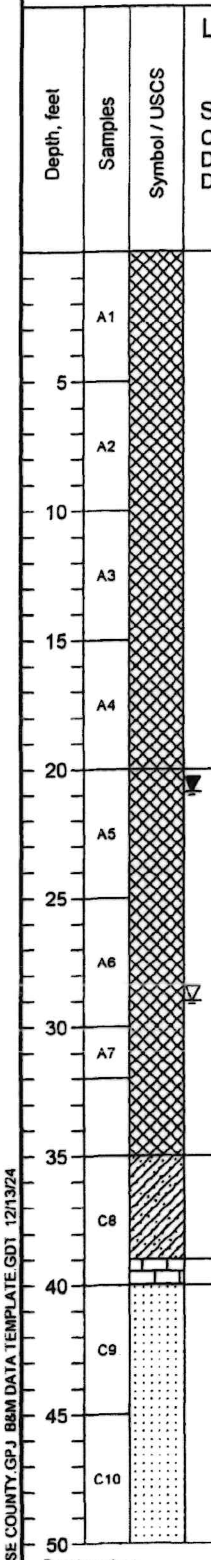
LOG OF BORING NO. BME-8

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-6892
Phone: 817-563-1144

Project Description: **Chisholm Trail Disposal Landfill**

Location: **E 2261111.52 N 7065570.32**

Surface El.: **684.11 ft. msl**
Completion Depth: 106.0 ft.
Date Boring Started: 5/21/2024
Date Boring Completed: 5/21/2024



MATERIAL DESCRIPTION

Clay, with gravel, brown (fill)

664.11

Sand, reddish brown to brown, rock fragments (fill)

649.11

Clay, sandy, light greenish gray, very hard

645.11

Limestone, tan to gray

644.11

Sandstone, crossbedded, tan, with lignite

634.11

Contractor: H/ET

Groundwater Observations

Date		Depth
5/21/24	▽	29
5/22/24	▼	20.9

Remarks: Borehole grouted upon completion.

Continued Next Page

The stratification lines represent approximate strata boundaries. In situ, the transition may be gradual.
LOGS ARE NOT INTENDED TO BE USED SEPARATELY FROM THE ORIGINAL REPORT.

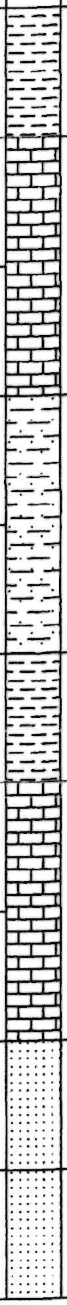
LOG OF BORING NO. BME-8

Project Description: **Chisholm Trail Disposal Landfill**

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-563-1144

Location: **E 2261111.52 N 7065570.32**

Surface El.: **684.11 ft. msl**
Completion Depth: 106.0 ft.
Date Boring Started: 5/21/2024
Date Boring Completed: 5/21/2024



Depth, feet	Samples	MATERIAL DESCRIPTION	
	C11	Shale, dark gray, with silt partings	
55			629.11
	C12	Limestone, with clay seams, light gray to gray, dark gray clay seams	
60	C13		
65			619.11
	C14	Shale, sandy, greenish gray to gray, with sand seams	
70		- with lignite	
	C15		
75			609.11
	C16	Shale, with sandstone seams, gray	
80			604.11
	C17	Limestone, light gray to gray	
85	C18		
90			594.11
	C19	Sandstone, well cemented, greenish gray	
95			589.11
	C20	Sandstone, lightly cemented, tan, very fine grained, with clay lamination, with lignite	
		- with fossils	
100			584.11

Contractor: **H/ET**

Groundwater Observations

Date		Depth
5/21/24	▽	29
5/22/24	▼	20.9

Remarks: Borehole grouted upon completion.

SKYLINE 2024 WISE COUNTY.GPJ B&M DATA TEMPLATE.GDT 12/13/24

Continued Next Page

The stratification lines represent approximate strata boundaries. In situ, the transition may be gradual.
LOGS ARE NOT INTENDED TO BE USED SEPARATELY FROM THE ORIGINAL REPORT.

LOG OF BORING NO. BME-8

Project Description: **Chisholm Trail Disposal Landfill**

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-563-1144

Location: **E 2261111.52 N 7065570.32**

Surface El.: **684.11 ft. msl**
Completion Depth: 106.0 ft.
Date Boring Started: 5/21/2024
Date Boring Completed: 5/21/2024

Depth, feet	Samples	Symbol / USCS	MATERIAL DESCRIPTION	
			Shale, silty, gray to greenish gray	
	C21			
			- with silt seams	
105	C22			578.11
110				
115				
120				
125				
130				
135				
140				
145				
150				

Contractor: H/ET

Groundwater Observations		
Date		Depth
5/21/24	∇	29
5/22/24	▼	20.9

Remarks: Borehole grouted upon completion.

SKYLINE 2024 WISE COUNTY.GPJ B&M DATA TEMPLATE.GDT 12/13/24

The stratification lines represent approximate strata boundaries. In situ, the transition may be gradual.
LOGS ARE NOT INTENDED TO BE USED SEPARATELY FROM THE ORIGINAL REPORT.

LOG OF BORING NO. BME-9

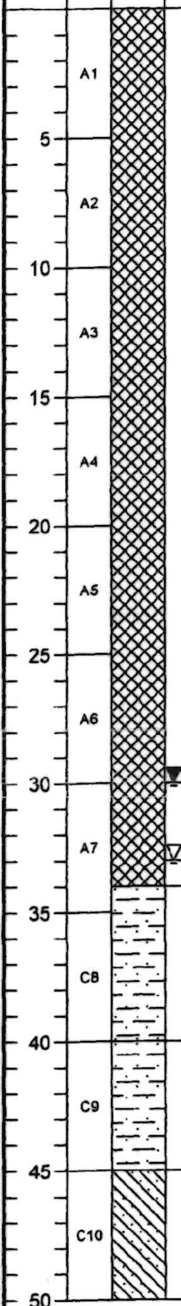
Project Description: **Chisholm Trail Disposal Landfill**

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-563-1144

Location: **E 2261101.94 N 7064570.56**

Surface El.: **679.02 ft. msl**
Completion Depth: 102.0 ft.
Date Boring Started: 5/30/2024
Date Boring Completed: 5/30/2024

MATERIAL DESCRIPTION



Clay, silty, dark gray with reddish brown, with gravel (fill)

645.02

Shale, with sandy partings, greenish gray

639.02

Shale, sandy, greenish gray

634.02

Sand, clayey, tan to greenish gray

629.02

Contractor: H/ET

Groundwater Observations

Date		Depth
5/30/24	∇	33
5/31/24	▼	30

Remarks: Borehole grouted upon completion.

Continued Next Page

LOG OF BORING NO. BME-9

Project Description: **Chisholm Trail Disposal Landfill**

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-563-1144

Location: **E 2261101.94 N 7064570.56**

Surface El.: **679.02 ft. msl**
Completion Depth: 102.0 ft.
Date Boring Started: 5/30/2024
Date Boring Completed: 5/30/2024

Depth, feet	Samples	Symbol / USCS	MATERIAL DESCRIPTION	
	C11		Shale, sandy, with siltstone seams	624.02
55	C12		Limestone, with clay seams, gray to light gray, dark gray clay seam	
60	C13			614.02
65	C14		Sand, clayey, light greenish gray, gray to dark gray	
70	C15		- with sand seams	
75	C16			599.02
80	C17		Limestone, with clay seams, gray to dark gray	
85	C18			589.02
90	C19		Shale, gray	584.02
95	C20		Shale, sandy, light greenish gray	
100				

Contractor: **H/ET**

Groundwater Observations	
Date	Depth
5/30/24 ▽	33
5/31/24 ▼	30

Remarks: Borehole grouted upon completion.

SKYLINE 2024 WISE COUNTY.GPJ B&M DATA TEMPLATE.GDT 12/13/24

Continued Next Page

The stratification lines represent approximate strata boundaries. In situ, the transition may be gradual.
LOGS ARE NOT INTENDED TO BE USED SEPARATELY FROM THE ORIGINAL REPORT.

LOG OF BORING NO. BME-9

Project Description: **Chisholm Trail Disposal Landfill**

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-563-1144

Location: **E 2261101.94 N 7064570.56**

Surface El.: **679.02 ft. msl**
Completion Depth: 102.0 ft.
Date Boring Started: 5/30/2024
Date Boring Completed: 5/30/2024

Depth, feet	Samples	Symbol / USCS	MATERIAL DESCRIPTION	
	C21		Shale, sandy, light greenish gray *(continued)*	577.02
105				
110				
115				
120				
125				
130				
135				
140				
145				
150				

Contractor: H/ET

Groundwater Observations

Date		Depth
5/30/24	▽	33
5/31/24	▼	30

Remarks: Borehole grouted upon completion.

The stratification lines represent approximate strata boundaries. In situ, the transition may be gradual.
LOGS ARE NOT INTENDED TO BE USED SEPARATELY FROM THE ORIGINAL REPORT.

LOG OF BORING NO. BME-10

Project Description: **Chisholm Trail Disposal Landfill**

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-563-1144

Location: **E 2261162.85 N 7063962.44**

Surface El.: **672.99 ft. msl**
Completion Depth: 70.0 ft.
Date Boring Started: 6/26/2024
Date Boring Completed: 6/26/2024

Depth, feet	Samples	Symbol / USCS	MATERIAL DESCRIPTION	
	A1		Clay, with silt and sand, dark brown	
5	A2			662.99
10	A3	▼	Sand, silty, dark brown, very fine grained to fine grained, loose	
15			- coarse grained	655.99
	A4		Gravel, tan	652.99
20	A5		Siltstone, tan to greenish gray, with sand partings	648.99
25	C6		Clay, silty, with limestone seams	642.99
30	C7		Sandstone, tan, with abundant lignite seams, with clay seams	638.99
35			Clay, silty, light greenish gray	635.99
	C8		Shale, with sand seams, gray (tan sand)	
40	C9			
45				626.99
	C10		Shale, with clay seams	622.99
50				

Contractor: **H/ET**

Groundwater Observations		
Date		Depth
6/26/24	▽	13
6/27/24	▼	13.0

Remarks: Borehole grouted upon completion.

Continued Next Page

The stratification lines represent approximate strata boundaries. In situ, the transition may be gradual.
LOGS ARE NOT INTENDED TO BE USED SEPARATELY FROM THE ORIGINAL REPORT.

LOG OF BORING NO. BME-10

Project Description: **Chisholm Trail Disposal Landfill**

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-563-1144

Location: **E 2261162.85 N 7063962.44**

Surface El.: **672.99 ft. msl**
Completion Depth: 70.0 ft.
Date Boring Started: 6/26/2024
Date Boring Completed: 6/26/2024

Depth, feet	Samples	Symbol / USCS	MATERIAL DESCRIPTION	
	C11	+ + +	Siltstone, with shale seams	618.99
55	C12	▧	Sand, clayey, light greenish gray to tan	612.99
60	C13	+ + +	Siltstone, tan, with shale partings	607.99
65		▨	Clay, with sand lenses, dark gray (tan sand)	605.99
	C14	▨	Clay, with limestone, dark gray to light tan to buff marl	602.99
70				
75				
80				
85				
90				
95				
100				

Contractor: H/ET

Groundwater Observations		
Date		Depth
6/26/24	∇	13
6/27/24	▼	13.0

Remarks: Borehole grouted upon completion.

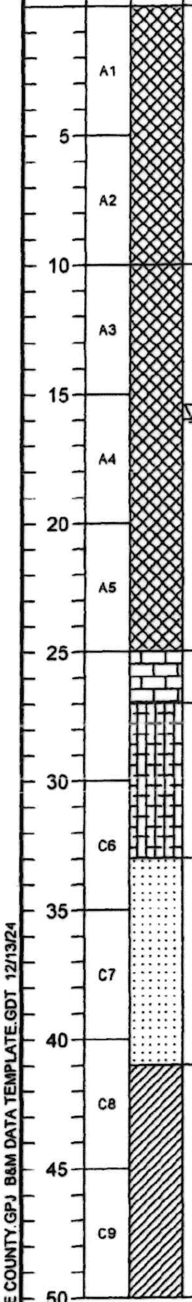
LOG OF BORING NO. BME-11

Project Description: **Chisholm Trail Disposal Landfill**

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-563-1144

Location: **E 2261568.57 N 7064102.01**

Surface El.: **677.74 ft. msl**
Completion Depth: 100.0 ft.
Date Boring Started: 6/26/2024
Date Boring Completed: 6/27/2024



MATERIAL DESCRIPTION	
Clay, silty, sandy, reddish brown (fill)	667.74
Sand, silty, with trace coarse sand, brown, moist (fill)	652.74
Limestone, tan to gray	650.74
Shale, silty, greenish gray, with red, with sand partings	644.74
Sandstone, with clay seams, tan to greenish gray, cross bedded, with lignite, well cemented	636.74
Clay, with limestone, with sand partings	

Contractor: H/ET

Groundwater Observations	
Date	Depth
6/26/24 ∇	16

Remarks: Borehold grouted upon completion.

BME

Continued Next Page

The stratification lines represent approximate strata boundaries. In situ, the transition may be gradual.
LOGS ARE NOT INTENDED TO BE USED SEPARATELY FROM THE ORIGINAL REPORT.

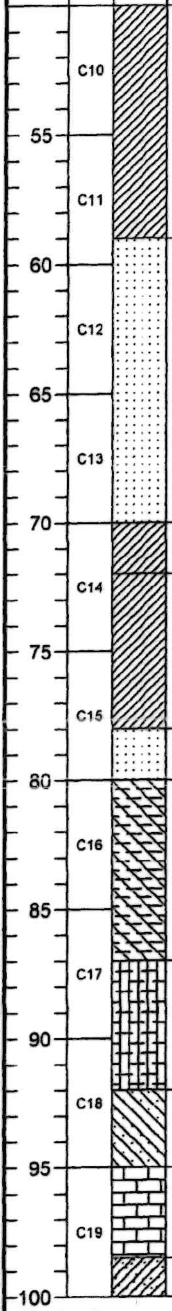
LOG OF BORING NO. BME-11

Project Description: **Chisholm Trail Disposal Landfill**

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-563-1144

Location: **E 2261568.57 N 7064102.01**

Surface El.: **677.74 ft. msl**
Completion Depth: 100.0 ft.
Date Boring Started: 6/26/2024
Date Boring Completed: 6/27/2024



MATERIAL DESCRIPTION

Clay, with limestone, with sand partings *(continued)*

618.74

Sandstone, lightly crossbedded, with trace silt, with clay seams and partings, tan to greenish gray

607.74

Clay, with sand lenses, dark gray (tan sand), well cemented

605.74

Clay, with limestone seams, light gray to gray

599.74

Sandstone, silty, crossbedded, tan, with lignite

597.74

Shale, clayey, with limestone seams, light gray to gray

590.74

Shale, silty, with sand partings, light greenish gray (tan sand)

585.74

Sand, clayey, light greenish gray

582.74

Limestone, light greenish gray to tan

579.24

Clay, sandy, light greenish gray

577.74

Contractor: H/ET

Groundwater Observations

Date		Depth
6/26/24	▽	16

Remarks: Borehold grouted upon completion.

SKYLINE 2024 WISE COUNTY.GPJ B&M DATA TEMPLATE.GDT 12/13/24

The stratification lines represent approximate strata boundaries. In situ, the transition may be gradual.
LOGS ARE NOT INTENDED TO BE USED SEPARATELY FROM THE ORIGINAL REPORT.

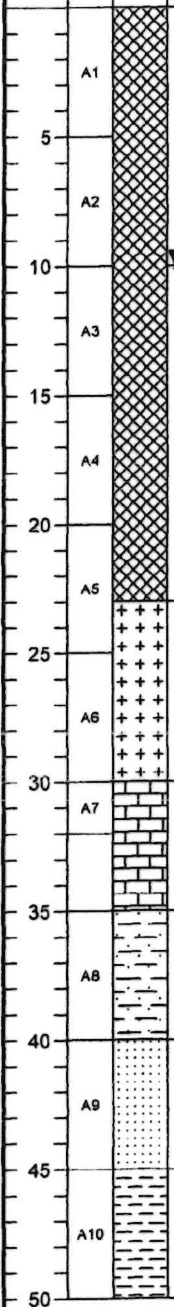
LOG OF BORING NO. BME-12

Project Description: **Chisholm Trail Disposal Landfill**

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-563-1144

Location: **E 2251646.13 N 7064582.24**

Surface El.: **673.92 ft. msl**
Completion Depth: 95.0 ft.
Date Boring Started: 6/4/2024
Date Boring Completed: 6/4/2024



MATERIAL DESCRIPTION

Sand, silty, with gravel, reddish brown (fill)	650.92
Siltstone, light greenish gray to light gray	643.92
Limestone, light tan with greenish gray	638.92
Shale, with sand, greenish gray	633.92
Sandstone, with silt, tan to light brown, crossbedded	628.92
Shale, dark gray, with siltstone seams	623.92

Contractor: H/ET

Groundwater Observations

Date		Depth
6/4/24	▽	10
6/5/24	▼	10

Remarks: Borehole grouted upon completion.

Continued Next Page

LOG OF BORING NO. BME-12

Project Description: **Chisholm Trail Disposal Landfill**

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-563-1144

Location: **E 2251646.13 N 7064582.24**

Surface El.: **673.92 ft. msl**
Completion Depth: 95.0 ft.
Date Boring Started: 6/4/2024
Date Boring Completed: 6/4/2024

Depth, feet	Samples	Symbol / USCS	MATERIAL DESCRIPTION	
	A11	▦	Limestone, with clay seams, dark gray to gray to light gray	
55	A12	▦		613.92
60	A13	▤	Shale, with sand seams, gray	608.92
65	A14	▨	Sand, clayey, gray	603.92
70	A15	▤	Shale, dark gray, with sand partings	598.92
75	A16	▦	Limestone, with sandy clay layers, buff to tan, light gray to gray - sandstone seam with lignite, crossbedded	
80	A17	▦		588.92
85	A18	▤	Shale, sandy, greenish gray	
90	A19	▤		578.92
95				
100				

Contractor: **H/ET**

Groundwater Observations	
Date	Depth
6/4/24	▽ 10
6/5/24	▼ 10

Remarks: Borehole grouted upon completion.

SKYLINE 2024 WISE COUNTY.GPJ B&M DATA TEMPLATE.GDT 12/13/24

The stratification lines represent approximate strata boundaries. In situ, the transition may be gradual.
LOGS ARE NOT INTENDED TO BE USED SEPARATELY FROM THE ORIGINAL REPORT.

LOG OF BORING NO. BME-13

Project Description: **Chisholm Trail Disposal Landfill**

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-563-1144

Location: **E 2261219.5 N 7065089.15**

Surface El.: **683.85 ft. msl**
Completion Depth: 110.0 ft.
Date Boring Started: 6/29/2024
Date Boring Completed: 6/29/2024

Depth, feet	Samples	Symbol / USCS	MATERIAL DESCRIPTION	
			Clay, silty, with trace sand, brown to reddish brown, with rock fragments (fill)	
	A1			
5				
	A2			
10				
	A3			
15				
	A4			
20				
	A5			
25				
	A6			
30		∇		
	A7			650.85
			Limestone, tan to buff	648.85
35			Shale, silty, with sand partings, with limestone seams, with increasing sand	
	C8			
			- sand seam	643.85
40			Sandstone, very fine grained, tan to gray, crossbedded with lignite	
	C9			
45				637.85
			Shale, with clay seams, dark gray to gray	
	C10			634.85
			Shale, with limestone seams, dark gray (light gray limestone)	
50				

Contractor: H/ET

Groundwater Observations

Date		Depth
6/29/24	∇	30

Remarks: Borehole grouted upon completion.

Continued Next Page

LOG OF BORING NO. BME-13

Project Description: **Chisholm Trail Disposal Landfill**

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-563-1144

Location: **E 2261219.5 N 7065089.15**

Surface El.: **683.85 ft. msl**
Completion Depth: 110.0 ft.
Date Boring Started: 6/29/2024
Date Boring Completed: 6/29/2024

Depth, feet	Samples	Symbol / USCS	MATERIAL DESCRIPTION	
	C11		Shale, with limestone seams, dark gray (light gray limestone) *(continued)*	
55	C12			623.85
60			Sandstone, tan, well cemented, hard	621.85
	C13		Sand, with clay, tan to greenish gray	
65	C14			615.85
70	C15		Shale, with sand lenses, dark gray, tan sand, well cemented	609.85
75	C16		Limestone, with shale partings, siltstone seams, with shell fragments, trace lignite	
80	C17		- sand seam	
85	C18			594.85
90			Clay, sandy, greenish gray to tan	592.85
	C19		Sandstone, very fine grained, tan to greenish gray to gray, with clay seams	
95	C20			
100				

Contractor: H/ET

Groundwater Observations	
Date	Depth
6/29/24 ∇	30

Remarks: Borehole grouted upon completion.

Continued Next Page

The stratification lines represent approximate strata boundaries. In situ, the transition may be gradual.
LOGS ARE NOT INTENDED TO BE USED SEPARATELY FROM THE ORIGINAL REPORT.

LOG OF BORING NO. BME-13

Project Description: **Chisholm Trail Disposal Landfill**

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-563-1144

Location: **E 2261219.5 N 7065089.15**

Surface El.: **683.85 ft. msl**
Completion Depth: 110.0 ft.
Date Boring Started: 6/29/2024
Date Boring Completed: 6/29/2024

Depth, feet	Samples	Symbol / USCS	MATERIAL DESCRIPTION	
			Sandstone, very fine grained, tan to greenish gray to gray, with clay seams *(continued)*	
	C21			
105			- with shale interbeds	
	C22			575.85
			Shale, dark greenish gray	573.85
110				
115				
120				
125				
130				
135				
140				
145				
150				

Contractor: **H/ET**

Groundwater Observations

Date		Depth
6/29/24	∇	30

Remarks: Borehole grouted upon completion.

The stratification lines represent approximate strata boundaries. In situ, the transition may be gradual.
LOGS ARE NOT INTENDED TO BE USED SEPARATELY FROM THE ORIGINAL REPORT.

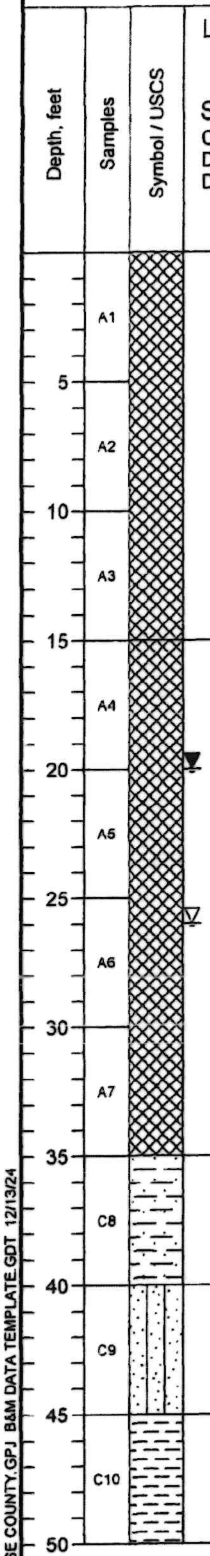
LOG OF BORING NO. BME-14

Project Description: **Chisholm Trail Disposal Landfill**

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-563-1144

Location: **E 2261655.71 N 7066590.94**

Surface El.: **680.95 ft. msl**
Completion Depth: 105.0 ft.
Date Boring Started: 5/22/2024
Date Boring Completed: 5/22/2024



MATERIAL DESCRIPTION	
Clay, silty, with sand, brown, with rootlets (fill)	665.95
Sand, light brown and brown, with medium to coarse grained sand, with clay pockets (fill)	645.95
Shale, sandy, light greenish gray	640.95
Sand, silty, tan, very fine grained	635.95
Shale, with sand seams, gray to dark gray, very fined grained	630.95

Contractor: H/ET

Groundwater Observations

Date	Depth
5/22/24 ▽	26
5/23/24 ▼	20

Remarks: Borehole grouted upon completion.

Continued Next Page

LOG OF BORING NO. BME-14

Project Description: **Chisholm Trail Disposal Landfill**

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-563-1144

Location: **E 2261655.71 N 7066590.94**

Surface El.: **680.95 ft. msl**
Completion Depth: 105.0 ft.
Date Boring Started: 5/22/2024
Date Boring Completed: 5/22/2024

Depth, feet	Samples	Symbol / USCS	MATERIAL DESCRIPTION	
	C11		Limestone, with clay seams, light gray to gray	
55	C12			620.95
60	C13		Sand, clayey, greenish gray, not well cemented	615.95
65	C14		Shale, sandy, greenish gray and gray with sand seams	610.95
70	C15		Limestone, with clay seams, light gray to gray	
75	C16			
80	C17			595.95
85	C18		Sand, clayey, greenish gray, with dark gray clay seams	590.95
90	C19		Sand, silty, tan, compacted, some crossbedding, with lignite	
95	C20		- with clay seams	580.95
100				

Contractor: H/ET

Groundwater Observations

Date		Depth
5/22/24	∇	26
5/23/24	▼	20

Remarks: Borehole grouted upon completion.

Continued Next Page

LOG OF BORING NO. BME-14

Project Description: **Chisholm Trail Disposal Landfill**

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-563-1144

Location: **E 2261655.71 N 7066590.94**

Surface El.: **680.95 ft. msl**
Completion Depth: 105.0 ft.
Date Boring Started: 5/22/2024
Date Boring Completed: 5/22/2024

Depth, feet	Samples	Symbol / USCS	MATERIAL DESCRIPTION
	C21		Shale, sandy, greenish gray and light greenish gray - with sand seams
105			575.95
110			
115			
120			
125			
130			
135			
140			
145			
150			

Contractor: H/ET

Groundwater Observations		
Date		Depth
5/22/24	▽	26
5/23/24	▼	20

Remarks: Borehole grouted upon completion.

SKYLINE 2024 WISE COUNTY.GPJ B&M DATA TEMPLATE.GDT 12/13/24

The stratification lines represent approximate strata boundaries. In situ, the transition may be gradual.
LOGS ARE NOT INTENDED TO BE USED SEPARATELY FROM THE ORIGINAL REPORT.

LOG OF BORING NO. BME-15

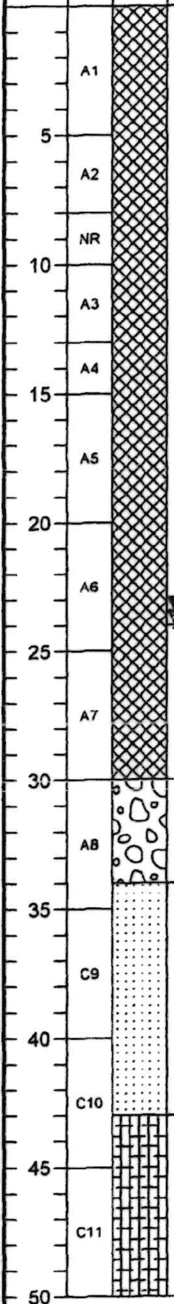
Project Description: **Chisholm Trail Disposal Landfill**

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-563-1144

Location: **E 2262026.57 N 7066180.21**

Surface El.: **683.01 ft. msl**
Completion Depth: 105.0 ft.
Date Boring Started: 5/20/2024
Date Boring Completed: 5/20/2024

Depth, feet | Samples | Symbol / USCS | MATERIAL DESCRIPTION



Sand, silty, reddish brown, with clay, with rock fragments and gravel (fill)

653.01

Gravel, tan to brown

649.01

Sandstone, greenish gray and reddish brown with tan to light tan, limestone partings

640.01

Shale, silty, greenish gray to tan, very hard

limestone seam

633.01

Contractor: H/ET

Groundwater Observations

Date		Depth
5/20/24	▽	24
5/21/24	▼	23.5

Remarks: Borehole grouted upon completion.

Continued Next Page

The stratification lines represent approximate strata boundaries. In situ, the transition may be gradual.
LOGS ARE NOT INTENDED TO BE USED SEPARATELY FROM THE ORIGINAL REPORT.

LOG OF BORING NO. BME-15

Project Description: **Chisholm Trail Disposal Landfill**

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-6892
Phone: 817-563-1144

Location: **E 2262026.57 N 7066180.21**

Surface El.: **683.01 ft. msl**
Completion Depth: 105.0 ft.
Date Boring Started: 5/20/2024
Date Boring Completed: 5/20/2024

Depth, feet	Samples	Symbol / USCS	MATERIAL DESCRIPTION	
	C12		Shale, silty, tan and gray	
55				628.01
	C13		Sandstone, with silt, tan crossbedded with lignite	
60				623.01
	C14		Shale, dark grayish green - with limestone seam	
65				
	C15		- trace silt/sand layers	
70				613.01
	C16		Sand, clayey, light gray to gray	
75				
	C17			
80			- with siltstone seams	
	C18			
85				
	C19			
90				
	C20			
95				
	C21			
100				

Contractor: **H/ET**

Groundwater Observations

Date		Depth
5/20/24	▽	24
5/21/24	▼	23.5

Remarks: Borehole grouted upon completion.

Continued Next Page

The stratification lines represent approximate strata boundaries. In situ, the transition may be gradual.
LOGS ARE NOT INTENDED TO BE USED SEPARATELY FROM THE ORIGINAL REPORT.

LOG OF BORING NO. BME-15

Project Description: **Chisholm Trail Disposal Landfill**

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-563-1144

Location: **E 2262026.57 N 7066180.21**

Surface El.: **683.01 ft. msl**
Completion Depth: 105.0 ft.
Date Boring Started: 5/20/2024
Date Boring Completed: 5/20/2024

Depth, feet	Samples	Symbol / USCS	MATERIAL DESCRIPTION	
		▨	Sand, clayey, light gray to gray *(continued)*	
	NR	▨		
		▨	- greenish gray	578.01
105				
110				
115				
120				
125				
130				
135				
140				
145				
150				

Contractor: **H/ET**

Groundwater Observations

Date		Depth
5/20/24	▽	24
5/21/24	▼	23.5

Remarks: Borehole grouted upon completion.

SKYLINE 2024 WISE COUNTY.GPJ B&M DATA TEMPLATE.GDT 12/13/24

LOG OF BORING NO. BME-16

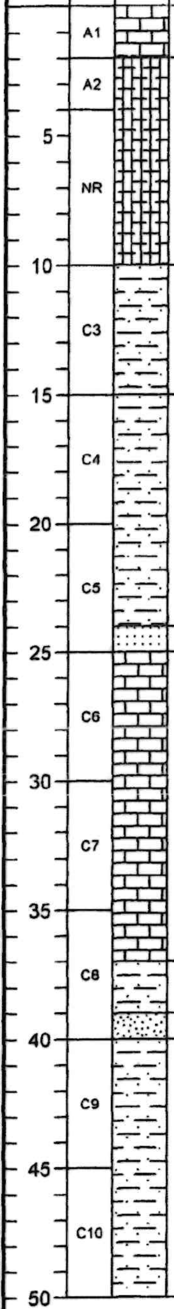
Project Description: **Chisholm Trail Disposal Landfill**

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-563-1144

Location: **E 2262000.96 N 7065658.96**

Surface El.: **654.65 ft. msl**
Completion Depth: 51.0 ft.
Date Boring Started: 6/24/2024
Date Boring Completed: 6/24/2024

MATERIAL DESCRIPTION



Limestone, tan and light brown, hard	652.65
Shale, silty, light gray	644.65
Shale, sandy, light greenish gray to tan - limestone seam	639.65
Shale, sandy, light greenish gray with tan sand lenses	630.65
Sandstone, silty, tan crossbedded with greenish gray clay	629.65
Limestone, with clay seams, gray to dark gray	617.65
Shale, sandy, light greenish gray to tan	615.65
Sand, very fine grained, tan to gray	614.65
Shale, sandy, with sand partings, light greenish gray to gray, with tan sand	604.65

Contractor: **H/ET**

Groundwater Observations	
Date	Depth

Remarks: Borehole grouted upon completion.

Continued Next Page

LOG OF BORING NO. BME-16

Project Description: **Chisholm Trail Disposal Landfill**

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-563-1144

Location: **E 2262000.96 N 7065658.96**

Surface El.: **654.65 ft. msl**
Completion Depth: 51.0 ft.
Date Boring Started: 6/24/2024
Date Boring Completed: 6/24/2024

Depth, feet	Samples	Symbol / USCS	MATERIAL DESCRIPTION	
	C11	– – –	Shale, green and dark gray, with limestone, with lignite	599.65
55	C12	+ + +	Siltstone, greenish and tan, with shale seams, limestone, very hard	
60	C13	+ + +		589.65
65				
70				
75				
80				
85				
90				
95				
100				

Contractor: H/ET

Groundwater Observations	
Date	Depth

Remarks: Borehole grouted upon completion.

BME

The stratification lines represent approximate strata boundaries. In situ, the transition may be gradual.
LOGS ARE NOT INTENDED TO BE USED SEPARATELY FROM THE ORIGINAL REPORT.

LOG OF BORING NO. BME-17

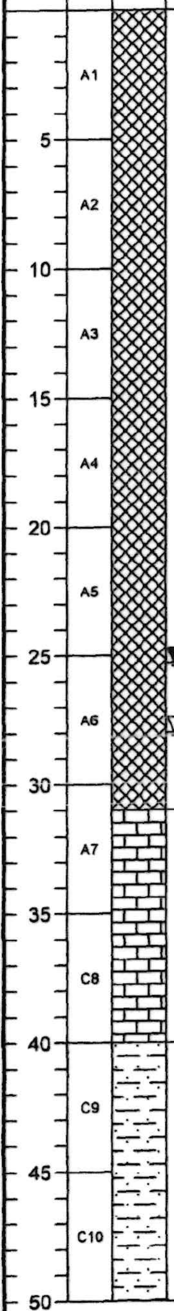
Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-563-1144

Project Description: **Chisholm Trail Disposal Landfill**

Location: **E 2262135.24 N 7064648.75**

Surface El.: **682.09 ft. msl**
Completion Depth: 105.0 ft.
Date Boring Started: 6/5/2024
Date Boring Completed: 6/5/2024

MATERIAL DESCRIPTION



Sand, silty, with clay, brown to reddish brown (fill)

651.09

Limestone, light greenish gray

642.09

Shale, sandy, light greenish gray and brown

632.09

Contractor: H/ET

Groundwater Observations		
Date		Depth
6/5/24	▽	28
6/6/24	▼	25.3

Remarks: Borehole grouted upon completion.

Continued Next Page

LOG OF BORING NO. BME-17

Project Description: **Chisholm Trail Disposal Landfill**

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-6892
Phone: 817-563-1144

Location: **E 2262135.24 N 7064648.75**

Surface El.: **682.09 ft. msl**
Completion Depth: 105.0 ft.
Date Boring Started: 6/5/2024
Date Boring Completed: 6/5/2024

Depth, feet	Samples	Symbol / USCS	MATERIAL DESCRIPTION	
	C11		Sandstone, thinly crossbedded, tan, with lignite	627.09
55	C12		Shale, sandy, light greenish gray and gray, with sand and silt partings (tan)	622.09
60	C13		Limestone, with clay seams, dark gray to gray	
65	C14			612.09
70	C15		Shale, sandy, light greenish gray	607.09
75	C16		Sand, clayey, with clay seams, tan, with lignite	602.09
80	C17		Limestone, with clay seams, light gray to gray	
85	C18			
90	C19			587.09
95	C20		Shale, sandy, with coal seams, greenish gray	582.09
100				

Contractor: **H/ET**

Groundwater Observations

Date		Depth
6/5/24	∇	28
6/6/24	▼	25.3

Remarks: Borehole grouted upon completion.

Continued Next Page

LOG OF BORING NO. BME-17

Project Description: **Chisholm Trail Disposal Landfill**

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-563-1144

Location: **E 2262135.24 N 7064648.75**

Surface El.: **682.09 ft. msl**
Completion Depth: 105.0 ft.
Date Boring Started: 6/5/2024
Date Boring Completed: 6/5/2024

Depth, feet	Samples	Symbol / USCS	MATERIAL DESCRIPTION	
	C21		Limestone, tan to buff, crystalline	577.09
105				
110				
115				
120				
125				
130				
135				
140				
145				
150				

Contractor: **H/ET**

Groundwater Observations

Date		Depth
6/5/24	▽	28
6/6/24	▼	25.3

Remarks: Borehole grouted upon completion.

BME

The stratification lines represent approximate strata boundaries. In situ, the transition may be gradual.
LOGS ARE NOT INTENDED TO BE USED SEPARATELY FROM THE ORIGINAL REPORT.

LOG OF BORING NO. BME-18

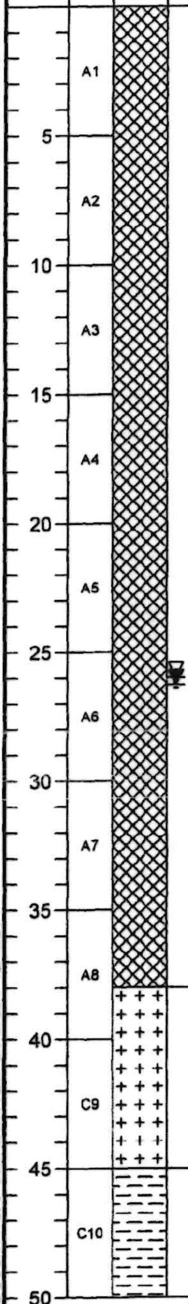
Project Description: **Chisholm Trail Disposal Landfill**

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-6892
Phone: 817-563-1144

Location: **E 2262165.57 N 7064100.12**

Surface El.: **684.50 ft. msl**
Completion Depth: 105.0 ft.
Date Boring Started: 6/4/2024
Date Boring Completed: 6/4/2024

Depth, feet | Samples | Symbol / USCS | MATERIAL DESCRIPTION



Sand, silty, with clay, light brown to reddish brown (fill)

646.50

Siltstone, with clay, with sand lenses, tan and light green, very hard

639.50

Shale, with sand lenses and partings, light greenish gray

634.50

Contractor: H/ET

Groundwater Observations		
Date		Depth
6/4/24	▽	26
6/5/24	▼	26.3

Remarks: Borehole grouted upon completion.

Continued Next Page

LOG OF BORING NO. BME-18

Project Description: **Chisholm Trail Disposal Landfill**

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-563-1144

Location: **E 2262165.57 N 7064100.12**

Surface El.: **684.50 ft. msl**
Completion Depth: 105.0 ft.
Date Boring Started: 6/4/2024
Date Boring Completed: 6/4/2024

Depth, feet	Samples	Symbol / USCS	MATERIAL DESCRIPTION	
	C11		Siltstone, light greenish gray to tan, very hard	629.50
55	C12		Shale, with silt, dark gray to gray	
60			- wtih siltstone seams	
	C13		- some lignite	619.50
65	C14		Limestone, with dark gray clay seams, light gray to gray	
70	C15			609.50
75	C16		Sand, clayey, with sand partings, light greenish gray to tan	604.50
80	C17		Shale, with silt seams, gray	599.50
85	C18		Limestone, with dark gray clay seam, light gray to gray	
90	C19			
95	C20			
100				

Contractor: H/ET

Groundwater Observations

Date		Depth
6/4/24	▽	26
6/5/24	▼	26.3

Remarks: Borehole grouted upon completion.

Continued Next Page

LOG OF BORING NO. BME-18

Project Description: **Chisholm Trail Disposal Landfill**

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-563-1144

Location: **E 2262165.57 N 7064100.12**

Surface El.: **684.50 ft. msl**
Completion Depth: 105.0 ft.
Date Boring Started: 6/4/2024
Date Boring Completed: 6/4/2024

Depth, feet	Samples	Symbol / USCS	MATERIAL DESCRIPTION	
		▦	Limestone, with dark gray clay seam, light gray to gray *(continued)*	
	C21	▦		
		▦		579.50
105				
110				
115				
120				
125				
130				
135				
140				
145				
150				

Contractor: H/ET

Groundwater Observations

Date		Depth
6/4/24	▽	26
6/5/24	▼	26.3

Remarks: Borehole grouted upon completion.

The stratification lines represent approximate strata boundaries. In situ, the transition may be gradual.
LOGS ARE NOT INTENDED TO BE USED SEPARATELY FROM THE ORIGINAL REPORT.

LOG OF BORING NO. BME-19

Project Description: **Chisholm Trail Disposal Landfill**

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-563-1144

Location: **E 2262057.42 N 7063463.33**

Surface El.: **678.61 ft. msl**
Completion Depth: 100.0 ft.
Date Boring Started: 6/27/2024
Date Boring Completed: 6/27/2024

Depth, feet	Samples	Symbol / USCS	MATERIAL DESCRIPTION	
			Clay, silty, with sand, dark reddish brown (fill)	
	A1			
5	A2			
10				668.61
			Sand, silty, reddish brown (fill)	
	A3			
15	A4			
20		▼		
	A5			
25		▽		
	A6			
30	A7			
35				643.61
			Shale, silty, greenish gray, hard	
	C9			
40				637.61
			Sand, clayey, with clay seams	
	C10			
45				633.61
			Shale, with sand lenses, dark gray (tan sand)	
	C11			
50				628.61

Contractor: **H/ET**

Groundwater Observations

Date		Depth
6/27/24	▽	25
6/28/24	▼	20

Remarks: Borehole grouted upon completion.

Continued Next Page

LOG OF BORING NO. BME-19

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-6892
Phone: 817-563-1144

Project Description: **Chisholm Trail Disposal Landfill**

Location: **E 2262057.42 N 7063463.33**

Surface El.: **678.61 ft. msl**
Completion Depth: 100.0 ft.
Date Boring Started: 6/27/2024
Date Boring Completed: 6/27/2024

Depth, feet	Samples	Symbol / USCS	MATERIAL DESCRIPTION	
	C12		Shale, dark gray, with silt partings	623.61
55 60	C13 C14		Limestone, with clay seams	614.61
65			Shale, silty, with sand partings	611.61
70	C15 C16		Sandstone, tan, some crossbedding with lignite	603.61
75			Shale, with sand lenses, dark gray (tan sand), with limestone seam	601.61
80	C17 C18		Limestone, gray to light gray - sandstone seam	593.61
85 90	C19 C20		Clay, with limestone, with shell fragments	583.61
95			Sandstone, tan, crossbedded with lignite	581.61
	C21		Clay, dark gray, with marl, with sand and gravel seam	580.11
100			Clay, silty, greenish gray	578.61

Contractor: H/ET

Groundwater Observations		
Date		Depth
6/27/24	∇	25
6/28/24	▼	20

Remarks: Borehole grouted upon completion.

SKYLINE 2024 WISE COUNTY.GPJ B&M DATA TEMPLATE.GDT 12/13/24

The stratification lines represent approximate strata boundaries. In situ, the transition may be gradual.
LOGS ARE NOT INTENDED TO BE USED SEPARATELY FROM THE ORIGINAL REPORT.

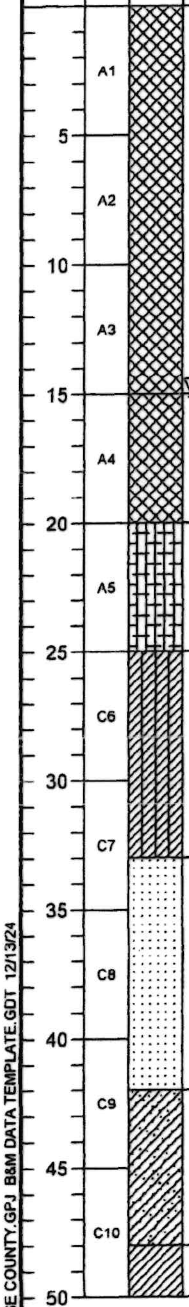
LOG OF BORING NO. BME-20

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-563-1144

Project Description: **Chisholm Trail Disposal Landfill**

Location: **E 2262655.19 N 7063470.92**

Surface El.: **669.64 ft. msl**
Completion Depth: 70.0 ft.
Date Boring Started: 6/27/2024
Date Boring Completed: 6/28/2024



MATERIAL DESCRIPTION	
Clay, silty, reddish brown, with sand (fill)	654.64
Sand, silty, unconsolidated, reddish brown (fill)	649.64
Shale, silty, greenish gray	644.64
Clay, silty, with sand, with limestone seams, greenish gray	636.64
Sandstone, tan crossbedded, with lignite	627.64
Clay, with sand partings, greenish gray and gray	621.64
Clay, with limestone, dark gray (light gray limestone)	

Contractor: H/ET

Groundwater Observations	
Date	Depth
6/27/24 ∇	15

Remarks: Borehole grouted upon completion.

BME

Continued Next Page

The stratification lines represent approximate strata boundaries. In situ, the transition may be gradual.
LOGS ARE NOT INTENDED TO BE USED SEPARATELY FROM THE ORIGINAL REPORT.

LOG OF BORING NO. BME-20

Project Description: **Chisholm Trail Disposal Landfill**

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-563-1144

Location: **E 2262655.19 N 7063470.92**

Surface El.: **669.64 ft. msl**
Completion Depth: 70.0 ft.
Date Boring Started: 6/27/2024
Date Boring Completed: 6/28/2024

Depth, feet	Samples	Symbol / USCS	MATERIAL DESCRIPTION	
	C11	▨	Clay, with limestone, dark gray (light gray limestone) *(continued)*	613.64
	C12	▥	Clay, silty, greenish gray	609.64
	C13	▧	Sand, with clay, light greenish gray to tan	603.64
	C14	☰	Shale, with sand lenses, dark gray, tan sand	599.64

55
60
65
70
75
80
85
90
95
100

Contractor: H/ET

Groundwater Observations	
Date	Depth
6/27/24 ∇	15

Remarks: Borehole grouted upon completion.

SKYLINE 2024 WISE COUNTY.GPJ B&M DATA TEMPLATE.GDT 12/13/24

LOG OF BORING NO. BME-21

Project Description: **Chisholm Trail Disposal Landfill**

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-563-1144

Location: **E 2262551.73 N 7064651.41**

Surface El.: **683.24 ft. msl**
Completion Depth: 80.0 ft.
Date Boring Started: 6/5/2024
Date Boring Completed: 6/5/2024

Depth, feet	Samples	Symbol / USCS	MATERIAL DESCRIPTION	
	A1	▩	Sand, silty, tan and brown, with gravel (fill)	
5	A2	▩		
10	A3	▩		
15	A4	▩ ▼ ▽		
20	A5	▩		
25	A6	▩		
30	A7	▩		
35		▩		647.24
	C8	▦	Limestone, tan to buff	
40	C9	▦		
				638.24
45	C10	▦	Shale, very silty, light greenish gray to gray	
50				

Contractor: H/ET

Groundwater Observations

Date		Depth
6/5/24	▽	20
6/6/24	▼	19

Remarks: Borehole grouted upon completion.

Continued Next Page

LOG OF BORING NO. BME-21

Project Description: **Chisholm Trail Disposal Landfill**

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-563-1144

Location: **E 2262551.73 N 7064651.41**

Surface El.: **683.24 ft. msl**
Completion Depth: 80.0 ft.
Date Boring Started: 6/5/2024
Date Boring Completed: 6/5/2024

Depth, feet	Samples	Symbol / USCS	MATERIAL DESCRIPTION	
50–55	C11		Shale, very silty, light greenish gray to gray *(continued)*	628.24
55–60	C12		Sandstone, tan, crossbedded - with trace lignite	623.24
60–65	C13		Shale, trace sand, dark gray with trace lignite	618.24
65–70	C14		Limestone, with clay seams, light gray to gray	613.24
70–80	C15 C16		Sand, clayey, with limestone seams, light greenish gray	603.24

Depth scale: 55, 60, 65, 70, 75, 80, 85, 90, 95, 100

Contractor: **H/ET**

Groundwater Observations

Date		Depth
6/5/24	▽	20
6/6/24	▼	19

Remarks: Borehole grouted upon completion.

BME

The stratification lines represent approximate strata boundaries. In situ, the transition may be gradual.
LOGS ARE NOT INTENDED TO BE USED SEPARATELY FROM THE ORIGINAL REPORT.

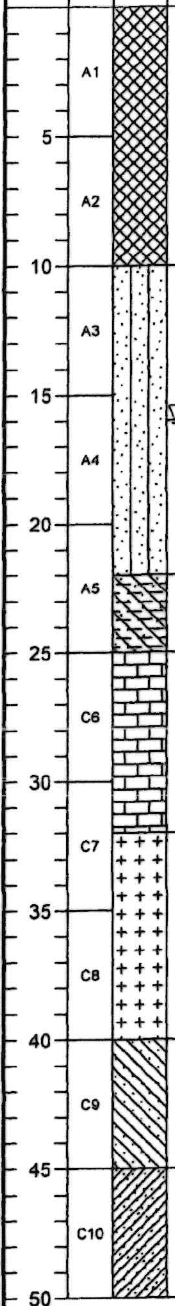
LOG OF BORING NO. BME-22

Project Description: **Chisholm Trail Disposal Landfill**

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-563-1144

Location: **E 2262677.89 N 7064992.98**

Surface El.: **670.18 ft. msl**
Completion Depth: 67.0 ft.
Date Boring Started: 6/24/2024
Date Boring Completed: 6/25/2024



MATERIAL DESCRIPTION

MATERIAL DESCRIPTION	
Clay, with sand and gravel, dark brown	660.18
Sand, silty, tan, very fine grained	648.18
Shale, clayey, with sand seams, greenish gray with reddish brown	645.18
Limestone, with clay seams, light greenish gray to tan - sand seam	638.18
Siltstone, clayey, light greenish gray to tan, very hard	630.18
Sand, clayey, with sand seams, with clay seams, tan to greenish gray	625.18
Clay, sandy, with limestone seams, dark gray clay, light gray limestone	

Contractor: H/ET

Groundwater Observations

Date		Depth
6/24/24	▽	16

Remarks: Borehole grouted upon completion.

Continued Next Page

The stratification lines represent approximate strata boundaries. In situ, the transition may be gradual.
LOGS ARE NOT INTENDED TO BE USED SEPARATELY FROM THE ORIGINAL REPORT.

LOG OF BORING NO. BME-22

Project Description: **Chisholm Trail Disposal Landfill**

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-563-1144

Location: **E 2262677.89 N 7064992.98**

Surface El.: **670.18 ft. msl**
Completion Depth: 67.0 ft.
Date Boring Started: 6/24/2024
Date Boring Completed: 6/25/2024

Depth, feet	Samples	Symbol / USCS	MATERIAL DESCRIPTION	
		▨	Clay, sandy, with limestone seams, dark gray clay, light gray limestone *(continued)*	
	C11	▨		
55		▨		
	C12	▨		610.18
60		+ + +	Siltstone, light greenish gray	609.18
		⊞	Shale, silty, very silty, greenish	
	C13	⊞		
65	C14	⊞		603.18
70				
75				
80				
85				
90				
95				
100				

Contractor: H/ET

Groundwater Observations

Date		Depth
6/24/24	∇	16

Remarks: Borehole grouted upon completion.

LOG OF BORING NO. BME-23

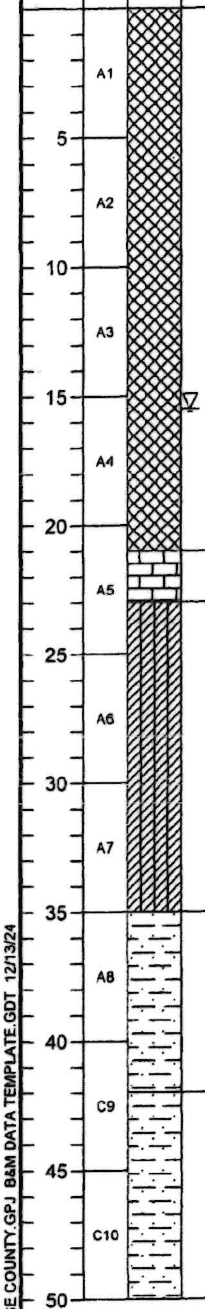
Project Description: **Chisholm Trail Disposal Landfill**

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-563-1144

Location: **E 2262543.1 N 7065360.3**

Surface El.: **667.38 ft. msl**
Completion Depth: 65.0 ft.
Date Boring Started: 6/25/2024
Date Boring Completed: 6/25/2024

MATERIAL DESCRIPTION



Sand, silty, with rock fragments, light tan (fill)

646.38

Limestone, tan

644.38

Clay, silty, with limestone partings, with sand partings, light greenish gray to tan

632.38

Shale, sandy, greenish gray to gray

625.38

Shale, sandy, with sandstone seams

617.38

Contractor: H/ET

Groundwater Observations

Date	Depth
6/25/24 ∇	15.5

Remarks: Borehole grouted upon completion.

Continued Next Page

The stratification lines represent approximate strata boundaries. In situ, the transition may be gradual.
LOGS ARE NOT INTENDED TO BE USED SEPARATELY FROM THE ORIGINAL REPORT.

LOG OF BORING NO. BME-23

Project Description: **Chisholm Trail Disposal Landfill**

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-563-1144

Location: **E 2262543.1 N 7065360.3**

Surface El.: **667.38 ft. msl**
Completion Depth: 65.0 ft.
Date Boring Started: 6/25/2024
Date Boring Completed: 6/25/2024

Depth, feet	Samples	Symbol / USCS	MATERIAL DESCRIPTION	
	C11	▦	Limestone, light gray, with dark gray clay seams	
55	C12	▦		
60	C12	▥	Shale, silty, with sand partings, light greenish gray - with siltstone	607.38
65				602.38
70				
75				
80				
85				
90				
95				
100				

Contractor: **H/ET**

Groundwater Observations	
Date	Depth
6/25/24	▽ 15.5

Remarks: Borehole grouted upon completion.

LOG OF BORING NO. BME-23
PAGE 2 OF 2

The stratification lines represent approximate strata boundaries. In situ, the transition may be gradual.
LOGS ARE NOT INTENDED TO BE USED SEPARATELY FROM THE ORIGINAL REPORT.

LOG OF BORING NO. BME-24

Project Description: **Chisholm Trail Disposal Landfill**

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-563-1144

Location: **E 2262616.74 N 7066668.86**

Surface El.: **681.35 ft. msl**
Completion Depth: 104.0 ft.
Date Boring Started: 8/2/2024
Date Boring Completed: 8/14/2024

Depth, feet	Samples	Symbol / USCS	MATERIAL DESCRIPTION	Hand Penetrometer, tsf	Penetration Blows/Foot
	U1		Clay, silty, brown, hard to very hard (fill)		
	U2				
5	S3				12/17/2
	S4				12/18/2
	S5		671.35		13/19/1
10	S6		Sand, tan to brown, fine to coarse grained (fill)		14/14/2
	S7				17/17/2
15	S8				7/7/9
	S9				6/7/20
	S10		- with gravel		9/9/15
20	S11				8/7/16
	S12				9/9/19
25	S13				15/50-3
	S14		652.35		
30	C15		Limestone, tan, hard 650.35		
	C16		Shale, silty, with limestone seams, tan		
35	C17				
40	C18		- limestone seam 636.35		
45	C19		Shale, with silt, greenish gray, hard 631.35		
50					

Contractor: **H/ET**

Groundwater Observations	
Date	Depth

Remarks: Borehole grouted upon completion.

Continued Next Page

The stratification lines represent approximate strata boundaries. In situ, the transition may be gradual.
LOGS ARE NOT INTENDED TO BE USED SEPARATELY FROM THE ORIGINAL REPORT.

LOG OF BORING NO. BME-24

Project Description: **Chisholm Trail Disposal Landfill**

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-563-1144

Location: **E 2262616.74 N 7066668.86**

Surface El.: **681.35 ft. msl**
Completion Depth: 104.0 ft.
Date Boring Started: 8/2/2024
Date Boring Completed: 8/14/2024

Depth, feet	Samples	Symbol / USCS	MATERIAL DESCRIPTION	Hand Penetrometer, tsf	Penetration Blows/Foot
	C20		Shale, sandy, tan to light gray		
			626.35		
55	C21		Shale, dark gray, with ferrous stains, shell fragments		
			621.35		
60	C22		Limestone, light gray to gray		
65	C23		- with clay seams		
			611.35		
70	C24		Sandstone, very fine grained, well cemented, greenish gray to tan		
			606.35		
75	C25		Shale, silty, greenish gray to tan		
			601.35		
80	C26		Limestone, with clay and shale layers, tan to gray		
85	C27				
90	C28		- with shale and limestone - dark gray		
95	C29				
			581.35		
100					

Contractor: H/ET

Groundwater Observations	
Date	Depth

Remarks: Borehole grouted upon completion.

TASWA 2024 WISE COUNTY.GPJ B&M DATA TEMPLATE.GDT 12/13/24

Continued Next Page

The stratification lines represent approximate strata boundaries. In situ, the transition may be gradual.
LOGS ARE NOT INTENDED TO BE USED SEPARATELY FROM THE ORIGINAL REPORT.

LOG OF BORING NO. BME-24

Project Description: **Chisholm Trail Disposal Landfill**

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-563-1144

Location: **E 2262616.74 N 7066668.86**

Surface El.: **681.35 ft. msl**
Completion Depth: 104.0 ft.
Date Boring Started: 8/2/2024
Date Boring Completed: 8/14/2024

Depth, feet	Samples	Symbol / USCS	MATERIAL DESCRIPTION		Hand Penetrometer, tsf	Penetration Blows/Foot
	C30	+ + +	Sltstone, greenish gray to tan	577.35		
105						
110						
115						
120						
125						
130						
135						
140						
145						
150						

Contractor: **H/ET**

Groundwater Observations	
Date	Depth

Remarks: Borehole grouted upon completion.

TASWA 2024 WISE COUNTY.GPJ B&M DATA TEMPLATE.GDT 12/13/24

The stratification lines represent approximate strata boundaries. In situ, the transition may be gradual.
LOGS ARE NOT INTENDED TO BE USED SEPARATELY FROM THE ORIGINAL REPORT.

LOG OF BORING NO. BME-25

Project Description: **Chisholm Trail Disposal Landfill**

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-563-1144

Location: **E 2263157.02 N 7066390.09**

Surface El.: **657.21 ft. msl**
Completion Depth: 54.0 ft.
Date Boring Started: 5/1/2024
Date Boring Completed: 5/1/2024

Depth, feet	Samples	Symbol / USCS	MATERIAL DESCRIPTION		Hand Penetrometer, tsf	Penetration Blows/Foot
	S1	▨	Clay, sandy, brown to tan, with rock fragments (fill)			5/10/15
	S2	▨				6/8/9
5	S3	▨				9/9/9
	S4	▨				9/9/9
	S5	▨				5/6/10
10	S6	▨ ▽				3/5/5
	S7	▨		642.21		
15	S8		Limestone	641.21		
		+ + +	Siltstone, light greenish gray			
20	S9	+ + +		634.21		
25	S10		Shale, interbedded with limestone, reddish brown and green to tan			
30	S11					
			- with limestone seams			
35	S12					
40	S13		- with silt partings	614.21		
			Shale, sandy, with sand partings, greenish gray to gray			
45	S14					
			- sand lenses			
	S15					
50						

Contractor: **H/ET**

Groundwater Observations

Date		Depth
5/1/24	▽	10

Remarks: Borehole grouted upon completion.

BME

Continued Next Page

The stratification lines represent approximate strata boundaries. In situ, the transition may be gradual.
LOGS ARE NOT INTENDED TO BE USED SEPARATELY FROM THE ORIGINAL REPORT.

LOG OF BORING NO. BME-25

Project Description: **Chisholm Trail Disposal Landfill**

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-563-1144

Location: **E 2263157.02 N 7066390.09**

Surface El.: **657.21 ft. msl**
Completion Depth: 54.0 ft.
Date Boring Started: 5/1/2024
Date Boring Completed: 5/1/2024

Depth, feet	Samples	Symbol / USCS	MATERIAL DESCRIPTION	Hand Penetrometer, tsf	Penetration Blows/Foot
	S16		Shale, sandy, with sand partings, greenish gray to gray *(continued)*		
55	S17		601.21		
60					
65					
70					
75					
80					
85					
90					
95					
100					

Contractor: H/ET

Groundwater Observations	
Date	Depth
5/1/24 ▽	10

Remarks: Borehole grouted upon completion.

TASWA 2024 WISE COUNTY.GPJ B&M DATA TEMPLATE.GDT 12/13/24

LOG OF BORING NO. BME-26

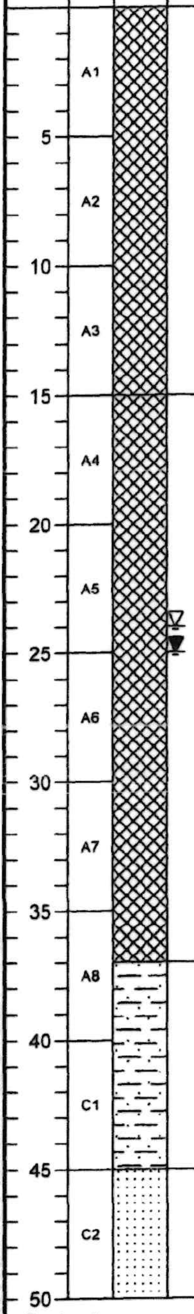
Project Description: **Chisholm Trail Disposal Landfill**

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-6892
Phone: 817-563-1144

Location: **E 2263363.5 N 7064729.93**

Surface El.: **680.87 ft. msl**
Completion Depth: 105.0 ft.
Date Boring Started: 6/7/2024
Date Boring Completed: 6/7/2024

Depth, feet	Samples	Symbol / USCS	MATERIAL DESCRIPTION



Clay, sand, brown and tan, with silty sand (fill)

665.87

Sand, silty, brown to tan (fill)

643.87

Shale, sandy

635.87

Sandstone, with silt, light gray

630.87

Contractor: **H/ET**

Groundwater Observations	
Date	Depth
6/7/24 ▽	24
6/8/24 ▼	25

Remarks: Borehole grouted upon completion.

Continued Next Page

LOG OF BORING NO. BME-26

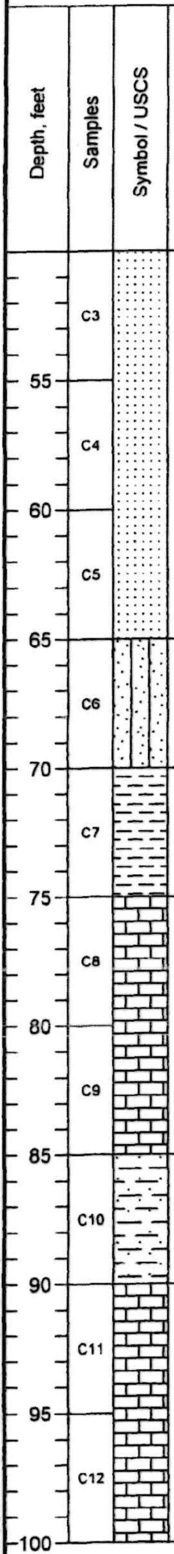
Project Description: **Chisholm Trail Disposal Landfill**

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-563-1144

Location: **E 2263363.5 N 7064729.93**

Surface El.: **680.87 ft. msl**
Completion Depth: 105.0 ft.
Date Boring Started: 6/7/2024
Date Boring Completed: 6/7/2024

MATERIAL DESCRIPTION



Sandstone, very fine grained, with clay seams, light greenish gray, to yellow, with reddish brown streaks

615.87

Sand, silty, light greenish gray and tan

610.87

Shale, dark gray, with silt partings, with siltstone partings

605.87

Limestone, light gray and gray, with clay seams

595.87

Shale, sandy, dark gray to light greenish gray

590.87

Limestone, tan to light gray, with clay seams

Contractor: **H/ET**

Groundwater Observations

Date		Depth
6/7/24	∇	24
6/8/24	▼	25

Remarks: Borehole grouted upon completion.

Continued Next Page

The stratification lines represent approximate strata boundaries. In situ, the transition may be gradual.
LOGS ARE NOT INTENDED TO BE USED SEPARATELY FROM THE ORIGINAL REPORT.

LOG OF BORING NO. BME-26

Project Description: **Chisholm Trail Disposal Landfill**

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-563-1144

Location: **E 2263363.5 N 7064729.93**

Surface El.: **680.87 ft. msl**
Completion Depth: 105.0 ft.
Date Boring Started: 6/7/2024
Date Boring Completed: 6/7/2024

Depth, feet	Samples	Symbol / USCS	MATERIAL DESCRIPTION	
	C13	▦	Limestone, tan to light gray, with clay seams *(continued)*	
105				575.87
110				
115				
120				
125				
130				
135				
140				
145				
150				

Contractor: H/ET

Groundwater Observations

Date		Depth
6/7/24	∇	24
6/8/24	▼	25

Remarks: Borehole grouted upon completion.

The stratification lines represent approximate strata boundaries. In situ, the transition may be gradual.
LOGS ARE NOT INTENDED TO BE USED SEPARATELY FROM THE ORIGINAL REPORT.

LOG OF BORING NO. BME-27

Project Description: **Chisholm Trail Disposal Landfill**

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-563-1144

Location: **E 2262836 N 7064589.29**

Surface El.: **681.14 ft. msl**
Completion Depth: 80.0 ft.
Date Boring Started: 6/6/2024
Date Boring Completed: 6/6/2024

Depth, feet	Samples	Symbol / USCS	MATERIAL DESCRIPTION	
			Sand, silty, brown and light brown (fill)	
	A1			
5				
	A2			
10				
	A3			
15				
	A4			
20				
	A5			
		▽		
25				
	A6			
30				
				649.14
	NR		Limestone, tan to buff	
				646.14
35			Sand, light greenish gray	
				644.14
	C8		Sandstone, very fine grained, well cemented, light greenish gray	
40				
	C9			
45			- light greenish gray to tan	
	C10			
50				

Contractor: H/ET

Groundwater Observations		
Date		Depth
6/6/24	▽	24.5

Remarks: Borehole grouted upon completion.

BME

Continued Next Page

The stratification lines represent approximate strata boundaries. In situ, the transition may be gradual.
LOGS ARE NOT INTENDED TO BE USED SEPARATELY FROM THE ORIGINAL REPORT.

LOG OF BORING NO. BME-27

Project Description: **Chisholm Trail Disposal Landfill**

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-563-1144

Location: **E 2262836 N 7064589.29**

Surface El.: **681.14 ft. msl**
Completion Depth: 80.0 ft.
Date Boring Started: 6/6/2024
Date Boring Completed: 6/6/2024

Depth, feet	Samples	Symbol / USCS	MATERIAL DESCRIPTION	
	C11	░	Sandstone, very fine grained, well cemented, light greenish gray *(continued)* - greenish gray	
55	C12	░	- greenish gray to tan, not well cemented, with clay	621.14
60	C13	▤	Shale, with sand seams, dark gray	616.14
65	C14	▦	Limestone, with clay seams, light gray to gray	611.14
70	C15	░	Sandstone, clayey, greenish gray	606.14
75	C16	▨	Sand, clayey, tan to dark gray	601.14
80				
85				
90				
95				
100				

Contractor: **H/ET**

Groundwater Observations

Date	Depth
6/6/24 ∇	24.5

Remarks: Borehole grouted upon completion.

BME

The stratification lines represent approximate strata boundaries. In situ, the transition may be gradual.
LOGS ARE NOT INTENDED TO BE USED SEPARATELY FROM THE ORIGINAL REPORT.

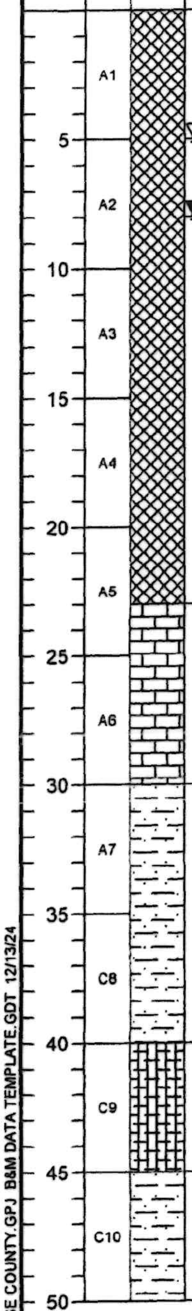
LOG OF BORING NO. BME-28

Project Description: **Chisholm Trail Disposal Landfill**

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-563-1144

Location: **E 2262980.52 N 7064049.67**

Surface El.: **668.10 ft. msl**
Completion Depth: 90.0 ft.
Date Boring Started: 6/6/2024
Date Boring Completed: 6/6/2024



MATERIAL DESCRIPTION

Sand, silty, light brown (fill)	645.10
Limestone, with clay seams, light greenish gray with reddish brown	638.10
Shale, sandy, greenish gray to reddish brown	628.10
Sandstone, with silt partings, greenish gray to tan	623.10
Shale, with sand seams, dark gray	618.10

Contractor: **H/ET**

Groundwater Observations

Date		Depth
6/6/24	▽	5
6/7/24	▼	8

Remarks: Borehole grouted upon completion.

Continued Next Page

The stratification lines represent approximate strata boundaries. In situ, the transition may be gradual.
LOGS ARE NOT INTENDED TO BE USED SEPARATELY FROM THE ORIGINAL REPORT.

LOG OF BORING NO. BME-28

Project Description: **Chisholm Trail Disposal Landfill**

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-563-1144

Location: **E 2262980.52 N 7064049.67**

Surface El.: **668.10 ft. msl**
Completion Depth: 90.0 ft.
Date Boring Started: 6/6/2024
Date Boring Completed: 6/6/2024

Depth, feet	Samples	Symbol / USCS	MATERIAL DESCRIPTION	
55	C11 C12		Limestone, with clay, light gray to gray, with lignite	608.10
60 65	C13 C14		Sand, clayey, light greenish gray	598.10
70 75 80	C15 C16 C17		Limestone, with clay seams, light to dark gray, tan to buff	583.10
85	C18		Sandstone, very fine grained, with clay lenses, greenish gray	578.10
90 95 100				

Contractor: H/ET

Groundwater Observations

Date		Depth
6/6/24	▽	5
6/7/24	▼	8

Remarks: Borehole grouted upon completion.

LOG OF BORING NO. BME-29

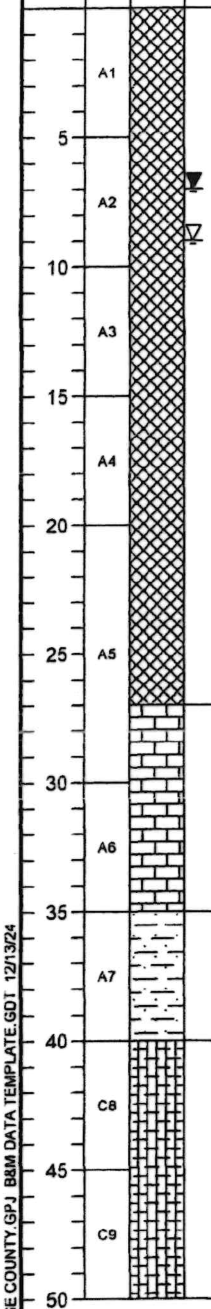
Project Description: **Chisholm Trail Disposal Landfill**

Siggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-6892
Phone: 817-563-1144

Location: **E 2263120.12 N 7063212.67**

Surface El.: **664.12 ft. msl**
Completion Depth: 65.0 ft.
Date Boring Started: 6/7/2024
Date Boring Completed: 6/7/2024

Depth, feet | Samples | Symbol / USCS | MATERIAL DESCRIPTION



Sand, silty, reddish brown and brown, with clay (fill)

637.12

Limestone, with clay seams, tan to buff, and greenish gray

629.12

Shale, sandy, greenish gray, interbedded with sand seams, silty (tan, crossbedded)

624.12

Sandstone, silty, (tan, crossbedded), greenish gray

614.12

Contractor: H/ET

Groundwater Observations		
Date		Depth
6/7/24	▽	9
6/8/24	▼	7

Remarks: Borehole grouted upon completion.

BME

Continued Next Page

The stratification lines represent approximate strata boundaries. In situ, the transition may be gradual.
LOGS ARE NOT INTENDED TO BE USED SEPARATELY FROM THE ORIGINAL REPORT.

LOG OF BORING NO. BME-29

Project Description: **Chisholm Trail Disposal Landfill**

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-563-1144

Location: **E 2263120.12 N 7063212.67**

Surface El.: **664.12 ft. msl**
Completion Depth: 65.0 ft.
Date Boring Started: 6/7/2024
Date Boring Completed: 6/7/2024

Depth, feet	Samples	Symbol / USCS	MATERIAL DESCRIPTION	
	C10		Shale, dark gray, with trace siltstone	
55				609.12
	C11		Limestone, light gray to gray, with clay seams	
60	C12			
65				599.12
70				
75				
80				
85				
90				
95				
100				

Contractor: H/ET

Groundwater Observations

Date		Depth
6/7/24	∇	9
6/8/24	▼	7

Remarks: Borehole grouted upon completion.

BME

SKYLINE 2024 WISE COUNTY.GPJ B&M DATA TEMPLATE.GDT 12/13/24

The stratification lines represent approximate strata boundaries. In situ, the transition may be gradual.
LOGS ARE NOT INTENDED TO BE USED SEPARATELY FROM THE ORIGINAL REPORT.

LOG OF BORING NO. BME-30

Project Description: **Chisholm Trail Disposal Landfill**

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-563-1144

Location: **E 2263409.87 N 7066558.45**

Surface El.: **688.42 ft. msl**
Completion Depth: 38.0 ft.
Date Boring Started: 7/29/2024
Date Boring Completed: 7/29/2024

Depth, feet	Samples	Symbol / USCS	MATERIAL DESCRIPTION	
		▨	Clay, silty, light brown and reddish brown	
5				683.42
		▨	Clay, sandy, reddish brown, with pea gravel	
10				678.42
		∴	Sand, coarse grained, with pea gravel	
15			- with silt	
20				
		∇		
25			- with clayey layers	
30				
35				
				650.42
40				
45				
50				

Contractor: H/ET

Groundwater Observations

Date		Depth
7/29/24	∇	22.5

Remarks: Borehole grouted upon completion.

The stratification lines represent approximate strata boundaries. In situ, the transition may be gradual.
LOGS ARE NOT INTENDED TO BE USED SEPARATELY FROM THE ORIGINAL REPORT.

LOG OF BORING NO. BME-31

Project Description: **Chisholm Trail Disposal Landfill**

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-563-1144

Location: **E 2263418.41 N 7065874.74**

Surface El.: **683.55 ft. msl**
Completion Depth: 37.5 ft.
Date Boring Started: 7/29/2024
Date Boring Completed: 7/29/2024

Depth, feet	Samples	Symbol / USCS	MATERIAL DESCRIPTION	
0		▨	Clay, silty, light brown to brown, with rootlets	680.55
3		▨	Sand, with clay, brown and reddish brown	
10		▨	- with trace gravel	669.55
14		░	Sand, silty, tan and light brown, very fine-grained	
20		░	- with clay lenses	
26		░ ▽		646.55
37			Limestone, white and buff	646.05

Depth, feet: 5, 10, 15, 20, 25, 30, 35, 40, 45, 50

Contractor: H/ET

Groundwater Observations	
Date	Depth
7/29/24 ▽	26

Remarks: Borehole grouted upon completion.

BME

The stratification lines represent approximate strata boundaries. In situ, the transition may be gradual.
LOGS ARE NOT INTENDED TO BE USED SEPARATELY FROM THE ORIGINAL REPORT.

LOG OF BORING NO. BME-32

Project Description: **Chisholm Trail Disposal Landfill**

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-563-1144

Location: **E 2263448.92 N 7064671.71**

Surface El.: **682.06 ft. msl**
Completion Depth: 89.5 ft.
Date Boring Started: 7/30/2024
Date Boring Completed: 8/14/2024

Depth, feet	Samples	Symbol / USCS	MATERIAL DESCRIPTION	
		▨	Clay, silty, with sand, brown, with rootlets	678.06
5 10		⁘	Sand, silty, reddish brown, stiff to hard	671.56
15 20		▨ ∇	Clay, sandy, light brown, very stiff	659.06
25 30 35		⁘	Sand, silty, light brown and tan, dense	645.06
		▭	Limestone, tan to buff, hard	644.06
40		☰	Shale, sandy, greenish gray, hard	637.06
45 50		⁘	Sandstone, with silt, light gray	632.06

Contractor: **H/ET**

Groundwater Observations	
Date	Depth
7/30/24 ∇	23

Remarks: Borehole grouted upon completion.

Continued Next Page

The stratification lines represent approximate strata boundaries. In situ, the transition may be gradual.
LOGS ARE NOT INTENDED TO BE USED SEPARATELY FROM THE ORIGINAL REPORT.

LOG OF BORING NO. BME-32

Project Description: **Chisholm Trail Disposal Landfill**

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-563-1144

Location: **E 2263448.92 N 7064671.71**

Surface El.: **682.06 ft. msl**
Completion Depth: 89.5 ft.
Date Boring Started: 7/30/2024
Date Boring Completed: 8/14/2024

Depth, feet	Samples	Symbol / USCS	MATERIAL DESCRIPTION	
55 60		⋯	Sandstone, very fine grained, with clay seams, light greenish gray, to yellow, with reddish brown streaks	617.06
65		⋮	Sand, silty, light greenish gray and tan	612.06
70		☰	Shale, dark gray, with silt partings, with siltstone partings	607.06
75 80		▦	Limestone, light gray and gray, with clay seams	597.06
85		▨	Clay, sandy, dark gray to light greenish gray	592.56
90 95 100				

Contractor: H/ET

Groundwater Observations	
Date	Depth
7/30/24 ⊽	23

Remarks: Borehole grouted upon completion.

BME

The stratification lines represent approximate strata boundaries. In situ, the transition may be gradual.
LOGS ARE NOT INTENDED TO BE USED SEPARATELY FROM THE ORIGINAL REPORT.

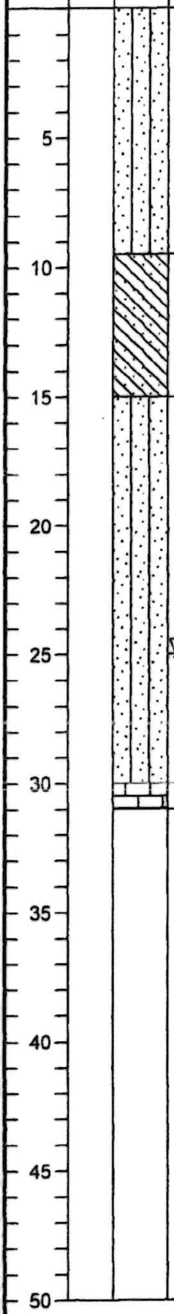
LOG OF BORING NO. BME-33

Project Description: **Chisholm Trail Disposal Landfill**

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-563-1144

Location: **E 2263450.89 N 7062868.07**

Surface El.: **682.55 ft. msl**
Completion Depth: 31.0 ft.
Date Boring Started: 7/30/2024
Date Boring Completed: 8/14/2024



MATERIAL DESCRIPTION

Sand, silty, with trace clay, light reddish brown	673.05
Sand, clayey, reddish brown, stiff to very stiff	667.55
Sand, silty, coarse grained, with trace pea gravel, dense	652.55
Limestone, white and buff	651.55

Contractor: **H/ET**

Groundwater Observations

Date	Depth
7/30/24 ∇	25

Remarks: Borehole grouted upon completion.

The stratification lines represent approximate strata boundaries. In situ, the transition may be gradual.
LOGS ARE NOT INTENDED TO BE USED SEPARATELY FROM THE ORIGINAL REPORT.

LOG OF BORING NO. BME-34

Project Description: **Chisholm Trail Disposal Landfill**

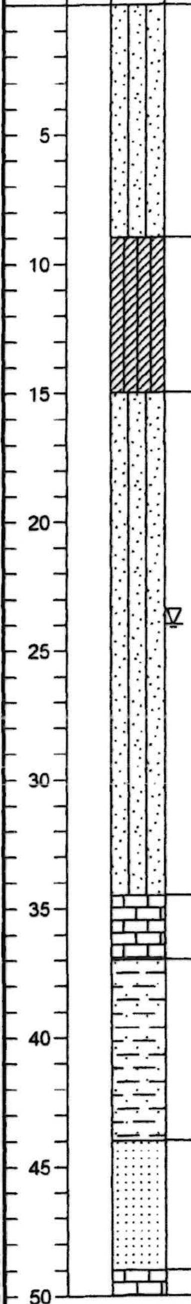
Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-563-1144

Location: **E 2263444.34 N 7064381.12**

Surface El.: **682.62 ft. msl**
Completion Depth: 88.0 ft.
Date Boring Started: 7/30/2024
Date Boring Completed: 8/14/2024

Depth, feet | Samples | Symbol / USCS

MATERIAL DESCRIPTION



Sand, silty, with clay, light brown, with rootlets

- very fine-grained

673.62

Clay, silty, with sand, reddish brown

667.62

Sand, silty, brown and reddish brown

- with coarse sand and pea gravel

648.12

Limestone, tan and buff, hard

645.62

Shale, sandy, greenish gray, very hard

638.62

Sandstone, silty, greenish gray

633.62

Limestone, tan to buff, hard

Contractor: H/ET

Groundwater Observations

Date		Depth
7/30/24	∇	24
8/9/24	▼	83

Remarks: Borehole grouted upon completion.

Continued Next Page

The stratification lines represent approximate strata boundaries. In situ, the transition may be gradual
LOGS ARE NOT INTENDED TO BE USED SEPARATELY FROM THE ORIGINAL REPORT.

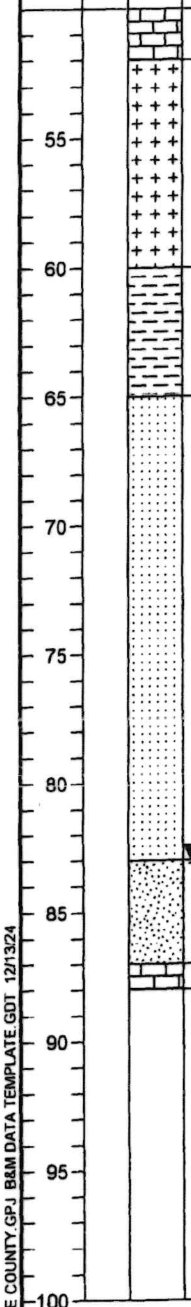
LOG OF BORING NO. BME-34

Project Description: **Chisholm Trail Disposal Landfill**

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-563-1144

Location: **E 2263444.34 N 7064381.12**

Surface El.: **682.62 ft. msl**
Completion Depth: 88.0 ft.
Date Boring Started: 7/30/2024
Date Boring Completed: 8/14/2024



MATERIAL DESCRIPTION	
Limestone, tan to buff, hard *(continued)*	630.62
Siltstone, light greenish gray, hard	622.62
Shale, dark gray	617.62
Sandstone, with shale layers, dense	599.62
Sand, tan to greenish, with silt	595.62
Limestone	594.62

Contractor: **H/ET**

Groundwater Observations

Date		Depth
7/30/24	∇	24
8/9/24	▼	83

Remarks: Borehole grouted upon completion.

SKYLINE 2024 WISE COUNTY.GPJ B&M DATA TEMPLATE.GDT 12/13/24

The stratification lines represent approximate strata boundaries. In situ, the transition may be gradual.
LOGS ARE NOT INTENDED TO BE USED SEPARATELY FROM THE ORIGINAL REPORT.

LOG OF PIEZOMETER NO. P-3S

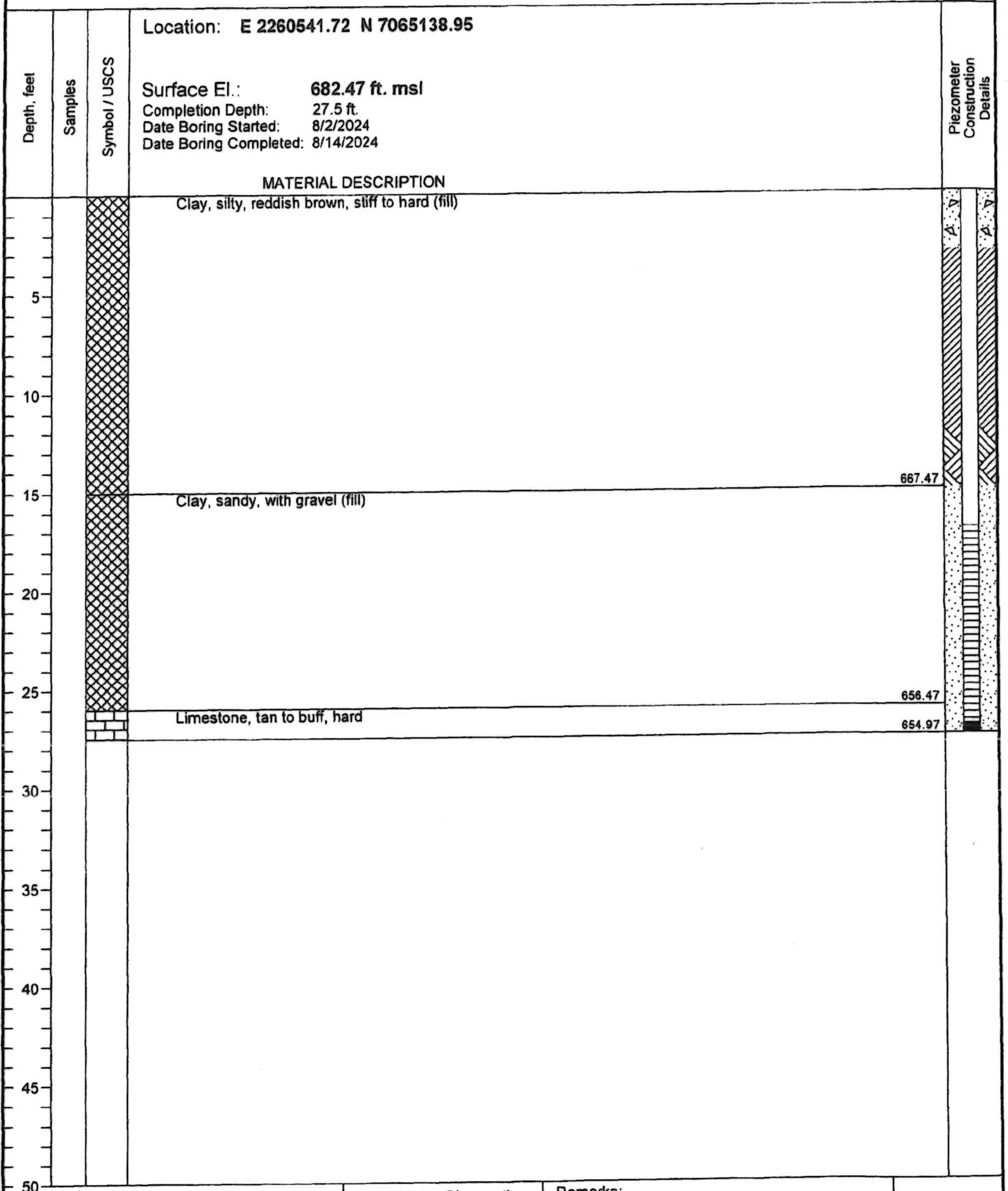
Project Description: **Chisholm Trail Disposal Landfill**

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-563-1144

Location: **E 2260541.72 N 7065138.95**

Surface El.: **682.47 ft. msl**
Completion Depth: 27.5 ft.
Date Boring Started: 8/2/2024
Date Boring Completed: 8/14/2024

MATERIAL DESCRIPTION



Clay, silty, reddish brown, stiff to hard (fill)

Clay, sandy, with gravel (fill)

Limestone, tan to buff, hard

Contractor: H/ET

Groundwater Observations

Date	Depth

Remarks:

SKYLINE 2024 WISE COUNTY.GPJ B&M DATA TEMPLATE.GDT 12/13/24

The stratification lines represent approximate strata boundaries. In situ, the transition may be gradual.
LOGS ARE NOT INTENDED TO BE USED SEPARATELY FROM THE ORIGINAL REPORT.

LOG OF PIEZOMETER NO. P-3M

Project Description: **Chisholm Trail Disposal Landfill**

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-563-1144

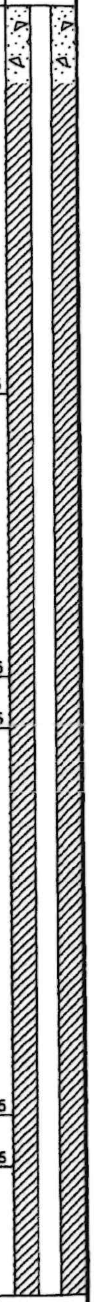
Location: **E 2260555.29 N 7065143.81**

Surface El.: **682.25 ft. msl**
Completion Depth: 70.0 ft.
Date Boring Started: 8/10/2024
Date Boring Completed: 8/14/2024

Depth, feet	Samples	Symbol / USCS	MATERIAL DESCRIPTION	
			Clay, silty, reddish brown, stiff to hard (fill)	667.25
			Clay, sandy, with gravel (fill)	656.25
			Limestone, tan to buff, hard	654.25
			Shale, with some silt partings, dark gray	639.25
			Limestone, tan to buff with light green partings	637.25
			Shale, with some silt partings, dark gray	

Depth, feet: 5, 10, 15, 20, 25, 30, 35, 40, 45, 50

Piezometer Construction Details



Contractor: H/ET

Groundwater Observations	
Date	Depth

Remarks:

Continued Next Page

The stratification lines represent approximate strata boundaries. In situ, the transition may be gradual
LOGS ARE NOT INTENDED TO BE USED SEPARATELY FROM THE ORIGINAL REPORT.

LOG OF PIEZOMETER NO. P-3M

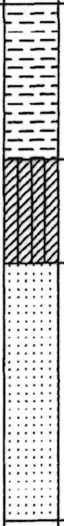
Project Description: **Chisholm Trail Disposal Landfill**

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-6892
Phone: 817-563-1144

Location: **E 2260555.29 N 7065143.81**

Surface El.: **682.25 ft. msl**
Completion Depth: 70.0 ft.
Date Boring Started: 8/10/2024
Date Boring Completed: 8/14/2024

Depth, feet | Samples | Symbol / USCS | MATERIAL DESCRIPTION | Piezometer Construction Details



Shale, with some silt partings, dark gray *(continued)*

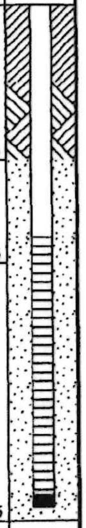
626.25

Clay, silty, greenish gray

622.25

Sandstone, tan with lignite, crossbedded

612.25



Contractor: H/ET

Groundwater Observations	
Date	Depth

Remarks:

The stratification lines represent approximate strata boundaries. In situ, the transition may be gradual.
LOGS ARE NOT INTENDED TO BE USED SEPARATELY FROM THE ORIGINAL REPORT.

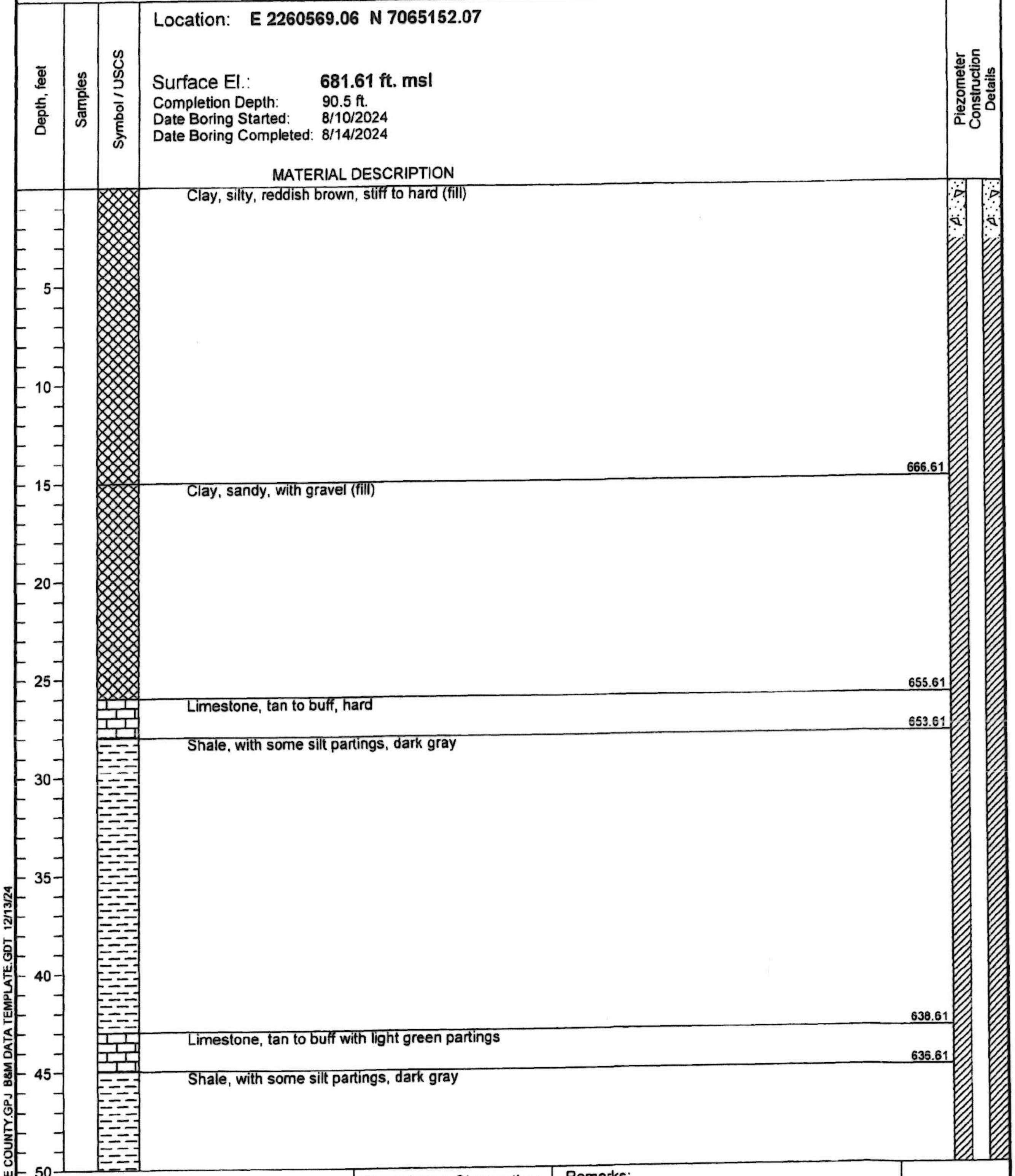
LOG OF PIEZOMETER NO. P-3D

Project Description: **Chisholm Trail Disposal Landfill**

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-563-1144

Location: **E 2260569.06 N 7065152.07**

Surface El.: **681.61 ft. msl**
Completion Depth: 90.5 ft.
Date Boring Started: 8/10/2024
Date Boring Completed: 8/14/2024



Clay, silty, reddish brown, stiff to hard (fill)

666.61

Clay, sandy, with gravel (fill)

655.61

Limestone, tan to buff, hard

653.61

Shale, with some silt partings, dark gray

638.61

Limestone, tan to buff with light green partings

636.61

Shale, with some silt partings, dark gray

Contractor: **H/ET**

Groundwater Observations	
Date	Depth

Remarks:

Continued Next Page

The stratification lines represent approximate strata boundaries. In situ, the transition may be gradual.
LOGS ARE NOT INTENDED TO BE USED SEPARATELY FROM THE ORIGINAL REPORT.

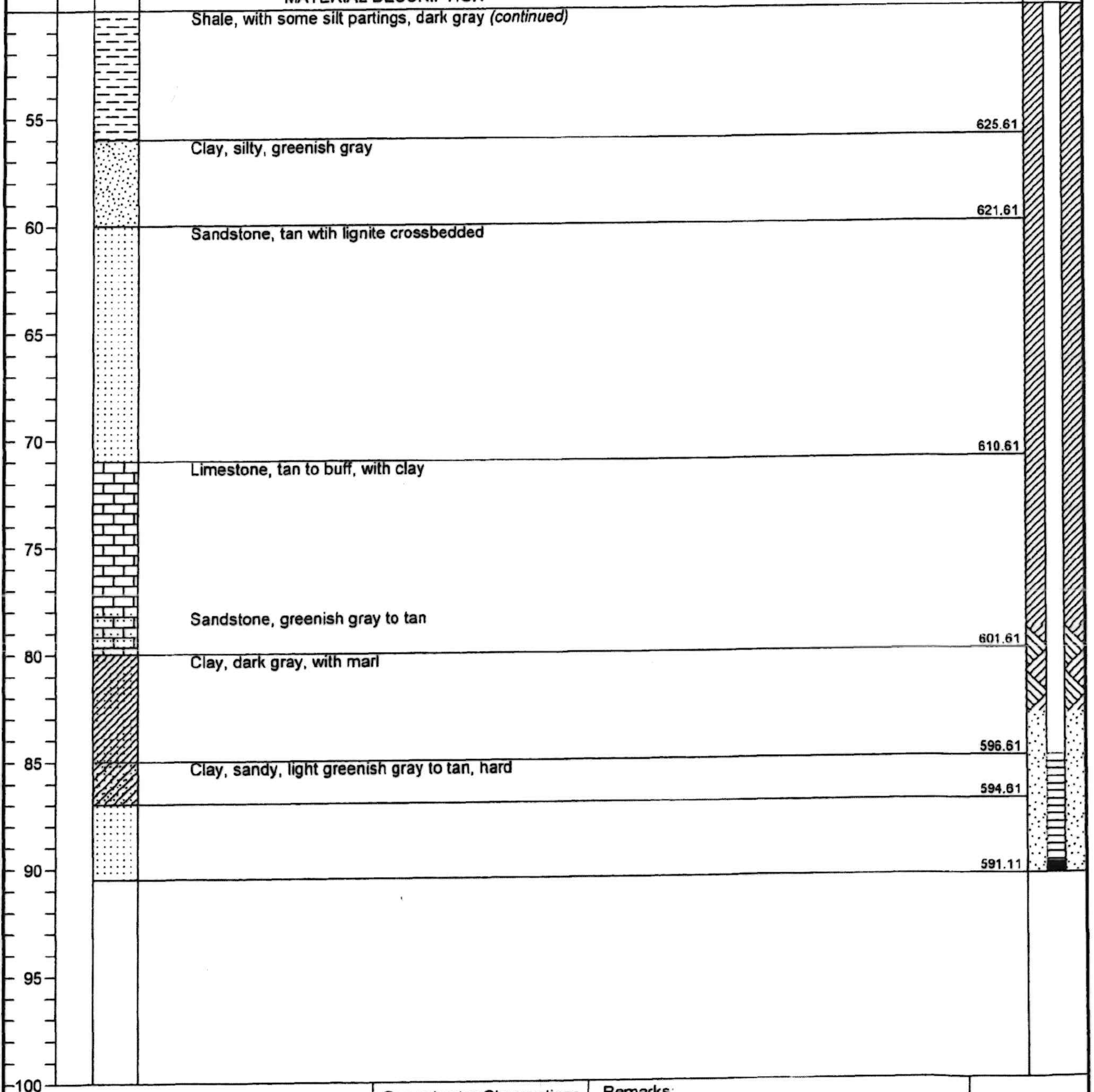
LOG OF PIEZOMETER NO. P-3D

Project Description: **Chisholm Trail Disposal Landfill**

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-563-1144

Location: **E 2260569.06 N 7065152.07**

Surface El.: **681.61 ft. msl**
Completion Depth: 90.5 ft.
Date Boring Started: 8/10/2024
Date Boring Completed: 8/14/2024



Shale, with some silt partings, dark gray *(continued)*

625.61

Clay, silty, greenish gray

621.61

Sandstone, tan wtih lignite crossbedded

610.61

Limestone, tan to buff, with clay

Sandstone, greenish gray to tan

601.61

Clay, dark gray, with marl

596.61

Clay, sandy, light greenish gray to tan, hard

594.61

591.11

Contractor: H/ET

Groundwater Observations	
Date	Depth

Remarks:

BME

The stratification lines represent approximate strata boundaries. In situ, the transition may be gradual.
LOGS ARE NOT INTENDED TO BE USED SEPARATELY FROM THE ORIGINAL REPORT.

LOG OF PIEZOMETER NO. P-4D

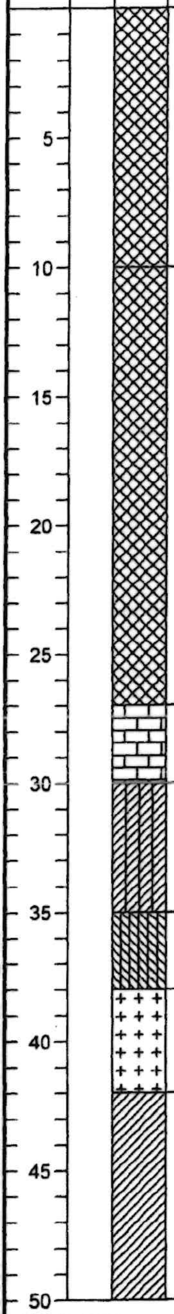
Project Description: **Chisholm Trail Disposal Landfill**

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-563-1144

Location: **E 2260695.36 N 7065411.11**

Surface El.: **681.18 ft. msl**
Completion Depth: 90.5 ft.
Date Boring Started: 8/11/2024
Date Boring Completed: 8/14/2024

Depth, feet | Samples | Symbol / USCS | MATERIAL DESCRIPTION | Piezometer Construction Details



Silt, clayey, reddish brown, with rootlets (fill)

- dark brown, with sand

671.18

Clay, silty, light gray to light brown, with ferrous stains (fill)

654.18

Limestone, tan to light gray, hard

651.18

Clay, silty

646.18

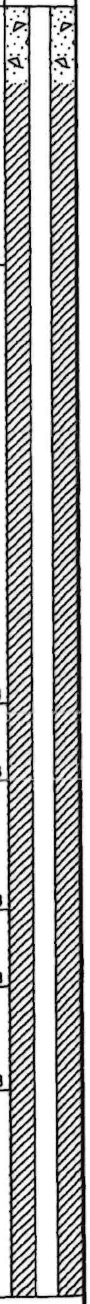
Silt, clayey, with sand

643.18

Siltstone, tan to gray, with clay partings

639.18

Clay, with limestone seams, dark gray (light gray limestone)



Contractor: **H/ET**

Groundwater Observations	
Date	Depth

Remarks:

Continued Next Page

LOG OF PIEZOMETER NO. P-4D

Project Description: **Chisholm Trail Disposal Landfill**

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-563-1144

Location: **E 2260695.36 N 7065411.11**

Surface El.: **681.18 ft. msl**
Completion Depth: 90.5 ft.
Date Boring Started: 8/11/2024
Date Boring Completed: 8/14/2024

Depth, feet | Samples | Symbol / USCS | MATERIAL DESCRIPTION | Piezometer Construction Details

Clay, with limestone seams, dark gray (light gray limestone) *(continued)*
626.18

55 — Siltstone, light greenish gray, with sand, with silty clay, with sand seams
621.18

60 — Sandstone, crossbedded, tan to gray, with lignite
612.18

Limestone, with clay and sand partings, tan to buff, with dark gray clay

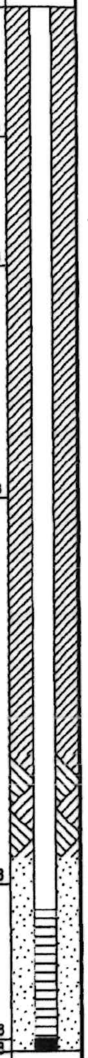
- siltstone and sandstone seam, tan to light gray
- gray and light gray, with sandy shale seam

597.18

Siltstone, tan and light greenish gray, with shale and sand seams and partings
591.18

90 — Clay, with limestone seam, with sand, dark green to gray
590.68

Depth scale: 55, 60, 65, 70, 75, 80, 85, 90, 95, 100



Contractor: H/ET

Groundwater Observations

Date	Depth

Remarks:

The stratification lines represent approximate strata boundaries. In situ, the transition may be gradual.
LOGS ARE NOT INTENDED TO BE USED SEPARATELY FROM THE ORIGINAL REPORT.

LOG OF PIEZOMETER NO. P-5D

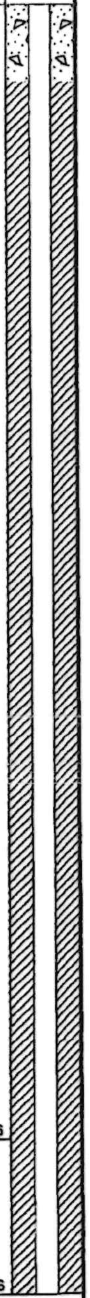
Project Description: **Chisholm Trail Disposal Landfill**

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-563-1144

Location: **E 2260681.97 N 7066362.39**

Surface El.: **681.46 ft. msl**
Completion Depth: 66.0 ft.
Date Boring Started: 8/9/2024
Date Boring Completed: 8/14/2024

Depth, feet	Samples	Symbol / USCS	MATERIAL DESCRIPTION	Piezometer Construction Details
0			Clay, silty, with rock fragments, reddish brown (fill)	
5				
10				
15				
20				
25				
30				
35				
40				
44			637.46	
			Limestone, light gray and dark gray	
45				
50			631.46	



Contractor: H/ET

Groundwater Observations	
Date	Depth

Remarks:

BME

Continued Next Page

The stratification lines represent approximate strata boundaries. In situ, the transition may be gradual.
LOGS ARE NOT INTENDED TO BE USED SEPARATELY FROM THE ORIGINAL REPORT.

LOG OF PIEZOMETER NO. P-5D

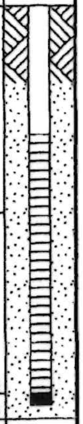
Project Description: **Chisholm Trail Disposal Landfill**

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-563-1144

Location: **E 2260681.97 N 7066362.39**

Surface El.: **681.46 ft. msl**
Completion Depth: 66.0 ft.
Date Boring Started: 8/9/2024
Date Boring Completed: 8/14/2024

Depth, feet	Samples	Symbol / USCS	MATERIAL DESCRIPTION	Piezometer Construction Details
			Sandstone, with clay lenses, light gray to gray	
55				
			623.46	
			Sandstone, with silt, tan, with some clay partings	
60				
			616.46	
65			Clay, sandy, dark gray	
			615.46	
70				
75				
80				
85				
90				
95				
100				



Contractor: H/ET

Groundwater Observations	
Date	Depth

Remarks:

SKYLINE 2024 WISE COUNTY.GPJ B&M DATA TEMPLATE.GDT 12/13/24

The stratification lines represent approximate strata boundaries. In situ, the transition may be gradual.
LOGS ARE NOT INTENDED TO BE USED SEPARATELY FROM THE ORIGINAL REPORT.

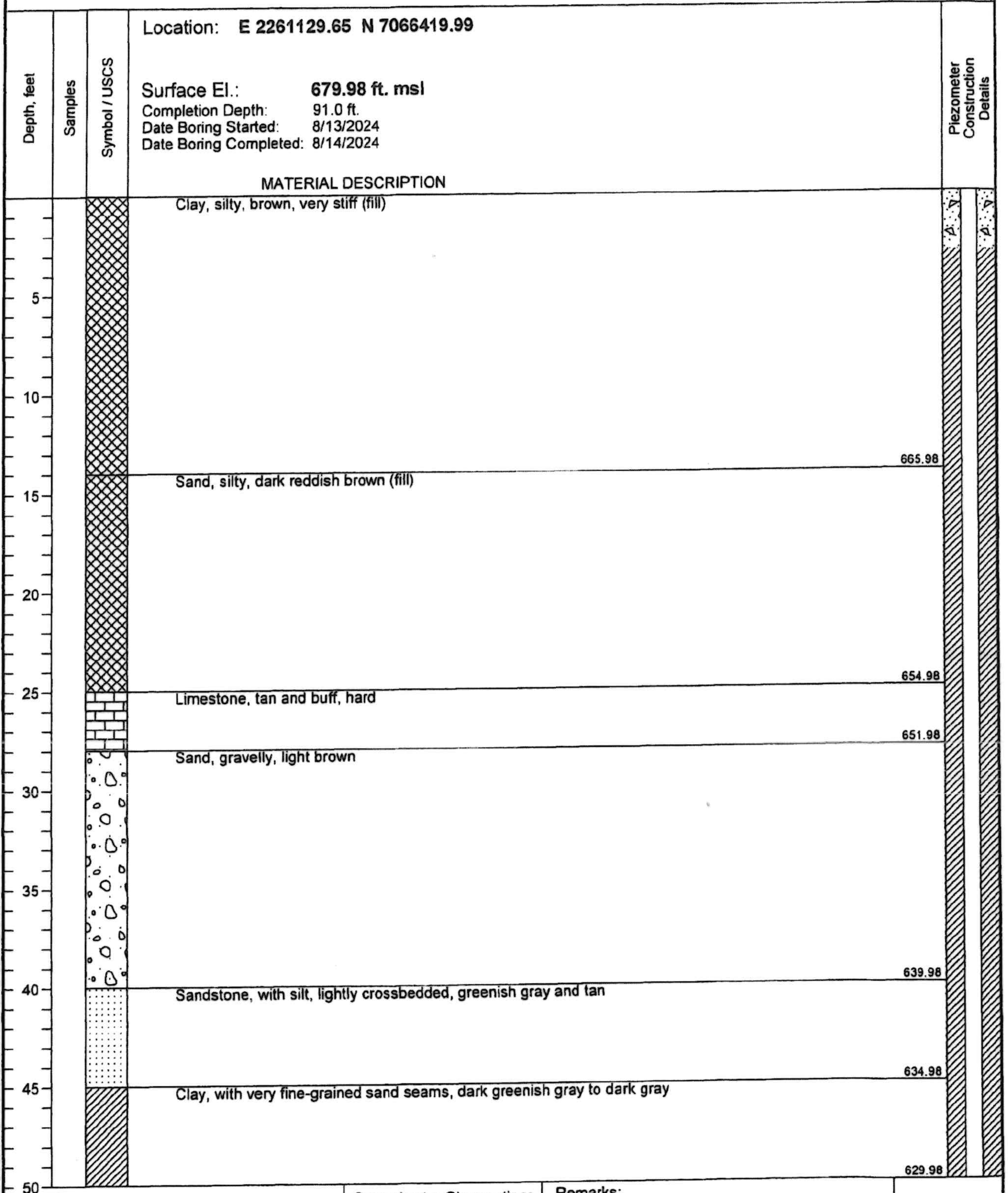
LOG OF PIEZOMETER NO. P-6VII

Project Description: **Chisholm Trail Disposal Landfill**

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-563-1144

Location: **E 2261129.65 N 7066419.99**

Surface El.: **679.98 ft. msl**
Completion Depth: 91.0 ft.
Date Boring Started: 8/13/2024
Date Boring Completed: 8/14/2024



MATERIAL DESCRIPTION

Clay, silty, brown, very stiff (fill)
665.98

Sand, silty, dark reddish brown (fill)
654.98

Limestone, tan and buff, hard
651.98

Sand, gravelly, light brown
639.98

Sandstone, with silt, lightly crossbedded, greenish gray and tan
634.98

Clay, with very fine-grained sand seams, dark greenish gray to dark gray
629.98

Contractor: H/ET

Groundwater Observations	
Date	Depth

Remarks:

BME

Continued Next Page

The stratification lines represent approximate strata boundaries. In situ, the transition may be gradual.
LOGS ARE NOT INTENDED TO BE USED SEPARATELY FROM THE ORIGINAL REPORT.

LOG OF PIEZOMETER NO. P-6VII

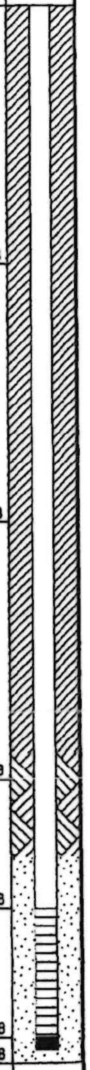
Project Description: **Chisholm Trail Disposal Landfill**

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-563-1144

Location: **E 2261129.65 N 7066419.99**

Surface El.: **679.98 ft. msl**
Completion Depth: 91.0 ft.
Date Boring Started: 8/13/2024
Date Boring Completed: 8/14/2024

Depth, feet	Samples	Symbol / USCS	MATERIAL DESCRIPTION		Piezometer Construction Details
			Limestone, with clay seams, light gray to gray, dark gray clay seams		
55			- no clay seams, light greenish gray		
60				619.98	
			Shale, sandy, dark greenish gray		
65					
			- sand lenses (tan)		
70				609.98	
			Limestone, with shale seams, light gray to gray		
75					
80				599.98	
			Clay, sandy, light greenish gray to tan		
			- with limestone seams		
85				594.98	
			Sandstone, with silt, tan		
			- clay seam		
90				589.98	
			Shale, sandy, dark gray	588.98	
95					
100					



Contractor: H/ET

Groundwater Observations	
Date	Depth

Remarks:

BME

The stratification lines represent approximate strata boundaries. In situ, the transition may be gradual.
LOGS ARE NOT INTENDED TO BE USED SEPARATELY FROM THE ORIGINAL REPORT.

LOG OF PIEZOMETER NO. P-11S

Project Description: **Chisholm Trail Disposal Landfill**

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-563-1144

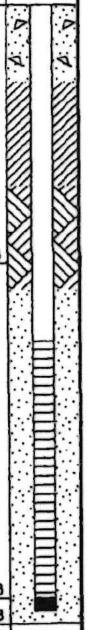
Location: **E 2261537.62 N 7064179.94**

Surface El.: **677.23 ft. msl**
Completion Depth: 24.0 ft.
Date Boring Started: 8/2/2024
Date Boring Completed: 8/14/2024

Depth, feet	Samples	Symbol / USCS	MATERIAL DESCRIPTION	Elevation
0			Clay, silty, light reddish brown to reddish brown (fill)	
10			Sand, silty, with trace coarse sand, reddish brown (fill)	667.23
23			Limestone, tan and white, hard	654.23
24				653.23

Depth, feet: 5, 10, 15, 20, 25, 30, 35, 40, 45, 50

Piezometer Construction Details



Contractor: H/ET

Groundwater Observations

Date	Depth

Remarks:

SKYLINE 2024 WISE COUNTY.GPJ B&M DATA TEMPLATE.GDT 12/13/24

The stratification lines represent approximate strata boundaries. In situ, the transition may be gradual.
LOGS ARE NOT INTENDED TO BE USED SEPARATELY FROM THE ORIGINAL REPORT.

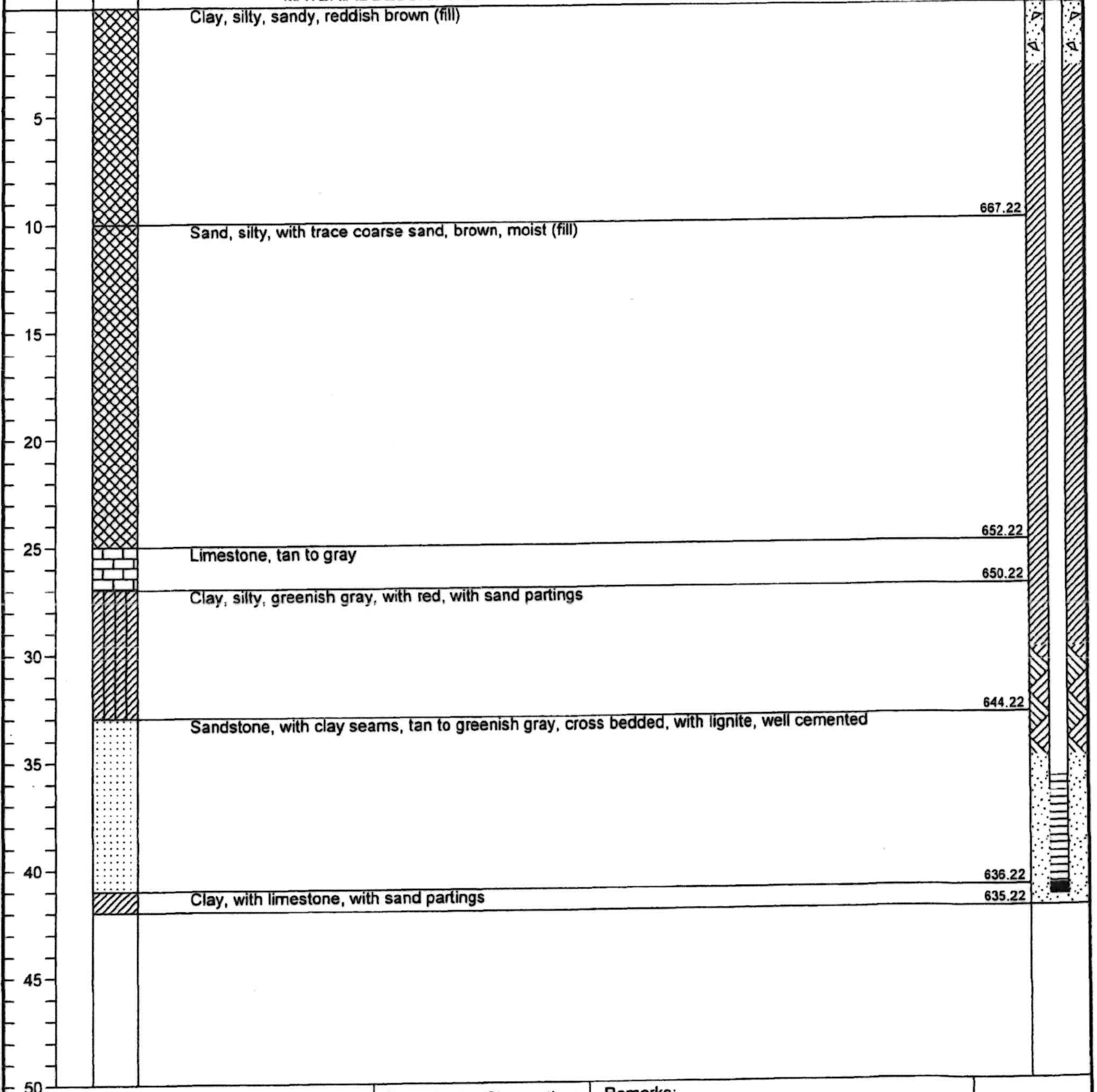
LOG OF PIEZOMETER NO. P-11M

Project Description: **Chisholm Trail Disposal Landfill**

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-563-1144

Location: **E 2261540.77 N 7064168.9**

Surface El.: **677.22 ft. msl**
Completion Depth: 42.0 ft.
Date Boring Started: 8/8/2024
Date Boring Completed: 8/14/2024



MATERIAL DESCRIPTION

Clay, silty, sandy, reddish brown (fill)

Sand, silty, with trace coarse sand, brown, moist (fill)

Limestone, tan to gray

Clay, silty, greenish gray, with red, with sand partings

Sandstone, with clay seams, tan to greenish gray, cross bedded, with lignite, well cemented

Clay, with limestone, with sand partings

Contractor: H/ET

Groundwater Observations	
Date	Depth

Remarks:

SKYLINE 2024 WISE COUNTY.GPJ B&M DATA TEMPLATE.GDT 12/13/24

The stratification lines represent approximate strata boundaries. In situ, the transition may be gradual.
LOGS ARE NOT INTENDED TO BE USED SEPARATELY FROM THE ORIGINAL REPORT.

LOG OF PIEZOMETER NO. P-11D

Project Description: **Chisholm Trail Disposal Landfill**

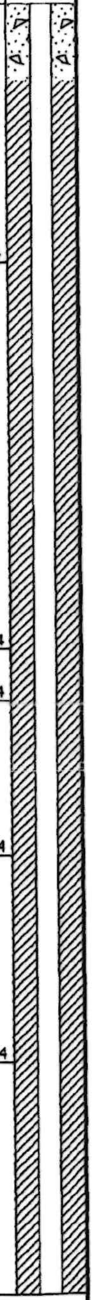
Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-563-1144

Location: **E 2261548.08 N 7064156.89**

Surface El.: **677.04 ft. msl**
Completion Depth: 71.0 ft.
Date Boring Started: 8/7/2024
Date Boring Completed: 8/14/2024

Depth, feet	Samples	Symbol / USCS	MATERIAL DESCRIPTION
5			Clay, silty, sandy, reddish brown (fill) 667.04
10 15 20			Sand, silty, with trace coarse sand, brown, moist (fill) 652.04
25			Limestone, tan to gray 650.04
30			Clay, silty, greenish gray, with red, with sand partings 644.04
35 40			Sandstone, with clay seams, tan to greenish gray, cross bedded, with lignite, well cemented 636.04
45 50			Clay, with limestone, with sand partings

Piezometer Construction Details



Contractor: **H/ET**

Groundwater Observations	
Date	Depth

Remarks:

Continued Next Page

The stratification lines represent approximate strata boundaries. In situ, the transition may be gradual.
LOGS ARE NOT INTENDED TO BE USED SEPARATELY FROM THE ORIGINAL REPORT.

LOG OF PIEZOMETER NO. P-11D

Project Description: **Chisholm Trail Disposal Landfill**

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-563-1144

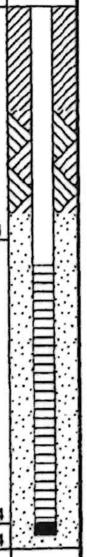
Location: **E 2261548.08 N 7064156.89**

Surface El.: **677.04 ft. msl**
Completion Depth: 71.0 ft.
Date Boring Started: 8/7/2024
Date Boring Completed: 8/14/2024

Depth, feet	Samples	Symbol / USCS	MATERIAL DESCRIPTION	Elevation
		▨	Clay, with limestone, with sand partings *(continued)*	618.04
		⁙	Sandstone, lightly crossbedded, with trace silt, with clay seams and partings, tan to greenish gray	607.04
		▨	Clay, with sand lenses, dark gray (tan sand), well cemented	606.04

Depth, feet: 55, 60, 65, 70, 75, 80, 85, 90, 95, 100

Piezometer Construction Details



Contractor: H/ET

Groundwater Observations	
Date	Depth

Remarks:

BME

SKYLINE 2024 WISE COUNTY.GPJ B&M DATA TEMPLATE.GDT 12/13/24

The stratification lines represent approximate strata boundaries. In situ, the transition may be gradual.
LOGS ARE NOT INTENDED TO BE USED SEPARATELY FROM THE ORIGINAL REPORT.

LOG OF PIEZOMETER NO. P-24S

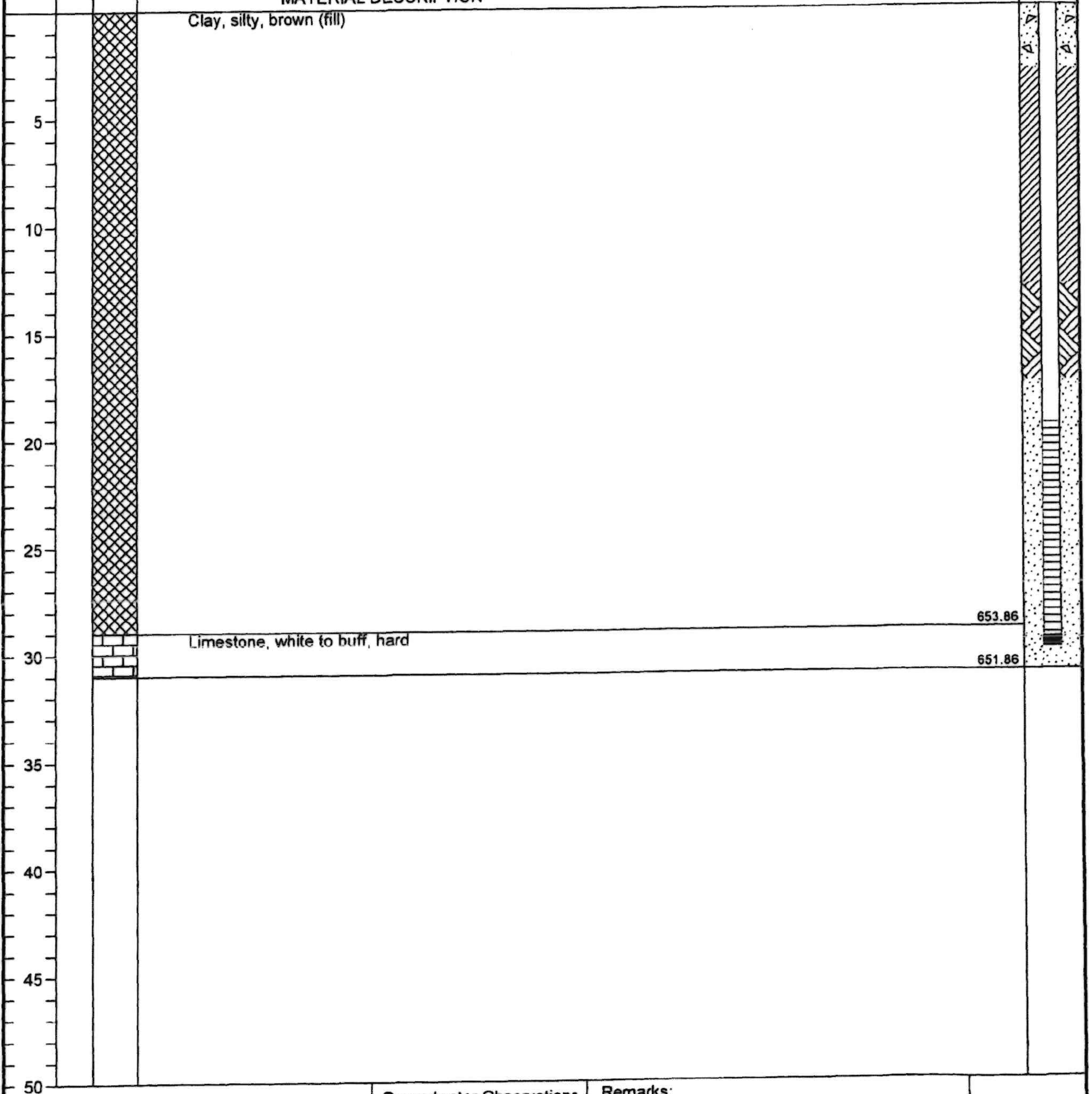
Project Description: **Chisholm Trail Disposal Landfill**

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-563-1144

Location: **E 2262711.07 N 7066698.9**

Surface El.: **682.86 ft. msl**
Completion Depth: 31.0 ft.
Date Boring Started: 8/2/2024
Date Boring Completed: 8/14/2024

MATERIAL DESCRIPTION



Clay, silty, brown (fill)

653.86

Limestone, white to buff, hard

651.86

Contractor:	H/ET

Groundwater Observations	
Date	Depth

Remarks:

The stratification lines represent approximate strata boundaries. In situ, the transition may be gradual.
LOGS ARE NOT INTENDED TO BE USED SEPARATELY FROM THE ORIGINAL REPORT.

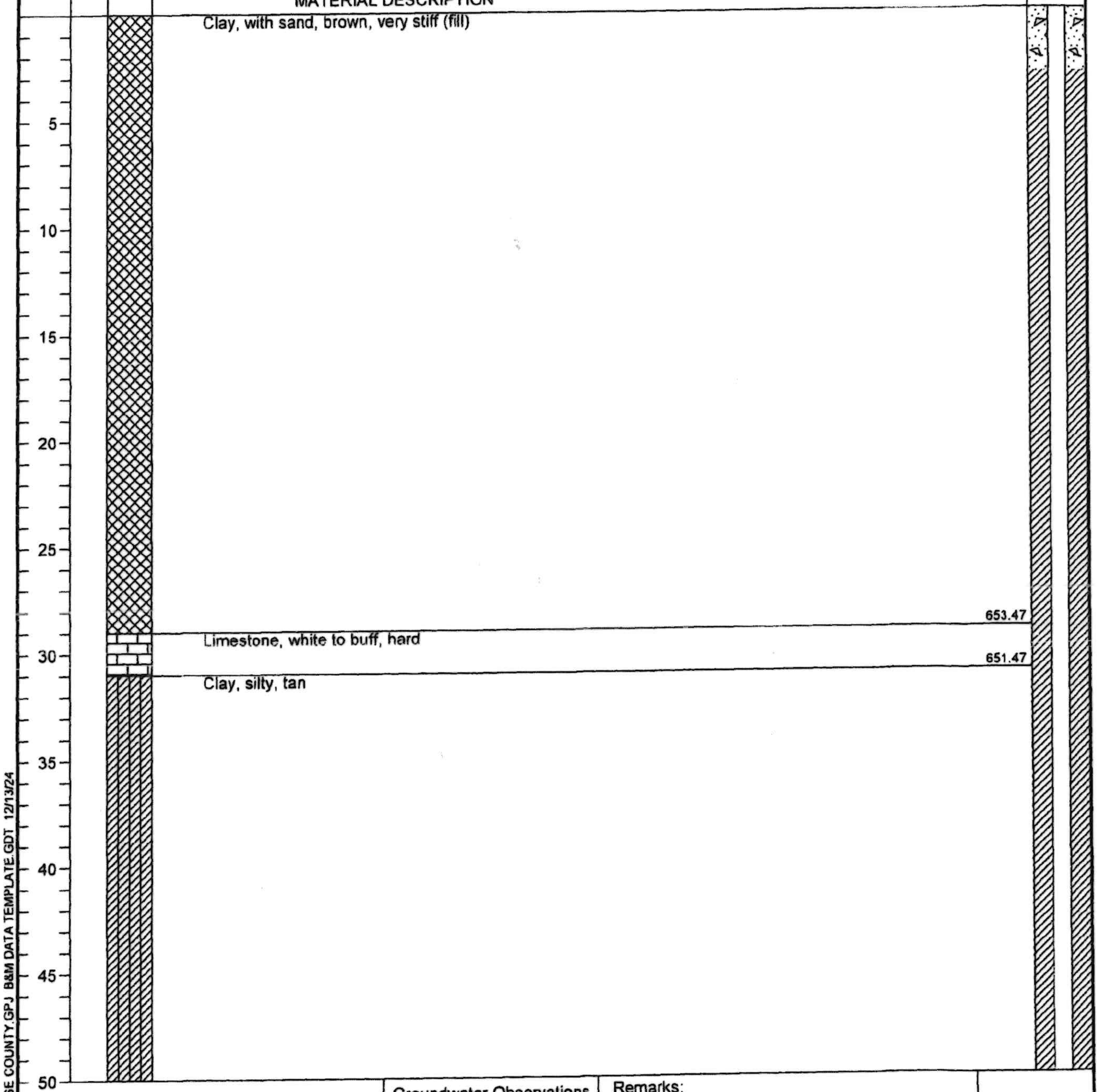
LOG OF PIEZOMETER NO. P-24D

Project Description: **Chisholm Trail Disposal Landfill**

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-663-1144

Location: **E 2262700.19 N 7066696.18**

Surface El.: **682.47 ft. msl**
Completion Depth: 75.5 ft.
Date Boring Started: 8/10/2024
Date Boring Completed: 8/14/2024



MATERIAL DESCRIPTION

Clay, with sand, brown, very stiff (fill)

Limestone, white to buff, hard

Clay, silty, tan

Contractor: H/ET

Groundwater Observations	
Date	Depth

Remarks:

Continued Next Page

The stratification lines represent approximate strata boundaries. In situ, the transition may be gradual.
LOGS ARE NOT INTENDED TO BE USED SEPARATELY FROM THE ORIGINAL REPORT.

LOG OF PIEZOMETER NO. P-24D

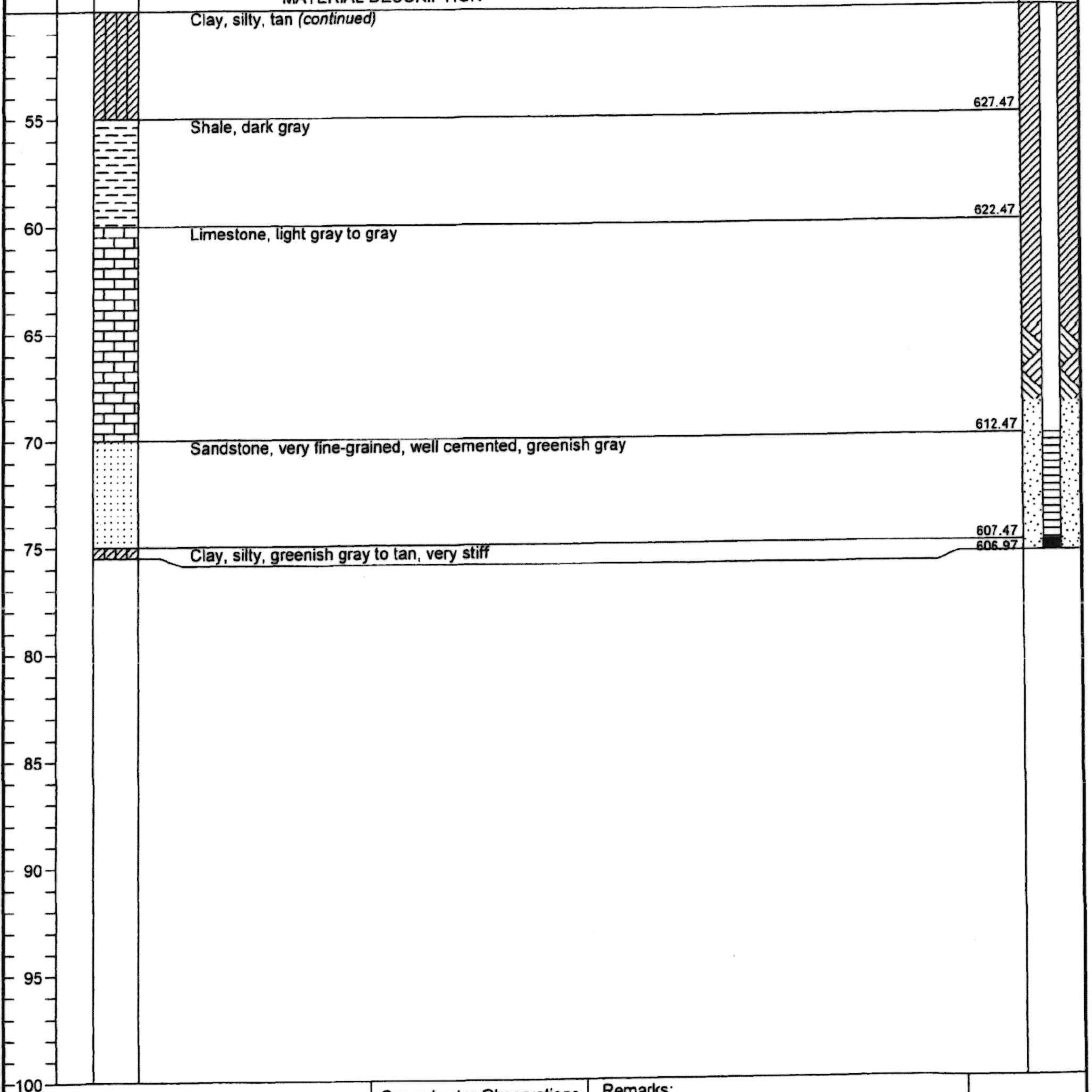
Project Description: **Chisholm Trail Disposal Landfill**

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-563-1144

Location: **E 2262700.19 N 7066696.18**

Surface El.: **682.47 ft. msl**
Completion Depth: 75.5 ft.
Date Boring Started: 8/10/2024
Date Boring Completed: 8/14/2024

Depth, feet | Samples | Symbol / USCS | MATERIAL DESCRIPTION | Piezometer Construction Details



Clay, silty, tan *(continued)*
627.47
Shale, dark gray
622.47
Limestone, light gray to gray
612.47
Sandstone, very fine-grained, well cemented, greenish gray
607.47
Clay, silty, greenish gray to tan, very stiff
606.97

Contractor: H/ET

Groundwater Observations	
Date	Depth

Remarks:

SKYLINE 2024 WISE COUNTY.GPJ B&M DATA TEMPLATE.GDT 12/13/24

The stratification lines represent approximate strata boundaries. In situ, the transition may be gradual.
LOGS ARE NOT INTENDED TO BE USED SEPARATELY FROM THE ORIGINAL REPORT.

LOG OF PIEZOMETER NO. P-24VII

Project Description: **Chisholm Trail Disposal Landfill**

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-563-1144

Location: **E 2262687 N 7066692.91**

Surface El.: **682.33 ft. msl**
Completion Depth: 105.0 ft.
Date Boring Started: 8/11/2024
Date Boring Completed: 8/14/2024

Depth, feet	Samples	Symbol / USCS	MATERIAL DESCRIPTION		Piezometer Construction Details
			Clay, silty, brown, hard to very hard (fill)		
5					
				672.33	
10			Sand, tan to brown, fine to coarse grained (fill)		
15					
20			- with gravel		
25					
				653.33	
30			Limestone, tan, hard		
				651.33	
			Clay, silty, tan - limestone seams		
35					
40			- limestone seam		
				637.33	
45			Clay, greenish gray		
				632.33	
50					

Contractor: H/ET

Groundwater Observations

Date	Depth

Remarks:

Continued Next Page

LOG OF PIEZOMETER NO. P-24VII

Project Description: **Chisholm Trail Disposal Landfill**

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-563-1144

Location: **E 2262687 N 7066692.91**

Surface El.: **682.33 ft. msl**
Completion Depth: 105.0 ft.
Date Boring Started: 8/11/2024
Date Boring Completed: 8/14/2024

Depth, feet	Samples	Symbol / USCS	MATERIAL DESCRIPTION	Elevation
			Clay, sandy, tan to light gray	627.33
55			Shale, dark gray, with ferrous stains, shell fragments	622.33
60			Limestone, light gray to gray	
65			- with clay seams	612.33
70			Sandstone, very fine grained, well cemented, greenish gray to tan	607.33
75			Clay, silty, greenish gray to tan	602.33
80			Limestone, with clay and shale layers, tan to gray	
85				
90			- with shale and limestone	
			- dark gray	
95				583.33
			Siltstone, greenish gray to tan	
100				

Piezometer Construction Details

Contractor: H/ET

Groundwater Observations

Date	Depth

Remarks:

BME

Continued Next Page

E2.101

The stratification lines represent approximate strata boundaries. In situ, the transition may be gradual.
LOGS ARE NOT INTENDED TO BE USED SEPARATELY FROM THE ORIGINAL REPORT.

LOG OF PIEZOMETER NO. P-24VII

Project Description: **Chisholm Trail Disposal Landfill**

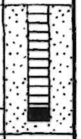
Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-563-1144

Location: **E 2262687 N 7066692.91**

Surface El.: **682.33 ft. msl**
Completion Depth: 105.0 ft.
Date Boring Started: 8/11/2024
Date Boring Completed: 8/14/2024

Depth, feet	Samples	Symbol / USCS	MATERIAL DESCRIPTION	Elevation
		+ + +	Siltstone, greenish gray to tan *(continued)*	578.33
			Limestone, tan to gray, hard	577.33
105				
110				
115				
120				
125				
130				
135				
140				
145				
150				

Piezometer Construction Details



Contractor: H/ET

Groundwater Observations

Date	Depth

Remarks:

The stratification lines represent approximate strata boundaries. In situ, the transition may be gradual.
LOGS ARE NOT INTENDED TO BE USED SEPARATELY FROM THE ORIGINAL REPORT.

LOG OF PIEZOMETER NO. P-31S

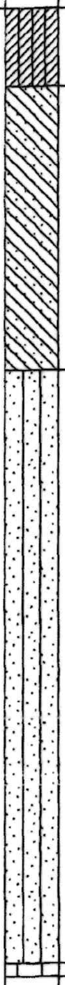
Project Description: **Chisholm Trail Disposal Landfill**

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-563-1144

Location: **E 2263418.42 N 7065877.14**

Surface El.: **684.14 ft. msl**
Completion Depth: 37.5 ft.
Date Boring Started: 8/11/2024
Date Boring Completed: 8/14/2024

Depth, feet	Samples	Symbol / USCS	MATERIAL DESCRIPTION		Piezometer Construction Details
0			Clay, silty, light brown to brown, with rootlets		
3			Sand, with clay, brown and reddish brown	681.14	
10			- with trace gravel		
14			Sand, silty, tan and light brown, very fine-grained	670.14	
20			- with clay pockets, gray to greenish gray		
37			Limestone, white and buff	647.14	
37.5				646.64	



Contractor: **H/ET**

Groundwater Observations

Date	Depth

Remarks:

SKYLINE 2024 WISE COUNTY.GPJ B&M DATA TEMPLATE.GDT 12/13/24

The stratification lines represent approximate strata boundaries. In situ, the transition may be gradual.
LOGS ARE NOT INTENDED TO BE USED SEPARATELY FROM THE ORIGINAL REPORT.

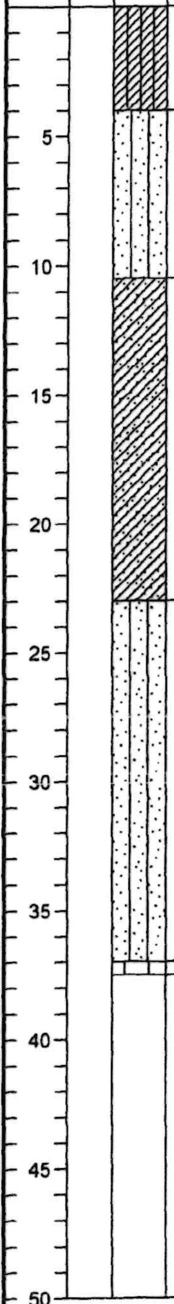
LOG OF PIEZOMETER NO. P-32S

Project Description: **Chisholm Trail Disposal Landfill**

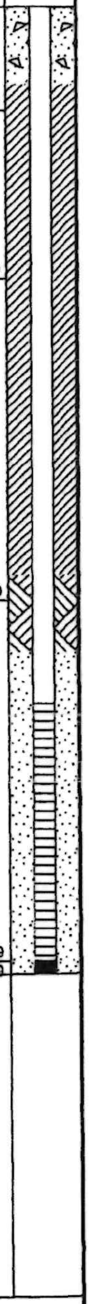
Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-563-1144

Location: **E 2263443.02 N 7064677.44**

Surface El.: **681.79 ft. msl**
Completion Depth: 37.5 ft.
Date Boring Started: 7/30/2024
Date Boring Completed: 8/14/2024



MATERIAL DESCRIPTION	
Clay, silty, with sand, brown, with rootlets	677.79
Sand, silty, reddish brown, stiff to hard	671.29
Clay, sandy, light brown, very stiff	658.79
Sand, silty, light brown and tan, dense	644.79
Limestone, tan to buff, hard	644.29



Contractor: H/ET

Groundwater Observations	
Date	Depth

Remarks:

SKYLINE 2024 WISE COUNTY.GPJ B&M DATA TEMPLATE.GDT 12/13/24

The stratification lines represent approximate strata boundaries. In situ, the transition may be gradual.
LOGS ARE NOT INTENDED TO BE USED SEPARATELY FROM THE ORIGINAL REPORT.

LOG OF PIEZOMETER NO. P-32M

Project Description: **Chisholm Trail Disposal Landfill**

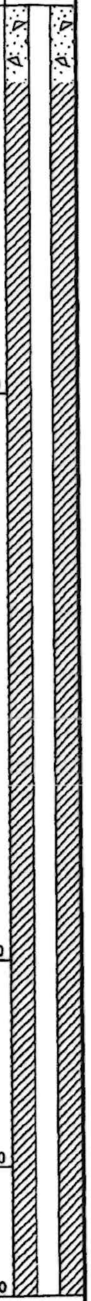
Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-563-1144

Location: **E 2263428.75 N 7064675.72**

Surface El.: **682.10 ft. msl**
Completion Depth: 71.0 ft.
Date Boring Started: 8/11/2024
Date Boring Completed: 8/14/2024

Depth, feet	Samples	Symbol / USCS	MATERIAL DESCRIPTION	
		▨	Clay, sand, brown and tan, with silty sand	
5				
10				
				667.10
15			Sand, silty, brown to tan	
20				
25				
30				
35				
				645.10
		▨	Clay, sandy	
40				
				637.10
45			Sandstone, with silt, light gray	
				632.10
50				

Piezometer Construction Details



Contractor: **H/ET**

Groundwater Observations	
Date	Depth

Remarks:

BME

The stratification lines represent approximate strata boundaries. In situ, the transition may be gradual.
LOGS ARE NOT INTENDED TO BE USED SEPARATELY FROM THE ORIGINAL REPORT.

Continued Next Page

LOG OF PIEZOMETER NO. P-32M

Project Description: **Chisholm Trail Disposal Landfill**

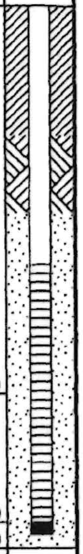
Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-563-1144

Location: **E 2263428.75 N 7064675.72**

Surface El.: **682.10 ft. msl**
Completion Depth: 71.0 ft.
Date Boring Started: 8/11/2024
Date Boring Completed: 8/14/2024

Depth, feet	Samples	Symbol / USCS	MATERIAL DESCRIPTION	Elevation
			Sandstone, very fine grained, with clay seams, light greenish gray, to yellow, with reddish brown streaks	
55				
60				
65			Sand, silty, light greenish gray and tan	617.10
70			Shale, dark gray, with silt partings, with siltstone partings	612.10 611.10
75				
80				
85				
90				
95				
100				

Piezometer Construction Details



Contractor: **H/ET**

Groundwater Observations	
Date	Depth

Remarks:

BME

SKYLINE 2024 WISE COUNTY.GPJ B&M DATA TEMPLATE.GDT 12/13/24

The stratification lines represent approximate strata boundaries. In situ, the transition may be gradual.
LOGS ARE NOT INTENDED TO BE USED SEPARATELY FROM THE ORIGINAL REPORT.

LOG OF PIEZOMETER NO. P-32D

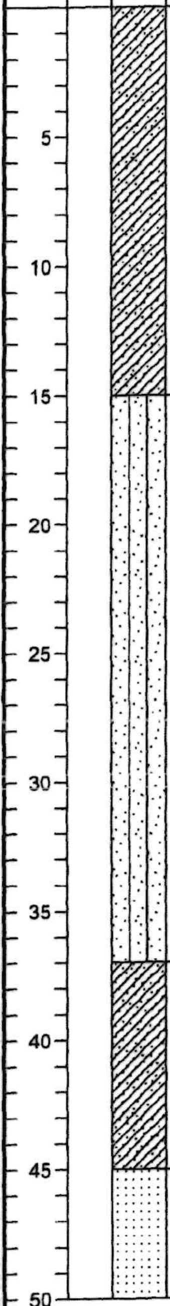
Project Description: **Chisholm Trail Disposal Landfill**

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-563-1144

Location: **E 2263412.78 N 7064671.77**

Surface El.: **682.63 ft. msl**
Completion Depth: 89.5 ft.
Date Boring Started: 8/11/2024
Date Boring Completed: 8/14/2024

Depth, feet | Samples | Symbol / USCS | MATERIAL DESCRIPTION | Piezometer Construction Details



Clay, sand, brown and tan, with silty sand

667.63

Sand, silty, brown to tan

645.63

Clay, sandy

637.63

Sandstone, with silt, light gray

632.63

Contractor: **H/ET**

Groundwater Observations	
Date	Depth

Remarks:

Continued Next Page

E2.107

LOG OF PIEZOMETER NO. P-32D
PAGE 1 OF 2

The stratification lines represent approximate strata boundaries. In situ, the transition may be gradual.
LOGS ARE NOT INTENDED TO BE USED SEPARATELY FROM THE ORIGINAL REPORT.

LOG OF PIEZOMETER NO. P-32D

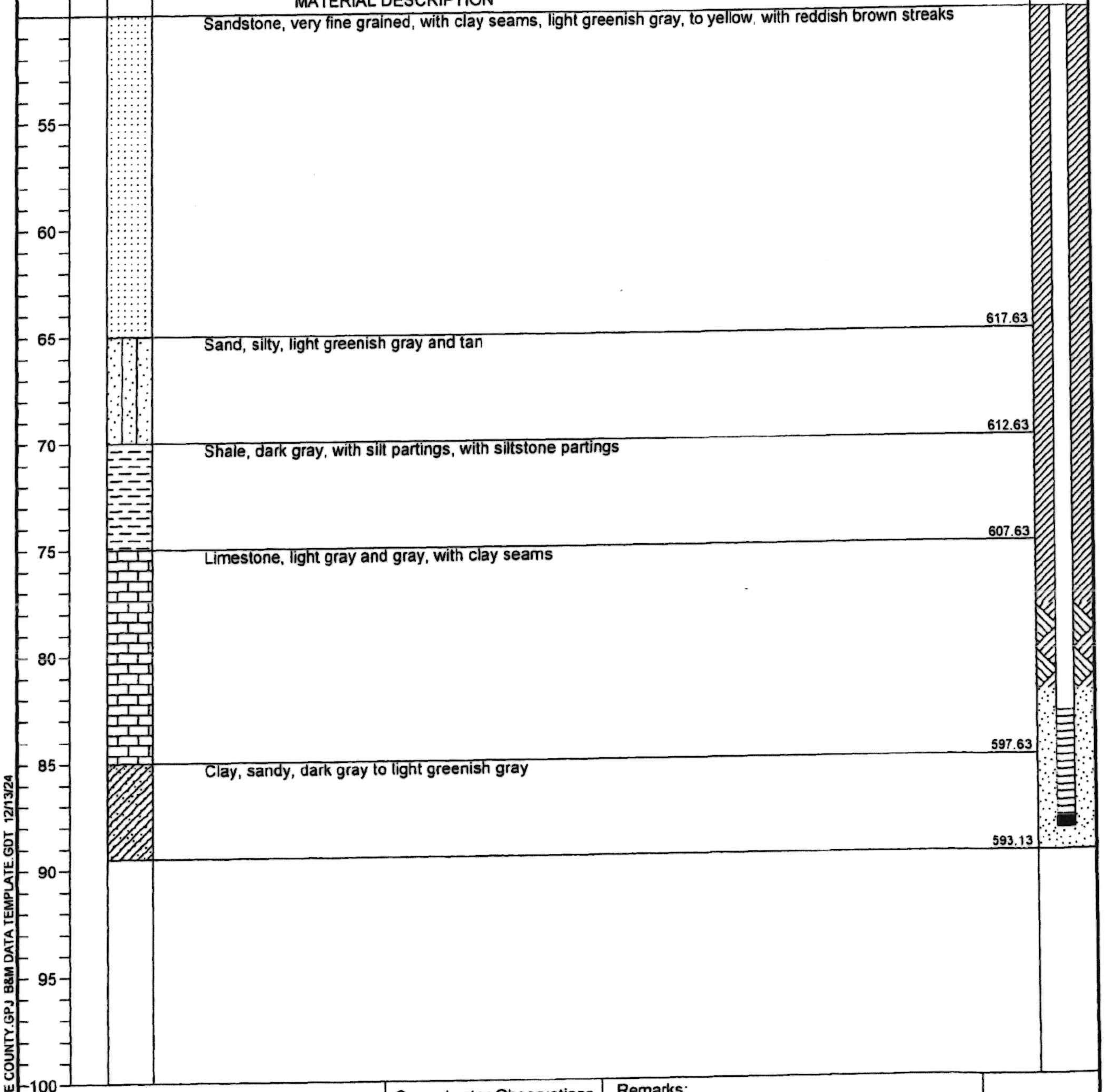
Project Description: **Chisholm Trail Disposal Landfill**

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-563-1144

Location: **E 2263412.78 N 7064671.77**

Surface El.: **682.63 ft. msl**
Completion Depth: 89.5 ft.
Date Boring Started: 8/11/2024
Date Boring Completed: 8/14/2024

Depth, feet	Samples	Symbol / USCS	MATERIAL DESCRIPTION	Piezometer Construction Details



Sandstone, very fine grained, with clay seams, light greenish gray, to yellow, with reddish brown streaks

Sand, silty, light greenish gray and tan

Shale, dark gray, with silt partings, with siltstone partings

Limestone, light gray and gray, with clay seams

Clay, sandy, dark gray to light greenish gray

Contractor: H/ET

Groundwater Observations	
Date	Depth

Remarks:

The stratification lines represent approximate strata boundaries. In situ, the transition may be gradual.
LOGS ARE NOT INTENDED TO BE USED SEPARATELY FROM THE ORIGINAL REPORT.

LOG OF PIEZOMETER NO. P-33S

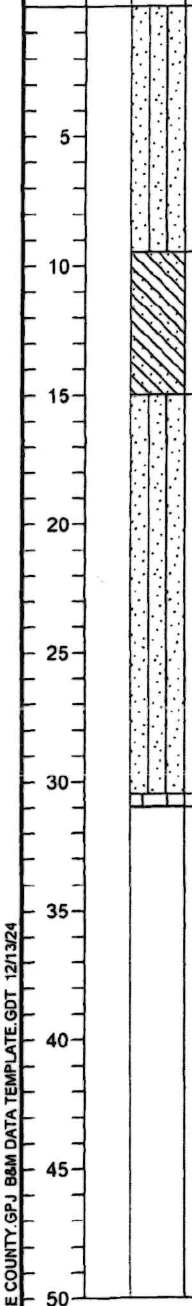
Project Description: **Chisholm Trail Disposal Landfill**

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-563-1144

Location: **E 2263450.89 N 7062868.07**

Surface El.: **682.55 ft. msl**
Completion Depth: 31.0 ft.
Date Boring Started: 7/30/2024
Date Boring Completed: 8/14/2024

Depth, feet	Samples	Symbol / USCS	MATERIAL DESCRIPTION	Piezometer Construction Details



Sand, silty, with trace clay, light reddish brown

673.05

Sand, clayey, reddish brown, stiff to very stiff

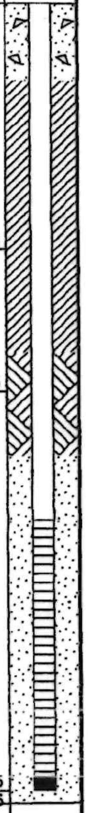
667.55

Sand, silty, coarse grained, with trace pea gravel, dense

652.05

Limestone, white and buff

651.55



Contractor: H/ET

Groundwater Observations	
Date	Depth

Remarks:

BME

SKYLINE 2024 WISE COUNTY.GPJ B&M DATA TEMPLATE.GDT 12/13/24

LOG OF PIEZOMETER NO. P-33S
PAGE 1 OF 1

The stratification lines represent approximate strata boundaries. In situ, the transition may be gradual.
LOGS ARE NOT INTENDED TO BE USED SEPARATELY FROM THE ORIGINAL REPORT.

LOG OF PIEZOMETER NO. P-34S

Project Description: **Chisholm Trail Disposal Landfill**

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-563-1144

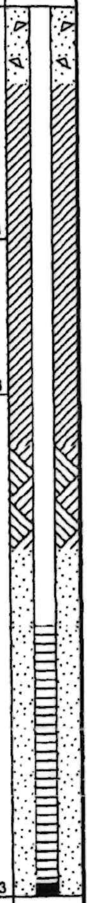
Location: **E 2263450.14 N 7064348.17**

Surface El.: **682.83 ft. msl**
Completion Depth: 34.5 ft.
Date Boring Started: 7/30/2024
Date Boring Completed: 8/14/2024

Depth, feet	Samples	Symbol / USCS	MATERIAL DESCRIPTION	Elevation
0			Sand, silty, with clay, light brown, with rootlets - very fine-grained	
9			Clay, silty, with sand, reddish brown	673.83
15			Sand, silty, brown and reddish brown	667.83
34.5				648.33

Depth scale: 5, 10, 15, 20, 25, 30, 35, 40, 45, 50

Piezometer Construction Details



Contractor: **H/ET**

Groundwater Observations

Date	Depth

Remarks:

BME

LOG OF PIEZOMETER NO. P-34S
PAGE 1 OF 1

The stratification lines represent approximate strata boundaries. In situ, the transition may be gradual
LOGS ARE NOT INTENDED TO BE USED SEPARATELY FROM THE ORIGINAL REPORT.

LOG OF PIEZOMETER NO. P-34M

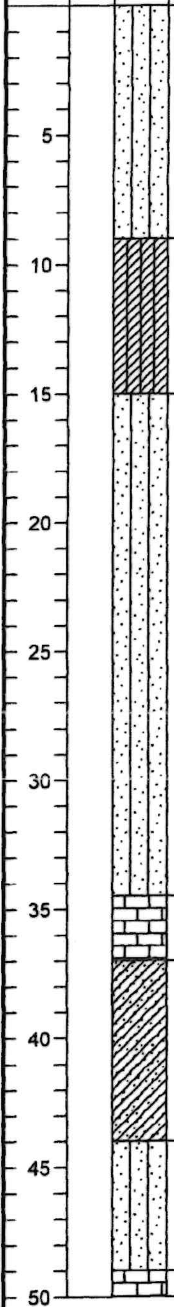
Project Description: **Chisholm Trail Disposal Landfill**

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-563-1144

Location: **E 2263449.96 N 7064363.23**

Surface El.: **682.98 ft. msl**
Completion Depth: 50.0 ft.
Date Boring Started: 8/9/2024
Date Boring Completed: 8/14/2024

Depth, feet | Samples | Symbol / USCS | MATERIAL DESCRIPTION | Piezometer Construction Details



Sand, silty, with clay, light brown, with rootlets

- very fine-grained

673.98

Clay, silty, with sand, reddish brown

667.98

Sand, silty, brown and reddish brown

- with coarse sand and pea gravel

648.48

Limestone, tan and buff, hard

645.98

Clay, sandy, greenish gray, very hard

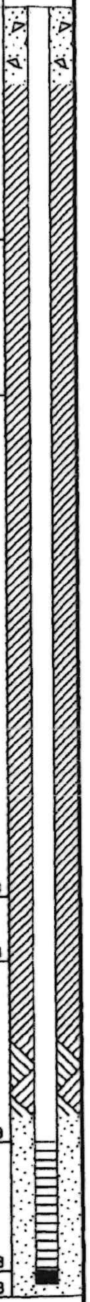
638.98

Sand, silty, greenish gray, dense

633.98

Limestone, tan to buff, hard

632.98



Contractor: **H/ET**

Groundwater Observations

Date	Depth

Remarks:

The stratification lines represent approximate strata boundaries. In situ, the transition may be gradual.
LOGS ARE NOT INTENDED TO BE USED SEPARATELY FROM THE ORIGINAL REPORT.

LOG OF PIEZOMETER NO. P-34D

Project Description: **Chisholm Trail Disposal Landfill**

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-563-1144

Location: **E 2263448.75 N 7064376.84**

Surface El.: **683.08 ft. msl**
Completion Depth: 88.0 ft.
Date Boring Started: 8/9/2024
Date Boring Completed: 8/14/2024

Depth, feet | Samples | Symbol / USCS | Piezometer Construction Details

MATERIAL DESCRIPTION

Depth, feet	Material Description	Elevation
	Sand, silty, with clay, light brown, with rootlets	
5	- very fine-grained	
		674.08
10	Clay, silty, with sand, reddish brown	
		668.08
15	Sand, silty, brown and reddish brown	
20		
25	- with coarse sand and pea gravel	
30		
		648.58
35	Limestone, tan and buff, hard	
		646.08
	Clay, sandy, greenish gray, very hard	
40		
		639.08
45	Sand, silty, greenish gray, dense	
		634.08
50	Limestone, tan to buff, hard	

Contractor: H/ET

Groundwater Observations

Date	Depth

Remarks:

BME

Continued Next Page

The stratification lines represent approximate strata boundaries. In situ, the transition may be gradual.
LOGS ARE NOT INTENDED TO BE USED SEPARATELY FROM THE ORIGINAL REPORT.

LOG OF PIEZOMETER NO. P-34D

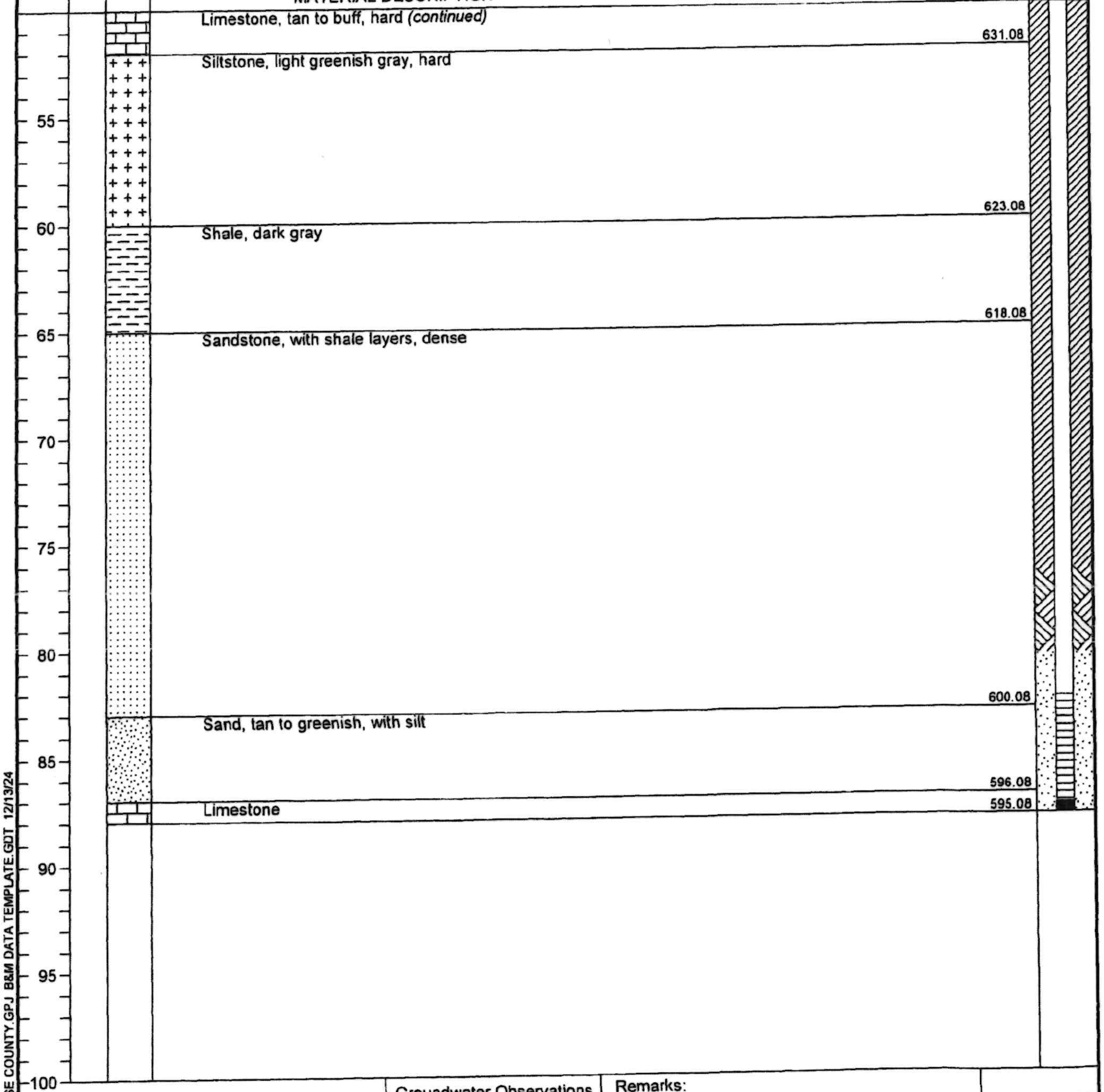
Project Description: **Chisholm Trail Disposal Landfill**

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-563-1144

Location: **E 2263448.75 N 7064376.84**

Surface El.: **683.08 ft. msl**
Completion Depth: 88.0 ft.
Date Boring Started: 8/9/2024
Date Boring Completed: 8/14/2024

MATERIAL DESCRIPTION



Limestone, tan to buff, hard *(continued)*
631.08

Siltstone, light greenish gray, hard
623.08

Shale, dark gray
618.08

Sandstone, with shale layers, dense
600.08

Sand, tan to greenish, with silt
596.08

Limestone
595.08

Contractor: H/ET

Groundwater Observations	
Date	Depth

Remarks:

BME

The stratification lines represent approximate strata boundaries. In situ, the transition may be gradual
LOGS ARE NOT INTENDED TO BE USED SEPARATELY FROM THE ORIGINAL REPORT.

STATE OF TEXAS WELL REPORT for Tracking #677191

Owner:	**CHISHOLM TRAIL DISPOSAL, LLC**	Owner Well #:	**P-3S**
Address:	**271 COUNTY ROAD 4664 RHOME, TX 76078**	Grid #:	**19-60-5**
Well Location:	**271 COUNTY ROAD 4664 RHOME, TX 76078**	Latitude:	**33° 02' 49" N**
		Longitude:	**097° 32' 49" W**
Well County:	**Wise**	Elevation:	**No Data**

Type of Work: **New Well**

Proposed Use: **Monitor**

Drilling Start Date: **8/2/2024** Drilling End Date: **8/14/2024**

	Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
Borehole:	**6.25**	**0**	**27.5**

Drilling Method: **Hollow Stem Auger**

Borehole Completion: **Filter Packed**

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Filter Material*	*Size*
Filter Pack Intervals:	**15**	**27.5**	**Sand**	**20/40**

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Description (number of sacks & material)*
Annular Seal Data:	**0**	**3**	**Cement 1 Bags/Sacks**
	3	**12**	**Bentonite 2 Bags/Sacks**
	12	**15**	**CHIPS 1 Bags/Sacks**

Seal Method: **Tremie**

Sealed By: **Driller**

Distance to Property Line (ft.): **No Data**

Distance to Septic Field or other concentrated contamination (ft.): **No Data**

Distance to Septic Tank (ft.): **No Data**

Method of Verification: **No Data**

Surface Completion: **Surface Slab Installed**

Surface Completion by Driller

Water Level: **No Data**

Packers: **No Data**

Type of Pump: **No Data**

Well Tests: **No Test Data Specified**

	Strata Depth (ft.)	*Water Type*
Water Quality:	**No Data**	**No Data**

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **No**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **H/ET**

11550 FM 1764
SANTA FE, TX 77510

Driller Name: **STEFAN STAMOULIS** License Number: **54882**

Comments: **No Data**

Lithology:
DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	*Bottom (ft.)*	*Description*
0	**15**	**SILTY CLAY, REDDISH BRN, STIFF TO HARD**
15	**26**	**SANDY CLAY, W/SAND, DARK REDDISH BRN, STIFF**
26	**27.5**	**LIMESTONE, BRN TO BUFF AND L GREEN**

Casing:
BLANK PIPE & WELL SCREEN DATA

Dia (in.)	*Type*	*Material*	*Sch./Gage*	*Top (ft.)*	*Bottom (ft.)*
2	**Riser**	**New Plastic (PVC)**	**SCH 40**	**0**	**17**
2	**Screen**	**New Plastic (PVC)**	**0.010**	**17**	**27**

IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY

TEX. OCC. CODE Title 12, Chapter 1901.251, authorizes the owner (owner or the person for whom the well was drilled) to keep information in Well Reports confidential. The Department shall hold the contents of the well log confidential and not a matter of public record if it receives, by certified mail, a written request to do so from the owner.

Please include the report's Tracking Number on your written request.

Texas Department of Licensing and Regulation
P.O. Box 12157
Austin, TX 78711
(512) 334-5540

STATE OF TEXAS WELL REPORT for Tracking #677188

Owner:	**CHISHOLM TRAIL DISPOSAL, LLC**	Owner Well #:	**P-3M**
Address:	**271 COUNTY ROAD 4664 RHOME, TX 76078**	Grid #:	**19-60-5**
Well Location:	**271 COUNTY ROAD 4664 RHOME, TX 76078**	Latitude:	**33° 02' 49" N**
		Longitude:	**097° 32' 49" W**
Well County:	**Wise**	Elevation:	**No Data**
Type of Work:	**New Well**	Proposed Use:	**Monitor**

Drilling Start Date: **8/10/2024** Drilling End Date: **8/14/2024**

	Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
Borehole:	**10.25**	**0**	**28**
	5.875	**28**	**70**

Drilling Method: **HOLLOW STEM AUGER, AIR ROTARY**

Borehole Completion: **Filter Packed**

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Filter Material*	*Size*
Filter Pack Intervals:	**56**	**70**	**Sand**	**20/40**

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Description (number of sacks & material)*
Annular Seal Data:	**0**	**3**	**Cement 1 Bags/Sacks**
	3	**53**	**Bentonite 5 Bags/Sacks**
	53	**59**	**CHIPS 1 Bags/Sacks**

Seal Method: **Tremie**

Sealed By: **Driller**

Distance to Property Line (ft.): **No Data**

Distance to Septic Field or other concentrated contamination (ft.): **No Data**

Distance to Septic Tank (ft.): **No Data**

Method of Verification: **No Data**

Surface Completion: **Surface Slab Installed** **Surface Completion by Driller**

Water Level: **No Data**

Packers: **No Data**

Type of Pump: **No Data**

Well Tests: **No Test Data Specified**

	Strata Depth (ft.)	*Water Type*
Water Quality:	**No Data**	**No Data**

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **No**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **H/ET**

11550 FM 1764
SANTA FE, TX 77510

Driller Name: **STEFAN STAMOULIS**

License Number: **54882**

Comments: **No Data**

Lithology:
DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	*Bottom (ft.)*	*Description*
0	**15**	**SILTY CLAY, REDDISH BRN, STIFF TO HARD**
15	**26**	**SANDY CLAY, W/SAND, DARK REDDISH BRN, STIFF**
26	**28**	**LIMESTONE, TAN TO BUFF, HARD**
28	**43**	**SHALE, W/ SOME SILT PARTINGS, DARY GRAY**
43	**45**	**LIMESTONE, TAN TO BUFF, W/LIGHT GREEN**
45	**56**	**SHALE, DARK GRAY, W/SILT**
56	**60**	**CLAY, SILTY, GREENISH GRAY**
60	**70**	**SANDSTONE, TAN, DENSE**

Casing:
BLANK PIPE & WELL SCREEN DATA

Dia (in.)	*Type*	*Material*	*Sch./Gage*	*Top (ft.)*	*Bottom (ft.)*
2	**Riser**	**New Plastic (PVC)**	**SCH 40**	**0**	**59**
6	**Riser**	**New Plastic (PVC)**	**SCH 40**	**0**	**28**
2	**Screen**	**New Plastic (PVC)**	**0.010**	**59**	**69**

IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY

TEX. OCC. CODE Title 12, Chapter 1901.251, authorizes the owner (owner or the person for whom the well was drilled) to keep information in Well Reports confidential. The Department shall hold the contents of the well log confidential and not a matter of public record if it receives, by certified mail, a written request to do so from the owner.

Please include the report's Tracking Number on your written request.

Texas Department of Licensing and Regulation
P.O. Box 12157
Austin, TX 78711
(512) 334-5540

STATE OF TEXAS WELL REPORT for Tracking #677184

Owner:	**CHISHOLM TRAIL DISPOSAL, LLC**	Owner Well #:	**P-3D**
Address:	**271 COUNTY ROAD 4664** **RHOME, TX 76078**	Grid #:	**19-60-5**
Well Location:	**271 COUNTY ROAD 4664** **RHOME, TX 76078**	Latitude:	**33° 02' 49" N**
		Longitude:	**097° 32' 48" W**
Well County:	**Wise**	Elevation:	**No Data**

Type of Work: **New Well**

Proposed Use: **Monitor**

Drilling Start Date: **8/10/2024** Drilling End Date: **8/14/2024**

	Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
Borehole:	**10.25**	**0**	**30**
	5.875	**30**	**90.5**

Drilling Method: **HOLLOW STEM AUGER, AIR ROTARY**

Borehole Completion: **Filter Packed**

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Filter Material*	*Size*
Filter Pack Intervals:	**83**	**90.5**	**Sand**	**20/40**

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Description (number of sacks & material)*
Annular Seal Data:	**0**	**3**	**Cement 1 Bags/Sacks**
	3	**79**	**Bentonite 5 Bags/Sacks**
	79	**83**	**CHIPS 1 Bags/Sacks**

Seal Method: **Tremie**

Sealed By: **Driller**

Distance to Property Line (ft.): **No Data**

Distance to Septic Field or other concentrated contamination (ft.): **No Data**

Distance to Septic Tank (ft.): **No Data**

Method of Verification: **No Data**

Surface Completion: **Surface Slab Installed**

Surface Completion by Driller

Water Level: **No Data**

Packers: **No Data**

Type of Pump: **No Data**

Well Tests: **No Test Data Specified**

	Strata Depth (ft.)	*Water Type*
Water Quality:	**No Data**	**No Data**

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **No**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **H/ET**

11550 FM 1764
SANTA FE, TX 77510

Driller Name: **STEFAN STAMOULIS** License Number: **54882**

Comments: **No Data**

Lithology:
DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	*Bottom (ft.)*	*Description*
0	15	SILTY CLAY, RD BRN, STIFF TO HARD (FILL)
15	26	SANDY CLAY, W/SAND, DARK REDDISH BRN (FILL)
26	28	LIMESTONE, TAN TO BUFF, HARD
28	43	SHALE, W/SOME SILT PARTINGS, DK GRAY
43	45	LIMESTONE, TAN AND BUFF, W/LIGHT GREEN PARTINGS
45	56	SHALE, W/SILT PARTINGS, DARK GRAY
56	60	CLAY, SILTY, GREENISH GRAY
60	71	SANDSTONE, TAN W/LIGNITE, CROSSHEDDED
71	80	LIMESTONE, TAN TO BUFF, W/CLAY
80	85	CLAY, DK GRAY, W/MAR.
85	87	CLAY, SANDY, LIGHT GREENISH GRAY TO TAN, HARD
87	90.5	SANDSTONE, GREENISH GRAY TO TAN

Casing:
BLANK PIPE & WELL SCREEN DATA

Dia (in.)	*Type*	*Material*	*Sch./Gage*	*Top (ft.)*	*Bottom (ft.)*
2	Riser	New Plastic (PVC)	SCH 40	0	85
6	Riser	New Plastic (PVC)	SCH 40	0	28
2	Screen	New Plastic (PVC)	0.010	85	90

IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY

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Texas Department of Licensing and Regulation
P.O. Box 12157
Austin, TX 78711
(512) 334-5540

STATE OF TEXAS WELL REPORT for Tracking #677194

Owner:	**CHISHOLM TRAIL DISPOSAL, LLC**	Owner Well #:	**P-4D**
Address:	**271 COUNTY ROAD 4664** **RHOME, TX 76078**	Grid #:	**19-60-5**
Well Location:	**271 COUNTY ROAD 4664** **RHOME, TX 76078**	Latitude:	**33° 02' 51" N**
		Longitude:	**097° 32' 47" W**
Well County:	**Wise**	Elevation:	**No Data**
Type of Work:	**New Well**	Proposed Use:	**Monitor**

Drilling Start Date: **8/11/2024** Drilling End Date: **8/14/2024**

	Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
Borehole:	**10.25**	**0**	**29**
	5.875	**29**	**90.5**

Drilling Method: **HOLLOW STEM AUGER, AIR ROTARY**

Borehole Completion: **Filter Packed**

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Filter Material*	*Size*
Filter Pack Intervals:	**83**	**90.5**	**Sand**	**20/40**

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Description (number of sacks & material)*
Annular Seal Data:	**0**	**3**	**Cement 1 Bags/Sacks**
	3	**79**	**Bentonite 6 Bags/Sacks**
	79	**83**	**CHIPS 1 Bags/Sacks**

Seal Method: **Tremie**

Sealed By: **Driller**

Distance to Property Line (ft.): **No Data**

Distance to Septic Field or other concentrated contamination (ft.): **No Data**

Distance to Septic Tank (ft.): **No Data**

Method of Verification: **No Data**

Surface Completion: **Surface Slab Installed** **Surface Completion by Driller**

Water Level: **No Data**

Packers: **No Data**

Type of Pump: **No Data**

Well Tests: **No Test Data Specified**

	Strata Depth (ft.)	*Water Type*
Water Quality:	**No Data**	**No Data**

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **No**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **H/ET**

11550 FM 1764
SANTA FE, TX 77510

Driller Name: **STEFAN STAMOULIS**

License Number: **54882**

Comments: **No Data**

Lithology:
DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	*Bottom (ft.)*	*Description*
0	**10**	**SILT, CLAYEY, RD BRN, W/ROOTLETS (FILL)**
10	**27**	**SILTY CLAY, LIGHT GREY, CLAYEY SAND, SAND (FILL)**
27	**30**	**LIMESTONE, TAN TO LIGHT GRAY, HARD**
30	**35**	**CLAY, SILTY, GREENISH GRAY**
35	**38**	**SILT, CLAYEY, W/SAND**
38	**42**	**SILTSTONE, TAN TO GRAY, W/CLAY PARTINGS**
42	**55**	**CLAY, W/ MAR. SEAMS, DK GRAY**
55	**60**	**SILTSTONE, LIGHT GREENISH GRAY**
60	**69**	**SANDSTONE, CROSSHEDDED, TAN TO GRAY, WITH LIGNITE**
69	**84**	**LIMESTONE, W/CLAY AND SAND PARTINGS, TAN TO BUFF, W/DARK GRAY CLAY**
84	**90**	**SILTSONE, TAN AND LIGHT GREENISH GRAY, W/SHALE, W/SAND PARTINGS**

Casing:
BLANK PIPE & WELL SCREEN DATA

Dia (in.)	*Type*	*Material*	*Sch./Gage*	*Top (ft.)*	*Bottom (ft.)*
2	**Riser**	**New Plastic (PVC)**	**SCH 40**	**0**	**85**
6	**Riser**	**New Plastic (PVC)**	**SCH 40**	**0**	**29**
2	**Screen**	**New Plastic (PVC)**	**0.010**	**85**	**90**

90	90.5	CLAY, W. MAR. AND LIMESTONE, DARK GREE TO GRAY

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Texas Department of Licensing and Regulation
P.O. Box 12157
Austin, TX 78711
(512) 334-5540

STATE OF TEXAS WELL REPORT for Tracking #677195

Owner:	**CHISHOLM TRAIL DISPOSAL, LLC**	Owner Well #:	**P-5D**
Address:	**271 COUNTRY ROAD 4664** **RHOME, TX 76078**	Grid #:	**19-60-5**
Well Location:	**271 COUNTRY ROAD 4664** **RHOME, TX 76078**	Latitude:	**33° 03' 01" N**
		Longitude:	**097° 32' 47" W**
Well County:	**Wise**	Elevation:	**No Data**
Type of Work:	**New Well**	Proposed Use:	**Monitor**

Drilling Start Date: **8/9/2024**   Drilling End Date: **8/14/2024**

	Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
Borehole:	**10.25**	**0**	**45**
	5.875	**45**	**66**

Drilling Method: **HOLLOW STEM AUGER, AIR ROTARY**

Borehole Completion: **Filter Packed**

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Filter Material*	*Size*
Filter Pack Intervals:	**53**	**66**	**Sand**	**20/40**

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Description (number of sacks & material)*
Annular Seal Data:	**0**	**3**	**Cement 1 Bags/Sacks**
	3	**50**	**Bentonite 5 Bags/Sacks**
	50	**53**	**CHIPS 1 Bags/Sacks**

Seal Method: **Tremie**

Sealed By: **Driller**

Distance to Property Line (ft.): **No Data**

Distance to Septic Field or other concentrated contamination (ft.): **No Data**

Distance to Septic Tank (ft.): **No Data**

Method of Verification: **No Data**

Surface Completion: **Surface Slab Installed**   **Surface Completion by Driller**

Water Level: **No Data**

Packers: **No Data**

Type of Pump: **No Data**

Well Tests: **No Test Data Specified**

	Strata Depth (ft.)	*Water Type*
Water Quality:	**No Data**	**No Data**

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **No**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **H/ET**

11550 FM 1764
SANTA FE, TX 77510

Driller Name: **STEFAN STAMOULIS**

License Number: **54882**

Comments: **No Data**

Report Amended on 10/17/2024 by Request #43591

Lithology:
DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	*Bottom (ft.)*	*Description*
0	**25**	**CLAY, SILTY, W/ROCK FRAGMENTS, REDDISH BRN (FILL)**
25	**44**	**SANDY, CLAYEY , TAN TO LIGHT BRN, W/SHALE**
44	**50**	**LIMESTONE, LIGHT GRAY TO DARK GRAY**
50	**65**	**SANDSTONE W/CLAY, W/SILT, LIGHT GRAY TO TAN**
65	**66**	**CLAY, SANDY, DARK GRAY**

Casing:
BLANK PIPE & WELL SCREEN DATA

Dia (in.)	*Type*	*Material*	*Sch./Gage*	*Top (ft.)*	*Bottom (ft.)*
2	**Riser**	**New Plastic (PVC)**	**SCH 40**	**0**	**55**
6	**Riser**	**New Plastic (PVC)**	**SCH 40**	**0**	**45**
2	**Screen**	**New Plastic (PVC)**	**0.010**	**55**	**65**

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Texas Department of Licensing and Regulation
P.O. Box 12157
Austin, TX 78711
(512) 334-5540

STATE OF TEXAS WELL REPORT for Tracking #677244

Owner: **CHISHOLM TRAIL DISPOSAL, LLC**

Address: **271 COUNTY ROAD 4664**
RHOME, TX 76078

Well Location: **271 COUNTY ROAD 4664**
RHOME, TX 76078

Well County: **Wise**

Owner Well #: **P-6 VII**

Grid #: **19-60-6**

Latitude: **33° 03' 06" N**

Longitude: **097° 32' 23" W**

Elevation: **No Data**

Type of Work: **New Well**

Proposed Use: **Monitor**

Drilling Start Date: **8/13/2024**

Drilling End Date: **8/14/2024**

	Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
Borehole:	**10.25**	**0**	**26**
	5.875	**26**	**91**

Drilling Method: **HOLLOW STEM AUGER, AIR ROTARY**

Borehole Completion: **Filter Packed**

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Filter Material*	*Size*
Filter Pack Intervals:	**83**	**91**	**Sand**	**20/40**

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Description (number of sacks & material)*
Annular Seal Data:	**0**	**3**	**Cement 1 Bags/Sacks**
	3	**79**	**Bentonite 6 Bags/Sacks**
	79	**83**	**CHIPS 1 Bags/Sacks**

Seal Method: **Tremie**

Sealed By: **Driller**

Distance to Property Line (ft.): **No Data**

Distance to Septic Field or other concentrated contamination (ft.): **No Data**

Distance to Septic Tank (ft.): **No Data**

Method of Verification: **No Data**

Surface Completion: **Surface Slab Installed**

Surface Completion by Driller

Water Level: **No Data**

Packers: **No Data**

Type of Pump: **No Data**

Well Tests: **No Test Data Specified**

	Strata Depth (ft.)	*Water Type*
Water Quality:	**No Data**	**No Data**

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **No**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **H/ET**

11550 FM 1764
SANTA FE, TX 77510

Driller Name: **STEFAN STAMOULIS** License Number: **54882**

Comments: **No Data**

Report Amended on 10/17/2024 by Request #43592

Lithology:
DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	*Bottom (ft.)*	*Description*
0	**15**	**SILTY CLAY, BRN, VERY STIFF (FILL)**
15	**25**	**SILTY SAND, DK REDDISH BRN, W/CLAY, W/SAND (FILL)**
25	**28**	**LIMESTONE, TAN TO BUFF, HARD**
28	**40**	**SAND, GRAVELLY, LIGHT BRN**
40	**45**	**SANDSTONE, W/SILT, CROSSHEDDED, GREENISH GRAY AND TAN**
45	**50**	**CLAY, DARK GREENISH GRAY TO DK GRAY**
50	**60**	**LIMESTONE, L GRAY TO DARK GRAY, W/CLAY SEAMS**
60	**70**	**SHALE, DK GREENISH GRAY**
70	**80**	**LIMESTONE, LIGHT GRAY TO GRAY**
80	**85**	**SANDSTONE, W/SILT**
85	**90**	**TAN**
90	**91**	**SHALE, SANDY DK GRAY**

Casing:
BLANK PIPE & WELL SCREEN DATA

Dia (in.)	*Type*	*Material*	*Sch./Gage*	*Top (ft.)*	*Bottom (ft.)*
2	**Riser**	**New Plastic (PVC)**	**SCH 40**	**0**	**85**
6	**Riser**	**New Plastic (PVC)**	**SCH 40**	**0**	**28**
2	**Screen**	**New Plastic (PVC)**	**0.010**	**85**	**90**

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Texas Department of Licensing and Regulation
P.O. Box 12157
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(512) 334-5540

E2.129

STATE OF TEXAS WELL REPORT for Tracking #677247

Owner:	**CHISHOLM TRAIL DISPOSAL, LLC**	Owner Well #:	**P-11S**
Address:	**271 COUNTY ROAD 4664 RHOME, TX 76078**	Grid #:	**19-60-5**
Well Location:	**271 COUNTY ROAD 4664 RHOME, TX 76078**	Latitude:	**33° 02' 39" N**
		Longitude:	**097° 32' 37" W**
Well County:	**Wise**	Elevation:	**No Data**
Type of Work:	**New Well**	Proposed Use:	**Monitor**

Drilling Start Date: **8/2/2024** Drilling End Date: **8/14/2024**

	Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
Borehole:	**6.25**	**0**	**24**

Drilling Method: **Hollow Stem Auger**

Borehole Completion: **Filter Packed**

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Filter Material*	*Size*
Filter Pack Intervals:	**11**	**24**	**Sand**	**20/40**

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Description (number of sacks & material)*
Annular Seal Data:	**0**	**3**	**Cement 1 Bags/Sacks**
	3	**7**	**Bentonite 1 Bags/Sacks**
	7	**11**	**CHIPS 1 Bags/Sacks**

Seal Method: **Tremie**

Sealed By: **Driller**

Distance to Property Line (ft.): **No Data**

Distance to Septic Field or other concentrated contamination (ft.): **No Data**

Distance to Septic Tank (ft.): **No Data**

Method of Verification: **No Data**

Surface Completion: **Surface Slab Installed** **Surface Completion by Driller**

Water Level: **No Data**

Packers: **No Data**

Type of Pump: **No Data**

Well Tests: **No Test Data Specified**

	Strata Depth (ft.)	*Water Type*
Water Quality:	**No Data**	**No Data**

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **No**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **H/ET**

11550 FM 1764
SANTA FE, TX 77510

Driller Name: **STEFAN STAMOULIS**

License Number: **54882**

Comments: **No Data**

Report Amended on 10/30/2024 by Request #43665

Lithology:
DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	*Bottom (ft.)*	*Description*
0	**10**	**CLAY SILTY, L RD BRN TO RD BRN (FILL)**
15	**23**	**SAND, SILTY W/TRACE COARSE SAND, RD BRN, W/PEA GRAVEL (FILL)**
23	**24**	**LIMESTONE, L BRN, TAN AND WHITE, HARD**

Casing:
BLANK PIPE & WELL SCREEN DATA

Dia (in.)	*Type*	*Material*	*Sch./Gage*	*Top (ft.)*	*Bottom (ft.)*
2	**Riser**	**New Plastic (PVC)**	**SCH 40**	**0**	**13**
2	**Screen**	**New Plastic (PVC)**	**0.010**	**13**	**23**

IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY

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Texas Department of Licensing and Regulation
P.O. Box 12157
Austin, TX 78711
(512) 334-5540

STATE OF TEXAS WELL REPORT for Tracking #677246

Owner:	**CHISHOLM TRAIL DISPOSAL, LLC**	Owner Well #:	**P-11M**
Address:	**271 COUNTY ROAD 4664 RHOME, TX 76078**	Grid #:	**19-60-5**
Well Location:	**271 COUNTY ROAD 4664 RHOME, TX 76078**	Latitude:	**33° 02' 39" N**
		Longitude:	**097° 32' 37" W**
Well County:	**Wise**	Elevation:	**No Data**
Type of Work:	**New Well**	Proposed Use:	**Monitor**

Drilling Start Date: **8/10/2024** Drilling End Date: **8/14/2024**

	Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
Borehole:	**10.25**	**0**	**22.5**
	5.875	**22.5**	**42**

Drilling Method: **HOLLOW STEM AUGER, AIR ROTARY**

Borehole Completion: **Filter Packed**

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Filter Material*	*Size*
Filter Pack Intervals:	**35**	**42**	**Sand**	**20/40**

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Description (number of sacks & material)*
Annular Seal Data:	**0**	**3**	**Cement 1 Bags/Sacks**
	3	**30**	**Bentonite 2 Bags/Sacks**
	30	**35**	**CHIPS 2 Bags/Sacks**

Seal Method: **Tremie**

Sealed By: **Driller**

Distance to Property Line (ft.): **No Data**

Distance to Septic Field or other concentrated contamination (ft.): **No Data**

Distance to Septic Tank (ft.): **No Data**

Method of Verification: **No Data**

Surface Completion: **Surface Slab Installed** **Surface Completion by Driller**

Water Level: **No Data**

Packers: **No Data**

Type of Pump: **No Data**

Well Tests: **No Test Data Specified**

	Strata Depth (ft.)	*Water Type*
Water Quality:	**No Data**	**No Data**

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **No**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **H/ET**

11550 FM 1764
SANTA FE, TX 77510

Driller Name: **STEFAN STAMOULIS** License Number: **54882**

Comments: **No Data**

Lithology:
DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	*Bottom (ft.)*	*Description*
0	**15**	**CLAY, SILTY L BRN AND L RD BRN, FILL**
15	**20**	**SAND, SILTY, W/TRACE, COARSE SAND AND GRAVEL (FILL)**
20	**22**	**LIMESTONE, L BRN, TAN AND WHITE, HARD**
22	**33**	**CLAY, SILTY, GREENISH GRAY, W/SAND PARTINGS**
33	**41**	**SANDSTONE, W/CLAY SEAMS, TAN TO GREENISH GRAY**
41	**42**	**CLAY, W/MARL. W/SAND PARTINGS**

Casing:
BLANK PIPE & WELL SCREEN DATA

Dia (in.)	*Type*	*Material*	*Sch./Gage*	*Top (ft.)*	*Bottom (ft.)*
2	**Riser**	**New Plastic (PVC)**	**SCH 40**	**0**	**36**
6	**Riser**	**New Plastic (PVC)**	**SCH 40**	**0**	**21**
2	**Screen**	**New Plastic (PVC)**	**0.010**	**36**	**41**

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Texas Department of Licensing and Regulation
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Austin, TX 78711
(512) 334-5540

STATE OF TEXAS WELL REPORT for Tracking #677245

Owner:	**CHISHOLM TRAIL DISPOSAL, LLC**	Owner Well #:	**P-11D**
Address:	**271 COUNTY ROAD 4664** **RHOME, TX 76078**	Grid #:	**19-60-5**
Well Location:	**271 COUNTY ROAD 4664** **RHOME, TX 76078**	Latitude:	**33° 02' 39" N**
		Longitude:	**097° 32' 37" W**
Well County:	**Wise**	Elevation:	**No Data**

Type of Work: **New Well** Proposed Use: **Monitor**

Drilling Start Date: **8/10/2024** Drilling End Date: **8/14/2024**

	Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
Borehole:	**10.25**	**0**	**22.5**
	5.875	**22.5**	**71**

Drilling Method: **HOLLOW STEM AUGER, AIR ROTARY**

Borehole Completion: **Filter Packed**

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Filter Material*	*Size*
Filter Pack Intervals:	**58**	**71**	**Sand**	**20/40**

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Description (number of sacks & material)*
Annular Seal Data:	**0**	**3**	**Cement 1 Bags/Sacks**
	3	**54**	**Bentonite 4 Bags/Sacks**
	54	**58**	**CHIPS 1 Bags/Sacks**

Seal Method:	**Tremie**	Distance to Property Line (ft.):	**No Data**
Sealed By:	**Driller**	Distance to Septic Field or other concentrated contamination (ft.):	**No Data**
		Distance to Septic Tank (ft.):	**No Data**
		Method of Verification:	**No Data**

Surface Completion: **Surface Slab Installed** **Surface Completion by Driller**

Water Level: **No Data**

Packers: **No Data**

Type of Pump: **No Data**

Well Tests: **No Test Data Specified**

	Strata Depth (ft.)	*Water Type*
Water Quality:	**No Data**	**No Data**

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **No**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **H/ET**

11550 FM 1764
SANTA FE, TX 77510

Driller Name: **STEFAN STAMOULIS**

License Number: **54882**

Comments: **No Data**

Lithology:
DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	*Bottom (ft.)*	*Description*
0	15	CLAY, SILTY, L BRN AND L RD BRN (FILL)
15	20	SAND SILTY, W/TRACE, COARSE, SAND, GRAVEL (FILL)
20	25	LIMESTONE, L BRN, TAN, WHITE, HARD
25	33	CLAY, SILTY, GREENISH GRAY AND RED, W/SAND
33	41	SANDSTONE, TAN TO GREENISH GRAY
41	59	CLAY, W/MARL., W/SAND PARTINGS
59	70	SANDSTONE, W/CLAY
70	71	CLAY, W/SAND LENSES, DARK GRAY

Casing:
BLANK PIPE & WELL SCREEN DATA

Dia (in.)	*Type*	*Material*	*Sch./Gage*	*Top (ft.)*	*Bottom (ft.)*
2	Riser	New Plastic (PVC)	SCH 40	0	60
6	Riser	New Plastic (PVC)	SCH 40	0	21
2	Screen	New Plastic (PVC)	0.010	60	70

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Texas Department of Licensing and Regulation
P.O. Box 12157
Austin, TX 78711
(512) 334-5540

STATE OF TEXAS WELL REPORT for Tracking #677250

Owner:	**CHISHOLM TRAIL DISPOSAL, LLC**	Owner Well #:	**P-24S**
Address:	**271 COUNTY ROAD 4664** **RHOME, TX 76078**	Grid #:	**19-60-6**
Well Location:	**271 COUNTY ROAD 4664** **RHOME, TX 76078**	Latitude:	**33° 03' 04" N**
		Longitude:	**097° 32' 23" W**
Well County:	**Wise**	Elevation:	**No Data**

Type of Work: **New Well**

Proposed Use: **Monitor**

Drilling Start Date: **8/2/2024**

Drilling End Date: **8/14/2024**

	Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
Borehole:	**6.25**	**0**	**31**

Drilling Method: **Hollow Stem Auger**

Borehole Completion: **Filter Packed**

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Filter Material*	*Size*
Filter Pack Intervals:	**17.5**	**31**	**Sand**	**20/40**

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Description (number of sacks & material)*
Annular Seal Data:	**0**	**3**	**Cement 1 Bags/Sacks**
	3	**13**	**Bentonite 2 Bags/Sacks**
	13	**17.5**	**CHIPS 1 Bags/Sacks**

Seal Method: **Tremie**

Sealed By: **Driller**

Distance to Property Line (ft.): **No Data**

Distance to Septic Field or other concentrated contamination (ft.): **No Data**

Distance to Septic Tank (ft.): **No Data**

Method of Verification: **No Data**

Surface Completion: **Surface Slab Installed**

Surface Completion by Driller

Water Level: **No Data**

Packers: **No Data**

Type of Pump: **No Data**

Well Tests: **No Test Data Specified**

	Strata Depth (ft.)	*Water Type*
Water Quality:	**No Data**	**No Data**

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **No**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **H/ET**

11550 FM 1764
SANTA FE, TX 77510

Driller Name: **STEFAN STAMOULIS** License Number: **54882**

Comments: **No Data**

Report Amended on 10/17/2024 by Request #43597

Lithology:
DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	*Bottom (ft.)*	*Description*
0	**29**	**CLAY W/SAND, W/SANDY CLAY, BRN, V-STIFF (FILL)**
29	**31**	**LIMESTONE, WHITE TO BUFF, HARD**

Casing:
BLANK PIPE & WELL SCREEN DATA

Dia (in.)	*Type*	*Material*	*Sch./Gage*	*Top (ft.)*	*Bottom (ft.)*
2	**Riser**	**New Plastic (PVC)**	**SCH 40**	**0**	**18.5**
2	**Screen**	**New Plastic (PVC)**	**0.010**	**18.5**	**29.5**

IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY

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Texas Department of Licensing and Regulation
P.O. Box 12157
Austin, TX 78711
(512) 334-5540

STATE OF TEXAS WELL REPORT for Tracking #677249

Owner:	**CHISHOLM TRAIL DISPOSAL, LLC**	Owner Well #:	**P-24D**
Address:	**271 COUNTY ROAD 4664** **RHOME, TX 76078**	Grid #:	**19-60-5**
Well Location:	**271 COUNTY ROAD 4664** **RHOME, TX 76078**	Latitude:	**33° 03' 04" N**
		Longitude:	**097° 33' 23" W**
Well County:	**Wise**	Elevation:	**No Data**
Type of Work:	**New Well**	Proposed Use:	**Monitor**

Drilling Start Date: **8/10/2024** Drilling End Date: **8/14/2024**

	Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
Borehole:	**10.25**	**0**	**30**
	5.875	**30**	**75**

Drilling Method: **HOLLOW STEM AUGER, AIR ROTARY**

Borehole Completion: **Filter Packed**

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Filter Material*	*Size*
Filter Pack Intervals:	**68.5**	**75.5**	**Sand**	**20/40**

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Description (number of sacks & material)*
Annular Seal Data:	**0**	**3**	**Cement 1 Bags/Sacks**
	3	**65**	**Bentonite 5 Bags/Sacks**
	65	**68.5**	**CHIPS 1 Bags/Sacks**

Seal Method: **Tremie**

Sealed By: **Driller**

Distance to Property Line (ft.): **No Data**

Distance to Septic Field or other concentrated contamination (ft.): **No Data**

Distance to Septic Tank (ft.): **No Data**

Method of Verification: **No Data**

Surface Completion: **Surface Slab Installed** **Surface Completion by Driller**

Water Level: **No Data**

Packers: **No Data**

Type of Pump: **No Data**

Well Tests: **No Test Data Specified**

	Strata Depth (ft.)	*Water Type*
Water Quality:	**No Data**	**No Data**

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **No**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **H/ET**

11550 FM 1764
SANTA FE, TX 77510

Driller Name: **STEFAN STAMOULIS** License Number: **54882**

Comments: **No Data**

Report Amended on 10/17/2024 by Request #43595

Lithology:
DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	*Bottom (ft.)*	*Description*
0	**29**	**CLAY, W/SAND, W/SANDY CLAY, BRN, V-STIFF (FILL)**
29	**31**	**LIMESTONE, WHITE TO BUFF, HARD**
31	**55**	**CLAY, SILTY, TAN, SANDY BELOW 50.0'**
55	**60**	**SHALE, DARK GRAY**
60	**70**	**LIMESTONE, LIGHT GRAY TO GRAY**
70	**75**	**SANDSTONE, VFG, WELL CEMENTED, GREENISH GRAY**
75	**75.5**	**CLAY, SILTY, GREENISH GRAY TO TAN, VERY STIFF**

Casing:
BLANK PIPE & WELL SCREEN DATA

Dia (in.)	*Type*	*Material*	*Sch./Gage*	*Top (ft.)*	*Bottom (ft.)*
2	**Riser**	**New Plastic (PVC)**	**SCH 40**	**0**	**70**
6	**Riser**	**New Plastic (PVC)**	**SCH 40**	**0**	**30**
2	**Screen**	**New Plastic (PVC)**	**0.010**	**70**	**75**

IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY

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P.O. Box 12157
Austin, TX 78711
(512) 334-5540

STATE OF TEXAS WELL REPORT for Tracking #677248

Owner:	**CHISHOLM TRAIL DISPOSAL, LLC**	Owner Well #:	**P-24 VII**
Address:	**271 COUNTY ROAD 4664 RHOME, TX 76078**	Grid #:	**19-60-6**
Well Location:	**271 COUNTY ROAD 4664 RHOME, TX 76078**	Latitude:	**33° 03' 04" N**
		Longitude:	**097° 32' 23" W**
Well County:	**Wise**	Elevation:	**No Data**
Type of Work:	**New Well**	Proposed Use:	**Monitor**

Drilling Start Date: **8/11/2024** Drilling End Date: **8/14/2024**

	Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
Borehole:	**10.25**	**0**	**30**
	5.875	**30**	**105**

Drilling Method: **HOLLOW STEM AUGER, AIR ROTARY**

Borehole Completion: **Filter Packed**

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Filter Material*	*Size*
Filter Pack Intervals:	**97**	**105**	**Sand**	**20/40**

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Description (number of sacks & material)*
Annular Seal Data:	**0**	**3**	**Cement 1 Bags/Sacks**
	3	**93**	**Bentonite 6 Bags/Sacks**
	93	**97**	**CHIPS 1 Bags/Sacks**

Seal Method: **Tremie**

Sealed By: **Driller**

Distance to Property Line (ft.): **No Data**

Distance to Septic Field or other concentrated contamination (ft.): **No Data**

Distance to Septic Tank (ft.): **No Data**

Method of Verification: **No Data**

Surface Completion: **Surface Slab Installed** **Surface Completion by Driller**

Water Level: **No Data**

Packers: **No Data**

Type of Pump: **No Data**

Well Tests: **No Test Data Specified**

	Strata Depth (ft.)	*Water Type*
Water Quality:	**No Data**	**No Data**

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **No**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **H/ET**

11550 FM 1764
SANTA FE, TX 77510

Driller Name: **STEFAN STAMOULIS** License Number: **54882**

Comments: **No Data**

Report Amended on 10/17/2024 by Request #43596

Lithology:
DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	*Bottom (ft.)*	*Description*
0	29	CLAY, W/SAND, W/SANDY CLAY, BRN, V-STIFF (FILL)
29	31	LIMESTONE, WHITE TO BUFF, HARD
31	55	CLAY, SILTY, TAN, SANDY BELOW 50.0'
55	60	SHALE, DARK GRAY
60	70	LIMESTONE, LIGHT GRAY TO GRAY
70	75	SANDSTONE, VFG, WELL CEMENTED, GREENISH GRAY AND TAN
75	80	CLAY, SILTY, GREENISH GRAY TO TAN, VERY STIFF
80	99	LIMESTONE, W/CLAY AND SHALE LAYERS, TAN TO GRAY, HARD
99	104	SILTSTONE, GREENISH GRAY TO TAN
104	105	LIMESTONE, TAN TO GRAY, HARD

Casing:
BLANK PIPE & WELL SCREEN DATA

Dia (in.)	*Type*	*Material*	*Sch./Gage*	*Top (ft.)*	*Bottom (ft.)*
2	Riser	New Plastic (PVC)	SCH 40	0	99
6	Riser	New Plastic (PVC)	SCH 40	0	30
2	Screen	New Plastic (PVC)	0.010	99	104

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Texas Department of Licensing and Regulation
P.O. Box 12157
Austin, TX 78711
(512) 334-5540

STATE OF TEXAS WELL REPORT for Tracking #677251

Owner: **CHISHOLM TRAIL DISPOSAL, LLC**

Owner Well #: **P-31S**

Address: **271COUNTY ROAD 4664**
RHOME, TX 76078

Grid #: **19-60-6**

Latitude: **33° 02' 56" N**

Well Location: **271COUNTY ROAD 4664**
RHOME, TX 76078

Longitude: **097° 32' 14" W**

Well County: **Wise**

Elevation: **No Data**

Type of Work: **New Well**

Proposed Use: **Monitor**

Drilling Start Date: **8/1/2024** Drilling End Date: **8/14/2024**

	Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
Borehole:	**6.25**	**0**	**37.5**

Drilling Method: **Hollow Stem Auger**

Borehole Completion: **Filter Packed**

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Filter Material*	*Size*
Filter Pack Intervals:	**25**	**37.5**	**Sand**	**20/40**

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Description (number of sacks & material)*
Annular Seal Data:	**0**	**3**	**Cement 1 Bags/Sacks**
	3	**22**	**Bentonite 4 Bags/Sacks**
	22	**25**	**CHIPS 1 Bags/Sacks**

Seal Method: **Tremie**

Sealed By: **Driller**

Distance to Property Line (ft.): **No Data**

Distance to Septic Field or other concentrated contamination (ft.): **No Data**

Distance to Septic Tank (ft.): **No Data**

Method of Verification: **No Data**

Surface Completion: **Surface Slab Installed**

Surface Completion by Driller

Water Level: **No Data**

Packers: **No Data**

Type of Pump: **No Data**

Well Tests: **No Test Data Specified**

	Strata Depth (ft.)	*Water Type*
Water Quality:	**No Data**	**No Data**

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **No**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **H/ET**

11550 FM 1764
SANTA FE, TX 77510

Driller Name: **STEFAN STAMOULIS**

License Number: **54882**

Comments: **No Data**

Lithology:
DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	*Bottom (ft.)*	*Description*
0	14	SILTY CLAY AND SAND, L BRN TO BRN, REDDISH BRN
14	37	SILTY SAND, TAN AND LIGHT BRN TO GREENISH GRAY, DENSE
37	37.5	LIMESTONE, WHITE AND BUFF, HARD

Casing:
BLANK PIPE & WELL SCREEN DATA

Dia (in.)	*Type*	*Material*	*Sch./Gage*	*Top (ft.)*	*Bottom (ft.)*
2	Riser	New Plastic (PVC)	SCH 40	0	27
2	Screen	New Plastic (PVC)	0.010	27	37

IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY

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Austin, TX 78711
(512) 334-5540

STATE OF TEXAS WELL REPORT for Tracking #677254

Owner: **CHISHOLM TRAIL DISPOSAL, LLC**

Owner Well #: **P-32S**

Address: **271 COUNTY ROAD 4664**
RHOME, TX 76078

Grid #: **19-60-6**

Latitude: **33° 02' 44" N**

Well Location: **271 COUNTY ROAD 4664**
RHOME, TX 76078

Longitude: **097° 32' 15" W**

Well County: **Wise**

Elevation: **No Data**

Type of Work: **New Well**

Proposed Use: **Monitor**

Drilling Start Date: **8/1/2024**

Drilling End Date: **8/14/2024**

	Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
Borehole:	**6.25**	**0**	**37.5**

Drilling Method: **Hollow Stem Auger**

Borehole Completion: **Filter Packed**

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Filter Material*	*Size*
Filter Pack Intervals:	**25**	**37.5**	**Sand**	**20/40**

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Description (number of sacks & material)*
Annular Seal Data:	**0**	**3**	**Cement 1 Bags/Sacks**
	3	**22**	**Bentonite 3.5 Bags/Sacks**
	22	**25**	**CHIPS 1 Bags/Sacks**

Seal Method: **Tremie**

Sealed By: **Driller**

Distance to Property Line (ft.): **No Data**

Distance to Septic Field or other concentrated contamination (ft.): **No Data**

Distance to Septic Tank (ft.): **No Data**

Method of Verification: **No Data**

Surface Completion: **Surface Slab Installed**

Surface Completion by Driller

Water Level: **No Data**

Packers: **No Data**

Type of Pump: **No Data**

Well Tests: **No Test Data Specified**

	Strata Depth (ft.)	Water Type
Water Quality:	**No Data**	**No Data**

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **No**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **H/ET**

11550 FM 1764
SANTA FE, TX 77510

Driller Name: **STEFAN STAMOULIS**

License Number: **54882**

Comments: **No Data**

Report Amended on 10/17/2024 by Request #43593

Lithology:
DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	Bottom (ft.)	Description
0	4	SILTY CLAY, W/SAND, BRN W/ROOTLETS, STIFF
4	10.5	SILTY SAND, RD BRN, STIFF TO HARD
10.5	23	SANDY CLAY, L BRN, W/FE STAINS, V-STIFF
23	37	SILTY SAND, L BRN AND TAN, DENSE
37	37.5	LIMESTONE, TAN TO BUFF, HARD

Casing:
BLANK PIPE & WELL SCREEN DATA

Dia (in.)	Type	Material	Sch./Gage	Top (ft.)	Bottom (ft.)
2	Riser	New Plastic (PVC)	SCH 40	0	27
2	Screen	New Plastic (PVC)	0.010	27	37

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P.O. Box 12157
Austin, TX 78711
(512) 334-5540

STATE OF TEXAS WELL REPORT for Tracking #677253

Owner: **CHISHOLM TRAIL DISPOSAL, LLC**

Owner Well #: **P-32M**

Address:
271 COUNTY ROAD 4664
RHOME, TX 76078

Grid #: **19-60-6**

Latitude: **33° 02' 44" N**

Well Location:
271 COUNTY ROAD 4664
RHOME, TX 76078

Longitude: **097° 32' 15" W**

Well County: **Wise**

Elevation: **No Data**

Type of Work: **New Well**

Proposed Use: **Monitor**

Drilling Start Date: **8/11/2024** Drilling End Date: **8/14/2024**

	Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
Borehole:	**10.25**	**0**	**38**
	5.875	**38**	**71**

Drilling Method: **HOLLOW STEM AUGER, AIR ROTARY**

Borehole Completion: **Filter Packed**

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Filter Material*	*Size*
Filter Pack Intervals:	**58**	**71**	**Sand**	**20/40**

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Description (number of sacks & material)*
Annular Seal Data:	**0**	**3**	**Cement 1 Bags/Sacks**
	3	**55**	**Bentonite 4 Bags/Sacks**
	55	**58**	**CHIPS 1 Bags/Sacks**

Seal Method: **Tremie**

Sealed By: **Driller**

Distance to Property Line (ft.): **No Data**

Distance to Septic Field or other concentrated contamination (ft.): **No Data**

Distance to Septic Tank (ft.): **No Data**

Method of Verification: **No Data**

Surface Completion: **Surface Slab Installed**

Surface Completion by Driller

Water Level: **No Data**

Packers: **No Data**

Type of Pump: **No Data**

Well Tests: **No Test Data Specified**

	Strata Depth (ft.)	*Water Type*
Water Quality:	**No Data**	**No Data**

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **No**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **H/ET**

11550 FM 1764
SANTA FE, TX 77510

Driller Name: **STEFAN STAMOULIS**

License Number: **54882**

Comments: **No Data**

Lithology:
DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	*Bottom (ft.)*	*Description*
0	**4**	**SILTY CLAY, W/SAND, W/ROOTLETS**
4	**10.5**	**SILTY SAND, RD BRN, STIFF TO HARD**
10.5	**23**	**SANDY CLAY, L BRN, W/FE STAINS, V-STIFF**
23	**37**	**SILTY SAND, L BRN TO TAN, DENSE**
37	**38**	**LIMESTONE, TAN TO BUFF, HARD**
38	**45**	**CLAY, SANDY, STIFF**
45	**65**	**SANDSTONE, VFG, LIGHT GREENISH GREY, HARD**
65	**70**	**SAND, SILTY LIGHT GREENISH GREY AND TAN, DENSE**
70	**71**	**SHALE, DARK GREY W/SILT, W/SILTSTONE PARTINGS**

Casing:
BLANK PIPE & WELL SCREEN DATA

Dia (in.)	*Type*	*Material*	*Sch./Gage*	*Top (ft.)*	*Bottom (ft.)*
2	**Riser**	**New Plastic (PVC)**	**SCH 40**	**0**	**60**
6	**Riser**	**New Plastic (PVC)**	**SCH 40**	**0**	**38**
2	**Screen**	**New Plastic (PVC)**	**0.010**	**60**	**70**

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Texas Department of Licensing and Regulation
P.O. Box 12157
Austin, TX 78711
(512) 334-5540

STATE OF TEXAS WELL REPORT for Tracking #677252

Owner:	**CHISHOLM TRAIL DISPOSAL, LLC**	Owner Well #:	**P-32D**
Address:	**271 COUNTY ROAD 4664** **RHOME, TX 76078**	Grid #:	**19-60-6**
Well Location:	**271 COUNTY ROAD 4664** **RHOME, TX 76078**	Latitude:	**33° 02' 44" N**
		Longitude:	**097° 32' 15" W**
Well County:	**Wise**	Elevation:	**No Data**
Type of Work:	**New Well**	Proposed Use:	**Monitor**

Drilling Start Date: **8/11/2024** Drilling End Date: **8/14/2024**

	Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
Borehole:	**10.25**	**0**	**38**
	5.875	**38**	**89.5**

Drilling Method: **HOLLOW STEM AUGER, AIR ROTARY**

Borehole Completion: **Filter Packed**

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Filter Material*	*Size*
Filter Pack Intervals:	**82**	**89.5**	**Sand**	**20/40**

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Description (number of sacks & material)*
Annular Seal Data:	**0**	**3**	**Cement 1 Bags/Sacks**
	3	**78**	**Bentonite 5 Bags/Sacks**
	78	**82**	**CHIPS 2 Bags/Sacks**

Seal Method: **Tremie**

Sealed By: **Driller**

Distance to Property Line (ft.): **No Data**

Distance to Septic Field or other concentrated contamination (ft.): **No Data**

Distance to Septic Tank (ft.): **No Data**

Method of Verification: **No Data**

Surface Completion: **Surface Slab Installed** **Surface Completion by Driller**

Water Level: **No Data**

Packers: **No Data**

Type of Pump: **No Data**

Well Tests: **No Test Data Specified**

	Strata Depth (ft.)	Water Type
Water Quality:	**No Data**	**No Data**

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **No**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **H/ET**

11550 FM 1764
SANTA FE, TX 77510

Driller Name: **STEFAN STAMOULIS**

License Number: **54882**

Comments: **No Data**

Lithology:
DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	Bottom (ft.)	Description
0	4	SILTY CLAY, W/SAND, W/ROOTLETS
4	10.5	SILTY SAND, RD BRN, STIFF TO HARD
10.5	23	SANDY CLAY, L BRN, W/FE STAINS, V-STIFF
23	37	SILTY SAND, L BRN TO TAN, DENSE
37	38	LIMESTONE, TAN TO BUFF, HARD
38	45	CLAY, SANDY STIFF
45	65	SANDSTONE, VFG, LIGHT GREENISH GRAY, HARD
65	70	SAND, SILTY. LIGHT GREENISH GRAY AND TAN, DENSE
70	75	SHALE, DARK GRAY, W/SILT PARTINGS, W/SILTSTONE PARTINGS
75	83	LIMESTONE, LIGHT GRAY AND GRAY, W/CLAY SEAMS, HARD
83	88	SANDY CLAY, DARK GRAY AND LIGHT GREENISH GRAY, VERY SANDY

Casing:
BLANK PIPE & WELL SCREEN DATA

Dia (in.)	Type	Material	Sch./Gage	Top (ft.)	Bottom (ft.)
2	Riser	New Plastic (PVC)	SCH 40	0	83
6	Riser	New Plastic (PVC)	SCH 40	0	38
2	Screen	New Plastic (PVC)	0.010	83	88

88	89	LIMESTONE, TAN TO LIGHT GRAY, HARD

IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY

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Texas Department of Licensing and Regulation
P.O. Box 12157
Austin, TX 78711
(512) 334-5540

STATE OF TEXAS WELL REPORT for Tracking #677255

Owner:	**CHISHOLM TRAIL DISPOSAL, LLC**	Owner Well #:	**P-33S**
Address:	**271 COUNTY ROAD 4664** **RHOME, TX 76078**	Grid #:	**19-60-9**
Well Location:	**271 COUNTY ROAD 4664** **RHOME, TX 76078**	Latitude:	**33° 02' 26" N**
		Longitude:	**097° 32' 15" W**
Well County:	**Wise**	Elevation:	**No Data**

Type of Work: **New Well**

Proposed Use: **Monitor**

Drilling Start Date: **7/30/2024** Drilling End Date: **8/14/2024**

	Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
Borehole:	**6.25**	**0**	**31**

Drilling Method: **Hollow Stem Auger**

Borehole Completion: **Filter Packed**

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Filter Material*	*Size*
Filter Pack Intervals:	**17.5**	**31**	**Sand**	**20/40**

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Description (number of sacks & material)*
Annular Seal Data:	**0**	**3**	**Cement 1 Bags/Sacks**
	3	**13.5**	**Bentonite 1.5 Bags/Sacks**
	13.5	**17.5**	**CHIPS 1 Bags/Sacks**

Seal Method: **Tremie**

Sealed By: **Driller**

Distance to Property Line (ft.): **No Data**

Distance to Septic Field or other concentrated contamination (ft.): **No Data**

Distance to Septic Tank (ft.): **No Data**

Method of Verification: **No Data**

Surface Completion: **Surface Slab Installed**

Surface Completion by Driller

Water Level: **No Data**

Packers: **No Data**

Type of Pump: **No Data**

Well Tests: **No Test Data Specified**

	Strata Depth (ft.)	*Water Type*
Water Quality:	**No Data**	**No Data**

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **No**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **H/ET**

11550 FM 1764
SANTA FE, TX 77510

Driller Name: **STEFAN STAMOULIS** License Number: **54882**

Comments: **No Data**

Report Amended on 10/17/2024 by Request #43594

Lithology:
DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	*Bottom (ft.)*	*Description*
0	**9.5**	**SILTY SAND, TRACE CLAY, L RD BRN, W/SILT**
9.5	**15**	**CLAYEY SAND, RD BRN, STIFF TO VERY STIFF**
15	**30.5**	**SILTY SAND, COARSE GRAINED W/PEA GRAVEL DENSE**
30.5	**31**	**LIMESTONE, WHITE TO BUFF, HARD**

Casing:
BLANK PIPE & WELL SCREEN DATA

Dia (in.)	*Type*	*Material*	*Sch./Gage*	*Top (ft.)*	*Bottom (ft.)*
2	**Riser**	**New Plastic (PVC)**	**SCH 40**	**0**	**20**
2	**Screen**	**New Plastic (PVC)**	**0.010**	**20**	**30**

IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY

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Texas Department of Licensing and Regulation
P.O. Box 12157
Austin, TX 78711
(512) 334-5540

STATE OF TEXAS WELL REPORT for Tracking #677258

Owner: **CHISHOLM TRAIL DISPOSAL, LLC**

Address: **271 COUNTY ROAD 4668**
RHOME, TX 76078

Well Location: **271 COUNTY ROAD 4668**
RHOME, TX 76078

Well County: **Wise**

Owner Well #: **P-34S**

Grid #: **19-60-6**

Latitude: **33° 02' 41" N**

Longitude: **097° 32' 15" W**

Elevation: **No Data**

Type of Work: **New Well**

Proposed Use: **Monitor**

Drilling Start Date: **7/30/2024** Drilling End Date: **8/14/2024**

	Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
Borehole:	**6.25**	**0**	**34.5**

Drilling Method: **Hollow Stem Auger**

Borehole Completion: **Filter Packed**

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Filter Material*	*Size*
Filter Pack Intervals:	**21**	**34.5**	**Sand**	**20/40**

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Description (number of sacks & material)*
Annular Seal Data:	**0**	**3**	**Cement 1 Bags/Sacks**
	3	**17**	**Bentonite 3 Bags/Sacks**
	17	**21**	**CHIPS 1 Bags/Sacks**

Seal Method: **Tremie**

Sealed By: **Driller**

Distance to Property Line (ft.): **No Data**

Distance to Septic Field or other concentrated contamination (ft.): **No Data**

Distance to Septic Tank (ft.): **No Data**

Method of Verification: **No Data**

Surface Completion: **Surface Slab Installed** **Surface Completion by Driller**

Water Level: **No Data**

Packers: **No Data**

Type of Pump: **No Data**

Well Tests: **No Test Data Specified**

	Strata Depth (ft.)	*Water Type*
Water Quality:	**No Data**	**No Data**

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **No**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **H/ET**

11550 FM 1764
SANTA FE, TX 77510

Driller Name: **STEFAN STAMOULIS** License Number: **54882**

Comments: **No Data**

Lithology:
DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	*Bottom (ft.)*	*Description*
0	**3**	**SILTY SAND, W/CLAY, L BRN, W/ROOTLETS, STIF (FILL)**
3	**9**	**SILTY SAND, BRN AND DARK BRN, VFG, MOD DENSE (FILL)**
9	**15**	**SILTY CLAY, RD BRN, W/GRAVEL (FILL)**
15	**34.5**	**SILTY SAND, BRN AND RD BRN, SOME SILTY W/COARSE SAND, PEA GRAVEL (FILL)**

Casing:
BLANK PIPE & WELL SCREEN DATA

Dia (in.)	*Type*	*Material*	*Sch./Gage*	*Top (ft.)*	*Bottom (ft.)*
2	**Riser**	**New Plastic (PVC)**	**SCH 40**	**0**	**24**
2	**Screen**	**New Plastic (PVC)**	**0.010**	**24**	**34**

IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY

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Texas Department of Licensing and Regulation
P.O. Box 12157
Austin, TX 78711
(512) 334-5540

STATE OF TEXAS WELL REPORT for Tracking #677257

Owner:	**CHISHOLM TRAIL DISPOSAL, LLC**	Owner Well #:	**P-34M**
Address:	**271 COUNTY ROAD 4664 RHOME, TX 76078**	Grid #:	**19-60-6**
Well Location:	**271 COUNTY ROAD 4664 RHOME, TX 76078**	Latitude:	**33° 02' 41" N**
		Longitude:	**097° 32' 15" W**
Well County:	**Wise**	Elevation:	**No Data**

Type of Work: **New Well** Proposed Use: **Monitor**

Drilling Start Date: **8/9/2024** Drilling End Date: **8/14/2024**

	Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
Borehole:	**10.25**	**0**	**36**
	5.875	**36**	**50**

Drilling Method: **HOLLOW STEM AUGER, AIR ROTARY**

Borehole Completion: **Filter Packed**

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Filter Material*	*Size*
Filter Pack Intervals:	**43**	**50**	**Sand**	**20/40**

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Description (number of sacks & material)*
Annular Seal Data:	**0**	**3**	**Cement 1 Bags/Sacks**
	3	**43**	**BENTONITE CHIPS 8 Bags/Sacks**

Seal Method: **Tremie**

Sealed By: **Driller**

Distance to Property Line (ft.): **No Data**

Distance to Septic Field or other concentrated contamination (ft.): **No Data**

Distance to Septic Tank (ft.): **No Data**

Method of Verification: **No Data**

Surface Completion: **Surface Slab Installed** **Surface Completion by Driller**

Water Level: **No Data**

Packers: **No Data**

Type of Pump: **No Data**

Well Tests: **No Test Data Specified**

	Strata Depth (ft.)	*Water Type*
Water Quality:	**No Data**	**No Data**

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **No**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **H/ET**

11550 FM 1764
SANTA FE, TX 77510

Driller Name: **STEFAN STAMOULIS**

License Number: **54882**

Comments: **No Data**

Lithology:
DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	*Bottom (ft.)*	*Description*
0	**3.5**	**SILTY SAND, W/CLAY, L BRN, W/ROOTLETS (FILL)**
3.5	**9**	**SILTY SAND, BRN TO DK BRN, VFG (FILL)**
9	**15**	**SILTY CLAY, RD BRN, W/SAND (FILL)**
15	**34.5**	**SILTY SAND, BRN AND RD BRN W/SILT, COARSE SAND, GRAVEL (FILL)**
34.5	**37**	**LIMESTONE, TAN AND BUFF, HARD**
37	**44**	**CLAY, SANDY, GREENISH GREY, VERY HARD**
44	**49**	**SAND, SILTY, GREENISH GREY, DENSE**
49	**50**	**LIMESTONE, TAR TO BUFF HARD**

Casing:
BLANK PIPE & WELL SCREEN DATA

Dia (in.)	*Type*	*Material*	*Sch./Gage*	*Top (ft.)*	*Bottom (ft.)*
2	**Riser**	**New Plastic (PVC)**	**SCH 40**	**0**	**44**
6	**Riser**	**New Plastic (PVC)**	**SCH 40**	**0**	**36**
2	**Screen**	**New Plastic (PVC)**	**0.010**	**44**	**49**

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Texas Department of Licensing and Regulation
P.O. Box 12157
Austin, TX 78711
(512) 334-5540

E2.162

STATE OF TEXAS WELL REPORT for Tracking #677256

Owner:	**CHISHOLM TRAIL DISPOSAL, LLC**	Owner Well #:	**P-34D**
Address:	**271 COUNTY ROAD 4664** **RHOME, TX 76078**	Grid #:	**19-60-6**
		Latitude:	**33° 02' 41" N**
Well Location:	**271 COUNTY ROAD 4664** **RHOME, TX 76078**	Longitude:	**097° 32' 14" W**
Well County:	**Wise**	Elevation:	**No Data**

Type of Work: **New Well**

Proposed Use: **Monitor**

Drilling Start Date: **8/9/2024**

Drilling End Date: **8/14/2024**

	Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
Borehole:	**10.25**	**0**	**36**
	5.875	**36**	**88**

Drilling Method: **HOLLOW STEM AUGER, AIR ROTARY**

Borehole Completion: **Filter Packed**

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Filter Material*	*Size*
Filter Pack Intervals:	**80.5**	**88**	**Sand**	**20/40**

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Description (number of sacks & material)*
Annular Seal Data:	**0**	**3**	**Cement 1 Bags/Sacks**
	3	**76.5**	**Bentonite 3.5 Bags/Sacks**
	76.5	**80.5**	**CHIPS 1 Bags/Sacks**

Seal Method: **Tremie**

Sealed By: **Driller**

Distance to Property Line (ft.): **No Data**

Distance to Septic Field or other concentrated contamination (ft.): **No Data**

Distance to Septic Tank (ft.): **No Data**

Method of Verification: **No Data**

Surface Completion: **Surface Slab Installed**

Surface Completion by Driller

Water Level: **No Data**

Packers: **No Data**

Type of Pump: **No Data**

Well Tests: **No Test Data Specified**

	Strata Depth (ft.)	*Water Type*
Water Quality:	**No Data**	**No Data**

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **No**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **H/ET**

11550 FM 1764
SANTA FE, TX 77510

Driller Name: **STEFAN STAMOULIS**

License Number: **54882**

Comments: **No Data**

Lithology:
DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	*Bottom (ft.)*	*Description*
0	**3.5**	**SILTY SAND, W/CLAY, L BRN W/ROOTLETS (FILL)**
3.5	**9**	**SILTY SAND, BRN AND DK BRN, VFG (FILL)**
9	**15**	**SILTY CLAY, RD BRN, W/SAND (FILL)**
15	**34.5**	**SILTY SAND, RD BRN AND BRN W/SILT, COARSE SAND, GRAVEL (FILL)**
34.5	**37**	**LIMESTONE, TAN AND BUFF, HARD**
37	**44**	**CLAYEY SAND, GREENISH GREY, VERY HARD**
44	**49**	**SILTY SAND, GREENISH GREY**
49	**52**	**LIMESTONE, TAN TO BUFF, HARD**
52	**60**	**SILTSTONE LIGHT GREENISH GREY, HARD**
60	**65**	**SHALE, DK GREY SHALY**
65	**83**	**SANDSTONE, W/SHALE PARTINGS, DENSE**
83	**87**	**SAND, TAN TO GREENISH, W/SILT**
87	**88**	**LIMESTONE, LIGHT TO DARK GREY, HARD**

Casing:
BLANK PIPE & WELL SCREEN DATA

Dia (in.)	*Type*	*Material*	*Sch./Gage*	*Top (ft.)*	*Bottom (ft.)*
2	**Riser**	**New Plastic (PVC)**	**SCH 40**	**0**	**82.5**
6	**Riser**	**New Plastic (PVC)**	**SCH 40**	**0**	**36**
2	**Screen**	**New Plastic (PVC)**	**0.010**	**82.5**	**87.5**

IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY

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Texas Department of Licensing and Regulation
P.O. Box 12157
Austin, TX 78711
(512) 334-5540

LOG OF BORING NO. B-1

Project Description: **Wise County**

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-563-1144

Location: **E 2260997.815 N 7066293.806**

Surface El.: **682.14 ft. msl**
Completion Depth: 45.0 ft.
Date Boring Started: 1/17/2023
Date Boring Completed: 1/17/2023

Depth, feet	Samples	Symbol / USCS	MATERIAL DESCRIPTION	Hand Penetrometer, tsf
		▨	Sand, clayey, brown, with gravel (fill)	
	U1	▨		
5		▨		
	U2	▨		
10		▨		
	U3	▨		
15		▨	666.14	
	U4	⁘	Sand, silty, brown	
20		⁘		
	U5	⁘		
25		⁘ ▽		
	U6	⁘		
30		⁘		
	U7	⁘		
35		⁘	646.64	
	U8	☰	Shale, gray	
40		☰		
	U9	☰		
45		☰	637.14	
50				

Elizabeth Floyd
ELIZABETH FLOYD
GEOLOGY
2045
2/26/2024

Contractor: H/ET
Method:
Sampling Method:
Geologist/Engineer:
Project No.:

Groundwater Observations

Date		Depth
1/17/23	▽	26

Remarks:

BME

The stratification lines represent approximate strata boundaries. In situ, the transition may be gradual.
LOGS ARE NOT INTENDED TO BE USED SEPARATELY FROM THE ORIGINAL REPORT.

LOG OF BORING NO. B-2

Project Description: Wise County

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-563-1144

Location: E 2262076.823 N 7066365.235

Surface El.: 680.87 ft. msl
Completion Depth: 45.0 ft.
Date Boring Started: 1/17/2023
Date Boring Completed: 1/17/2023

Depth, feet	Samples	Symbol / USCS	MATERIAL DESCRIPTION	
0	U1 U2 U3	▨	Sand, clayey, dark brown	
15	U4 U5	░	Sand, brown	665.87
24	U6 U7 U8	∘	Sand, silty, tan, with gravel	656.87
26.5		▽		
40	U9	▥	Silt, gray	640.87
45				635.87
50				

Elizabeth Floyd

ELIZABETH FLOYD
GEOLOGY
2045

2/26/2024

Contractor: H/ET

Groundwater Observations	
Date	Depth
1/17/23 ▽	27

Remarks:

BME

The stratification lines represent approximate strata boundaries. In situ, the transition may be gradual.
LOGS ARE NOT INTENDED TO BE USED SEPARATELY FROM THE ORIGINAL REPORT.

LOG OF BORING NO. B-3

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-563-1144

Project Description: **Wise County**

Location: E 2261461.217 N 7065608.929

Surface El.: **684.73 ft. msl**
Completion Depth: 70.0 ft.
Date Boring Started: 1/17/2023
Date Boring Completed: 1/17/2023

Depth, feet	Samples	Symbol / USCS	MATERIAL DESCRIPTION	
0 - 10	U1 U2	▨	Clay, sandy, reddish brown	674.73
10 - 20	U3 U4	∘	Sand, brown, with gravel	664.73
20 - 25	U5	⁝	Sand, silty, gray	659.73
25 - 30	U6	░	Sand, brown	654.73
30 - 37	U7	▧ ▽	Sand, clayey, gray and brown	647.73
37 - 50	U8 U9	☰	Shale, gray	

Depth, feet: 5, 10, 15, 20, 25, 30, 35, 40, 45, 50

STATE OF TEXAS
Elizabeth Floyd
ELIZABETH FLOYD
GEOLOGY
2045
LICENSED
PROFESSIONAL GEOSCIENTIST
2/26/2024

Contractor: H/ET

Groundwater Observations	
Date	Depth
1/17/23 ▽	31

Remarks:

BME

Continued Next Page

The stratification lines represent approximate strata boundaries. In situ, the transition may be gradual.
LOGS ARE NOT INTENDED TO BE USED SEPARATELY FROM THE ORIGINAL REPORT.

LOG OF BORING NO. B-3

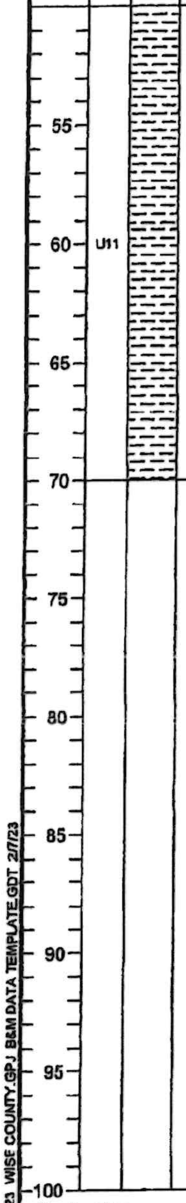
Project Description: Wise County

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-663-1144

Location: **E 2261461.217 N 7065608.929**

Surface El.: **684.73 ft. msl**
Completion Depth: 70.0 ft.
Date Boring Started: 1/17/2023
Date Boring Completed: 1/17/2023

Depth, feet	Samples	Symbol / USCS	MATERIAL DESCRIPTION
			Shale, gray *(continued)*
60	U11		
70			614.73



Contractor: H/ET

Groundwater Observations	
Date	Depth
1/17/23	▽ 31

Remarks:

WISE COUNTY 2023 WISE COUNTY.GPJ B&M DATA TEMPLATE.GDT 2/7/23

The stratification lines represent approximate strata boundaries. In situ, the transition may be gradual.
LOGS ARE NOT INTENDED TO BE USED SEPARATELY FROM THE ORIGINAL REPORT.

LOG OF BORING NO. B-4

Project Description: **Wise County**

Biggs and Mathows Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-563-1144

Location: **E 2260931.798 N 7064788.325**

Surface El.: **684.84 ft. msl**
Completion Depth: 45.0 ft.
Date Boring Started: 1/17/2023
Date Boring Completed: 1/17/2023

Depth, feet	Samples	Symbol / USCS	MATERIAL DESCRIPTION		Hand Penetrometer, tsf
0		▨	Sand, clayey, silty, reddish brown (fill)		
	U1				
5	U2				
10	U3				
15	U4				
20	U5				
25				659.84	
25	U6	⁘	Sand, brown		
30					
32				652.84	
32	U7		Gravel, with clay		
35					
36.5				648.34	
36.5		▧	Shale, clayey, gray		
40	U8				
45				639.84	
50					

Elizabeth Floyd
ELIZABETH FLOYD
GEOLOGY
2045
2/26/2024

Contractor: H/ET
Method:
Sampling Method:
Geologist/Engineer:
Project No.:

Groundwater Observations	
Date	Depth

Remarks:

BME

The stratification lines represent approximate strata boundaries. In situ, the transition may be gradual.
LOGS ARE NOT INTENDED TO BE USED SEPARATELY FROM THE ORIGINAL REPORT.

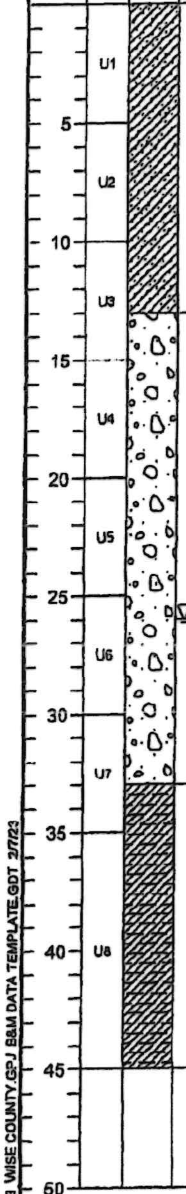
LOG OF BORING NO. B-5

Project Description: **Wise County**

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-563-1144

Location: E 2261969.757 N 7064803.91

Surface El.: **685.00 ft. msl**
Completion Depth: 45.0 ft.
Date Boring Started: 1/18/2023
Date Boring Completed: 1/18/2023



MATERIAL DESCRIPTION	
Clay, sandy, reddish brown	672.00
Sand, tan and gray, with gravel	652.00
Clay, shaley, gray	640.00

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ELIZABETH FLOYD
GEOLOGY
2045
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PROFESSIONAL GEOSCIENTIST

2/26/2024

Contractor: H/ET

Groundwater Observations

Date		Depth
1/18/23	▽	26

Remarks:

BME

The stratification lines represent approximate strata boundaries. In situ, the transition may be gradual.
LOGS ARE NOT INTENDED TO BE USED SEPARATELY FROM THE ORIGINAL REPORT.

LOG OF BORING NO. B-6

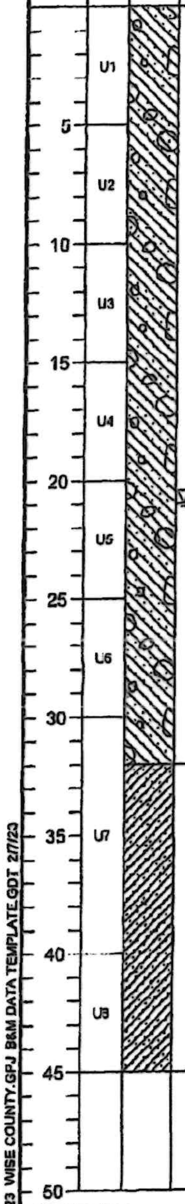
Project Description: Wise County

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-563-1144

Location: E 2263311.985 N 7064568.33

Surface El.: 681.16 ft. msl
Completion Depth: 45.0 ft.
Date Boring Started: 1/18/2023
Date Boring Completed: 1/18/2023

Depth, feet	Samples	Symbol / USCS	MATERIAL DESCRIPTION	
0–32	U1, U2, U3, U4, U5, U6		Sand, clayey, brown and tan, with gravel	649.16
32–45	U7, U8		Clay, sandy, gray	636.16



STATE OF TEXAS
ELIZABETH FLOYD
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2045
LICENSED
PROFESSIONAL GEOSCIENTIST

Elizabeth Floyd
2/26/2024

Contractor: H/ET

Groundwater Observations

Date		Depth
1/18/23	∇	21

Remarks:

The stratification lines represent approximate strata boundaries. In situ, the transition may be gradual.
LOGS ARE NOT INTENDED TO BE USED SEPARATELY FROM THE ORIGINAL REPORT.

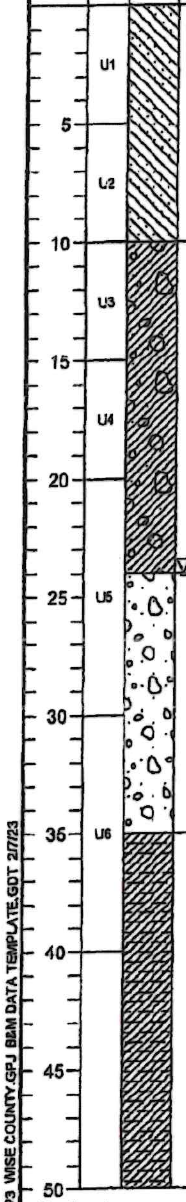
LOG OF BORING NO. B-7

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-563-1144

Project Description: **Wise County**

Location: **E 2261304.619 N 7064282.702**

Surface El.: **682.39 ft. msl**
Completion Depth: 70.0 ft.
Date Boring Started: 1/17/2023
Date Boring Completed: 1/17/2023



Depth, feet	MATERIAL DESCRIPTION	Elevation
0–10	Sand, clayey, brown	672.39
10–24	Clay, sandy, gray, with gravel	658.39
24–35	Sand, brown, with gravel	647.39
35–50	Clay, shaley, gray	

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GEOLOGY
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Elizabeth Floyd

2/26/2024

Contractor: H/ET

Groundwater Observations	
Date	Depth
1/17/23 ▽	24

Remarks:

BME

Continued Next Page

LOG OF BORING NO. B-7

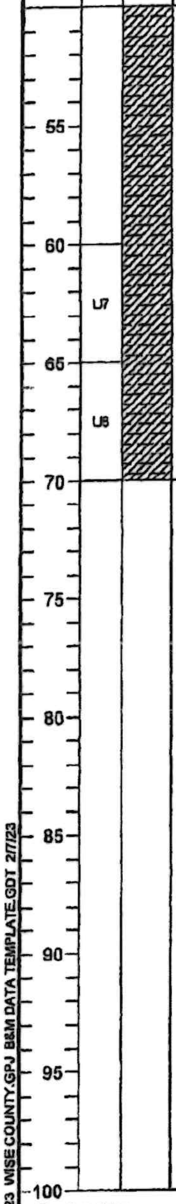
Project Description: Wise County

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-563-1144

Location: E 2261304.619 N 7064282.702

Surface El.: 682.39 ft. msl
Completion Depth: 70.0 ft.
Date Boring Started: 1/17/2023
Date Boring Completed: 1/17/2023

Depth, feet	Samples	Symbol / USCS	MATERIAL DESCRIPTION
		▨	Clay, shaley, gray *(continued)*
70			612.39



Contractor: H/ET

Groundwater Observations

Date		Depth
1/17/23	▽	24

Remarks:

LOG OF BORING NO. B-8

Project Description: **Wise County**

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-6892
Phone: 817-563-1144

Location: **E 2260821.609 N 7063975.084**

Surface El.: **683.47 ft. msl**
Completion Depth: 45.0 ft.
Date Boring Started: 1/18/2023
Date Boring Completed: 1/18/2023

Depth, feet	Samples	Symbol / USCS	MATERIAL DESCRIPTION	Hand Penetrometer, tsf
		▨	Sand, clayey, brown, with gravel (fill)	
	U1			
5				
			676.47	
	U2		Clay, silty, sandy, gray and brown	
10				
	U3			
15				
	U4			
20				
			661.47	
	U5		Sand, brown, with gravel	
25		▽		
	U6			
30				
35				
			647.47	
			Sandstone	
			646.47	
	U7		Clay, sandy, shaley, gray	
40				
	U8			
			638.47	
45				
50				

Elizabeth Floyd
ELIZABETH FLOYD
GEOLOGY
2045
2/26/2024

Contractor: **H/ET**
Method:
Sampling Method:
Geologist/Engineer:
Project No.:

Groundwater Observations

Date		Depth
1/18/23	▽	26

Remarks:

BME

LOG OF BORING NO. B-9

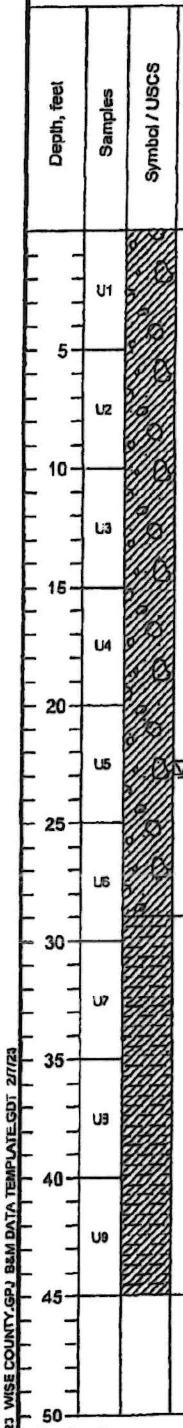
Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-6892
Phone: 817-563-1144

Project Description: **Wise County**

Location: **E 2261989.749 N 7063501.765**

Surface El.: **675.79 ft. msl**
Completion Depth: 45.0 ft.
Date Boring Started: 1/18/2023
Date Boring Completed: 1/18/2023

MATERIAL DESCRIPTION



Clay, sandy, brown, with gravel

646.79

Clay, shaley, gray

630.79

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ELIZABETH FLOYD
GEOLOGY
2045
2/26/2024

Contractor:	H/ET

Groundwater Observations

Date	Depth
1/18/23 ▽	23

Remarks:

BME

WISE COUNTY 2023 WISE COUNTY.GPJ B&M DATA TEMPLATE.GDT 2/7/23

The stratification lines represent approximate strata boundaries. In situ, the transition may be gradual.
LOGS ARE NOT INTENDED TO BE USED SEPARATELY FROM THE ORIGINAL REPORT.

LOG OF BORING NO. B-10

Project Description: **Wise County**

Biggs and Mathews Environmental
1700 Robert Road, Ste 100
Mansfield, Texas 76063-5892
Phone: 817-563-1144

Location: **E 2263272.497 N 7063238.659**

Surface El.: **670.40 ft. msl**
Completion Depth: 45.0 ft.
Date Boring Started: 1/18/2023
Date Boring Completed: 1/18/2023

Depth, feet	Samples	Symbol / USCS	MATERIAL DESCRIPTION	Hand Penetrometer, tsf
		▨	Sand, brown, with gravel (fill)	
	U1			
5				
	U2			
10				
	U3			
		∇		
15				
	U4			
20				
	U5			
			647.40	
		▨	Clay, sandy, gray	
25				
			643.40	
	U6	▨	Clay, shaley, gray	
30				
	U7			
35				
	U8			
40				
	U9			
			625.40	
45				
50				

ELIZABETH FLOYD
GEOLOGY
2045

Elizabeth Floyd
2/26/2024

Contractor: H/ET
Method:
Sampling Method:
Geologist/Engineer:
Project No.:

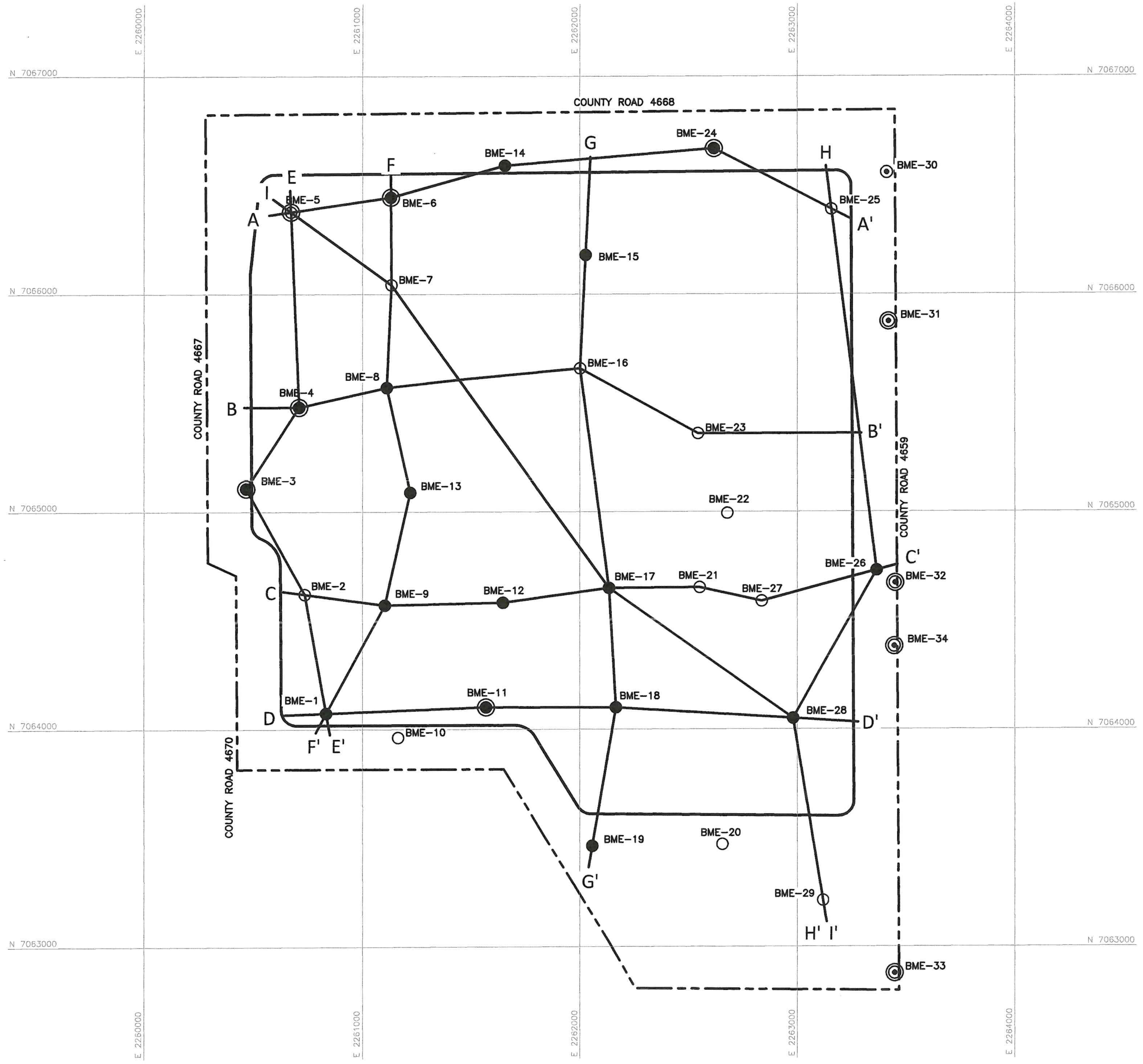
Groundwater Observations	
Date ∇	Depth
1/18/23 ∇	15

Remarks:

BME

APPENDIX E3

SITE GEOLOGIC DATA



0 250 500
SCALE IN FEET

LEGEND

— — —	PERMIT BOUNDARY
———	WASTE MANAGEMENT UNIT
N 7062000	STATE PLANE COORDINATES
BME-2 ○	EXISTING BORING DRILLED TO 5 FT BELOW EDE
BME-1 ●	EXISTING BORING DRILLED TO 30 FT BELOW EDE
BME-30 ◉	ADDITIONAL BORING
○	PIEZOMETER LOCATION

NOTE(S):

1. PERMIT BOUNDARY INFORMATION FROM SURVEYING AND MAPPING, LLC.

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2045

9/23/2025

FOR PERMITTING PURPOSES

REVISIONS

REV	DATE	DESCRIPTION	DWN BY

CROSS SECTION LOCATION MAP

CHISHOLM TRAIL DISPOSAL, LLC
CHISHOLM TRAIL DISPOSAL LANDFILL

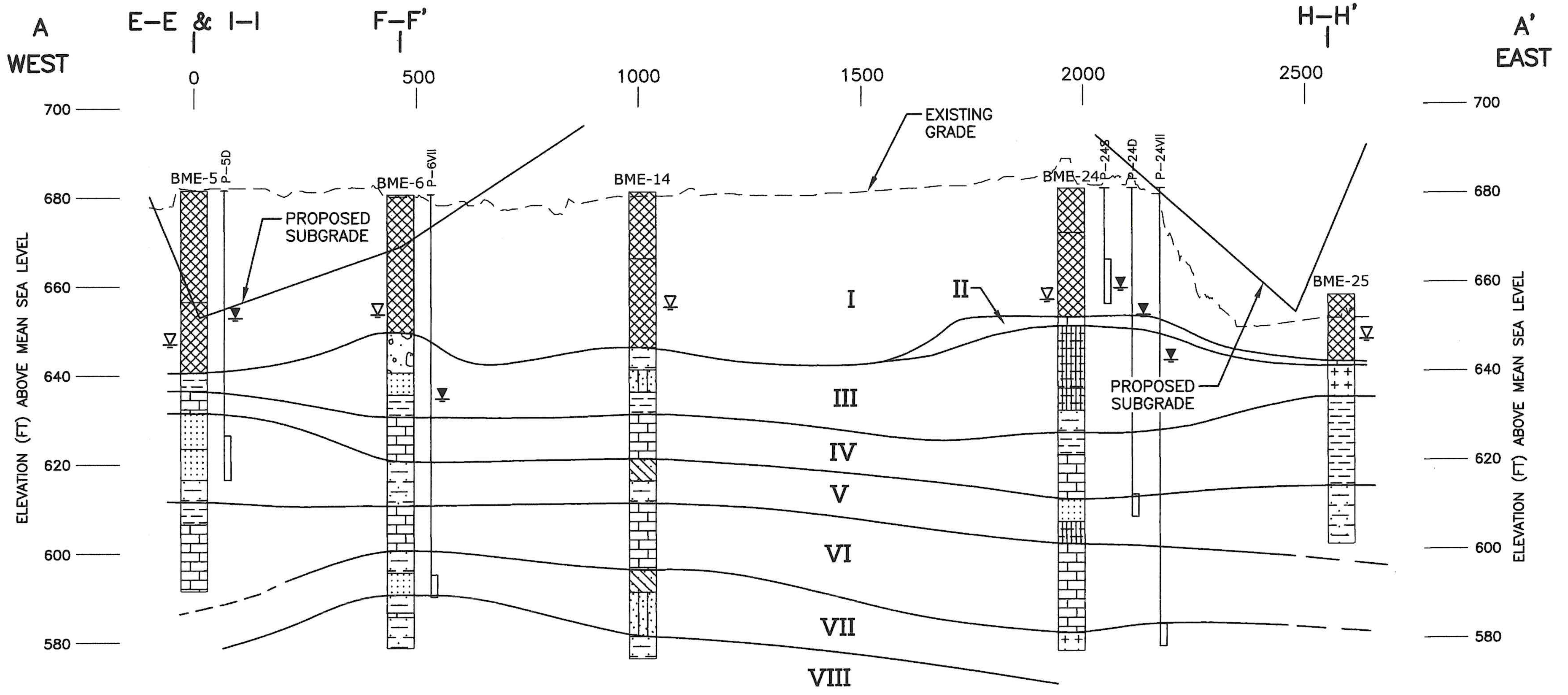
BME

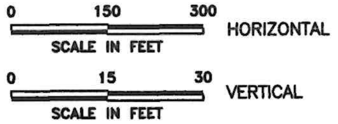
BIGGS & MATHEWS ENVIRONMENTAL
1700 ROBERT ROAD, STE. 100
MANSFIELD, TEXAS 76063
817-563-1144

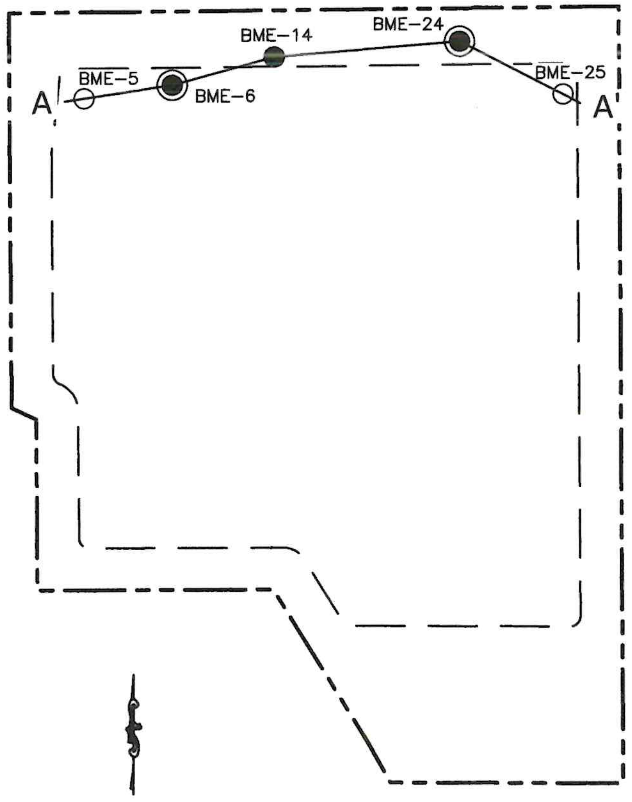
TBPE FIRM NO. F-256
TBPG FIRM NO. 50222

DRAWING
E3.1

O:\Green Group\Wise County\Solid Waste\Type IV\P\Drawings\ATT E\E3.1_CrossSectionLocationMap.dwg Layout: LAYOUT 1 User: awhite







KEY MAP

LEGEND

PIEZOMETER SCREENED INTERVAL

▽ GROUNDWATER ELEVATION OBSERVED DURING DRILLING

▼ GROUNDWATER ELEVATION ON 9-11-24

▩ FILL

▥ CLAY W/SILT

▦ LIMESTONE

▧ SAND W/CLAY

SAND W/GRAVEL

SAND W/SILT

SANDSTONE

▤ SHALE

SHALE W/SAND

SHALE W/SILT

SILTSTONE

NOTES:

1. CROSS SECTION CORRELATIONS ARE INTERPOLATED BETWEEN BORINGS. ACTUAL CONDITIONS MAY VARY FROM THOSE ILLUSTRATED.
2. CROSS-SECTION LOCATION MAP IS DRAWING E3.1.

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GEOLOGY
2045

9/23/2025

FOR PERMITTING PURPOSES

REVISIONS			
REV	DATE	DESCRIPTION	DWN BY

GEOLOGIC CROSS SECTION A – A'

CHISHOLM TRAIL DISPOSAL, LLC
CHISHOLM TRAIL DISPOSAL LANDFILL

BME
BIGGS & MATHEWS ENVIRONMENTAL
1700 ROBERT ROAD, STE. 100
MANSFIELD, TEXAS 76063
817-563-1144

TBPE FIRM NO. F-256
TBPG FIRM NO. 50222

DRAWING
E3.2

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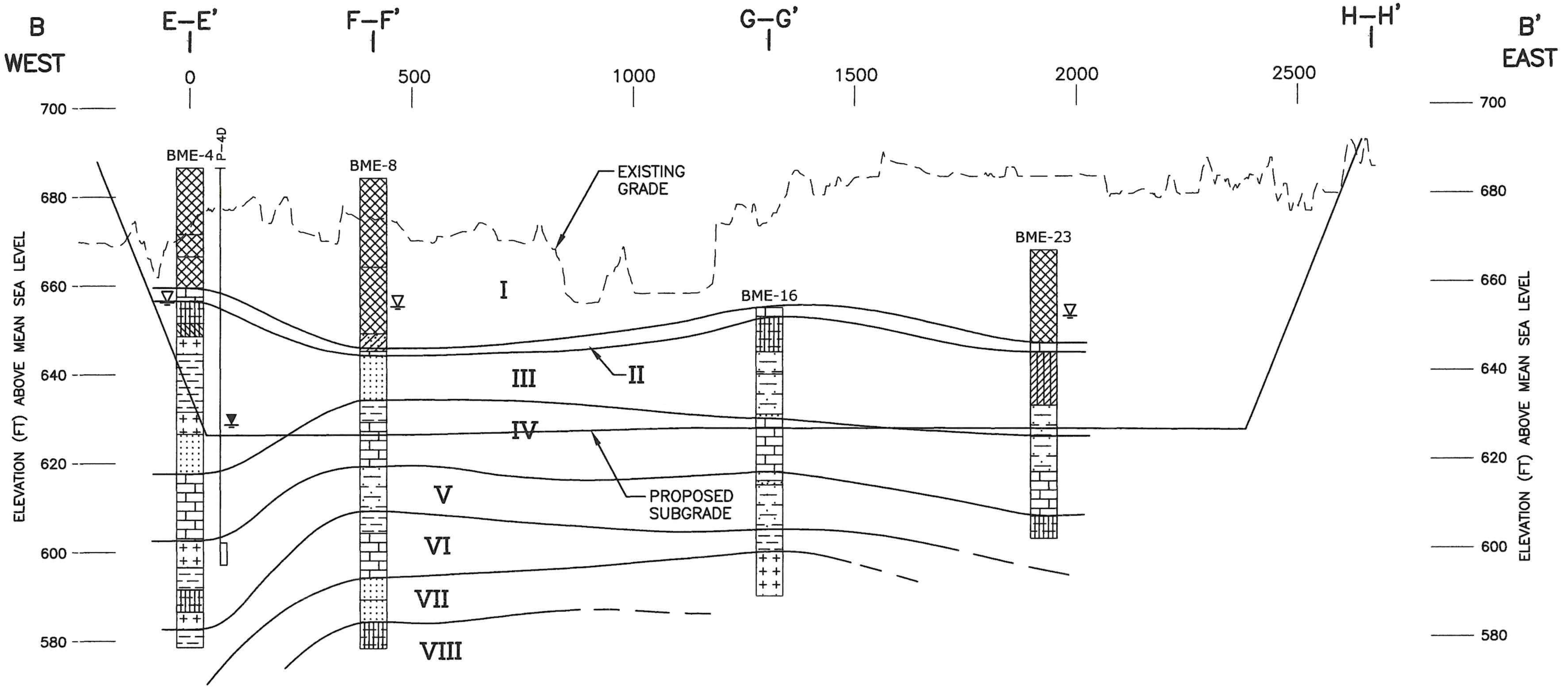
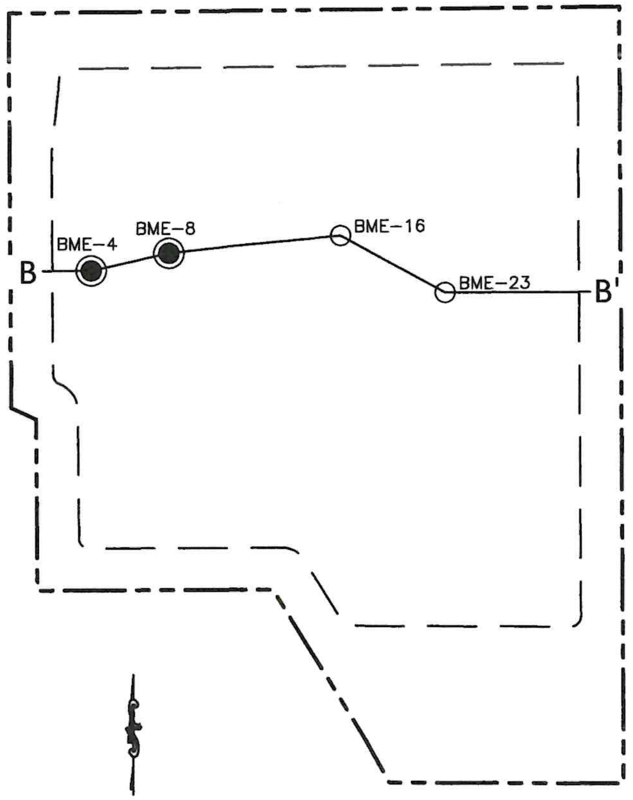


0 150 300
SCALE IN FEET
HORIZONTAL

0 15 30
SCALE IN FEET
VERTICAL

NOTES:

1. CROSS SECTION CORRELATIONS ARE INTERPOLATED BETWEEN BORINGS. ACTUAL CONDITIONS MAY VARY FROM THOSE ILLUSTRATED.
2. CROSS–SECTION LOCATION MAP IS DRAWING E3.1.



KEY MAP

LEGEND

PIEZOMETER SCREENED INTERVAL

▽ GROUNDWATER ELEVATION OBSERVED DURING DRILLING

▼ GROUNDWATER ELEVATION ON 9–11–24

▩ FILL
▨ CLAY W/SAND
▥ CLAY W/SILT
▦ LIMESTONE
░ SAND
⁘ SANDSTONE
☰ SHALE
☷ SHALE W/SAND
▦ SHALE W/SILT
++ SILTSTONE
▧ SILT W/CLAY

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2045

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REVISIONS

REV	DATE	DESCRIPTION	DWN BY

GEOLOGIC CROSS SECTION B – B'

CHISHOLM TRAIL DISPOSAL, LLC
CHISHOLM TRAIL DISPOSAL LANDFILL

BME

BIGGS & MATHEWS ENVIRONMENTAL
1700 ROBERT ROAD, STE. 100
MANSFIELD, TEXAS 76063
817–563–1144

TBPE FIRM NO. F–256
TBPG FIRM NO. 50222

DRAWING
E3.3

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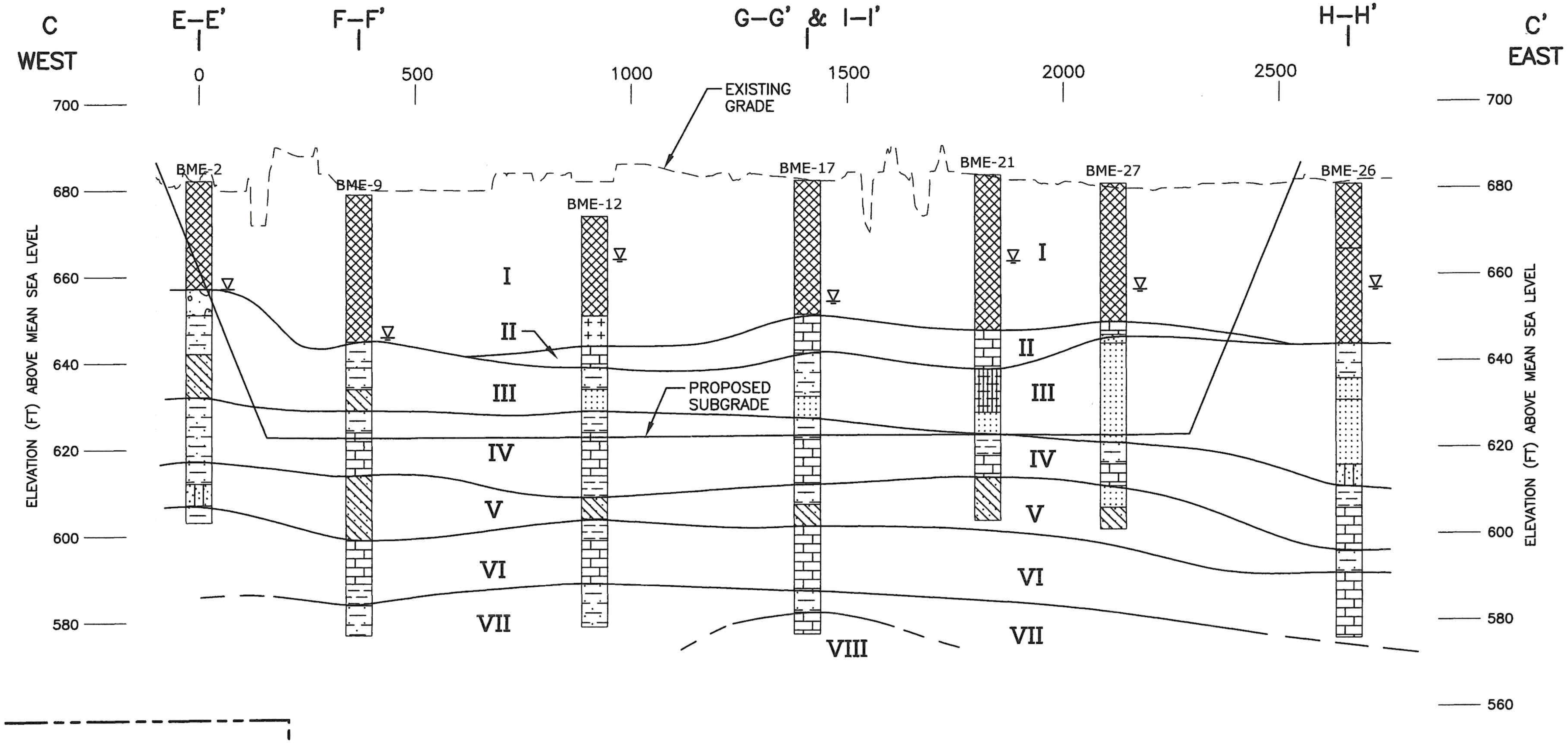

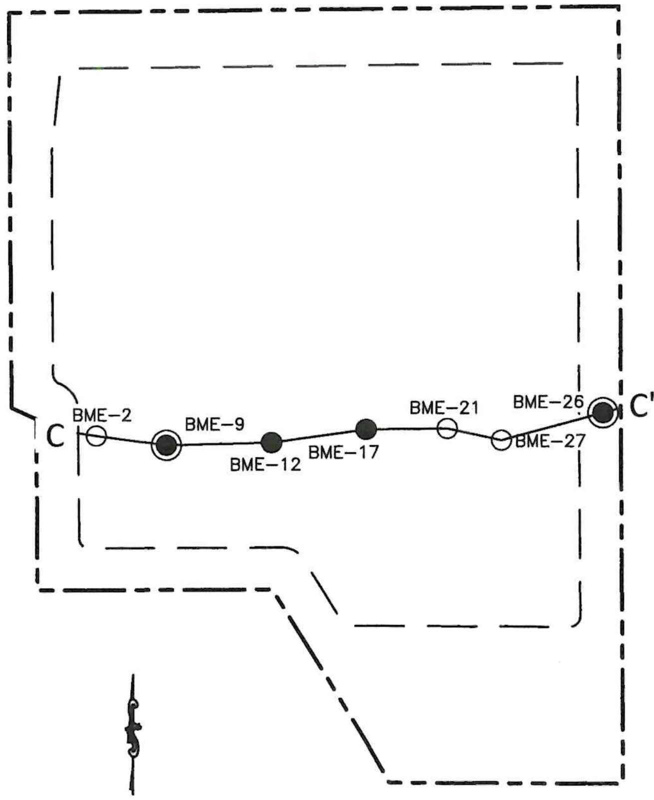

KEY MAP

0 150 300
SCALE IN FEET
HORIZONTAL

0 15 30
SCALE IN FEET
VERTICAL

LEGEND

▨	FILL
▦	LIMESTONE
░	SAND
▧	SAND W/CLAY
⁘	SAND W/GRAVEL
⁝	SAND W/SILT
░	SANDSTONE
☰	SHALE
☰	SHALE W/SAND
▥	SHALE W/SILT
+ +	SILTSTONE
∇	GROUNDWATER ELEVATION OBSERVED DURING DRILLING

NOTES:

1. CROSS SECTION CORRELATIONS ARE INTERPOLATED BETWEEN BORINGS. ACTUAL CONDITIONS MAY VARY FROM THOSE ILLUSTRATED.
2. CROSS–SECTION LOCATION MAP IS DRAWING E3.1.

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REVISIONS

REV	DATE	DESCRIPTION	DWN BY

GEOLOGIC CROSS SECTION C – C'

CHISHOLM TRAIL DISPOSAL, LLC
CHISHOLM TRAIL DISPOSAL LANDFILL

BME
BIGGS & MATHEWS ENVIRONMENTAL
1700 ROBERT ROAD, STE. 100
MANSFIELD, TEXAS 76063
817–563–1144

TBPE FIRM NO. F–256
TBPG FIRM NO. 50222

DRAWING
E3.4

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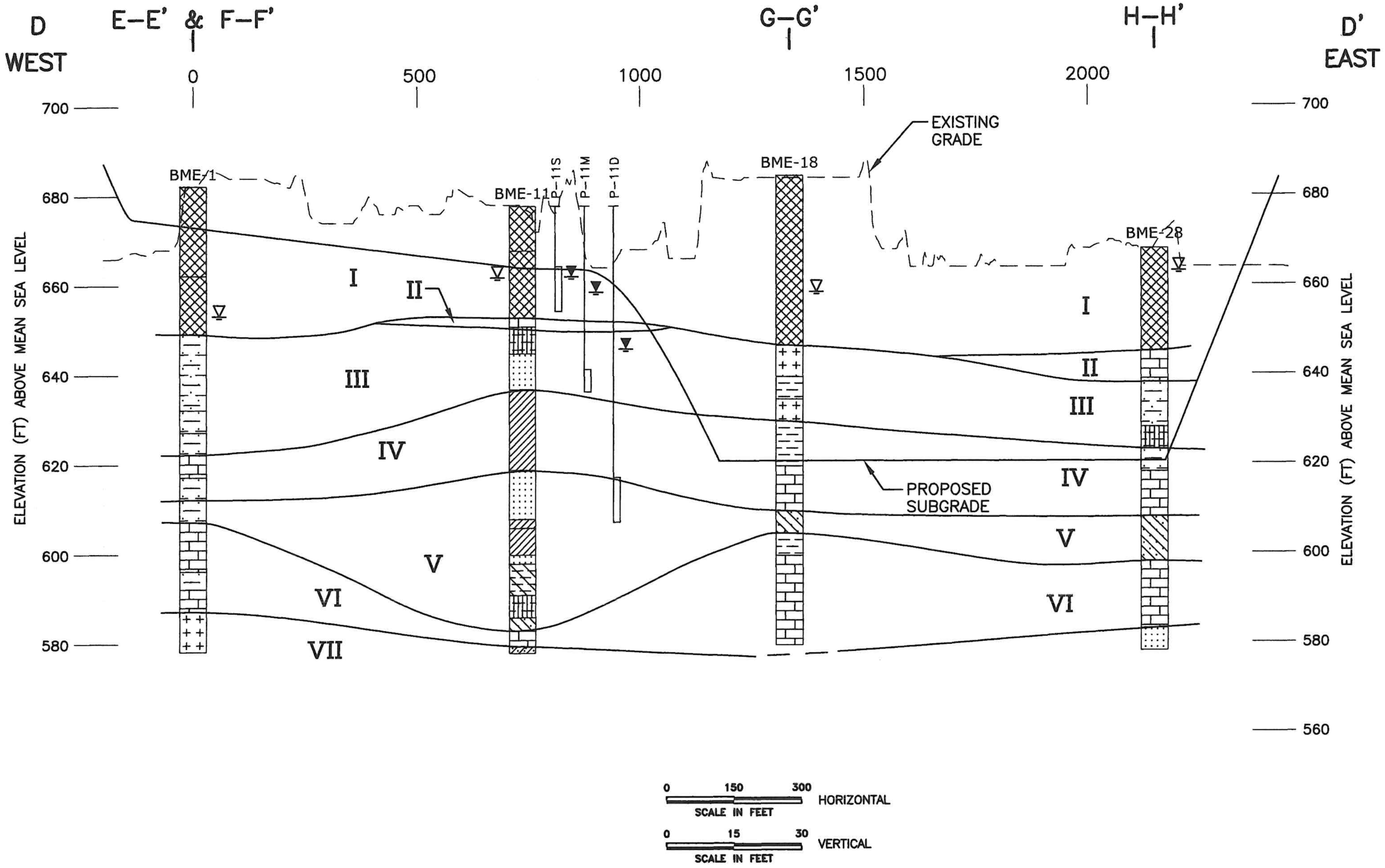

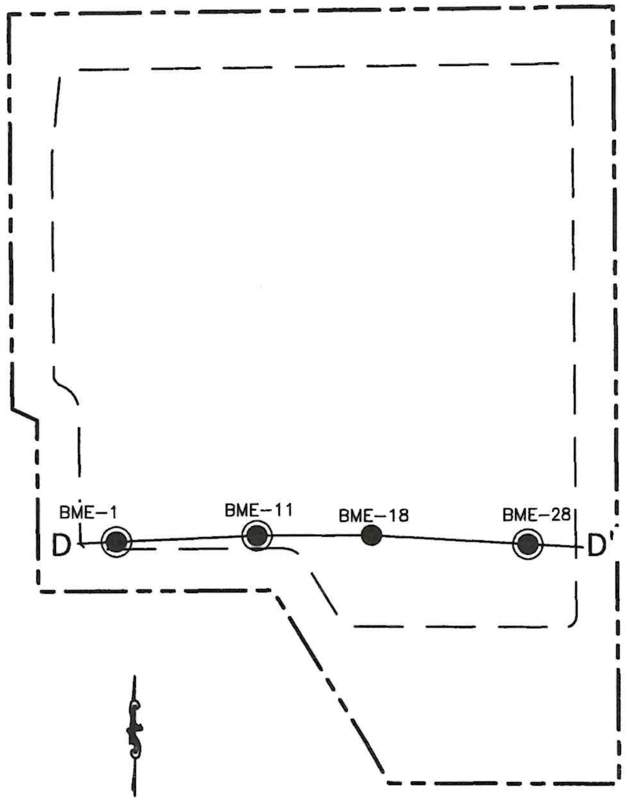

KEY MAP

NOTES:

1. CROSS SECTION CORRELATIONS ARE INTERPOLATED BETWEEN BORINGS. ACTUAL CONDITIONS MAY VARY FROM THOSE ILLUSTRATED.
2. CROSS-SECTION LOCATION MAP IS DRAWING E3.1.

LEGEND

▯ PIEZOMETER SCREENED INTERVAL	▩ FILL	▦ SAND W/SILT	▤ SHALE W/SAND
▽ GROUNDWATER ELEVATION OBSERVED DURING DRILLING	▨ CLAY (CL)	▦ SANDSTONE	▦ SHALE W/SILT
▼ GROUNDWATER ELEVATION ON 9-11-24	▨ CLAY W/SAND	▦ SANDSTONE W/SILT	++ SILTSTONE
	▦ LIMESTONE	▤ SHALE	
	▧ SAND W/CLAY	▧ SHALE W/CLAY	

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2045
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7/23/2025

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REVISIONS

REV	DATE	DESCRIPTION	DWN BY

GEOLOGIC CROSS SECTION D – D'

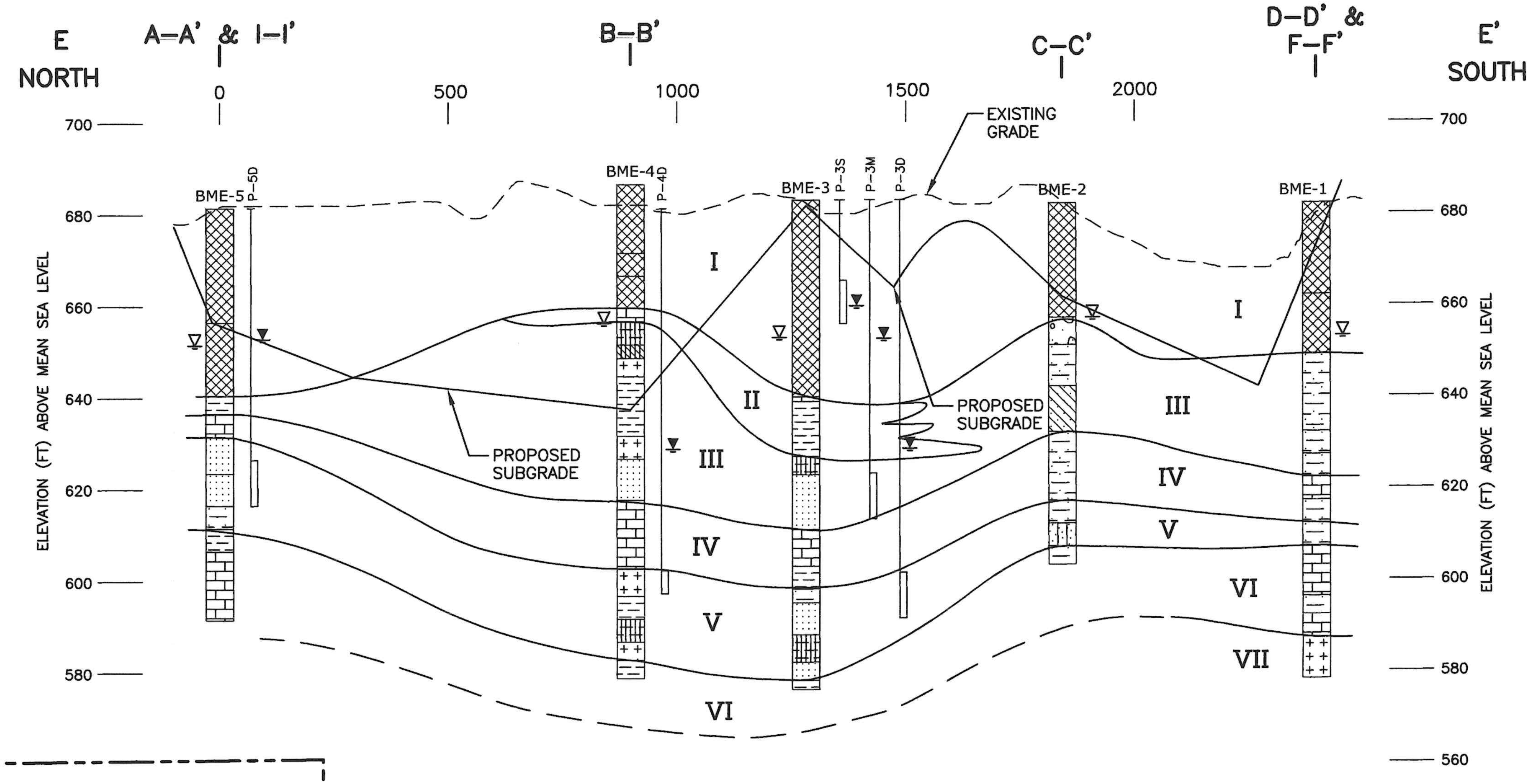
CHISHOLM TRAIL DISPOSAL, LLC
CHISHOLM TRAIL DISPOSAL LANDFILL

BME
BIGGS & MATHEWS ENVIRONMENTAL
1700 ROBERT ROAD, STE. 100
MANSFIELD, TEXAS 76063
817-563-1144

TBPE FIRM NO. F-256
TBPG FIRM NO. 50222

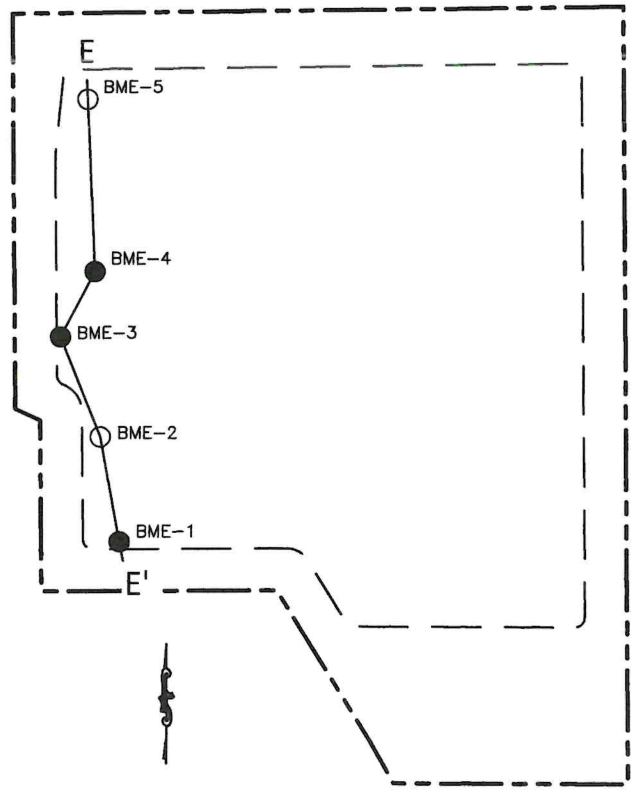
DRAWING
E3.5

O:\Green Group\Wise County\Solid Waste\Type IV\P\Drawings\ATT E\E3.2thru10-GeologicCrossSections.dwg Layout: XSEC D User: awhite



0 150 300 HORIZONTAL
SCALE IN FEET

0 15 30 VERTICAL
SCALE IN FEET



KEY MAP

LEGEND

PIEZOMETER SCREENED INTERVAL

▽ GROUNDWATER ELEVATION OBSERVED DURING DRILLING

▼ GROUNDWATER ELEVATION ON 9-11-24

FILL

LIMESTONE

SAND W/CLAY

SAND W/GRAVEL

SAND W/SILT

SANDSTONE

SHALE

SHALE W/SAND

SHALE W/SILT

SILT W/CLAY

SILTSTONE

NOTES:

1. CROSS SECTION CORRELATIONS ARE INTERPOLATED BETWEEN BORINGS. ACTUAL CONDITIONS MAY VARY FROM THOSE ILLUSTRATED.
2. CROSS-SECTION LOCATION MAP IS DRAWING E3.1.

Elizabeth Floyd
GEOLOGY
2045

Elizabeth Floyd

9/23/2025

FOR PERMITTING PURPOSES

REVISIONS

REV	DATE	DESCRIPTION	DWN BY

GEOLOGIC CROSS SECTION E – E'

CHISHOLM TRAIL DISPOSAL, LLC
CHISHOLM TRAIL DISPOSAL LANDFILL

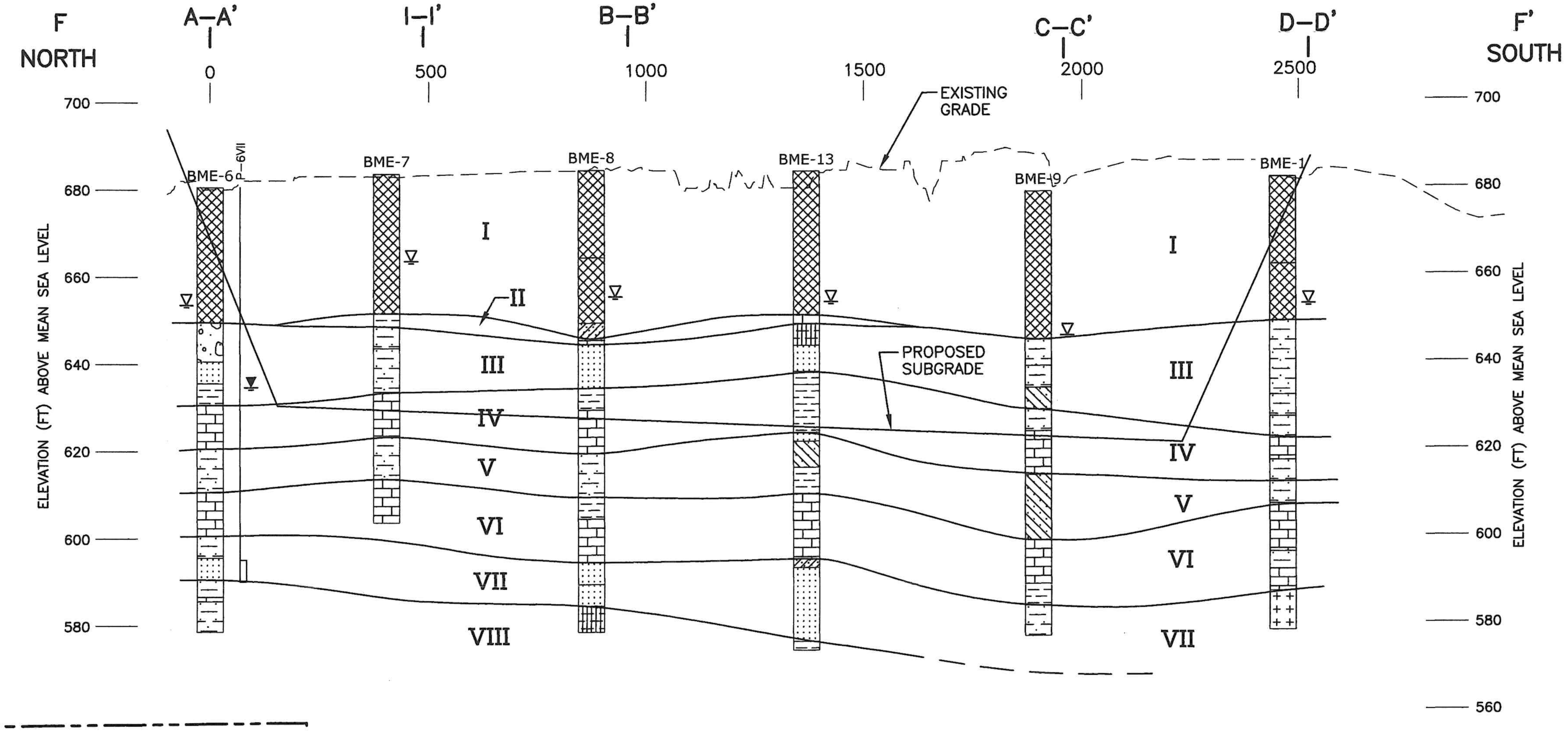
BME

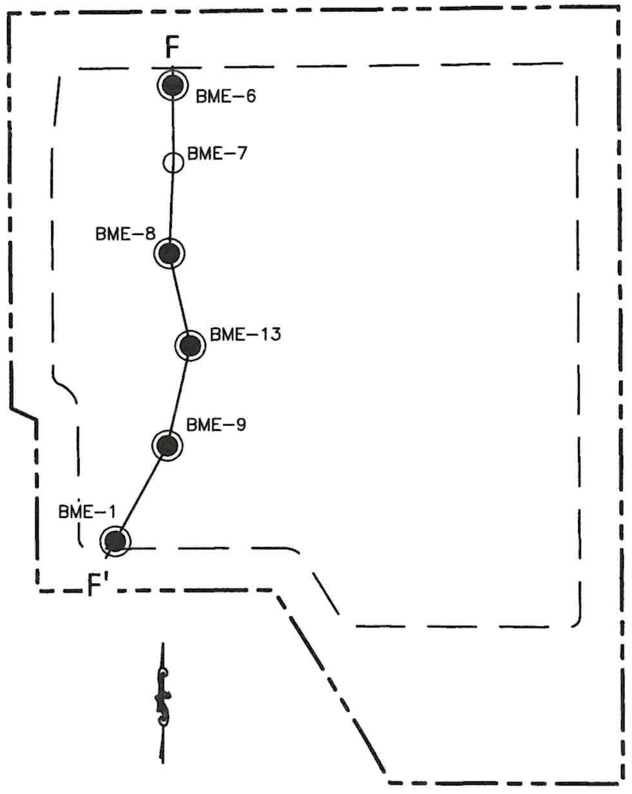
BIGGS & MATHEWS ENVIRONMENTAL
1700 ROBERT ROAD, STE. 100
MANSFIELD, TEXAS 76063
817-563-1144

TBPE FIRM NO. F-256
TBPG FIRM NO. 50222

DRAWING
E3.6

O:\Green Group\Wise County\Solid Waste\Type IV\P\Drawings\ATT E\E3.2thru10-GeologicCrossSections.dwg Layout: XSEC E User: awhite





KEY MAP

0 150 300
SCALE IN FEET
HORIZONTAL

0 15 30
SCALE IN FEET
VERTICAL

NOTES:

1. CROSS SECTION CORRELATIONS ARE INTERPOLATED BETWEEN BORINGS. ACTUAL CONDITIONS MAY VARY FROM THOSE ILLUSTRATED.
2. CROSS-SECTION LOCATION MAP IS DRAWING E3.1.

LEGEND

PIEZOMETER SCREENED INTERVAL
▽ GROUNDWATER ELEVATION OBSERVED DURING DRILLING
▼ GROUNDWATER ELEVATION ON 9-11-24

▩ FILL
▨ CLAY W/SAND
▦ LIMESTONE
▧ SAND W/CLAY

SAND W/GRAVEL
SANDSTONE
▤ SHALE
SHALE W/SAND

▥ SHALE W/SILT
SILTSTONE

STATE OF TEXAS
Elizabeth Floyd
GEOLOGY
2045
LICENSED
PROFESSIONAL GEOSCIENTIST

Elizabeth Floyd
9/23/2025

FOR PERMITTING PURPOSES

REVISIONS			
REV	DATE	DESCRIPTION	DWN BY

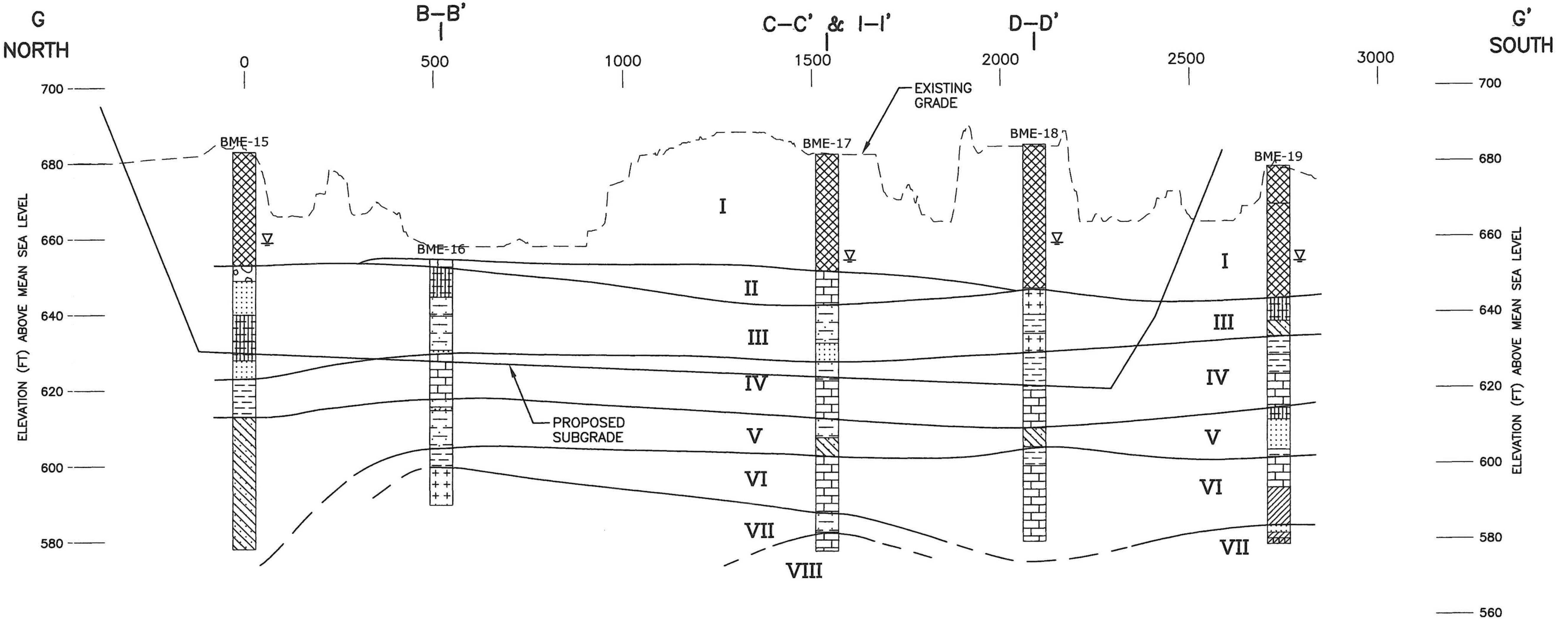
GEOLOGIC CROSS SECTION F – F'

CHISHOLM TRAIL DISPOSAL, LLC
CHISHOLM TRAIL DISPOSAL LANDFILL

BME
BIGGS & MATHEWS ENVIRONMENTAL
1700 ROBERT ROAD, STE. 100
MANSFIELD, TEXAS 76063
817-563-1144

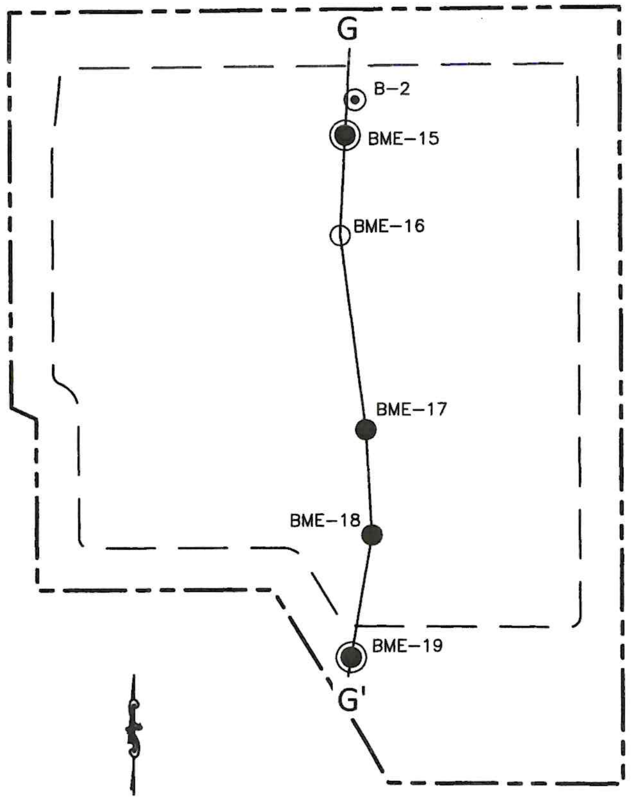
TBPE FIRM NO. F-256
TBPG FIRM NO. 50222

DRAWING
E3.7



0 150 300 SCALE IN FEET HORIZONTAL

0 15 30 SCALE IN FEET VERTICAL



KEY MAP

LEGEND

▩ FILL
▨ CLAY (CL)
▥ CLAY W/SILT
▨ GRAVEL
▦ LIMESTONE
▨ SAND
▨ SAND W/CLAY
▨ SANDSTONE
▤ SHALE
▤ SHALE W/SAND
▥ SHALE W/SILT
▨ SILTSTONE
∇ GROUNDWATER ELEVATION OBSERVED DURING DRILLING

NOTES:

1. CROSS SECTION CORRELATIONS ARE INTERPOLATED BETWEEN BORINGS. ACTUAL CONDITIONS MAY VARY FROM THOSE ILLUSTRATED.
2. CROSS-SECTION LOCATION MAP IS DRAWING E3.1.

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GEOLOGY
2045

Elizabeth Floyd

9/23/2025

FOR PERMITTING PURPOSES

REVISIONS

REV	DATE	DESCRIPTION	DWN BY

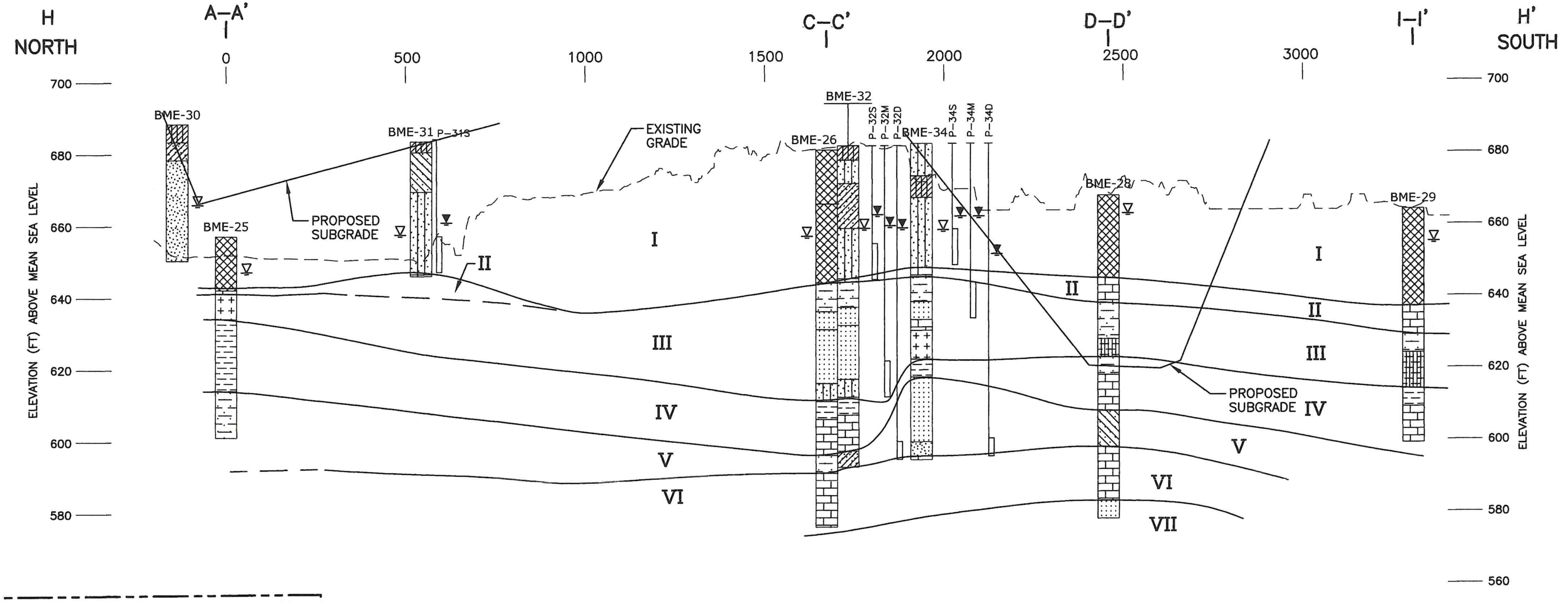
GEOLOGIC CROSS SECTION G – G'

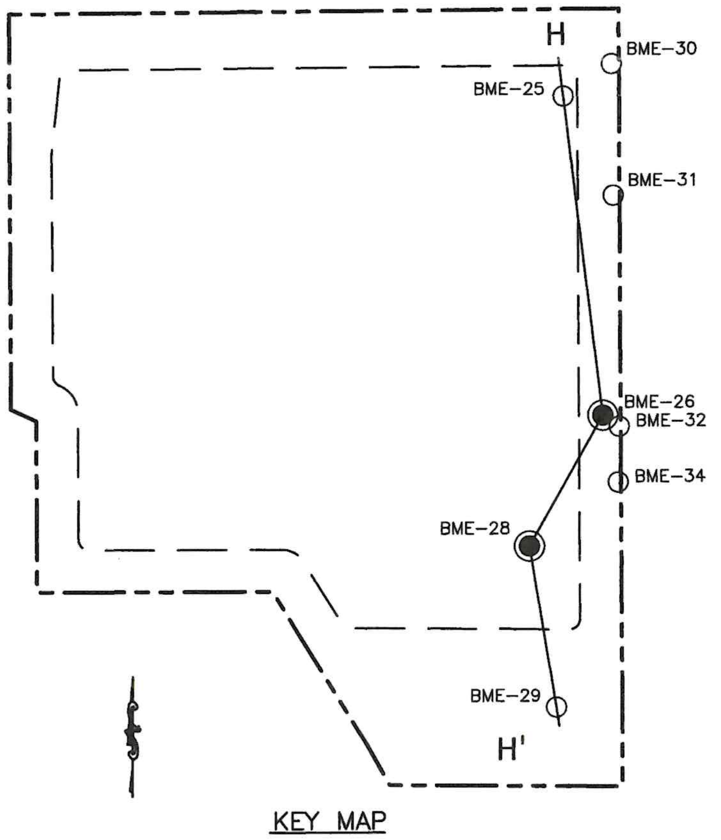
CHISHOLM TRAIL DISPOSAL, LLC
CHISHOLM TRAIL DISPOSAL LANDFILL

BME
BIGGS & MATHEWS ENVIRONMENTAL
1700 ROBERT ROAD, STE. 100
MANSFIELD, TEXAS 76063
817-563-1144

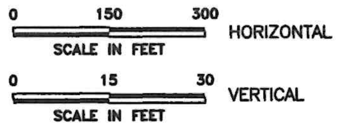
TBPE FIRM NO. F-256
TBPG FIRM NO. 50222

DRAWING
E3.8





KEY MAP



NOTES:

1. CROSS SECTION CORRELATIONS ARE INTERPOLATED BETWEEN BORINGS. ACTUAL CONDITIONS MAY VARY FROM THOSE ILLUSTRATED.
2. CROSS-SECTION LOCATION MAP IS DRAWING E3.1.

LEGEND

PIEZOMETER SCREENED INTERVAL

▽ GROUNDWATER ELEVATION OBSERVED DURING DRILLING

▼ GROUNDWATER ELEVATION ON 9-11-24

▩ FILL	▒ SAND	▦ SANDSTONE W/SILT
▨ CLAY W/SAND	▧ SAND W/CLAY	▤ SHALE
▥ CLAY W/SILT	▥ SAND W/SILT	▤ SHALE W/SAND
▦ LIMESTONE	▒ SANDSTONE	⊞ SILTSTONE

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REV	DATE	DESCRIPTION	DWN BY

GEOLOGIC CROSS SECTION H – H'

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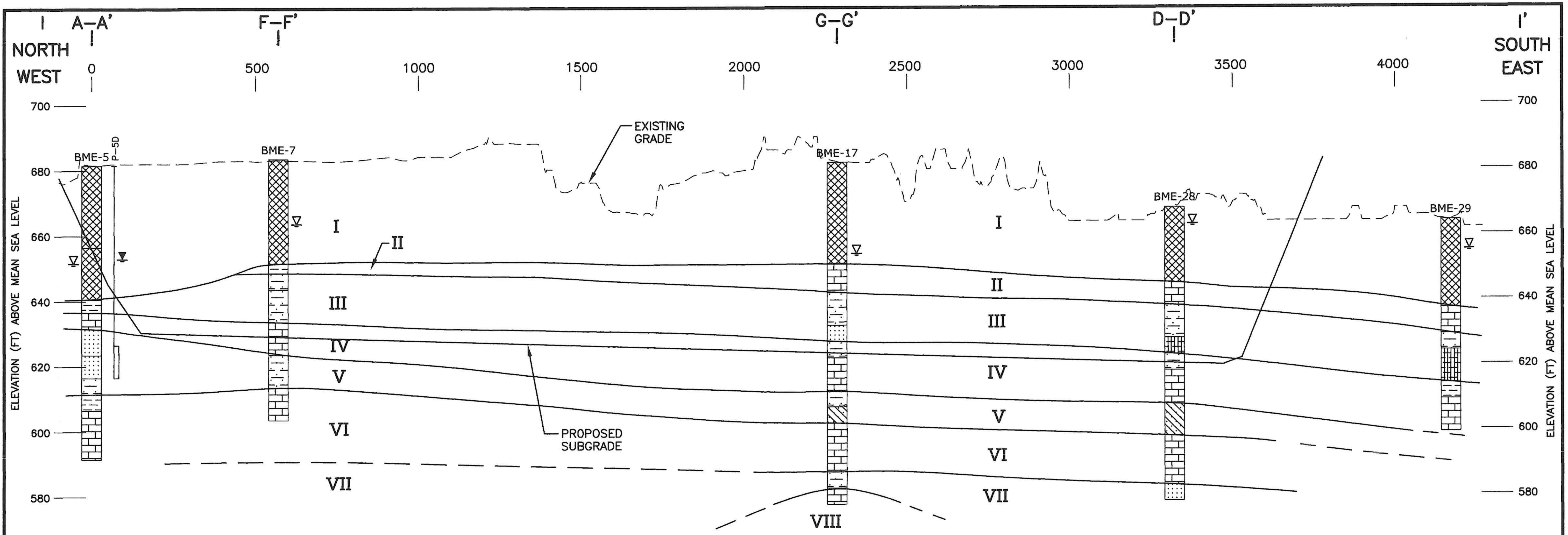
MANSFIELD, TEXAS 76063
817-563-1144

TBPE FIRM NO. F-256
TBPG FIRM NO. 50222

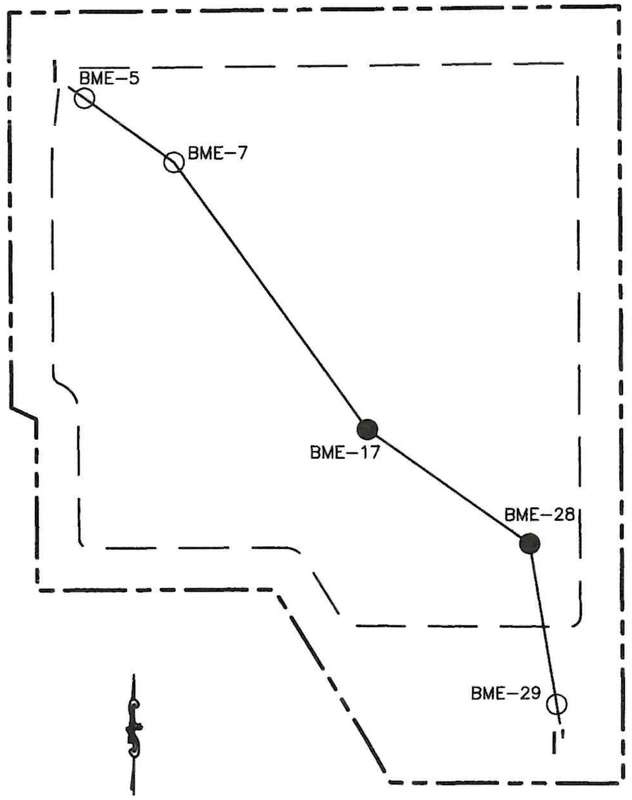
DRAWING
E3.9

O:\Green Group\Wise County\Solid Waste\Type IV\P\Drawings\ATT E\E3.2thru10-GeologicCrossSections.dwg Layout: XSEC H User: awhite



0 150 300 HORIZONTAL
SCALE IN FEET

0 15 30 VERTICAL
SCALE IN FEET



KEY MAP

LEGEND

PIEZOMETER SCREENED INTERVAL

▽ GROUNDWATER ELEVATION OBSERVED DURING DRILLING

▼ GROUNDWATER ELEVATION ON 9-11-24

FILL

LIMESTONE

SAND W/CLAY

SAND W/SILT

SANDSTONE

SANDSTONE W/SILT

SHALE

SHALE W/SAND

NOTES:

1. CROSS SECTION CORRELATIONS ARE INTERPOLATED BETWEEN BORINGS. ACTUAL CONDITIONS MAY VARY FROM THOSE ILLUSTRATED.
2. CROSS-SECTION LOCATION MAP IS DRAWING E3.1.

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REV	DATE	DESCRIPTION	DWN BY

GEOLOGIC CROSS SECTION I – I'

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TBPG FIRM NO. 50222

DRAWING
E3.10

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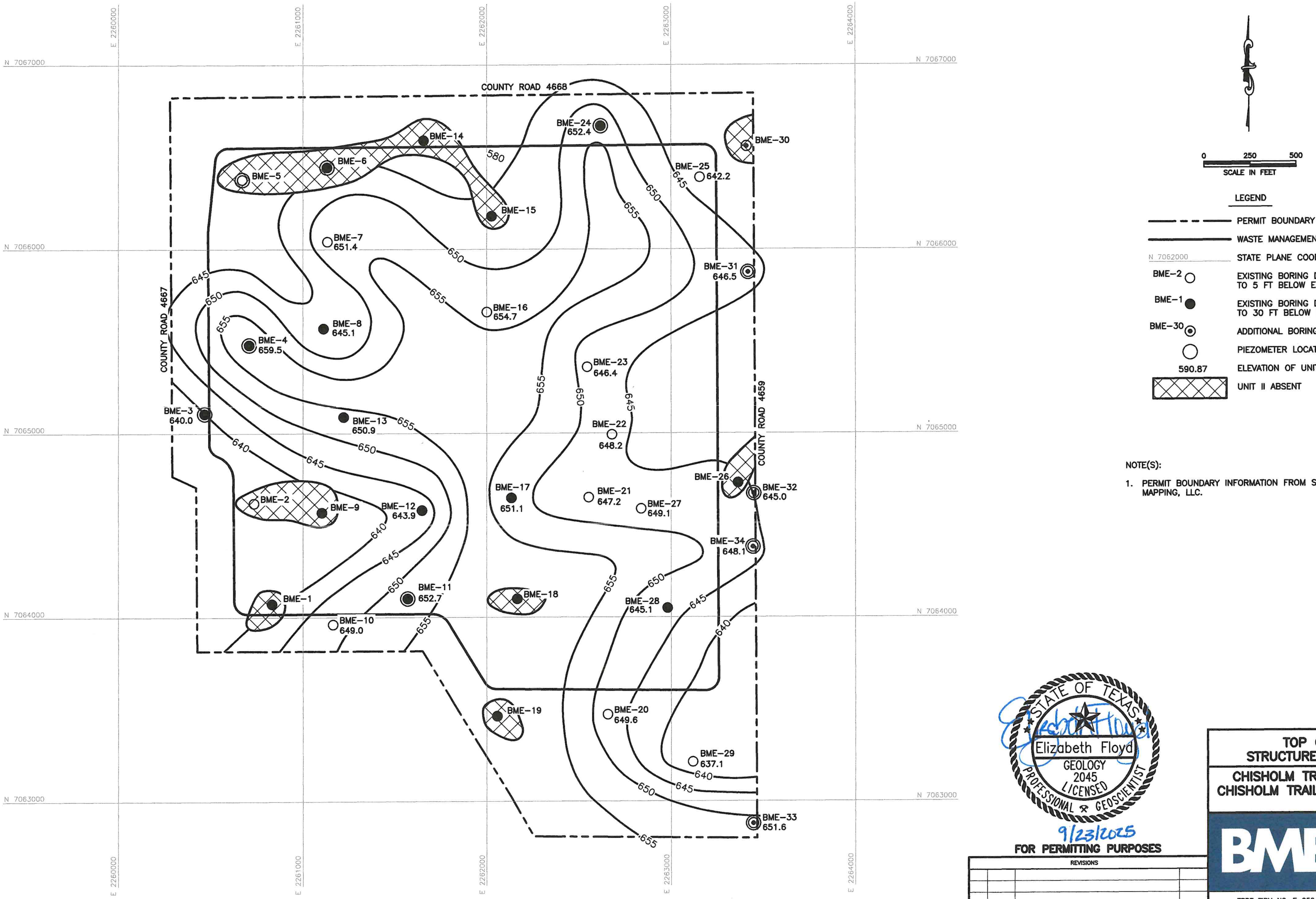

LEGEND

— — - — —	PERMIT BOUNDARY
———	WASTE MANAGEMENT UNIT
N 7062000	STATE PLANE COORDINATES
BME-2 ○	EXISTING BORING DRILLED TO 5 FT BELOW EDE
BME-1 ●	EXISTING BORING DRILLED TO 30 FT BELOW EDE
BME-30 ◎	ADDITIONAL BORING
○	PIEZOMETER LOCATION
590.87	ELEVATION OF UNIT II (FT-MSL)
▨	UNIT II ABSENT

NOTE(S):

1. PERMIT BOUNDARY INFORMATION FROM SURVEYING AND MAPPING, LLC.

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REV	DATE	DESCRIPTION	DWN BY

TOP OF UNIT II STRUCTURE CONTOUR MAP

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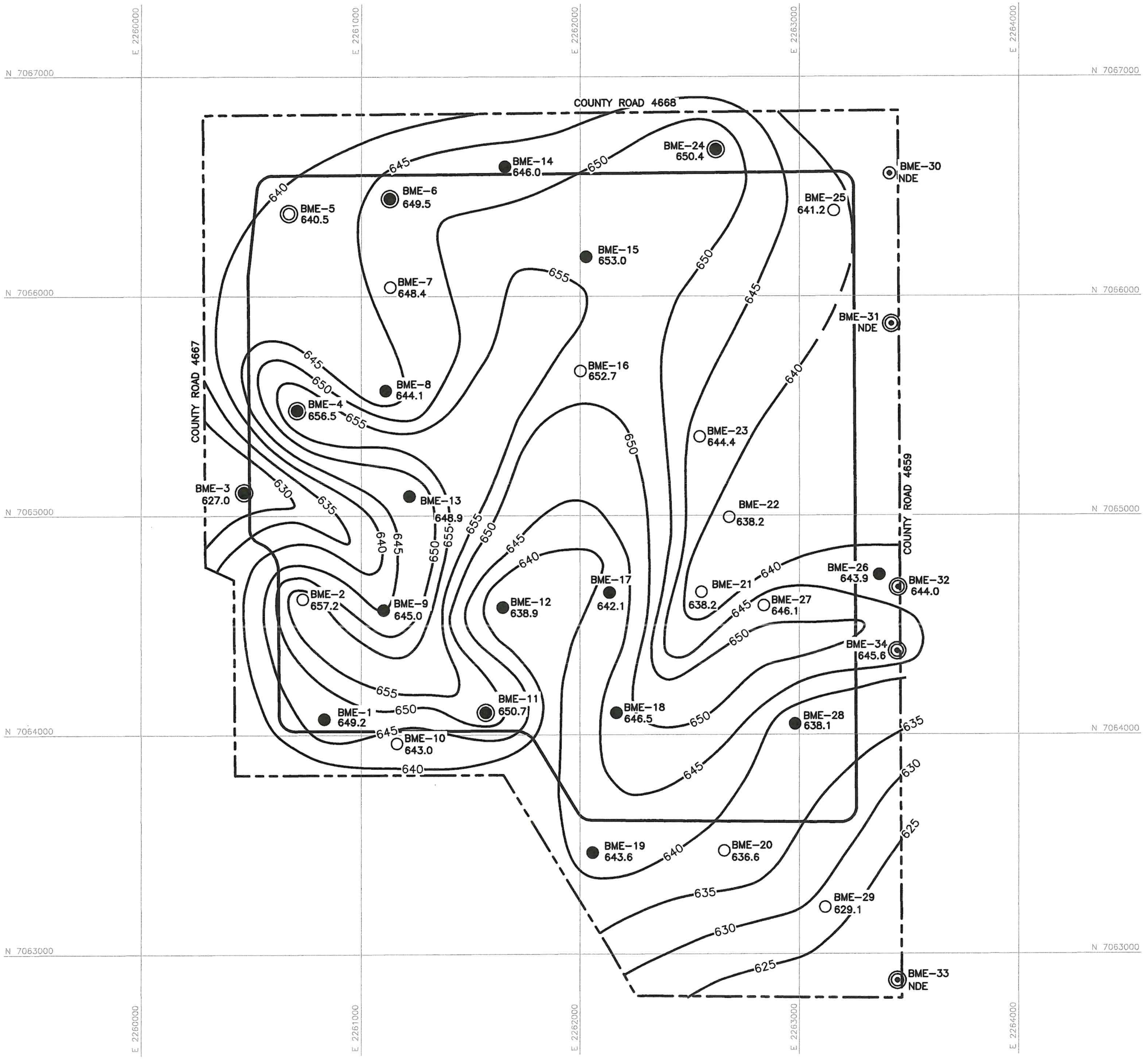
MANSFIELD, TEXAS 76063
817-563-1144

TBPE FIRM NO. F-256
TBPG FIRM NO. 50222

DRAWING
E3.11



0 250 500
SCALE IN FEET

LEGEND

— — — —	PERMIT BOUNDARY
———	WASTE MANAGEMENT UNIT
N 7062000	STATE PLANE COORDINATES
BME-2 ○	EXISTING BORING DRILLED TO 5 FT BELOW EDE
BME-1 ●	EXISTING BORING DRILLED TO 30 FT BELOW EDE
BME-30 ◉	ADDITIONAL BORING
P-3S ○	PIEZOMETER LOCATION
638.9	ELEVATION OF UNIT III (FT-MSL)
NDE	BORING WAS NOT DRILLED DEEP ENOUGH

NOTE(S):

1. PERMIT BOUNDARY INFORMATION FROM SURVEYING AND MAPPING, LLC.

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REV	DATE	DESCRIPTION	DWN BY

TOP OF UNIT III STRUCTURE CONTOUR MAP

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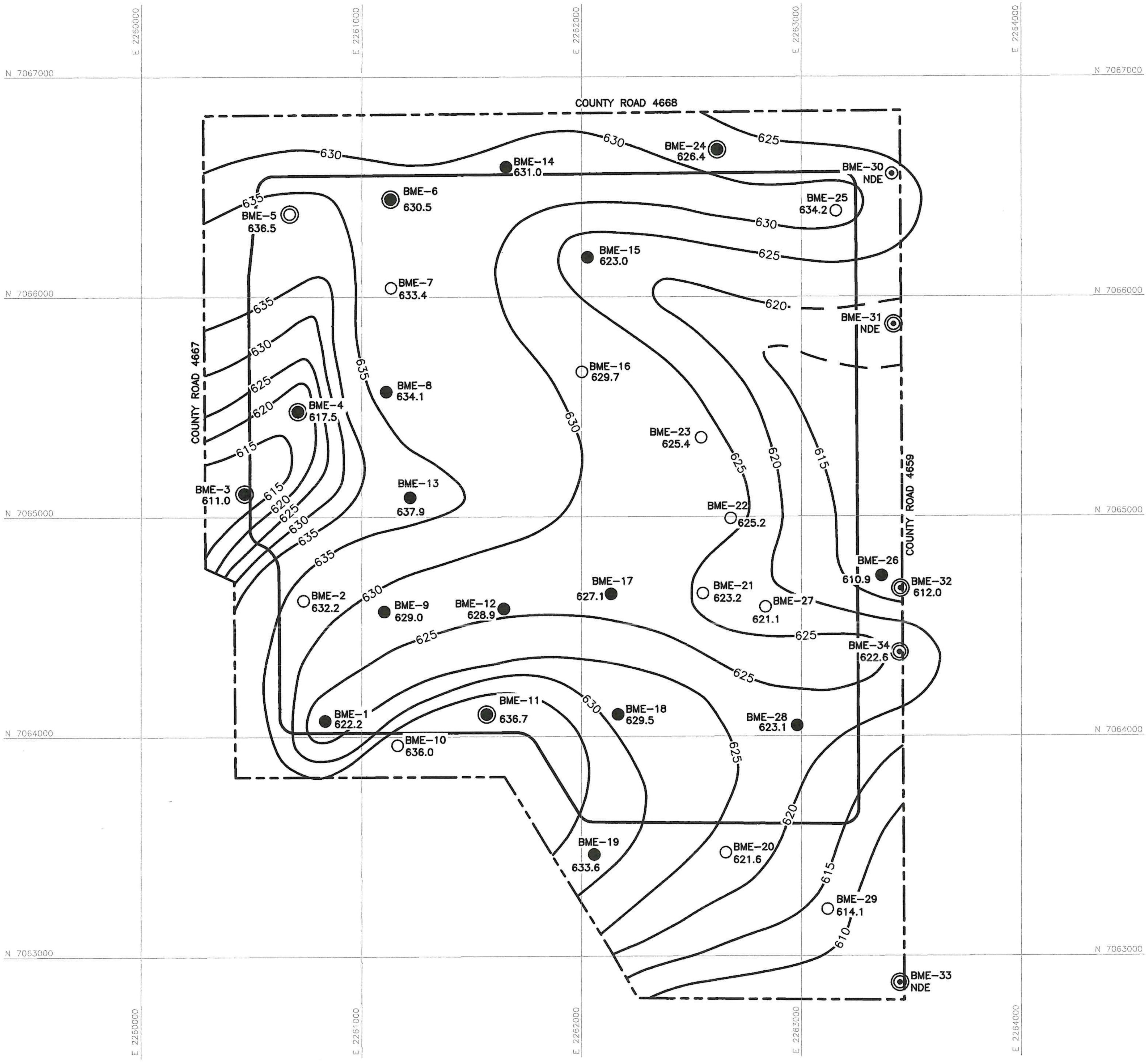
TBPG FIRM NO. 50222

DRAWING
E3.12

O:\Green Group\Wise County\Solid Waste\Type IV\P\Drawings\ATT E\E3.12-Unit III_Structure.dwg Layout: LAYOUT 1 User: awhite

O:\Green Group\Wise County\Solid Waste\Type IV\P\Drawings\ATT E\E3.13-Unit IV_Structure.dwg Layout: LAYOUT 1 User: awhite



0 250 500
SCALE IN FEET

LEGEND

— — - — —	PERMIT BOUNDARY
— — — —	WASTE MANAGEMENT UNIT
N 7062000	STATE PLANE COORDINATES
BME-2 ○	EXISTING BORING DRILLED TO 5 FT BELOW EDE
BME-1 ●	EXISTING BORING DRILLED TO 30 FT BELOW EDE
BME-30 ◉	ADDITIONAL BORING
○	PIEZOMETER LOCATION
629.0	ELEVATION OF UNIT IV (FT-MSL)
NDE	BORING WAS NOT DRILLED DEEP ENOUGH

NOTE(S):

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TOP OF UNIT IV STRUCTURE CONTOUR MAP

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DRAWING
E3.13

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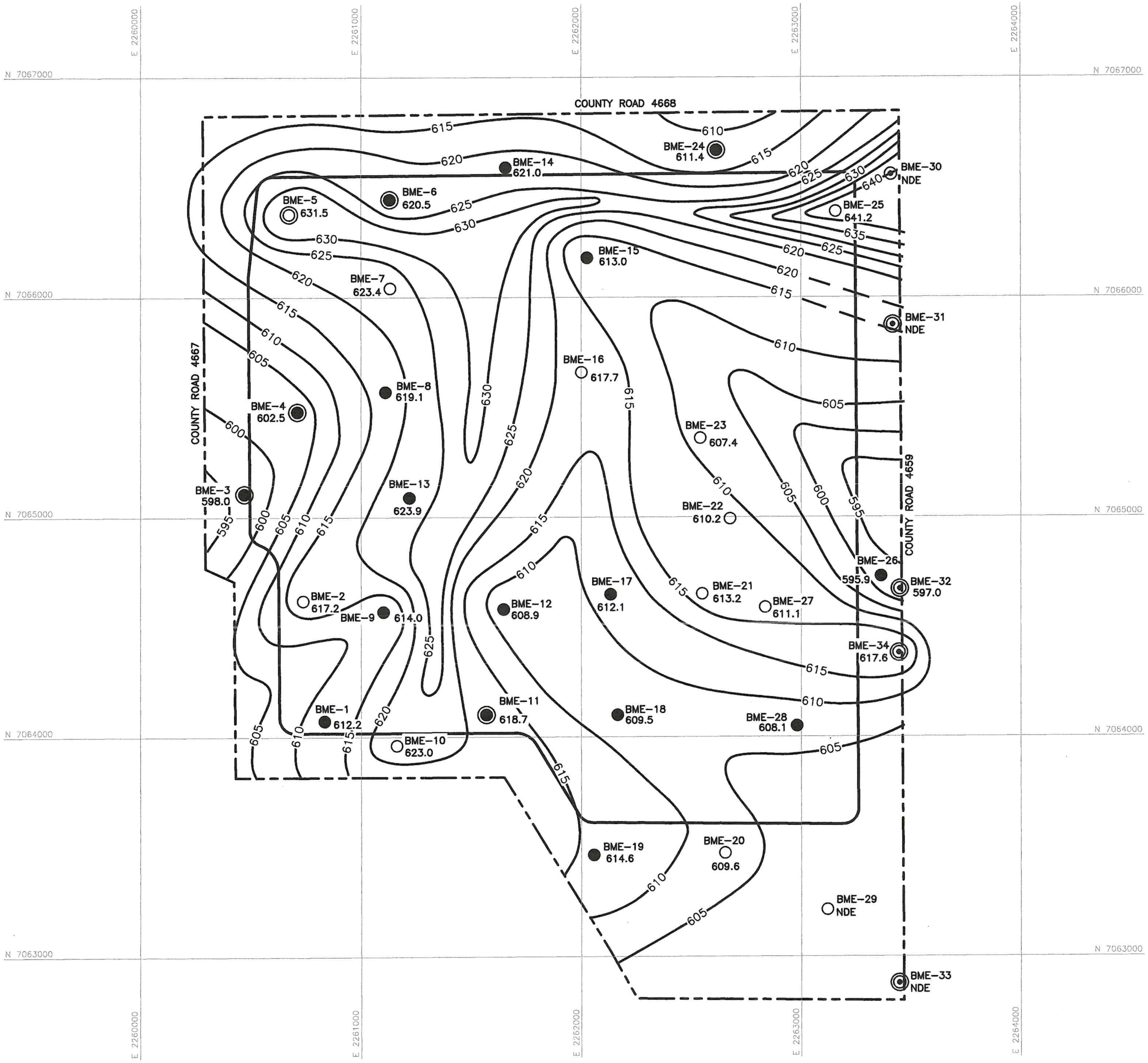

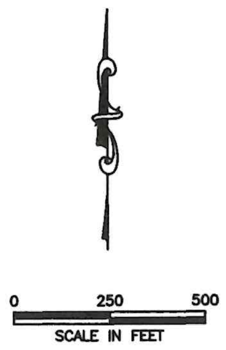

LEGEND

— — —	PERMIT BOUNDARY
———	WASTE MANAGEMENT UNIT
N 7062000	STATE PLANE COORDINATES
BME-2 ○	EXISTING BORING DRILLED TO 5 FT BELOW EDE
BME-1 ●	EXISTING BORING DRILLED TO 30 FT BELOW EDE
BME-32 ◉	ADDITIONAL BORING
○	PIEZOMETER LOCATION
597.0	ELEVATION OF UNIT V (FT-MSL)
NDE	BORING WAS NOT DRILLED DEEP ENOUGH

NOTE(S):

1. PERMIT BOUNDARY INFORMATION FROM SURVEYING AND MAPPING, LLC.

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TOP OF UNIT V
STRUCTURE CONTOUR MAP

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TBPG FIRM NO. 50222

DRAWING
E3.14

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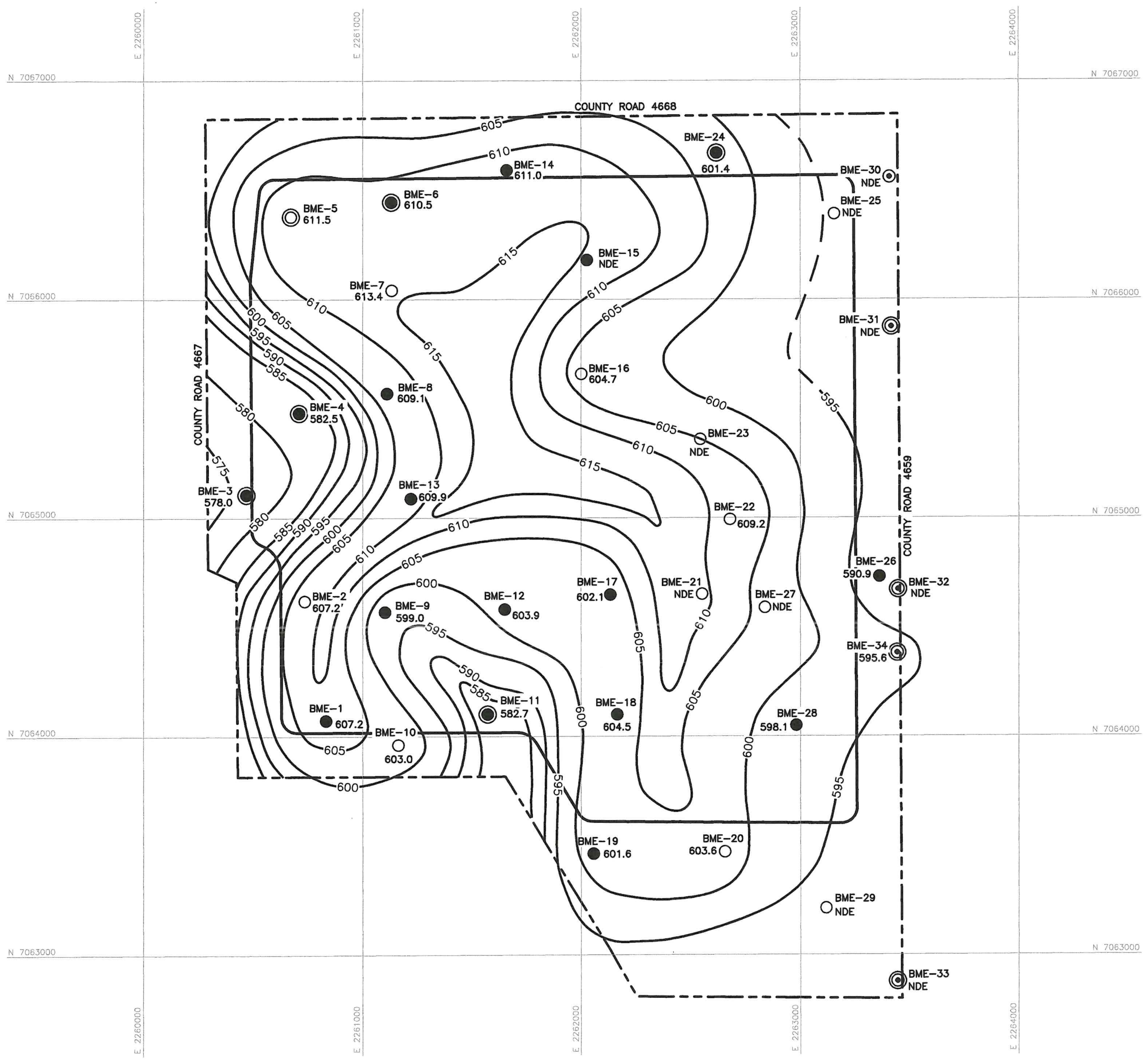

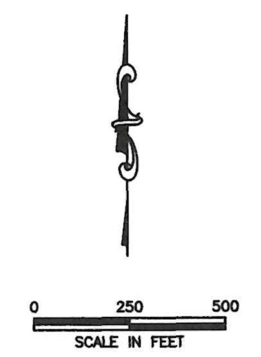

LEGEND

— — - — —	PERMIT BOUNDARY
——————	WASTE MANAGEMENT UNIT
N 7062000	STATE PLANE COORDINATES
BME-2 ○	EXISTING BORING DRILLED TO 5 FT BELOW EDE
BME-1 ●	EXISTING BORING DRILLED TO 30 FT BELOW EDE
BME-30 ◉	ADDITIONAL BORING
○	PIEZOMETER LOCATION
609.2	ELEVATION OF UNIT VI (FT-MSL)
NDE	BORING WAS NOT DRILLED DEEP ENOUGH

NOTE(S):

1. PERMIT BOUNDARY INFORMATION FROM SURVEYING AND MAPPING, LLC.

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TOP OF UNIT VI STRUCTURE CONTOUR MAP

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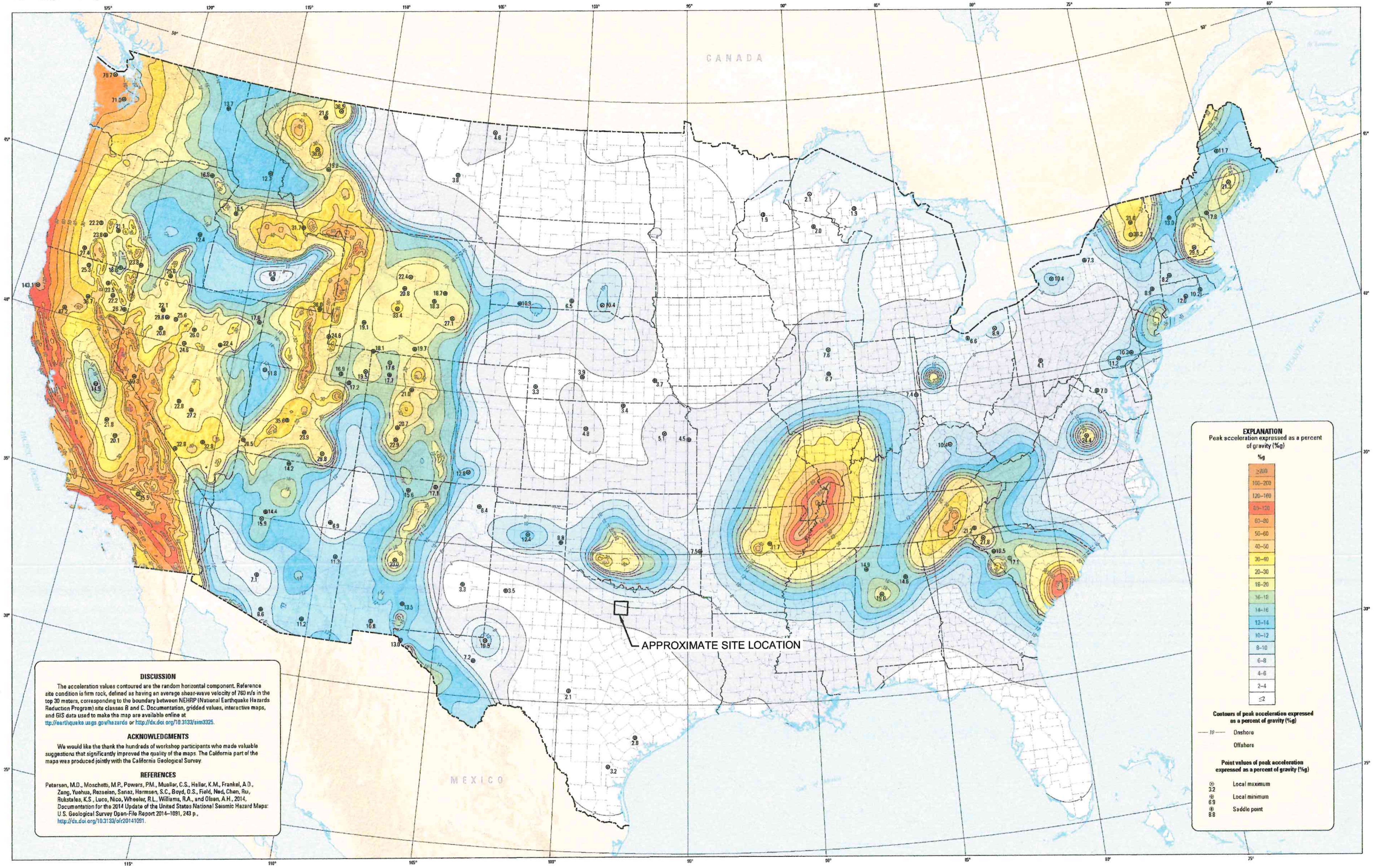
DRAWING
E3.15

APPENDIX E4

SEISMIC INFORMATION

USGS
science for a changing world
U.S. Department of the Interior
U.S. Geological Survey

Scientific Investigations Map 3325
Sheet 2 of 6



DISCUSSION

The acceleration values contoured are the random horizontal component. Reference site condition is firm rock, defined as having an average shear-wave velocity of 760 m/s in the top 30 meters, corresponding to the boundary between NEHRP (National Earthquake Hazards Reduction Program) site classes B and C. Documentation, gridded values, interactive maps, and GIS data used to make the map are available online at ttp://earthquake.usgs.gov/hazards or http://dx.doi.org/10.3133/sim3325.

ACKNOWLEDGMENTS

We would like the thank the hundreds of workshop participants who made valuable suggestions that significantly improved the quality of the maps. The California part of the maps was produced jointly with the California Geological Survey.

REFERENCES

Petersen, M.D., Moschetti, M.P., Powers, P.M., Mueller, C.S., Haller, K.M., Frankel, A.D., Zeng, Yuehua, Rezaeian, Sanaz, Harmsen, S.C., Boyd, O.S., Field, Ned, Chen, Rui, Rukstales, K.S., Luco, Nico, Wheeler, R.L., Williams, R.A., and Olsen, A.H., 2014, Documentation for the 2014 Update of the United States National Seismic Hazard Maps: U.S. Geological Survey Open-File Report 2014–1091, 243 p., http://dx.doi.org/10.3133/ofr20141091.

SCALE 1:7 000 000
100 0 100 200 300 400 500 600 700 800 900 1000 MILES
100 0 100 200 300 400 500 600 700 800 900 1000 KILOMETERS

Seismic-Hazard Maps for the Conterminous United States, 2014

Peak Horizontal Acceleration with 2 Percent Probability of Exceedance in 50 Years

By

Mark D. Petersen,[1] Morgan P. Moschetti,[1] Peter M. Powers,[1] Charles S. Mueller,[1] Kathleen M. Haller,[1] Arthur D. Frankel,[1] Yuehua Zeng,[1] Sanaz Rezaeian,[1]
Stephen C. Harmsen,[1] Oliver S. Boyd,[1] Edward H. Field,[1] Rui Chen,[2] Nicolas Luco,[1] Russell L. Wheeler,[1] Robert A. Williams,[1] Anna H. Olsen,[1] and Kenneth S. Rukstales[1]

2015

NOTES:

1. THE FACILITY LIES IN AN AREA WHERE THE PGA, WITH A 2% PROBABILITY OF BEING EXCEEDED IN 50 YEARS, IS LESS THAN 10% OF GRAVITY (LESS THAN 0.1g). THIS IS EQUIVALENT TO A 10% PROBABILITY IN 250 YEARS. A PRINTOUT OF THE USGS FAQ RESPONSE CONFIRMING THE EQUIVALENCY IS INCLUDED IN THIS SUBMITTAL ON THE NEXT PAGE.
2. THE MAP PRESENTED HERE IS INTENDED TO ONLY DEPICT THE IMPACT ZONE IN WHICH THE FACILITY LIES. PLEASE REFER TO PETERSON, M.D., ET AL., 2015, SEISMIC HAZARD MAPS FOR THE CONTERMINOUS UNITED STATES, 2014: U.S. GEOLOGICAL SURVEY SCIENTIFIC INVESTIGATION MAP 3325, 6 SHEETS, SCALE 1:7,000,000. HTTPS://PUBS.USGS.GOV/SIM/3325/PDF/SIM3325_SHEET2.PDF FOR A FULLY LEGIBLE VERSION.

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SEISMIC IMPACT ZONE MAP

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E4.1

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Earthquake Hazards 201 - Technical Q&A

The seismic hazard map is for ground motions having a 2% probability of exceedance in 50 years. Are those values the same as those for 10% in 250?

Yes, basically. This conclusion will be illustrated by using an approximate rule-of-thumb for calculating Return Period (RP).

A typical seismic hazard map may have the title, "Ground motions having 90 percent probability of not being exceeded in 50 years." The 90 percent is a "non-exceedance probability"; the 50 years is an "exposure time." An equivalent alternative title for the same map would be, "Ground motions having 10 percent probability of being exceeded in 50 years." A typical shorthand to describe these ground motions is to say that they are 475-year return-period ground motions. This means the same as saying that these ground motions have an annual probability of occurrence of 1/475 per year. "Return period" is thus just the inverse of the annual probability of occurrence (of getting an exceedance of that ground motion).

To get an approximate value of the return period, RP, given the exposure time, T, and exceedance probability, r = 1 - non-exceedance probability, NEP, (expressed as a decimal, rather than a percent), calculate:

RP = T / r* Where r* = r(1 + 0.5r).r* is an approximation to the value -loge (NEP).
In the above case, where r = 0.10, r* = 0.105 which is
approximately = -loge (0.90) = 0.10536 Thus, approximately,
when r = 0.10, RP = T / 0.105

Consider the following table:

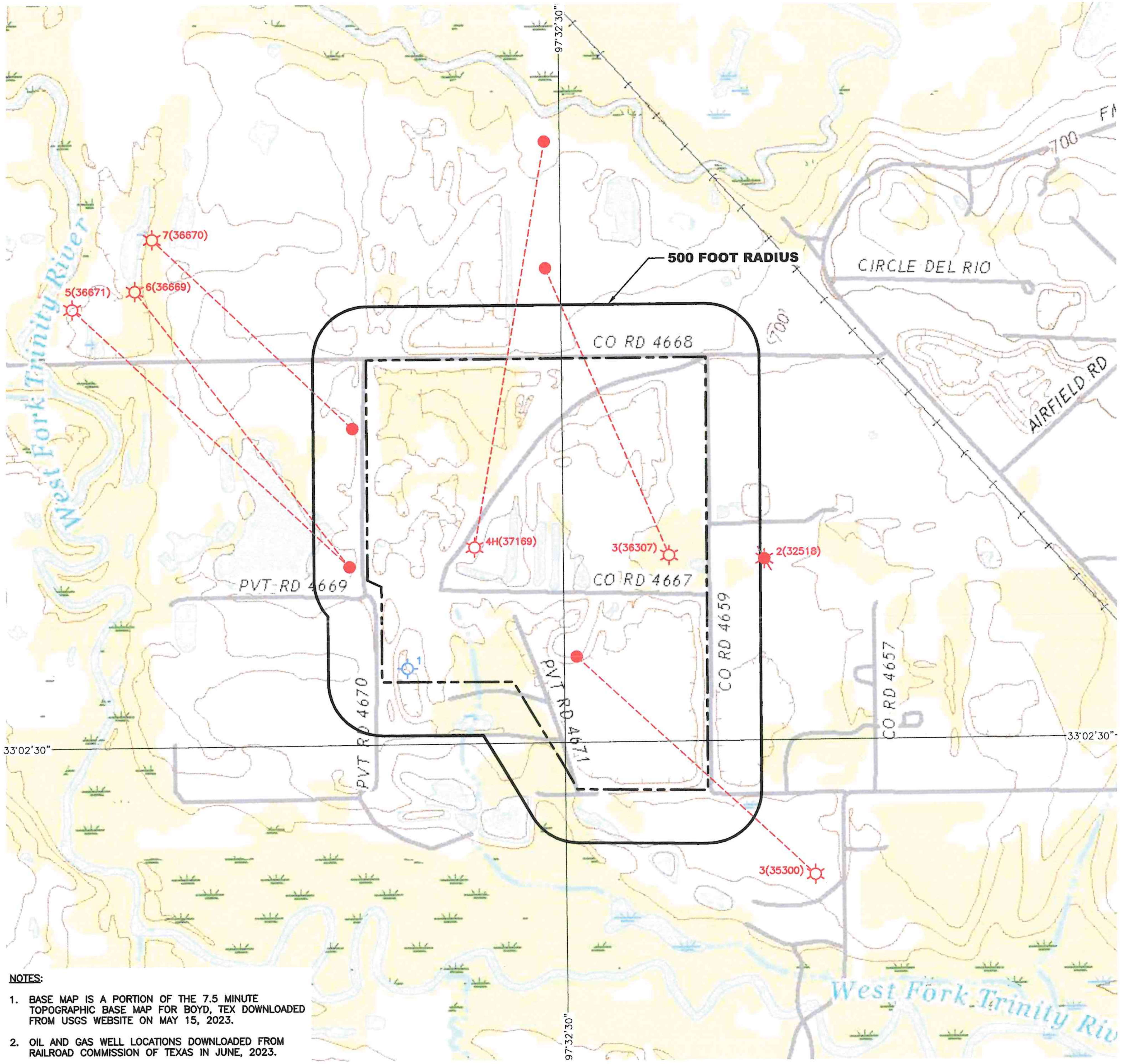
				Rule of Thumb		Exact
NEP	T	r	r*	Calculation	RP	
0.90	50	0.10	0.105	50/0.105	476.2	474.6
0.90	100	0.10	0.105	100/0.105	952.4	949.1
0.90	250	0.10	0.105	250/0.105	2381.0	2372.8

In this table, the exceedance probability is constant for different exposure times. Compare the results of the above table with those shown below, all for the same exposure time, with differing exceedance probabilities.

				Rule of Thumb		Exact
NEP	T	r	r*	Calculation	RP	RP
0.90	50	0.10	0.105	50/0.105	476.2	474.6
0.95	50	0.05	0.05125	50/0.05125	975.6	974.8
0.98	50	0.02	0.0202	50/0.0202	2475.2	2475.9

Comparison of the last entry in each table allows us to see that ground motion values having a 2% probability of exceedance in 50 years should be approximately the same as those having 10% probability of being exceeded in 250 years: The annual exceedance probabilities differ by about 4%. Corresponding ground motions should differ by 2% or less in the EUS and 1 percent or less in the WUS, based upon typical relations between ground motion and return period.

(Earthquake Hazards Program, 2019)



NOTES:

1. BASE MAP IS A PORTION OF THE 7.5 MINUTE TOPOGRAPHIC BASE MAP FOR BOYD, TEX DOWNLOADED FROM USGS WEBSITE ON MAY 15, 2023.
2. OIL AND GAS WELL LOCATIONS DOWNLOADED FROM RAILROAD COMMISSION OF TEXAS IN JUNE, 2023.

0 500 1000
SCALE IN FEET

LEGEND

— - — - —	PERMIT BOUNDARY
———	500' RADIUS
—700—	EXISTING 10' GROUND CONTOUR
	SURFACE WATER BODY OR OTHER WATER
⌖	DRY HOLE
☼	GAS WELL (BOTTOM HOLE LOCATION)
✹	PLUGGED GAS WELL (SURFACE LOCATION)
- - - -	HORIZONTAL/DIRECTIONAL LINES
●	GAS WELL (SURFACE LOCATION)

BOYD, TEX
2022

ROAD CLASSIFICATION

Expressway		Local Connector	
Secondary Hwy		Local Road	
Ramp		4WD	
Interstate Route		US Route	State Route

OIL AND GAS WELLS	
MAP ID	API NUMBER
1	497
2(32518)	49732518
3(35300)	49735300
3(36307)	49736307
4H(37169)	49737169
5(36671)	49736671
6(36669)	49736669
7(36670)	49736670

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REVISIONS			
REV	DATE	DESCRIPTION	DWN BY

LOCATIONS OF OIL AND GAS PRODUCING WELLS

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TBPG FIRM NO. 50222

DRAWING
E4.3

U.S. Geological Survey Quaternary Faults

1/12/2023, 3:46:13 PM

Fault Areas

- ⬚ Class B
- ▨ historic
- ▨ late Quaternary
- ▨ latest Quaternary
- ▨ middle and late Quaternary

National Database

- — Historic (< 150 years), well constrained location
- - - Historic (< 150 years), moderately constrained location
- ···· Historic (< 150 years), inferred location
- — Latest Quaternary (<15,000 years), well constrained location
- - - Latest Quaternary (<15,000 years), moderately constrained location
- ···· Latest Quaternary (<15,000 years), inferred location
- — Late Quaternary (< 130,000 years), well constrained location
- - - Late Quaternary (< 130,000 years), moderately contrained location
- ···· Late Quaternary (< 130,000 years), inferred location
- — Middle and late Quaternary (< 750,000 years), well constrained location
- - - Middle and late Quaternary (< 750,000 years), moderately constrained location
- ···· Middle and late Quaternary (< 750,000 years), inferred location
- — Undifferentiated Quaternary (< 1.6 million years), well constrained location
- - - Undifferentiated Quaternary (< 1.6 million years), moderately constrained location
- ···· Undifferentiated Quaternary (< 1.6 million years), inferred location

1:18,489,298

0 185 370 740 mi

0 285 570 1,140 km

National Geographic, Esri, Garmin, HERE, UNEP-WCMC, USGS, NASA, ESA, METI, NRCAN, GEBCO, NOAA, increment P Corp.

SOURCE:

U.S. GEOLOGICAL SURVEY AND TEXAS BUREAU OF ECONOMIC GEOLOGY, ACCESSED OCTOBER 25, 2023 AT: https://www.usgs.gov/natural hazards/earthquake-hazards/faults.

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LOCATION OF QUATERNARY FAULTS

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DRAWING
E4.4

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APPENDIX E5

SITE HYDROGEOLOGIC DATA

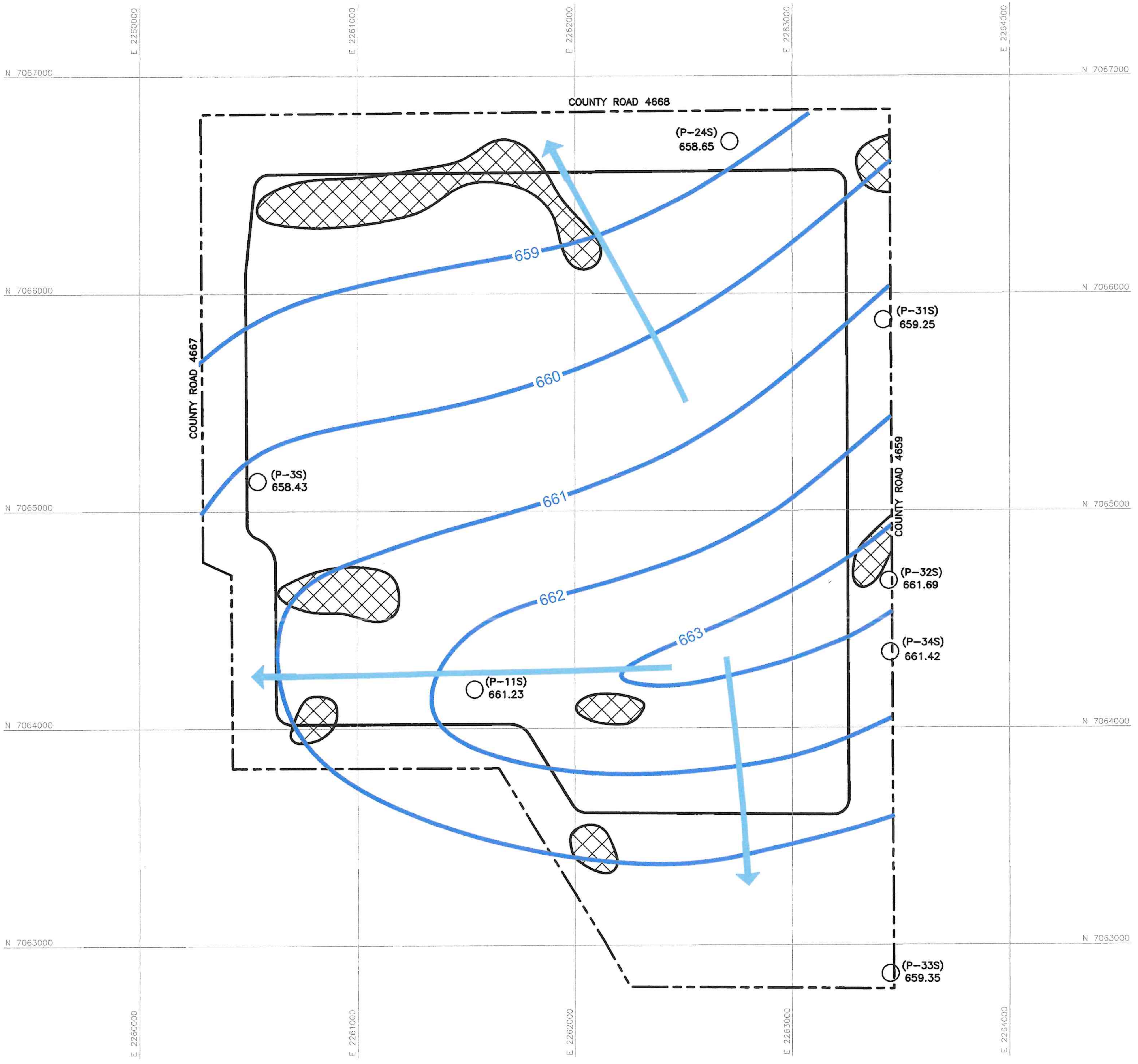
Chisholm Trail Disposal Landfill
Water Level Elevation Table - Piezometers

BOLD indicates highest water level

	P-3S	P-3M	P-3D	P-4D	P-5D	P-6 VII	P-11S	P-11M	P-11D	P-24S	P-24D	P-24 VII	P-31S	P-32S	P-32M	P-32D	P-33S	P-34S	P-34M	P-34D
8/23/2024	**660.08**	652.83	628.83	628.25	652.92	634.59	**662.29**	658.12	645.74	**658.88**	651.35	643.45	**661.12**	**663.18**	659.55	655.96	660.09	662.67	662.19	651.75
9/11/2024	659.86	652.74	628.66	628.58	652.81	634.55	661.96	658.51	645.73	658.86	652.86	642.62	660.90	662.83	**659.75**	659.14	659.77	662.41	662.38	651.91
10/9/2024	659.57	652.34	628.25	627.89	652.36	634.13	661.58	658.58	645.33	658.77	651.64	640.68	660.34	662.34	659.44	658.66	659.40	661.93	662.42	651.17
11/12/2024	659.23	652.21	627.99	627.63	652.31	633.59	661.19	**658.80**	645.28	658.71	651.05	639.98	660.29	662.06	659.65	658.96	659.08	661.56	662.57	651.63

O:\Green Group\Wise County\Water Levels\Wise Co. Water Level Table.xlsm

O:\Green Group\Wise County\Solid Waste\Type IV\P\Drawings\ATT E\E5-2a_Unit I_PotenSurfMap08-24.dwg Layout: LAYOUT 1 User: awhite



0 250 500
SCALE IN FEET

LEGEND

— — - — —	PERMIT BOUNDARY
————	WASTE MANAGEMENT UNIT
N 7062000	STATE PLANE COORDINATES
(P-3S) ○ 658.65	PIEZOMETER LOCATION, ID NUMBER AND WATER ELEVATION
—660—	CONTOURS OF UNIT I POTENTIOMETRIC SURFACE (1' CONTOURS)
→	APPARENT DIRECTION OF GROUNDWATER FLOW
▨	UNIT II ABSENT

NOTE(S):

1. PERMIT BOUNDARY INFORMATION FROM SURVEYING AND MAPPING, LLC.

Elizabeth Floyd
GEOLOGY
2045
9/23/2025

FOR PERMITTING PURPOSES

UNIT I POTENTIOMETRIC SURFACE MAP
AUGUST 2024

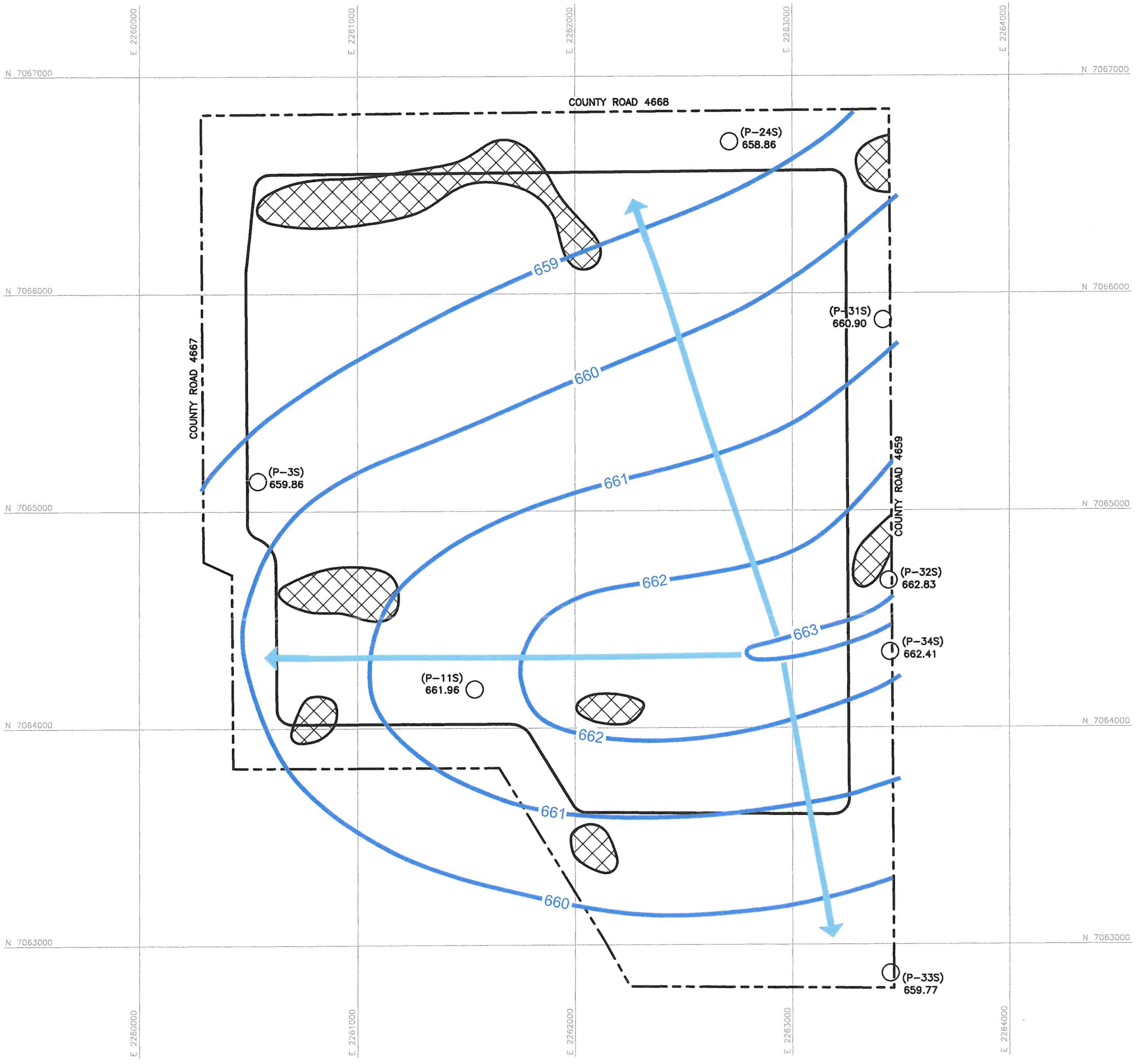
CHISHOLM TRAIL DISPOSAL, LLC
CHISHOLM TRAIL DISPOSAL LANDFILL

BME
BIGGS & MATHEWS ENVIRONMENTAL
1700 ROBERT ROAD, STE. 100
MANSFIELD, TEXAS 76063
817-563-1144

TBPE FIRM NO. F-256
TBPG FIRM NO. 50222

DRAWING
E5.2a

O:\Green Group\Wise County\Solid Waste\Type IV\P\Drawings\ATT E\E5-2b_Unit I_PotenSurfMap09-24.dwg Layout: LAYOUT 1 User: awhite



0 250 500
SCALE IN FEET

LEGEND

— — —	PERMIT BOUNDARY
———	WASTE MANAGEMENT UNIT
N 7062000	STATE PLANE COORDINATES
P-3S ○	PIEZOMETER LOCATION AND ID NUMBER
—660—	CONTOURS OF UNIT I POTENTIOMETRIC SURFACE (1' CONTOURS)
➡	APPARENT DIRECTION OF GROUNDWATER FLOW
659.86	WATER LEVEL ELEVATION
▨	UNIT II ABSENT

NOTE(S):

1. PERMIT BOUNDARY INFORMATION FROM SURVEYING AND MAPPING, LLC.

Elizabeth Floyd
GEOLOGY
2045

9/23/2025

FOR PERMITTING PURPOSES

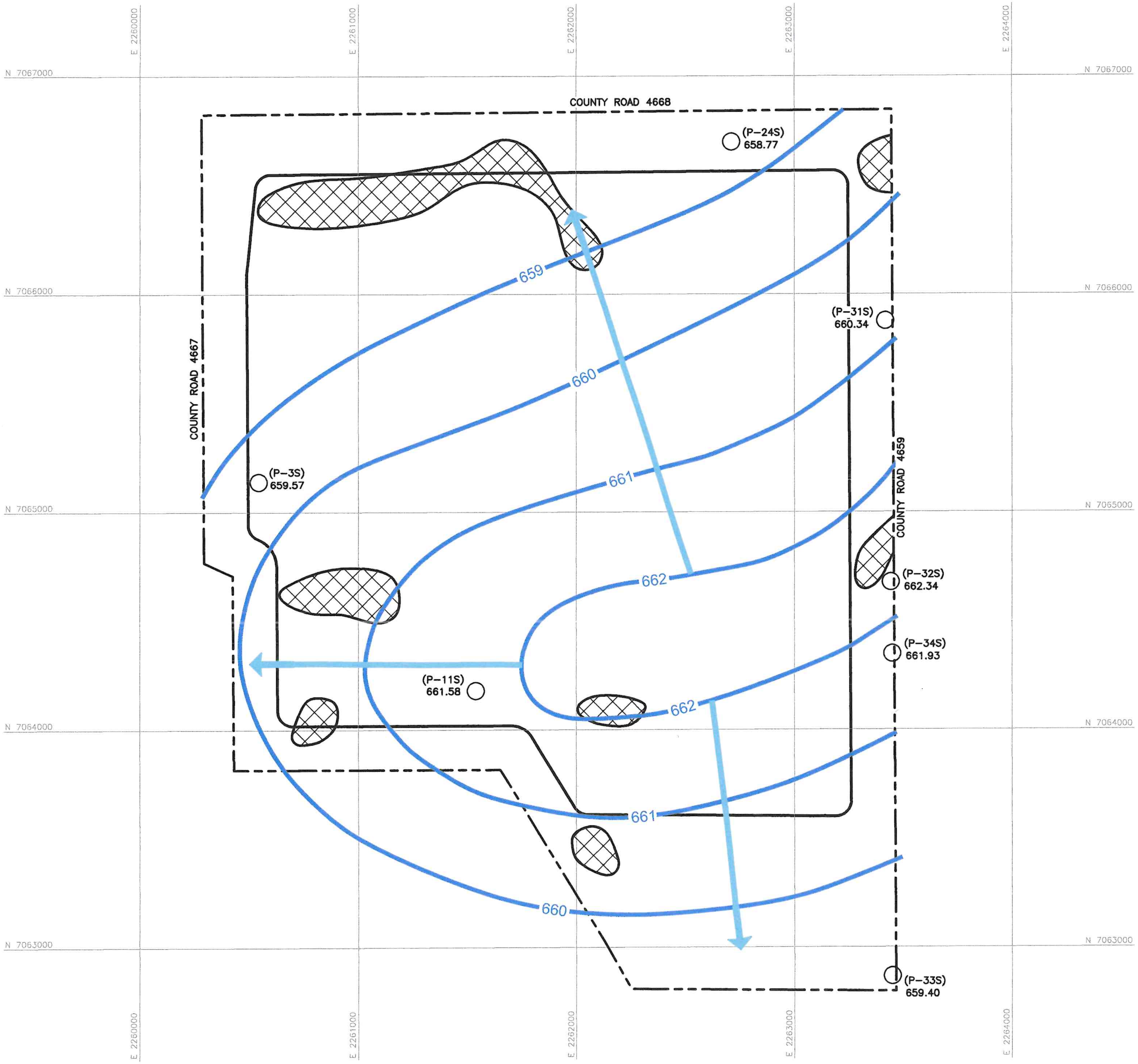
UNIT I POTENTIOMETRIC SURFACE MAP
SEPTEMBER 2024

CHISHOLM TRAIL DISPOSAL, LLC
CHISHOLM TRAIL DISPOSAL LANDFILL

BME
BIGGS & MATHEWS ENVIRONMENTAL
1700 ROBERT ROAD, STE. 100
MANSFIELD, TEXAS 76063
817-563-1144

TBPE FIRM NO. F-256
TBPG FIRM NO. 50222

DRAWING
E5.2b



0 250 500
SCALE IN FEET

LEGEND

— - —	PERMIT BOUNDARY
——	WASTE MANAGEMENT UNIT
N 7062000	STATE PLANE COORDINATES
P-3S ○	PIEZOMETER LOCATION AND ID NUMBER
— 660 —	CONTOURS OF UNIT I POTENTIOMETRIC SURFACE (1' CONTOURS)
➡	APPARENT DIRECTION OF GROUNDWATER FLOW
659.57	WATER LEVEL ELEVATION
▨	UNIT II ABSENT

NOTE(S):

1. PERMIT BOUNDARY INFORMATION FROM SURVEYING AND MAPPING, LLC.

Elizabeth Floyd
GEOLOGY
2045
1/23/2025

FOR PERMITTING PURPOSES

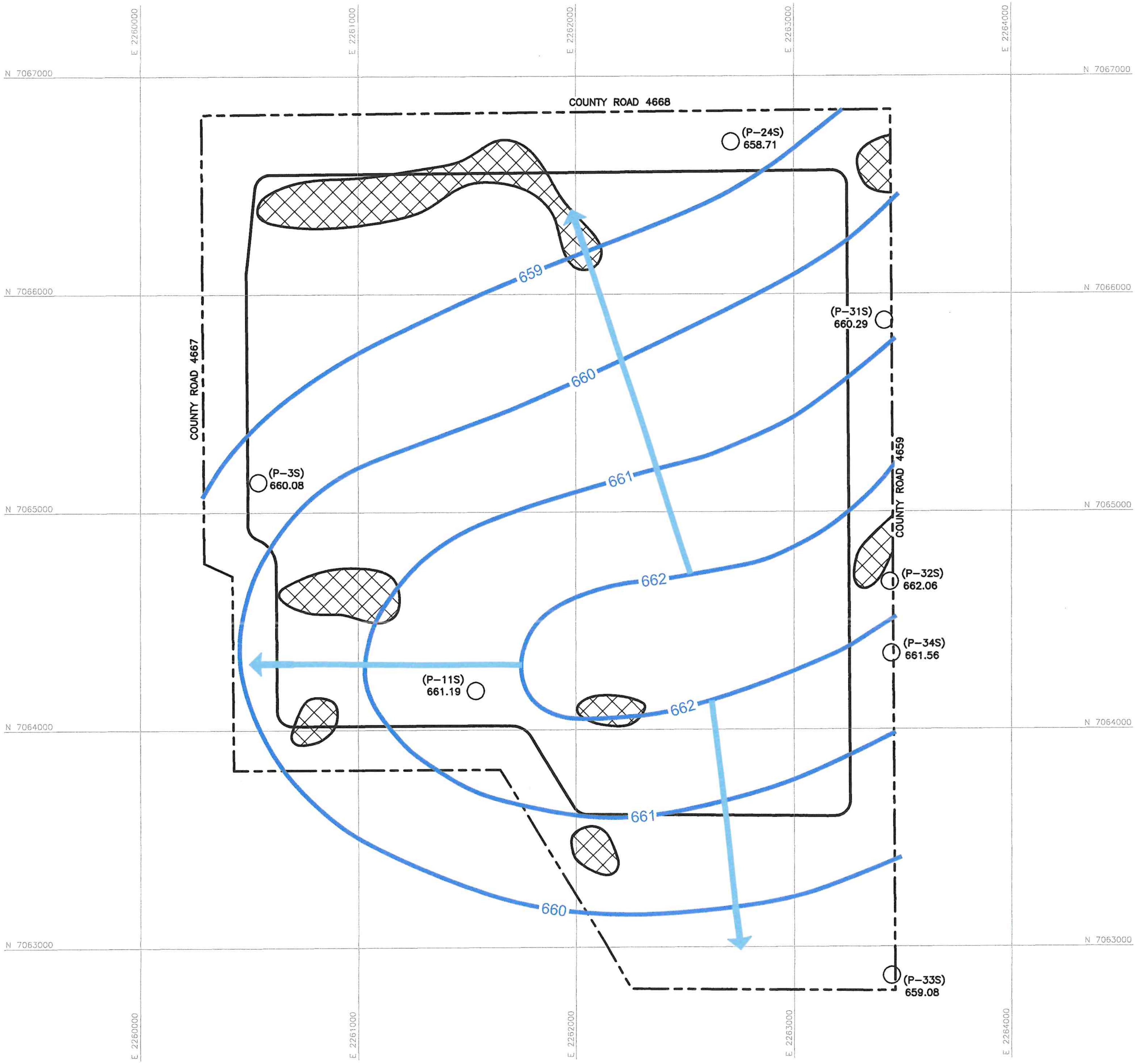
UNIT I POTENTIOMETRIC SURFACE MAP
OCTOBER 2024

CHISHOLM TRAIL DISPOSAL, LLC
CHISHOLM TRAIL DISPOSAL LANDFILL

BIGGS & MATHEWS ENVIRONMENTAL
1700 ROBERT ROAD, STE. 100
MANSFIELD, TEXAS 76063
817-563-1144

TBPE FIRM NO. F-256
TBPG FIRM NO. 50222

DRAWING
E5.2c



0 250 500
SCALE IN FEET

LEGEND

— — —	PERMIT BOUNDARY
———	WASTE MANAGEMENT UNIT
N 7062000	STATE PLANE COORDINATES
P-3S ○	PIEZOMETER LOCATION AND ID NUMBER
— 660 —	CONTOURS OF UNIT I POTENTIOMETRIC SURFACE (1' CONTOURS)
➡	APPARENT DIRECTION OF GROUNDWATER FLOW
660.08	WATER LEVEL ELEVATION
▨	UNIT II ABSENT

NOTE(S):

1. PERMIT BOUNDARY INFORMATION FROM SURVEYING AND MAPPING, LLC.

Elizabeth Floyd
GEOLOGY
2045

Elizabeth Floyd

9/23/2025

FOR PERMITTING PURPOSES

UNIT I POTENTIOMETRIC SURFACE MAP
NOVEMBER 2024

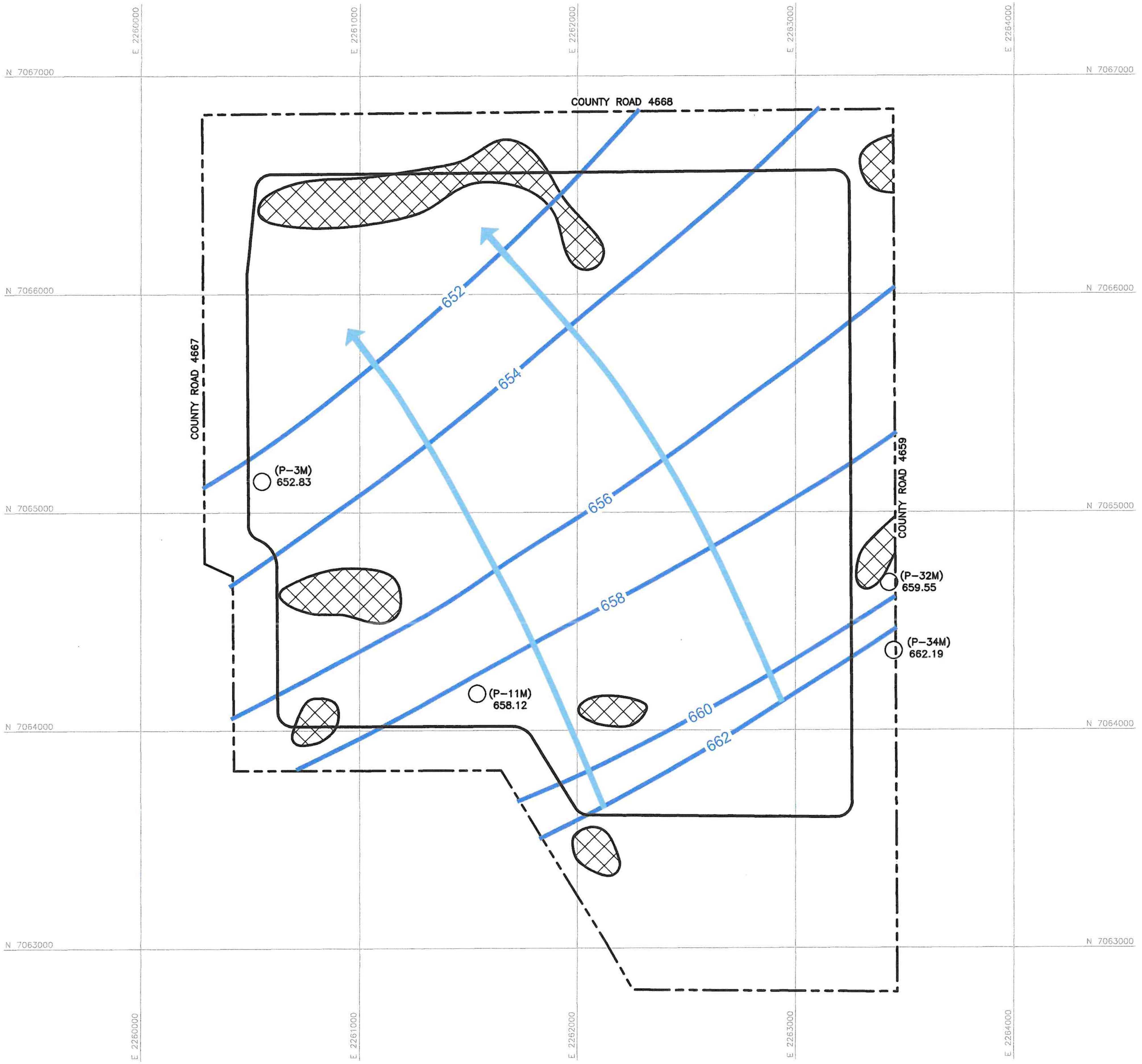
CHISHOLM TRAIL DISPOSAL, LLC
CHISHOLM TRAIL DISPOSAL LANDFILL

BME
BIGGS & MATHEWS ENVIRONMENTAL
1700 ROBERT ROAD, STE. 100
MANSFIELD, TEXAS 76063
817-563-1144

TBPE FIRM NO. F-256
TBPG FIRM NO. 50222

DRAWING
E5.2d

O:\Green Group\Wise County\Solid Waste\Type IV\P\Drawings\ATT E\E5-2d_Unit I_PotenSurfMap11-24.dwg Layout: LAYOUT 1 User: awhite



0 250 500
SCALE IN FEET

LEGEND

— — —	PERMIT BOUNDARY
———	WASTE MANAGEMENT UNIT
N 7062000	STATE PLANE COORDINATES
P-3M ○	PIEZOMETER LOCATION AND ID NUMBER
— 660 —	CONTOURS OF UNIT III POTENTIOMETRIC SURFACE (2' CONTOUR)
➡	APPARENT DIRECTION OF GROUNDWATER FLOW
652.83	WATER LEVEL ELEVATION
▨	UNIT II ABSENT

NOTE(S):

1. PERMIT BOUNDARY INFORMATION FROM SURVEYING AND MAPPING, LLC.

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GEOLOGY
2045

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FOR PERMITTING PURPOSES

UNIT III POTENTIOMETRIC SURFACE MAP
AUGUST 2024

CHISHOLM TRAIL DISPOSAL, LLC
CHISHOLM TRAIL DISPOSAL LANDFILL

BME

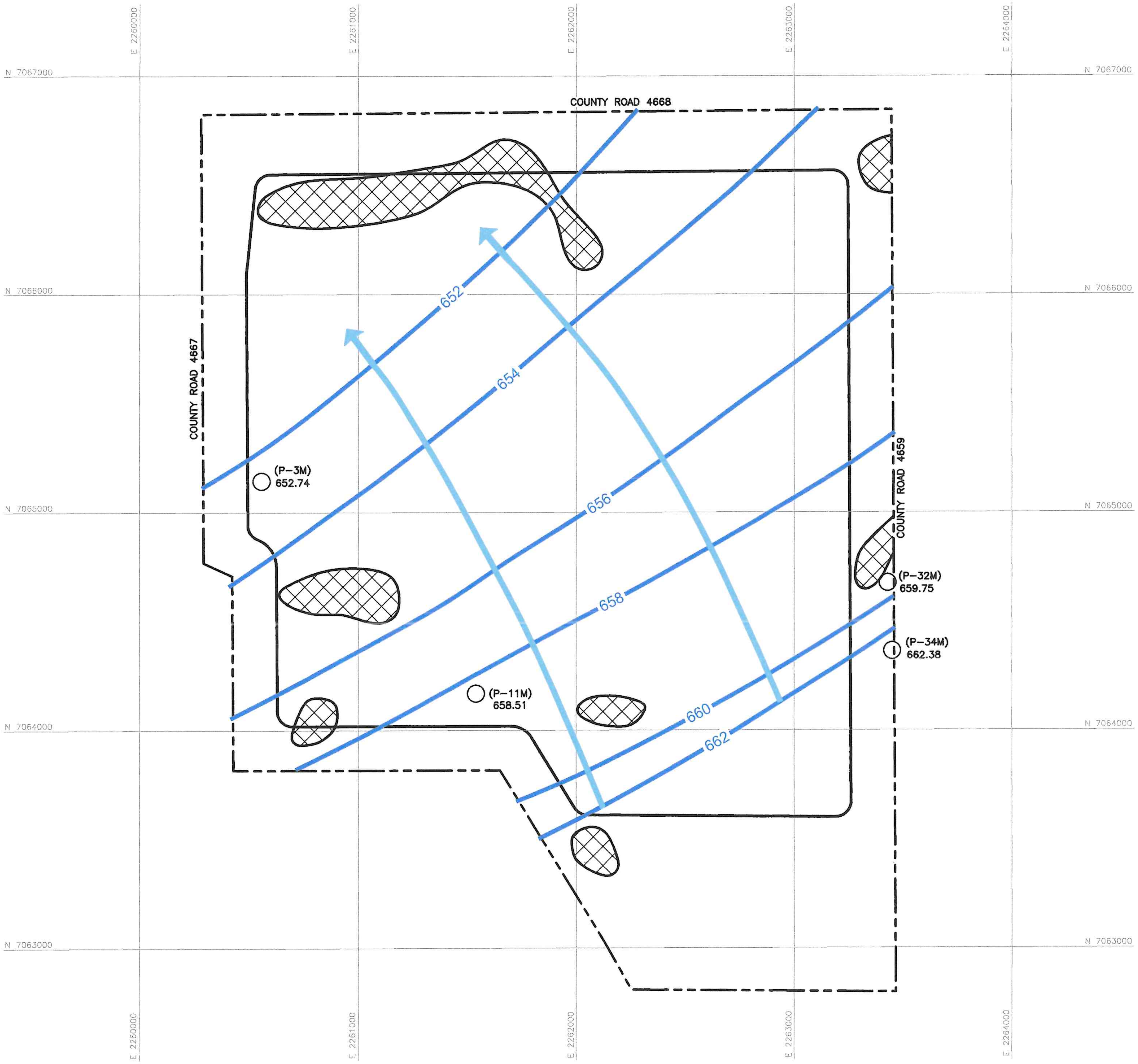
BIGGS & MATHEWS ENVIRONMENTAL
1700 ROBERT ROAD, STE. 100
MANSFIELD, TEXAS 76063
817-563-1144

TBPE FIRM NO. F-256
TBPG FIRM NO. 50222

DRAWING
E5.3a

O:\Green Group\Wise County\Solid Waste\Type IV\P\Drawings\ATT E\E5-3a_Unit III_PotenSurfMap08-24.dwg Layout: LAYOUT 1 User: awhite

O:\Green Group\Wise County\Solid Waste\Type IV\P\Drawings\ATT E\E5-3b_Unit III_PotenSurfMap09-24.dwg Layout: LAYOUT 1 User: awhite



0 250 500
SCALE IN FEET

LEGEND

— - — - —	PERMIT BOUNDARY
———	WASTE MANAGEMENT UNIT
N 7062000	STATE PLANE COORDINATES
P-3M ○	PIEZOMETER LOCATION AND ID NUMBER
— 660 —	CONTOURS OF UNIT III POTENTIOMETRIC SURFACE (2' CONTOUR)
➡	APPARENT DIRECTION OF GROUNDWATER FLOW
652.74	WATER LEVEL ELEVATION
▨	UNIT II ABSENT

NOTE(S):

1. PERMIT BOUNDARY INFORMATION FROM SURVEYING AND MAPPING, LLC.

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GEOLOGY
2045

9/23/2025

FOR PERMITTING PURPOSES

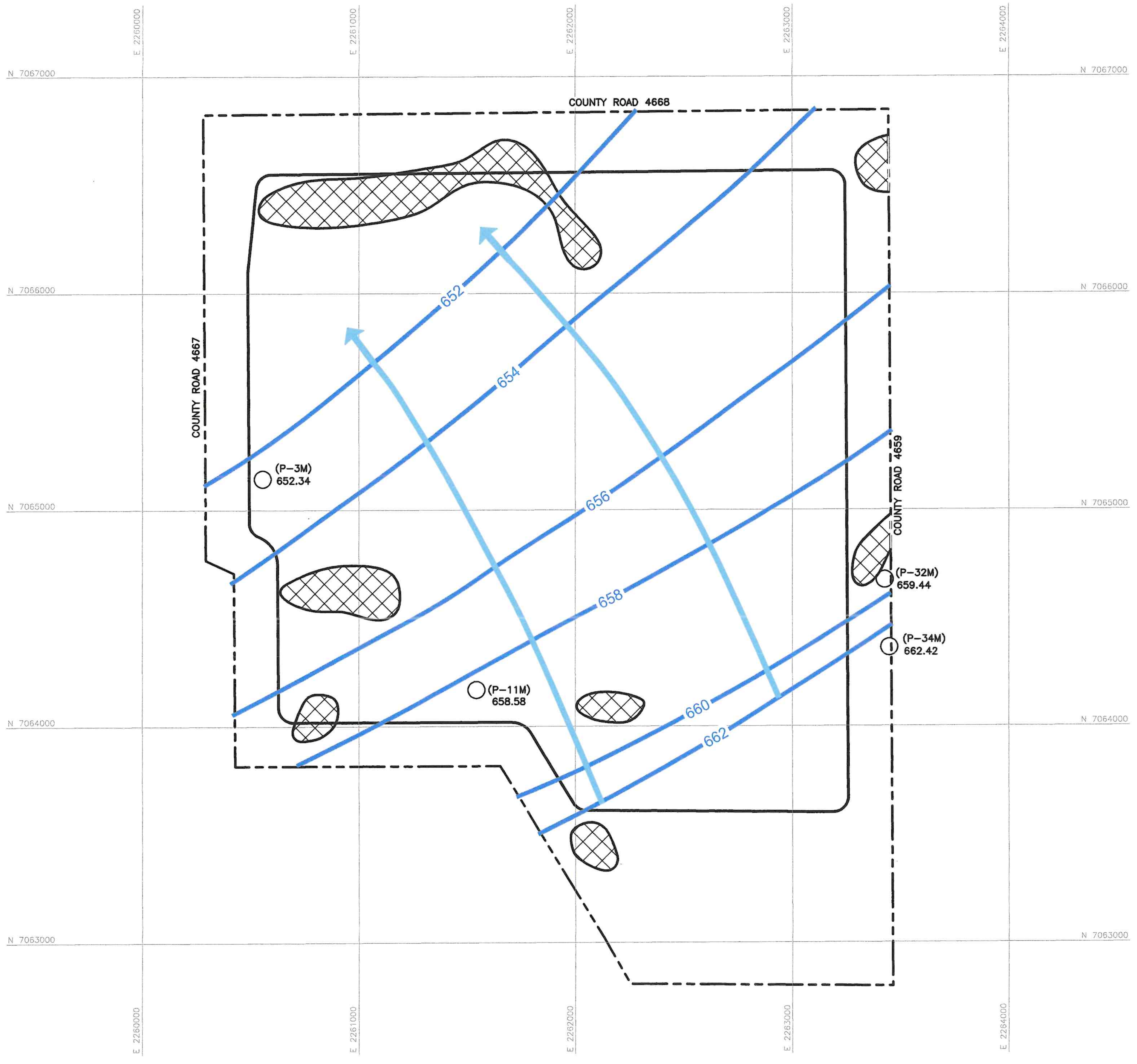
UNIT III POTENTIOMETRIC SURFACE MAP
SEPTEMBER 2024

CHISHOLM TRAIL DISPOSAL, LLC
CHISHOLM TRAIL DISPOSAL LANDFILL

BME
BIGGS & MATHEWS ENVIRONMENTAL
1700 ROBERT ROAD, STE. 100
MANSFIELD, TEXAS 76063
817-563-1144

TBPE FIRM NO. F-256
TBPG FIRM NO. 50222

DRAWING
E5.3b



0 250 500
SCALE IN FEET

LEGEND

— - — -	PERMIT BOUNDARY
——	WASTE MANAGEMENT UNIT
N 7062000	STATE PLANE COORDINATES
P-3M ○	PIEZOMETER LOCATION AND ID NUMBER
—660—	CONTOURS OF UNIT III POTENTIOMETRIC SURFACE (2' CONTOUR)
➡	APPARENT DIRECTION OF GROUNDWATER FLOW
652.34	WATER LEVEL ELEVATION
▨	UNIT II ABSENT

NOTE(S):

1. PERMIT BOUNDARY INFORMATION FROM SURVEYING AND MAPPING, LLC.

STATE OF TEXAS
Elizabeth Floyd
GEOLOGY
2045
LICENSED
PROFESSIONAL GEOSCIENTIST

Elizabeth Floyd
9/23/2025

FOR PERMITTING PURPOSES

UNIT III POTENTIOMETRIC SURFACE MAP OCTOBER 2024

CHISHOLM TRAIL DISPOSAL, LLC
CHISHOLM TRAIL DISPOSAL LANDFILL

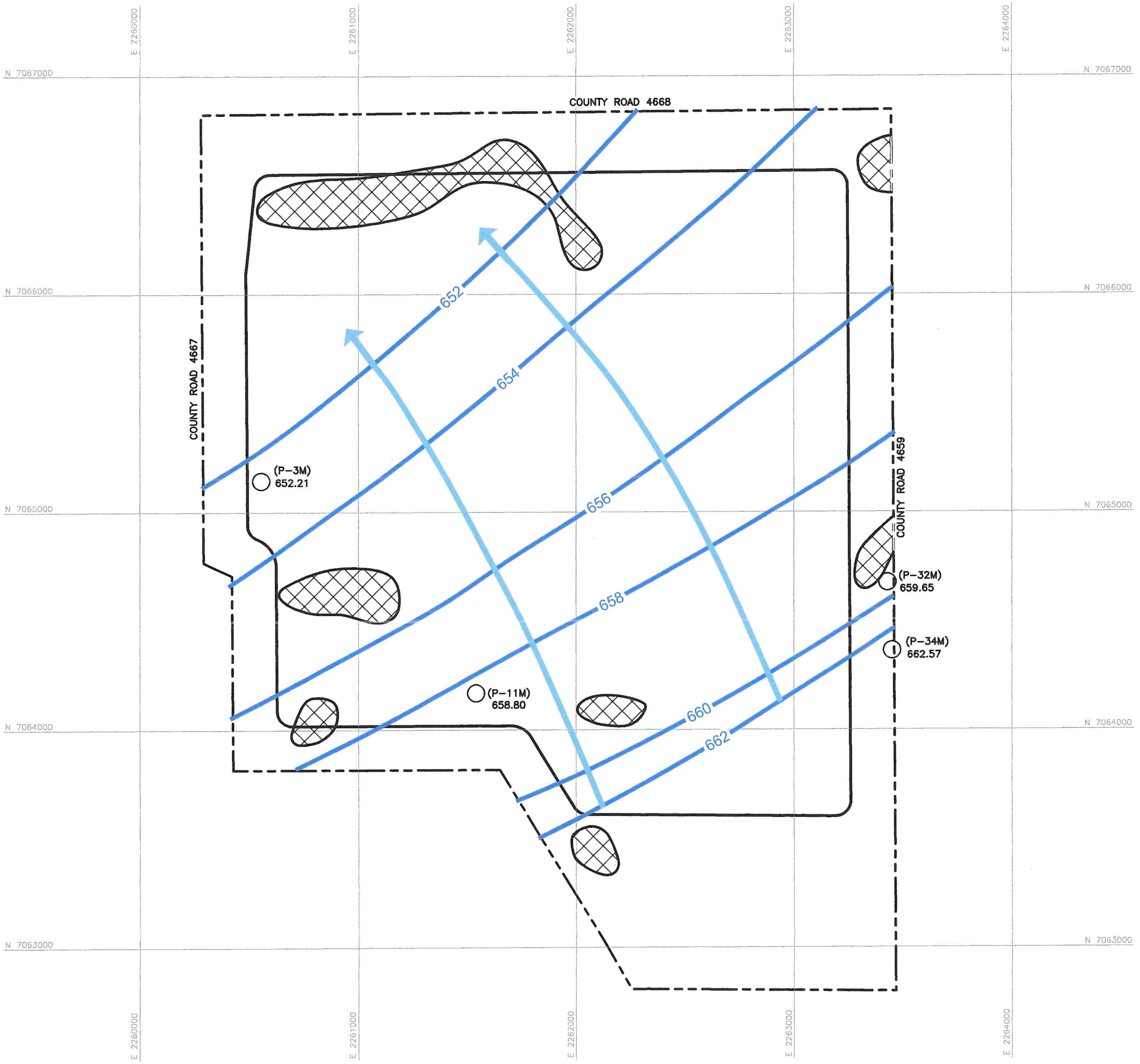
BME

BIGGS & MATHEWS ENVIRONMENTAL
1700 ROBERT ROAD, STE. 100
MANSFIELD, TEXAS 76063
817-563-1144

TBPE FIRM NO. F-256
TBPG FIRM NO. 50222

DRAWING
E5.3c

O:\Green Group\Wise County\Solid Waste\Type IV\P\Drawings\ATT E\E5-3c_Unit III_PotenSurfMap10-24.dwg Layout: LAYOUT 1 User: awhite



LEGEND

— — —	PERMIT BOUNDARY
——	WASTE MANAGEMENT UNIT
N 7062000	STATE PLANE COORDINATES
P-3M ○	PIEZOMETER LOCATION AND ID NUMBER
—660—	CONTOURS OF UNIT III POTENTIOMETRIC SURFACE (2' CONTOUR)
➡	APPARENT DIRECTION OF GROUNDWATER FLOW
652.21	WATER LEVEL ELEVATION
▨	UNIT II ABSENT

NOTE(S):

1. PERMIT BOUNDARY INFORMATION FROM SURVEYING AND MAPPING, LLC.

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GEOLOGY
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9/23/2025

FOR PERMITTING PURPOSES

UNIT III POTENTIOMETRIC SURFACE MAP NOVEMBER 2024

CHISHOLM TRAIL DISPOSAL, LLC CHISHOLM TRAIL DISPOSAL LANDFILL

BIGGS & MATHEWS ENVIRONMENTAL
1700 ROBERT ROAD, STE. 100
MANSFIELD, TEXAS 76063
817-563-1144

TBPE FIRM NO. F-256
TBPG FIRM NO. 50222

DRAWING
E5.3d

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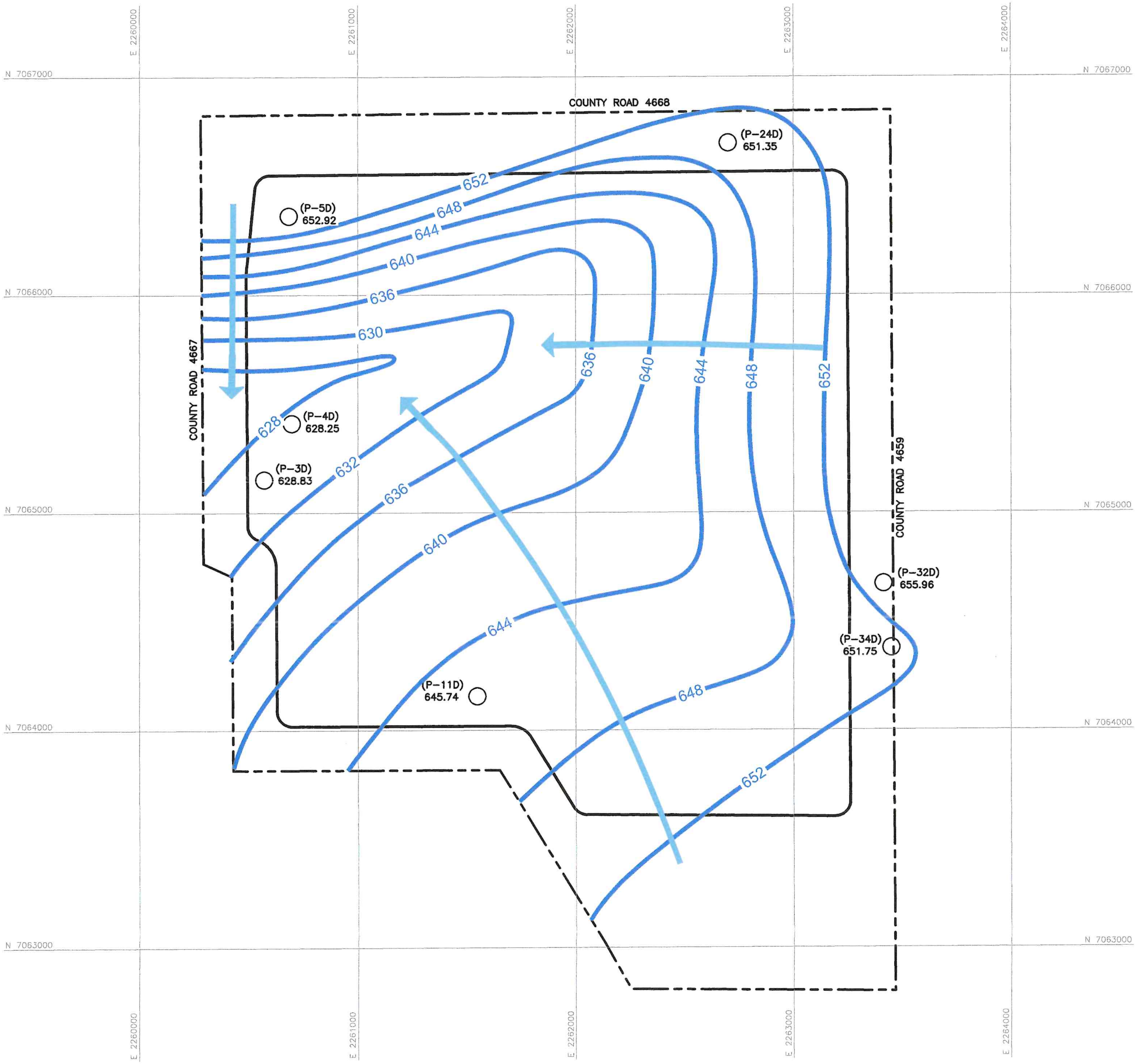

0 250 500
SCALE IN FEET

LEGEND

— - —	PERMIT BOUNDARY
———	WASTE MANAGEMENT UNIT
N 7062000	STATE PLANE COORDINATES
P-3D ○	PIEZOMETER LOCATION AND ID NUMBER
—628—	CONTOURS OF UNIT V POTENTIOMETRIC SURFACE (4' CONTOUR)
➡	APPARENT DIRECTION OF GROUNDWATER FLOW
628.83	WATER LEVEL ELEVATION

NOTE(S):

1. PERMIT BOUNDARY INFORMATION FROM SURVEYING AND MAPPING, LLC.

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GEOLOGY
2045
Elizabeth Floyd
9/23/2025

FOR PERMITTING PURPOSES

UNIT V POTENTIOMETRIC SURFACE MAP
AUGUST 2024

CHISHOLM TRAIL DISPOSAL, LLC
CHISHOLM TRAIL DISPOSAL LANDFILL

BME
BIGGS & MATHEWS ENVIRONMENTAL
1700 ROBERT ROAD, STE. 100
MANSFIELD, TEXAS 76063
817-563-1144

TBPE FIRM NO. F-256
TBPG FIRM NO. 50222

DRAWING
E5.4a

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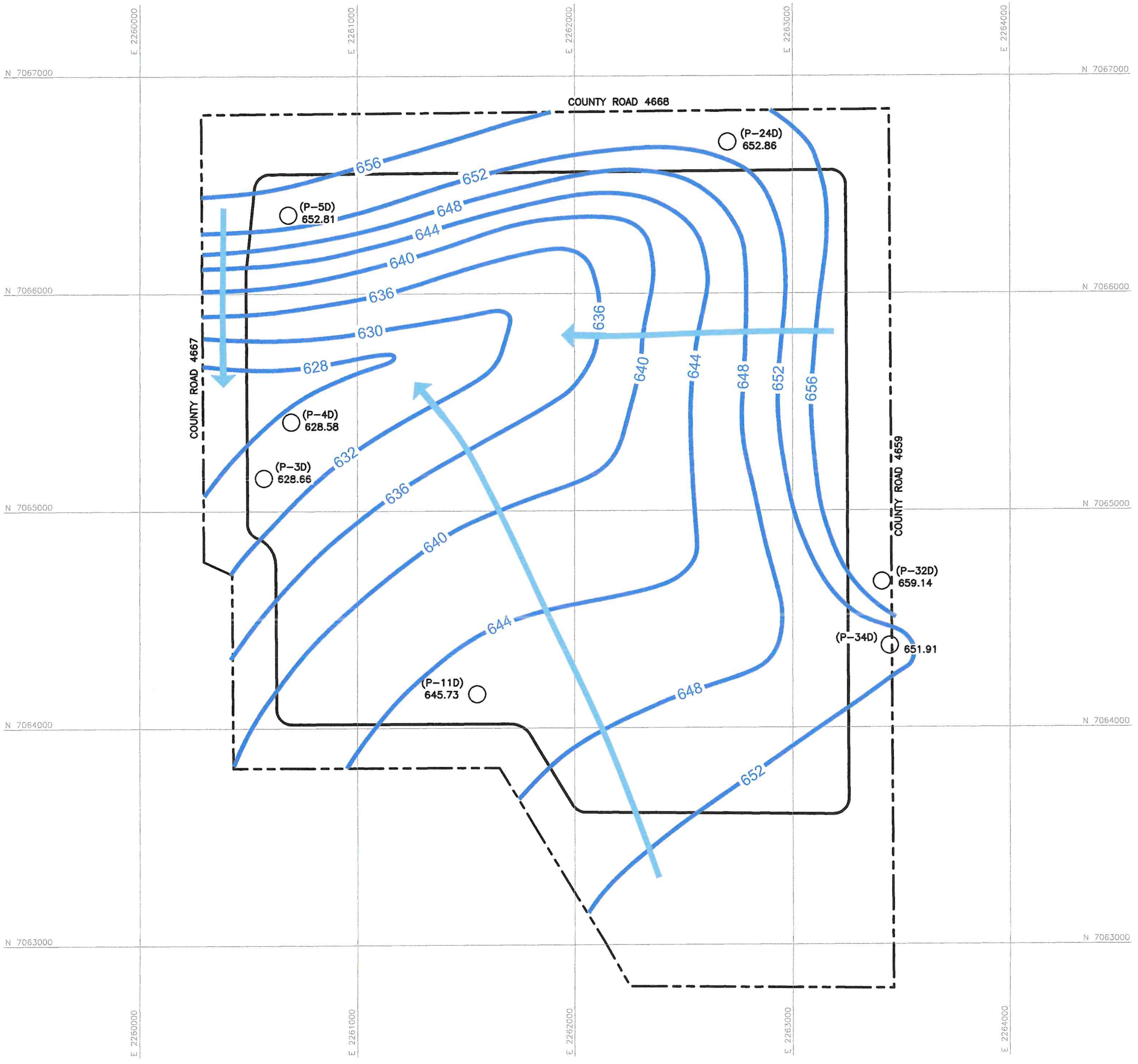

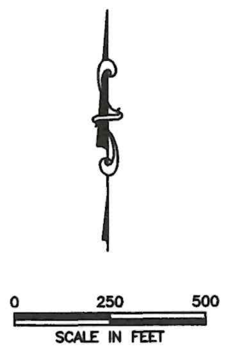

LEGEND

— - — - —	PERMIT BOUNDARY
———	WASTE MANAGEMENT UNIT
N 7062000	STATE PLANE COORDINATES
P-3D ○	PIEZOMETER LOCATION AND ID NUMBER
—628—	CONTOURS OF UNIT V POTENTIOMETRIC SURFACE (4' CONTOUR)
→	APPARENT DIRECTION OF GROUNDWATER FLOW
628.66	WATER LEVEL ELEVATION

NOTE(S):

1. PERMIT BOUNDARY INFORMATION FROM SURVEYING AND MAPPING, LLC.

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Elizabeth Floyd
GEOLOGY
2045

9/23/2025

FOR PERMITTING PURPOSES

UNIT V POTENTIOMETRIC SURFACE MAP SEPTEMBER 2024

CHISHOLM TRAIL DISPOSAL, LLC
CHISHOLM TRAIL DISPOSAL LANDFILL

BIGGS & MATHEWS ENVIRONMENTAL
1700 ROBERT ROAD, STE. 100
MANSFIELD, TEXAS 76063
817-563-1144

TBPE FIRM NO. F-256
TBPG FIRM NO. 50222

DRAWING
E5.4b

O:\Green Group\Wise County\Solid Waste\Type IV\P\Drawings\ATT E\E5-4b_Unit V_PotenSurfMap09-24.dwg Layout: LAYOUT 1 User: awhite

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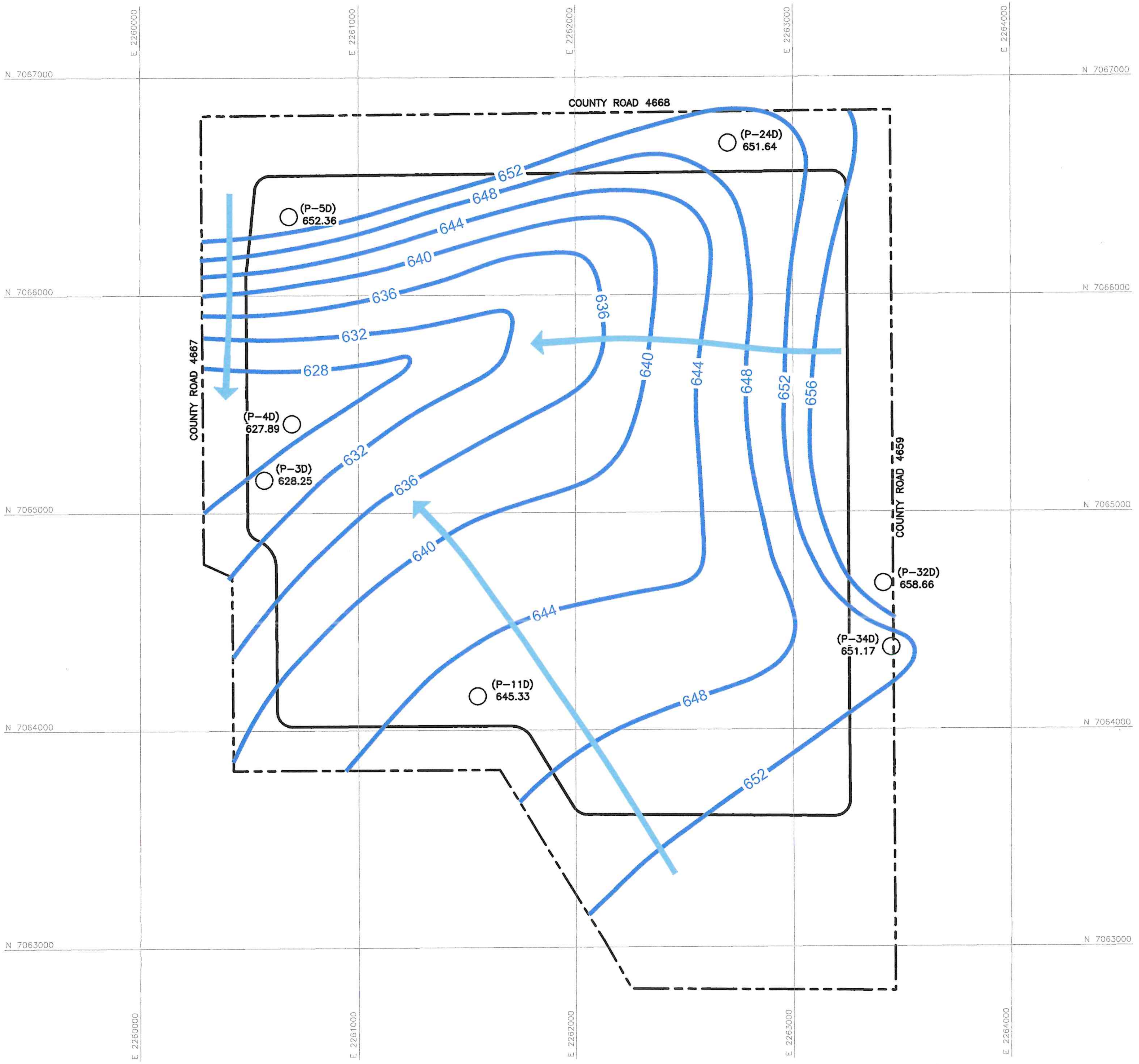


0 250 500
SCALE IN FEET

LEGEND

— - - —	PERMIT BOUNDARY
——	WASTE MANAGEMENT UNIT
N 7062000	STATE PLANE COORDINATES
P-3D ○	PIEZOMETER LOCATION AND ID NUMBER
—628—	CONTOURS OF UNIT V POTENTIOMETRIC SURFACE (4' CONTOUR)
➡	APPARENT DIRECTION OF GROUNDWATER FLOW
628.25	WATER LEVEL ELEVATION

NOTE(S):

1. PERMIT BOUNDARY INFORMATION FROM SURVEYING AND MAPPING, LLC.

Elizabeth Floyd
GEOLOGY 2045
9/23/2025

FOR PERMITTING PURPOSES

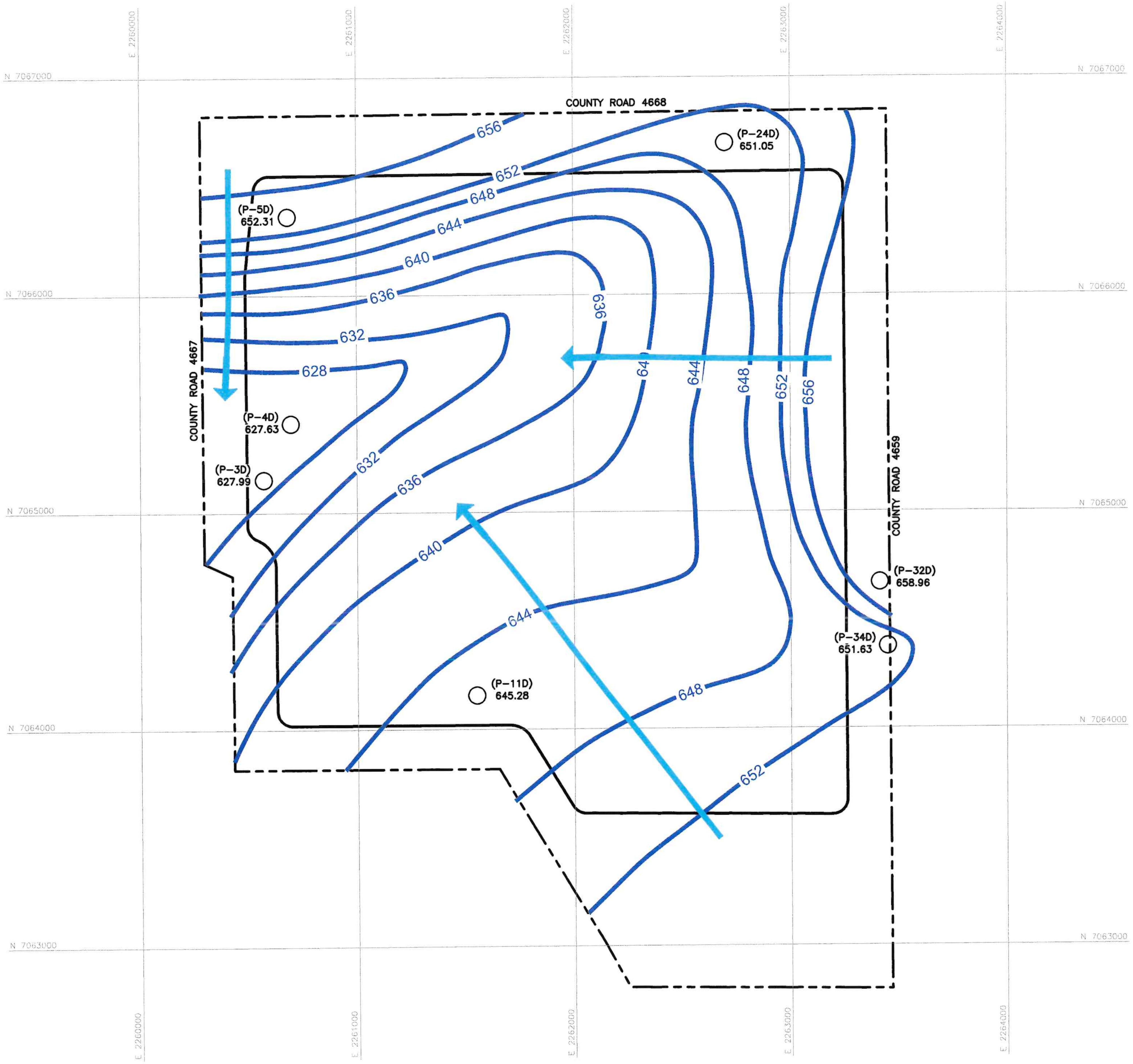
UNIT V POTENTIOMETRIC SURFACE MAP
OCTOBER 2024

CHISHOLM TRAIL DISPOSAL, LLC
CHISHOLM TRAIL DISPOSAL LANDFILL

BME
BIGGS & MATHEWS ENVIRONMENTAL
1700 ROBERT ROAD, STE. 100
MANSFIELD, TEXAS 76063
817-563-1144

TBPE FIRM NO. F-256
TBPG FIRM NO. 50222

DRAWING
E5.4c



0 250 500
SCALE IN FEET

LEGEND

— — - — —	PERMIT BOUNDARY
———	WASTE MANAGEMENT UNIT
N 7062000	STATE PLANE COORDINATES
P-3D ○	PIEZOMETER LOCATION AND ID NUMBER
—628—	CONTOURS OF UNIT V POTENTIOMETRIC SURFACE (4' CONTOUR)
➡	APPARENT DIRECTION OF GROUNDWATER FLOW
627.99	WATER LEVEL ELEVATION

NOTE(S):

1. PERMIT BOUNDARY INFORMATION FROM SURVEYING AND MAPPING, LLC.

Elizabeth Floyd
2045
9/23/2025

FOR PERMITTING PURPOSES

UNIT V POTENTIOMETRIC SURFACE MAP
NOVEMBER 2024

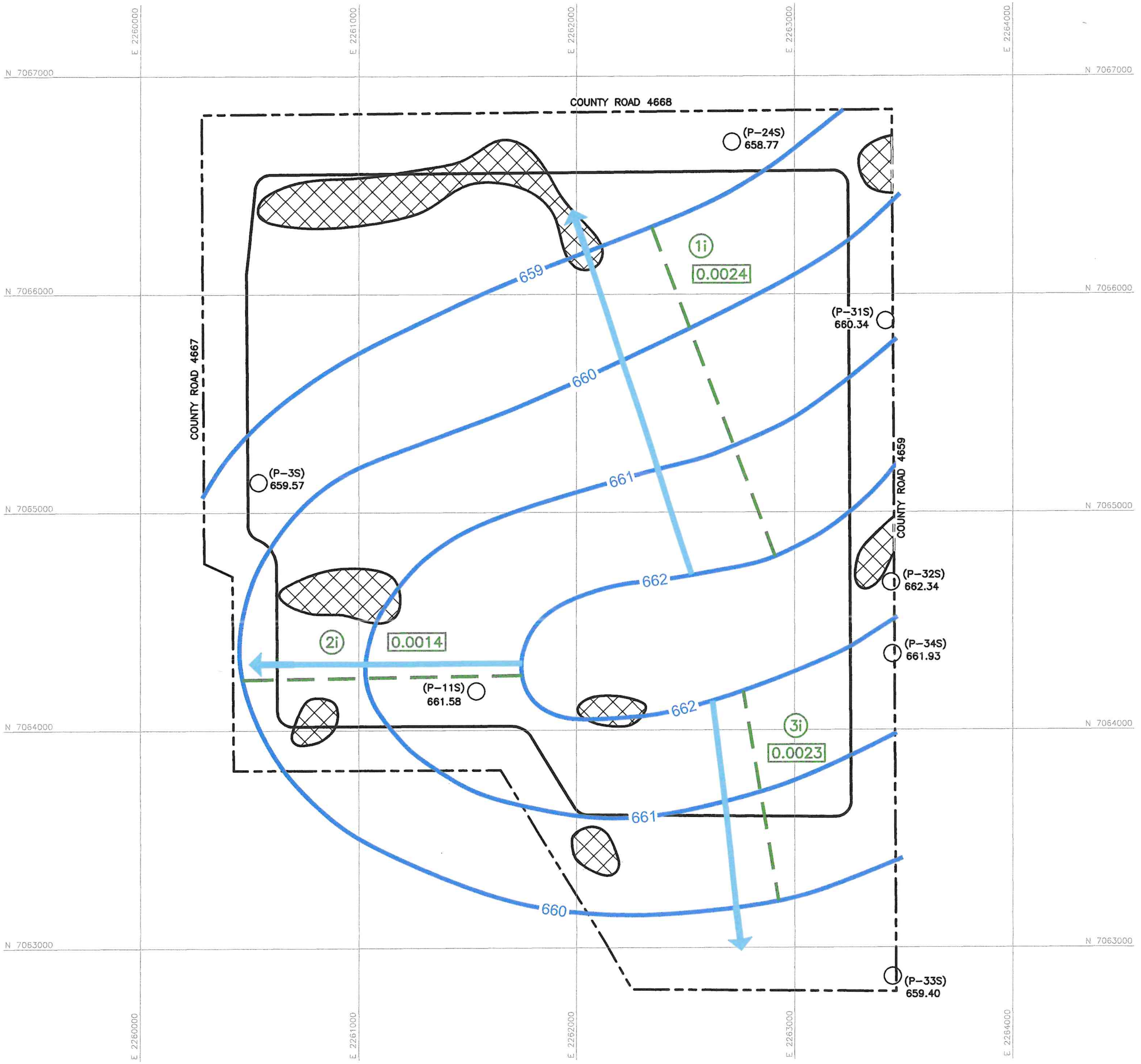
CHISHOLM TRAIL DISPOSAL, LLC
CHISHOLM TRAIL DISPOSAL LANDFILL

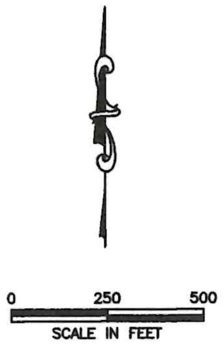
BIGGS & MATHEWS ENVIRONMENTAL
1700 ROBERT ROAD, STE. 100
MANSFIELD, TEXAS 76063
817-563-1144

TBPE FIRM NO. F-256
TBPG FIRM NO. 50222

DRAWING
E5.4d

O:\Green Group\Wise County\Solid Waste\Type IV\P\Drawings\ATT E\E5-4d_Unit V_PotenSurfMap11-24.dwg Layout: LAYOUT 1 User: awhite





LEGEND

— — — —	PERMIT BOUNDARY
———	WASTE MANAGEMENT UNIT
N 7062000	STATE PLANE COORDINATES
P-3S ○	PIEZOMETER LOCATION AND ID NUMBER
—660—	CONTOURS OF UNIT I POTENTIOMETRIC SURFACE (1' CONTOURS)
➡	APPARENT DIRECTION OF GROUNDWATER FLOW
659.57	WATER LEVEL ELEVATION
▨	UNIT II ABSENT
(1i)	GROUNDWATER FLOWPATH IDENTIFICATION NUMBER
— — —	GROUNDWATER FLOW GRADIENT LINES
0.0024	AVERAGE GRADIENT FOR CORRESPONDING FLOWLINE

NOTE(S):

1. PERMIT BOUNDARY INFORMATION FROM SURVEYING AND MAPPING, LLC.
2. WATER LEVEL ELEVATIONS TAKEN IN OCTOBER 2024.

Elizabeth Floyd
Elizabeth Floyd
2045
9/23/2025

FOR PERMITTING PURPOSES

GROUNDWATER GRADIENT EVALUATION – UNIT I

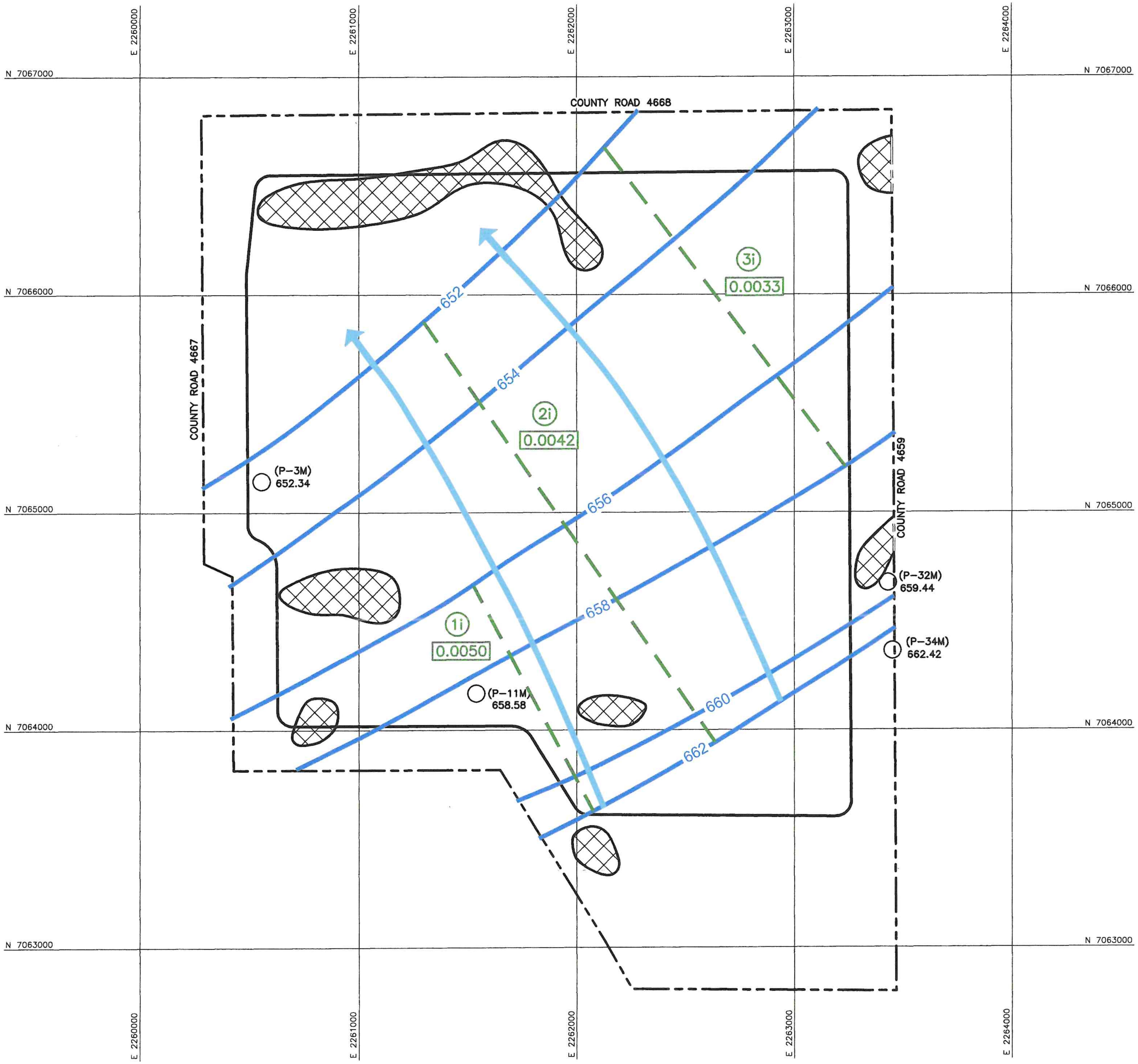
CHISHOLM TRAIL DISPOSAL, LLC
CHISHOLM TRAIL DISPOSAL LANDFILL

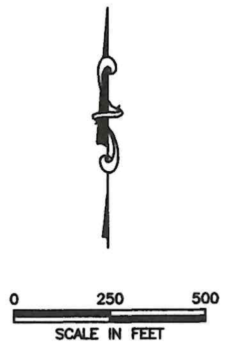
BIGGS & MATHEWS ENVIRONMENTAL
1700 ROBERT ROAD, STE. 100
MANSFIELD, TEXAS 76063
817-563-1144

TBPE FIRM NO. F-256
TBPG FIRM NO. 50222

DRAWING
E5.5

O:\Green Group\Wise County\Solid Waste\Type IV\P\Drawings\ATT E\E5-6_Unit III_GW_GradientEval.dwg Layout: LAYOUT 1 User: awhite





LEGEND

— - —	PERMIT BOUNDARY
— — —	WASTE MANAGEMENT UNIT
N 7062000	STATE PLANE COORDINATES
○	PIEZOMETER LOCATION AND ID NUMBER
660	CONTOURS OF UNIT III POTENTIOMETRIC SURFACE (2' CONTOUR)
➡	APPARENT DIRECTION OF GROUNDWATER FLOW
652.74	WATER LEVEL ELEVATION
▨	UNIT II ABSENT
(1i)	GROUNDWATER FLOWPATH IDENTIFICATION NUMBER
— —	GROUNDWATER FLOW GRADIENT LINES
0.0050	AVERAGE GRADIENT FOR CORRESPONDING FLOWLINE

NOTE(S):

1. PERMIT BOUNDARY INFORMATION FROM SURVEYING AND MAPPING, LLC.
2. WATER LEVEL ELEVATIONS TAKEN IN OCTOBER 2024.

Elizabeth Floyd
GEOLOGY
2045

Elizabeth Floyd
9/23/2025

FOR PERMITTING PURPOSES

GROUNDWATER GRADIENT EVALUATION – UNIT III

CHISHOLM TRAIL DISPOSAL, LLC
CHISHOLM TRAIL DISPOSAL LANDFILL

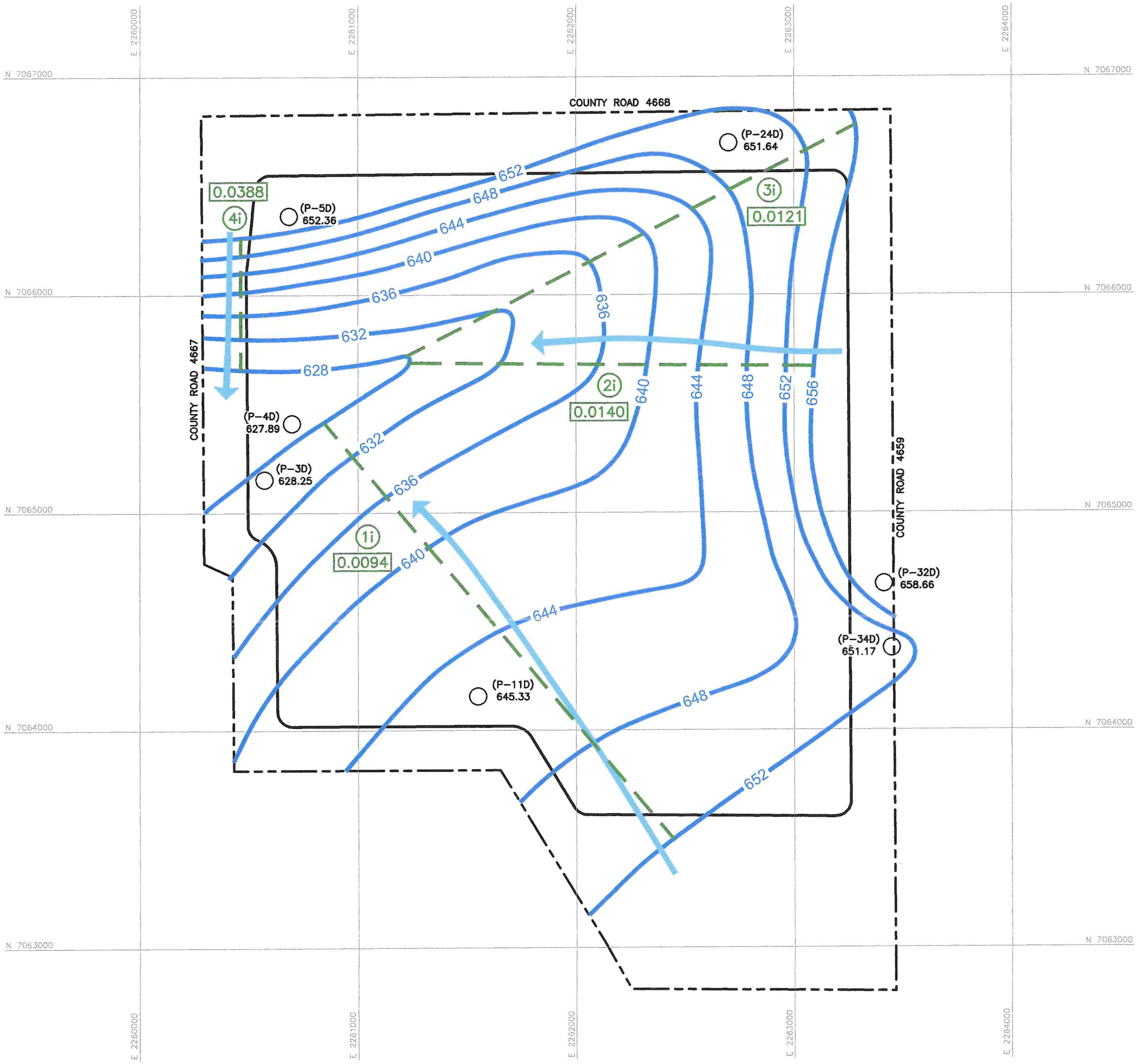
BME

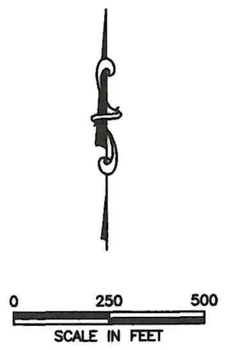
BIGGS & MATHEWS ENVIRONMENTAL
1700 ROBERT ROAD, STE. 100
MANSFIELD, TEXAS 76063
817-563-1144

TBPE FIRM NO. F-256
TBPG FIRM NO. 50222

DRAWING
E5.6

O:\Green Group\Wise County\Solid Waste\Type IV\P\Drawings\ATT E\E5-7_Unit V_GW_GradientEval.dwg Layout: LAYOUT 1 User: awhite





LEGEND

— - — - —	PERMIT BOUNDARY
———	WASTE MANAGEMENT UNIT
N 7062000	STATE PLANE COORDINATES
P-3D ○	PIEZOMETER LOCATION AND ID NUMBER
—628—	CONTOURS OF UNIT V POTENTIOMETRIC SURFACE (4' CONTOUR)
→	APPARENT DIRECTION OF GROUNDWATER FLOW
628.66	WATER LEVEL ELEVATION
(1i)	GROUNDWATER FLOWPATH IDENTIFICATION NUMBER
— — —	GROUNDWATER FLOW GRADIENT LINES
0.0094	AVERAGE GRADIENT FOR CORRESPONDING FLOWLINE

NOTE(S):

1. PERMIT BOUNDARY INFORMATION FROM SURVEYING AND MAPPING, LLC.
2. WATER LEVEL ELEVATIONS TAKEN IN OCTOBER 2024.

Elizabeth Floyd

Elizabeth Floyd
GEOLOGY
2045

9/23/2025

FOR PERMITTING PURPOSES

GROUNDWATER GRADIENT EVALUATION – UNIT V

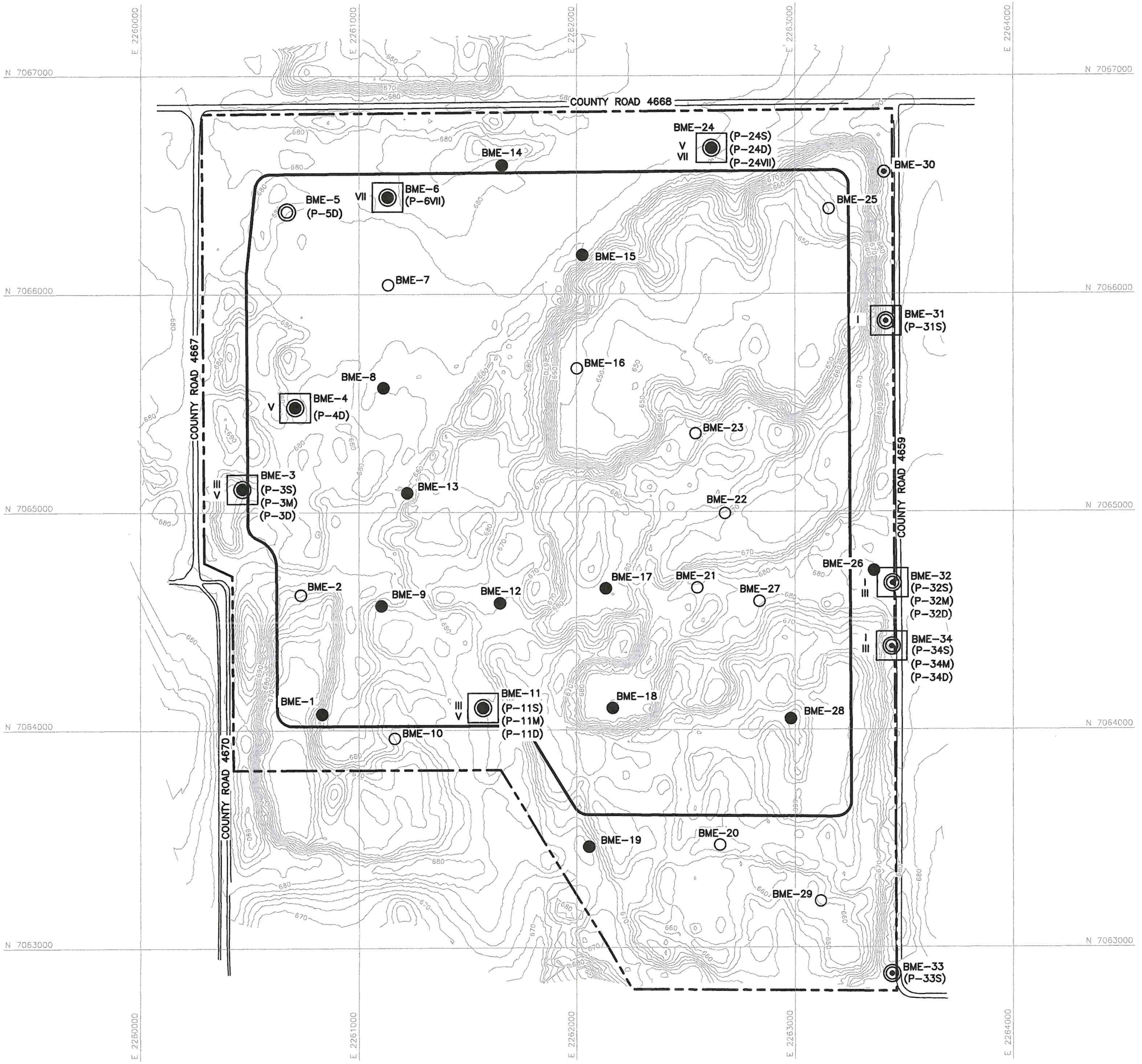
CHISHOLM TRAIL DISPOSAL, LLC
CHISHOLM TRAIL DISPOSAL LANDFILL

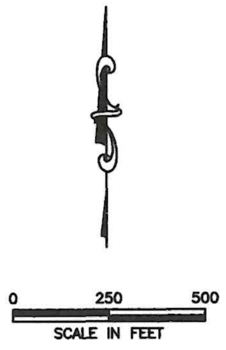
BME

BIGGS & MATHEWS ENVIRONMENTAL
1700 ROBERT ROAD, STE. 100
MANSFIELD, TEXAS 76063
817-563-1144

TBPE FIRM NO. F-256
TBPG FIRM NO. 50222

DRAWING
E5.7





LEGEND

— - - —	PERMIT BOUNDARY
———	WASTE MANAGEMENT UNIT
---700---	10' CONTOUR
N 7062000	STATE PLANE COORDINATES
BME-2 ○	EXISTING BORING DRILLED TO 5 FT BELOW EDE
BME-1 ●	EXISTING BORING DRILLED TO 30 FT BELOW EDE
BME-30 ◉	ADDITIONAL BORING
P-3S ○	PIEZOMETER LOCATION
☐ I III V VII	SLUG TEST LOCATION UNITS I, III, V, VII

NOTE(S):

1. EXISTING CONTOURS TAKEN FROM DRONE SURVEY PROVIDED BY BIGGS AND MATHEWS ENVIRONMENTAL DATED APRIL 5, 2024.
2. PERMIT BOUNDARY INFORMATION FROM SURVEYING AND MAPPING, LLC.

STATE OF TEXAS
Elizabeth Floyd
GEOLOGY
2045
LICENSED
PROFESSIONAL GEOSCIENTIST

Elizabeth Floyd

9/23/2025

FOR PERMITTING PURPOSES

SLUG TEST LOCATION MAP

CHISHOLM TRAIL DISPOSAL, LLC
CHISHOLM TRAIL DISPOSAL LANDFILL

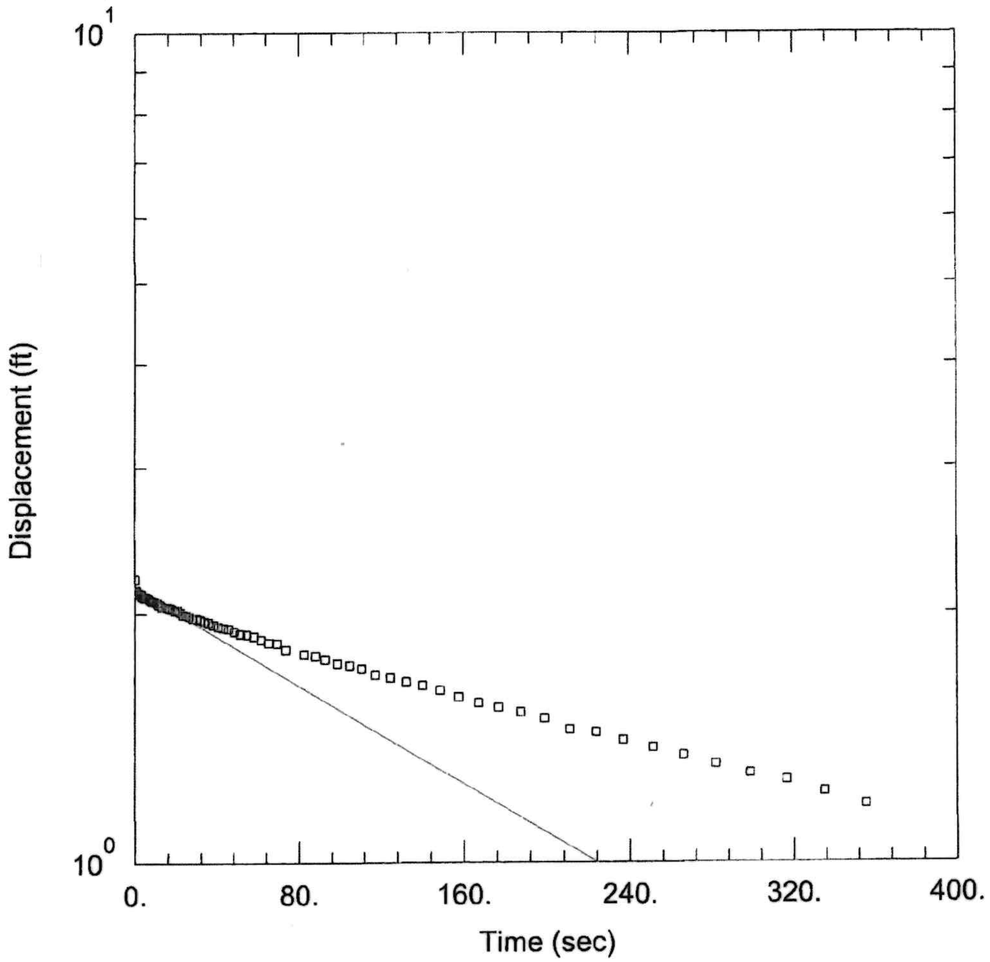
BME

BIGGS & MATHEWS ENVIRONMENTAL
1700 ROBERT ROAD, STE. 100
MANSFIELD, TEXAS 76063
817-563-1144

TBPE FIRM NO. F-256
TBPG FIRM NO. 50222

DRAWING
E5.8

O:\Green Group\Wise County\Solid Waste\Type IV\P\Drawings\ATT E\E5-8_SlugTestLocations.dwg Layout: Layout User: awhite



WELL TEST ANALYSIS

PROJECT INFORMATION

Company: Biggs & Mathews
Client: Green Group
Location: Chisholm Trail Disposal
Test Well: P-31S-FH
Test Date: October 2024

AQUIFER DATA

Saturated Thickness: 13.67 ft
Anisotropy Ratio (Kz/Kr): 1.

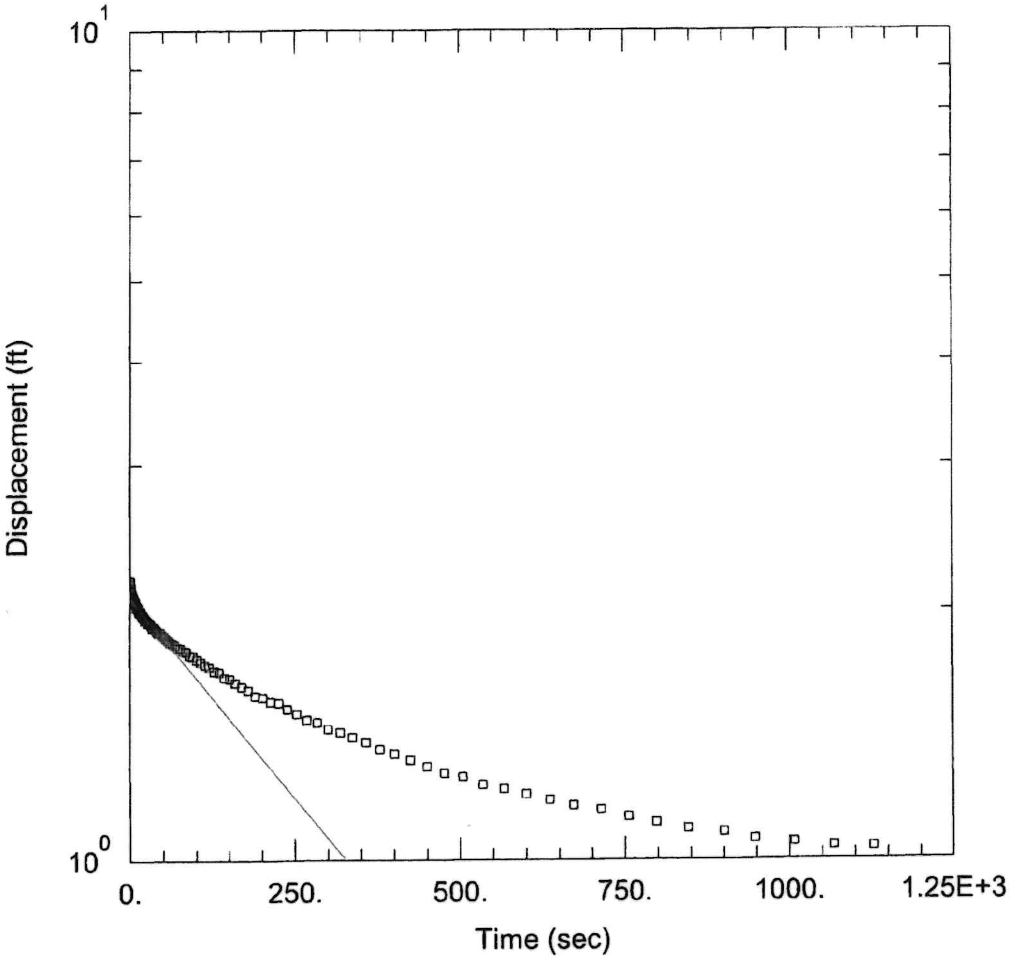
WELL DATA (P-31S)

Initial Displacement: 2.203 ft
Total Well Penetration Depth: 10.46 ft
Casing Radius: 0.083 ft
Static Water Column Height: 10.46 ft
Screen Length: 10. ft
Well Radius: 0.083 ft
Gravel Pack Porosity: 0.

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 9.152E-5 cm/sec
y0 = 2.148 ft

E5.9a



WELL TEST ANALYSIS

PROJECT INFORMATION

Company: Biggs & Mathews
Client: Green Group
Location: Chisholm Trail Disposal
Test Well: P-31S-RH
Test Date: October 2024

AQUIFER DATA

Saturated Thickness: 14.82 ft
Anisotropy Ratio (Kz/Kr): 1.

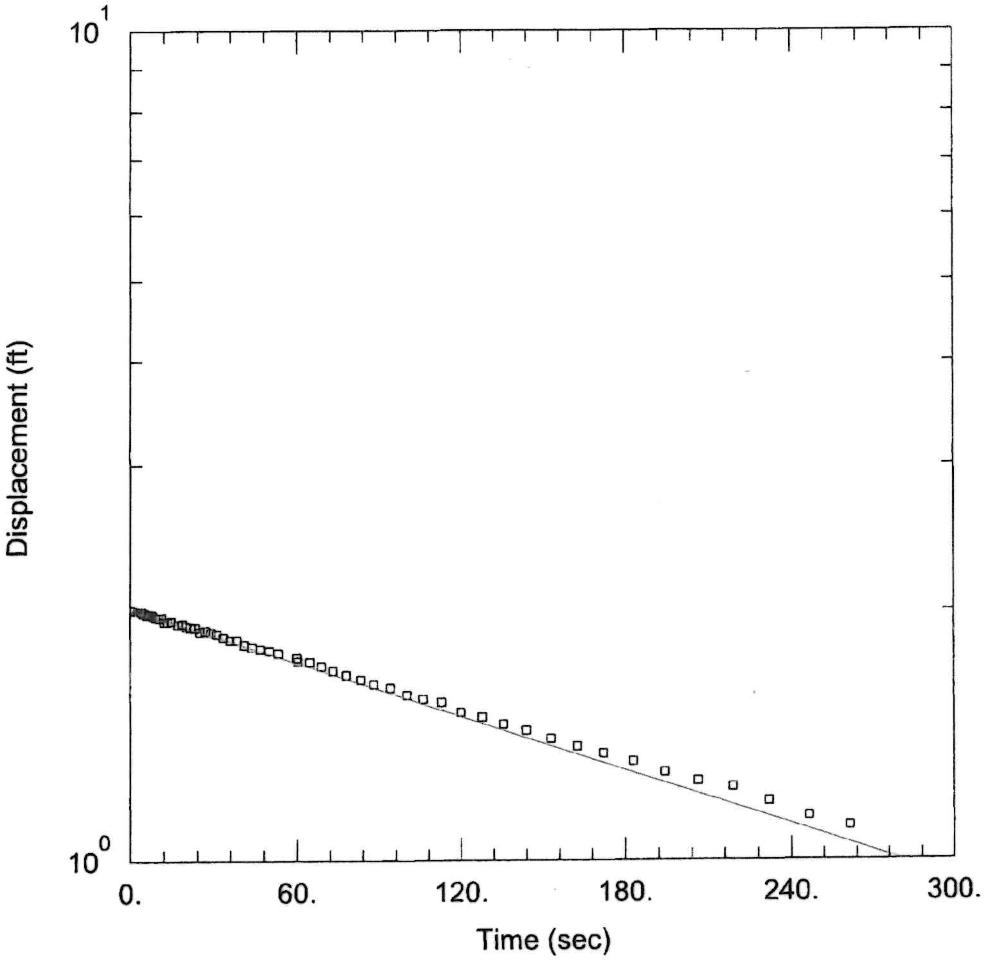
WELL DATA (P-31S-RH)

Initial Displacement: 2.182 ft
Total Well Penetration Depth: 11.61 ft
Casing Radius: 0.083 ft
Static Water Column Height: 11.61 ft
Screen Length: 10. ft
Well Radius: 0.083 ft
Gravel Pack Porosity: 0.

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 6.066E-5 cm/sec
y0 = 2.071 ft

E5.9b



WELL TEST ANALYSIS

PROJECT INFORMATION

Company: Biggs & Mathews
Client: Green Group
Location: Chisholm Trail Disposal
Test Well: P-32S-FH
Test Date: October 2024

AQUIFER DATA

Saturated Thickness: 18.05 ft
Anisotropy Ratio (Kz/Kr): 1.

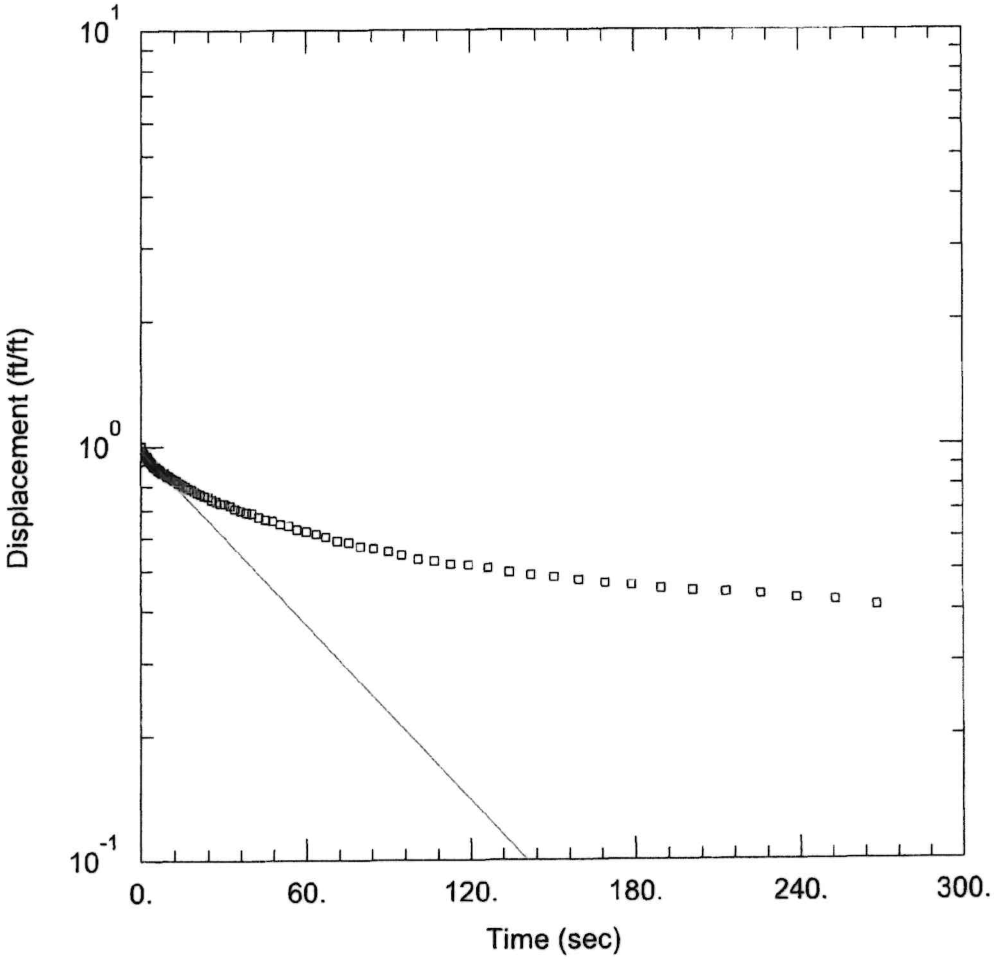
WELL DATA (P-32S)

Initial Displacement: 2.01 ft
Total Well Penetration Depth: 15.02 ft
Casing Radius: 0.083 ft
Static Water Column Height: 15.02 ft
Screen Length: 10. ft
Well Radius: 0.083 ft
Gravel Pack Porosity: 0.

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 7.083E-5 cm/sec
y0 = 2.011 ft

E5.9c



WELL TEST ANALYSIS

PROJECT INFORMATION

Company: Biggs & Mathews
Client: Green Group
Location: Chisholm Trail Disposal
Test Well: P-32S-RH
Test Date: October 2024

AQUIFER DATA

Saturated Thickness: 19.03 ft
Anisotropy Ratio (Kz/Kr): 1.

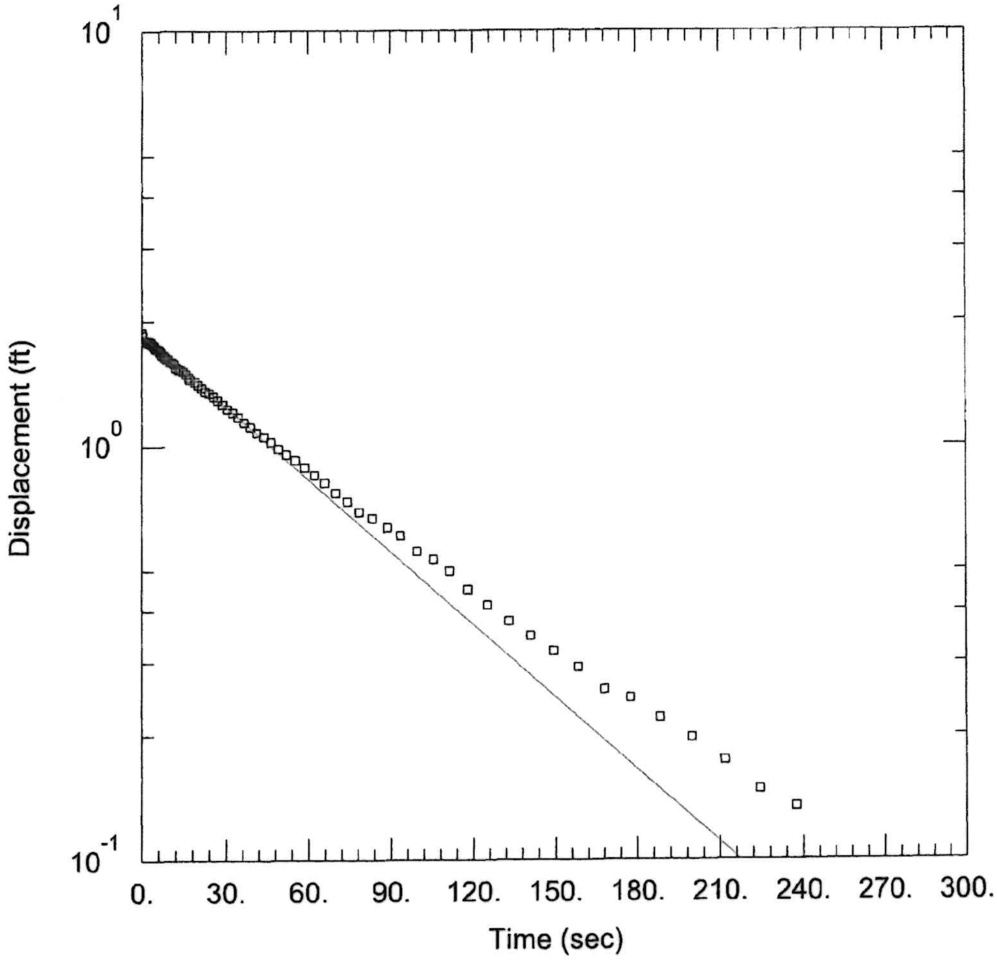
WELL DATA (P-32S-rh)

Initial Displacement: 1.699 ft
Total Well Penetration Depth: 16. ft
Casing Radius: 0.083 ft
Static Water Column Height: 16. ft
Screen Length: 10. ft
Well Radius: 0.083 ft
Gravel Pack Porosity: 0.

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.0004645 cm/sec
y0 = 1.656 ft

E5.9d



WELL TEST ANALYSIS

PROJECT INFORMATION

Company: Biggs & Mathews
Client: Green Group
Location: Chisholm Trail Disposal
Test Well: P-34S-FH
Test Date: October 2024

AQUIFER DATA

Saturated Thickness: 13.6 ft

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (P-34S)

Initial Displacement: 1.88 ft
Total Well Penetration Depth: 10.52 ft
Casing Radius: 0.083 ft

Static Water Column Height: 10.52 ft
Screen Length: 10. ft
Well Radius: 0.083 ft
Gravel Pack Porosity: 0.

SOLUTION

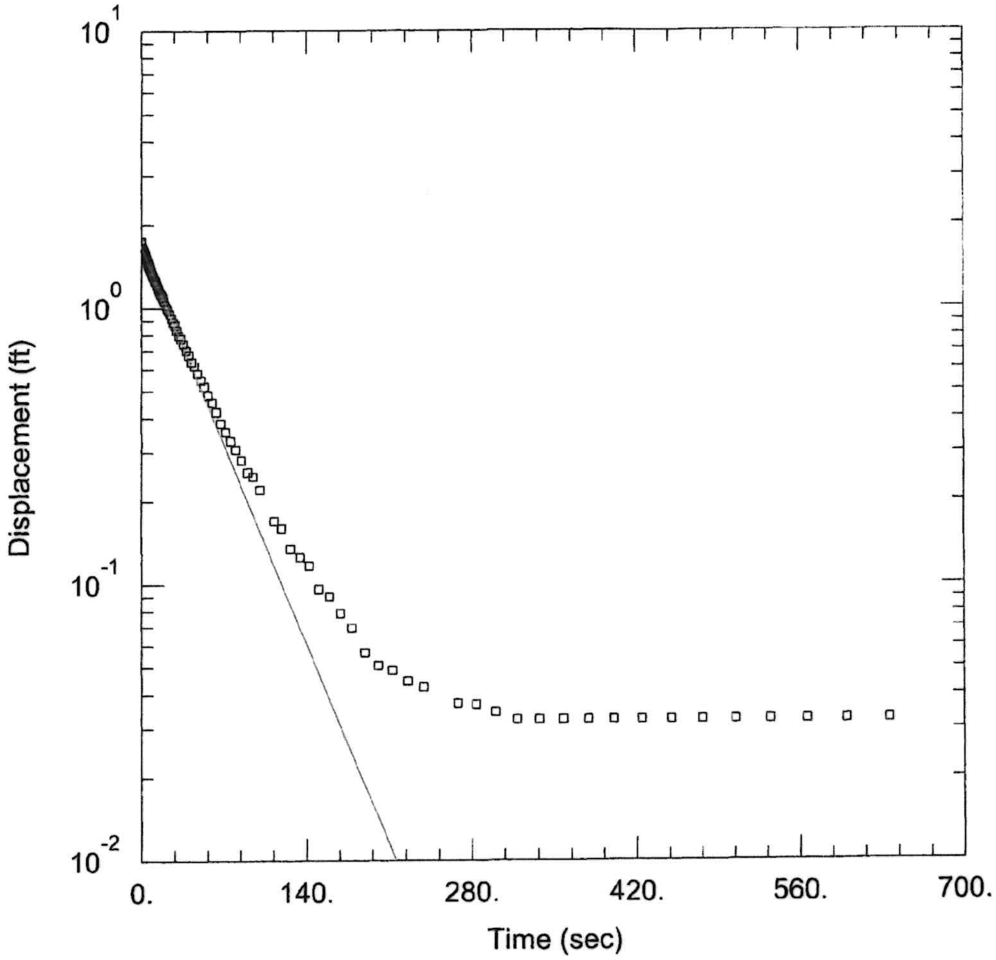
Aquifer Model: Unconfined

Solution Method: Bouwer-Rice

K = 0.0003618 cm/sec

y0 = 1.859 ft

E5.9e



WELL TEST ANALYSIS

PROJECT INFORMATION

Company: Biggs & Mathews
Client: Green Group
Location: Chisholm Trail Disposal
Test Well: P-34S-RH
Test Date: October 2024

AQUIFER DATA

Saturated Thickness: 13.6 ft
Anisotropy Ratio (Kz/Kr): 1.

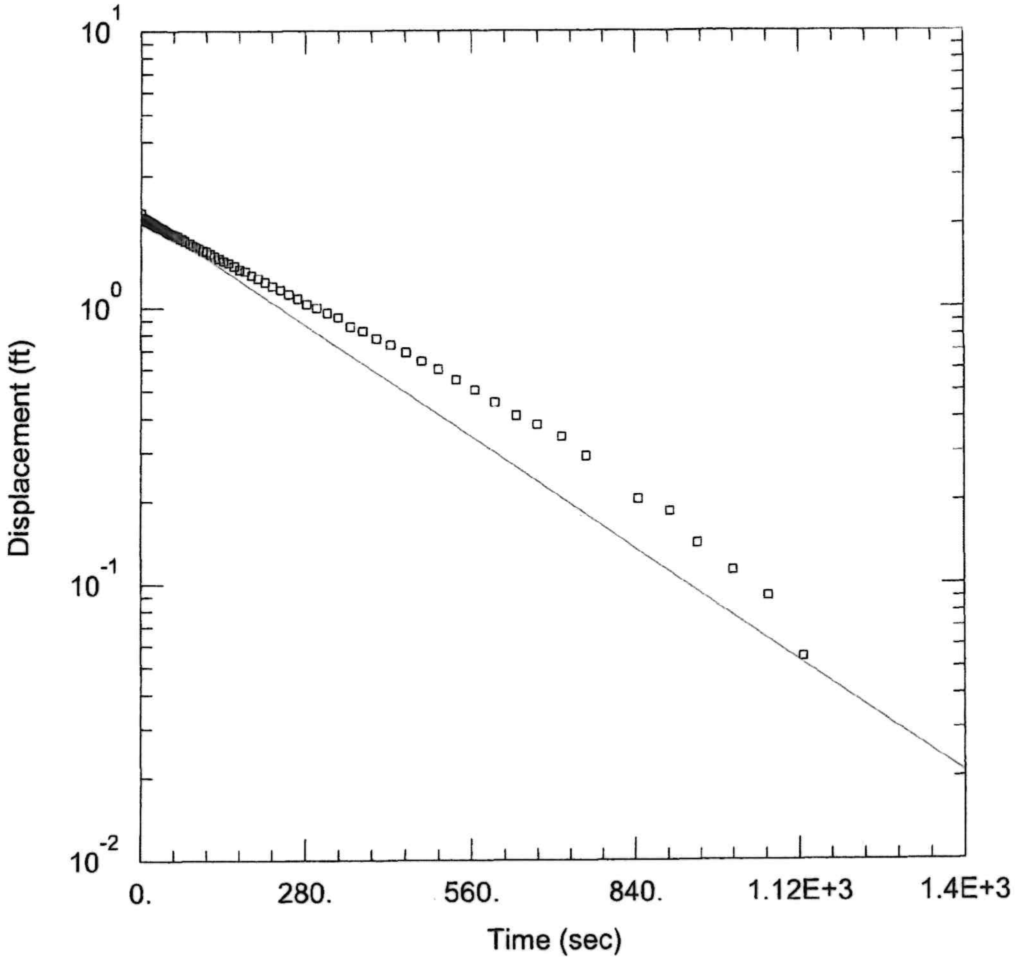
WELL DATA (P-34S-RH)

Initial Displacement: 1.74 ft
Total Well Penetration Depth: 10.56 ft
Casing Radius: 0.083 ft
Static Water Column Height: 10.56 ft
Screen Length: 10. ft
Well Radius: 0.083 ft
Gravel Pack Porosity: 0.

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.0006388 cm/sec
y0 = 1.672 ft

E5.9f



WELL TEST ANALYSIS

PROJECT INFORMATION

Company: Biggs & Mathews
Client: Green Group
Location: Chisholm Trail Disposal
Test Well: P-3M-FH
Test Date: October 2024

AQUIFER DATA

Saturated Thickness: 14. ft

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (P-3M-FH)

Initial Displacement: 2.206 ft
Total Well Penetration Depth: 15. ft
Casing Radius: 0.083 ft

Static Water Column Height: 36.51 ft
Screen Length: 10. ft
Well Radius: 0.083 ft
Gravel Pack Porosity: 0.

SOLUTION

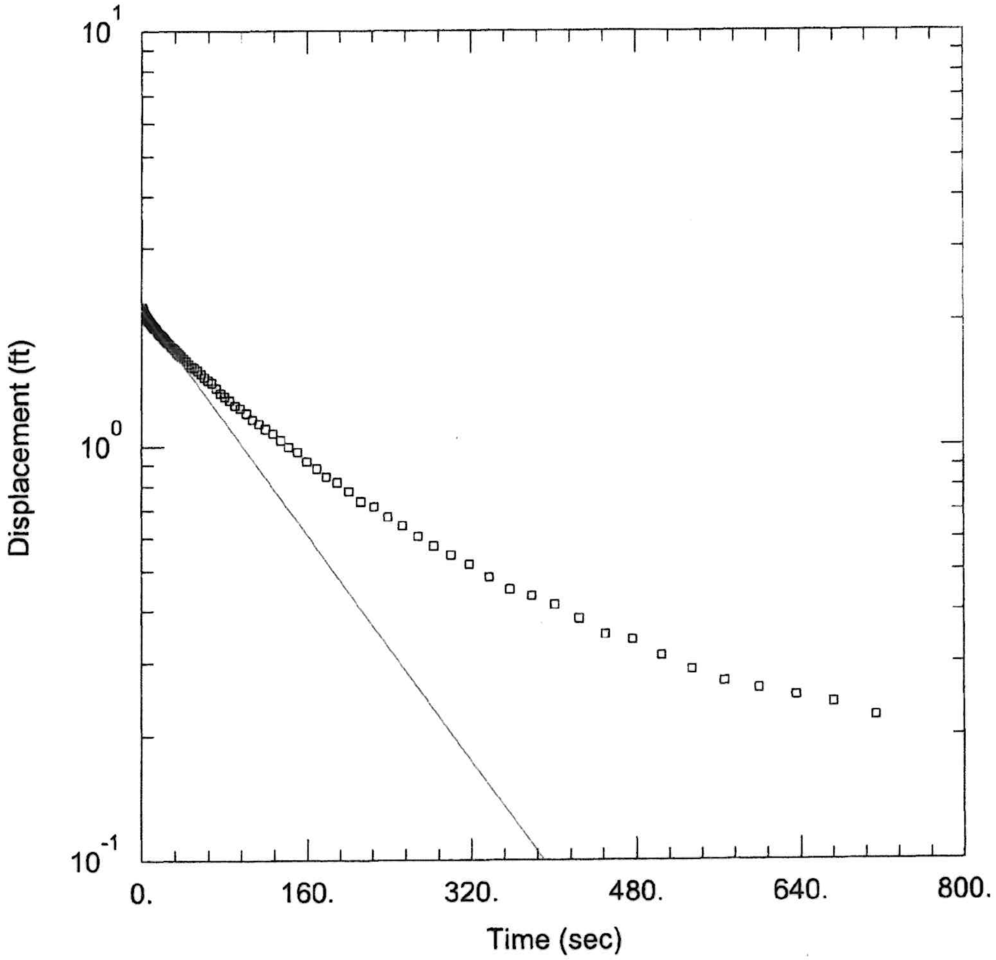
Aquifer Model: Confined

Solution Method: Bouwer-Rice

K = 0.0001033 cm/sec

y0 = 2.19 ft

E5.9g



WELL TEST ANALYSIS

PROJECT INFORMATION

Company: Biggs & Mathews
Client: Green Group
Location: Chisholm Trail Disposal
Test Well: P-3M-RH
Test Date: October 2024

AQUIFER DATA

Saturated Thickness: 14. ft

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (P-3M-RH)

Initial Displacement: 2.169 ft
Total Well Penetration Depth: 11. ft
Casing Radius: 0.083 ft

Static Water Column Height: 15. ft
Screen Length: 10. ft
Well Radius: 0.083 ft
Gravel Pack Porosity: 0.

SOLUTION

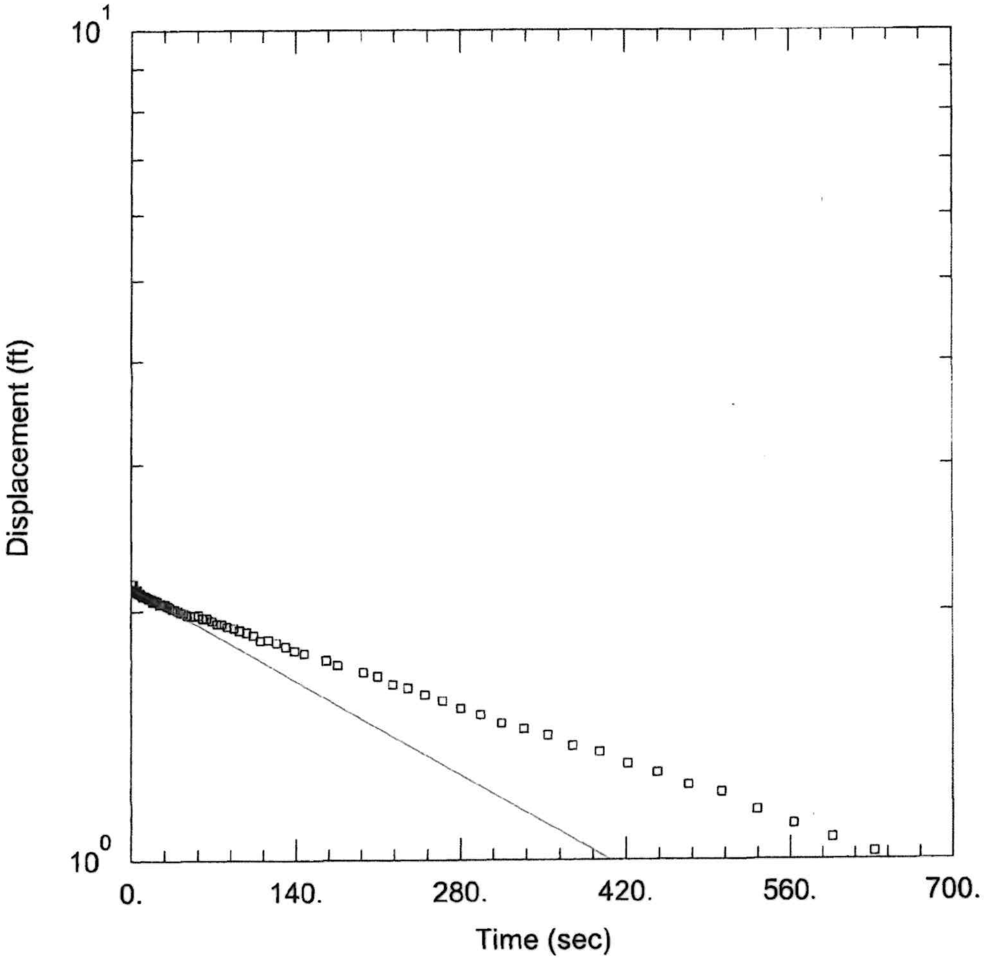
Aquifer Model: Confined

K = 0.0002127 cm/sec

Solution Method: Bouwer-Rice

y0 = 2.133 ft

E5.9h



WELL TEST ANALYSIS

PROJECT INFORMATION

Company: Biggs & Mathews
Client: Green Group
Location: Chisholm Trail Disposal
Test Well: P-11M-FH
Test Date: October 2024

AQUIFER DATA

Saturated Thickness: 14. ft
Anisotropy Ratio (Kz/Kr): 1.

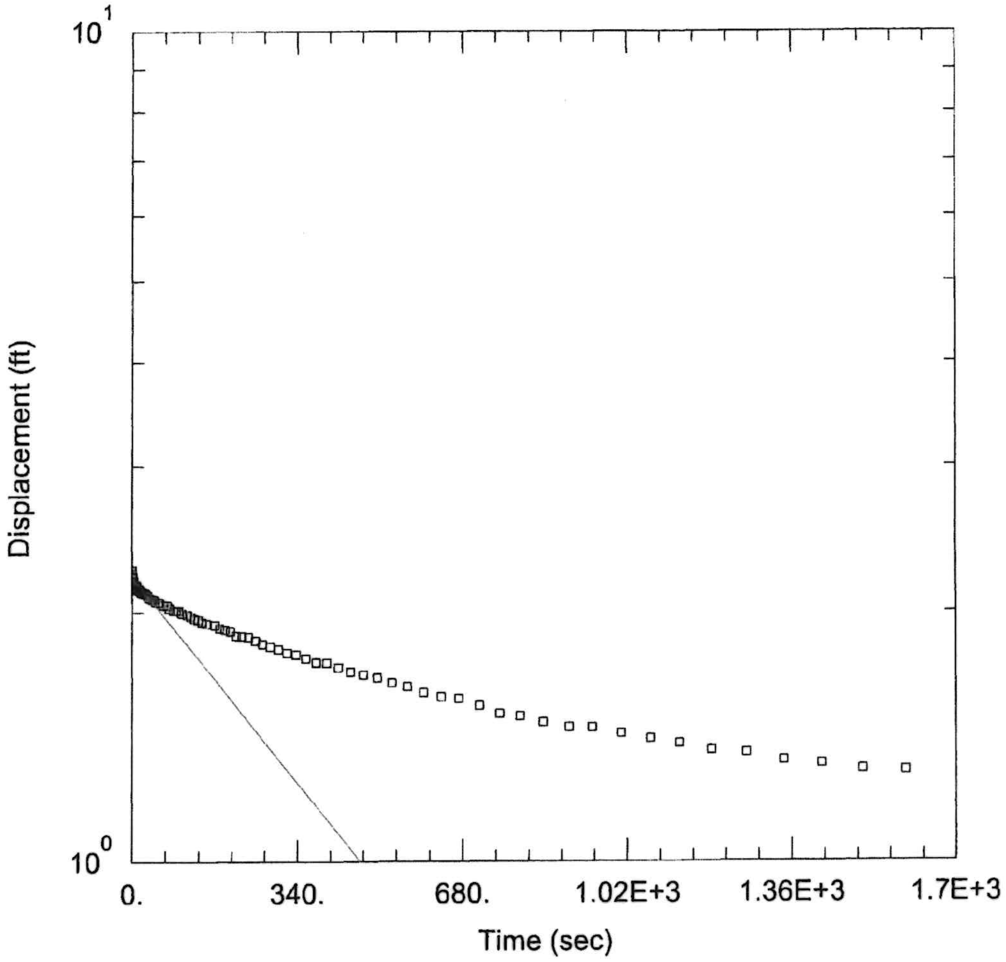
WELL DATA (P-11M-FH)

Initial Displacement: 2.159 ft
Total Well Penetration Depth: 13. ft
Casing Radius: 0.083 ft
Static Water Column Height: 13. ft
Screen Length: 5. ft
Well Radius: 0.083 ft
Gravel Pack Porosity: 0.

SOLUTION

Aquifer Model: Confined
Solution Method: Bouwer-Rice
K = 9.114E-5 cm/sec
y0 = 2.134 ft

E5.9i



WELL TEST ANALYSIS

PROJECT INFORMATION

Company: Biggs & Mathews
Client: Green Group
Location: Chisholm Trail Disposal
Test Well: P-11M-RH
Test Date: October 2024

AQUIFER DATA

Saturated Thickness: 14. ft
Anisotropy Ratio (Kz/Kr): 1.

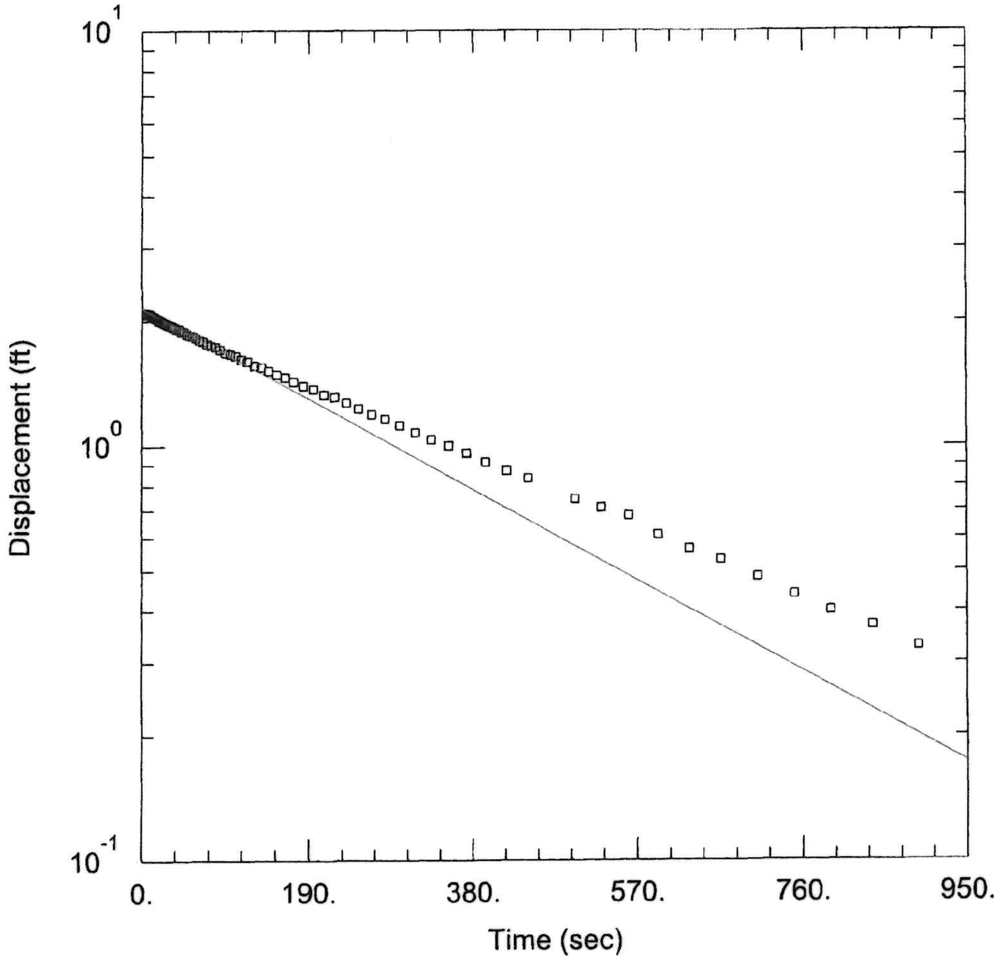
WELL DATA (P-11M-RH)

Initial Displacement: 2.25 ft
Total Well Penetration Depth: 13. ft
Casing Radius: 0.083 ft
Static Water Column Height: 13. ft
Screen Length: 5. ft
Well Radius: 0.083 ft
Gravel Pack Porosity: 0.

SOLUTION

Aquifer Model: Confined
Solution Method: Bouwer-Rice
K = 8.929E-5 cm/sec
y0 = 2.203 ft

E5.9j



WELL TEST ANALYSIS

PROJECT INFORMATION

Company: Biggs & Mathews
Client: Green Group
Location: Chisholm Trail Disposal
Test Well: P-32M-FH
Test Date: October 2024

AQUIFER DATA

Saturated Thickness: 25. ft

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (P-32M-FH)

Initial Displacement: 2.098 ft
Total Well Penetration Depth: 25. ft
Casing Radius: 0.083 ft

Static Water Column Height: 25. ft
Screen Length: 10. ft
Well Radius: 0.083 ft
Gravel Pack Porosity: 0.

SOLUTION

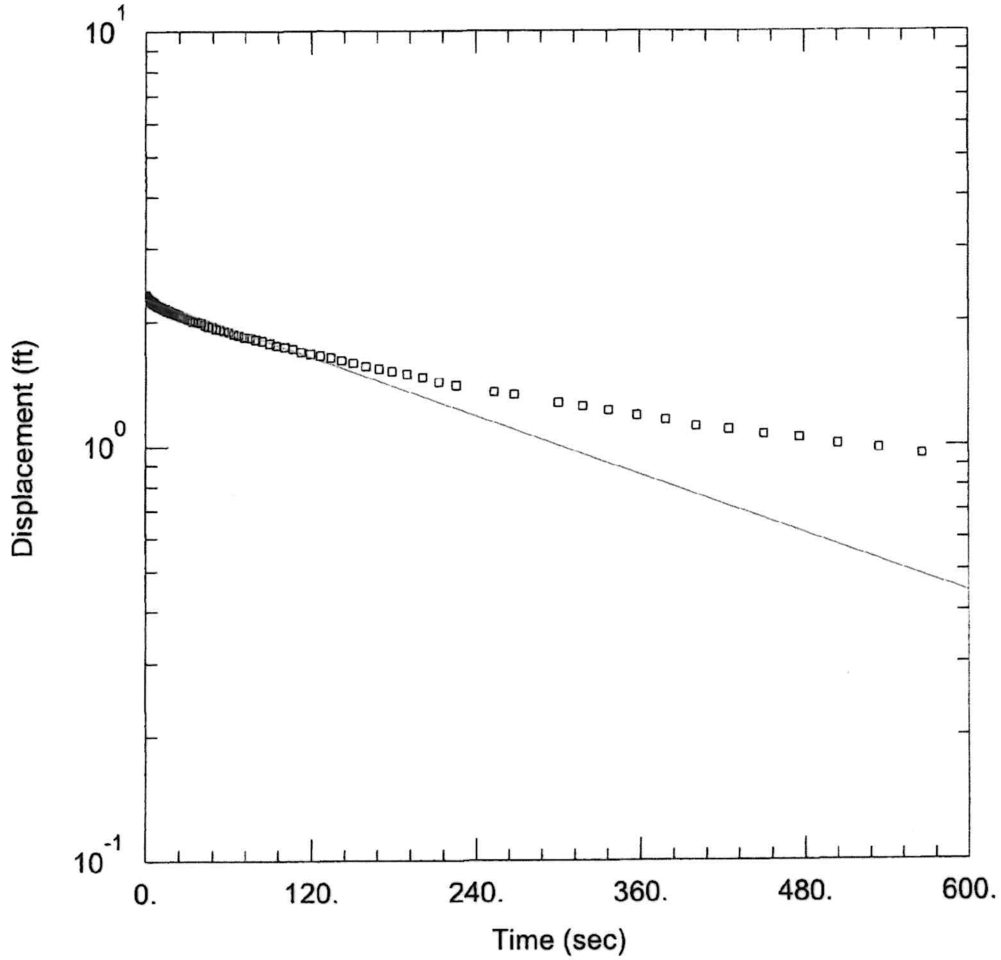
Aquifer Model: Confined

Solution Method: Bouwer-Rice

K = 8.918E-5 cm/sec

y0 = 2.151 ft

E5.9k



WELL TEST ANALYSIS

PROJECT INFORMATION

Company: Biggs & Mathews
Client: Green Group
Location: Chisholm Trail Disposal
Test Well: P-32M-RH
Test Date: October 2024

AQUIFER DATA

Saturated Thickness: 25. ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (P-32M-RH)

Initial Displacement: 2.33 ft
Total Well Penetration Depth: 25. ft
Casing Radius: 0.083 ft

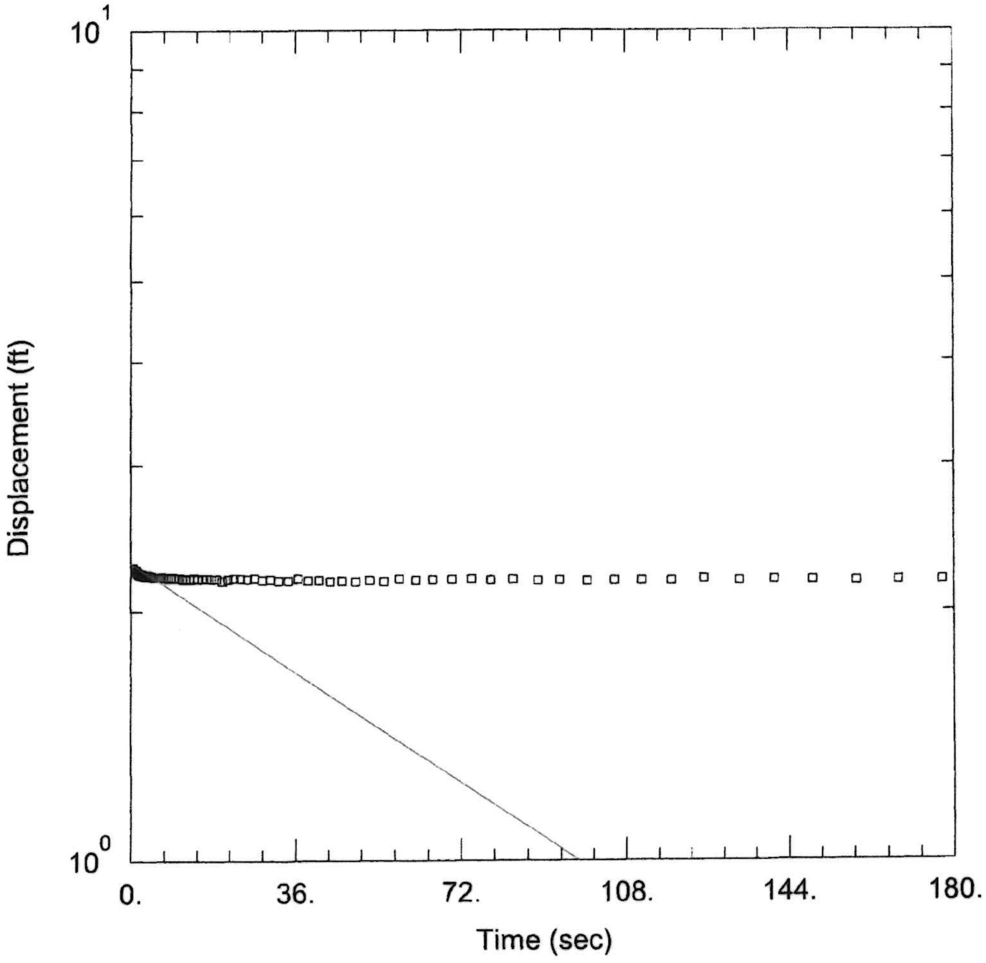
Static Water Column Height: 25. ft
Screen Length: 10. ft
Well Radius: 0.083 ft
Gravel Pack Porosity: 0.

SOLUTION

Aquifer Model: Confined
K = 9.142E-5 cm/sec

Solution Method: Bouwer-Rice
y0 = 2.273 ft

E5.9I



WELL TEST ANALYSIS

PROJECT INFORMATION

Company: Biggs & Mathews
Client: Green Group
Location: Chisholm Trail Disposal
Test Well: P-34M-RH
Test Date: October 2024

AQUIFER DATA

Saturated Thickness: 12. ft
Anisotropy Ratio (Kz/Kr): 1.

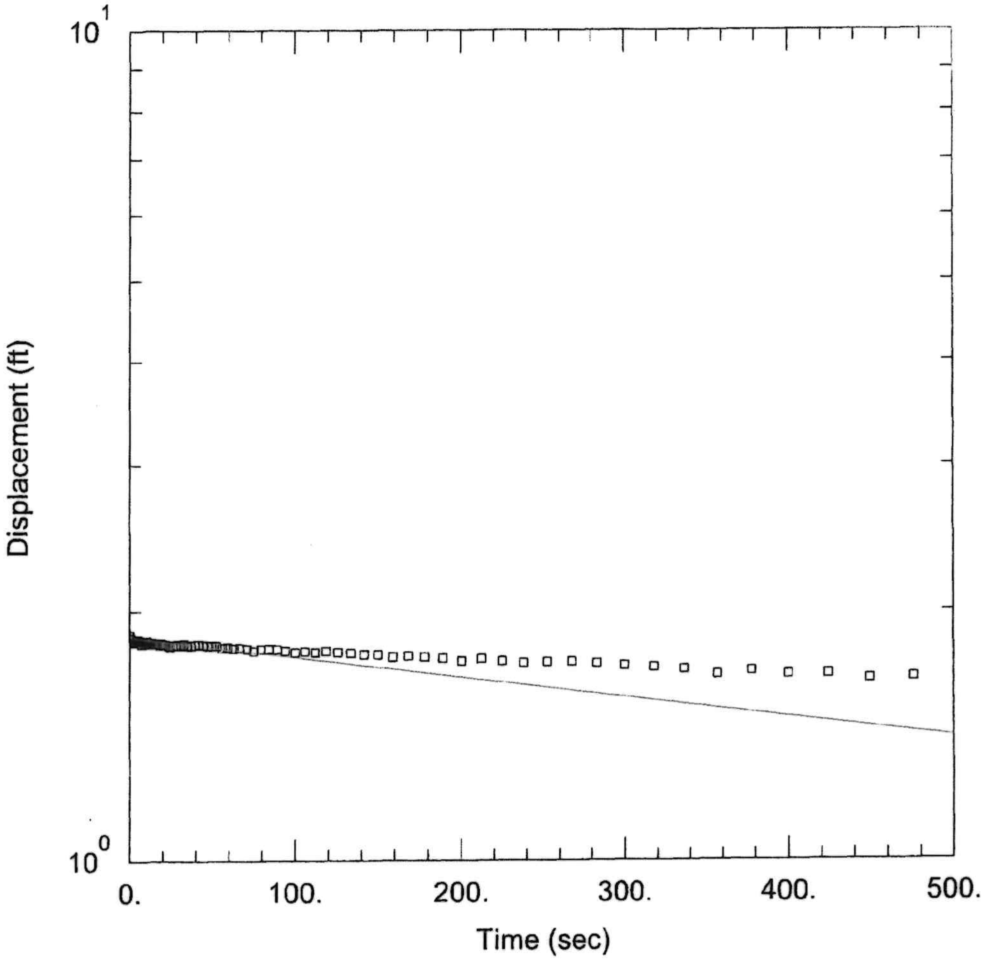
WELL DATA (P-34M-RH)

Initial Displacement: 2.261 ft
Total Well Penetration Depth: 12. ft
Casing Radius: 0.083 ft
Static Water Column Height: 12. ft
Screen Length: 5. ft
Well Radius: 0.083 ft
Gravel Pack Porosity: 0.

SOLUTION

Aquifer Model: Confined
K = 0.0004922 cm/sec
Solution Method: Bouwer-Rice
y0 = 2.289 ft

E5.9m



WELL TEST ANALYSIS

PROJECT INFORMATION

Company: Biggs & Mathews
Client: Green Group
Location: Chisholm Trail Disposal
Test Well: P-4D-FH
Test Date: October 2024

AQUIFER DATA

Saturated Thickness: 6. ft
Anisotropy Ratio (Kz/Kr): 1.

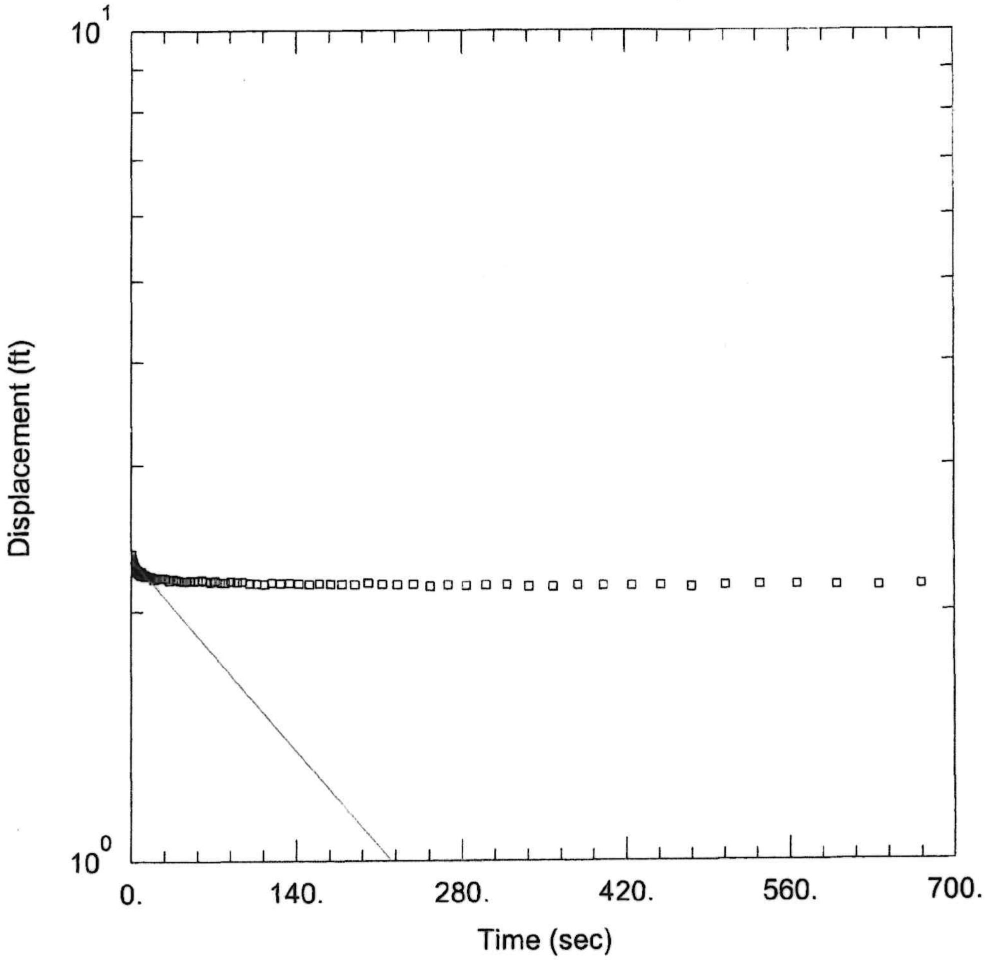
WELL DATA (P-4D-FH)

Initial Displacement: 1.874 ft
Total Well Penetration Depth: 6. ft
Casing Radius: 0.083 ft
Static Water Column Height: 11. ft
Screen Length: 5. ft
Well Radius: 0.083 ft
Gravel Pack Porosity: 0.

SOLUTION

Aquifer Model: Confined
Solution Method: Bouwer-Rice
K = 2.836E-5 cm/sec
y0 = 1.859 ft

E5.9n



WELL TEST ANALYSIS

PROJECT INFORMATION

Company: Biggs & Mathews
Client: Green Group
Location: Chisholm Trail Disposal
Test Well: P-4D-RH
Test Date: October 2024

AQUIFER DATA

Saturated Thickness: 6. ft

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (P-4D-RH)

Initial Displacement: 2.35 ft
Total Well Penetration Depth: 6. ft
Casing Radius: 0.083 ft

Static Water Column Height: 6. ft
Screen Length: 5. ft
Well Radius: 0.083 ft
Gravel Pack Porosity: 0.

SOLUTION

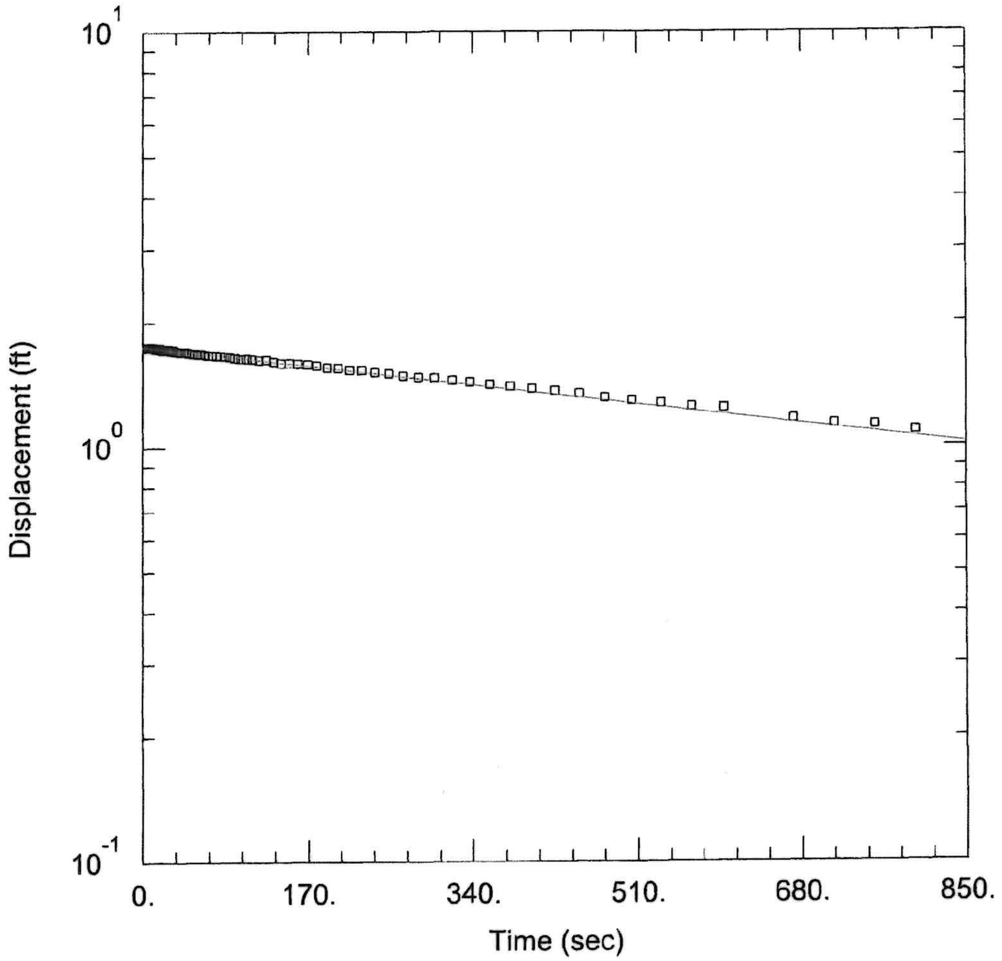
Aquifer Model: Confined

Solution Method: Bouwer-Rice

K = 0.0001951 cm/sec

y0 = 2.313 ft

E5.9o



WELL TEST ANALYSIS

PROJECT INFORMATION

Company: Biggs & Mathews
Client: Green Group
Location: Chisholm Trail Disposal
Test Well: P-11D-FH
Test Date: October 2024

AQUIFER DATA

Saturated Thickness: 43. ft
Anisotropy Ratio (Kz/Kr): 1.

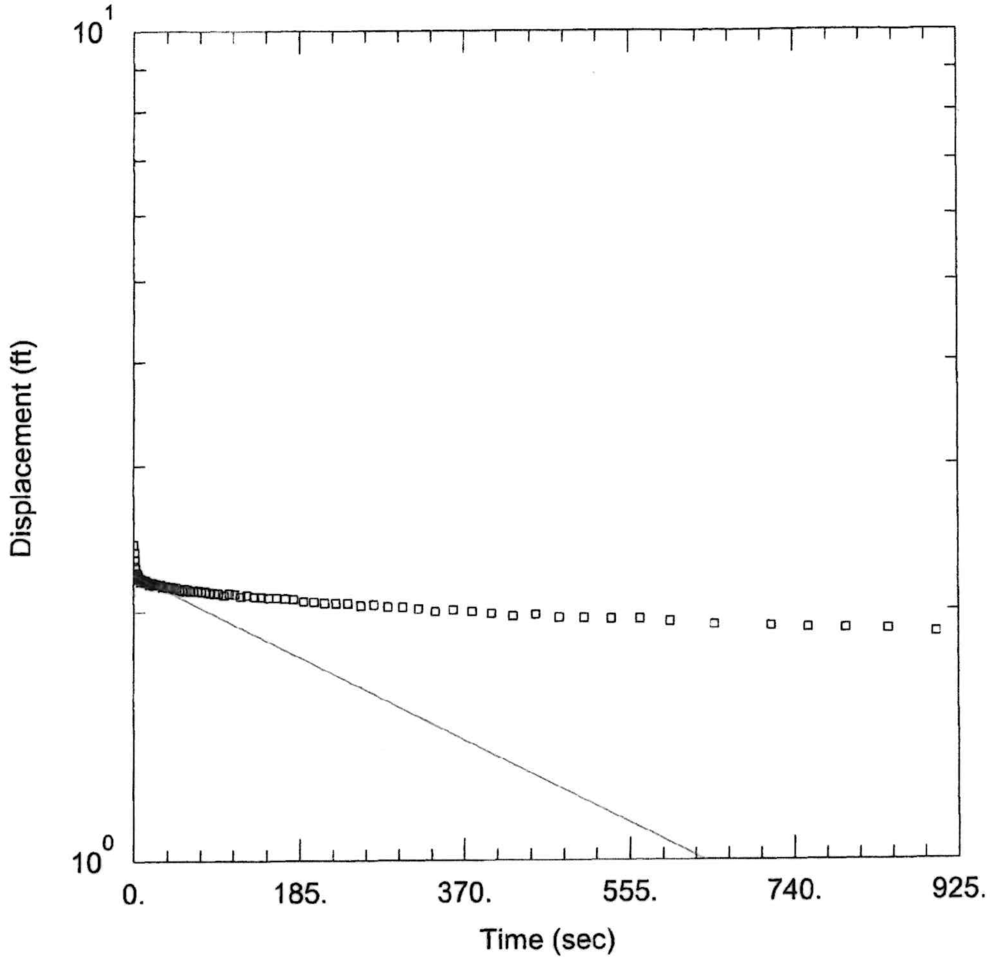
WELL DATA (P-11D-FH)

Initial Displacement: 1.744 ft
Total Well Penetration Depth: 43. ft
Casing Radius: 0.083 ft
Static Water Column Height: 43. ft
Screen Length: 10. ft
Well Radius: 0.083 ft
Gravel Pack Porosity: 0.

SOLUTION

Aquifer Model: Confined
Solution Method: Bouwer-Rice
K = 2.296E-5 cm/sec
y0 = 1.748 ft

E5.9p



WELL TEST ANALYSIS

PROJECT INFORMATION

Company: Biggs & Mathews
Client: Green Group
Location: Chisholm Trail Disposal
Test Well: P-11D-RH
Test Date: October 2024

AQUIFER DATA

Saturated Thickness: 5. ft
Anisotropy Ratio (Kz/Kr): 1.

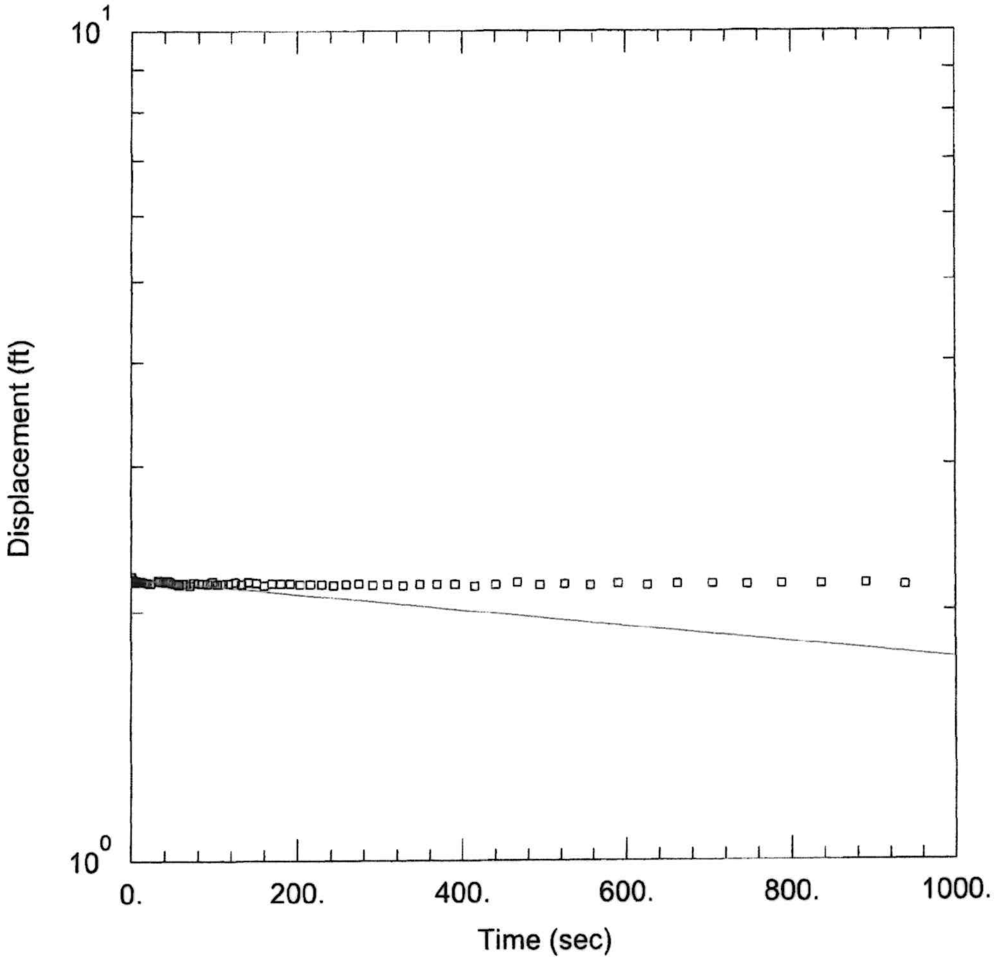
WELL DATA (P-11D-RH)

Initial Displacement: 2.41 ft
Total Well Penetration Depth: 5. ft
Casing Radius: 0.083 ft
Static Water Column Height: 5. ft
Screen Length: 5. ft
Well Radius: 0.083 ft
Gravel Pack Porosity: 0.

SOLUTION

Aquifer Model: Confined
Solution Method: Bouwer-Rice
K = 6.145E-5 cm/sec
y0 = 2.216 ft

E5.9q



WELL TEST ANALYSIS

PROJECT INFORMATION

Company: Biggs & Mathews
Client: Green Group
Location: Chisholm Trail Disposal
Test Well: P-24D-FH
Test Date: October 2024

AQUIFER DATA

Saturated Thickness: 11.12 ft

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (P-24D-FH)

Initial Displacement: 2.204 ft
Total Well Penetration Depth: 46.44 ft
Casing Radius: 0.083 ft

Static Water Column Height: 46.44 ft
Screen Length: 10. ft
Well Radius: 0.083 ft
Gravel Pack Porosity: 0.

SOLUTION

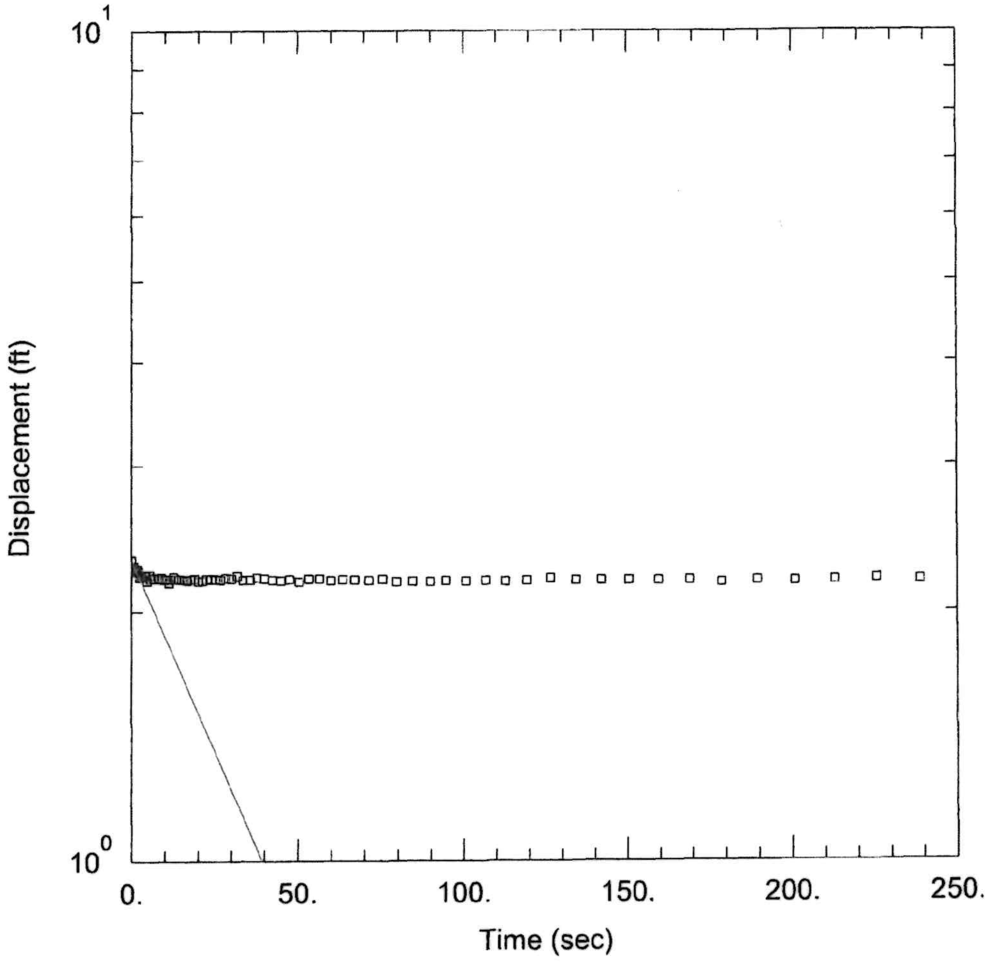
Aquifer Model: Confined

Solution Method: Bouwer-Rice

K = 8.143E-6 cm/sec

y0 = 2.192 ft

E5.9r



WELL TEST ANALYSIS

PROJECT INFORMATION

Company: Biggs & Mathews
Client: Green Group
Location: Chisholm Trail Disposal
Test Well: P-24D-RH
Test Date: October 2024

AQUIFER DATA

Saturated Thickness: 11.12 ft

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (P-24D-RH)

Initial Displacement: 2.31 ft
Total Well Penetration Depth: 43.96 ft
Casing Radius: 0.083 ft

Static Water Column Height: 43.96 ft
Screen Length: 5. ft
Well Radius: 0.083 ft
Gravel Pack Porosity: 0.

SOLUTION

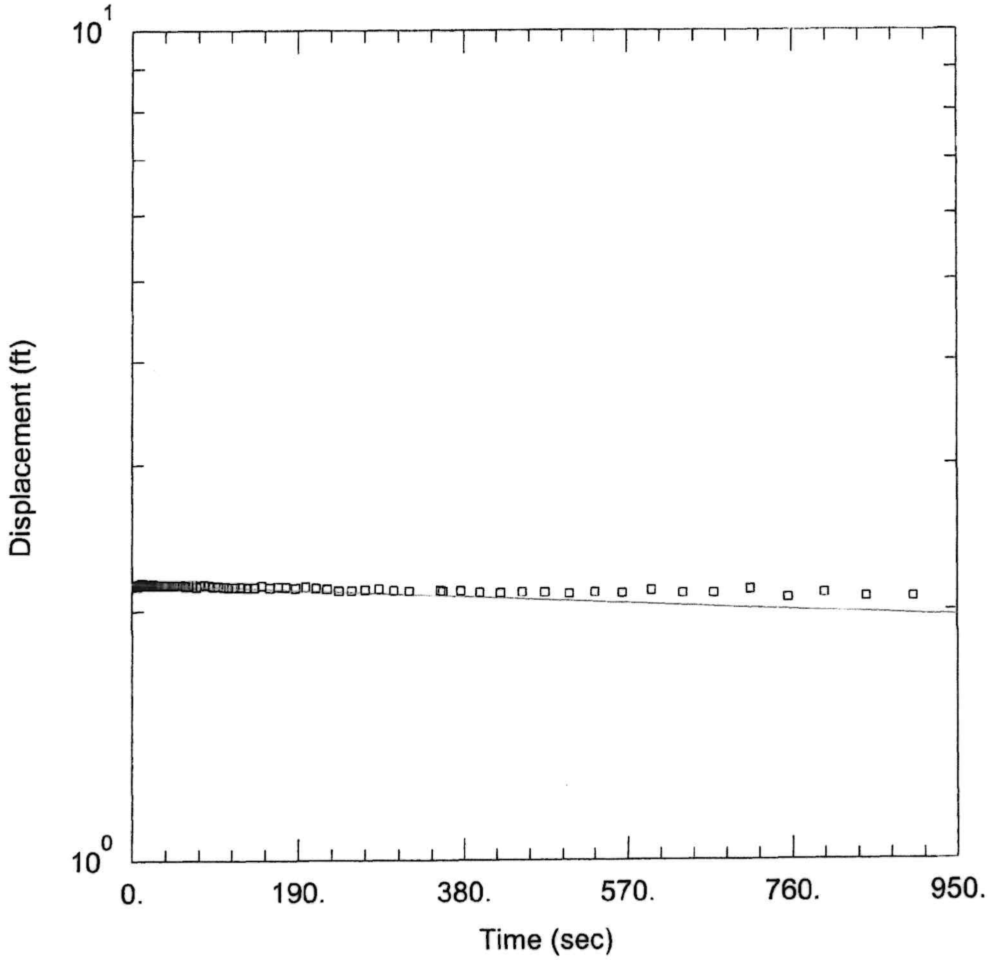
Aquifer Model: Confined

Solution Method: Bouwer-Rice

K = 0.001489 cm/sec

y0 = 2.313 ft

E5.9s



WELL TEST ANALYSIS

PROJECT INFORMATION

Company: Biggs & Mathews
Client: Green Group
Location: Chisholm Trail Disposal
Test Well: P-6VII-FH
Test Date: October 2024

AQUIFER DATA

Saturated Thickness: 10. ft
Anisotropy Ratio (Kz/Kr): 1.

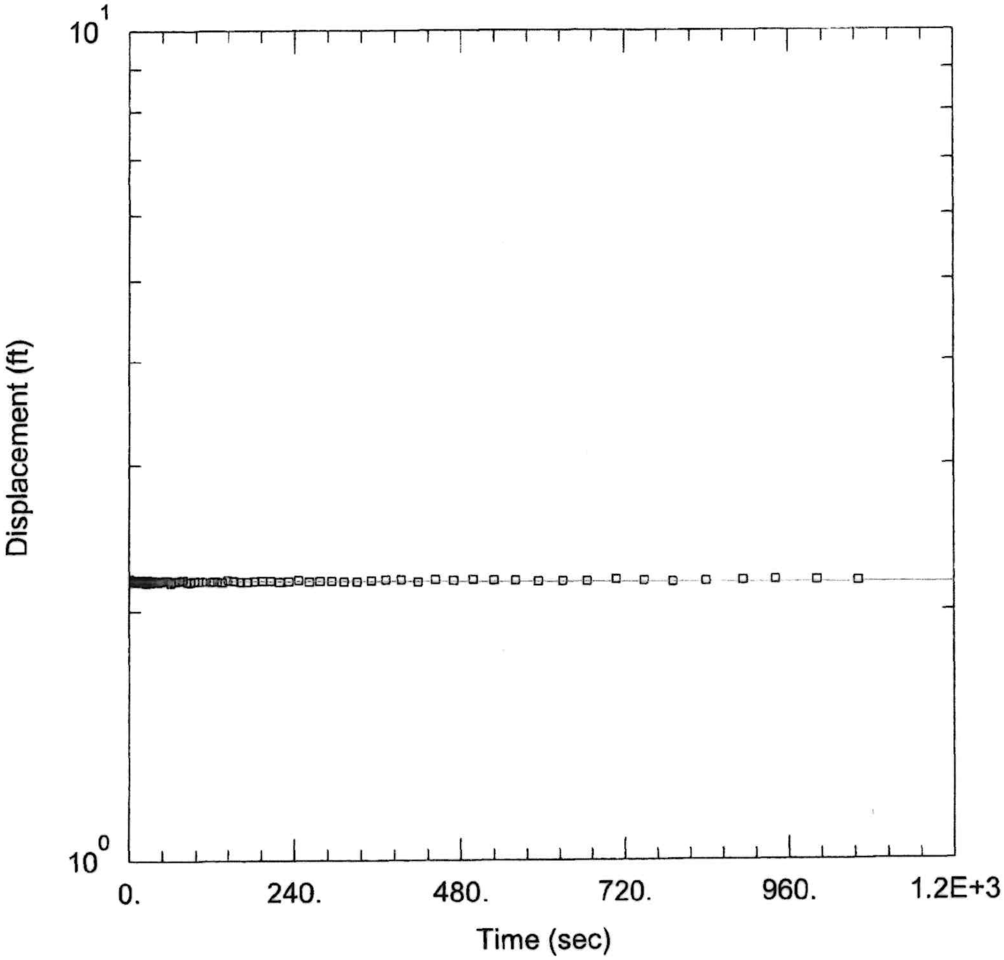
WELL DATA (P-6VII-FH)

Initial Displacement: 2.15 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.083 ft
Static Water Column Height: 10. ft
Screen Length: 5. ft
Well Radius: 0.083 ft
Gravel Pack Porosity: 0.

SOLUTION

Aquifer Model: Confined
Solution Method: Bouwer-Rice
K = 5.501E-6 cm/sec
y0 = 2.158 ft

E5.9t



WELL TEST ANALYSIS

PROJECT INFORMATION

Company: Biggs & Mathews
Client: Green Group
Location: Chisholm Trail Disposal
Test Well: P-6VII-RH
Test Date: October 2024

AQUIFER DATA

Saturated Thickness: 10. ft
Anisotropy Ratio (Kz/Kr): 1.

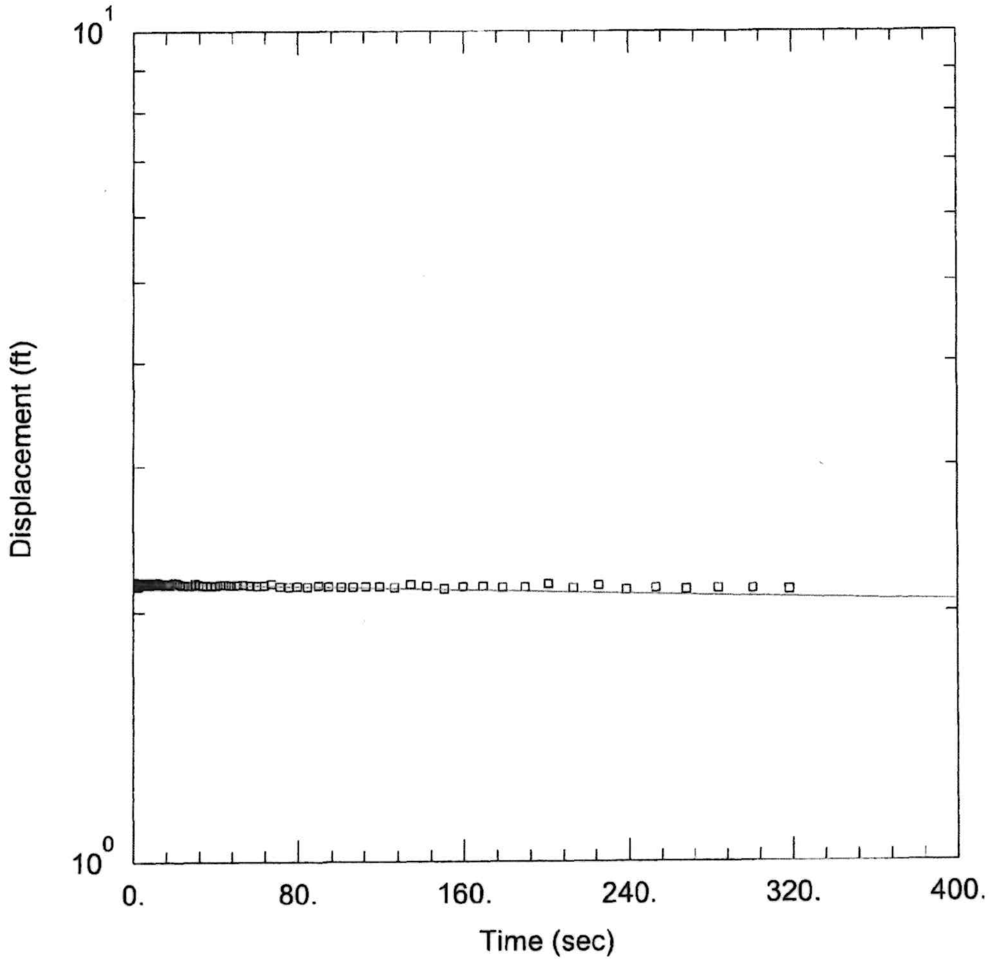
WELL DATA (P-6VII-RH)

Initial Displacement: 2.19 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.083 ft
Static Water Column Height: 10. ft
Screen Length: 5. ft
Well Radius: 0.083 ft
Gravel Pack Porosity: 0.

SOLUTION

Aquifer Model: Confined
Solution Method: Bouwer-Rice
K = 3.564E-7 cm/sec
y0 = 2.176 ft

E5.9u



WELL TEST ANALYSIS

PROJECT INFORMATION

Company: Biggs & Mathews
Client: Green Group
Location: Chisholm Trail Disposal
Test Well: P-24VII-FH
Test Date: October 2024

AQUIFER DATA

Saturated Thickness: 5. ft
Anisotropy Ratio (Kz/Kr): 1.

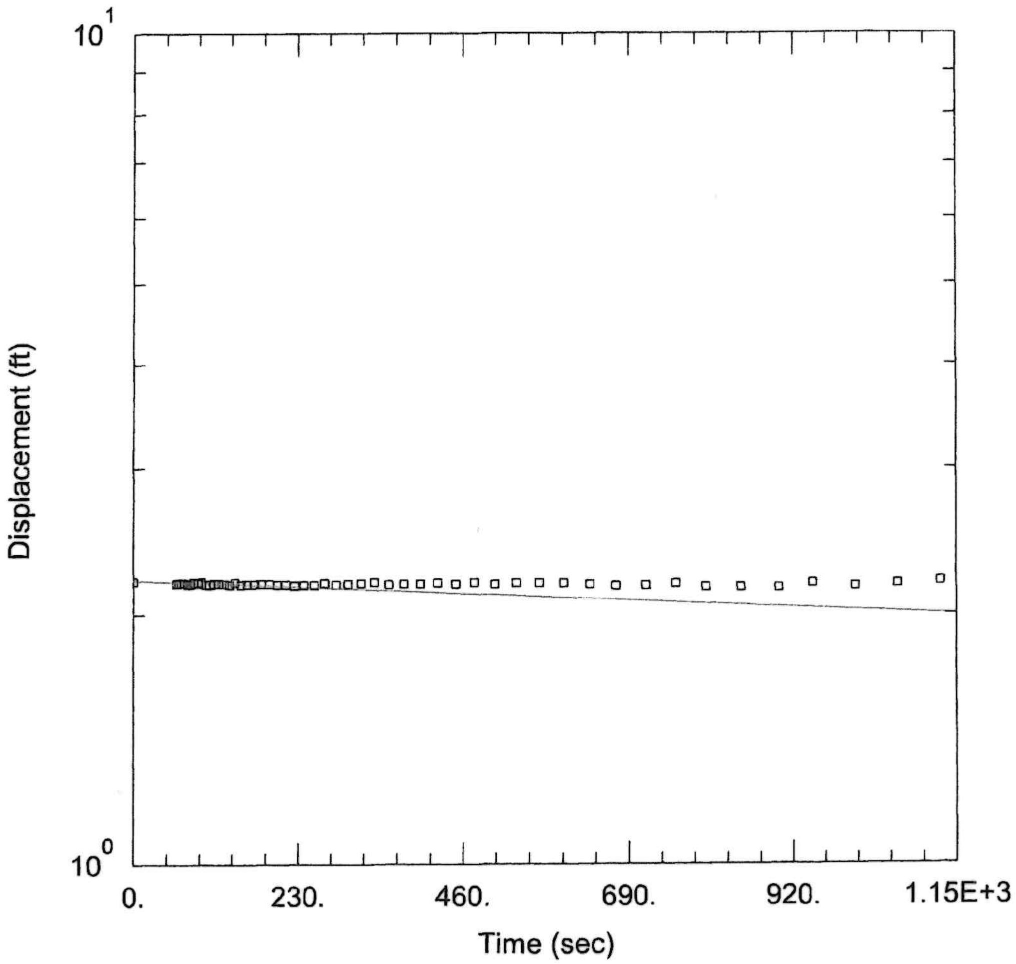
WELL DATA (P-24VII-FH)

Initial Displacement: 2.178 ft
Total Well Penetration Depth: 5. ft
Casing Radius: 0.083 ft
Static Water Column Height: 5. ft
Screen Length: 5. ft
Well Radius: 0.083 ft
Gravel Pack Porosity: 0.

SOLUTION

Aquifer Model: Confined
Solution Method: Bouwer-Rice
K = 6.316E-6 cm/sec
y0 = 2.17 ft

E5.9v



WELL TEST ANALYSIS

PROJECT INFORMATION

Company: Biggs & Mathews
Client: Green Group
Location: Chisholm Trail Disposal
Test Well: P-24VII-RH
Test Date: October 2024

AQUIFER DATA

Saturated Thickness: 5. ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (P-24VII-RH)

Initial Displacement: 2.195 ft
Total Well Penetration Depth: 5. ft
Casing Radius: 0.083 ft
Static Water Column Height: 5. ft
Screen Length: 5. ft
Well Radius: 0.083 ft
Gravel Pack Porosity: 0.

SOLUTION

Aquifer Model: Confined
Solution Method: Bouwer-Rice
K = 4.062E-6 cm/sec
y0 = 2.201 ft

E5.9w

COMPUTATION SHEET

BME
Project Title: Chisholm Trail Disposal Landfill
Description: Groundwater Flow Velocity Calculations
Project No.: 132.03.100
Sheet 1 of 4
Prep. By: K. Coddington Date: 12/3/2024 Chkd. By: E. Floyd Date: 12/3/2024

GROUNDWATER VELOCITY CALCULATIONS

Unit I

STATE OF TEXAS
Elizabeth Floyd
GEOLOGY
2045
LICENSED
PROFESSIONAL GEOSCIENTIST

Elizabeth Floyd

Biggs & Mathews Environmental, Inc.
Firm Registration No. 50222
9/23/2025

$$V = \frac{Ki}{n_e}$$

WHERE:
V = Groundwater Flow Velocity
K = Hydraulic Conductivity
i = Hydraulic Gradient
n_e = Effective Porosity

Results for Hydraulic Gradient Lines (1i through 3i)
1i average gradient 0.0020 ft/ft
2i average gradient 0.0014 ft/ft
3i average gradient 0.0023 ft/ft

0.0020 ft/ft average hydraulic gradient

Layer Lithology - Sand, silty

K	=	1.87E-04	cm/sec	(Geometric mean of Unit I K values; see Table 9)
i	=	0.0020	ft/ft	(Average of 1i, 2i, 3i; see Table 10 and Drawing E5.5)
n_e	=	0.33		(From McWhorter & Sunada, 1977)

$$V = \frac{1.87E\text{-}04 \quad x \quad 0.002}{0.33} \quad x \quad 2835 \quad = \quad 0.003 \quad \text{ft/day}$$

$$= \quad 0.003 \quad x \quad 365 \quad = \quad \mathbf{1.17} \quad \textbf{ft/year}$$

Unit I - Average Velocity
1.17 ft/year

1) Hydraulic Conductivity (K) value from site specific field permeability tests (BME, 2024)
2) 2835 is a multiplyer that converts cm/sec to ft/day

COMPUTATION SHEET

BME Project Title: Chisholm Trail Disposal Landfill
Description: Groundwater Flow Velocity Calculations
Project No.: 132.03.100
Sheet 2 of 4
Prep. By: K. Coddington Date: 12/3/2024 Chkd. By: E. Floyd Date: 12/3/2024

GROUNDWATER VELOCITY CALCULATIONS

Unit III

$$V = \frac{Ki}{n_e}$$

WHERE:
V = Groundwater Flow Velocity
K = Hydraulic Conductivity
i = Hydraulic Gradient
n_e = Effective Porosity

Results for Hydraulic Gradient Lines (1i through 3i)

1i average gradient	0.0044 ft/ft
2i average gradient	0.0037 ft/ft
3i average gradient	0.0034 ft/ft

0.0042 ft/ft average hydraulic gradient

Layer Lithology - Sandstone

K = 1.56E-04 cm/sec (Geometric mean of Unit III K values; see Table 9)
i = 0.0042 ft/ft (Average of 1i, 2i, 3i; see Table 10 and Drawing E5.6)
n_e = 0.21 (From McWhorter & Sunada, 1977)

$$V = \frac{1.56\text{E-}04 \times 0.0042}{0.33} \times 2835 = 0.009 \text{ ft/day}$$

$$= 0.009 \times 365 = \mathbf{3.23} \textbf{ ft/year}$$

Layer Lithology - Sandstone with clay lenses

K = 1.56E-04 cm/sec (Geometric mean of Unit III K values; see Table 9)
i = 0.0042 ft/ft (Average of 1i, 2i, 3i; see Table 10 and Drawing E5.6)
n_e = 0.15 (From McWhorter & Sunada, 1977)

$$V = \frac{1.56\text{E-}04 \times 0.0042}{0.15} \times 2835 = 0.012 \text{ ft/day}$$

$$= 0.012 \times 365 = \mathbf{4.52} \textbf{ ft/year}$$

1) Hydraulic Conductivity (K) value from site specific field permeability tests (BME, 2024)
2) 2835 is a multiplyer that converts cm/sec to ft/day

COMPUTATION SHEET

Project Title: Chisholm Trail Disposal Landfill
Project No.: 132.03.100
Description: Groundwater Flow Velocity Calculations
Sheet 3 of 4
Prep. By: K. Coddington Date: 12/3/2024 Chkd. By: E. Floyd Date: 12/3/2024

GROUNDWATER VELOCITY CALCULATIONS

Unit III

$$V = \frac{Ki}{n_e}$$

WHERE:

V = Groundwater Flow Velocity
K = Hydraulic Conductivity
i = Hydraulic Gradient
n_e = Effective Porosity

Results for Hydraulic Gradient Lines (1i through 3i)

1i average gradient	0.0044 ft/ft
2i average gradient	0.0037 ft/ft
3i average gradient	0.0034 ft/ft

0.0042 ft/ft average hydraulic gradient

Layer Lithology - Sand, silty

K	=	1.56E-04	cm/sec	(Geometric mean of Unit III K values; see Table 9)
i	=	0.0042	ft/ft	(Average of 1i, 2i, 3i; see Table 10 and Drawing E5.6)
n_e	=	0.33		(From McWhorter & Sunada, 1977)

$$V = \frac{1.56\text{E-}04 \times 0.0042}{0.33} \times 2835 = 0.006 \text{ ft/day}$$

$$= 0.006 \times 365 = \mathbf{2.06} \textbf{ ft/year}$$

Unit III - Average Velocity
3.26 ft/yr

1) Hydraulic Conductivity (K) value from site specific field permeability tests (BME, 2024)
2) 2835 is a multiplyer that converts cm/sec to ft/day

COMPUTATION SHEET

Project Title: Chisholm Trail Disposal Landfill Project No.: 132.03.100
Description: Groundwater Flow Velocity Calculations Sheet 4 of 4
Prep. By: K. Coddington Date: 12/3/2024 Chkd. By: E. Floyd Date: 12/3/2024

GROUNDWATER VELOCITY CALCULATIONS

Unit V

$$V = \frac{Ki}{n_e}$$

WHERE:

V = Groundwater Flow Velocity
K = Hydraulic Conductivity
i = Hydraulic Gradient
n_e = Effective Porosity

Results for Hydraulic Gradient Lines (1i through 4i)

1i average gradient 0.0094 ft/ft
2i average gradient 0.0149 ft/ft
3i average gradient 0.0129 ft/ft
4i average gradient 0.0381 ft/ft

0.0186 ft/ft average hydraulic gradient

Layer Lithology - Siltstone

K = 4.60E-05 cm/sec (Geometric mean of Unit V K values; see Table 9)
i = 0.0186 ft/ft (Average of 1i, 2i, 3i, 4i; see Table 10 and Drawing E5.7)
n_e = 0.12 (From McWhorter & Sunada, 1977)

$$V = \frac{4.60E\text{-}05 \times 0.0186}{0.12} \times 2835 = 0.020 \text{ ft/day}$$

$$= 0.020 \times 365 = \mathbf{7.38} \textbf{ ft/year}$$

Layer Lithology - Sandstone

K = 4.60E-05 cm/sec (Geometric mean of Unit V K values; see Table 9)
i = 0.0186 ft/ft (Average of 1i, 2i, 3i, 4i; see Table 10 and Drawing E5.7)
n_e = 0.21 (From McWhorter & Sunada, 1977)

$$V = \frac{4.60E\text{-}05 \times 0.0186}{0.21} \times 2835 = 0.012 \text{ ft/day}$$

$$= 0.012 \times 365 = \mathbf{4.22} \textbf{ ft/year}$$

Unit V - Average Velocity
6.32 ft/year

1) Hydraulic Conductivity (K) value from site specific field permeability tests (BME, 2024)
2) 2835 is a multiplyer that converts cm/sec to ft/day

APPENDIX E6

GEOTECHNICAL DATA

Summary of Material Characteristics

Boring ID	Depth	Liquid Limit	Plastic Limit	Plasticity Index	Sieve Analysis				Classification	Moisture Content (%)	Dry Density (pcf)	Horizontal Permeability (cm/sec)
					% < 1/2"	% < 3/8"	% < #4	% < #200				
		ASTM D4318-17e1			ASTM D422-63(2007)e2			ASTM D1140-17	ASTM D2487-17e1	ASTM D2216-19	ASTM D7263-21	Apx VII EM 1110-2-1906
BME-1	16.0	37	18	19	100	100	100	52	CL			
BME-2	35.0	33	18	15				77	CL			
BME-2	40.0									10.9	120.6	
BME-3	11.0	22	15	7	100	100	100	32	SC-SM			
BME-3	45.0	39	17	22				86	CL	11.7	123.0	
BME-3	55.0									11.6	122.6	
BME-3	56.0									11.6	118.7	2.8x10^{-8}
BME-4	30.0	38	23	15				91	CL	14.1	115.4	
BME-4	33.0									13.2	130.1	3.0x10^{-8}
BME-4	45.0									14.1	118.3	
BME-4	47.0									12.4	122.2	3.0x10^{-8}
BME-6	1.0	51	21	30	100	100	100	96	CH			
BME-6	26.0	25	12	13	100	100	92.2	46	SC			
BME-6	40.0	24	31	3				15	SM			
BME-6	45.0	47	23	24				100	CL			
BME-7	11.0	91	29	62	100	100	100	86	CH			
BME-7	16.0	41	19	22	100	100	100	85	CL			
BME-7	40.0	35	18	17				94	CL			
BME-7	41.0	35	17	18				96	CL	13.7	121.8	
BME-7	47.0									13.5	117.0	5.0x10^{-8}
BME-8	83.0									1.4	138.7	4.5x10^{-9}
BME-9	25.0	35	14	21				59	CL			
BME-9	35.0	30	17	19				78	CL			
BME-10	1.0	33	13	20	100	100	100	58	CL			
BME-12	45.0	34	20	14				99	CL			
BME-13	6.0	17	13	4	100	94.3	83.8	28	SC-SM			
BME-13	16.0	39	13	26	100	100	100	75	CL			
BME-13	35.0									7.3	129.6	
BME-13	37.0									8.9	121.8	3.3x10^{-8}
BME-15	50.0	29	17	12				98	CL			
BME-15	65.0	31	19	12				99	CL			
BME-16	15.0	29	17	12				65	CL	12.1	125.2	
BME-16	17.0									12.1	118.8	3.4x10^{-8}
BME-17	87.0									1.5	136.6	< 1.00x10^{-9}
BME-18	40.0	27	18	9				70	CL			
BME-18	67.0									1.2	140.1	4.3x10^{-9}
BME-19	6.0	35	15	20	100	100	100	75	CL			
BME-19	31.0	18	12	6	100	100	95.5	24	SC-SM			
BME-21	11.0	19	17	2	100	100	98.0	15	SM			
BME-21	55.0	26	22	4				32	SM	17.1		

Summary of Material Characteristics

Boring ID	Depth	Liquid Limit	Plastic Limit	Plasticity Index	Sieve Analysis				Classification	Moisture Content (%)	Dry Density (pcf)	Horizontal Permeability (cm/sec)
					% < 1/2"	% < 3/8"	% < #4	% < #200				
		ASTM D4318-17e1			ASTM D422-63(2007)e2			ASTM D1140-17	ASTM D2487-17e1	ASTM D2216-19	ASTM D7263-21	Apx VII EM 1110-2-1906
BME-21	57.0									21.5	92.7	5.2x10^{-8}
BME-23	11.0	25	17	8	100	100	100	72	CL			
BME-23	25.0	31	17	14				65	CL	12.1	121.7	
BME-23	27.0									12.1	118.3	1.5x10^{-8}
BME-24	31.0	36	19	17				93	CL			
BME-24	32.0	37	16	21				64	CL	11.1	117.8	
BME-24	34.0									11.0	112.4	3.2x10^{-8}
BME-24	40.0	24	13	11				80	CL			
BME-25	14.0	23	15	8				68	CL			
BME-25	28.0	36	22	14				99	CL			
BME-28	57.0									1.4	139.4	< 1.00x10^{-9}

HYDRAULIC CONDUCTIVITY WORKSHEET
FALLING HEAD - FIXED WALL PERMEAMETER

PROJECT: Chisholm Trail Disposal
LOCATION:
MATERIAL: Cemented sand, gray
BORING/SAMPLE: BME-3
PROCTOR # :
SAMPLE ORIENTATION: H ✓ V ____
Remold ____

JOB No.: 132.03.100
LAB START DATE: 9/19/2024
LAB REP. DATE: 9/23/2024
TECHNICIAN: MLT
DEPTH/LIFT: 55.0'-60.0'
PERM FLUID USED: De-aired Tap Water

a. Length of Specimen, L: 1.0 in
c. Sample Volume (0.7854 * a * b ^ 2): 4.909 cu in

b. Avg. Diameter of Specimen: 2.5 in
d. Wet Unit Weight: [((f-h)*3.8095)/c)]: 132.4 pcf

INITIAL CONDITIONS

e. Ring + Wet Weight Soil: 712.3 gms
f. Wet Weight Soil + Tare: 179.0 gms
g. Dry Weight Soil + Tare: 161.3 gms
h. Tare Weight: 8.4 gms
i. Moisture Content [(f-g)/(g-h)]*100: 11.6 %
j. Unit Dry Weight [d/(1+(i/100))]: 118.7 pcf

FINAL CONDITIONS

k. Wet Weight Soil + Tare: 181.2 gms
l. Dry Weight Soil + Tare: 161.3 gms
m. Tare Weight: 8.4 gms
n. Moisture Content [(k-l)/(l-m)]*100: 13.0 %
o. Unit Dry Weight [d/(1+(n/100))]: 117.1 pcf
p. Ring Weight: 541.7 gms

Date	Time	t sec	Initial Height, ho	Corrected ho - C	Final Height, hf	Corrected hf - C	Temp C	Rt	k @ 20C cm/sec
19-Sep	10:01		37.9	31.2					
20-Sep	07:00	75540			36.2	29.5	22	0.953	1.0E-07
20-Sep	07:00		36.2	29.5					
20-Sep	11:00	14400			36.1	29.4	22	0.953	3.3E-08
20-Sep	11:00		36.1	29.4					
20-Sep	15:07	14820			36.0	29.3	22	0.953	3.2E-08
20-Sep	15:07		36.0	29.3					
20-Sep	19:15	14880			35.9	29.2	22	0.953	3.2E-08
20-Sep	19:15		35.9	29.2					
21-Sep	06:48	41580			35.7	29.0	22	0.953	2.3E-08
20-Sep	07:00		36.2	29.5					
21-Sep	06:48	85680			35.7	29.0	22	0.953	2.8E-08

Height of Top of Specimen From Top of Table: 6.72 cm

Standpipe Diameter 1.52 cm

Standpipe Area 1.815 sq cm

Test Method: Corps of Engineers EM 1110-2-1906, Appendix VII

Hx-C = Hx-Ht

HYDRAULIC CONDUCTIVITY WORKSHEET

FALLING HEAD - FIXED WALL PERMEAMETER

PROJECT: Chisholm Trail Disposal

LOCATION: ____

MATERIAL: Shaley clay, gray

BORING/SAMPLE: BME-4

PROCTOR # : ____

SAMPLE ORIENTATION: H ✓ V ____

Remold ____

JOB No.: 132.03.100

LAB START DATE: 9/21/2024

LAB REP. DATE: 9/24/2024

TECHNICIAN: MLT

DEPTH/LIFT: 30.0'-35.0'

PERM FLUID USED: De-aired Tap Water

a. Length of Specimen, L: 1.0 in

c. Sample Volume (0.7854 * a * b ^ 2): 4.909 cu in

b. Avg. Diameter of Specimen: 2.5 in

d. Wet Unit Weight: [((f-h)*3.8095)/c)]: 147.4 pcf

INITIAL CONDITIONS

e. Ring + Wet Weight Soil: 729.1 gms

f. Wet Weight Soil + Tare: 198.3 gms

g. Dry Weight Soil + Tare: 176.1 gms

h. Tare Weight: 8.4 gms

i. Moisture Content [(f-g)/(g-h)]*100: 13.2 %

j. Unit Dry Weight [d/(1+(i/100))]: 130.1 pcf

FINAL CONDITIONS

k. Wet Weight Soil + Tare: 200.9 gms

l. Dry Weight Soil + Tare: 176.1 gms

m. Tare Weight: 8.4 gms

n. Moisture Content [(k-l)/(l-m)]*100: 14.8 %

o. Unit Dry Weight [d/(1+(n/100))]: 128.4 pcf

p. Ring Weight: 539.2 gms

Date	Time	t sec	Initial Height, ho	Corrected ho - C	Final Height, hf	Corrected hf - C	Temp C	Rt	k @ 20C cm/sec
21-Sep	07:57		40.7	34.0					
21-Sep	20:03	43560			39.5	32.8	22	0.953	1.2E-07
21-Sep	20:03		39.5	32.8					
22-Sep	06:58	39300			39.1	32.4	22	0.953	4.5E-08
22-Sep	06:58		39.1	32.4					
22-Sep	11:00	14520			39.0	32.3	22	0.953	3.1E-08
22-Sep	11:00		39.0	32.3					
22-Sep	15:49	17340			38.9	32.2	22	0.953	2.6E-08
22-Sep	15:49		38.9	32.2					
23-Sep	09:45	64560			38.6	31.9	22	0.953	2.1E-08
21-Sep	20:03		39.5	32.8					
23-Sep	09:45	135720			38.6	31.9	22	0.953	3.0E-08

Height of Top of Specimen From Top of Table: 6.71 cm

Standpipe Diameter 1.55 cm

Standpipe Area 1.887 sq cm

Test Method: Corps of Engineers EM 1110-2-1906, Appendix VII

Hx-C = Hx-Ht

HYDRAULIC CONDUCTIVITY WORKSHEET

FALLING HEAD - FIXED WALL PERMEAMETER

PROJECT: Chisholm Trail Disposal
LOCATION: ____
MATERIAL: Shale, gray
BORING/SAMPLE: BME-4
PROCTOR # : ____
SAMPLE ORIENTATION: H _✓_ V ____
Remold ____

JOB No.: 132.03.100
LAB START DATE: 9/21/2024
LAB REP. DATE: 9/24/2024
TECHNICIAN: MLT
DEPTH/LIFT: 45.0'-50.0'
PERM FLUID USED: De-aired Tap Water

a. Length of Specimen, L: 1.0 in
c. Sample Volume (0.7854 * a * b ^ 2): 4.909 cu in

b. Avg. Diameter of Specimen: 2.5 in
d. Wet Unit Weight: [((f-h)*3.8095)/c)]: 137.4 pcf

INITIAL CONDITIONS

e. Ring + Wet Weight Soil: 717.5 gms
f. Wet Weight Soil + Tare: 185.4 gms
g. Dry Weight Soil + Tare: 165.9 gms
h. Tare Weight: 8.4 gms
i. Moisture Content [(f-g)/(g-h)]*100: 12.4 %
j. Unit Dry Weight [d/(1+(i/100))]: 122.2 pcf

FINAL CONDITIONS

k. Wet Weight Soil + Tare: 187.3 gms
l. Dry Weight Soil + Tare: 165.9 gms
m. Tare Weight: 8.4 gms
n. Moisture Content [(k-l)/(l-m)]*100: 13.6 %
o. Unit Dry Weight [d/(1+(n/100))]: 120.9 pcf
p. Ring Weight: 540.5 gms

Date	Time	t sec	Initial Height, ho	Corrected ho - C	Final Height, hf	Corrected hf - C	Temp C	Rt	k @ 20C cm/sec
21-Sep	07:40		41.1	34.5					
21-Sep	20:03	44580			39.8	33.2	22	0.953	1.2E-07
21-Sep	20:03		39.8	33.2					
22-Sep	06:58	39300			39.2	32.6	22	0.953	6.6E-08
22-Sep	06:58		39.2	32.6					
22-Sep	11:00	14520			39.1	32.5	22	0.953	3.0E-08
22-Sep	11:00		39.1	32.5					
22-Sep	15:49	17340			39.0	32.4	22	0.953	2.5E-08
22-Sep	15:49		39.0	32.4					
23-Sep	09:45	64560			38.8	32.2	22	0.953	1.4E-08
21-Sep	20:03		39.8	33.2					
23-Sep	09:45	135720			38.8	32.2	22	0.953	3.2E-08

Height of Top of Specimen From Top of Table: 6.64 cm

Standpipe Diameter 1.54 cm

Standpipe Area 1.863 sq cm

Test Method: Corps of Engineers EM 1110-2-1906, Appendix VII

Hx-C = Hx-Ht

HYDRAULIC CONDUCTIVITY WORKSHEET

FALLING HEAD - FIXED WALL PERMEAMETER

PROJECT: Chisholm Trail Disposal
LOCATION:
MATERIAL: Clayey sand, gray
BORING/SAMPLE: BME-7
PROCTOR # :
SAMPLE ORIENTATION: H ✓ V ____
Remold ____

JOB No.: 132.03.100
LAB START DATE: 9/21/2024
LAB REP. DATE: 9/24/2024
TECHNICIAN: MLT
DEPTH/LIFT: 40.0'-45.0'
PERM FLUID USED: De-aired Tap Water

a. Length of Specimen, L: 1.0 in
c. Sample Volume (0.7854 * a * b ^ 2): 4.909 cu in

b. Avg. Diameter of Specimen: 2.5 in
d. Wet Unit Weight: [((f-h)*3.8095)/c)]: 132.7 pcf

INITIAL CONDITIONS

e. Ring + Wet Weight Soil: 678.9 gms
f. Wet Weight Soil + Tare: 179.4 gms
g. Dry Weight Soil + Tare: 159.1 gms
h. Tare Weight: 8.4 gms
i. Moisture Content [(f-g)/(g-h)]*100: 13.5 %
j. Unit Dry Weight [d/(1+(i/100))]: 117.0 pcf

FINAL CONDITIONS

k. Wet Weight Soil + Tare: 181.5 gms
l. Dry Weight Soil + Tare: 159.1 gms
m. Tare Weight: 8.4 gms
n. Moisture Content [(k-l)/(l-m)]*100: 14.9 %
o. Unit Dry Weight [d/(1+(n/100))]: 115.5 pcf
p. Ring Weight: 507.9 gms

Date	Time	t sec	Initial Height, ho	Corrected ho - C	Final Height, hf	Corrected hf - C	Temp C	Rt	k @ 20C cm/sec
21-Sep	08:15		44.8	38.1					
21-Sep	20:03	42480			43.5	36.8	22	0.953	1.2E-07
21-Sep	20:03		43.5	36.8					
22-Sep	06:58	39300			42.9	36.2	22	0.953	6.0E-08
22-Sep	06:58		42.9	36.2					
22-Sep	11:00	14520			42.7	36.0	22	0.953	5.4E-08
22-Sep	11:00		42.7	36.0					
22-Sep	15:49	17340			42.5	35.8	22	0.953	4.6E-08
22-Sep	15:49		42.5	35.8					
23-Sep	09:45	64560			41.8	35.1	22	0.953	4.4E-08
21-Sep	20:03		43.5	36.8					
23-Sep	09:45	135720			41.8	35.1	22	0.953	5.0E-08

Height of Top of Specimen From Top of Table: 6.71 cm

Standpipe Diameter 1.54 cm

Standpipe Area 1.863 sq cm

Test Method: Corps of Engineers EM 1110-2-1906, Appendix VII

Hx-C = Hx-Ht

HYDRAULIC CONDUCTIVITY WORKSHEET
FALLING HEAD - FIXED WALL PERMEAMETER

PROJECT: Chisholm Trail Disposal
LOCATION:
MATERIAL: Limestone gray
BORING/SAMPLE: BME-8
PROCTOR # :
SAMPLE ORIENTATION: H ✓ V ____
Remold ____

JOB No.: 132.03.100
LAB START DATE: 10/4/2024
LAB REP. DATE: 10/7/2024
TECHNICIAN: MLT
DEPTH/LIFT: 80.0'-85.0'
PERM FLUID USED: De-aired Tap Water

a. Length of Specimen, L: 1.0 in
c. Sample Volume (0.7854 * a * b ^ 2): 4.909 cu in

b. Avg. Diameter of Specimen: 2.5 in
d. Wet Unit Weight: [((f-h)*3.8095)/c)]: 140.6 pcf

INITIAL CONDITIONS

e. Ring + Wet Weight Soil: 720.4 gms
f. Wet Weight Soil + Tare: 189.6 gms
g. Dry Weight Soil + Tare: 187.1 gms
h. Tare Weight: 8.4 gms
i. Moisture Content [(f-g)/(g-h)]*100: 1.4 %
j. Unit Dry Weight [d/(1+(i/100))]: 138.7 pcf

FINAL CONDITIONS

k. Wet Weight Soil + Tare: 190.6 gms
l. Dry Weight Soil + Tare: 187.1 gms
m. Tare Weight: 8.4 gms
n. Moisture Content [(k-l)/(l-m)]*100: 2.0 %
o. Unit Dry Weight [d/(1+(n/100))]: 137.9 pcf
p. Ring Weight: 539.2 gms

Date	Time	t sec	Initial Height, ho	Corrected ho - C	Final Height, hf	Corrected hf - C	Temp C	Rt	k @ 20C cm/sec
04-Oct	13:47		37.6	30.9					
05-Oct	06:12	59100			36.9	30.2	22	0.953	5.6E-08
05-Oct	06:12		36.9	30.2					
05-Oct	11:33	19260			36.8	30.1	22	0.953	2.5E-08
05-Oct	11:33		36.8	30.1					
05-Oct	15:59	15960			36.8	30.1	22	0.953	<1.00E-09
05-Oct	15:59		36.8	30.1					
06-Oct	07:21	55320			36.8	30.1	22	0.953	<1.00E-09
06-Oct	07:21		36.8	30.1					
06-Oct	12:00	16740			36.8	30.1	22	0.953	<1.00E-09
05-Oct	06:12		36.9	30.2					
06-Oct	12:00	107280			36.8	30.1	22	0.953	4.5E-09

Height of Top of Specimen From Top of Table: 6.71 cm

Standpipe Diameter 1.55 cm

Standpipe Area 1.887 sq cm

Test Method: Corps of Engineers EM 1110-2-1906, Appendix VII

Hx-C = Hx-Ht

HYDRAULIC CONDUCTIVITY WORKSHEET

FALLING HEAD - FIXED WALL PERMEAMETER

PROJECT: Chisholm Trail Disposal
LOCATION: ____
MATERIAL: Cemented sand, gray
BORING/SAMPLE: BME-13
PROCTOR # : ____
SAMPLE ORIENTATION: H ✓ V ____ Remold ____

JOB No.: 132.03.100
LAB START DATE: 9/19/2024
LAB REP. DATE: 9/23/2024
TECHNICIAN: MLT
DEPTH/LIFT: 35.0'-40.0'
PERM FLUID USED: De-aired Tap Water

a. Length of Specimen, L: 1.0 in
b. Avg. Diameter of Specimen: 2.5 in
c. Sample Volume (0.7854 * a * b ^ 2): 4.909 cu in
d. Wet Unit Weight: [((f-h)*3.8095)/c)]: 132.7 pcf

INITIAL CONDITIONS

e. Ring + Wet Weight Soil: 678.5 gms
f. Wet Weight Soil + Tare: 179.4 gms
g. Dry Weight Soil + Tare: 165.4 gms
h. Tare Weight: 8.4 gms
i. Moisture Content [(f-g)/(g-h)]*100: 8.9 %
j. Unit Dry Weight [d/(1+(i/100))]: 121.8 pcf

FINAL CONDITIONS

k. Wet Weight Soil + Tare: 182.0 gms
l. Dry Weight Soil + Tare: 165.4 gms
m. Tare Weight: 8.4 gms
n. Moisture Content [(k-l)/(l-m)]*100: 10.6 %
o. Unit Dry Weight [d/(1+(n/100))]: 120.0 pcf
p. Ring Weight: 507.5 gms

Date	Time	t sec	Initial Height, ho	Corrected ho - C	Final Height, hf	Corrected hf - C	Temp C	Rt	k @ 20C cm/sec
19-Sep	10:23		38.6	31.9					
20-Sep	07:00	74220			36.8	30.1	22	0.953	1.1E-07
20-Sep	07:00		36.8	30.1					
20-Sep	11:00	14400			36.7	30.0	22	0.953	3.3E-08
20-Sep	11:00		36.7	30.0					
20-Sep	15:07	14820			36.6	29.9	22	0.953	3.2E-08
20-Sep	15:07		36.6	29.9					
20-Sep	19:15	14880			36.5	29.8	22	0.953	3.2E-08
20-Sep	19:15		36.5	29.8					
21-Sep	06:48	41580			36.2	29.5	22	0.953	3.5E-08
20-Sep	07:00		36.8	30.1					
21-Sep	06:48	85680			36.2	29.5	22	0.953	3.3E-08

Height of Top of Specimen From Top of Table: 6.71 cm
Standpipe Diameter 1.54 cm
Standpipe Area 1.863 sq cm

Test Method: Corps of Engineers EM 1110-2-1906, Appendix VII

Hx-C = Hx-Ht

HYDRAULIC CONDUCTIVITY WORKSHEET

FALLING HEAD - FIXED WALL PERMEAMETER

PROJECT: Chisholm Trail Disposal
LOCATION:
MATERIAL: Cemented sand, gray
BORING/SAMPLE: BME-16
PROCTOR # :
SAMPLE ORIENTATION: H ✓ V ____
Remold ____

JOB No.: 132.03.100
LAB START DATE: 9/19/2024
LAB REP. DATE: 9/23/2024
TECHNICIAN: MLT
DEPTH/LIFT: 15.0'-20.0'
PERM FLUID USED: De-aired Tap Water

a. Length of Specimen, L: 1.0 in
c. Sample Volume (0.7854 * a * b ^ 2): 4.909 cu in

b. Avg. Diameter of Specimen: 2.5 in
d. Wet Unit Weight: [((f-h)*3.8095)/c)]: 133.2 pcf

INITIAL CONDITIONS

e. Ring + Wet Weight Soil: 710.3 gms
f. Wet Weight Soil + Tare: 180.0 gms
g. Dry Weight Soil + Tare: 161.5 gms
h. Tare Weight: 8.4 gms
i. Moisture Content [(f-g)/(g-h)]*100: 12.1 %
j. Unit Dry Weight [d/(1+(i/100))]: 118.8 pcf

FINAL CONDITIONS

k. Wet Weight Soil + Tare: 183.7 gms
l. Dry Weight Soil + Tare: 161.5 gms
m. Tare Weight: 8.4 gms
n. Moisture Content [(k-l)/(l-m)]*100: 14.5 %
o. Unit Dry Weight [d/(1+(n/100))]: 116.3 pcf
p. Ring Weight: 538.7 gms

Date	Time	t sec	Initial Height, ho	Corrected ho - C	Final Height, hf	Corrected hf - C	Temp C	Rt	k @ 20C cm/sec
19-Sep	09:30		43.5	36.9					
20-Sep	07:00	77400			41.4	34.8	22	0.953	1.1E-07
20-Sep	07:00		41.4	34.8					
20-Sep	11:00	14400			41.2	34.6	22	0.953	5.7E-08
20-Sep	11:00		41.2	34.6					
20-Sep	15:07	14820			41.1	34.5	22	0.953	2.8E-08
20-Sep	15:07		41.1	34.5					
20-Sep	19:15	14880			41.0	34.4	22	0.953	2.8E-08
20-Sep	19:15		41.0	34.4					
21-Sep	06:48	41580			40.7	34.1	22	0.953	3.0E-08
20-Sep	07:00		41.4	34.8					
21-Sep	06:48	85680			40.7	34.1	22	0.953	3.4E-08

Height of Top of Specimen From Top of Table: 6.65 cm
Standpipe Diameter 1.54 cm
Standpipe Area 1.863 sq cm

Test Method: Corps of Engineers EM 1110-2-1906, Appendix VII

Hx-C = Hx-Ht

HYDRAULIC CONDUCTIVITY WORKSHEET
FALLING HEAD - FIXED WALL PERMEAMETER

PROJECT: Chisholm Trail Disposal
LOCATION:
MATERIAL: Limestone gray
BORING/SAMPLE: BME-17
PROCTOR # :
SAMPLE ORIENTATION: H ✓ V ____ Remold ____

JOB No.: 132.03.100
LAB START DATE: 10/4/2024
LAB REP. DATE: 10/7/2024
TECHNICIAN: MLT
DEPTH/LIFT: 85.0'-90.0'
PERM FLUID USED: De-aired Tap Water

a. Length of Specimen, L: 1.0 in
c. Sample Volume (0.7854 * a * b ^ 2): 4.909 cu in
b. Avg. Diameter of Specimen: 2.5 in
d. Wet Unit Weight: [((f-h)*3.8095)/c)]: 138.6 pcf

INITIAL CONDITIONS

e. Ring + Wet Weight Soil: 719.5 gms
f. Wet Weight Soil + Tare: 187.0 gms
g. Dry Weight Soil + Tare: 184.4 gms
h. Tare Weight: 8.4 gms
i. Moisture Content [(f-g)/(g-h)]*100: 1.5 %
j. Unit Dry Weight [d/(1+(i/100))]: 136.6 pcf

FINAL CONDITIONS

k. Wet Weight Soil + Tare: 187.9 gms
l. Dry Weight Soil + Tare: 184.4 gms
m. Tare Weight: 8.4 gms
n. Moisture Content [(k-l)/(l-m)]*100: 2.0 %
o. Unit Dry Weight [d/(1+(n/100))]: 135.9 pcf
p. Ring Weight: 540.9 gms

Date	Time	t sec	Initial Height, ho	Corrected ho - C	Final Height, hf	Corrected hf - C	Temp C	Rt	k @ 20C cm/sec
04-Oct	14:16		36.9	30.3					
05-Oct	06:12	57360			36.4	29.8	22	0.953	4.1E-08
05-Oct	06:12		36.4	29.8					
05-Oct	11:33	19260			36.4	29.8	22	0.953	<1.00E-09
05-Oct	11:33		36.4	29.8					
05-Oct	15:59	15960			36.4	29.8	22	0.953	<1.00E-09
05-Oct	15:59		36.4	29.8					
06-Oct	07:21	55320			36.4	29.8	22	0.953	<1.00E-09
06-Oct	07:21		36.4	29.8					
06-Oct	12:00	16740			36.4	29.8	22	0.953	<1.00E-09
05-Oct	06:12		36.4	29.8					
06-Oct	12:00	107280			36.4	29.8	22	0.953	<1.00E-09

Height of Top of Specimen From Top of Table: 6.64 cm
Standpipe Diameter 1.54 cm
Standpipe Area 1.863 sq cm

Test Method: Corps of Engineers EM 1110-2-1906, Appendix VII
Hx-C = Hx-Ht

HYDRAULIC CONDUCTIVITY WORKSHEET

FALLING HEAD - FIXED WALL PERMEAMETER

PROJECT: Chisholm Trail Disposal
LOCATION:
MATERIAL: Limestone gray
BORING/SAMPLE: BME-18
PROCTOR # :
SAMPLE ORIENTATION: H ✓ V ____
Remold ____

JOB No.: 132.03.100
LAB START DATE: 10/4/2024
LAB REP. DATE: 10/7/2024
TECHNICIAN: MLT
DEPTH/LIFT: 65.0'-70.0'
PERM FLUID USED: De-aired Tap Water

a. Length of Specimen, L: 1.0 in
c. Sample Volume (0.7854 * a * b ^ 2): 4.909 cu in

b. Avg. Diameter of Specimen: 2.5 in
d. Wet Unit Weight: [((f-h)*3.8095)/c)]: 141.8 pcf

INITIAL CONDITIONS

e. Ring + Wet Weight Soil: 721.7 gms
f. Wet Weight Soil + Tare: 191.1 gms
g. Dry Weight Soil + Tare: 188.9 gms
h. Tare Weight: 8.4 gms
i. Moisture Content [(f-g)/(g-h)]*100: 1.2 %
j. Unit Dry Weight [d/(1+(i/100))]: 140.1 pcf

FINAL CONDITIONS

k. Wet Weight Soil + Tare: 191.8 gms
l. Dry Weight Soil + Tare: 188.9 gms
m. Tare Weight: 8.4 gms
n. Moisture Content [(k-l)/(l-m)]*100: 1.6 %
o. Unit Dry Weight [d/(1+(n/100))]: 139.5 pcf
p. Ring Weight: 539.0 gms

Date	Time	t sec	Initial Height, ho	Corrected ho - C	Final Height, hf	Corrected hf - C	Temp C	Rt	k @ 20C cm/sec
04-Oct	14:44		38.5	31.9					
05-Oct	06:12	55680			37.9	31.3	22	0.953	4.9E-08
05-Oct	06:12		37.9	31.3					
05-Oct	11:33	19260			37.8	31.2	22	0.953	2.4E-08
05-Oct	11:33		37.8	31.2					
05-Oct	15:59	15960			37.8	31.2	22	0.953	<1.00E-09
05-Oct	15:59		37.8	31.2					
06-Oct	07:21	55320			37.8	31.2	22	0.953	<1.00E-09
06-Oct	07:21		37.8	31.2					
06-Oct	12:00	16740			37.8	31.2	22	0.953	<1.00E-09
05-Oct	06:12		37.9	31.3					
06-Oct	12:00	107280			37.8	31.2	22	0.953	4.3E-09

Height of Top of Specimen From Top of Table: 6.65 cm

Standpipe Diameter 1.54 cm

Standpipe Area 1.863 sq cm

Test Method: Corps of Engineers EM 1110-2-1906, Appendix VII

Hx-C = Hx-Ht

HYDRAULIC CONDUCTIVITY WORKSHEET

FALLING HEAD - FIXED WALL PERMEAMETER

PROJECT: Chisholm Trail Disposal
LOCATION: ____
MATERIAL: Cemented sand, brown
BORING/SAMPLE: BME-21
PROCTOR # : ____
SAMPLE ORIENTATION: H ✓ V ____
Remold ____

JOB No.: 132.03.100
LAB START DATE: 9/21/2024
LAB REP. DATE: 9/24/2024
TECHNICIAN: MLT
DEPTH/LIFT: 55.0'-60.0'
PERM FLUID USED: De-aired Tap Water

a. Length of Specimen, L: 1.0 in
c. Sample Volume (0.7854 * a * b ^ 2): 4.909 cu in

b. Avg. Diameter of Specimen: 2.5 in
d. Wet Unit Weight: [((f-h)*3.8095)/c)]: 112.7 pcf

INITIAL CONDITIONS

e. Ring + Wet Weight Soil: 683.8 gms
f. Wet Weight Soil + Tare: 153.6 gms
g. Dry Weight Soil + Tare: 127.9 gms
h. Tare Weight: 8.4 gms
i. Moisture Content [(f-g)/(g-h)]*100: 21.5 %
j. Unit Dry Weight [d/(1+(i/100))]: 92.7 pcf

FINAL CONDITIONS

k. Wet Weight Soil + Tare: 157.6 gms
l. Dry Weight Soil + Tare: 127.9 gms
m. Tare Weight: 8.4 gms
n. Moisture Content [(k-l)/(l-m)]*100: 24.9 %
o. Unit Dry Weight [d/(1+(n/100))]: 90.3 pcf
p. Ring Weight: 538.6 gms

Date	Time	t sec	Initial Height, ho	Corrected ho - C	Final Height, hf	Corrected hf - C	Temp C	Rt	k @ 20C cm/sec
21-Sep	07:28		38.6	32.0					
21-Sep	20:03	45300			37.4	30.8	22	0.953	1.2E-07
21-Sep	20:03		37.4	30.8					
22-Sep	06:58	39300			36.9	30.3	22	0.953	5.9E-08
22-Sep	06:58		36.9	30.3					
22-Sep	11:00	14520			36.7	30.1	22	0.953	6.5E-08
22-Sep	11:00		36.7	30.1					
22-Sep	15:49	17340			36.5	29.9	22	0.953	5.5E-08
22-Sep	15:49		36.5	29.9					
23-Sep	09:45	64560			35.9	29.3	22	0.953	4.5E-08
21-Sep	20:03		37.4	30.8					
23-Sep	09:45	135720			35.9	29.3	22	0.953	5.2E-08

Height of Top of Specimen From Top of Table: 6.65 cm

Standpipe Diameter 1.54 cm

Standpipe Area 1.863 sq cm

Test Method: Corps of Engineers EM 1110-2-1906, Appendix VII

Hx-C = Hx-Ht

HYDRAULIC CONDUCTIVITY WORKSHEET
FALLING HEAD - FIXED WALL PERMEAMETER

PROJECT: Chisholm Trail Disposal
LOCATION:
MATERIAL: Shale sandy gray
BORING/SAMPLE: BME-23
PROCTOR # :
SAMPLE ORIENTATION: H ✓ V ____
Remold ____

JOB No.: 132.03.100
LAB START DATE: 9/19/2024
LAB REP. DATE: 9/23/2024
TECHNICIAN: MLT
DEPTH/LIFT: 25.0'-30.0'
PERM FLUID USED: De-aired Tap Water

a. Length of Specimen, L: 1.0 in
c. Sample Volume (0.7854 * a * b ^ 2): 4.909 cu in
b. Avg. Diameter of Specimen: 2.5 in
d. Wet Unit Weight: [((f-h)*3.8095)/c)]: 132.6 pcf

INITIAL CONDITIONS

e. Ring + Wet Weight Soil: 679.8 gms
f. Wet Weight Soil + Tare: 179.3 gms
g. Dry Weight Soil + Tare: 160.8 gms
h. Tare Weight: 8.4 gms
i. Moisture Content [((f-g)/(g-h)]*100: 12.1 %
j. Unit Dry Weight [d/(1+(i/100))]: 118.3 pcf

FINAL CONDITIONS

k. Wet Weight Soil + Tare: 181.9 gms
l. Dry Weight Soil + Tare: 160.8 gms
m. Tare Weight: 8.4 gms
n. Moisture Content [(k-l)/(l-m)]*100: 13.8 %
o. Unit Dry Weight [d/(1+(n/100))]: 116.5 pcf
p. Ring Weight: 508.9 gms

Date	Time	t sec	Initial Height, ho	Corrected ho - C	Final Height, hf	Corrected hf - C	Temp C	Rt	k @ 20C cm/sec
19-Sep	09:45		40.0	33.4					
20-Sep	07:00	76500			38.1	31.5	22	0.953	1.0E-07
20-Sep	07:00		38.1	31.5					
20-Sep	11:00	14400			38.0	31.4	22	0.953	3.0E-08
20-Sep	11:00		38.0	31.4					
20-Sep	15:07	14820			37.9	31.3	22	0.953	2.9E-08
20-Sep	15:07		37.9	31.3					
20-Sep	19:15	14880			37.9	31.3	22	0.953	<1.00E-09
20-Sep	19:15		37.9	31.3					
21-Sep	06:48	41580			37.8	31.2	22	0.953	1.0E-08
20-Sep	07:00		38.1	31.5					
21-Sep	06:48	85680			37.8	31.2	22	0.953	1.5E-08

Height of Top of Specimen From Top of Table: 6.61 cm
Standpipe Diameter 1.50 cm
Standpipe Area 1.767 sq cm

Test Method: Corps of Engineers EM 1110-2-1906, Appendix VII

Hx-C = Hx-Ht

HYDRAULIC CONDUCTIVITY WORKSHEET
FALLING HEAD - FIXED WALL PERMEAMETER

PROJECT: Chisholm Trail Disposal
LOCATION:
MATERIAL: Cemented sand, gray
BORING/SAMPLE: BME-24
PROCTOR # :
SAMPLE ORIENTATION: H ✓ V ____
Remold ____

JOB No.: 132.03.100
LAB START DATE: 9/19/2024
LAB REP. DATE: 9/23/2024
TECHNICIAN: MLT
DEPTH/LIFT: 31.0'-36.0'
PERM FLUID USED: De-aired Tap Water

a. Length of Specimen, L: 1.0 in
c. Sample Volume (0.7854 * a * b ^ 2): 4.909 cu in

b. Avg. Diameter of Specimen: 2.5 in
d. Wet Unit Weight: [((f-h)*3.8095)/c)]: 124.8 pcf

INITIAL CONDITIONS

e. Ring + Wet Weight Soil: 701.3 gms
f. Wet Weight Soil + Tare: 169.2 gms
g. Dry Weight Soil + Tare: 153.2 gms
h. Tare Weight: 8.4 gms
i. Moisture Content [(f-g)/(g-h)]*100: 11.0 %
j. Unit Dry Weight [d/(1+(i/100))]: 112.4 pcf

FINAL CONDITIONS

k. Wet Weight Soil + Tare: 172.5 gms
l. Dry Weight Soil + Tare: 153.2 gms
m. Tare Weight: 8.4 gms
n. Moisture Content [(k-l)/(l-m)]*100: 13.3 %
o. Unit Dry Weight [d/(1+(n/100))]: 110.1 pcf
p. Ring Weight: 540.5 gms

Date	Time	t sec	Initial Height, ho	Corrected ho - C	Final Height, hf	Corrected hf - C	Temp C	Rt	k @ 20C cm/sec
19-Sep	09:16		39.7	33.1					
20-Sep	07:00	78240			37.8	31.2	22	0.953	1.1E-07
20-Sep	07:00		37.8	31.2					
20-Sep	11:00	14400			37.6	31.0	22	0.953	6.4E-08
20-Sep	11:00		37.6	31.0					
20-Sep	15:07	14820			37.5	30.9	22	0.953	3.1E-08
20-Sep	15:07		37.5	30.9					
20-Sep	19:15	14880			37.4	30.8	22	0.953	3.1E-08
20-Sep	19:15		37.4	30.8					
21-Sep	06:48	41580			37.2	30.6	22	0.953	2.2E-08
20-Sep	07:00		37.8	31.2					
21-Sep	06:48	85680			37.2	30.6	22	0.953	3.2E-08

Height of Top of Specimen From Top of Table: 6.64 cm

Standpipe Diameter 1.54 cm

Standpipe Area 1.863 sq cm

Test Method: Corps of Engineers EM 1110-2-1906, Appendix VII

Hx-C = Hx-Ht

HYDRAULIC CONDUCTIVITY WORKSHEET

FALLING HEAD - FIXED WALL PERMEAMETER

PROJECT: Chisholm Trail Disposal
LOCATION:
MATERIAL: Limestone gray
BORING/SAMPLE: BME-28
PROCTOR # :
SAMPLE ORIENTATION: H ✓ V
Remold

JOB No.: 132.03.100
LAB START DATE: 10/4/2024
LAB REP. DATE: 10/7/2024
TECHNICIAN: MLT
DEPTH/LIFT: 55.0'-60.0'
PERM FLUID USED: De-aired Tap Water

a. Length of Specimen, L: 1.0 in
c. Sample Volume (0.7854 * a * b ^ 2): 4.909 cu in

b. Avg. Diameter of Specimen: 2.5 in
d. Wet Unit Weight: [((f-h)*3.8095)/c)]: 141.4 pcf

INITIAL CONDITIONS

e. Ring + Wet Weight Soil: 691.4 gms
f. Wet Weight Soil + Tare: 190.6 gms
g. Dry Weight Soil + Tare: 188.0 gms
h. Tare Weight: 8.4 gms
i. Moisture Content [(f-g)/(g-h)]*100: 1.4 %
j. Unit Dry Weight [d/(1+(i/100))]: 139.4 pcf

FINAL CONDITIONS

k. Wet Weight Soil + Tare: 191.4 gms
l. Dry Weight Soil + Tare: 188.0 gms
m. Tare Weight: 8.4 gms
n. Moisture Content [(k-l)/(l-m)]*100: 1.9 %
o. Unit Dry Weight [d/(1+(n/100))]: 138.8 pcf
p. Ring Weight: 509.2 gms

Date	Time	t sec	Initial Height, ho	Corrected ho - C	Final Height, hf	Corrected hf - C	Temp C	Rt	k @ 20C cm/sec
04-Oct	15:09		41.7	35.1					
05-Oct	06:12	54180			41.2	34.6	22	0.953	3.6E-08
05-Oct	06:12		41.2	34.6					
05-Oct	11:33	19260			41.2	34.6	22	0.953	<1.00E-09
05-Oct	11:33		41.2	34.6					
05-Oct	15:59	15960			41.2	34.6	22	0.953	<1.00E-09
05-Oct	15:59		41.2	34.6					
06-Oct	07:21	55320			41.2	34.6	22	0.953	<1.00E-09
06-Oct	07:21		41.2	34.6					
06-Oct	12:00	16740			41.2	34.6	22	0.953	<1.00E-09
05-Oct	06:12		41.2	34.6					
06-Oct	12:00	107280			41.2	34.6	22	0.953	<1.00E-09

Height of Top of Specimen From Top of Table: 6.61 cm

Standpipe Diameter 1.50 cm

Standpipe Area 1.767 sq cm

Test Method: Corps of Engineers EM 1110-2-1906, Appendix VII

Hx-C = Hx-Ht

LOGO M. L. Testing, LLC

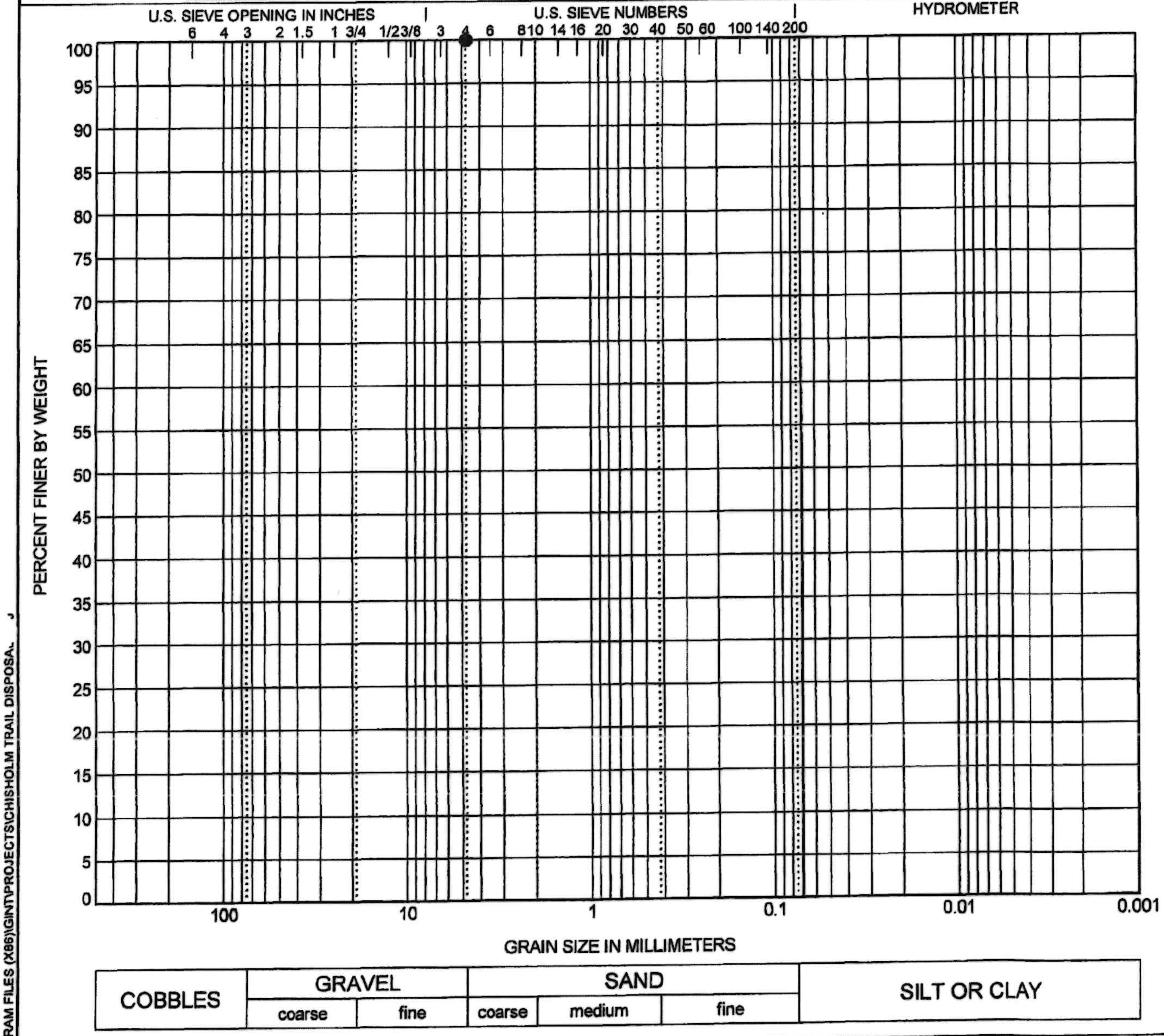
GRAIN SIZE DISTRIBUTION

CLIENT

PROJECT NUMBER 132.03.100

PROJECT NAME Chisholm Trail Disposal

PROJECT LOCATION



BOREHOLE	DEPTH	Classification	LL	PL	PI	Cc	Cu
● BME-01	16.0						

BOREHOLE	DEPTH	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● BME-01	16.0	4.75				0.0			

GRAIN SIZE DISTRIBUTION

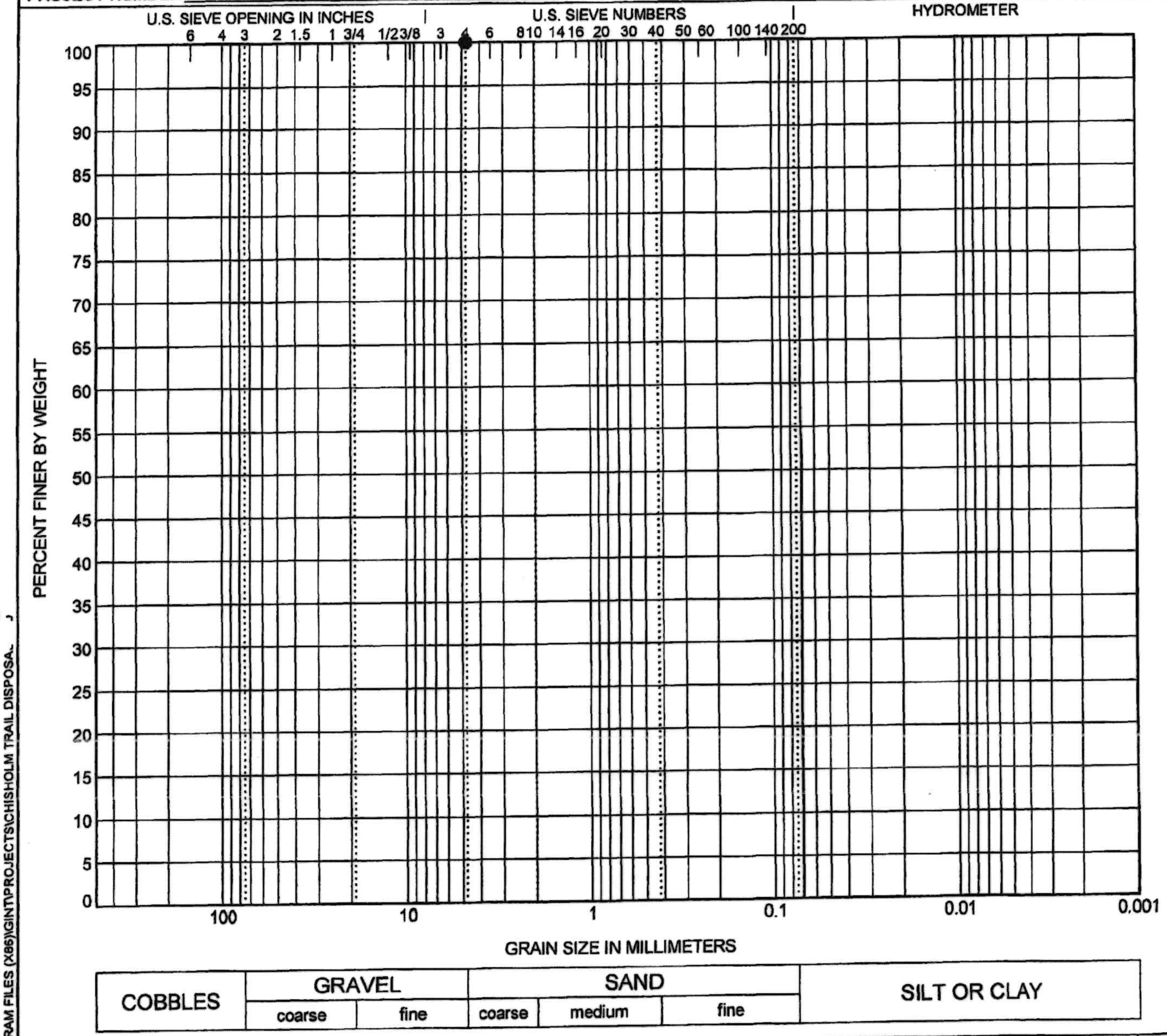
LOGO M. L. Testing, LLC

CLIENT

PROJECT NAME Chisholm Trail Disposal

PROJECT NUMBER 132.03.100

PROJECT LOCATION



BOREHOLE	DEPTH	Classification	LL	PL	PI	Cc	Cu
● BME-03	11.0						

BOREHOLE	DEPTH	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● BME-03	11.0	4.75				0.0			

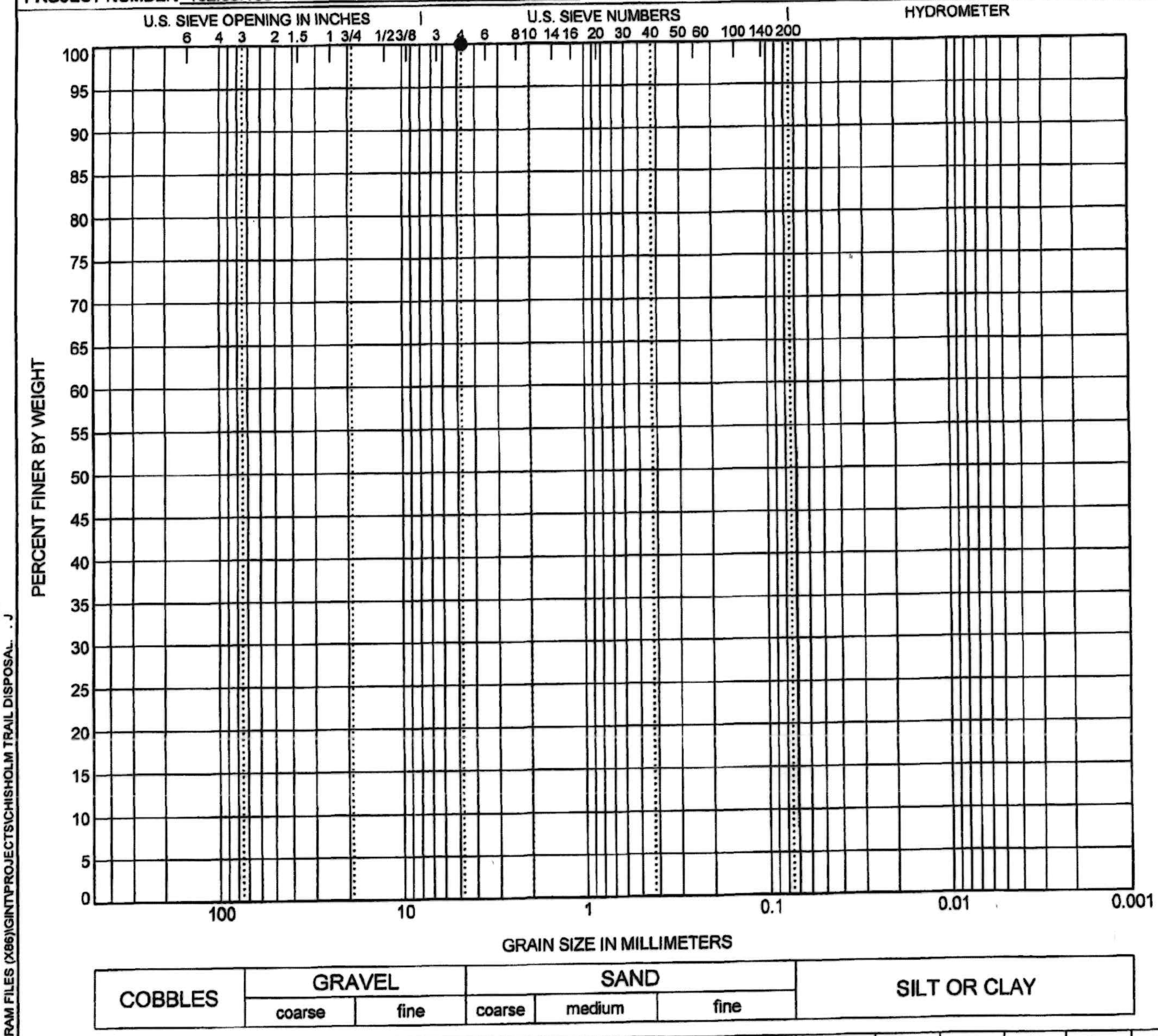
GRAIN SIZE - GIN J US LAB.GDT - 9/22/24 16:40 - C:\PROGRAM FILES (X86)\GINT\PROJECTS\CHISHOLM TRAIL DISPOSA.

GRAIN SIZE DISTRIBUTION

LOGO M. L. Testing, LLC

CLIENT ____________________ PROJECT NAME Chisholm Trail Disposal

PROJECT NUMBER 132.03.100 PROJECT LOCATION ____________________



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● BME-06	1.0						

BOREHOLE	DEPTH	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● BME-06	1.0	4.75				0.0			

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GRAIN SIZE DISTRIBUTION

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CLIENT

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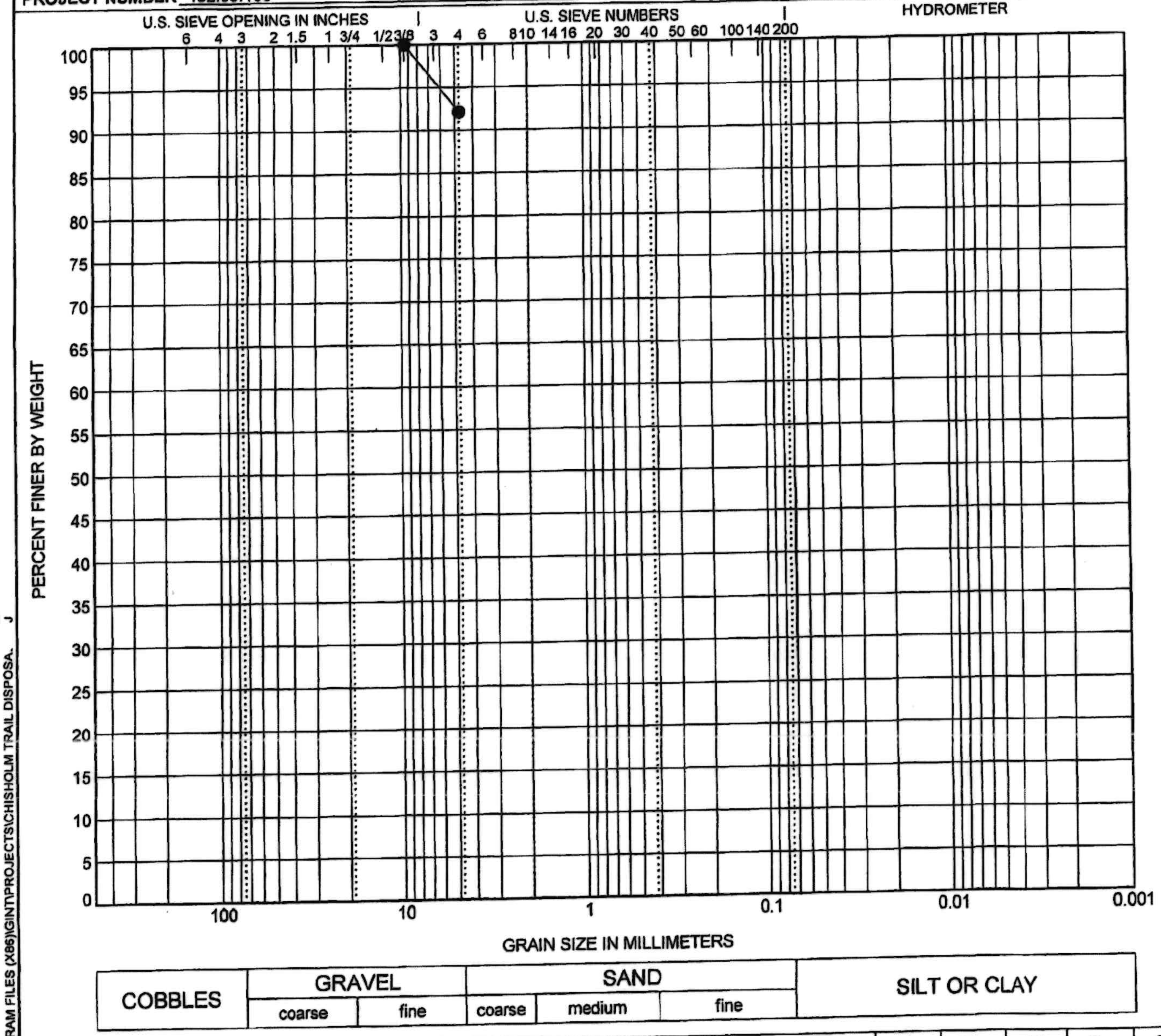
PROJECT NUMBER 132.03.100

PROJECT LOCATION



	BOREHOLE	DEPTH	Classification	LL	PL	PI	Cc	Cu
●	**BME-06**	**26.0**						

	BOREHOLE	DEPTH	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	**BME-06**	**26.0**	**9.5**				**7.8**			

E6.18

GRAIN SIZE DISTRIBUTION

LOGO

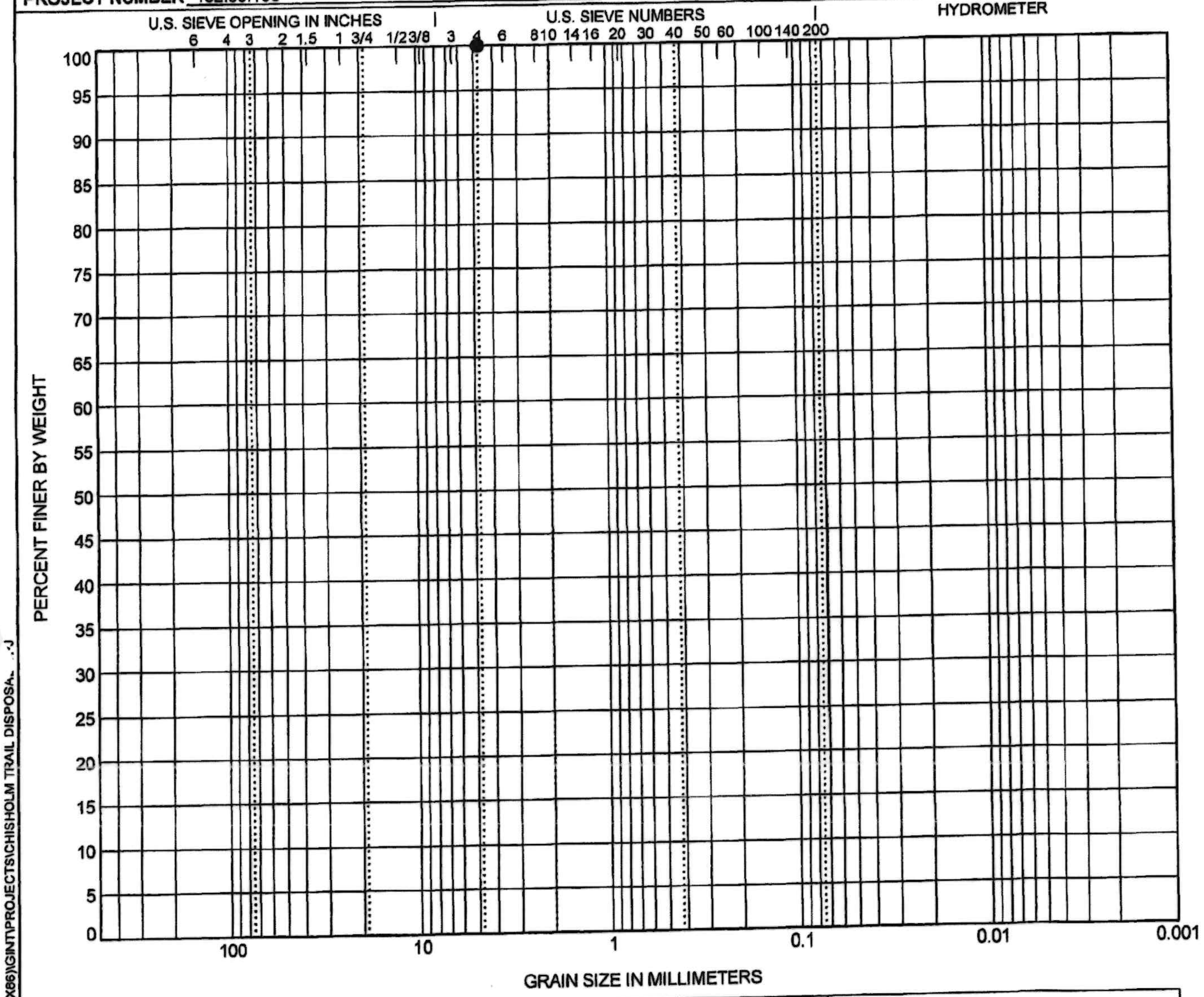
M. L. Testing, LLC

CLIENT ______

PROJECT NAME Chisholm Trail Disposal

PROJECT NUMBER 132.03.100

PROJECT LOCATION ______



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	BOREHOLE	DEPTH	Classification	LL	PL	PI	Cc	Cu
●	BME-07	11.0						

	BOREHOLE	DEPTH	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	BME-07	11.0	4.75				0.0			

E6.19

LOGO

M. L. Testing, LLC

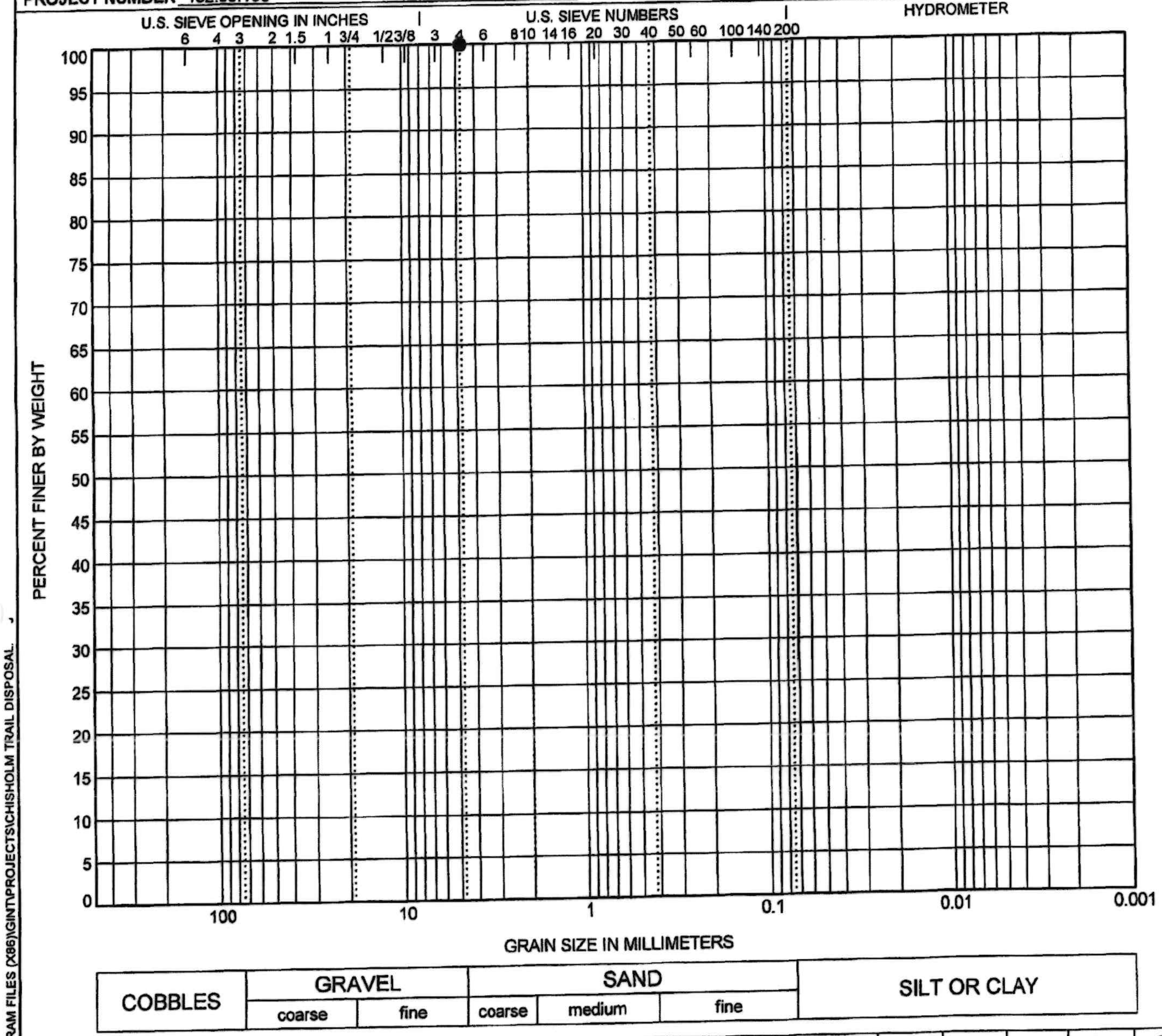
GRAIN SIZE DISTRIBUTION

CLIENT

PROJECT NAME Chisholm Trail Disposal

PROJECT NUMBER 132.03.100

PROJECT LOCATION



BOREHOLE	DEPTH	Classification	LL	PL	PI	Cc	Cu
● BME-07	16.0						

BOREHOLE	DEPTH	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● BME-07	16.0	4.75				0.0			

E6.20

GRAIN SIZE DISTRIBUTION

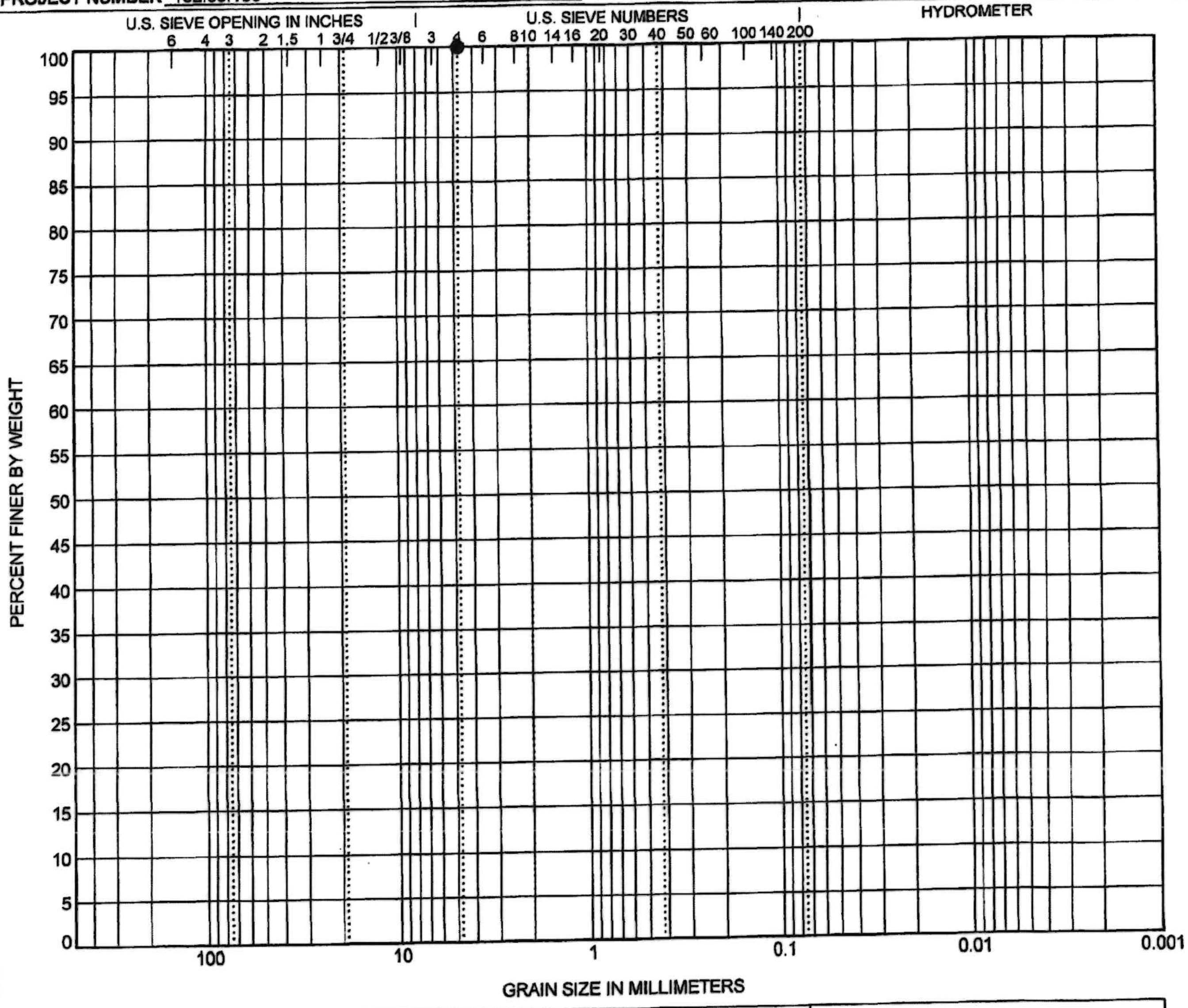
LOGO M. L. Testing, LLC

CLIENT

PROJECT NAME Chisholm Trail Disposal

PROJECT NUMBER 132.03.100

PROJECT LOCATION



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	BOREHOLE	DEPTH	Classification	LL	PL	PI	Cc	Cu
●	BME-10	1.0						

	BOREHOLE	DEPTH	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	BME-10	1.0	4.75				0.0			

E6.21

GRAIN SIZE DISTRIBUTION

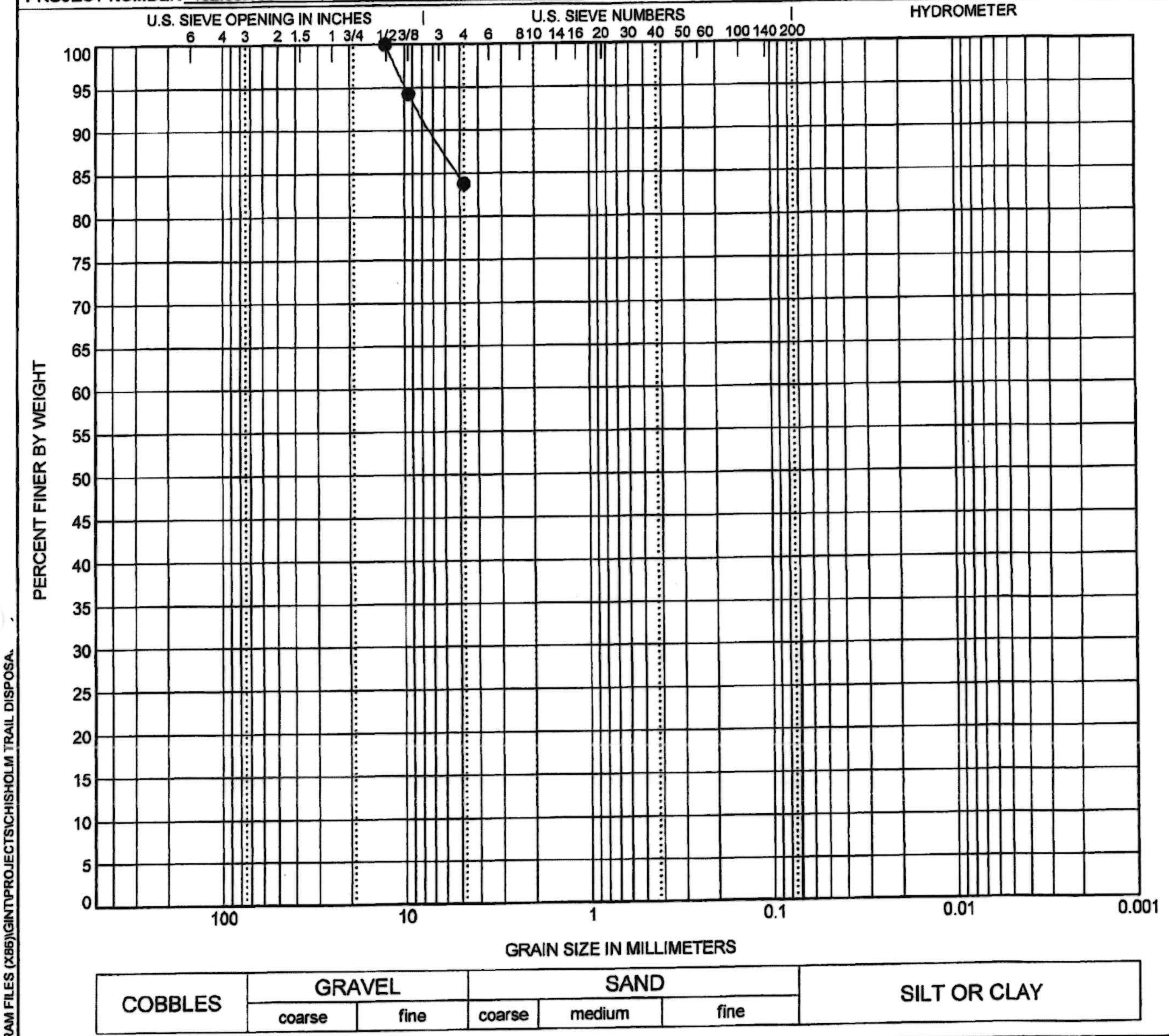
LOGO M. L. Testing, LLC

CLIENT ____________________

PROJECT NAME Chisholm Trail Disposal

PROJECT NUMBER 132.03.100

PROJECT LOCATION ____________________



BOREHOLE	DEPTH	Classification	LL	PL	PI	Cc	Cu
● BME-13	6.0						

BOREHOLE	DEPTH	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● BME-13	6.0	12.7				16.2			

E6.22

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GRAIN SIZE DISTRIBUTION

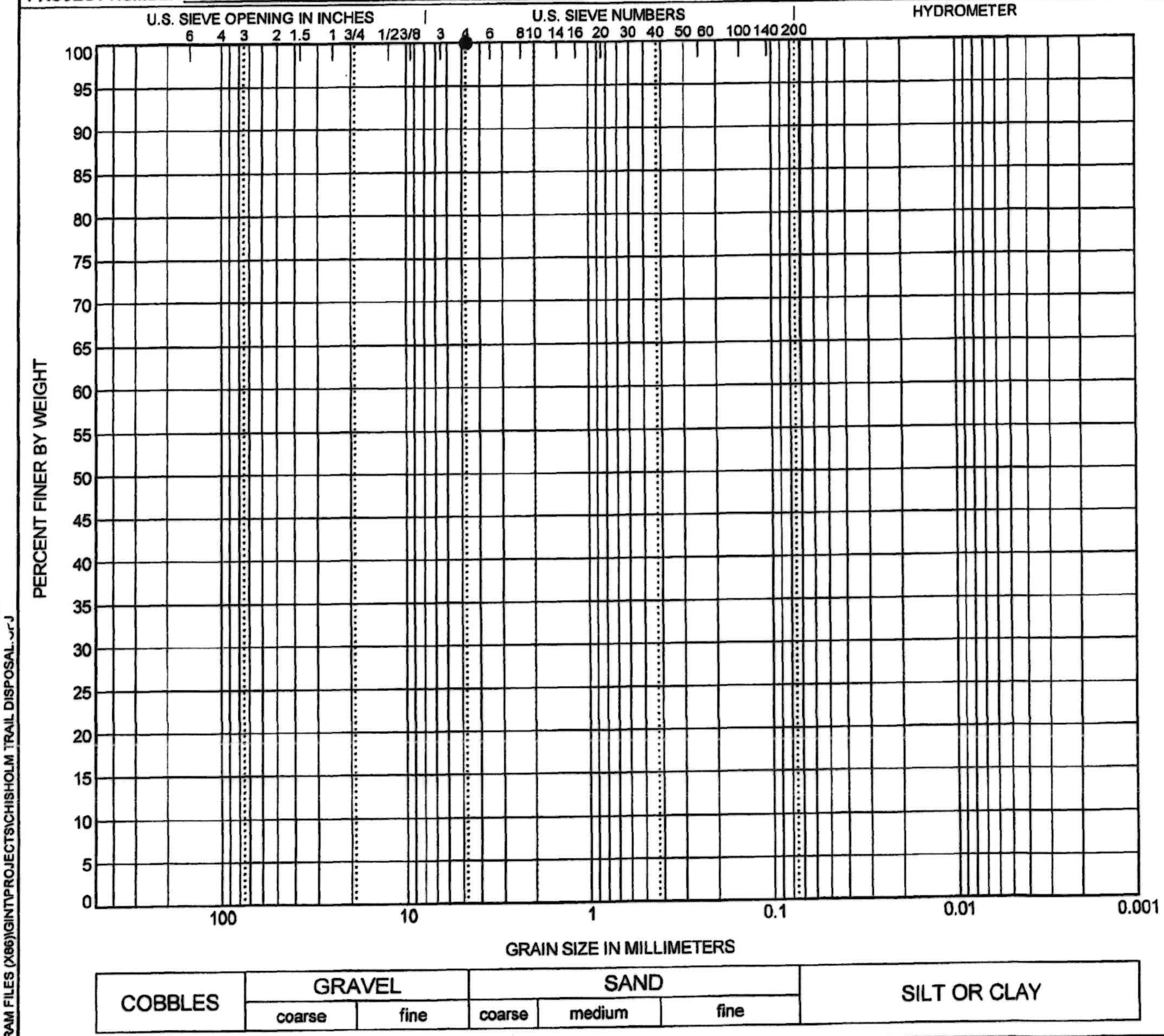
LOGO M. L. Testing, LLC

CLIENT ______

PROJECT NAME Chisholm Trail Disposal

PROJECT NUMBER 132.03.100

PROJECT LOCATION ______



	BOREHOLE	DEPTH	Classification	LL	PL	PI	Cc	Cu
●	BME-13	16.0						

	BOREHOLE	DEPTH	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	BME-13	16.0	4.75				0.0			

E6.23

GRAIN SIZE DISTRIBUTION

LOGO

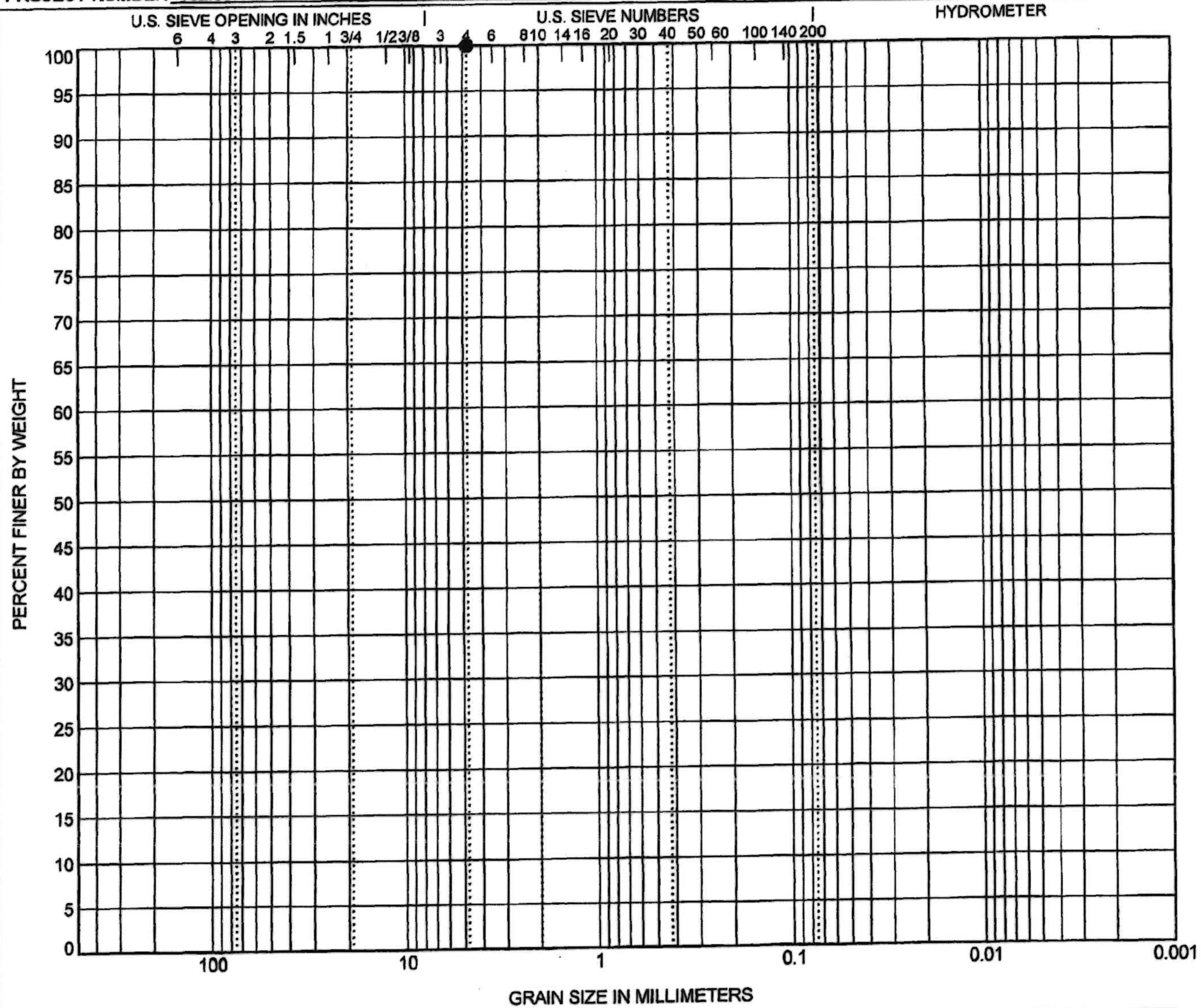
M. L. Testing, LLC

CLIENT

PROJECT NAME Chisholm Trail Disposal

PROJECT NUMBER 132.03.100

PROJECT LOCATION



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	BOREHOLE	DEPTH	Classification	LL	PL	PI	Cc	Cu
●	BME-19	6.0						

	BOREHOLE	DEPTH	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	BME-19	6.0	4.75				0.0			

E6.24

GRAIN SIZE DISTRIBUTION

LOGO

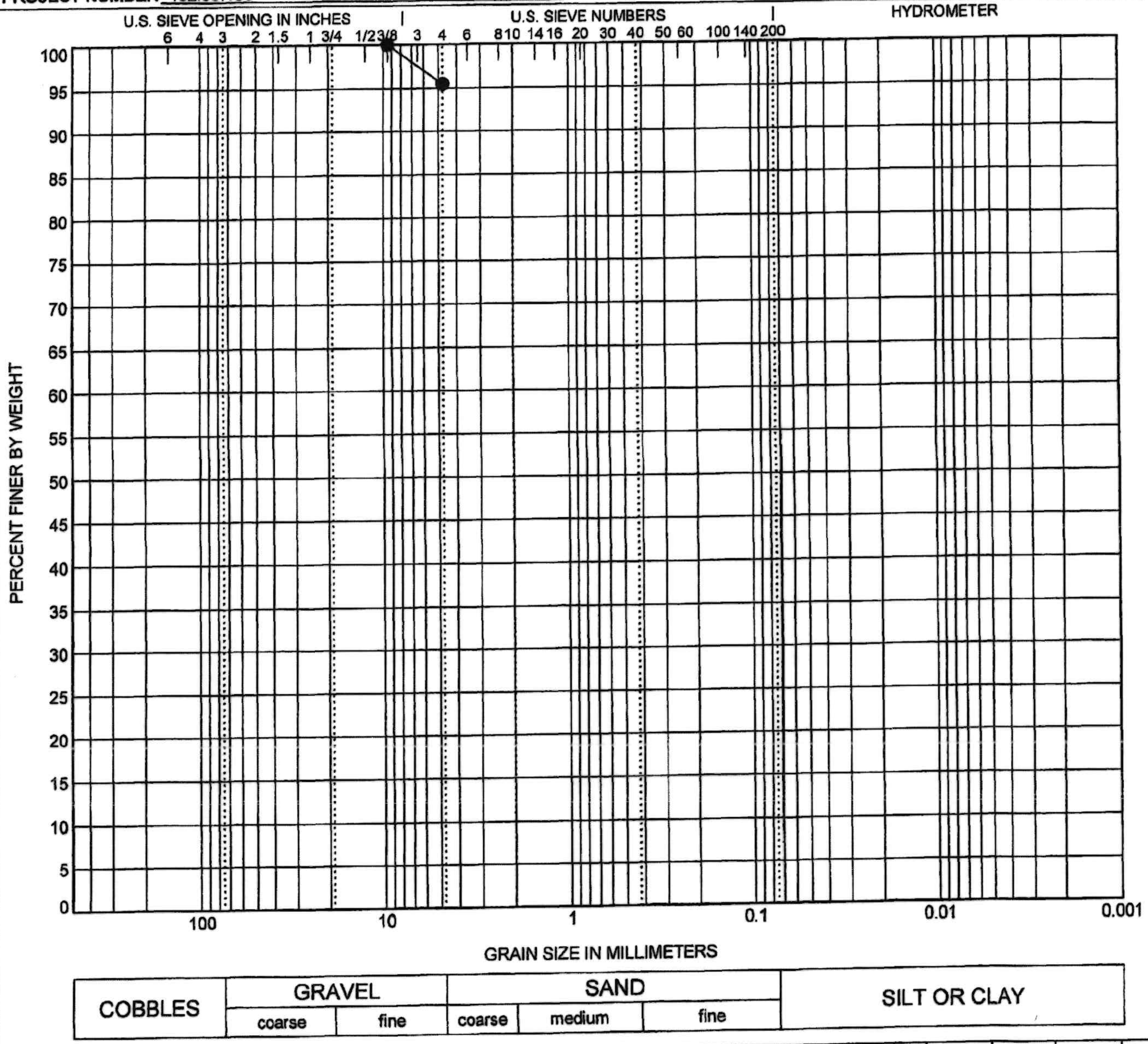
M. L. Testing, LLC

CLIENT

PROJECT NAME Chisholm Trail Disposal

PROJECT NUMBER 132.03.100

PROJECT LOCATION



BOREHOLE		DEPTH	Classification	LL	PL	PI	Cc	Cu
●	BME-19	31.0						

BOREHOLE		DEPTH	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	BME-19	31.0	9.5				4.5			

E6.25

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LOGO M. L. Testing, LLC

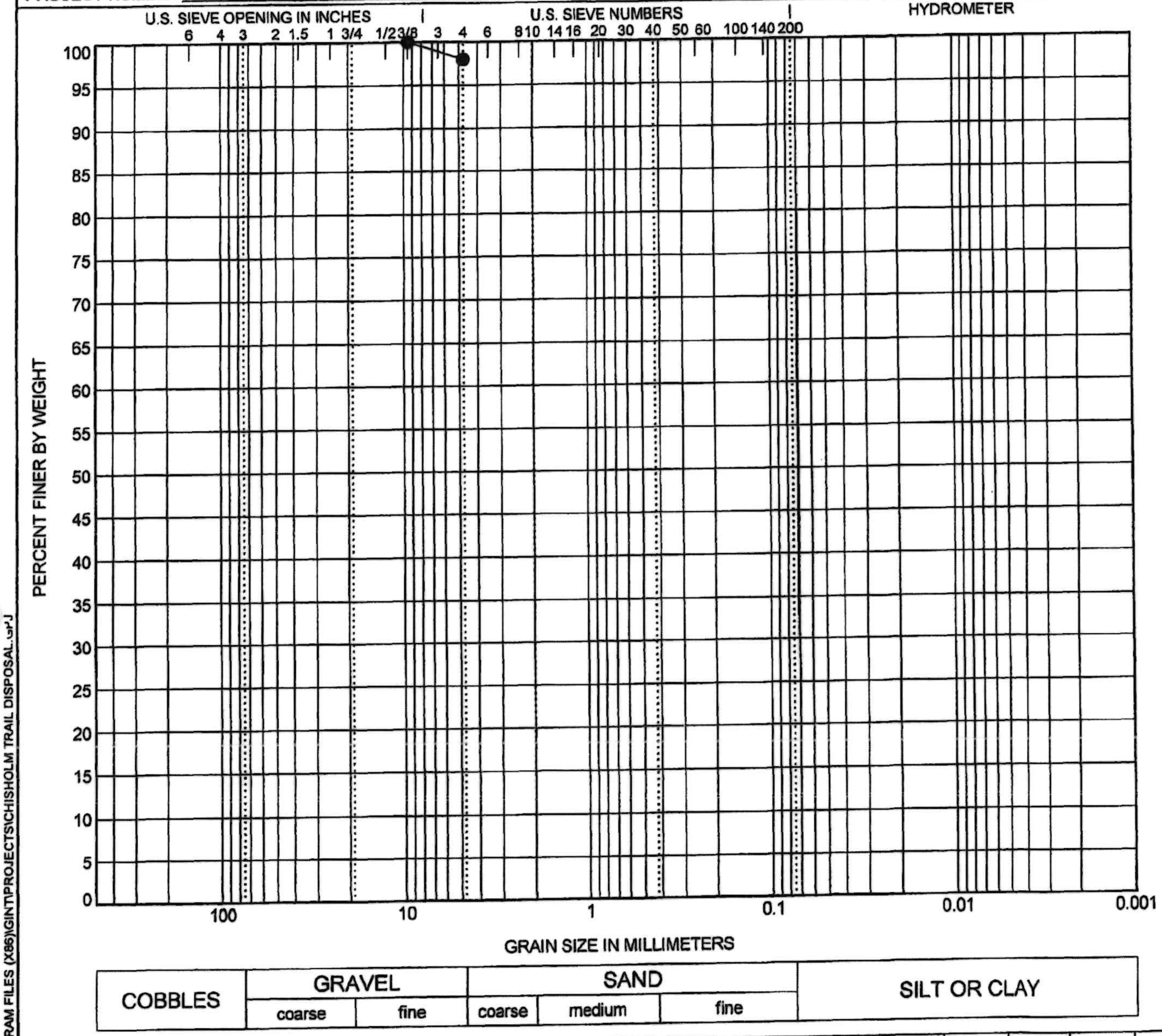
GRAIN SIZE DISTRIBUTION

CLIENT ______

PROJECT NAME Chisholm Trail Disposal

PROJECT NUMBER 132.03.100

PROJECT LOCATION ______



BOREHOLE	DEPTH	Classification	LL	PL	PI	Cc	Cu
● BME-21	11.0						

BOREHOLE	DEPTH	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● BME-21	11.0	9.5				2.0			

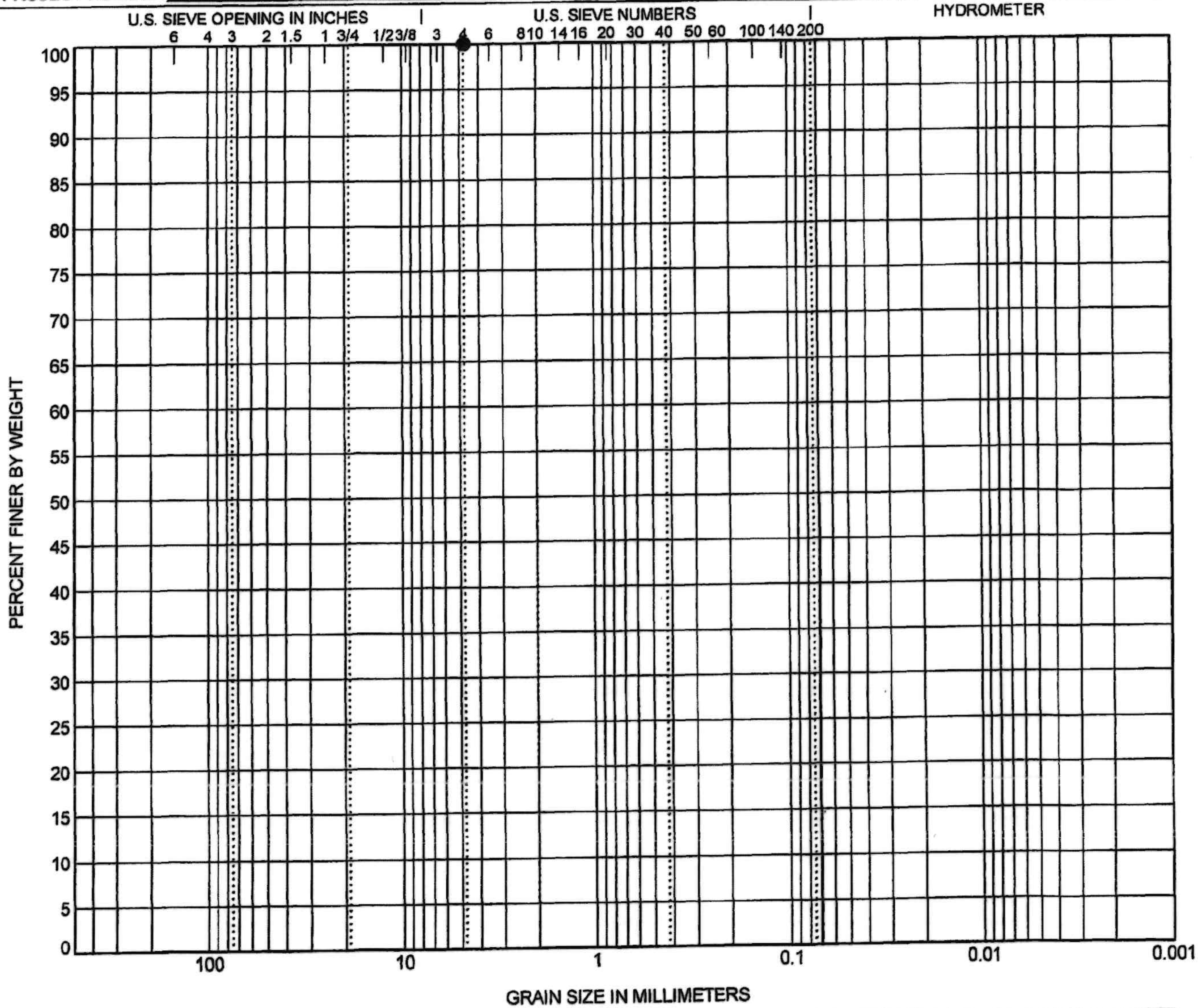
E6.26

GRAIN SIZE DISTRIBUTION

LOGO M. L. Testing, LLC

CLIENT ______ PROJECT NAME Chisholm Trail Disposal

PROJECT NUMBER 132.03.100 PROJECT LOCATION ______



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	BOREHOLE	DEPTH	Classification	LL	PL	PI	Cc	Cu
●	BME-23	11.0						

	BOREHOLE	DEPTH	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	BME-23	11.0	4.75				0.0			

E6.27

GRAIN SIZE - GIN. US LAB.GDT - 9/22/24 16:43 - C:\PROGRAM FILES (X86)\GINT\PROJECTS\CHISHOLM TRAIL DISPOSA.

CHISHOLM TRAIL DISPOSAL LANDFILL
WISE COUNTY, TEXAS
TCEQ PERMIT NO. MSW 2421

TYPE IV PERMIT APPLICATION

PART III –SITE DEVELOPMENT PLAN
ATTACHMENT F
GROUNDWATER MONITORING PLAN

Prepared for

Chisholm Trail Disposal, LLC

September 2025
Technically Complete

Elizabeth Floyd

Elizabeth Floyd
GEOLOGY
2045

Biggs & Mathews Environmental, Inc.
Firm Registration No. 50222
9/23/2025

Prepared by

BIGGS & MATHEWS ENVIRONMENTAL
1700 Robert Road, Suite 100 ◆ Mansfield, Texas 76063 ◆ 817-563-1144

TEXAS BOARD OF PROFESSIONAL ENGINEERS AND LAND SURVEYORS
FIRM REGISTRATION NO. F-256 AND NO. 10194895

TEXAS BOARD OF PROFESSIONAL GEOSCIENTISTS
FIRM REGISTRATION NO. 50222

Elizabeth Floyd
2045

9/23/2025

Biggs & Mathews Environmental, Inc.
Firm Registration No. 50222

CONTENTS

GROUNDWATER MONITORING SYSTEM DESIGN CERTIFICATION

General Site Information

Site: Chisholm Trail Disposal Landfill

Site Location: Wise County, Texas

MSW Permit No.: 2421

Qualified Groundwater Scientist Statement

I, Elizabeth Floyd, am a licensed professional geoscientist in the State of Texas and a qualified groundwater scientist as defined in §330.3. I have reviewed the groundwater monitoring system and supporting data contained herein. In my professional opinion, the groundwater monitoring system is in compliance with the groundwater monitoring requirements specified in 30 TAC §330.401 through §330.421. This system has been designed for specification application to the Chisholm Trail Disposal Landfill (Permit No. MSW 2421). The only warranty made by me in connection with this document is that I have used that degree of care and skill ordinarily exercised under similar conditions by reputable members of my profession, practicing in the same or similar locality. No other warranty, expressed or implied, is intended.

Firm/Address: Biggs and Mathews Environmental, Inc.
1700 Robert Road, Suite 100
Mansfield, Texas 76063

Elizabeth Floyd
GEOLOGY
2045

Biggs & Mathews Environmental, Inc.
Firm Registration No. 50222

9/23/2025

1 GROUNDWATER MONITORING PROGRAM

1.1 Site Hydrogeology

Site stratigraphy is discussed in detail in Section 4.2 of Attachment E. A discussion of the hydrogeologic interpretation of the site is in Section 5.3 of Attachment E.

1.1.1 Unit I – Alluvium - Perched Water Zone

Groundwater is contained in the Unit I alluvium. Groundwater enters Unit I as meteoric water filtration from the surface. Current excavation activities have altered the natural flow of groundwater at the site. A large open excavation in the northeast quadrant of the site acts as a sink for groundwater in Unit I.

Water levels in piezometers screened in Unit I range from 658.77 to 663.18 ft/msl. Groundwater present in this unit is under water table conditions. Groundwater flows toward the north-northwest in the northern portion of the site. Groundwater also flows toward the south in the southwest portion of the site. Potentiometric surface maps of Unit I are included in Appendix E5 as Drawings E5.2a to E5.2d. Slug tests were conducted in Unit I piezometers. The geometric mean of hydraulic conductivity values (K) calculated from the Unit I slug tests is 1.87 x 10^{-4} centimeters per second (cm/sec). The estimated flow velocity in Unit I is 1.17 feet per year (ft/yr).

1.1.2 Unit II – Confining Unit – Limestone and Shale

Unit II consists of hard beds of limestone and shale and ranges from 1 to 13 feet thick. This layer was missing from the borings (BME-1, 2, 5, 6, 9, 14, 15, 18, 19, and 26). When present, the lithologic and hydrogeological characteristics of this unit act as a lower confining unit to Unit I and an upper confining unit to Unit III. A laboratory permeability test was run on an undisturbed sample of Unit II (BME-3). The hydraulic conductivity was calculated to be 2.8 x 10^{-8} cm/sec. The hydraulic conductivity worksheet is included in Appendix E6 as Drawing E6.2.

Where Unit II is absent, Unit I and Unit III are in direct communication.

1.1.3 Unit III – Sandstone, Sandstone with Silt, Siltstone, Sandy Shale – Upper Groundwater Zone

Groundwater is contained in Unit III strata which is comprised of sandstone, sandstone with silt, siltstone, and with some interbeds of sandy shale. Groundwater enters Unit III on the outcrop of the Paluxy Sand Formation. Water levels in piezometers screened in Unit III range from 652.34 to 662.42 ft/msl. Groundwater present in this unit is under confined conditions where Unit II is present. Groundwater flow in Unit III flows toward the northwest. Potentiometric surface maps of Unit III are included in Appendix E5 as Drawings E5.3a through E5.4c. Slug tests conducted in Unit III had a geometric mean of hydraulic conductivity values (K) of 1.56 x 10^{-4} cm/sec. The estimated flow velocity in Unit III is 3.26 ft/yr.

Unit II acts as a lower confining unit to Unit I and an upper confining unit to Unit III. As previously discussed, Unit II is absent in borings BME-1, 2, 5, 6, 9, 14, 15, 18, 19, and 26. Units I and III are in direct communication with one another where Unit II is absent. Groundwater in these areas would follow the flow regime for Unit III and flow to the northwest.

1.1.4 Unit IV – Confining Unit – Limestone and Shale

Unit IV consists of layers of limestone and shale. This unit ranges from 5 to 27 feet thick across the site. The lithological and hydrogeological characteristics of this unit indicate that it serves as the lower confining unit for Unit III and an upper confining unit for the underlying Unit V.

Two undisturbed samples were submitted for laboratory permeability testing on the Unit IV strata (BME-18, BME-28). Results for hydraulic conductivity calculated were less than 4.3 x 10^{-9} and 1.00 x 10^{-9} cm/sec, respectively. The hydraulic conductivity worksheets are included in Appendix E6 as Drawings E6.10 and E6.14.

1.1.5 Unit V – Uppermost Aquifer – Sand, Sandstone, Sand with Silt, Sandy Shale

Groundwater enters Unit V strata at its outcrop east of the site. Water levels in piezometers screened in Unit V range from 628.25 to 659.14 ft/msl. Groundwater present in this unit is under confined conditions. Groundwater is confined in Unit V by the overlying limestone of Unit IV and by the underlying limestone, shale with sand, and shale with silt of Unit VI. Potentiometric surface maps of Unit V are included in Appendix E5 as Drawings E5.4a through E5.4d. Groundwater flow is generally toward the west toward piezometers P-3 and P-4. In this area, groundwater is directed to its localized area in Unit V because of a depression in Unit III through VI, as shown on Cross Sections B-B' and E-E' (see Drawings E3.3 and E3.6). The geometric mean of the hydraulic conductivity values (K) calculated from the Unit V slug tests is 4.60 x 10^{-5} cm/sec. The estimated groundwater flow velocity in Unit V is approximately 6.32 ft/yr.

1.1.6 Unit VI – Lower Confining Unit – Limestone, Shale with Sand, Shale with Silt

Unit VI consists of layers of limestone, shale with sand, and shale with silt. An average of approximately 14 feet and a maximum of 20 feet of this layer was penetrated by site borings. Two undisturbed samples were submitted for laboratory permeability testing on the Unit VI strata (BME-8 and BME-17). The hydraulic conductivity was calculated as 4.5 x 10^{-9} and less than 1.00 x 10^{-9} cm/sec, respectively. The laboratory hydraulic conductivity worksheets are included in Appendix E6 as Drawings E6.6 and E6.9. The lithological and hydrogeologic characteristics of this unit indicate that Unit VI serves as the lower confining unit to Unit V, the uppermost aquifer. This layer serves as the aquiclude to Unit V, the uppermost aquifer.

1.1.7 Unit VII – Sandstone, Siltstone, Sand with Silt, and Sand with Clay

Unit VII is composed of individual layers of sandstone, siltstone, sand with silt, and sand with clay. The bulk of the site subsurface investigation was focused on Units I through Unit VI because the landfill subgrade is founded in Unit IV. However, two piezometers were installed in Unit VII. Water levels in these piezometers range from 634.59 to 643.45 ft/msl. Slug tests were also conducted in these piezometers screened in Unit VII. The geometric mean of hydraulic conductivity values (K) from slug tests performed in Unit VII is 2.66×10^{-6}.

2 OPERATIONAL CONSIDERATIONS FOR GROUNDWATER SYSTEM DESIGN

2.1 Relationship of Excavation Bottom to Uppermost Aquifer

The natural flow of shallow groundwater within Units I and III have been, and will continue to be, altered by excavation activities that will remove both of those layers. As the landfill cells are constructed groundwater flow in Units I and III will be diverted around the lined excavated cells.

Unit V is composed of individual layers of sand, sandstone, sand with silt, and sandy clay. Layer V is present and correlatable across the site. Unit V is the uppermost aquifer as it is the first groundwater bearing unit that is encountered beneath the entirety of the excavation at the proposed facility.

Unit V is underlain by Unit VI. Unit VI is composed of individual layers of limestone, shale with sand, and shale with silt. An average of 14 feet and a maximum of 20 feet of this unit were penetrated by site borings. Due to the relatively low average hydraulic conductivity of Unit VI, this unit functions as the lower confining unit to the Layer V, the uppermost aquifer. Laboratory hydraulic conductivity testing was conducted on two undisturbed samples of Unit VI. The hydraulic conductivity was calculated as 4.5×10^{-9} and less than 1.00×10^{-9} cm/sec.

2.2 Area Water Wells and Surface Water Bodies

A comprehensive water well search was conducted as part of this permit application. That study identified a total of one hundred ten individual industrial or domestic wells within the one-mile radius. Of the known wells located within one mile of the site, eight are also within 500 feet of the site boundary, including the two facility water wells that are located just inside of the permit boundary.

Area water wells are shown in Attachment E, Drawing E1.6 and are included on Table 3 of Attachment E.

The nearest surface water bodies to the site include the northern portion of Eagle Mountain Lake, located approximately 2.3 miles south/southeast of the site, and the West Fork of the Trinity River, the predominate drainage way in the vicinity of the project site. The main channel of the West Fork is located approximately 1/2 mile west of the site and about 1/3 mile south of the site and flows generally from west to east.

2.3 Contaminant Pathway Analysis

In the unlikely event that the constructed liner was to allow an escape of leachate from the base of the facility, the contaminant would have to migrate down through the low permeability sediments of Unit IV prior to reaching Unit V, the uppermost aquifer.

Groundwater flows to the west in Unit V. Groundwater monitoring wells are proposed to monitor this zone as shown on Drawing F1.1 in Appendix F1.

In addition, if a leachate release were to happen in the sidewalls, it would migrate to Unit I and/or Unit III. Groundwater monitoring wells are proposed to monitor each of these units as shown in Drawings F1.2 and F1.3 in Appendix F1. Proposed monitoring wells for all hydrogeologic units (Units I, III, V) are shown on Drawing F1.4 in Appendix F1.

Monitoring well construction details including screen intervals, well locations and elevations, filter pack and bentonite seal elevations, and surface completion are shown on Drawing F1.5 in Appendix F1.

2.4 Groundwater Flow Direction and Rate

Groundwater flow directions and rates have been determined for the uppermost aquifer (Unit V) and for shallower groundwater zones (Unit I and Unit III). Potentiometric surface maps have been constructed for each unit and are included in Appendix E5.

Based on potentiometric surface maps constructed from water levels obtained from site piezometers, groundwater in Unit V (uppermost aquifer) flows to the west. Groundwater flow in Unit V is controlled by the exaggerated dip in strata at boring BME-14 and the proximity of the West Fork of the Trinity River located west of the proposed facility. Unit V groundwater flow is calculated to be 6.32 ft/yr (see Groundwater Velocity Calculations, Attachment E, Appendix E5, Drawing E5.10d). Recharge to the Unit V sands occurs where the sands outcrop at the surface surrounding the facility.

Based on potentiometric surface maps constructed from water levels observed in site piezometers, groundwater in Unit I flows generally to the northwest, west, and south-southwest. Groundwater flow velocity is estimated to range from 1.17 ft/yr in Unit I (see Attachment E, Appendix E5, Drawing E5.10a).

Based on potentiometric surface maps constructed from water levels observed in site piezometers, groundwater in Unit III flows generally to the northwest. Groundwater flow within Unit III is estimated to flow at an average of 3.26 ft/yr (see Attachment E, Appendix E5, Drawings E5.10b and E5.10c).

3 SUBTITLE D GROUNDWATER MONITORING SYSTEM

A groundwater monitoring system has been designed for the facility in accordance with the requirements for 30 TAC §330.403 based on site specific technical information including the identification of the uppermost aquifer and other groundwater bearing zones and the lower confining unit beneath the uppermost aquifer that also includes a thorough characterization of the aquifer thickness and groundwater flow rate and direction. The design also considered the thickness, stratigraphy, lithology, and hydraulic characteristics of the geologic units above the groundwater, the materials of the uppermost aquifer, and the materials and characteristics of the lower confining unit beneath the uppermost aquifer.

Groundwater will be monitored in three subsurface units: the uppermost aquifer, Unit V; the uppermost groundwater zone, Unit I; and Unit III.

After monitoring well installation and prior to waste acceptance at the new landfill, the owner or operator will submit a certification in accordance with 30 TAC §330.403, §330.405, §330.407, §330.409, and §330.417.

3.1 Groundwater Monitoring Well Locations

Monitoring well locations in each of the three units are based on the geometry of the transmissive zones within each unit, groundwater flow directions, and aspects of landfill design as discussed in Section 2.

In the uppermost aquifer (Unit V), groundwater monitoring well screens are to be placed in the upper saturated part of Unit V. As discussed in Section 2.1 of this attachment, the excavation bottom of the proposed landfill remains entirely above the top of Unit V, mostly in the limestone and shale of Unit IV. As such the upper part of the saturated portion of Unit V is the first place a potential release of contaminant could arrive in the groundwater of Unit V, and thus it is the appropriate place to monitor groundwater in the uppermost aquifer. The point of compliance (POC) has been determined at the downgradient portion of the western side of the site as shown in Appendix F1 on Drawing F1.1.

There will be a total of six monitoring wells in Unit V; two upgradient wells and four downgradient wells. Unit V monitoring wells are depicted on Drawing F1.1. Monitoring well details are provided on Drawing F1.5.

There will be a total of 14 monitoring wells in Unit I; one upgradient well and 13 downgradient wells. The monitoring wells in Unit I are designed to be screened directly above Unit II. Unit I monitoring wells are depicted on Drawing F1.2. Monitoring well details are provided on Drawing F1.5. The POC for Unit I was determined by the groundwater flow direction from the potentiometric surface maps included in Appendix E5 of Attachment E. Groundwater in Unit I flows to the northwest, west, and south-southeast.

There will be a total of ten groundwater monitoring wells in Unit III; one upgradient and nine downgradient wells Unit III monitoring wells are depicted on Drawing F1.3. Monitoring well details are provided in Drawing F1.5. The monitoring wells for Unit III are designed to be screened in the granular materials of the unit at each monitoring well location. The POC for Unit III was determined by the groundwater flow direction from the potentiometric surface maps included in Appendix E5 of Attachment E. Groundwater in Unit III flows to the northwest. As previously discussed, Unit II is absent in several borings. Where Unit II is absent, Unit I and Unit III are in direct communication. Monitoring wells have been added to the Unit III northern POC to monitor the northern area where Unit II is absent and where Unit I and III are in direct communication with each other.

All monitoring wells for Unit V (MW-1-V through MW-6-V) will be installed prior to Sector 1 accepting waste. Unit I and III monitoring wells will be installed in a phased approach.

Unit I monitoring wells will be installed as follows: Monitoring wells MW-5-I through MW-7-I and MW-14-I will be installed prior to Sector 1 accepting waste, monitoring wells MW-1-I, MW-2-I, and MW-4-I will be installed prior to wasted being accepted in Sector 2, the remaining monitoring wells for Unit I (MW-3-I, MW-8-I through MW-13-I) will be installed prior to Sector 3 accepting waste.

Unit III monitoring wells will be installed as follows: monitoring wells MW-1-III, MW-4-III through MW-10-III will be installed prior to waste being accepted in Sector 1, the remaining Unit III monitoring wells (MW-2-III and MW-3-III) will be installed prior to waste being accepted in Sector 3.

All monitoring well locations for all of the hydrogeologic units are shown on Drawing F1.4.

3.2 Monitoring Well Design

In accordance with §330.421 – Monitor Well Construction Specifications, a licensed Texas driller will install monitoring wells in accordance with the regulations. Wells will be drilled by a method that will not introduce contaminants into the borehole or casing. A licensed professional geoscientist or engineer who is familiar with the geology of the area will supervise monitoring well installation and development and will provide a log of the boring. Equivalent alternatives to the TCEQ requirements may be used if prior written approval is obtained from the Executive Director. Monitoring well construction details including screen intervals, well locations and elevations, filter pack and bentonite seal elevations, and surface completion are shown in Appendix F1. Monitoring well construction will be completed in accordance with §§330.63, 330.403, and 330.421.

If any fluid is required in the drilling of monitoring wells, clean, treated city water shall be used and a chemical analysis provided to the Executive Director. No glue or solvents will be used in monitoring well construction.

After installation, monitoring wells will be developed to remove drilling artifacts and open the water-bearing zone for maximum flow until all water used or affected during drilling activities is removed and field measurements of pH, specific conductance, and temperature are stabilized.

A registered professional land surveyor will survey the well location and elevation.

Within 60 days of completion of a monitoring well or any other part of a monitoring system, an installation report will be submitted. The report will include construction and installation details for each well on forms available from the commission, a site map drawn to scale showing the location of all monitoring wells and the relevant point(s) of compliance, well elevations to the nearest 0.01 foot above msl (with year of datum shown), latitude and longitude or landfill grid location of each well, copies of detailed geologic logs including soil sample data, and copies of driller's reports.

Damaged monitoring wells that are no longer usable will be reported to the Executive Director for a determination whether to replace or repair the well. In accordance with 30 TAC §305.70, if a compromised well requires replacement a permit modification request will be submitted within 45 days of the discovery.

Plugging and abandonment of monitoring wells will be performed in accordance with 16 TAC §76.702 and §76.1004. No abandonment will be performed without prior written authorization.

All parts of the groundwater monitoring system will be operated and maintained so that they perform to design specifications throughout the life of the groundwater monitoring program.

The facility must notify the Executive Director and any local pollution agency with jurisdiction of changes in site construction or operation or changes in adjacent property that affect or are likely to affect the direction and rate of groundwater flow and the potential for detecting groundwater contamination from the facility.

Monitoring well details are provided in Drawing F1.5 of Appendix F1 of this attachment. The proposed wells consist of 2-inch diameter, flush-threaded PVC (schedule 40) with 0.01-inch slotted PVC screens 10 feet in length (exception to the screen length for Unit V noted on Drawing F1.5). Filter-pack sand (20-40 grade silica sand) is placed from total well depth to about 3 feet above the top of the screen. A bentonite seal consisting of 3 feet of bentonite pellets, hydrated in place, is on top of the filter-pack sand. The remainder of the well boring is pressure grouted with bentonite grout to within 2 feet of the surface. Surface completions will be 6-foot by 6-foot by 6-inch thick concrete pads and steel, lockable housings on the existing monitoring wells.

3.3 Groundwater Monitoring Program

A Groundwater Sampling and Analysis Plan (GWSAP) for the site is contained in Appendix F2 of this attachment. Annual sampling and analytical testing for the facility's groundwater monitoring system will be performed in accordance with the TCEQ regulations outlined in 30 TAC §§330.417, 330.401(f), and 330.403(d).

4 GROUNDWATER QUALITY

4.1 Plume of Contamination

A description of any plume of contamination that has entered the groundwater is required by 30 TAC §330.63(f)(2). There is no existing MSW management unit at the site. General groundwater chemistry of the aquifers in the area is described in Attachment E, Section 3.1 – Regional Aquifers.

4.2 Background and Detection Monitoring

For new, or any replaced monitoring wells that may be added to the system, background water quality will be established as described in Appendix F2 – Groundwater Sampling and Analysis Plan. After the background analyses have been completed, the data will be statistically evaluated and background concentrations established for each parameter. Reporting requirements during background and detection monitoring are discussed in Appendix F2.

4.3 Assessment Monitoring

An assessment monitoring program, if it should become required, will be initiated in accordance with the requirements of 30 TAC, Subchapter J. Should such hazardous constituents be detected in the future, and should such detections support the implementation of assessment monitoring, information to establish an assessment monitoring program under §330.409 will be submitted, including a description of special wastes previously handled at the landfill and a characterization of the contaminated groundwater, including any detected concentration(s) of assessment constituents defined in §330.409.

4.4 Corrective Action Program

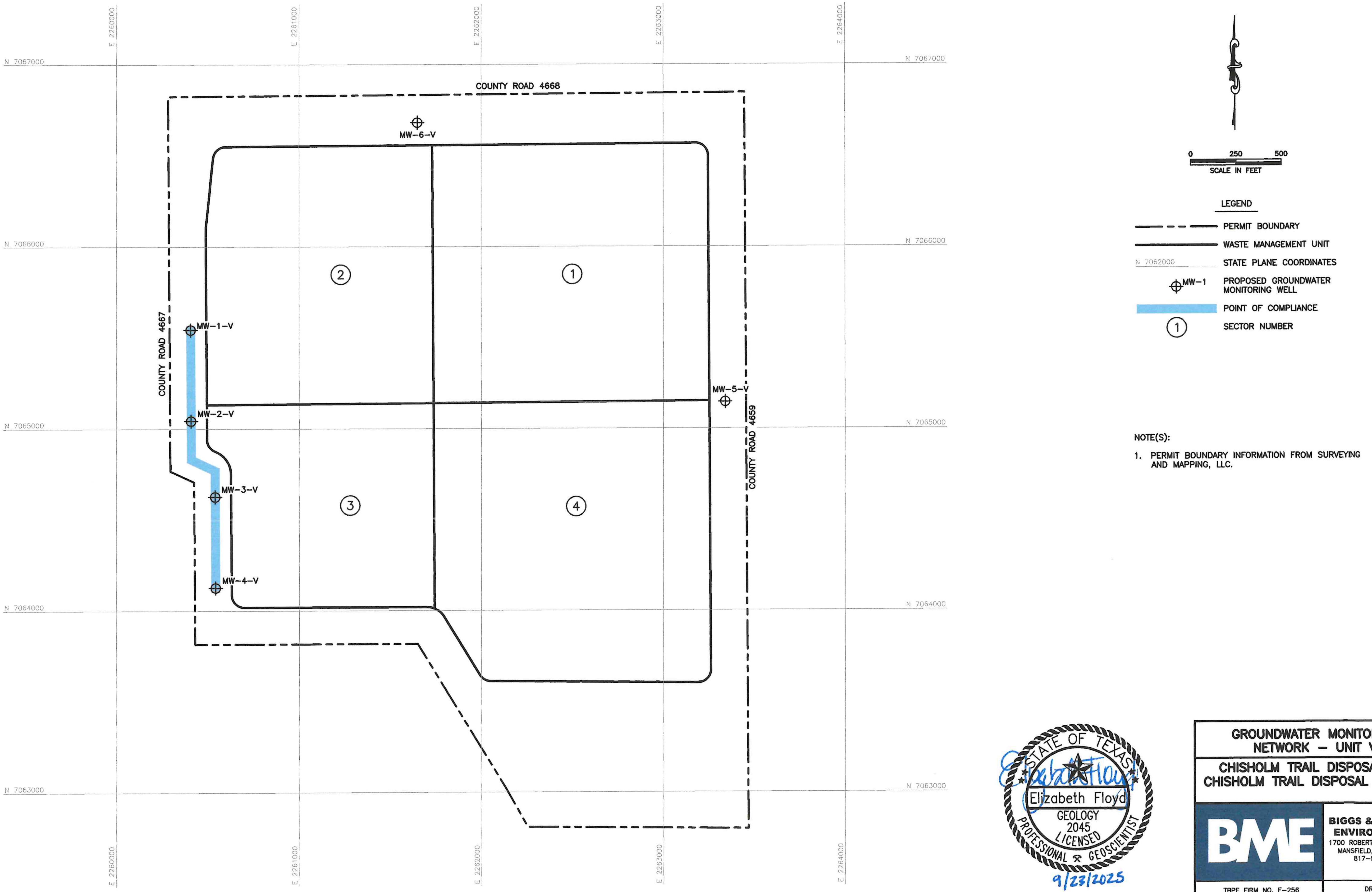
In accordance with §330.63(f)(7), the required information is provided. Should such hazardous constituents be detected in point of compliance wells in the future groundwater monitoring events above the concentration limits established in 30 TAC §330.409, and absent an alternate source demonstration, information, data, and analysis to establish a corrective action program meeting the requirements of §330.411 and §330.413 will be submitted.

CHISHOLM TRAIL DISPOSAL LANDFILL

APPENDIX F1

GROUNDWATER MONITORING SYSTEM

O:\Green Group\Wise County\Solid Waste\Type IV\P\Drawings\ATT F\F1.1-GWMonitoringNetwork-Unit V.dwg Layout: LAYOUT 1 User: awhite



NOTE(S):

1. PERMIT BOUNDARY INFORMATION FROM SURVEYING AND MAPPING, LLC.

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GROUNDWATER MONITORING NETWORK – UNIT V

CHISHOLM TRAIL DISPOSAL, LLC
CHISHOLM TRAIL DISPOSAL LANDFILL

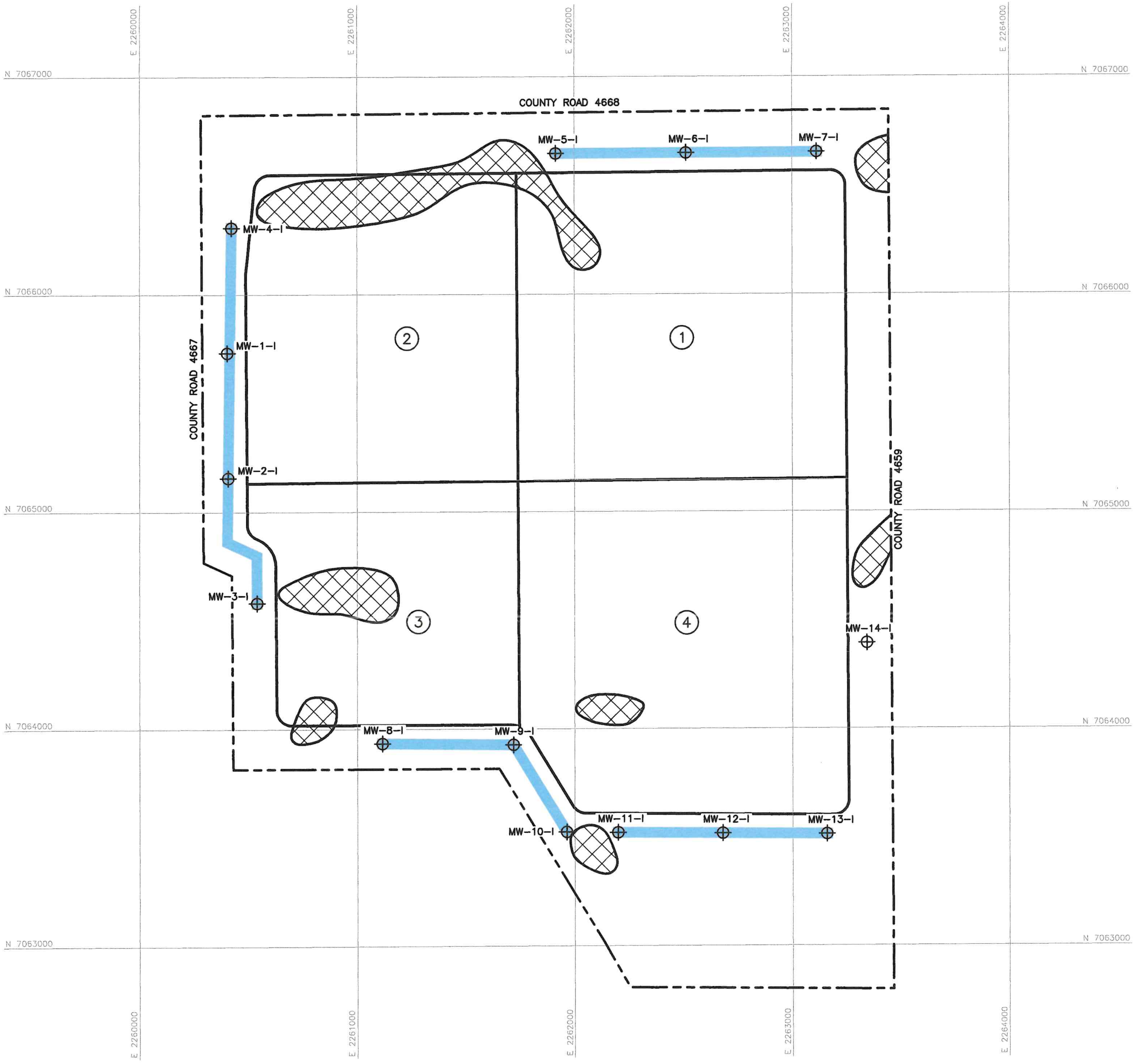
BME

BIGGS & MATHEWS ENVIRONMENTAL
1700 ROBERT ROAD, STE. 100
MANSFIELD, TEXAS 76063
817-563-1144

TBPE FIRM NO. F-256
TBPG FIRM NO. 50222

DRAWING
F1.1

O:\Green Group\Wise County\Solid Waste\Type I\AP\Drawings\ATT F\F1.2-GWMonitoringNetwork-Unit I.dwg Layout: LAYOUT 1 User: awhite



NOTE(S):

1. PERMIT BOUNDARY INFORMATION FROM SURVEYING AND MAPPING, LLC.

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GROUNDWATER MONITORING NETWORK – UNIT I

CHISHOLM TRAIL DISPOSAL, LLC
CHISHOLM TRAIL DISPOSAL LANDFILL

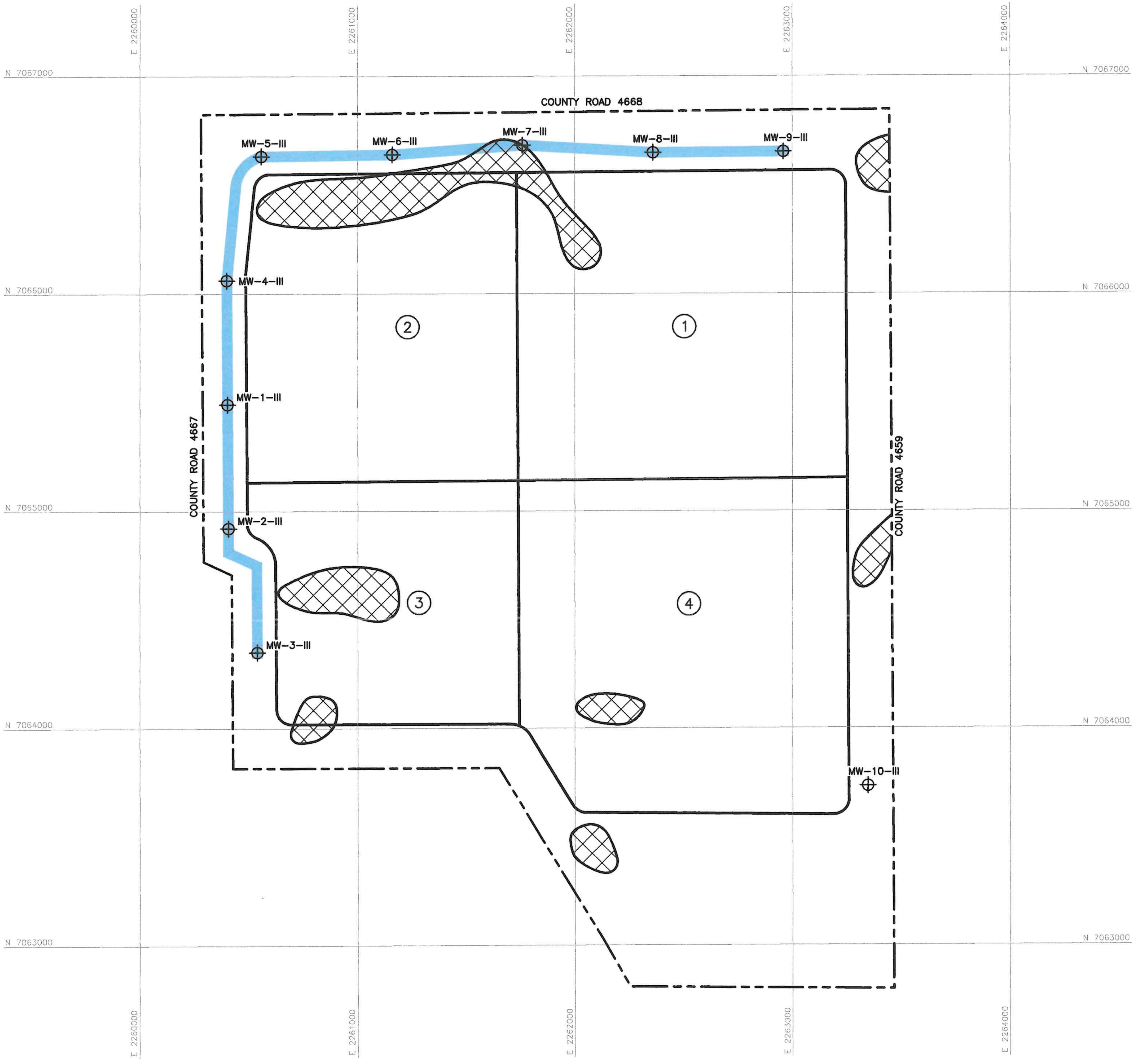
BME

BIGGS & MATHEWS ENVIRONMENTAL
1700 ROBERT ROAD, STE. 100
MANSFIELD, TEXAS 76063
817-563-1144

TBPE FIRM NO. F-256
TBPG FIRM NO. 50222

DRAWING
F1.2

O:\Green Group\Wise County\Solid Waste\Type IV\P\Drawings\ATT F\F1.3-GWMonitoringNetwork-Unit III.dwg Layout: LAYOUT 1 User: awhite



0 250 500
SCALE IN FEET

LEGEND

— — - — —	PERMIT BOUNDARY
———	WASTE MANAGEMENT UNIT
N 7062000	STATE PLANE COORDINATES
MW-5-III ⊕	PROPOSED GROUNDWATER MONITORING WELL
🟦	POINT OF COMPLIANCE
▨	UNIT II ABSENT
①	SECTOR NUMBER

NOTE(S):

1. PERMIT BOUNDARY INFORMATION FROM SURVEYING AND MAPPING, LLC.

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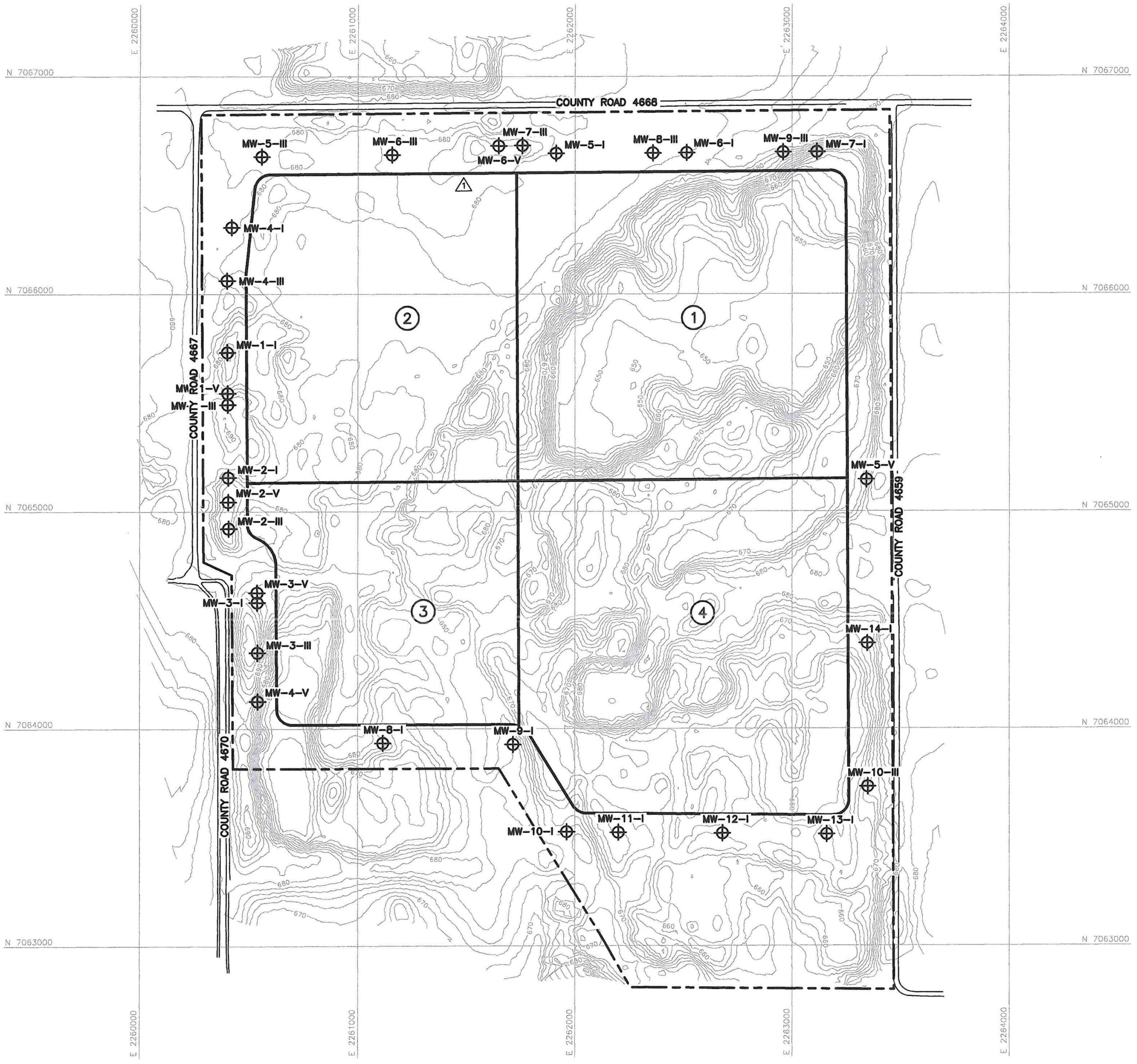
GROUNDWATER MONITORING NETWORK – UNIT III

CHISHOLM TRAIL DISPOSAL, LLC
CHISHOLM TRAIL DISPOSAL LANDFILL

BIGGS & MATHEWS ENVIRONMENTAL
1700 ROBERT ROAD, STE. 100
MANSFIELD, TEXAS 76063
817-563-1144

TBPE FIRM NO. F-256
TBPG FIRM NO. 50222

DRAWING
F1.3



0 250 500
SCALE IN FEET

LEGEND

— — — —	PERMIT BOUNDARY
———	WASTE MANAGEMENT UNIT
700	10' CONTOUR
N 7062000	STATE PLANE COORDINATES
MW-10-I ⊕	PROPOSED GROUNDWATER MONITORING WELL
①	SECTOR NUMBER

NOTES:

1. EXISTING CONTOURS TAKEN FROM DRONE SURVEY PROVIDED BY BIGGS AND MATHEWS ENVIRONMENTAL DATED APRIL 5, 2024.
2. PERMIT BOUNDARY INFORMATION FROM SURVEYING AND MAPPING, LLC.

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9/23/2025

FOR PERMITTING PURPOSES

GROUNDWATER MONITORING NETWORK
ALL HYDROGEOLOGIC UNITS

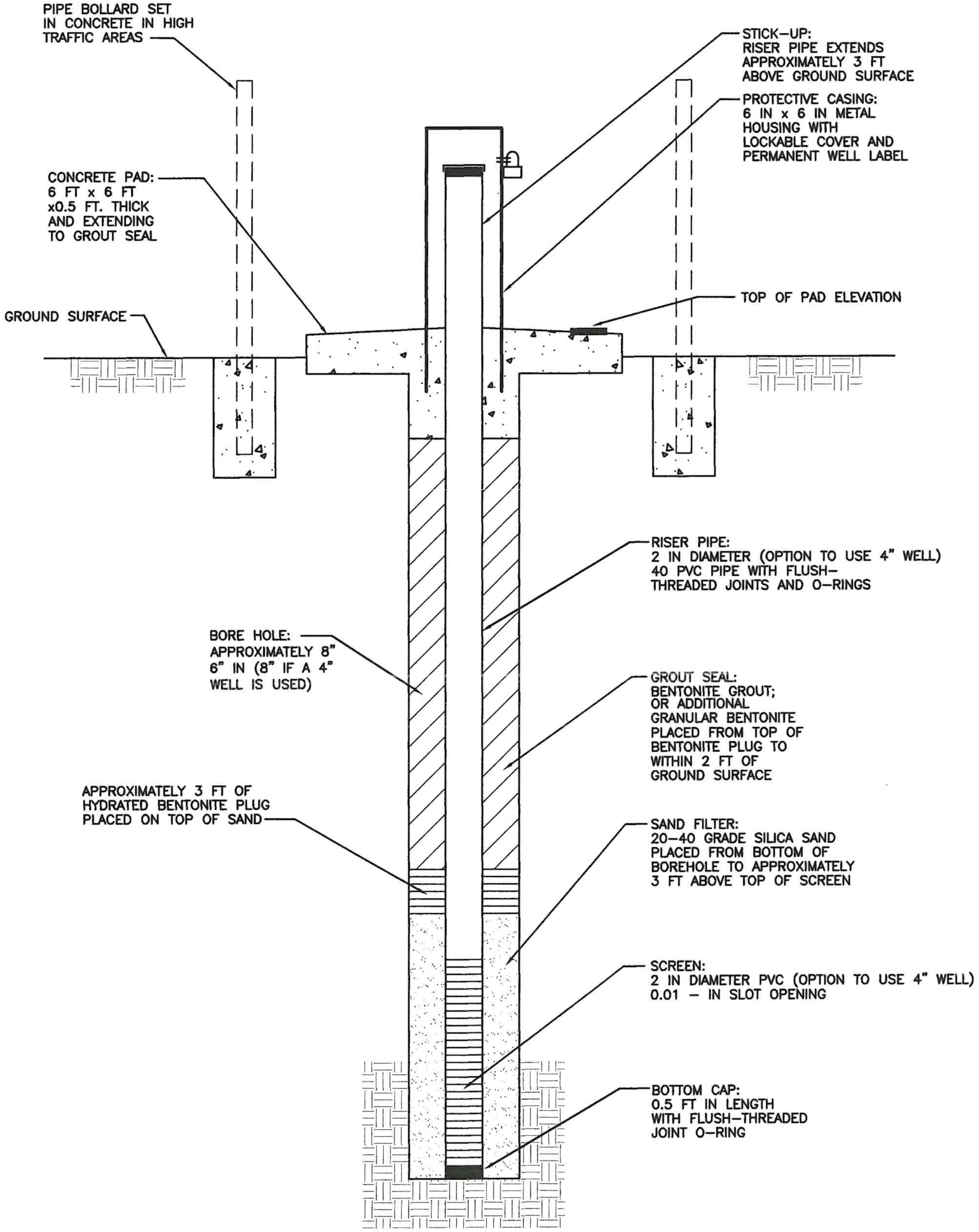
CHISHOLM TRAIL DISPOSAL, LLC
CHISHOLM TRAIL DISPOSAL LANDFILL

BME
BIGGS & MATHEWS ENVIRONMENTAL
1700 ROBERT ROAD, STE. 100
MANSFIELD, TEXAS 76063
817-563-1144

TBPE FIRM NO. F-256
TBPG FIRM NO. 50222

DRAWING
F1.4

O:\Green Group\Wise County\Solid Waste\Type IV\P\Drawings\ATT F\F1.4-GWMonitoringNetwork-All Units.dwg Layout: LAYOUT 1 User: MatthewWelch



Monitoring Well No.	Layer	Designation	Northing	Easting	Exisitng Ground Elevation (ft/msl)	Design Elevation (ft/msl) (See Note 2)	Total Depth (ft/bgs)	Top of Casing Elevation (ft/msl)	Screened Interval (ft/bgs)	Top of Filter Pack (ft/bgs)
MW-1-V	V	D	7065544	2260403	683	692.00	100	694.5	90.0-100.0	87.0
MW-2-V	V	D	7065044	2260406	676	691.00	106	693.5	96.0-106.0	93.0
MW-3-V	V	D	7064627	2260538	688	689.00	89	691.5	79.0-89.0	76.0
MW-4-V	V	D	7064127	2260541	681	688.00	93	690.5	83.0-93.0	80.0
MW-5-V	V	U	7065146	2263340	679	687.00	102	689.5	92.0-102.0	89.0
MW-6-V	V	U	7066650	2261655	676.2	695.90	85	689.4	75 - 85	72.0
MW-1-I	I	D	7065732	2260402	674	693.00	53	695.5	43.0-53.0	40.0
MW-2-I	I	D	7065157	2260405	678	691.00	51	693.5	41.0-51.0	38.0
MW-3-I	I	D	7064582	2260538	690	689.00	49	691.5	39.0-49.0	36.0
MW-4-I	I	D	7066307	2260421	683	694.00	54	696.5	44.0-54.0	41.0
MW-5-I	I	D	7066647	2261914	680	695.00	50	697.5	40.0-50.0	37.0
MW-6-I	I	D	7066649	2262514	682	694.00	41	696.5	31.0-41.0	28.0
MW-7-I	I	D	7066653	2263114	670	692.00	50	694.5	40.0-50.0	37.0
MW-8-I	I	D	7063932	2261116	678	686.00	31	688.5	21.0-31.0	18.0
MW-9-I	I	D	7063927	2261715	678	684.00	29	686.5	28.0-29.0	25.0
MW-10-I	I	D	7063525	2261963	674	683.00	28	685.5	18.0-28.0	15.0
MW-11-I	I	D	7063522	2262200	664	683.00	28	685.5	18.0-28.0	15.0
MW-12-I	I	D	7063518	2262680	665	684.00	35	686.5	25.0-35.0	22.0
MW-13-I	I	D	7063554	2262646	668	683.00	44	685.5	34.0-44.0	31.0
MW-14-I	I	U	7064392	2263345	672	685.00	37	687.5	27.0-37.0	24.0
MW-1-III	III	D	7065491	2260403	687	692.00	65	694.5	55.0-65.0	52.0
MW-2-III	III	D	7064921	2260408	676	690.00	68	692.5	58.0-68.0	55.0
MW-3-III	III	D	7064351	2260539	695	688.00	55	690.5	45.0-55.0	42.0
MW-4-III	III	D	7066061	2260400	684	694.00	64	696.5	54.0-64.0	51.0
MW-5-III	III	D	7066631	2260558	681	695.00	67	697.5	62.0-67.0	59.0
MW-6-III	III	D	7066640	2261158	679	696.00	60	698.5	50.0-60.0	47.0
MW-7-III	III	D	7066683	2261758	676	697.00	61	699.5	56.0-61.0	53.0
MW-8-III	III	D	7066648	2262358	682	694.00	52	696.5	42.0-52.0	49.0
MW-9-III	III	D	7066652	2262958	681	692.00	57	694.5	52.0-57.0	54.0
MW-10-III	III	U	7063733	7063733	673	683.00	69	685.5	59.0-69.0	56.0

NOTE(S):

1. SCREEN DEPTHS AND FILTER PACK DEPTHS SHOWN FOR THE PROPOSED MONITORING WELLS ARE ESTIMATES. ACTUAL DEPTHS WILL BE DETERMINED BY DEPTHS OF UNITS AT EACH PROPOSED LOCATION AS OBSERVED DURING INSTALLATION. WELL CONSTRUCTION MAY VARY IN ORDER TO MEET LOCAL CONDITION; INCLUDING USING A 5 FOOT SCREEN IN LAYER V INSTEAD OF A 10 FOOT SCREEN.
2. GROUNDWATER MONITORING WELL DEPTHS ARE MEASURED FROM PROPOSED FINAL GRADE ELEVATIONS AS SHOWN ON DRAWING D1.6, IN ATTACHMENT D. WELL SCREEN INTERVALS AND TOTAL DEPTHS ARE ADJUSTED ACCORDINGLY TO MAINTAIN REQUIRED MONITORING ZONES RELATIVE TO FINAL GRADE.
3. MONITORING WELLS WILL BE INSTALLED IN A PHASED APPROACH AS DISCUSSED IN SECTION 3.1 OF THIS ATTACHMENT.

Elizabeth Floyd

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2045

9/23/2025

FOR PERMITTING PURPOSES

REVISIONS

REV	DATE	DESCRIPTION	DWN BY

MONITORING WELL DETAIL

CHISHOLM TRAIL DISPOSAL, LLC
CHISHOLM TRAIL DISPOSAL LANDFILL

BME

BIGGS & MATHEWS ENVIRONMENTAL
1700 ROBERT ROAD, STE. 100
MANSFIELD, TEXAS 76063
817-563-1144

TBPE FIRM NO. F-256
TBPG FIRM NO. 50222

DRAWING
F1.5

O:\Green Group\Wise County\Solid Waste\Type IV\P\Drawings\ATT F\F1.5-MonWellDetail.dwg Layout: Layout1 User: awhite

CHISHOLM TRAIL DISPOSAL LANDFILL

APPENDIX F2
GROUNDWATER SAMPLING AND ANALYSIS PLAN

CHISHOLM TRAIL DISPOSAL LANDFILL
LANDFILL COUNTY, TEXAS
TCEQ PERMIT APPLICATION NO. MSW

TYPE IV PERMIT APPLICATION

PART III – SITE DEVELOPMENT PLAN
APPENDIX F2
GROUNDWATER SAMPLING AND ANALYSIS PLAN

Prepared for

CHISHOLM TRAIL DISPOSAL, LLC

September 2025
Technically Complete

Elizabeth Floyd
GEOLOGY
2045

Biggs & Mathews Environmental, Inc.
Firm Registration No. 50222
9/23/2025

Prepared by

BIGGS & MATHEWS ENVIRONMENTAL
1700 Robert Road, Suite 100 ◆ Mansfield, Texas 76063 ◆ 817-563-1144

TEXAS BOARD OF PROFESSIONAL ENGINEERS
FIRM REGISTRATION NO. F-256

TEXAS BOARD OF PROFESSIONAL GEOSCIENTISTS
FIRM REGISTRATION NO. 50222

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GEOLOGY
2045

9/23/2025

Biggs & Mathews Environmental, Inc.
Firm Registration No. 50222

CONTENTS

1 GROUNDWATER SAMPLING PROCEDURES

This Groundwater Sampling and Analysis Plan (GWSAP) has been prepared for the Chisholm Trail Disposal, LLC, Chisholm Trail Disposal (CTD) Landfill consistent with 30 TAC Chapter 330. In accordance with §330.405(b), a copy of the Groundwater Sampling and Analysis Plan will be placed in the operating record. The following sampling procedures are designed to aid in obtaining representative groundwater samples at each well location. These, or equivalent procedures, are to be followed by all personnel conducting groundwater monitoring well sampling.

1.1 Field Setup

Insect repellent or other topical skin applications that contain organic compounds should not be used by sampling personnel during purging or sampling. Smoking is not permitted.

Examine the wellhead area for anything unusual such as damage to the wellhead, spilled materials, etc., and record all observations in the field log book.

- Is the well number clearly labeled on the outer casing or lid?
- Is the protective casing intact and not bent or excessively corroded?
- Is the weep hole, if present, open?
- Is the concrete pad intact (no evidence of cracking or erosional undercutting)?
- Is the padlock functional?
- Is the inner casing intact?
- Is the inner casing properly capped and vented?

Sampling equipment should include a calibrated 5-gallon bucket for measuring bailed or purged well fluids and a small glass container for measuring temperature, specific conductance, and pH.

Field instruments for measuring pH and specific conductance will be calibrated following manufacturer's instructions prior to sampling.

Decontamination equipment will include suitable equipment, such as a water bucket, rinsing bucket, phosphate-free detergent, and additional rinsing bottles.

1.2 Water Level Measurements

Prior to purging each monitoring well, measure the depth to groundwater from the top of the well casing and record the measurement in the field log book. In addition, the depth to well bottom will also be measured to check for sedimentation build up in the well to adequately measure the water column. Decontaminate the water-level measuring device between wells. Water levels are to be measured and reported to the nearest hundredth of a foot.

Water level measurements will be collected during the first day of each sampling event prior to sampling the wells. If any site wells are known to be contaminated, groundwater samples will be taken from wells least likely to be contaminated and will proceed to those wells known to be contaminated.

1.3 Well Purging

Three well volumes of groundwater will be removed from each well in order to obtain water samples that are likely to be representative of the groundwater in the aquifer and not of "stagnant" water from the borehole or filter pack. Some low-volume wells will not yield three well volumes of groundwater before being purged dry. Such wells will be purged only until the well is effectively dry and purging will be deemed complete. Well volumes can be measured with a calibrated 5-gallon bucket.

Nondedicated, reusable purging and sampling equipment is to be decontaminated in accordance with Section 1.8. A new pair of appropriate disposable gloves is to be worn at each separate well and replaced after each purging and sampling event to reduce the possibility of cross-contamination between wells.

Purged groundwater (and excess sample water and decontamination fluids) may be stored in containers while awaiting results of samples analysis. If the results demonstrate that the water is not contaminated it may be discharged to the ground surface away from the wellhead area. If analysis indicates the groundwater is contaminated, then the purge water (and excess sample water and decontamination fluids) will be disposed of in accordance with the facility's contaminated water management plan.

1.3.1 Low-Flow Purging

Wells may be equipped with a dedicated PVC pump and HDPE discharge tubing. The wells may be purged using low-flow methods. Prior to commencement of sampling, a demonstration will be provided to the TCEQ justifying the implementation of low-flow sampling.

The wells that use low-flow sampling will be purged at a rate of les than 0.5 liter per minute until at least two pump-and-tubing volumes have been withdrawn from the well. Purge rates will be determined as a part of the low-flow sampling demonstration. The pumping rate will be adjusted to prevent more than one-third foot of total drawdown and to ensure that there is no continuous drawdown of the water level. Drawdown will be monitored continually during purging. Measurements will be made of pH, specific conductance, dissolved oxygen, and temperature about every three to five minutes during purging. Purging will continue until three consecutive measurements are within ±3 percent for specific conductance, ±10 percent for dissolved oxygen, and ±0.2 units for pH. An inline flow-through cell will be used for measurements of pH, specific conductance, and dissolved oxygen. All field measurements and volumes of purged water are to be recorded in the field log book or field data sheets.

1.3.2 Pump Instructions

This section provides instructions for a pump that can be used for low-flow well purging and sample collection. In wells with adequate water column, dedicated pumps will be positioned with the pump intake near the middle of the screened interval. In low-yield wells, the pump will be placed about 1 foot above the bottom of the screen.

Purging instructions:

1. Connect the compressed air source and pump controller to the pump per manufacturer's instructions.
2. Put on a new pair of gloves after handling the gasoline powered compressor.
3. Set up a water level indicator to provide continual water level measurements during purging.
4. Start the pump by opening the regulator on the controller, which allows compressed air to flow into the system.
5. Adjust the controller to the appropriate flow rate (not to exceed 0.5 liter per minute) that will not result in continuous drawdown of the water level in the well and that will limit total drawdown to not more than one-third foot, except as may be authorized by the TCEQ. This rate will generally be based on data from previous events.
6. Direct the pump discharge to a calibrated container to determine the flow volume.
7. Using an inline flow-through cell, measure temperature, pH, specific conductance, and dissolved oxygen approximately every three to five minutes.
8. Continue purging until at least two pump-and-tubing volumes have been removed, drawdown is not continuous, three consecutive measurements of specific conductance are within 3 percent, three consecutive measurements of dissolved oxygen are within 10 percent, and three consecutive measurements of pH are within ±0.2 units.
9. Record all measurements in the field log book or field data sheets.

Sampling Instructions:

1. Adjust the regulator to reduce the pumping rate to less than 0.25 liter per minute, as necessary to control sampling. The pump should be set to discharge a continuous thin stream during filling of the VOC sample containers. If the purge rate was greater than 0.25 liter per minute, clear the flowlines at a flow rate of less than 0.25 liter per minute before sampling for VOCs.
2. Collect the samples by pumping directly into each of the required containers. Record the measurements in the field log book or field data sheets.

Fill the sample containers in the order specified in Section 2.4.

Any non-dedicated, reusable purging equipment is to be decontaminated in accordance with Section 2.9. A new pair of appropriate disposable gloves is to be worn at each separate well and replaced after each purging and sampling event to reduce the possibility of cross-contamination between wells.

1.4 Sample Collection

Groundwater samples will be collected with disposable bailers. Samples will be collected within 48 hours of purging except where prior TCEQ approval for a longer period has been received. If contamination is known to be present, monitoring wells not likely to be contaminated must be sampled before those that are known to be contaminated. The following sampling procedures should be performed:

- Measure temperature, specific conductance, and pH, in that order, of a sample collected in a container not used for analysis and record the data in the log book.
- Lower the bailer slowly and gently into the water column in the well. Do not allow the bailer to "free fall" down the well. Care must be taken not to agitate the water, which could allow some of the volatile constituents to escape.
- Remove the bailer from the well slowly without allowing the bailer line to touch the ground.
- Gently drain the sample water from the bottom of the bailer into the appropriate sample bottles.

1.5 Sample Containers and Labeling

Water samples collected in the field are to be placed into laboratory-cleaned bottles of the appropriate size and construction for the chemical constituents to be analyzed. A list of chemical constituents and corresponding recommended types and sizes of sample containers are shown in Table 2. Sample containers must be marked as described below.

Sample labels are to be affixed to each sample container and must contain the following information in waterproof ink:

- Project name and number (includes site name)
- Sample and well number
- Date and time of sample collection
- Type of preservatives added
- Special handling instructions

Quality Assurance and Quality Control (QA/QC) samples, such as trip and equipment blanks, will be labeled accordingly. Well duplicates, if any, will be labeled with a nonexistent well number and will be properly identified only in the field log book.

1.6 Sample Preservation and Shipment

Chill the groundwater samples to about 4°C upon containment in the field and during transport to the testing laboratory.

Many constituents to be analyzed require a chemical additive for preservation. Table 2 shows preservation requirements for organic and inorganic chemical constituents. Groundwater samples collected for VOC and NPOC analysis should be placed in bottles that have been specially prepared with the appropriate type and quantity of chemical additive. Groundwater samples shall not be field filtered prior to laboratory analysis.

Samples to be shipped are to be packed in a hard-sided insulated shipping container pre-cooled with water ice. The sample containers must be packed to prevent breakage. Discard the water ice used to pre-cool the shipping container and add adequate chemical icepacks or water ice to maintain the temperature at about 4°C during the shipment. Dry ice must not be used.

1.7 Chain-of-Custody Documentation

A chain-of-custody (COC) form must be maintained in order to track possession and handling of samples from field collection through laboratory testing. COC records show the custody of samples at all times. Samples are in custody of an individual when they are either in the individual's sight or locked securely under the individual's control.

COC documentation is maintained on a chain-of-custody record form. Each sample must be logged onto the COC record form as it is collected. Information on the COC record form typically includes at least the following, as appropriate:

- Project name and number (includes site name)
- Site location
- Sample number
- Sample date and time
- Sample type
- Number of sample containers
- Analyses required
- Sample preservative
- Lab destination
- Carrier/shipping number
- Special instructions
- Spaces for signatures of sampler(s) and everyone assuming sample custody

The COC record must contain the signatures of anyone assuming custody of the samples. Each time custody changes hands, the party releasing the samples signs under "Relinquished By" and records the date and time. The party receiving the samples signs under the heading "Received By" and records the date and time. The COC form is typically provided by the analytical laboratory.

1.8 Equipment Decontamination

Reusable sampling equipment (except dedicated equipment) and measurement instruments coming in contact with the groundwater in wells or in samples are to be decontaminated before use at each well location. The following decontamination standards or equivalent procedures are to be followed for well purging and sampling equipment.

Wash the equipment with a nonphosphate detergent and rinse with tap water and laboratory-grade distilled water. Dry the sampling equipment before use. Disposable bailers and nondedicated bailer line must be discarded along with disposable health and safety garments.

1.9 Field Documentation

Field activities must be thoroughly documented in the field log book. Below is an outline of the information that is documented during field activities, as appropriate for the conditions.

- Project name and number
- Date and time of all activities
- Weather conditions
- Sampling personnel
- Field instrument calibration methods and remarks
- Initial equipment decontamination remarks
- Well identification number
- Well description, including casing size
- Description of well condition
- Initial water-level measurement with point of reference (top of casing) and time of measurement
- Depth to the well bottom with point of reference (from well records)
- Well volume calculations
- Physical description of groundwater (color, odor, turbidity)
- Time starting and ending well purging, volume purged, and method of removal
- Sampling equipment and remarks
- Initial temperature, conductivity, and pH measurements
- Sample time and date
- Description of sample
- Quality control remarks
- Samples collected (number of bottles)
- Analyses to be performed
- Preservatives added, if any
- Mode of sample transport

1.10 Quality Assurance and Quality Control Samples

To document that sample collection and handling procedures used in the field have not affected the quality of groundwater samples, blanks are to be prepared and analyzed. These blanks consist of one trip and one field blank per sampling event.

A trip blank is prepared before going to the site (preferably by the laboratory) by filling a water sample container with laboratory-grade distilled water, transporting the container to the site, handling it as a sample, and transporting it to the laboratory for analysis. A field blank is prepared by pouring laboratory-grade distilled water into a sample container at a well *downwind* of waste.

Laboratory precision can be determined in part by collection of duplicate samples. Duplicates are prepared by collecting two sets of samples from a well, preferably from the same disposable bailer if such equipment is used. Blind duplicates are labeled with a fictitious well number so the laboratory is unaware that the sample is a duplicate. One duplicate will be taken at each regular sampling event.

The duplicate and field blank are to be analyzed for the parameters listed in Table 3. Trip blanks are to be analyzed for VOCs only. All quality assurance and quality control samples will be listed on the COC.

2 LABORATORY QUALITY ASSURANCE AND QUALITY CONTROL

Laboratory data and analyses will be performed and submitted in accordance with Chapter 330 Subchapter J, Groundwater Monitoring and Corrective Action. The facility will submit laboratory data and analysis prepared by a TCEQ accredited environmental testing laboratory and in accordance with acceptable accreditation standards (e.g., National Environmental Laboratory Accreditation Conference (NELAC)).

All analytical data submitted under the requirements of this permit will be examined by the owner and/or operator to ensure that the data quality objectives are considered and met prior to submittal for the commission to review. The owner or operator will determine if the results represent the sample and are accurate and complete. The quality control results, supporting data, and data review by the laboratory must be included when the owner/operator reviews the data. Any potential impacts will be reported, such as the bias on the quality of the data, footnotes in the report, and anything of concern that was identified in the laboratory case narrative summary.

The owner or operator will ensure that the laboratory documents and reports all problems and observed anomalies associated with the analysis. If analysis of the data indicates that the data fails to meet the quality control goals for the laboratory's analytical data analysis program, the owner or operator will determine if the data is usable. If the owner and/or operator determines the analytical data may be utilized, any and all problems and corrective action that the laboratory identified during the analysis will be included in the report submitted to the TCEQ.

A Laboratory Case Narrative (LCN) report for all problems and anomalies observed must be submitted by the owner and/or operator. The LCN will report the following information:

1. The exact number of samples, testing parameters, and sample matrix.
2. The name of the laboratory involved in the analysis. If more than one laboratory is used, all laboratories shall be identified in the case narrative.
3. The test objective regarding samples.
4. Explanation of each failed precision and accuracy measurement determined to be outside of the laboratory and/or method control limits.
5. Explanation if the effect of the failed precision and accuracy measurements on the results induces a positive or negative bias.
6. Identification and explanation of problems associated with the sample results, along with the limitations these problems have on data usability.
7. A statement on the estimated uncertainty of analytical results of the samples when appropriate and/or when requested.
8. A statement of compliance and/or noncompliance with the requirements and specifications. Exceedance of holding times and identification of matrix interferences must be identified. Dilutions shall be identified and if dilutions are

necessary, they must be done to the smallest dilution possible to effectively minimize matrix interferences and bring the sample into control for analysis.

9. Identification of any and all applicable quality assurance and quality control samples that will require special attention by the reviewer.
10. A statement on the quality control of the analytical method of the permit and the analytical recoveries information shall be provided when appropriate and/or when requested.

In addition to the LCN, the following information must be submitted for all analytical data:

1. A table identifying the field sample name with the sample identification in the laboratory report.
2. Chain of custody.
3. An analytical report that documents the results and methods for each sample and analyte to be included for every analytical testing event. These test reports must document the reporting limit/method detection limit the laboratory used.
4. A release statement must be submitted from the laboratory. If it is an in-house laboratory, it must have the following statement: This laboratory is an in-house laboratory controlled by the person responding to rule. The official signing the cover page of the rule-required report (for example, the APAR) in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.
5. If the data is from soil and/or sediment samples, it must be reported on a dry weight basis with the percent solids and the percent moisture reported so that any back calculations of the wet analysis may be performed.
6. A laboratory checklist. For every response of "No, NA, or NR" that is reported on the checklist, the permittee will ensure the laboratory provides a detailed description of the "exception report" in the summary of the LCN. The permittee will require the laboratory to use the current MSW laboratory review checklist that is available on the TCEQ website and do the equivalent of an EPA Level 3 review regarding quality control analysis.

2.1 Reporting Limits: Practical Quantitation Limits

Reporting limits will be quantitation limits that meet the requirements of 30 TAC §330.405(f)(5). Analytical results must be reported to the lowest concentration levels that can be reliably quantified (practical quantitation limits). Practical quantitation limit (PQL) is defined as the lowest concentration reliably achieved within specified limits of precision and accuracy during routine laboratory operating conditions and is considered equivalent to the limit of quantitation (LOQ) described in the most recent NELAC Standard. The PQL is method, instrument, and analyte specific and may be updated as more data becomes available.

- The PQL will be at or below the groundwater protection standard established for each analyte in accordance with 30 TAC §330.409(h) unless approved otherwise by the TCEQ.

- The precision and accuracy of the PQL initially will be determined from the PQLs reported over the course of a minimum of eight groundwater monitoring events. The results obtained from these events will be used to demonstrate that the PQLs meet the specified precision and accuracy:

Table 1
PQL Precision and Accuracy Percentage

Constituents/Chemicals of Concern	Precision (percent RSD)	Accuracy (percent recovery)
Metals	10	70-130
Volatiles	20	50-150
Semi-Volatiles	30	50-150

- The PQL will be supported by analysis of a PQL check sample, consisting of a laboratory reagent grade sample matrix spiked with constituents/chemicals of concern at concentrations equal to or less than the PQL. At a minimum, a PQL check sample will be performed quarterly during the calendar year to demonstrate that the PQL continues to meet the specified limits for precision and accuracy.
- Analytical results for data below the limit of detection ("non-detect" results) must be reported as less than the established PQL limit that meets those precision and accuracy requirements.

If a PQL cannot be established according to the specified precision and accuracy limits, the owner or operator will ensure that the laboratory provides sufficient documentation to justify the alternate precision and accuracy limits. This information will be reported to the TCEQ by the owner or operator and will be evaluated on a case-by-case basis.

3 GROUNDWATER MONITORING REQUIREMENTS

Groundwater monitoring for the proposed monitoring well system is to follow the TCEQ requirements in 30 TAC §330.417.

Groundwater monitoring will be conducted during both the operational phase and the post-closure care period of the landfill, as required for solid waste management units in accordance with §330.401(f).

3.1 Monitoring Parameters and Frequency

All monitoring wells at the site are to be sampled and analyzed annually for the parameters listed in Table 3. An effort will be made to sample consistently in the same month each year.

EPA methods are listed for each constituent in Table 3. Equivalent or better methods may be substituted.

For any new or replacement wells that may be required, four quarterly background samples for the monitoring parameters listed in Table 3 will be collected and analyzed. Background groundwater samples from a new or replacement monitoring well will be obtained after completion of the monitoring well. Background levels will be established from samples collected from each new or replacement well at least once during each of the four calendar quarters. New or replacement wells will enter into the annual detection monitoring program once they have completed four sets of background analysis.

Following each background monitoring event, the analytical results will be reviewed and compared with the results of other site wells to determine whether there is any indication of facility impact. On completion of background monitoring and during background updates, the facility will evaluate the background data to ensure that the data are representative of background groundwater constituent concentrations unaffected by waste disposal activities or other sources of contamination. The background data evaluation will be documented in a report and submitted to the TCEQ.

Methods of data evaluation may include anion-cation balance techniques or Piper plots and Stiff diagrams to evaluate the groundwater geochemical signature compared to previous events. Trends will be evaluated using graphing software, statistical software, or other appropriate methods. Should the concentrations of a constituent with an MCL exhibit results that are naturally above the MCL, a risk based concentration will be used for evaluation of that constituent and described in the annual report.

3.2 Reporting Requirements

The results of analyses of groundwater samples will be submitted to the TCEQ in accordance with TCEQ rules. The results will be submitted on forms specified by the TCEQ.

All submittals will be made in triplicate to the central office of the TCEQ, unless otherwise specified by the TCEQ. Copies of all submittals will be maintained in the operating record for the site.

In accordance with 30 TAC §330.417, not later than 60 days after each sampling event, the owner or operator shall determine whether the landfill has released contaminants to the uppermost aquifer.

The executive director may require additional sampling, analyses of additional constituents, installation of additional monitoring wells or other sampling points, and/or other hydrogeological investigations if the facility appears to be contaminating the uppermost aquifer.

If the owner or operator finds the facility to have contaminated or be contaminating the uppermost aquifer, the executive director may order corrective action appropriate to protect human health and the environment up to and including that in §§330.411, 330.413, and 330.415 of this title (relating to Assessment of Corrective Measures; Selection of Remedy; and Implementation of the Corrective Action Program).

3.3 Annual Reports

The owner or operator shall provide an annual detection monitoring report within 60 days after the facility's annual groundwater monitoring event that includes the following information determined since the previously submitted report:

A. The results of all monitoring, testing, and analytical work obtained or prepared in accordance with the requirements of this permit, including a summary of background groundwater quality values, groundwater monitoring analyses, any statistical calculations, graphs, and drawings.

B. The groundwater flow rate and direction in the uppermost aquifer. The groundwater flow rate and direction of groundwater flow shall be established using the data collected during the preceding calendar year's sampling events from the monitoring wells of the Detection Monitoring Program. The owner or operator shall also include in the report all documentation used to determine the groundwater flow rate and direction of groundwater flow.

C. A contour map of piezometric water levels in the uppermost aquifer based at a minimum upon concurrent measurement in all monitoring wells. All data or documentation used to establish the contour map should be included in the report.

D. Recommendation for any changes.

E. Any other items requested by the executive director.

Table 2
Recommended Sampling, Preservation, and Storage Procedures for Groundwater Monitoring

Parameter	Recommended Containers	Preservation	Maximum Holding Time	Minimum Volume
pH	P, G	None	Analyze immediately	25 ml
Spec. cond.	P, G	None	Analyze immediately	100 ml
Temperature	P, G	None	Analyze immediately	
Heavy metals (includes iron and manganese)	P, G	*Acidify w/HNO_3 to pH<2, 4°C	6 months except 28 days for Hg	1 liter
Calcium, magnesium, sodium, potassium, fluoride, sulfate, chloride, and hardness	P, G	4°C	28 days	1 liter
TDS (may be included with above parameters)	P, G	4°C	7 days	1 liter
Nitrate	P, G	4°C	48 hrs	100 ml
Ammonia	P, G	4°C; acidify w/H_2SO_4 to pH<2, 4°C	7 days; 28 days if acidified	500 ml
Alkalinity	P, G	4°C	14 days	200 ml
NPOC	G amber, T-lined caps	4°C; acidify w/HCl to pH<2, 4°C	48 hrs; 28 days if acidified	100 ml/replicate
COD	P, G	4°C, acidify w/H_2SO_4 to pH<2, 4°C	48 hrs; 28 days if acidified	100 ml
SVOC	G, T-lined caps	4°C	7 days until extraction, then analyze within 40 days	1 liter
BOD	P, G	4°C	24 hrs	1 liter
VOC	G, T-lined septa	4°C; acidify w/HCl to pH<2, 4°C	14 days	2 x 40 ml

P = Polyethylene, G = Glass, T = Teflon
*If analyzing for dissolved metals, filter in the field before acidifying.

Table 3
Groundwater Monitoring Parameters for a Type IV Landfill
30 TAC §330.417

Parameter	Method*
Cadmium (total)	EPA 200.7/200.8
Chloride	EPA 300.0
Iron (total)	EPA 200.7/200.8
Manganese (total)	EPA 200.7/200.8
Total dissolved solids	EPA 160.1
Zinc (total)	EPA 200.7/200.8
Specific conductance (field and laboratory)	EPA 120.1
pH (field and laboratory)	EPA 150.1
Nonpurgeable organic compounds	EPA 415.1
* Equivalent or better methods may be substituted.	

CHISHOLM TRAIL DISPOSAL LANDFILL
WISE COUNTY, TEXAS
TCEQ PERMIT NO. MSW 2421

TYPE IV PERMIT APPLICATION

PART III – SITE DEVELOPMENT PLAN
ATTACHMENT G
LANDFILL GAS MANAGEMENT PLAN

Prepared for

Chisholm Trail Disposal, LLC

September 2025
Technically Complete

J. HEATH PARKER
94764

9/23/25

Biggs & Mathews Environmental, Inc.
Firm Registration No. F-256

Prepared by

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CONTENTS

1 INTRODUCTION

30 TAC §§330.63(g), 330.371

1.1 Scope

This landfill gas (LFG) management plan has been developed for the Chisholm Trail Disposal (CTD) Landfill, as required by 30 TAC §330.63(g) and is consistent with the requirements set forth in §330.371. This plan describes the proposed LFG monitoring network, the operation and monitoring of this network, notification procedures, future passive LFG vents, and possible remediation activities, if required.

The CTD Landfill will comply with all applicable federal and state regulations.

1.2 Purpose

§330.371 requires landfills to implement a routine LFG monitoring program to verify that: (1) the concentration of methane does not exceed 1.25 percent methane by volume in facility structures (excluding LFG collection and control system components), and that (2) the concentration of methane does not exceed 5 percent methane by volume in monitoring points, probes, subsurface soils, or other matrices at the facility permit boundary.

The purpose of this LFG management plan is to provide guidance for the management of LFG at the site. These guidelines cover the evaluation of methane concentrations at the permit boundary and in structures on the permitted site.

1.3 General

Consistent with §330.371(d), the executive director may establish alternative schedules for demonstrating compliance with methane monitoring as required by §330.371(b), and with action plan activities as required by §330.371(c).

Consistent with §330.371(e), the landfill gas monitoring and control program will continue for a period of 5 years after certification of final closure of the facility, or until the CTD Landfill receives written authorization to reduce the program. Authorization to reduce gas monitoring and control shall be based on a demonstration by the owner or operator that there is no potential for gas migration beyond the permit boundary or into on-site structures. The demonstration will be supported by data collected and additional studies, as required.

Consistent with §330.371(f), gas monitoring and control systems will be revised as needed to maintain current and effective gas monitoring and control. Postclosure land use of the facility will not interfere with the function of gas monitoring and control systems. Any underground utility trenches that cross the facility boundary will be vented and monitored regularly, contingent on approval from the utility easement owner.

2 SITE CHARACTERISTICS

30 TAC §330.371

2.1 Introduction

The proposed LFG monitoring network will consist of 13 permanent LFG monitoring probes installed outside the perimeter of the waste fill area, near the facility boundary, to detect potential LFG migration. The proposed LFG monitoring probe locations are shown on Drawing G1.1 in Appendix G1.

The type and frequency of LFG monitoring for this site are based on the following factors:

2.2 Soil Conditions

The site geologic conditions are discussed in Attachment E.

2.3 Hydrogeologic Conditions

The hydrogeologic conditions are discussed in detail in Attachment E.

2.4 Hydraulic Conditions

Hydraulic conditions are discussed in Attachment C.

2.5 Facility Structures Within the Permit Boundary

All enclosed structures within the permit boundary will be monitored for the presence of LFG as described in Section 3. As shown on Drawing G1.1, the only initial planned structure is the scale house.

2.6 Underground Utilities

There is one gas pipeline that currently crosses the CTD Landfill permit boundary. However, this pipeline will be abandoned prior to site development.

2.7 Offsite Structures

All known habitable structures located offsite within ¼ mile of the permit boundary are depicted on Drawing G1.3.

3 MONITORING

30 TAC §330.371

3.1 Perimeter Monitoring

3.1.1 Perimeter Monitoring Network

The LFG monitoring probe network at the landfill will consist of 13 LFG monitoring probes located outside the perimeter of the waste fill area near the permit boundary. Proposed locations of the LFG monitoring probes are shown on Drawing G1.1. All landfill gas monitoring probes will be installed prior to initial waste acceptance at the site.

3.1.2 Landfill Gas Monitoring Probes

The proposed LFG monitoring probes will be installed by a Texas licensed driller in accordance with the detail shown on Drawing G1.2. Once installation is completed, boring logs and completion logs will be submitted to the TCEQ and added to Appendix G3.

Each proposed gas monitoring probe is designed to monitor the soil strata above the lowest planned future elevation of waste within 1,000 feet of the probe. The interprobe spacing for the proposed gas monitoring probes will be a maximum of 1,000 feet. The as-built or design depths and elevations for each of the proposed gas monitoring probes is shown on the table on Drawing G1.1.

3.1.3 Utility Vents

When site development commences, there will be no underground utility lines or easements that enter or exit the permit boundary. Should a future underground utility line or easement be established across the permit boundary, utility vents will be installed in accordance with the detail shown on Drawing G1.2.

3.1.4 Monitoring Procedures

Monitoring will be conducted by a qualified landfill representative or a qualified consultant. To avoid artificially impacting the probe static pressure during the induction of the gas sample into the instrument, the static pressure will be measured and recorded prior to measuring gas composition.

During each monitoring event, the probes will be monitored for the following parameters:

- Static pressure, as measured in inches of water column, gauge
- Methane concentration, as measured in percent by volume
- Oxygen concentration (optional), as measured in percent by volume

- Depth to groundwater, as measured in feet

Monitoring for gas composition and gas pressure will be performed using a portable Landtec® GEM-2000, or equivalent instrument, capable of measuring the required parameters. The monitoring equipment will be calibrated and maintained in accordance with the manufacturer's recommended procedures. Manufacturer's maintenance and calibration requirements for the monitoring instruments will be maintained on site with the LFG monitoring records described in Section 3.3.

The monitoring device will have a suction sampling line equipped with a quick-disconnect fitting. This fitting will match up with a corresponding quick-disconnect fitting on the top of each probe to enable gas samples to be drawn directly into the monitoring instrument without diluting the sample. The indicator will give a direct reading of the methane concentration in one of two scales, percent of the lower explosive limit (LEL) or percent by volume.

After these parameters are measured, the probe of a liquid level indicator will be lowered into the LFG probe through an opening located on the top of the LFG probe to measure water level (if any) inside the LFG probe. If no water is present, the level indicator will be used to verify and report total depth of the probe to assure that the probe is not obstructed.

In addition, sampling for specified trace gases may be required if directed by the executive director.

3.1.5 Maintenance Procedures

Each time LFG monitoring is conducted, the sampler will inspect the integrity of the LFG monitoring probes. The sampler will record pertinent information on the Quarterly Landfill Gas Monitoring Report (see Appendix G2) or similar forms. The Quarterly Landfill Gas Monitoring Report will be kept in the site operating record. The sampler will perform the following at each monitoring event:

- Verify that the LFG monitoring probe is clearly labeled on the outer casing or lid.
- Verify that the protective casing is intact and is not bent or excessively corroded.
- Verify that the concrete pad is intact (no evidence of cracking or heaving).
- Verify that the padlock is functional.
- Verify that the inner casing is intact.

If damage to the LFG monitoring probe is observed, it will be reported to the landfill manager. If it is not possible to repair the LFG monitoring probe and the damage can potentially affect the accuracy of future monitoring results, the LFG monitoring probe will be decommissioned and replaced with a new LFG monitoring probe in accordance with Sections 3.1.2 and 3.4 of this attachment.

3.2 Facility Structures Monitoring

3.2.1 Monitoring Procedures

On-site buildings and structures designed for human occupation will be monitored with a continuous LFG monitor/alarm that will provide an audible alarm if methane concentrations exceed 1.25 percent methane by volume.

If allowable methane concentration limits are exceeded within structures, the building will be immediately evacuated and ventilated by opening doors and windows. Notification consistent with procedures in Section 4.2 of this attachment will be implemented immediately.

3.2.2 Maintenance Procedures

Continuous LFG monitors/alarms will be calibrated and maintained in accordance with the manufacturer's recommendations. Continuous LFG monitors/alarms will be tested in accordance with the manufacturer's testing specifications.

3.3 Recordkeeping/Reporting

Field monitoring data records will be maintained for the methane monitoring and kept in the site operating record. Field data will be recorded on the Quarterly Landfill Gas Monitoring Report form (or similar form) as shown in Appendix G2.

3.4 Backup Plan for Monitoring Probes and Continuous Monitors

The following is a backup plan to be used if any installed LFG monitoring probes or continuous monitoring devices become unusable or inoperative.

Stationary Perimeter Probes

1. Damaged or inoperative perimeter probes will be repaired within 30 days of the date of damage or replaced within 60 days from the TCEQ approval date of the permit modification requesting replacement.

2. Upon completion of the replacement probe, an installation report including boring logs and completion logs will be submitted to the TCEQ.

3. Should a monitoring event occur prior to replacement of a damaged probe, a barhole will be placed next to the damaged probe and a portable gas monitor used until the probe is replaced.

Stationary Combustible Gas Monitor

1. Damaged or inoperative stationary combustible gas monitors will be repaired within 30 days of the date the damage is noted or replaced within 60 days.
2. A portable gas indicator will be used until the damaged or inoperative stationary unit is replaced.

3.5 Monitoring Frequency

LFG monitoring points, including permanent and any temporary probes, subsurface soils, or other matrices will be monitored quarterly, at a minimum. The facility will monitor more frequently those locations where monitoring results indicate that LFG migration is occurring or is accumulating in structures. The executive director may also mandate increased monitoring in the event methane concentrations exceed the regulatory limit. Facility structures will be monitored using continuous LFG monitors.

The LFG monitoring program will continue for a period of 5 years after the final closure of the facility or until the owner or operator receives written authorization from the TCEQ to revise or discontinue the program.

4 ACTION PLAN

30 TAC §330.371

4.1 Initial Response Measures

As required under 30 TAC §330.371, this action plan has been prepared for the protection of human health in the event that concentrations of methane exceed allowable limits either within on-site buildings or at the permit boundary of the site. The appropriate emergency response is different for each situation; therefore, this plan addresses buildings and permit boundaries separately.

4.1.1 Emergency Action

The initial action in the event methane is detected at levels above regulatory limits is to protect human health. The specific response depends on the circumstances of the situation.

Buildings/Structures. If the monitoring device in a facility building/structure is triggered, or if gas monitoring equipment indicates that the methane concentration has exceeded the regulatory limit, the building/structure is to be evacuated of all personnel immediately and the landfill general manager will be notified. Personnel (except for authorized monitoring personnel) will not be allowed to re-enter the affected building/structure until additional measures are taken.

Permit Boundary. If methane levels above the regulatory limit are detected at the permit boundary in one of the LFG monitoring points, probes, subsurface soils, or other matrices, the landfill general manager will be notified. The immediate emergency response measure will be for the landfill general manager to determine if any nearby buildings or structures (including off-site) are at risk and if evacuation of the buildings or structures should be requested.

4.2 Notification Procedures

In the event concentrations of methane above the regulatory limit are detected, notifications will be made immediately in accordance with §330.371. Notifications will be made to the executive director of the TCEQ; the TCEQ Region 4 Office; the Wise County Office of Emergency Management; and owners of property within 1/4 mile of the reading, or as directed by the TCEQ.

The landfill general manager will place in the site operating record documentation of the methane gas levels detected and a description of the steps taken to ensure protection of human health within seven days of detection in accordance with §330.371.

5 REMEDIATION PLAN

30 TAC §330.371

If methane levels above the regulatory limit are encountered in buildings/structures or in one or more LFG monitoring points, probes, subsurface soils, or other matrices, remediation actions will be implemented within 60 days. The first step in developing a remediation plan will be an investigation of the cause of the methane levels. The investigation may include some or all of the following elements, depending on the circumstances:

- Barhole probe or hydropunch testing in the vicinity of the impacted monitoring probe
- Sampling and laboratory analysis of LFG monitoring probe samples to determine concentration of methane and trace compounds
- Additional LFG probe monitoring
- Installation of additional monitoring probes

Using accumulated data, an assessment will be made to determine an appropriate course of action to mitigate the migration of LFG. Such actions will vary with the specific incident. An incident-specific remediation plan, based on results of the investigation, will be submitted to the TCEQ within 60 days of detection. Copies of the remediation plan will be placed in the operating record and provided to the executive director of the TCEQ along with notification that the plan has been implemented. The executive director may establish an alternative schedule for demonstrating compliance.

6 LANDFILL GAS VENT SYSTEM

30 TAC §330.371

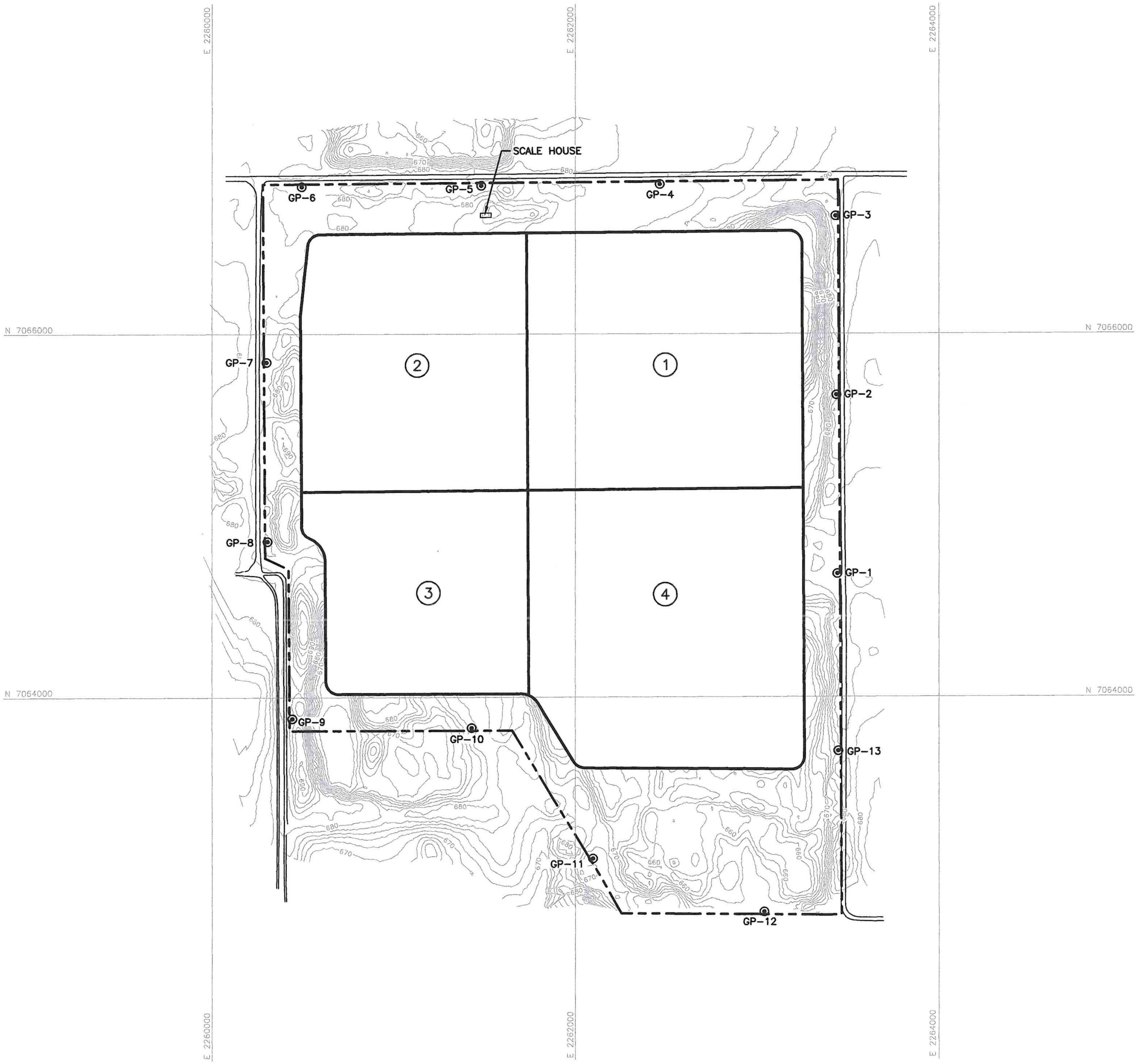
As the site develops, LFG vents may be installed within the landfill waste disposal footprint, as needed, to minimize the potential for subsurface landfill gas migration and reduce potential gas buildup within the waste. As additional waste is placed in these areas, the LFG vents will either be extended vertically or abandoned. If LFG vents are installed, as-built records will be placed in the site operating record. As necessary, vents may also be connected to a landfill gas flare to improve odor control.

LFG vents will be abandoned at the conclusion of the post-closure care requirement period. LFG vents will also be abandoned if they are damaged or rendered inoperable. The LFG vents will be abandoned by cutting and capping the vents below ground surface.

CHISHOLM TRAIL DISPOSAL LANDFILL

APPENDIX G1

LANDFILL GAS MONITORING PROBE LOCATIONS AND DETAILS



LEGEND

— — —	PERMIT BOUNDARY
———	WASTE MANAGEMENT UNIT
N 7062000	STATE PLANE COORDINATES
①	SECTOR NUMBER
GP-1 ◉	PROPOSED LANDFILL GAS MONITORING PROBE

NOTE(S):

1. EXISTING CONTOURS TAKEN FROM DRONE SURVEY PROVIDED BY BIGGS AND MATHEWS ENVIRONMENTAL DATED APRIL 5, 2024.

GAS PROBE DESIGN INFORMATION

PROBE NAME	GROUND ELEVATION (FT-MSL)	BOTTOM ELEVATION (FT-MSL)	PROBE DEPTH (FT)
GP-1	682	614	68
GP-2	685	620	65
GP-3	689	627	62
GP-4	683	627	56
GP-5	683	627	56
GP-6	683	628	55
GP-7	685	621	64
GP-8	687	617	70
GP-9	685	617	68
GP-10	677	614	63
GP-11	671	614	57
GP-12	668	633	35
GP-13	679	614	65

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J. Heath Parker
9/23/25

FOR PERMITTING PURPOSES

REVISIONS

REV	DATE	DESCRIPTION	DWN BY

GAS MONITORING PROBE PLAN

CHISHOLM TRAIL DISPOSAL, LLC
CHISHOLM TRAIL DISPOSAL LANDFILL

BIGGS & MATHEWS ENVIRONMENTAL
1700 ROBERT ROAD, STE. 100
MANSFIELD, TEXAS 76063
817-563-1144

TBPE FIRM NO. F-256
TBPG FIRM NO. 50222

DRAWING
G1.1

O:\Green Group\Wise County\Solid Waste\Type IV\P\Drawings\ATT G\G1.1 Gas Probe Plan.dwg Layout: Layout 1 User: awhite

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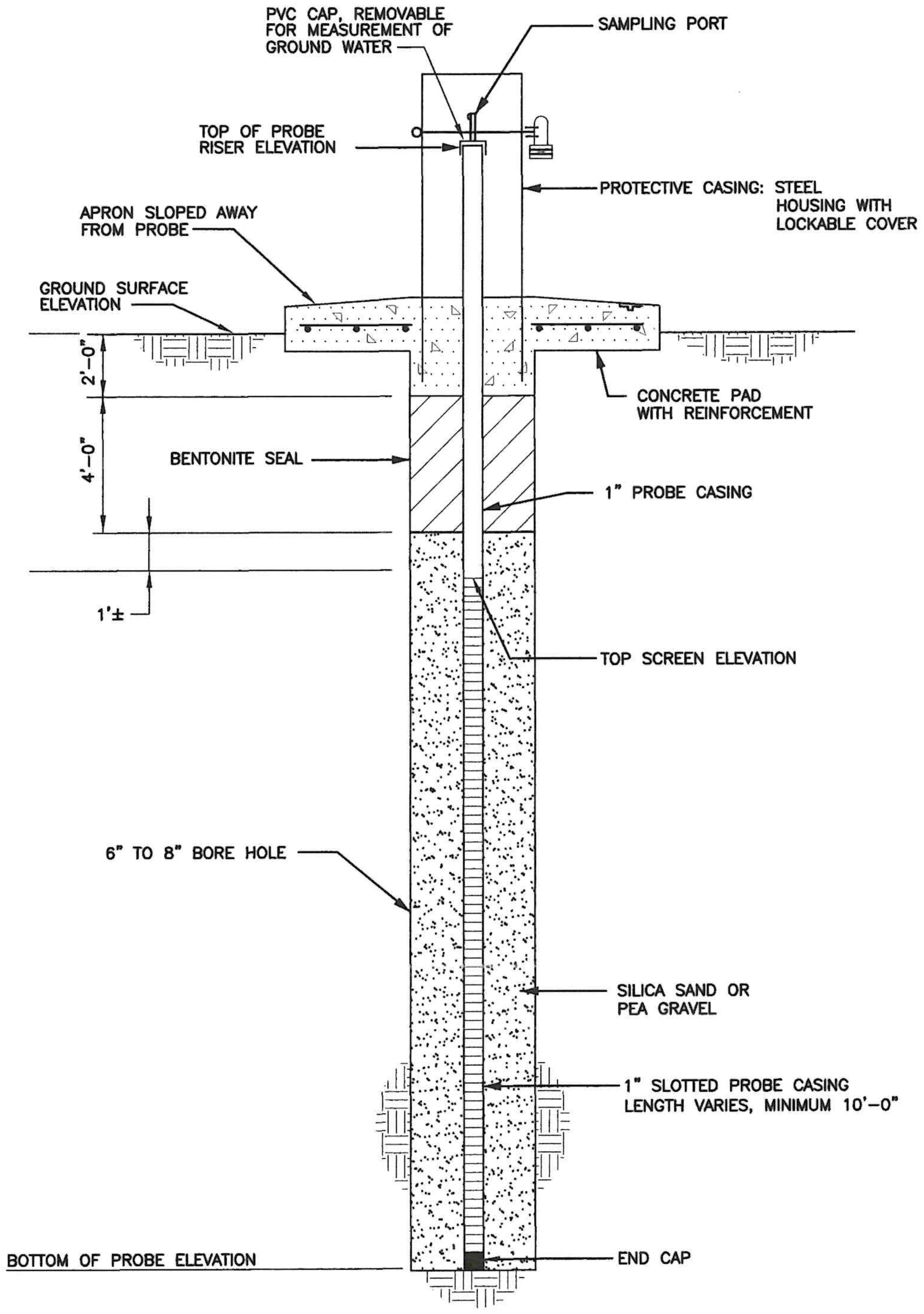
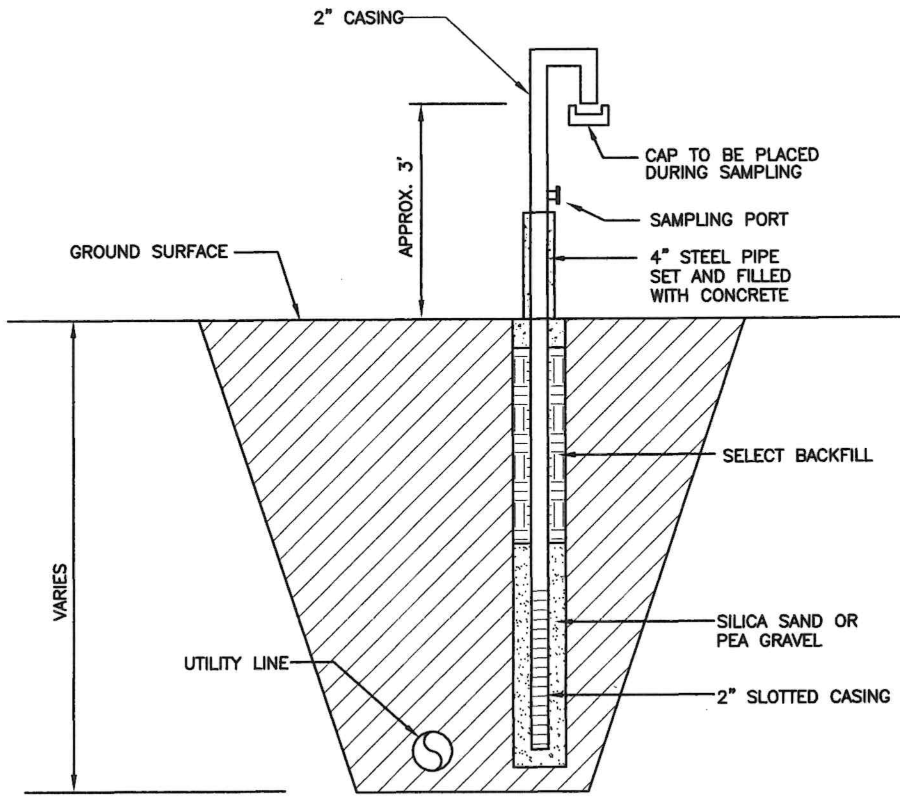


MONITORING PROBE DETAILS (MP-1 / G1.2)

NTS

NOTES

1. PROBES WILL BE INSTALLED TO MONITOR THE SOIL STRATA ABOVE THE LOWEST CURRENT OR PLANNED FUTURE ELEVATION OF WASTE WITHIN 1,000 FEET OF THE MONITORING PROBE.
2. ALL SIZES AND DIMENSIONS ARE APPROXIMATE.



UTILITY VENT (MP-2 / G1.2)

NTS

NOTE

1. ALL SIZES AND DIMENSIONS ARE APPROXIMATE.

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9/23/25

FOR PERMITTING PURPOSES

REVISIONS

REV	DATE	DESCRIPTION	DWN BY

MONITORING PROBE/VENT DETAILS

CHISHOLM TRAIL DISPOSAL, LLC
CHISHOLM TRAIL DISPOSAL LANDFILL

BME

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817-563-1144

TBPE FIRM NO. F-256
TBPG FIRM NO. 50222

DRAWING
G1.2

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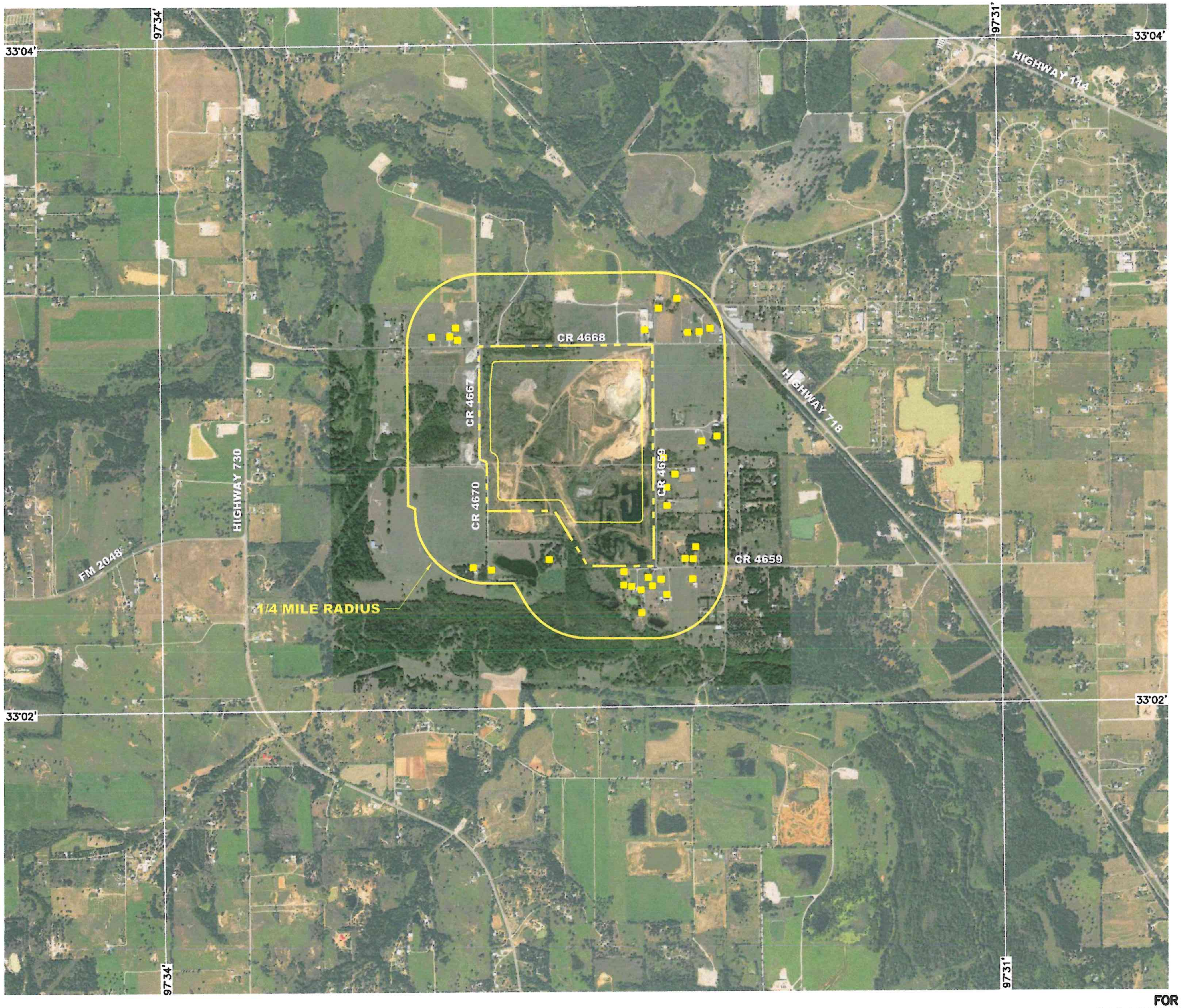


0 1000 2000
SCALE IN FEET

LEGEND

- — · — PERMIT BOUNDARY
- —— WASTE MANAGEMENT UNIT
- ━━ 1/4 MILE RADIUS
- ■ HABITABLE STRUCTURE

NOTE(S):

1. TAKEN FROM GOOGLE EARTH ON DECEMBER 13, 2022, IMAGERY DATE JUNE 13, 2022.

STATE OF TEXAS
J. HEATH PARKER
94764
LICENSED PROFESSIONAL ENGINEER

J HP
9/23/25

FOR PERMITTING PURPOSES

REVISIONS

REV	DATE	DESCRIPTION	DWN BY

STRUCTURES WITHIN 1/4 MILE OF PERMIT BOUNDARY

CHISHOLM TRAIL DISPOSAL, LLC
CHISHOLM TRAIL DISPOSAL LANDFILL

BME

BIGGS & MATHEWS ENVIRONMENTAL
1700 ROBERT ROAD, STE. 100
MANSFIELD, TEXAS 76063
817-563-1144

TBPE FIRM NO. F-256
TBPG FIRM NO. 50222

DRAWING
G1.3

CHISHOLM TRAIL DISPOSAL LANDFILL

APPENDIX G2

REPORTING AND RECORDING FORMS

CHISHOLM TRAIL DISPOSAL LANDFILL
QUARTERLY LANDFILL GAS MONITORING REPORT

Sampled by:______________________________Date:____________

Time Start: ____________Time Finish: ____________ Temperature: ______________

Weather: ____________________________ Bar. Pressure (Optional): ____________

Monitoring Equipment: ______________________ Date of Calibration: ____________

Field Calibration:

Date: ____________ Time: _______CH4:______CO2:_____O2:_____Balance:______

GAS MONITORING PROBES

Probe Name	Ground Surface Elevation (ft-MSL)	Bottom of Probe Elevation (ft-MSL)	% Methane	% LEL	% O_2 (Optional)	Static Pressure (in-W.C)	Depth to Water (ft)	Probe Integrity Verified (Yes/No)

ON-SITE STRUCTURES

Structure	Verify if Continuous LFG Alarm is Operational (Circle One)	Continuous LFG Alarm Activated (LEL > 25%) Since Last Monitoring Event (Circle One)
	Yes No	Yes No
	Yes No	Yes No

GENERAL COMMENTS:

____

____

____

CHISHOLM TRAIL DISPOSAL LANDFILL

APPENDIX G3

LANDFILL GAS MONITORING PROBE BORING/COMPLETION LOGS

CHISHOLM TRAIL DISPOSAL LANDFILL
WISE COUNTY, TEXAS
TCEQ PERMIT APPLICATION NO. MSW 2421

TYPE IV PERMIT APPLICATION

PART III – SITE DEVELOPMENT PLAN
ATTACHMENT H
CLOSURE PLAN

Prepared for

Chisholm Trail Disposal, LLC

September 2025
Technically Complete

GREGORY W. ADAMS
73356

Biggs & Mathews Environmental, Inc.
Firm Registration No. F-256
9/23/2023

Prepared by

BIGGS & MATHEWS ENVIRONMENTAL
1700 Robert Road, Suite 100 ◆ Mansfield, Texas 76063 ◆ 817-563-1144

TEXAS BOARD OF PROFESSIONAL ENGINEERS AND LAND SURVEYORS
FIRM REGISTRATION NO. F-256 AND NO. 10194895

TEXAS BOARD OF PROFESSIONAL GEOSCIENTISTS
FIRM REGISTRATION NO. 50222

STATE OF TEXAS
GREGORY W. ADAMS
73356
LICENSED
PROFESSIONAL ENGINEER
9/23/2025

Biggs & Mathews Environmental, Inc.
Firm Registration No. F-256

CONTENTS

1 INTRODUCTION

30 TAC §330.63(h) and §330.453

This facility closure plan provides the information required by 30 TAC §330.63(h) and §330.453. The closure plan includes drawings that depict the final constructed contour plan, surface water drainage and erosion and sediment control features, and the location of the 100-year floodplain. The closure plan also includes the procedures to be taken for ongoing closure of the facility and following final acceptance of waste, and a closure schedule.

2 FINAL COVER SYSTEM

30 TAC §330.453

The final cover system will consist of an 18-inch thick infiltration layer and a 12- inch thick erosion control layer. The final cover plan and details are included in Appendix H2.The erosion layer will be capable of sustaining native plant growth and the infiltration layer will be compacted soil with a maximum coefficient of permeability less than or equal to 1 x 10^{-7} cm/sec. The final cover will be seeded or sodded immediately following application of final cover to minimize erosion. Best management practices such as silt fences, straw bales, and mulch will be used to minimize erosion until the vegetation is established. Areas that experience erosion or do not readily vegetate will be repaired, reseeded or sodded until vegetation is established. The final cover system will be constructed, tested, and documented in accordance with §330.453 and Attachment D8.

3 CLOSURE PROCEDURES

30 TAC §330.453

3.1 Closure Sequence

The Chisholm Trail Disposal Landfill may conduct ongoing closure of the landfill throughout the active life of the landfill by placing final cover, constructing of drainage and erosion control features, and establishing vegetative cover as areas reach final grades. Otherwise the entire cover system may be constructed at final closure. All areas, regardless of the time of closure, will be closed in accordance with the applicable regulations and the closure plan, and a Final Cover Evaluation Report (FCER) will be submitted documenting closure activities.

3.2 Closure During Active Life

The final cover may be constructed as fill areas achieve the design grades. Should closure of the landfill become necessary at any time during the active life of the landfill, the following steps shall be taken:

- The final waste received will be placed and properly compacted.
- The large item staging area and reusable materials staging area will be closed and dismantled. All waste, waste residue, and demolition materials from these facilities will be disposed of in the landfill.
- Excavations will be filled with suitable material, and the site will be graded to promote runoff and prevent ponding.
- The top of the landfill will be regraded and reshaped as needed to provide the proper slope for positive drainage.
- The final cover system will be constructed consistent with the details included in Appendix H2.
- During the first growing season following application of final cover, the site will be vegetated with appropriate grasses to minimize erosion.
- A surface water management system will be constructed to minimize erosion.
- A closure certification will be prepared by a registered professional engineer and submitted to the TCEQ for approval.
- All proper notices and documentations will be filed with the appropriate agencies and governmental bodies.

3.2.1 Estimate of Largest Area Requiring Final Cover

The area requiring final cover at any time during the active life of the landfill will vary as lined areas are constructed and filled. The largest area requiring closure for the purposes of determining final closure construction cost is the entire footprint.

3.2.2 Estimate of Maximum Inventory of Waste On Site

The estimate of maximum inventory of waste ever on site over the active life of the facility is approximately 39,481,000 cubic yards. This estimate represents the total volume available between the top of protective cover and bottom of final cover and includes waste and daily and intermediate cover soil.

3.3 Perimeter Road

The typical perimeter road detail is shown in Appendix H2 and will be constructed outside the landfill footprint in the buffer zone. The construction and maintenance of the perimeter road will not disturb the integrity and function of the final cover, liner, or any monitoring system.

4 CLOSURE SCHEDULE

30 TAC §330.453 and §330.461

4.1 Final Cover Construction

During the active life of the landfill, final cover may be placed in phases as areas reach the design top of waste grades. Generally, the final cover will be placed in phases of 10 to 30 acres. Final cover placement over completed portions of the site will consist of the following steps:

- Survey controls will be implemented to control the filling of solid waste to the approved top of waste elevations.

- The final cover system layers will be constructed. Testing of the various components of the final cover system will be performed in accordance with Attachment D8.

- A final cover certification report and an as-built survey will be prepared by an independent registered professional engineer and submitted to the TCEQ for approval.

- The TCEQ-approved final cover certification report will be maintained in the site operating record and the final cover log will be updated to reflect the area where final cover has been placed. The TCEQ regional office will also be notified.

4.2 Implementation of the Closure Plan

The closure plan will be implemented in accordance with 30 TAC §330.453 as outlined below.

- No later than 60 days prior to initiation of final closure activities, Chisholm Trail Disposal, LLC will provide written notification to the TCEQ of the design and specifications for the closure of the municipal solid waste (MSW) units.

- Following completion of closure activities for the unit, Chisholm Trail Disposal, LLC will comply with the postclosure care requirements specified in 30 TAC 330.463(a) for the duration of the postclosure period.

4.3 Certification of Final Facility Closure

Certification of final facility closure will be accomplished in accordance with 30 TAC §330.461 as outlined below.

- No later than 90 days prior to initiation of final facility closure, a public notice of facility closure that contains the name, address, and physical location of the facility, the permit number, and the last date of intended receipt of waste will be placed in the newspaper of the largest circulation in the vicinity of the facility. Chisholm Trail Disposal, LLC will also make available an adequate number of copies of the approved final closure and postclosure plan for public access and review.

- Chisholm Trail Disposal, LLC will also provide written notification to the TCEQ of the intent to close the facility and place this notice of intent in the operating record.
- Following notification to the TCEQ of final facility closure, a minimum of one sign will be posted at the main entrance and all other frequently used points of access notifying all persons utilizing the facility of the closure date or date on which further receipt of waste is prohibited. In addition, barriers or gates will be installed at all access points following the closure date to adequately prevent unauthorized dumping of solid waste at the closed facility.
- Within 10 days after completion of final closure activities of the facility, a certified copy of an Affidavit to the Public (see Appendix H1) will be submitted in accordance with §330.19 and §330.453 by registered mail to the TCEQ. In addition, a certified notation will be recorded on the deed to the facility or similar instruments that will in perpetuity notify any potential purchaser of the property that the land has been used as a landfill facility and the use of the land is restricted according to the provisions specified in §330.465 and in the Postclosure Care Plan. Within 10 days after completion of final closure activities of the facility, a certified copy of the modified deed will be submitted to the TCEQ and a copy will be placed in the operating record.
- Within 10 days after completion of final closure activities of the facility, a certification, signed by an independent licensed professional engineer, verifying final facility closure has been completed in accordance with the approved closure plan, will be submitted by registered mail to the TCEQ. The submittal will include all applicable documentation necessary for certification of final facility closure.

4.4 Provisions for Extending Closure Period

If the CTD Landfill has remaining capacity at the time of its closure, final closure activities will begin no later than one year after the most recent receipt of wastes. Any request for an extension beyond the one year deadline for the initiation of final closure will be submitted to the executive director for review and approval and will include all applicable documentation to demonstrate that the unit or site has the capacity to receive additional waste and that Chisholm Trail Disposal, LLC has taken and will continue to take all steps necessary to prevent threats to human health and the environment.

5 CLOSURE COST ESTIMATE

30 TAC §330.503(a)

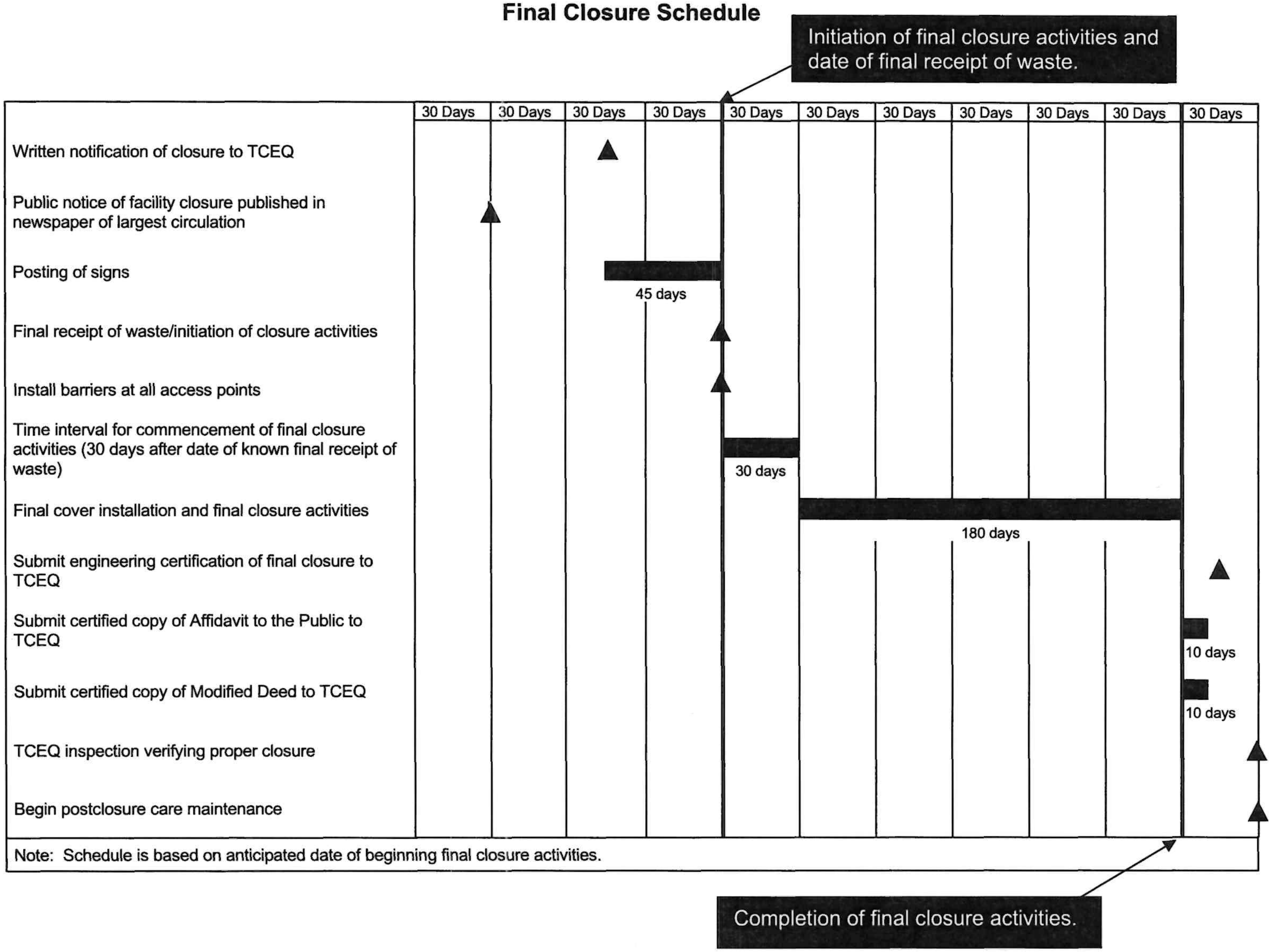
The estimated cost of hiring a third party to close the largest area of the landfill requiring final closure at any time during the active life of the site is provided in a detailed cost estimate included in Attachment J.

The cost estimate shows the cost of hiring a third party to close the largest waste fill area that could potentially be open in the year to follow and those areas that have not received final cover at any time during the active life of the site when the extent and manner of site operations would make closure the most expensive.

CHISHOLM TRAIL DISPOSAL LANDFILL

APPENDIX H1
FIGURES

Final Closure Schedule



Note: Schedule is based on anticipated date of beginning final closure activities.

Figure H1-2
AFFIDAVIT TO THE PUBLIC

STATE OF TEXAS

COUNTY OF ________________

Before me, the undersigned authority, on this day personally appeared ___________________, who, after being by me duly sworn, upon oath states that he is the record owner of that certain tract or parcel of land lying and being situated in _____________, Texas and being more particularly described as follows:

-insert legal description here-

NOTICE

The undersigned further states that from the year ______ to the year ______ there was operated on the aforesaid tract of land a Solid Waste Disposal Site. Specifically, such operation was conducted on that portion of the aforesaid tract described below.

(INSERT LEGAL DESCRIPTION)

Notice is hereby given that any future owner or user of the land described in the above legal description should consult with the Texas Commission on Environmental Quality prior to planning or initiating any activity involving disturbance of cover.

Further, the undersigned ____________________________ was the operator of such solid waste disposal site.

WITNESS MY/OUR HAND(S) on this _____ day of ________________, 20__.

Owner

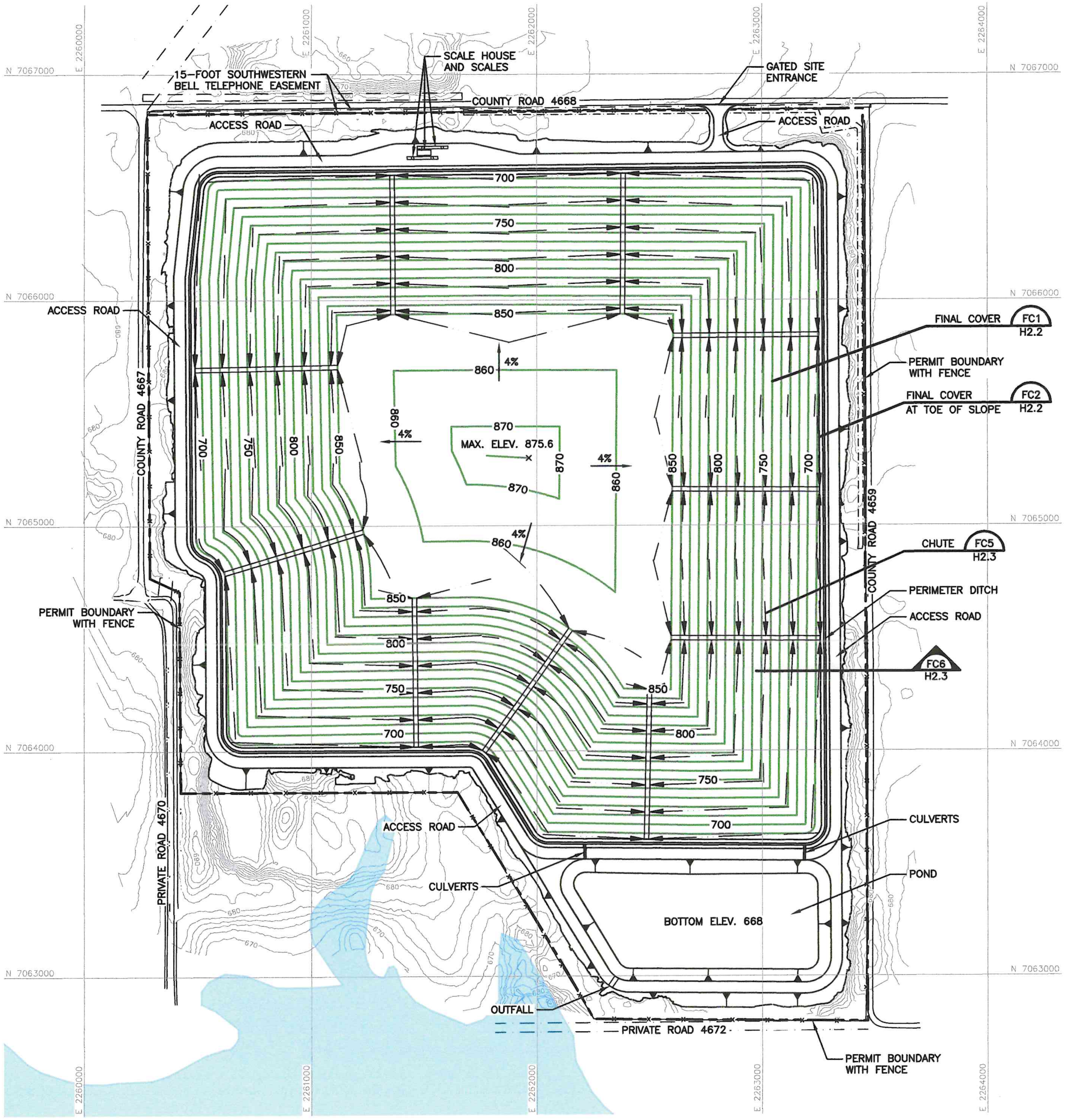
Operator

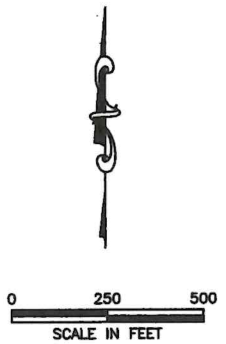
SWORN TO AND SUBSCRIBED before me on this _____ day of _____________, 20__.

CHISHOLM TRAIL DISPOSAL LANDFILL

APPENDIX H2
FINAL COVER SYSTEM PLANS AND DETAILS

O:\Green Group\Wise County\Solid Waste\Type IV\P\Drawings\ATT H\H2.1-FCSystemPlan.dwg Layout: LAYOUT 1 User: awhite





LEGEND

━ ━ ━	PERMIT BOUNDARY
——700——	10' CONTOUR
N 7062000	STATE PLANE COORDINATES
— · — · —	EASEMENT
— × — × —	FENCE
——800——	FINAL CONTOUR CONTOUR
═══	CHUTE
— — →	SWALE
🟦	100-YEAR FLOOD PLAIN

NOTE(S):

1. EXISTING CONTOURS TAKEN FROM DRONE SURVEY PROVIDED BY BIGGS AND MATHEWS ENVIRONMENTAL DATED APRIL 5, 2024.
2. PERMIT BOUNDARY INFORMATION FROM SURVEYING AND MAPPING, LLC.
3. MAXIMUM WASTE ELEVATION = 872.1 FT.
4. SEE PART III ATTACHMENT FOR DRAINAGE SYSTEM PLAN AND DETAILS.

GREGORY W. ADAMS
73356

9/23/2025

FOR PERMITTING PURPOSES

REVISIONS

REV	DATE	DESCRIPTION

FINAL COVER SYSTEM PLAN

CHISHOLM TRAIL DISPOSAL, LLC
CHISHOLM TRAIL DISPOSAL LANDFILL

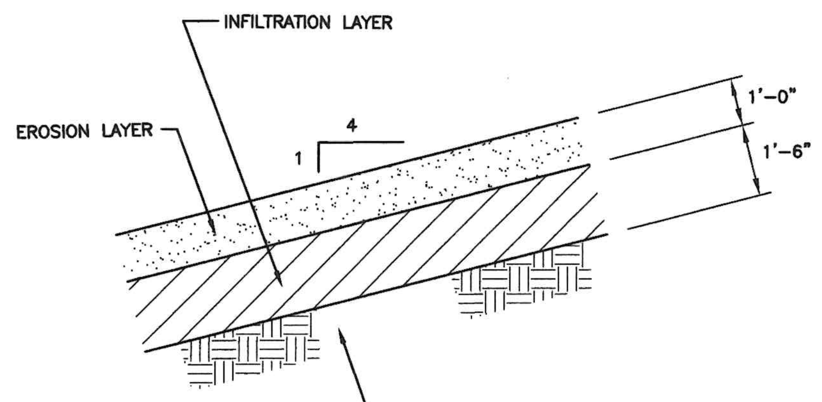
BME

BIGGS & MATHEWS ENVIRONMENTAL
1700 ROBERT ROAD, STE. 100
MANSFIELD, TEXAS 76063
817-563-1144

TBPE FIRM NO. F-256
TBPG FIRM NO. 50222

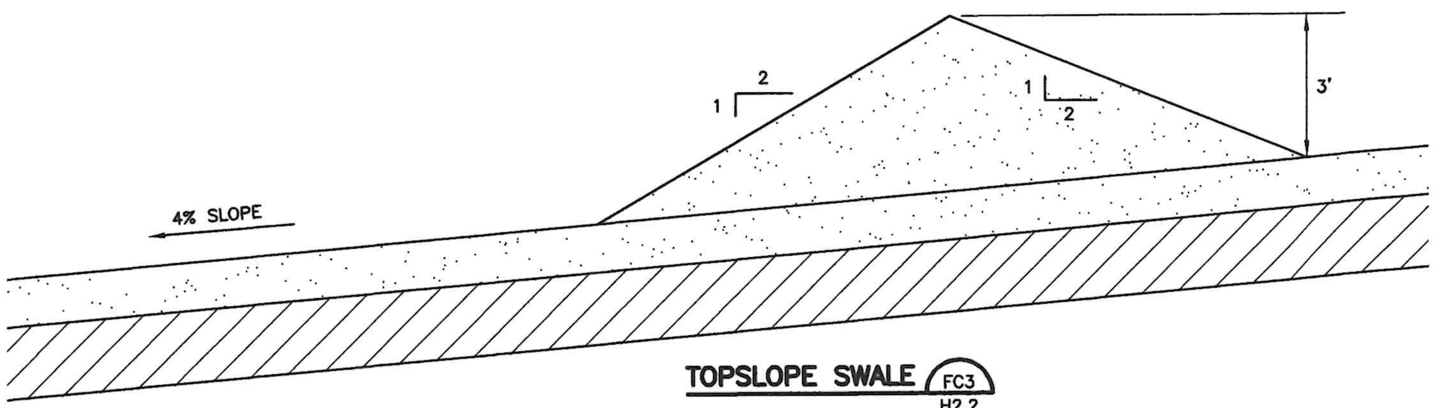
DRAWING
H2.1

O:\Green Group\Wise County\Solid Waste\Type IV\P\Drawings\ATT H\H2.2-FCSystemDetails.dwg Layout: LAYOUT 1 User: awhite



FINAL COVER FC1 H2.2

0 2 4
SCALE IN FEET



TOPSLOPE SWALE FC3 H2.2

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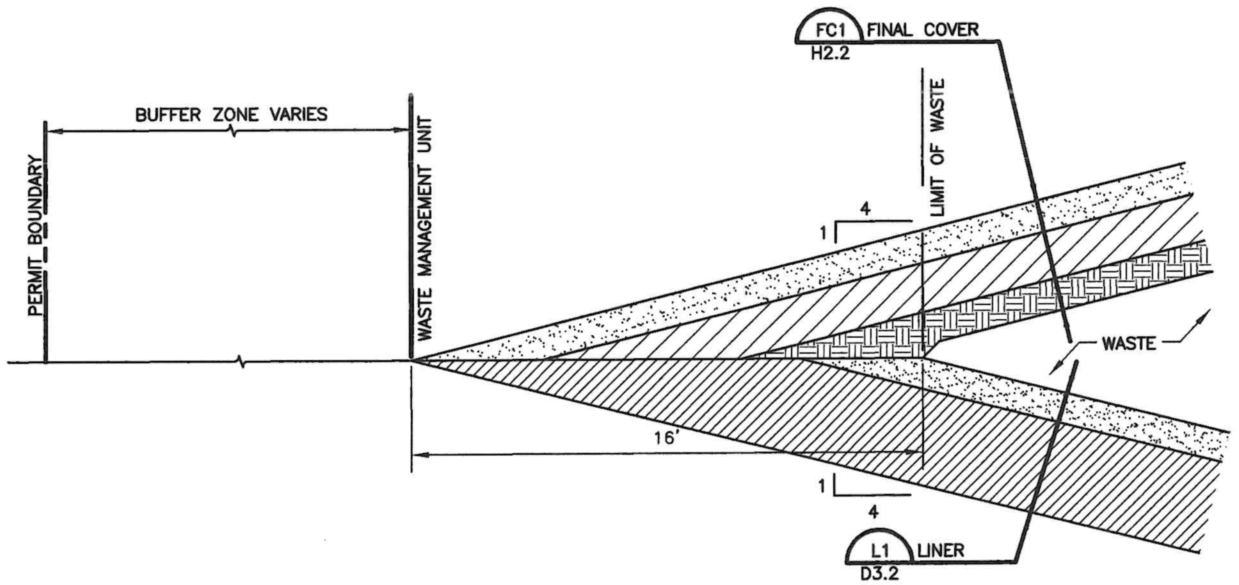
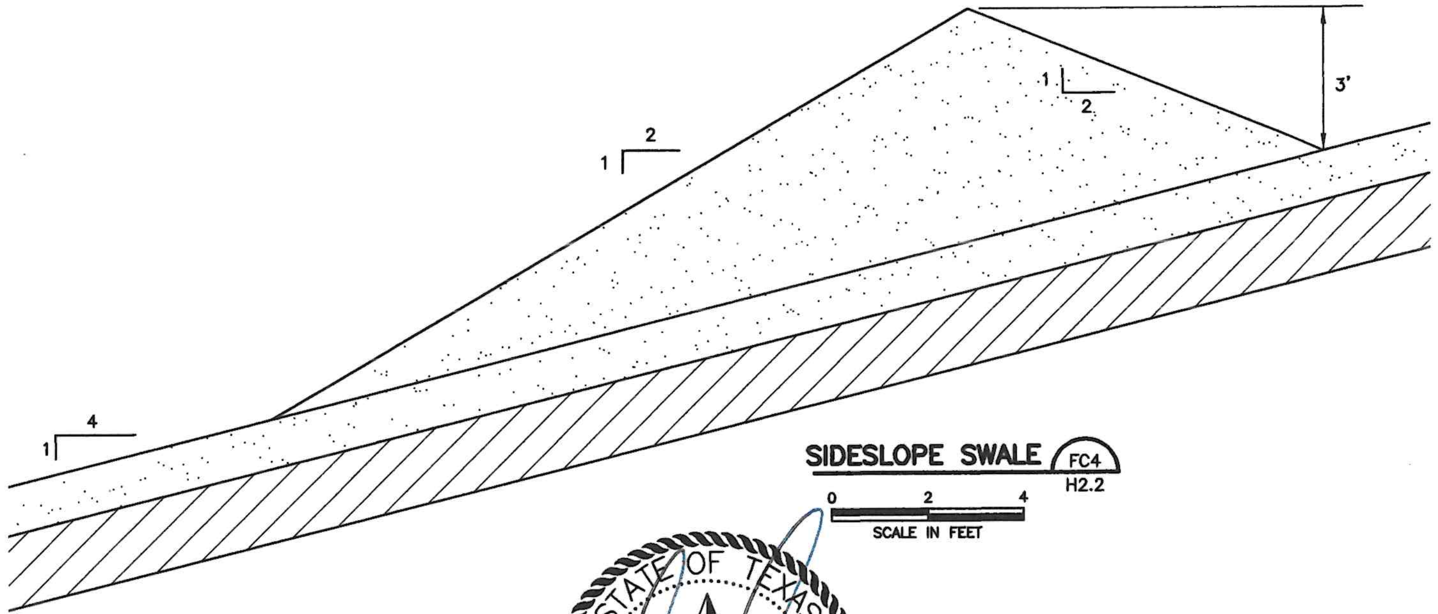
SCALE IN FEET



FINAL COVER AT TOE OF SLOPE FC2 H2.2

NTS



SIDESLOPE SWALE FC4 H2.2

0 2 4
SCALE IN FEET

GREGORY W. ADAMS
73356

9/23/2025

FOR PERMITTING PURPOSES

REVISIONS

REV	DATE	DESCRIPTION

FINAL COVER SYSTEM DETAILS

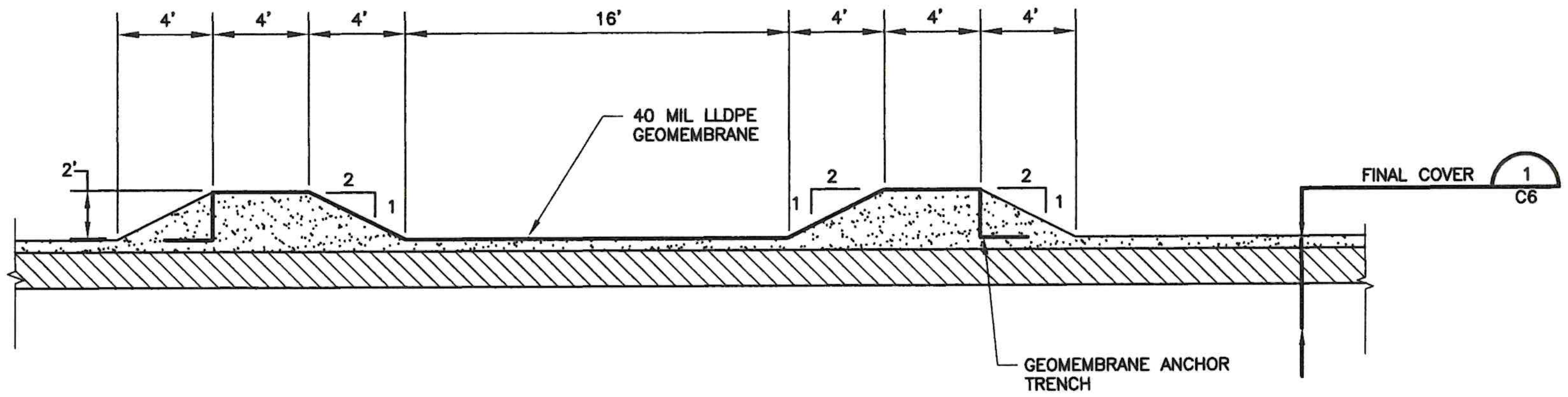
CHISHOLM TRAIL DISPOSAL, LLC
CHISHOLM TRAIL DISPOSAL LANDFILL

BME

BIGGS & MATHEWS ENVIRONMENTAL
1700 ROBERT ROAD, STE. 100
MANSFIELD, TEXAS 76063
817-563-1144

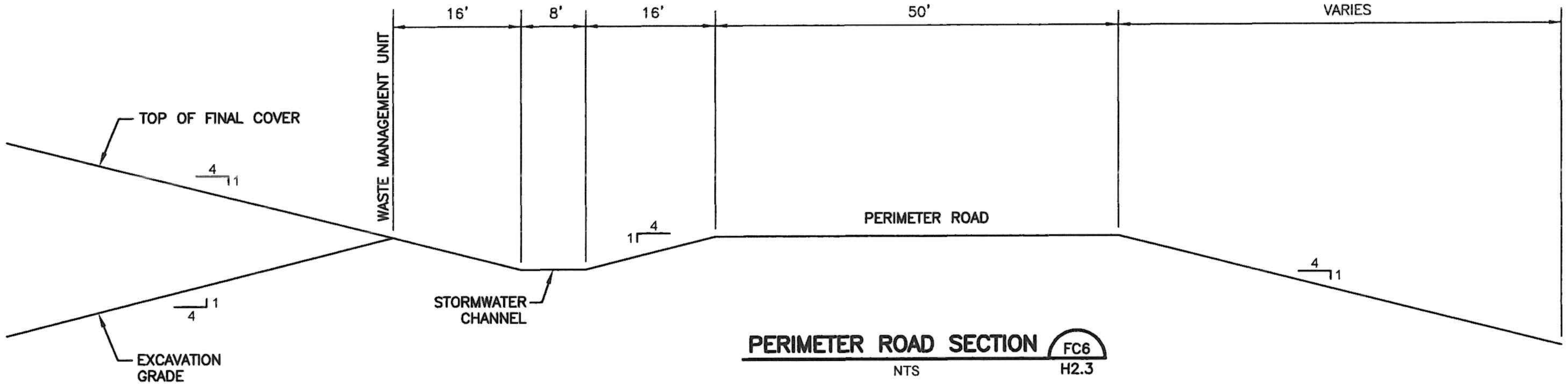
TBPE FIRM NO. F-256
TBPG FIRM NO. 50222

DRAWING
H2.2



CHUTE FC5 H2.2

0 4 8
FEET



PERIMETER ROAD SECTION FC6 H2.3
NTS

GREGORY W. ADAMS
73356

9/23/2025

FOR PERMITTING PURPOSES

REVISIONS		
REV	DATE	DESCRIPTION

FINAL COVER SYSTEM DETAILS

CHISHOLM TRAIL DISPOSAL, LLC
CHISHOLM TRAIL DISPOSAL LANDFILL

BME

BIGGS & MATHEWS ENVIRONMENTAL
1700 ROBERT ROAD, STE. 100
MANSFIELD, TEXAS 76063
817-563-1144

TBPE FIRM NO. F-256
TBPG FIRM NO. 50222

DRAWING
H2.3

O:\Green Group\Wise County\Solid Waste\Type IV\P\Drawings\ATT H\H2.3-FCSystemDetails.dwg Layout: Layout1 User: awhite

CHISHOLM TRAIL DISPOSAL LANDFILL
WISE COUNTY, TEXAS
TCEQ PERMIT NO. MSW 2421

TYPE IV PERMIT APPLICATION

PART III - SITE DEVELOPMENT PLAN
ATTACHMENT I
POSTCLOSURE PLAN

Prepared for

Chisholm Trail Disposal, LLC

September 2025
Technically Complete

GREGORY W. ADAMS
73356

Biggs & Mathews Environmental, Inc.
Firm Registration No. F-256

9/23/2025

Prepared by

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TEXAS BOARD OF PROFESSIONAL ENGINEERS AND LAND SURVEYORS
FIRM REGISTRATION NO. F-256 AND NO. 10194895

TEXAS BOARD OF PROFESSIONAL GEOSCIENTISTS
FIRM REGISTRATION NO. 50222

GREGORY W. ADAMS
73356
9/23/2025

Biggs & Mathews Environmental, Inc.
Firm Registration No. F-256

CONTENTS

1 INTRODUCTION

30 TAC §§330.63(i) 330.453(f), 330.463(a), and 330.465

This facility postclosure care plan provides the information required by 30 TAC §330.63(i), 330.453(f), §330.463(a), and §330.465. The postclosure care plan includes the provisions for continued groundwater monitoring, landfill gas monitoring, and maintenance of the constructed final cover and drainage facilities for the duration of the 5-year postclosure period. The postclosure care plan also provides procedures to decrease or increase the postclosure care period, identifies the person responsible for postclosure care, and includes the provisions for certification at the completion of the postclosure care period. A copy of the postclosure plan will be placed in the operating record prior to the initial receipt of waste.

2 POSTCLOSURE CARE ACTIVITIES

30 TAC §330.463(a) and §330.465

2.1 Monitoring and Maintenance

Following completion of all closure activities for the landfill unit, the owner or operator shall comply with the post-closure care requirements specified in §330.463(a). Closure requirements are included in Attachment H. Postclosure care maintenance will continue for a period of 5 years unless the TCEQ approves or requires a postclosure care period of a different duration. Postclosure care maintenance will consist, at a minimum, of the following requirements, to be carried out by Chisholm Trail Disposal, LLC.

- Retain the right of entry and maintain all rights-of-way to the closed landfill.
- Conduct semi-annual site inspections.
- Conduct maintenance or remediation activities, as needed, to maintain the integrity and effectiveness of the final cover, site vegetation, and stormwater drainage appurtenances. These activities may include regrading, placement of additional soil, seeding, and repair of erosion control features.
- Control surface run-on and run-off in order to minimize the erosion of the final cover system. Maintenance may include regrading and cleaning of ditches and swales.
- Correct the effects of settlement, subsidence, ponded water, erosion, or other events or failures as these situations are detrimental to the integrity of the closed landfill. Corrective measures may include regrading, placement of additional soil, and seeding.
- Maintain the groundwater monitoring system and monitor groundwater in accordance with the requirements of §§330.401 - 330.421. In accordance with 30 TAC §330.407, the monitoring frequency will be semi-annual. Parameters to be monitored will be those constituents listed in 30 TAC §330.419.
- Maintain and operate the landfill gas monitoring system in accordance with the requirements of §330.371. In accordance with 30 TAC §330.371, the minimum frequency will be quarterly. However, Chisholm Trail Disposal, LLC, reserves the right to request TCEQ approval of an alternate monitoring frequency. Such a request will be based on supporting data available at the time of the request.

2.2 Decreasing Postclosure Care Period

The length of the postclosure care maintenance period may be decreased by the TCEQ if Chisholm Trail Disposal, LLC, submits a documented certification, signed by an independent registered professional engineer and including all applicable documentation necessary to support the certification, that demonstrates that the reduced period is sufficient to protect human health and the environment. Applicable documentation may include data from monitoring of groundwater, surface water, and landfill gas. The certified documentation must be reviewed and approved by the TCEQ prior to decreasing the length of the postclosure care maintenance period.

2.3 Increasing Postclosure Care Period

The length of the postclosure care maintenance period may be increased by the TCEQ if it is determined that the increased duration is necessary to protect human health and the environment. It is understood that Chisholm Trail Disposal, LLC, will receive appropriate notification of any such proposed changes prior to the TCEQ's final determination.

2.4 Completion of Postclosure Care

Upon completion of the postclosure care maintenance period, Chisholm Trail Disposal, LLC will submit to the TCEQ documented certification signed by an independent licensed professional engineer and verifying that postclosure care maintenance has been completed in accordance with the approved postclosure plan. The submittal will include all documentation necessary for certification of completion of postclosure care maintenance. The certification will be placed in the site operating record upon approval. Certification of completion of the postclosure care maintenance period and voluntary permit revocation will be conducted in accordance with §330.465.

3 PERSON RESPONSIBLE FOR CONDUCTING POSTCLOSURE CARE ACTIVITIES

30 TAC §330.463(b)

At the time of the development of this document, the following person is responsible for the management of this landfill:

Thad Owings, Vice President
Chisholm Trail Disposal, LLC
225 Reformation Parkway, Suite 200
Canton, GA 30114
770-720-2717

Daily operational activities are directed by:

Landfill Manager
Chisholm Trail Disposal Landfill
291 P.R. 4674
Aurora, TX 76078
770-720-2717

The person responsible for conducting postclosure activities is subject to change. However, as part of the closure notification to the TCEQ, as required by 30 TAC §330.463(b), Chisholm Trail Disopsal, LLC, will notify the TCEQ regarding the responsible person.

4 POSTCLOSURE LAND USE

30 TAC §330.957

4.1 Intended Use

There are no current planned postclosure uses for the Chisholm Trail Disposal Landfill. Should use of the closed landfill not associated with solid waste activities be considered, plans will be prepared and submitted to the TCEQ for review and approval.

4.2 Constraints on Postclosure Construction

There are no plans to construct buildings or other structures on the closed Chisholm Trail Disposal Landfill property. Nevertheless, any future construction activities on the closed landfill will be subject to the provisions of 30 TAC §330.951 - §330.964, which require, among other things, prior approval from the TCEQ.

5 POSTCLOSURE CARE COST ESTIMATE

30 TAC §330.463(a)

The estimated cost of hiring a third party to conduct postclosure care activities in accordance with the postclosure plan is specified in the detailed cost estimate provided in Attachment J.

CHISHOLM TRAIL DISPOSAL LANDFILL
WISE COUNTY, TEXAS
TCEQ PERMIT NO. MSW 2421

TYPE IV PERMIT APPLICATION

PART III - SITE DEVELOPMENT PLAN
ATTACHMENT J
COST ESTIMATES FOR CLOSURE AND POSTCLOSURE CARE

Prepared for

Chisholm Trail Disposal, LLC

September 2025
Technically Complete

GREGORY W. ADAMS
73356

Biggs & Mathews Environmental, Inc.
Firm Registration No. F-256

9/23/2025

Prepared by

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TEXAS BOARD OF PROFESSIONAL ENGINEERS AND LAND SURVEYORS
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TEXAS BOARD OF PROFESSIONAL GEOSCIENTISTS
FIRM REGISTRATION NO. 50222

GREGORY W. ADAMS
73356
9/23/2025

Biggs & Mathews Environmental, Inc.
Firm Registration No. F-256

CONTENTS

1 INTRODUCTION

30 TAC §330.63(j)

This cost estimate for closure and postclosure care provides the information required by 30 TAC §330.63(j) and §§330.501 - 330.507.

2 CLOSURE COST ESTIMATE

30 TAC §330.503

This cost estimate shows the cost of hiring a third party to close the largest waste fill area that could potentially be open in the year to follow and those areas that have not received final cover in accordance with the final closure plan, at any time during the active life of the site when the extent and manner of site operations would make closure the most expensive. The estimate is based on having to close the entire Sector 1. The closure cost estimate includes the cost for evaluation, design, construction, contract administration, bonds, and legal fees.

Closure activities are outlined in Attachment H. This cost estimate, in current dollars, generally follows the outline presented in the TCEQ "Cost Estimate Handbook for Closure and Postclosure Care", Version 1. A summary of the estimated closure costs is presented in the following table. Calculations and supporting data for the closure cost estimate are included in Appendix J1. The cost will be adjusted annually as indicated in Section 4.

Closure Cost Estimate

No.	ITEM	COST
1.0	Engineering Costs	$ 329,418.90
2.0	Construction Costs	$ 3,260,620.00
	Engineering and Construction Total	$ 3,590,038.90
	10 % Contingency	$ 359,003.89
3.0	Administrative Costs	$ 107,701.17
	Total	$ 4,056,743.96

3 POSTCLOSURE CARE COST ESTIMATE

30 TAC §330.507

The postclosure care period is 5 years for a Type IV municipal solid waste facility. During this period, maintenance is required to assure the integrity and effectiveness of the final cover system and monitoring systems, erosion protection, and the stormwater drainage system. The estimated postclosure care cost is presented in the table below.

The postclosure care cost estimates are based on Attachment I and provide a cost for the routine operation, maintenance and monitoring of the final cover system, gas monitoring system, groundwater monitoring system, and stormwater drainage system. This estimate for routine maintenance and monitoring predicts the cumulative cost throughout the 5-year postclosure care period. Calculations and supporting data for the postclosure care cost estimate are included in Appendix J2. The costs will be adjusted annually as indicated in Section 4.

Postclosure Care Cost Estimate

No.	ITEM	ANNUAL COST
1.0	Engineering Costs	$ 33,346.40
2.0	Construction / Maintenance Costs	$ 57,949.00
	Subtotal	$ 91,295.40
	10% Contingency	$ 9,129.54
3.0	Administration	$ 9,129.54
	Annual Postclosure Costs	$ 109,554.48
	Total Postclosure Costs	$ 547,772.40

4 COST ESTIMATE ADJUSTMENTS

30 TAC §330.503 and §330.507

During the active life of the unit, Chisholm Trail Disposal, LLC will annually adjust the cost estimates for inflation within 60 days prior to the anniversary date of the establishment of the financial instrument(s). The adjustment may be made by recalculating the maximum costs of closure in current dollars, or by using an inflation factor derived from the most recent *Implicit Price Deflator for Gross National Product* published by the United States Department of Commerce in its Survey of Current Business. The inflation factor is the result of dividing the latest published annual deflator by the deflator for the previous year. The first adjustment is made by multiplying the closure and postclosure care cost estimate by the inflation factor. The result is the adjusted closure and postclosure care cost estimate. Subsequent adjustments are made by multiplying the latest adjusted closure and postclosure care estimate by the latest inflation factor.

An increase in the closure or postclosure care cost estimate and the amount of financial assurance will be made if changes to the final closure or postclosure care plan or the landfill conditions increase the maximum cost. A request for an increase in the cost estimate and financial assurance will be submitted as a permit modification. The closure and postclosure care cost will be evaluated annually, to determine if an increase in the closure or postclosure care cost is required as a result of continued landfill development.

A reduction in the closure or postclosure care cost estimate and the amount of financial assurance may be requested if the cost estimate exceeds the maximum costs of closure at any time during the remaining life of the unit or postclosure care remaining over the postclosure care period Chisholm Trail Disposal, LLC will submit written notice to the executive director of the detailed justification for the reduction of the cost estimates and the amount of financial assurance. A request for reduction in the cost estimate and financial assurance will be submitted as a permit modification.

5 FINANCIAL ASSURANCE

§§330.503 and 330.507

Financial assurance for closure and postclosure care for the facility will be established in accordance with 30 TAC Chapter 37, Subchapter R as related to Financial Assurance for Municipal Solid Waste Facilities. In accordance with §330.63(j), Chisholm Trail Disposal, LLC will submit a copy of the documentation required to demonstrate financial assurance at least 60 days prior to the initial receipt of waste.

CHISHOLM TRAIL DISPOSAL LANDFILL

APPENDIX J1
CLOSURE COST ESTIMATE CALCULATIONS

STATE OF TEXAS
GREGORY W. ADAMS
73356
LICENSED
PROFESSIONAL ENGINEER

Biggs & Mathews Environmental, Inc.
Firm Registration No. F-256
9/23/2025

CLOSURE COST ESTIMATE CALCULATIONS

30 TAC §330.503

The largest area ever requiring final cover is 167 acres. The closure cost estimate is based on Attachment H. The following sections describe the line items of the cost estimate calculations.

1.0 Engineering Costs

The engineering costs include surveying and evaluation of the entire facility having to be closed. However, the development of construction plans and construction quality assurance testing is limited to the area requiring final cover construction.

1.1 Topographic Survey

A topographic survey will be required to determine the existing grades of the landfill. The topographic survey will be used to evaluate permit compliance and to design the grading, final cover system, and drainage system. The cost of the topographic survey is based on the entire permit boundary.

1.2 Boundary Survey

A boundary survey is required for the filing of the affidavit of closure and deed record of any area of the site that has received waste. Other activities include the publication of the public notice of closing activities. The cost of the boundary survey is based on the entire permit boundary.

1.3 Site Evaluation

A site evaluation will be performed to identify waste disposal areas, analyze drainage and erosion protection, and to determine other site operational features that are not in compliance with the permit. The site evaluation also includes analysis of groundwater samples, gas probes, and review of the site operating record. The cost of the site evaluation is based on the entire permit boundary.

1.4 Development of Plans

The final closure plan will be revised to reflect the changes to the final grading and drainage plans, specifications for vegetation, and design of any other improvements to bring the site into compliance with the permit. Construction plans, specifications, and contract documents will be prepared in suitable detail to allow the project to be competitively bid. The cost of development of plans is based on the largest area requiring closure.

1.5 Administration

The consultant will advertise the project, receive the bids, evaluate the bids, award the closure construction contract, and administer the contract during construction. The cost of administration is calculated based on a percent of construction cost.

1.6 Closure Inspection and Testing

Closure inspection and testing includes observations by the professional of record during closure construction, thickness and permeability verifications, and preparation of a closure certification report. The cost of inspection and testing is based on the largest area requiring closure.

1.7 Groundwater Consultant

The groundwater monitor well system is provided in Attachment F and it is not anticipated that revisions will be necessary. The cost of a groundwater consultant is not required.

1.8 Permits

The consultant will prepare plans, specifications, and other documents necessary for compliance with applicable federal and state laws and requirements for the proper closure of the site (i.e., Stormwater Pollution Prevention Plan). The cost of permits is calculated based on the lump sum basis.

2.0 Construction Costs

Construction costs include construction and final closure costs for the largest area requiring final cover.

2.1 Final Cover System

The forced final closure scenario assumes that the largest area requiring final cover will include the entire waste disposal area. The final cover system will consist of an 18-inch thick infiltration layer and a 12-inch thick erosion layer.

2.1.1 Infiltration Layer

An 18-inch-thick infiltration layer, consisting of a clay material with a maximum permeability of 1 x 10^{-7} cm/sec, will be constructed over the area requiring final cover that has previously received intermediate cover. On-site materials will be acceptable for this application. The quantity of material required for the infiltration layer is based on the largest area requiring closure.

2.1.2 Erosion Layer

A 12-inch-thick erosion layer, consisting of earthen material capable of sustaining plant growth, will be placed over the infiltration layer. On-site materials will be acceptable for this application. The quantity of material required for the erosion layer is based on the largest area requiring closure.

2.2 Vegetation

Vegetative erosion protection will be established over the surface of the completed cover and general fill. The costs are based on seeding with native grasses and the application of appropriate fertilizer. The quantity for vegetation requirements is based on the largest area requiring closure.

2.3 Site Grading and Drainage

Site grading and drainage includes the final grading at the site, drainage improvements on the landfill cap, and sedimentation controls. The quantity of site grading is based on the largest area requiring closure.

2.4 Site Fencing and Security

Site fencing and security for the entire landfill will be in place at the permit boundary during the life of the facility. No additional expenses will be incurred for this item.

2.5 Groundwater Monitor Well Installation

Groundwater monitoring wells will have been installed during site development. No additional groundwater monitoring wells will be required to be installed.

2.6 Landfill Gas Probe Installation

Landfill gas monitoring probes will have been installed during site development. No additional landfill gas monitoring probes will be required to be installed.

2.7 Material Staging Areas

Material staging areas include the large item staging area and reusable materials staging area. All waste materials that are within the staging area will be disposed of at the active working face prior to closure.

3.0 Administrative Costs

3.1 Contract Performance Bond

The cost of a performance bond is based on a percent of the total cost of engineering and construction.

3.2 TCEQ Administration of Contracts and Legal Fees

An amount based on a percent of the total cost of engineering and construction has been included to account for TCEQ administration of contracts and legal fees.

Closure Cost Estimate

No.	ITEM	COST
1.0	**Engineering Costs**	
1.1	Topographic Survey	$ 6,526.00
1.2	Boundary Survey	$ 13,052.00
1.3	Site Evaluation	$ 8,709.70
1.4	Development of Plans	$ 29,225.00
1.5	Administration	$ 32,606.20
1.6	Closure Inspection and Testing	$ 233,800.00
1.7	Groundwater Consultant	$ -
1.8	Permit Compliance Package	$ 5,500.00
	Engineering Total	$ 329,418.90
2.0	**Construction Costs**	
2.1	Final Cover System	
2.1.1	Infiltration Layer	$ 1,603,200.00
2.1.2	Erosion Layer	$ 935,200.00
2.2	Vegetation	$ 467,600.00
2.3	Site Grading and Drainage	$ 233,800.00
2.4	Site Fencing and Security	$ -
2.5	Groundwater Monitoring Well Installation	$ -
2.6	Landfill Gas Probe Installation	$ -
2.7	Material Staging Areas	$ 20,820.00
	Construction Total	$ 3,260,620.00
	Engineering and Construction Total	$ 3,590,038.90
	10 % Contingency	$ 359,003.89
3.0	**Administrative Costs**	
3.1	Contract Performance Bond	$ 71,800.78
3.2	TCEQ Contract Administration/Legal Fees	$ 35,900.39
	Total	$ 4,056,743.96

CHISHOLM TRAIL DISPOSAL LANDFILL

APPENDIX J2
POSTCLOSURE CARE COST ESTIMATE CALCULATIONS

STATE OF TEXAS
GREGORY W. ADAMS
73356
LICENSED
PROFESSIONAL ENGINEER

Biggs & Mathews Environmental, Inc.
Firm Registration No. F-256
9/23/2025

POSTCLOSURE CARE COST ESTIMATE CALCULATIONS

30 TAC §330.63(j) and §330.507

The postclosure care period is 5 years for a Type IV municipal solid waste facility. Postclosure cost estimates were developed for the combined areas with final cover in place and largest area requiring closure. The following sections describe the line items of the postclosure cost estimate calculations.

1.0 Engineering Costs

1.1 Postclosure Plan

The postclosure plan provides a schedule for routine maintenance of the final cover system and the gas and groundwater monitoring systems. The Postclosure Plan is presented in Attachment I.

1.2 Site Inspections

Annual site inspections will be performed. Site inspections will identify areas experiencing settlement or subsidence, erosion or other drainage related problems, and will evaluate the condition of the gas monitoring system and groundwater monitoring system.

1.3 Correctional Plans and Specifications

Correctional plans and specifications include the costs for a consultant to prepare construction plans and specifications to correct problems identified during the site inspections. This cost is dependent upon the quality of care taken during the closure of the site and ongoing maintenance during previous postclosure care years. The cost may be significantly higher during earlier postclosure care years and be reduced to zero cost during the end of the postclosure care period.

1.4 Site Monitoring

Annual groundwater sampling and analysis will be performed for the groundwater monitoring wells. Quarterly gas monitoring will also be performed for the landfill gas monitoring probes and on-site buildings.

2.0 Construction and Maintenance Costs

Postclosure construction/maintenance will be required to correct problems identified during the site inspections and as specified by the correctional plans and specifications. These costs will also include ongoing site maintenance, cover and drainage maintenance, and annual seeding and mowing costs. Included in this item is the plugging of the groundwater monitoring wells and gas monitoring probes at the end of the postclosure care period.

2.1 Landfill Gas Control System

The passive landfill gas control system will be maintained through the postclosure care period. This cost will include ongoing maintenance to the passive landfill gas control system. Included in the cost of this item is the abandonment of the landfill gas vents at the end of the postclosure care period.

3.0 Administration

The cost for a third party to administer postclosure care activities is assumed at 10 percent of the annual postclosure costs.

Chisholm Trail Disposal Landfill
POSTCLOSURE COST ESTIMATE

Required: Estimate the cost to hire a third party to conduct postclosure care activities.

References: 1. Texas Natural Resources Conservation Commission, *Cost Estimate Handbook for Closure and Postclosure Care*, Version 1, August 1993.

Solution:

Postclosure care period =	5 years
Permit area =	251 acres
Waste footprint =	167 acres
Number of monitor wells =	29 wells
Number of gas probes =	13 probes
Number of LFG acres =	167 acres

No.	ITEM	ANNUAL QTY	UNIT	UNIT COST	TOTAL COST
1.0	**Engineering Costs**				
1.1	Postclosure Plan	1	LS	$ -	$ -
1.2	Site Inspections	251	ac	$ 16.00	$ 4,016.00
1.3	Correctional Plans and Specifications	167	ac	$ 36.00	$ 6,012.00
1.4	Site Monitoring				$ -
1.4.1	Groundwater Monitoring[1]	29	event	$ 555.20	$ 16,100.80
1.4.2	Landfill Gas Monitoring[2]	52	event	$ 138.80	$ 7,217.60
2.0	**Construction / Maintenance Costs**	167	ac	$ 173.50	$ 28,974.50
2.1	Landfill Gas Control System	167	ac	$ 173.50	$ 28,974.50
	Subtotal				$ 91,295.40
	Contingency	10	%		$ 9,129.54
3.0	**Administration**	10	%		$ 9,129.54
	Annual Postclosure Cost				$ 109,554.48
	Total Postclosure Cost				**$ 547,772.40**

***This postclosure cost estimate was developed in 2024 dollars.**

[1]Number of wells times 1 event per year

[2]Number of probes times 4 events per year

CHISHOLM TRAIL DISPOSAL LANDFILL
WISE COUNTY, TEXAS
TCEQ PERMIT NO. MSW 2421

PART IV – SITE OPERATING PLAN

Prepared for

CHISHOLM TRAIL DISPOSAL, LLC

September 2025
Technically Complete

GREGORY W. ADAMS
73356

Biggs & Mathews Environmental, Inc.
Firm Registration No. F-256
9/23/2025

Prepared by

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TEXAS BOARD OF PROFESSIONAL ENGINEERS AND LAND SURVEYORS
FIRM REGISTRATION NO. F-256 AND NO. 10194895

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STATE OF TEXAS
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9/23/2025

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CONTENTS

1 INTRODUCTION

30 TAC §§330.65, 330.121, 330.123, 330.127

This Site Operating Plan (SOP) has been prepared for the Chisholm Trail Disposal (CTD) Landfill consistent with 30 TAC §330.65. This SOP includes provisions for site management and site operating personnel to meet the general and site-specific requirements included in: 1) Subchapter D, §§330.121 through 330.179, relating to Operation Standards for Municipal Solid Waste Landfill Facilities and 2) Subchapter E, §§330.201 through 330.249, relating to Operational Standards for Municipal Solid Waste Storage and Processing Units for the day-to-day operation of the facility. This SOP will be retained on site throughout the active life of the facility and throughout the post closure care maintenance period.

This SOP provides guidance for site management and site operating personnel for daily operation of the CTD Landfill. This SOP also includes provisions for site management and site operating personnel to meet the general and site-specific requirements for the waste acceptance rate established in the permit.

In accordance with §330.123, the CTD will provide notice of construction of a new waste disposal areas in the form of a Soil Liner Evaluation Report (SLER) to the executive director for review 14 days prior to the placement of waste. The executive director has 14 days to provide a verbal or written response. If no response has been received by the end of the 14th day following the executive director's receipt of the report, the operator may begin placing waste. The provisions of this section are not applicable to the initial opening of a municipal solid waste landfill.

2 RECORDKEEPING REQUIREMENTS

30 TAC §330.125

2.1 Site Operating Record

The CTD Landfill will maintain the operating record for the facility on site. Documents that are considered part of the site operating record are listed in Table 1. In accordance with §330.125(b), the CTD Landfill will record and retain in the site operating record any and all records for those items listed in Table 1 within seven working days following completion or receipt of analytical data. The CTD Landfill will maintain the site operating record in an organized format, where information is easily locatable and retrievable. The site operating record will be furnished to the executive director upon request, and will be made available on site for inspection by the executive director.

In accordance with §330.125(d), the CTD Landfill will retain all information contained with the operating record and the different plans required for the facility for the life of the facility including the postclosure care period.

2.2 Personnel Training Records and Licenses

In accordance with §330.125(e), the CTD Landfill will maintain personnel training records in accordance with §335.586(d) and (e). Personnel training requirements will be consistent with Section 3. Personnel training records for current landfill personnel will be maintained and retained until closure of the facility. Records of former employees will be maintained for three years from the date the employee last worked at the facility. Records for each landfill personnel will include name, job title, job description, introductory training, continuing training, and documentation of training. In accordance with §330.125(f), the facility will maintain personnel operator licenses issued as required by 30 TAC Chapter 30 Subchapter F, relating to municipal solid waste facility supervisors. Personnel training records and personnel operator licenses will be maintained in the site operating record as listed in Table 1.

2.3 Alternative Schedules

In accordance with §330.125(g), the executive director may set alternative schedules for recordkeeping and notification requirements as specified in §330.125(a)-(f), except for notification requirements contained in §330.545 or landowners whose property overlies any part of the plume of contamination, if contaminants have migrated off site as indicated.

2.4 Annual Waste Acceptance Rate

As listed in Table 1, the CTD Landfill will maintain as part of the site operating record documentation of the annual waste acceptance rate for the facility in accordance with §330.125(h). Records will include maintaining the quarterly solid waste summary reports and the annual solid waste summary report as required by §330.675. The annual waste acceptance rate, as established by the sum of the previous four quarterly summary reports, will be evaluated by the CTD Landfill to determine if the waste acceptance rate exceeds the rate estimated in the permit application. Should an increase in waste acceptance be established, the facility will determine if the increase is due to a temporary occurrence. Should the waste acceptance rate exceed that established in the permit application, and not be due to a temporary occurrence, a permit modification would be prepared and filed within 90 days of the exceedance in accordance with then applicable TCEQ regulations to modify the permit, including the waste acceptance rate, and to propose changes, if necessary, to manage the increased waste acceptance rate to protect human health and the environment. An increase in the waste acceptance rate that is determined to be a temporary occurrence does not require the submittal of a permit modification. This section is not intended to make an estimated waste acceptance rate a limiting parameter of the permit.

The CTD Landfill is expected to initially receive approximately 234,000 tons of waste annually (about 750 tons per day). Based on projected waste acceptance rates, the maximum waste acceptance rate will reach approximately 460,000 tons per year (about 1,475 tons per day). The equipment listed in this SOP is sufficient to accommodate up to 624,000 tons per year or about 2,000 tons per day.

Table 1
Records to be Maintained in the Site Operating Record

Records to be Maintained in the Site Operating Record	Frequency	Rule Citation
Municipal Solid Waste Disposal Permit No. 2421	Approval of Permit, Modifications and Amendments	§330.125(a)
Part I – Site and Applicant Information		§330.125(a)
Part II – Existing Conditions and Character of the Facility and Surrounding Area		§330.125(a) and §330.125(b)(1)
Part III – Facility Investigation and Design		§330.125(a)
Attachment A – Site Development Plan Narrative		§330.125(a)
Attachment B – General Facility Design		§330.125(a)
Attachment C – Facility Surface Water Drainage Report		§330.125(a)
Attachment D – Waste Management Unit Design		§330.125(a)
Attachment E – Geology Report		§330.125(a)
Attachment F – Groundwater Sampling and Analysis Plan		§330.125(a)
Attachment G – Landfill Gas Management Plan		§§330.125(a) and 330.159
Attachment H – Closure Plan		§§330.125(a) and 330.125(b)(6)
Attachment I – Postclosure Plan		§§330.125(a) and 330.125(b)(6)
Attachment J – Cost Estimates for Closure and Postclosure Care		§§330.125(a) and 330.125(b)(7)
Part IV – Site Operating Plan		§330.125(a)
State and Federal Regulations		§330.125(a)
Location Restriction Demonstrations		§330.125(b)(1)
Inspection records, training procedures and notification procedures related to excluding the receipt of prohibited waste	Per occurrence	§330.125(b)(2)
Results from gas monitoring events	Quarterly	§§330.125(b)(3) and 330.159
Remediation plans relating to explosive and other gases	Per occurrence	§§330.125(b)(3) and 330.159
Groundwater monitoring and corrective action demonstrations, certifications, findings, monitoring, testing and analytical data	As required	§330.125(b)(5)
Closure and postclosure monitoring, testing, and analytical data	As required	§330.125(b)(6)

Table 1
Records to be Maintained in the Site Operating Record (continued)

Records to be Maintained in the Site Operating Record	Frequency	Rule Citation
Cost estimates and financial assurance documentation for closure and postclosure	Annually	§330.125(b)(7)
Facility operation, permit modification, approvals, and technical assistance correspondence and responses	Per occurrence	§330.125(b)(9)
Special waste manifests, shipping documents, trip tickets, and all other documents relating to special waste	Per occurrence	§330.125(b)(10)
Other documents specified in the permit or by the executive director	As required	§330.125(b)(12)
Personnel training records in accordance with §335.586(d)-(e)	As needed	§330.125(e)
Personnel operator licenses	As needed	§330.125(f)
Records to document the annual waste acceptance rate including quarterly solid waste summary reports and annual solid waste summary reports	Quarterly and annually	§§330.125(h) and 330.675
Load inspection records	Per occurrence	§330.127(5)(B)
Fire occurrence notices	Per occurrence	§330.129
Inspection records and training procedures relating to fire prevention and site safety	As needed	§330.129
Access control breach and repair notices	Per occurrence	§330.131
All site inspection and maintenance documentation noted in Section 8.27 – Site Inspection and Maintenance Schedule	As required	N/A
A record of each unauthorized material removal event	Per occurrence	§330.133(b)
A record of alternate operating hours	As required	§330.135(d)
Water, crude oil and/or natural gas well location and plugging reports	Within 30 days of discovery	§330.161(a)-(c)
Cover inspection records	As required	§330.165(h)
Contaminated water off-site disposal records	Per occurrence	N/A

3 PERSONNEL AND TRAINING

30 TAC §§330.127(1), (3), (4)

This SOP provides guidance for site management and site operating personnel for the daily operation of the CTD Landfill. This SOP also includes provisions for site management and site operating personnel to meet the general and site-specific requirements for the waste acceptance rate established in the permit.

3.1 Personnel

The CTD Landfill will be staffed with qualified individuals experienced with municipal solid waste disposal operations and earthmoving construction projects. See Figure 1 for the personnel organization. Refer to Table 2 for a summary of job descriptions, minimum qualifications, and required training for landfill personnel.

Landfill General Manager

The landfill general manager is responsible for overall facility management and is designated as the contact person for regulatory compliance matters. The landfill general manager is responsible for assuring that adequate personnel, training programs, and equipment are available to provide facility operation in accordance with Part III, Part IV, and the TCEQ regulations. The landfill general manager may also serve as the landfill manager.

Landfill Manager

The landfill manager is responsible for daily operations, administers the facility's SOP, and also serves as the emergency coordinator. The landfill manager may designate other personnel to assist with the daily site operating requirements. The landfill manager will have experience in municipal solid waste disposal operations, specifically including landfill operations, and earthmoving operations. The landfill manager will obtain and maintain the applicable required municipal solid waste operator license consistent with the requirements of §§30.201, 30.207, and 30.210 through 30.214. The landfill manager may obtain the applicable required license as a provisional license, consistent with the requirements of §30.211.

Equipment Operators

Equipment operators are responsible for the safe operation of the equipment. As the personnel most closely involved with the actual landfill operation, these employees are responsible for being alert to potentially dangerous conditions, or careless and improper actions on the part of non-employees and other persons while on the premises. Equipment operators monitor and direct unloading vehicles, visually observe for unauthorized wastes, and are also responsible for maintenance, construction, litter abatement, and general site cleanup. The equipment operators will intervene as necessary to prevent accidents and report unsafe conditions immediately to the landfill manager. Equipment operators report to the landfill manager. Equipment operators, at a minimum, must be experienced in the operation of heavy equipment, experienced in earthmoving operations, and demonstrate the ability to be trained in municipal solid waste disposal operations. Equipment operators will have a minimum of six months of experience in heavy equipment operation or on-the-job training by the landfill manager, and training by the landfill manager in SOP requirements for daily cover and unauthorized waste.

Gate Attendants

Gate attendants are primarily responsible for maintaining complete and accurate records of vehicles and solid waste entering the facility. Gate attendants will be trained in site safety procedures, to visually check for unauthorized wastes, to weigh vehicles, measure waste volumes if necessary, and to collect waste disposal fees. A gate attendant will be present all hours the CTD Landfill is open to the public. Gate attendants report to the landfill manager. Gate attendants will have a basic understanding of accounting principles, and communication skills.

Laborers

Laborers may be employed from time to time to perform maintenance, construction, litter abatement, and general site cleanup. Laborers may be permanent or part-time.

3.2 Training

Landfill personnel will have a basic understanding of the contents of this SOP that are relevant to the position for which they are employed. The landfill manager will also have a basic knowledge of Part III. Landfill personnel will be trained consistent with the applicable training requirements as defined in §335.586(a) and (c) and listed in Table 2.

Landfill personnel will receive training through a combination of informal directions, classroom instruction, and on-the-job training. The training program will provide instruction to personnel to allow performance of their duties to ensure facility compliance. This training program will be directed by a senior staff member of the CTD Landfill organization. Training will be conducted by landfill staff or consultants that are experienced and trained in municipal solid waste management procedures. The landfill personnel will be trained in procedures relevant to the position for which they are employed.

In-house training will address the following topics:

- Municipal Solid Waste Permit No. 2421
- Site Development Plan
- Site Operating Plan
- Facility emergency monitoring equipment and plans

- Communication and alarm systems, if any
- Customer notification and load inspection procedures
- Identification of unauthorized/prohibited wastes including, but not limited to, putrescible solid wastes, hazardous wastes, PCB wastes, and radioactive wastes
- Waste handling procedures
- Health and safety
- Fire Protection Plan
- Equipment operation and maintenance
- Stormwater Pollution Prevention Plan
- Recordkeeping

The training program will also incorporate the requirements of §335.586(a)(2) to train landfill personnel to be able to respond effectively to emergencies by familiarizing personnel with emergency procedures, emergency equipment, and emergency systems, including:

- Procedures for using, inspecting, repairing, and replacing facility emergency and monitoring equipment
  - Communication and alarm systems, if any
- Response to fires or explosions
- Response to groundwater contamination incidents
- Shutdown of operations

Landfill personnel must successfully complete the in-house training program within six months of employment. The in-house training program consists of training and safety meetings conducted at least once per month. The topics addressed are the topics identified as part of the training program above. Personnel will be trained on topics relevant to their position. Landfill personnel who have not successfully completed the in-house training program will not work in unsupervised positions, in accordance with §330.125(e) and §335.586. On-going regular training and safety meetings are scheduled monthly. Should a monthly meeting be cancelled, it will be rescheduled or combined with the next regular meeting. Documentation of training will be placed in the site operating record as required by Section 2.2.

Figure 1

Organizational Chart

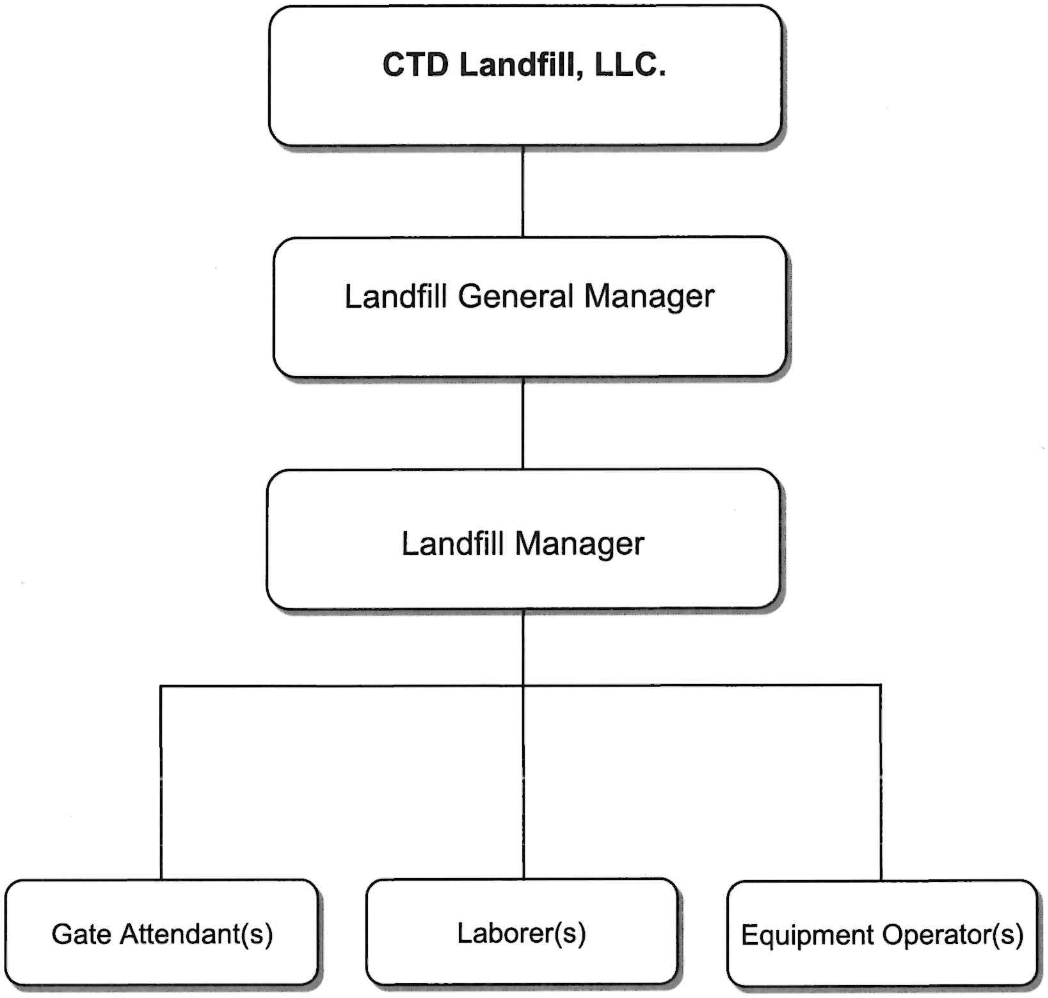

Table 2
Landfill personnel Summary$^{(1)}$

Position	Summary of Job Description	Minimum Qualifications	Required Training
Landfill General Manager	The landfill general manager is responsible for: • Overall facility management and is the designated contact person for regulatory compliance matters • Assuring that adequate personnel, training programs, and equipment are available to provide facility operation in accordance with this SOP, the SDP, TCEQ regulations, and other applicable local, state, or federal regulations • The hiring and terminating of other landfill personnel	• A high school diploma or equivalent • Experience in MSW disposal operations	• Site Orientation • Site Operations • Hazardous Waste Identification • Safety • Fire Prevention • Load Inspection • Prohibited Wastes • Emergency Response • SPCC • SWPPP • Litter Control • Random Inspections
Landfill Manager	The landfill manager is responsible for: • Daily operations, administration of facility's SDP, SOP, and serving as the emergency coordinator • Maintaining the site operating record and required logs • Actual landfill operations • Directing the equipment operators on a daily basis regarding waste disposal operations including the working face, excavation operations, and placement of weekly and intermediate cover • Personnel safety during waste and cover constructions • Other tasks as required by the landfill general manager	• A high school diploma or equivalent • Experience in earthmoving operations • One year of landfill operation experience • Experience in MSW disposal operations • Obtain and maintain a Class A license as defined in §30.213	• Site Orientation • Site Operations • Hazardous Waste Identification • Safety • Fire Prevention • Load Inspection • Prohibited Wastes • Emergency Response • SPCC • SWPPP • Litter Control • Random Inspections

Table 2
Landfill Personnel Summary[(1)] (continued)

Position	Summary of Job Description	Minimum Qualifications	Required Training
Equipment Operator	The equipment operator is responsible for: • The safe operation of equipment • Being alert for potentially dangerous conditions, or careless and improper actions on the part of non-employees and other persons while on the premises • Monitoring and directing unloading vehicles • Performing random load inspections • Maintenance, construction, litter abatement, and general site cleanup • Intervening as necessary to prevent accidents and report unsafe conditions immediately to the landfill manager or landfill general manager • Other tasks as required by the landfill manager	• Minimum six months experience in heavy equipment operation • Training by the landfill manager in SOP requirements for weekly cover and unauthorized waste	• Site Orientation • Hazardous Waste Identification • Safety • Fire Prevention • Load Inspection • Prohibited Wastes • Emergency Response • Random Inspections
Gate Attendant	The gate attendant is responsible for: • Being stationed at the site entrance • Maintaining complete and accurate records of vehicles and solid waste entering the facility • Visually checking for unauthorized wastes • Weighing vehicles or measuring waste volumes (if necessary) • Collecting waste disposal fees • Directing vehicles to the working face • Controlling site access • Providing general customer direction and information • Reviewing manifests and other shipping documents • Reviewing and confirming special waste documents • Other tasks as required by the landfill manager	• Basic understanding of accounting principles • Basic communication skills	• Site Orientation • Hazardous Waste Identification • Safety • Fire Prevention • Load Inspection • Prohibited Wastes • Emergency Response • SPCC • Random Inspections

Table 2
Landfill Personnel Summary[1] (continued)

Position	Summary of Job Description	Minimum Qualifications	Required Training
Laborers	The laborers are responsible for: • Collecting litter • Directing vehicles at the working face • Other tasks as needed including but not limited to maintenance, construction, litter abatement, and general site cleanup	• Ability to be trained in completing the assigned tasks	• Site Orientation • Safety • Fire Prevention • Emergency Response • Litter Control

[1] More detailed job descriptions along with written descriptions of the type and amount of introductory and continued training provided to each employee will be maintained in the site operating record.

4 EQUIPMENT

30 TAC §330.127(2)

Sufficient equipment will be provided to conduct site operations in accordance with the design and permit conditions. The following list of equipment is expected to be routinely available for use at the facility. Equipment requirements may vary in accordance with the waste acceptance rate at any given time. Additional equipment will be provided as required for increasing volumes of incoming solid waste. Other equivalent types of equipment by other manufacturers may be substituted on an as-needed basis. The minimum number of pieces of equipment to be provided for daily operations, based on estimated waste acceptance rates is listed in Table 3. The equipment size, number, type, and manufacturer will vary during site operations based on operational practices and the annual waste acceptance rate.

Compactors are typically used for spreading and compacting the refuse, compacting the cover material, and fire control. Dozers are typically used for soil movement and placement, to place and remove intermediate cover, for emergency waste compaction, and for fire control. Excavators and haul trucks are typically used for excavating both the cover material used in site operations and soil from the future disposal areas and for fire control. The landfill will use an excavator and haul trucks for soil excavation and movement. The water truck will be used for dust control, moisture conditioning of soil materials as necessary, fire control measures at the working face, haul water for irrigation, and to supply construction water. The water truck will not be used to haul contaminated water. A farm tractor with various attachments will be used for certain tasks. Tasks include mud removal from site roads, mowing vegetative cover and other vegetative growth, site maintenance, erosion control placement, litter control, and other miscellaneous tasks. A tractor and pickup trucks will be used as needed for miscellaneous maintenance, litter control, and personnel use. Backup equipment will be provided from contractors, or local rental companies in the event of a breakdown or maintenance to avoid interruption of waste services.

Table 3
Equipment Dedicated to the CTD Landfill(1)

Equipment (2)	Typical Size (3)	Number (4)		Function
		Less than 250,000 tons per year	More than 250,000 tons per year	
Compactor	CAT 826	1	2	Waste compaction and fire protection
Dozer	CAT D6 CAT D7	1 1	1 2	Soil movement and placement, excavation maintenance, waste spreading and covering, and fire protection
Excavator	CAT 330BL	1	1	Soil excavation
Haul Truck(2)	10 to 40 ton	1	2	Soil hauling and fire protection
Farm Tractor	35 HP	1	1	Miscellaneous maintenance
Pickup Truck(s)	½ ton	1	1	Personnel use, litter control, maintenance
Water Truck	1,000 gallons	1	1	Fire control, dust control, earthfill compaction
Pump	10 to 500 gpm	1	1	Stormwater pumping

(1)The manufacturers of heavy equipment and miscellaneous vehicles and equipment may vary.

(2) Backup equipment will be provided from contractors or local rental companies in the event of equipment breakdown or maintenance to avoid interruption of waste services.

(3) Typical size is the minimum size to be provided.

(4) The number stated for each piece of equipment is the minimum number for each piece of equipment to be provided.

5 DETECTION AND PREVENTION OF DISPOSAL OF PROHIBITED WASTES

30 TAC §330.127(5)

5.1 General

The following procedures for the detection and prevention of the disposal of prohibited wastes, including regulated hazardous waste, as defined in 40 CFR Part 261, and polychlorinated biphenyls (PCB) waste, as defined in 40 CFR Part 761 unless authorized by the United States Environmental Protection Agency (EPA) will be implemented at the CTD Landfill. The detection and prevention program includes training landfill personnel to know in detail what the regulated wastes are, how to perform a random inspection, how to control site access, what training will be provided for landfill personnel, and what procedures are required in the event of identification of prohibited wastes. The detection and prevention program includes:

- Random inspections of incoming loads
- Records of all inspections
- Training for appropriate landfill personnel (gatehouse attendant, equipment operators) to recognize prohibited waste, regulated hazardous waste, and PCB waste
- Notification to the TCEQ executive director of any incident involving the receipt or disposal of regulated hazardous waste or PCB waste at the landfill
- Provisions for remediation of the incident
- Identification and sampling to ensure no free liquids (as determined by the paint filter test), including unstabilized sludges, will be disposed of.

5.2 Load Inspection Procedure

Properly trained and qualified landfill personnel will visually observe incoming waste loads at the working face. All vehicles, including compactor vehicles, will be visually observed as waste is discharged at the working face. Should any indication of prohibited waste be detected, or as directed by the landfill manager, landfill personnel will stop unloading and conduct a thorough evaluation of the load. The driver will be directed to an area located near the working face over an approved lined area, where the balance of the load will be discharged from the vehicle. Landfill personnel will break up the waste pile and inspect the material for any prohibited waste. Known prohibited waste will be placed back into the vehicle and the driver will be instructed to depart the site. Should any regulated hazardous waste be detected, the entire load will be refused and recoverable materials will be loaded back into the waste hauling vehicle.

In addition to the above procedure, incoming loads will be inspected on a random basis. The landfill manager will be responsible for determining the random inspection schedule. The driver of the randomly selected load will be notified at the gatehouse or at the working face and instructed to proceed to a load inspection area located over an approved lined area. The driver will be directed to discharge the load from the vehicle on the designated load inspection area. Landfill personnel will break up the waste pile and inspect the waste material for any prohibited waste. Known prohibited waste will be placed back into the vehicle and the driver will be instructed to depart the site. Should any regulated hazardous waste be detected, the entire load will be refused and recoverable materials loaded back into the waste hauling vehicle.

5.3 Recordkeeping

Load inspection reports, recorded on standardized forms, will be maintained in the site operating record. The reports will include at a minimum the date and time of inspection, the name and address of the hauling company and driver, the type of vehicle, the size and source of the load, contents of the load, indicators of prohibited waste, and results of the inspection. A copy of the typical load inspection report form is included in Appendix IVA.

The TCEQ will be notified whenever regulated hazardous or PCB waste is detected. Records of the notification will be kept in the site operating record and will include the date and time of notification, the individual contacted, and the information reported.

Personnel training records will be maintained in the site operating record and will include evidence of successful completion of the training, the type of training received, and the name of the instructor.

5.4 Training

The landfill general manager, landfill manager, equipment operators, and gate attendants will be trained in the following areas:

- Customer notification and load inspection procedures
- Identification of regulated hazardous, PCB, radioactive wastes, and prohibited waste
- Waste handling procedures
- Health and safety procedures
- Recordkeeping

Documentation of training will be placed in the site operating record.

5.5 Notification

The TCEQ executive director and, if applicable, any local pollution agency with jurisdiction that has been requested to be notified will be notified of any incident involving the receipt or disposal of regulated hazardous waste or PCB waste at the landfill. Records of notifications will be maintained in the site operating record including the date and time of notification, the individual contacted, and the information reported.

5.6 Managing Prohibited Wastes

In accordance with §330.15(e), the following wastes are prohibited and will not be accepted at this facility:

(1) A lead acid storage battery shall not be intentionally or knowingly offered by a generator or transporter for disposal at a municipal solid waste landfill or incinerator, and/or shall not be intentionally or knowingly accepted for disposal.

(2) Do-it-Yourself (DIY) used motor vehicle oil shall not be intentionally or knowingly offered by a generator or transporter for disposal at a municipal solid waste landfill, either by itself or mixed with other solid waste, and/or will not be intentionally or knowingly be accepted for disposal, unless the mixing or commingling of used oil with solid waste that is to be disposed of in a landfill is incidental to, and the unavoidable result of, the mechanical shredding of motor vehicles, appliances, or other items of scrap, used, or obsolete metals.

(3) Used oil filters from internal combustion engines will not be intentionally or knowingly accepted for disposal at this facility except as provided in 30 TAC §330.171 (relating to Disposal of Special Wastes).

(4) Whole used or scrap tires will not be intentionally or knowingly accepted for disposal unless processed prior to disposal in a manner acceptable to the executive director. Scrap tires identified during landfill operations and generated through maintenance will not be accumulated or stored on site.

(5) Refrigerators, freezers, air conditioners, and any other items containing chlorinated fluorocarbons (CFC) will not be knowingly accepted for disposal.

(6) Liquid Waste

(7) Regulated hazardous waste as defined in 30 TAC §330.3.

(8) Polychlorinated biphenyls (PCB) wastes, except as permitted under 40 CFR Part 761.

(9) Radioactive substances as defined in Chapter 336, except as authorized in Chapter 336 or that are subject to an exemption of the Department of Health Services.

In addition, this facility will not accept for disposal putrescible wastes, special wastes, including Class 1 industrial solid wastes.

Known prohibited wastes detected during the inspection will be returned immediately to the hauler. If the hauler is not available, the waste will be safely stored until provisions for removal can be arranged.

If prohibited wastes are received and/or disposed of in the landfill, the TCEQ will be notified. As soon as is practical, the prohibited waste will be removed from the site and arrangements made for its proper management at an approved facility.

If regulated hazardous waste, PCB wastes, or radioactive wastes are discovered at the active working face, the landfill office and site manager will be immediately notified. The prohibited waste will be separated or isolated from other municipal solid waste, if practical, by landfill personnel trained in proper handling of hazardous waste, PCB wastes, or radioactive wastes. The TCEQ will be notified if hazardous waste, PCB wastes, or radioactive wastes are discovered at the active working face. The waste will be manifested and transported to an approved facility for disposal. Should an incident occur at the facility involving the removal of hazardous waste, PCB wastes, or radioactive wastes requiring clean-up, a remediation plan will be developed and submitted to the TCEQ for approval.

6 GENERAL INSTRUCTIONS

30 TAC §330.127(6)

6.1 General Site Safety

Site safety will be promoted by properly trained personnel using well maintained equipment to perform standard work procedures. Site safety will be enhanced by limiting access to the active areas to only authorized personnel. In the event of an emergency, planned emergency response procedures will be followed. Well maintained equipment is vital to the safe conduct of daily landfilling operations. Therefore, all site equipment will be maintained in proper working order and all safety guards, backup alarms, and engine kill switches will be operational. Equipment operators will perform an equipment check at the beginning of each workday. Problems will be reported to the landfill manager. Fire extinguishers and first aid kits will be maintained by landfill personnel.

Access to the site will be limited to authorized personnel as described in Section 8. Access is controlled by a combination of signs and physical barriers. Landfill personnel should be alert to the entrance of anyone into prohibited areas.

In the event of an emergency, landfill personnel will assess the situation, notify the landfill manager or designated supervisor, and take appropriate actions such as rendering aid, calling for assistance, or closing access to the emergency scene. Emergency numbers will be posted beside the telephone in the site office.

Office	Phone
Ambulance	911
Wise County ESD #1.	911 or 940-215-7937
Wise County Sheriff's Office	911 or 940-627-5971

6.2 Preparedness and Prevention Measures

Preparedness and prevention measures will minimize both the frequency and severity of accidents and emergency situations threatening human health. Preparedness and prevention measures depend largely on the attentiveness and state of readiness of landfill personnel.

General preparedness and prevention measures that will be followed are:

- Employee breaks or rest periods will be provided to minimize fatigue, improve alertness, and thereby reduce accident potential.
- Access controls will provide for the safety of non-landfill personnel.

- Routine preventive maintenance of equipment will be provided.

- Weekly site inspections of the working areas will be performed by the landfill manager or designated supervisor.

- Appropriate personnel safety equipment will be kept onsite and maintained in good repair. Landfill personnel will be furnished with hard hats, dust and hearing protection, and safety glasses as needed.

- Adequate turning area for hauling vehicles will be provided.

- Scavenging and unauthorized salvaging will not be allowed and individuals will be required to stay close to their vehicles for their own protection.

- Waste unloading will be restricted to designated areas only.

- Landfill personnel will be alert for possible hazardous or other unauthorized wastes.

- Nonapproved wastes will be controlled or contained and removed as necessary.

- Smoking is not allowed on the active areas of the landfill.

Preventative measures that will be followed in the gatehouse include the following:

- Visually screen incoming waste loads for unauthorized wastes.

- Monitor to see that all wastes loads are adequately covered, or otherwise protected or contained.

- Visually observe incoming vehicles for evidence of improper operation, faulty equipment, or other conditions that could be hazardous to personnel or other persons onsite.

- Maintain access to appropriate emergency equipment and first-aid materials.

- Provide emergency telephone numbers that are conspicuously posted in the gatehouse.

- Display signs warning transporters that wastes including regulated hazardous wastes, PCB wastes, putrescible wastes, and other nonallowable special wastes are prohibited.

Landfill entrance road, haul road, and access road preventative measures include the following:

- Display 25-mph speed limit, directional, and other precautionary signs.

- Provide road passable for two-way traffic.
- Maintain roadway free from obstructions.
- Enforce requirements for safe operation of vehicles onsite.

7 FIRE PROTECTION PLAN

30 TAC §330.129

7.1 Fire Prevention and Preparedness Procedures

The following steps will be taken regularly by designated landfill personnel in connection with fire prevention and preparedness:

- Open burning of waste is prohibited at all times.
- Incoming loads with burning waste will be prevented from being dumped in the active area of the landfill. The gate attendants and equipment operators will be alert for signs of burning waste such as smoke, steam, or heat being released from incoming waste loads.
- Should an incoming load with burning waste be observed at the gatehouse or active working face, the gate attendants or equipment operator will direct the driver to a designated area away from the active working face to unload. The burning waste will then be extinguished with water, fire extinguishers, or will be covered with soil to smother the fire.
- Fuel spills will be contained and cleaned up immediately.
- Dead trees, brush, or vegetation adjacent to the active waste disposal area will be removed immediately, and grass and weeds mowed so that forest, grass, or brush fires cannot spread to the landfill.
- Smoking is not allowed on the active areas of the landfill, refueling area, or other fire sensitive areas of the landfill. Smoking may be allowed by the landfill manager in designated areas only.
- The site will be equipped with fire extinguishers in appropriate locations. Each fire extinguisher will be fully charged and ready for use at all times. Each extinguisher will be inspected on an annual basis and recharged as necessary. These inspections will be performed by a qualified service company, and all extinguishers will display an updated inspection tag. Inspection and recharging will be performed following each use. The gatehouse and all landfill equipment and vehicles will be equipped with fire extinguishers.
- A common firefighting technique that can be quickly employed to fight a landfill fire is smothering with soil. The faster that soil can be placed over the fire, the more effective this method will be in controlling and extinguishing the fire. The stockpiled weekly cover may be used for firefighting purposes.

- A source of earthen material will be maintained so that it is available at all times to extinguish a fire. At least two separate soil sources will be provided. A stockpile will be provided adjacent to the working face, and a second soil stockpile or soil borrow source will be provided within 2,500 feet of the active working face. The landfill equipment conducting daily waste filling operations will be suitable for placement of additional soil from the earthen sources for fire control.

- The total volume of earthen material available from the two stockpiles will be sized to cover the working face with a minimum 6-inch layer of earthen material.

- Based on achievable production rates, the landfill equipment identified in Table 4-1 is sufficient to cover the active working face with a minimum 6-inch soil layer from an earthen material stockpile within one hour of detecting a fire, as demonstrated in Appendix IVB.

- The active working face will be limited to the total capacity of the dozer and compactor capacity and the excavator and haul truck capacity unless larger equipment or additional capacity is provided.

- An adequate supply of water under pressure is available for firefighting purposes for the storage and processing facilities located within the landfill footprint, the Large Item Staging Area, Citizen's Convenience Center, and Clean Wood Staging Area. The supply of water under pressure is provided by the water truck as identified in Table 3 and from the fire hydrant adjacent to County Road 4668.

7.2 Specific Fire-Fighting Procedures

The following procedures will be followed in the event of a fire:

- If a fire occurs on a vehicle or piece of equipment, the equipment operator should bring the vehicle or equipment to a safe stop. If the safety of personnel will allow, the vehicle must be parked away from fuel supplies, uncovered solid wastes, and other vehicles. The engine should be shut off and the brake engaged to prevent movement of the vehicle or piece of equipment. Fire extinguishers should be used to extinguish the fire if possible, without risk to the equipment operator.

- Incoming loads with burning waste will be prevented from being unloaded in the active working face of the landfill. The gate attendant and equipment operators will be alert for signs of hot loads, such as smoke, steam, or heat being released from incoming waste loads. Should a load with burning waste be observed at the gate or active working face, the gate attendant or equipment operator will direct the driver to a designated area away from the active working face to unload. The load will be covered with soil to smother the fire.

- If a fire is in the working face, the burning area should be isolated or pushed away from the active working face before the fire can spread to other areas of the working face. If isolating or pushing the fire is not feasible or unsafe, the working face should immediately be covered with earthen material from the stockpile to smother the fire.

- Firefighting methods include smothering with soil, separating burning material from other waste, and spraying with water from the water truck or water pumped from nearby ponds, excavations or the fire hydrant. If detected soon enough, a small fire may be fought with a handheld fire extinguisher. Fire extinguishers will be located at the gatehouse and all landfill equipment and vehicles. Under this circumstance, the fire area should also be watered or otherwise controlled to ensure that the fire is out.

7.3 General Rules for Fires

The following rules will be implemented in the event of a fire at the CTD Landfill:

- Immediately contact the gatehouse and landfill manager.
- Equipment operators will be equipped with two-way radios or cell phones.
- Alert other landfill personnel.
- Assess extent of fire, possibilities for the fire to spread, and alternatives for extinguishing the fire.
- If it appears that the fire can be safely fought with available fire-fighting devices until arrival of the Fire Department, attempt to contain or extinguish the fire.
- If landfill personnel cannot extinguish the fire, contact the Wise County ESD Fire Station #1 by calling 911 or 940-215-7937.
- Upon arrival of Fire Department personnel, direct them to the fire and provide assistance as appropriate.
- Do not attempt to fight the fire alone.
- Do not attempt to fight the fire without adequate personal protective equipment.
- Be familiar with the use and limitations of fire-fighting equipment available onsite.

7.4 Fire Protection Training

Landfill personnel will be trained in the following topics:

- Identification of burning waste, smoke, steam, or heat being released from incoming loads
- Procedures to prevent and contain fuel spills

- Fire prevention
- Fire safety
- Firefighting procedures with fire extinguishers, soil, and water as appropriate
- Notification procedures should a landfill fire be observed

In addition, information will be provided to the local fire department regarding waste disposal operations, fire sources, and firefighting techniques related to landfills. Documentation of training will be placed in the site operating record in accordance with Section 2.2.

7.5 TCEQ Notification

The CTD Landfill will make every reasonable effort to contact the TCEQ regional office immediately upon detection of a fire, if the fire is not extinguished within 10 minutes of detection. At a minimum, the TCEQ regional office will be contacted no later than 4 hours by phone, and in writing within 14 days. The notification will include a description of the fire and resulting response.

8 OPERATIONAL PROCEDURES

30 TAC §§330.131 – 330.175

8.1 Access Control

Public access to the landfill will be controlled by the perimeter fence located along the permit boundary. Access to the landfill from CR 4668 is limited to the entrance road through the gatehouse area. The gate attendant controls access and monitors all vehicles entering and exiting the site.

8.1.1 Site Security

Site security measures are designed to prevent unauthorized persons from entering the site, to protect the facility and its equipment from possible damage caused by trespassers, and to prevent disruption of facility operations caused by unauthorized site entry. Unauthorized entry into the site is minimized by controlling access to the landfill site with the perimeter fence and the entrance gate. A perimeter fence is located along the permit boundary on the north, south, east, and west sides of the site. Perimeter fencing consisting of barbed wire, woven wire, wooden fencing, plastic fencing, pipe fencing, or other suitable material may also be provided. A gate constructed of suitable fencing materials is located on the entrance road. Entrance to the landfill is monitored by a gate attendant during site operating hours. Outside operating hours, the gate on the entrance road will be locked.

Entry to the active portion of the site will be restricted to designated personnel, approved waste haulers, and properly identified persons whose entry is authorized by site management. Visitors may be allowed on the active area only when accompanied by a site representative.

8.1.2 Traffic Control

Access to the landfill gate will be provided via the entrance road from CR 4668. The gate attendant will restrict site access to authorized vehicles and direct these vehicles appropriately. Waste hauling vehicles will be directed to appropriate fill areas by signs located along the landfill haul road and access road. These vehicles will deposit their loads and depart the site. Private, commercial, or public solid waste vehicles will not be allowed access to any areas other than the active portion of the landfill. Landfill personnel will provide traffic directions as necessary to facilitate safe movement of vehicles. Within the site, signs will be placed along the landfill haul road and access road at a frequency adequate for users to be able to understand where disposal areas are and which roads are to be used.

8.1.3 Inspection and Maintenance

The perimeter fence and gate will be inspected twice monthly. Refer to Section 8.27 for site inspection and maintenance schedule. Maintenance will be performed as necessary.

Should a breach be detected, it will be permanently repaired within 8 hours of detection and notification is not required. If the permanent repair is not made within 8 hours of detection, the TCEQ regional office, and any local pollution agency with jurisdiction that has requested to be notified, will be notified within 24 hours. Temporary repairs will be performed within 24 hours of detection and permanently repaired within the time specified to the regional office.

8.2 Unloading of Waste

The landfill is authorized to receive municipal solid waste and Class 2 and Class 3 industrial solid waste consisting of construction or demolition waste, brush and rubbish. The categories of wastes that are prohibited at this site by state and federal regulations are discussed in Section 5. Special and industrial wastes will not be handled at this landfill, except in accordance with TCEQ regulations and Sections 8.21 and 8.22. Wastes generated by the facility will be processed or disposed of at an authorized facility.

Trained personnel will monitor the incoming waste on the trucks at the gatehouse and at the unloading area/active working face. Trained personnel will be on duty at the working face during waste acceptance hours to direct and observe waste unloading. Trained personnel at the active working face will have the authority and responsibility to reject loads which contain prohibited wastes with approval of the landfill manager. The personnel will also have the authority to require the hauler or transporter to remove prohibited waste immediately upon discovery. Trained personnel at the active working face will immediately notify the landfill manager of suspected prohibited waste. The landfill manager may assess appropriate surcharges to the waste hauler, transporter, or generator. The landfill manager will direct staff to remove or manage prohibited waste appropriately.

The unloading of solid waste in an unauthorized area is prohibited. Solid waste unloading will be controlled to prevent disposal in locations other than those specified by site management. In accordance with 30 TAC §330.3, the following definitions apply to the types of waste that may be disposed:

- **Brush** – Cuttings or trimmings from trees, shrubs, or lawns and similar materials.
- **Construction or demolition waste** – Waste resulting from construction or demolition projects; includes all materials that are directly or indirectly the byproducts of construction work or that result from demolition of buildings and other structures, including, but not limited to, paper, cartons, gypsum board, wood, excelsior, rubber, and plastics.
- **Rubbish** – Nonputrescible solid waste (excluding ashes), consisting of both combustible and noncombustible waste materials. Combustible rubbish includes paper, rags, cartons, wood, excelsior, furniture, rubber, plastics, brush, or similar materials; noncombustible rubbish includes glass, crockery, tin cans, aluminum cans, and similar materials that will not burn at ordinary incinerator temperatures (1,600°F to 1,800°F)

Any waste deposited in an unauthorized area will be promptly removed and disposed of properly at the active working face. There may be two unloading areas; one for normal operations and one for wet weather and/or natural disaster debris. The size of the working faces will be limited by the availability and capacity of site equipment to place cover soil, and the location of soil stockpiles, including those adjacent to the working face. The maximum size of the unloading area will be no larger than can be covered with soil to a depth of 6 inches within 1 hour with the equipment and soil borrow sources that are available.

The large item staging area for large items and white goods may be provided near the active working face prior to disposal. The maximum size of the large item staging area will be 100 feet by 100 feet. Control will be used to confine the large item staging area to an area consistent with the rate of incoming large items and white goods while allowing for safe and efficient operation. The large item staging area is further discussed in Section 8.9 and Section 8.26.1.

The reusable materials staging area for inert materials will be located within the waste disposal footprint and will be relocated as the active working face moves. The size of the stockpiles may vary depending on the amount of materials received at any given time. The reusable materials staging area is further discussed in Section 8.26.2.

Any prohibited waste that is not discovered by the operators until after it is unloaded shall be returned to the vehicle that delivered the waste. The generator shall be responsible for the proper transportation and disposal of this rejected waste. An effort shall first be made to identify the entity that deposited the prohibited waste and have them return to the site and properly transport and dispose of the waste. In the event that the transporter of the prohibited waste cannot be located or refuses to remove the prohibited waste from the site, landfill personnel will properly manage the prohibited waste and arrange for its off-site disposal at an authorized facility. A record of unauthorized waste removal will be maintained in the site operating record.

Any wastes accepted that may generate significant odors during waste disposal activities will be managed in accordance with Section 8.10.

The CTD Landfill will not accept wastes from completely enclosed containers or enclosed vehicles in accordance with §330.133(g) except as specified in Section 8.20. In addition, the CTD Landfill will provide the following during all periods of operation:

- A written procedure retained on site to ensure that containers with any putrescible wastes are not accepted. This might include or be a combination of a manifest system, surcharges, contractual agreements with transporters, or other acceptable means. This written procedure will be made available for review by the executive director. The procedure will be followed and will be modified as necessary to accomplish its purpose.

- A written procedure retained on site for the removal of any putrescible wastes and other prohibited waste to an approved disposal facility will specify the means to be used for removal of putrescible wastes illegally disposed of at the site. In all cases, such wastes will be removed from the active working face immediately upon discharge and returned to the offending transporter's vehicle or placed in suitable collection bins and will not be allowed to remain on the site in the collection bins for more than 24 hours. The equipment necessary to meet the chosen alternative will be specified and will be on site and operable during operating hours. This written procedure will be made available for review by the executive director. The procedure will be followed and will be modified as necessary to accomplish its purpose.

- Trained personnel at the active working face will inspect each load that is dumped at the site and will have the authority and responsibility to reject unauthorized loads, have unauthorized material removed by the transporter, and/or assess appropriate surcharges and have the unauthorized material removed by on-landfill personnel.
- A procedure whereby the transporter certificates required by 30 TAC Section 330.7(c) will be retained at the landfill and be available for inspection by the executive director.

Signs with directional arrows and portable traffic barricades will help to restrict traffic to designated disposal locations. Signs will be placed along the access route to the current disposal area or other designated disposal areas that may be established. In addition, rules for waste disposal and prohibited waste will be prominently displayed on signs at the site entrance. Refer to Section 5 for additional waste handling procedures.

8.3 Facility Operating Hours

In accordance with §330.137, the CTD Landfill will post the facility operating hours on the site sign. The CTD Landfill is authorized for waste acceptance from 8:00 a.m. to 3:00 p.m., Monday through Friday, and 7:00 a.m. to 12:00 p.m., Saturday. The site is closed on Sunday. The CTD Landfill may conduct waste acceptance, filling, construction, earthmoving, or other activities anytime within the facility waste acceptance hours. The CTD Landfill is authorized for site operations from 5:00 a.m. to 7:00 p.m., Monday through Friday and 6:00 a.m. to 2:00 p.m., Saturday. Site operations include construction, earthmoving, monitoring, and other non-waste acceptance operations. In addition to §330.135(a), the permit may include alternative operating hours of up to five days in a calendar-year period to accommodate special occasions, special purpose events, holidays, or other special occurrences; and that the commission's regional offices may allow additional temporary waste acceptance or operating hours to address disasters, other emergency situations, or other unforeseen circumstances that could result in the disruption of waste management services in the area. The CTD Landfill will notify the TCEQ regional office and will record in the site operating plan the dates, times, and duration when any alternative operating hours are utilized.

The CTD Landfill provides disposal capacity for municipal solid waste and Class 2 and Class 3 industrial solid waste consisting of construction or demolition waste, brush and rubbish. The facility receives waste from public and private haulers, including non-commercial customers. The waste acceptance and operating hours, including

Saturdays, are necessary to provide disposal capacity for these customers. The waste acceptance and operating hours on Saturdays provide a service in particular to non-commercial customers at times they are needed, thereby reducing the problem of abandonment of waste or illegal dumping of waste at the entrance gate or elsewhere.

8.4 Site Sign

A sign will be displayed at the gated entrance to the site. This sign will measure at least 4 feet by 4 feet, and have lettering of at least 3 inches in height. The sign will state the name of the site, type of site, the hours and days of operation, and the TCEQ permit number. An emergency 24-hour contact phone number and the local emergency fire department phone number will also be included. The emergency contact phone number will reach an individual with the authority to obligate the facility at all times the facility is closed. The site sign will be readable from the facility entrance.

8.5 Control of Windblown Solid Waste and Litter

The working face will be maintained and operated in a manner to minimize windblown solid waste. Windblown material and litter will be collected and properly managed to control unhealthy, unsafe, or unsightly conditions by the following methods:

- Waste transportation vehicles using this facility will be encouraged to use adequate covers or other means of containment to secure the loads. The adequacy of covers or containment of incoming wastes will be checked at the gatehouse. A sign will be prominently displayed at the gatehouse stating that all loads shall be properly covered.
- The active working face will be limited to as small an area as practical for the safe operation of the incoming waste hauling vehicles, and operation of compaction equipment, and delivery and placement of weekly cover soils.
- Weekly cover will be applied as frequently as needed to assist with the control of windblown waste.
- The CTD Landfill will provide litter control fences, as necessary, at appropriate locations near the working face and elsewhere. The litter control fences will be constructed of wire or plastic mesh screens attached to portable frames or temporary fences. The litter control fence will be of sufficient height and will be located as close as practical to the active area to control windblown waste and litter.
- Windblown waste and litter along the entrance road, the gatehouse area, within the permit boundary, and that has accumulated along the permit boundary will be collected once a day during facility operations and returned to the active working face. Windblown waste will be collected by laborer(s) under the direction of the landfill manager. Refer to Section 8.27 for the site inspection and maintenance schedule.

- Should windblown waste or litter escape the facility control measures and cross the permit boundary onto adjacent property, the facility will contact the adjacent property owners to seek permission for litter pick-up.

- Screening barriers such as temporary berms, trees, and visual screening berms may also serve as additional wind breaks.

8.6 Easements and Buffer Zones

8.6.1 Easements

In accordance with §330.141(a), solid waste unloading, storage, disposal, or facility operations will not occur within any easement, buffer zone, or right-of-way that crosses the site. No solid waste disposal will occur within 25 feet of any utility line or pipeline easement, unless otherwise authorized by the TCEQ. All easements will be clearly marked as specified in Section 8.7 of this SOP. Pipelines and utility easements will be marked with posts extending a minimum of 6 feet above ground surface at intervals that do not exceed 300 feet. Easements are shown in Part II, Appendix IIA.

8.6.2 Buffer Zones

The buffer zone is defined as the area between the permit boundary and the limit of waste disposal activities and solid waste processing activities, unless otherwise authorized. No solid waste unloading, storage, disposal, or processing operations will occur within any buffer zone. The buffer zones will provide for safe passage for fire-fighting and other emergency vehicles. The distance from the permit boundary to all solid waste unloading, storage, disposal, or processing operations exceed the minimum buffer distance of 50 feet, as such complying with the requirements of §330.543(b)(2). Buffer zones are shown in Part II, Appendix IIA. All buffer zones will be clearly marked as specified in Section 8.7.

8.7 Landfill Markers and Benchmark

Landfill markers will be installed to clearly mark significant features as described in §330.143(b). The markers will be steel or wooden posts (or other TCEQ approved material) and will extend at least 6 feet above the ground surface. The markers will not be obscured by vegetation and will be placed in sufficient numbers to clearly show the required boundaries. Markers that are removed or destroyed will be replaced within 15 days of their removal, completion of construction project, or destruction. Landfill markers will be inspected monthly and will be maintained and repaired within 15 days as required. The landfill markers will be maintained so that they are visible during operating hours. Refer to Section 8.27 for the site inspection and maintenance schedule. Markers will be repainted as needed to retain visibility. Guidelines for type, placement, and color coding of markers are provided in §330.143(b). The required landfill markers are listed in Table 4.

Table 4
Landfill Markers

Marker	Color	Descriptions
Site Boundary	Black	The boundary markers will be placed at each corner of the site and along each boundary line at intervals no greater than 300 feet. Fencing may be placed within these markers as required.
Buffer Zone	Yellow	The buffer zone markers will be placed along each buffer zone boundary at all corners and between corners at intervals of 300 feet.
Easements	Green	Easement and right-of-way markers will be placed along the centerline of an easement and along the boundary of a right-of-way at each corner within the site and at the intersection of the site boundary.
Grid System	White	The landfill grid system will encompass at least the area expected to be filled within the next three-year period. Markers will be spaced no greater than 100 feet apart measured along perpendicular lines. Intermediate markers will be installed if necessary to allow visibility from opposite boundaries.
SLER/GLER	Red	The SLER markers will be placed so that all areas for which a SLER has been submitted and approved by the Commission are readily determinable. These markers will be located so that they are not destroyed during operations or until operations extend into the next area and will provide site workers immediate knowledge of the extent of approved disposal areas. The location of the markers will be tied into the landfill grid system and reported on each SLER submitted. The markers will be placed outside of constructed areas.
Floodplain	Blue	Flood protection markers will be placed a maximum of 300 feet apart or closer if necessary to retain visual continuity. The markers will be installed for any area within a solid waste disposal facility that is within the 100-year floodplain.

A permanent benchmark has been established within the permit boundary in an area that is readily accessible and will not be used for disposal. The benchmark is a United States Coast and Geodetic Survey benchmark consistent of a bronze survey marker stamped with elevation and survey date and set in concrete. The location of the permanent benchmark is identified in Part II, Appendix IIA.

8.8 Materials Along the Route to the Site

Consistent with §330.145, the CTD Landfill will take steps to encourage that vehicles hauling waste to the site are enclosed or provided with a tarpaulin, net, or other means to properly secure the load to prevent the escape of any part of the load by blowing or spilling. The landfill will post signs at the entrance gate and gatehouse notifying haulers of this requirement and will enforce this rule by applying surcharges or other similar charges. The landfill manager may report habitual offenders to local law enforcement officers. On days the facility is in operation, the CTD Landfill will provide for the cleanup of waste materials spilled along and within the right-of-way of CR 4668, FM 730, FM 718, and FM 2048 within two miles of the facility entrance. The CTD Landfill will consult with officials of TxDOT and, if applicable, the county and/or local government with maintenance authority over these roads concerning cleanup of public access roads and right-of-ways consistent with §330.145.

8.9 Disposal of Large Items

A staging area for large items and white goods may be provided near the active working face prior to disposal. The large items and white goods include items such as ovens, dishwashers, freezers, air conditioners, and other large items. Care will be taken during disposal of large items to ensure that: (1) large items are excluded from the initial 5 feet of waste placed over the protective cover of a liner, (2) large items are placed such that they do not interfere with continued waste filling, and (3) that other smaller waste is placed and compacted around them.

8.10 Odor Management Plan

Measures to control potential odors and sources of odors may include, but are not limited to, the following items:

- The facility is a Type IV waste disposal facility. The facility is authorized to accept only brush, construction and demolition debris, and rubbish. No putrescible wastes are allowed to be accepted at the CTD Landfill.

- The facility will not accept putrescible wastes, municipal water and wastewater treatment plant sludges, grease trap waste, grit trap waste, other liquid waste from municipal sources, and dead animals. Refer to Section 5 and Section 8.21.

- Other sources of potential odors may include ponded water, decomposition of wastes, contaminated water, and landfill gas (LFG).

- Ponded water at the site will be controlled as detailed in Section 8.19 of this SOP. Odors will be eliminated through removal of ponded water and regrading of areas consistent with Section 8.18.

- Contaminated water will be managed in accordance with Part III, Attachment D6.

- Landfill gas will be managed in accordance with Part III, Attachment G.

- The gate attendant will identify and notify the landfill manager of those loads that contain wastes that generate significant odors and need special attention during waste disposal activities.

- Unloading of those wastes that generate odors at the active working face will be consistent with procedures established in Section 8.2, which limits the active working face to a minimum width, allowing prompt placement of cover over wastes that may produce odors.

- Spills of odor producing wastes will be managed by collecting and transporting these wastes to the active working face for prompt disposal and placement of cover.

- Cover consisting of a minimum of 6 inches of soil will be placed over these wastes consistent with the procedures established in Section 8.18.

8.11 Disease Vector Control

The need for vector control (control of rodents, flies, mosquitoes, birds, etc.) will be minimized through daily site operations and the prohibition of putrescible waste. Activities designed to control on-site populations of disease vectors include minimization of the size of the active working face; placement and compaction of weekly, intermediate, and final cover; adherence to the contaminated water plan; and following the procedures described in this SOP. The CTD Landfill will conduct daily inspections as required by Section 8.27 to observe waste disposal operations and to correct areas that may be conducive to insects and rodents. In addition, landfill personnel may apply pesticides when needed.

8.12 Site Access Roads

The entrance roadway provides access from CR 4668 to the gatehouse and landfill haul road for waste hauling vehicles, operating personnel, and visitors. The entrance road is an all-weather surface constructed of concrete and asphalt pavement. Other internal landfill roads will be constructed with a crushed-stone surface or other suitable material. The all-weather surface entrance, access, and internal roads will provide mud control for the waste hauling vehicles prior to exiting the site and returning to public access roads. It is not anticipated that mud or other debris will be tracked onto CR 4668 from the entrance road given its all-weather surface. During wet weather conditions the landfill manager will routinely inspect the site and implement measures to control mud tracking onto public access roads, as necessary. Mud will be removed periodically from the paved entrance road to prevent mud accumulation and slippery conditions. Should mud or other associated debris be tracked onto CR 4668, the material will be removed daily.

The landfill haul roads and access roads will be maintained to minimize dusty conditions by periodic spraying from a water truck. During dry weather conditions the landfill manager will routinely inspect the site and establish a frequency, if necessary, to spray the access roads with water to prevent nuisance conditions from developing. Grading equipment will be used as needed to control or remove mud accumulations on internal roads including the entrance road. Stockpiles of crushed stone concrete rubble, masonry demolition debris, or other similar material will be available for use in maintaining passable internal access roads, including regrading to minimize depressions, ruts, and potholes. Grading equipment will be used monthly or as needed to regrade the site access roads. Refer to Section 8.27 for site inspection and maintenance schedule. The site entrance road, landfill haul road, and access roads will be maintained in a clean and safe condition. Litter and debris will be picked up daily and returned to the active working face.

8.13 Salvaging and Scavenging

Salvaging will not be allowed to interfere with prompt sanitary disposal of solid waste or to create public health nuisances. Salvaged materials will be considered as potential recycled materials. Salvaged items will be removed from the site often enough to prevent the items from becoming a nuisance, to preclude the discharge of pollutants from the area, and to prevent an excessive accumulation of the material at the site. Pesticide, fungicide, rodenticide, and herbicide containers, if present, shall not be salvaged. Scavenging is the uncontrolled and unauthorized removal of materials at any point in the solid waste management system. No scavenging will be allowed at this site. Scavenging will be prevented through perimeter fencing, site access controls, vector controls, odor controls, daily cover, and monitoring by landfill personnel.

8.14 Endangered Species Protection

A detailed threatened and endangered species survey and assessment was conducted by a qualified biologist at Integrated Environmental Solutions, LLC and is provided in Part II, Appendix IIE. The facility and the operation of the facility will not result in the destruction or adverse modification of the critical habitat of endangered or threatened species, or cause or contribute to the taking of any endangered or threatened species.

8.15 Landfill Gas Control

The control and monitoring of landfill gas for the CTD Landfill will be in accordance with Part III, Attachment G. The gas management plan provides for inclusion of applicable documentation, including monitoring records for the landfill gas monitoring probes, in the site operating record, and for submittal to the executive director. Gas monitoring records will be maintained in the site operating record.

8.16 Oil, Gas, and Water Wells

8.16.1 Water Wells

There are 2 known water wells within the permit boundary of the CTD Landfill as shown on Part II, Appendix IIA. Should other water wells be discovered during facility development, the CTD Landfill will provide written notification to the executive director of their location. Within 30 days of finding a water well, the CTD Landfill will provide a copy of the well plugging report as well as written certification to the executive director of the TCEQ that all such wells have been capped, plugged, and closed in accordance with all applicable rules and regulations of the TCEQ or other applicable state agency. Should an abandoned water well be discovered during site development and facility operation, a permit modification will be submitted to the executive director if revisions to the liner installation plan are required as a result of well abandonment.

8.16.2 Oil and Gas Wells

There is one plugged gas well surface location (bottom hole location offsite to the southeast) and two bottom hole locations for existing gas wells (surface locations offsite to the north) within the permit boundary as shown on Part II, Appendix IIA. If crude oil or natural gas wells, or other wells associated with mineral recovery are discovered during the course of facility development, CTD Landfill will provide written notification to the TCEQ's executive director of their location within 30 days of discovery of the wells. For crude oil or natural gas wells, or other wells associated with mineral recovery, the landfill will provide the executive director of the TCEQ and the appropriate state agency with written certification that all such wells have been properly capped, plugged, and closed in accordance with all applicable rules and regulations of the Railroad Commission of Texas within 30 days after the well has been plugged. Should an oil or gas well be discovered during site development and facility operation, a permit modification will be submitted to the executive director if revisions to the liner installation plan are required as a result of well abandonment.

8.17 Compaction

Compaction of incoming waste provides more efficient use of available space and reduces the amount of settling after the fill is complete. Compaction of the waste will be accomplished by repeated passages of a landfill compactor weighing in excess of 40,000 pounds over the waste material. The site dozer will be used to compact waste should the compactor be temporarily out of service for repairs. Adequate compaction will be accomplished to minimize future consolidation and settlement, and provide for the proper application of intermediate and final cover. The incoming waste will be spread in layers and thoroughly compacted by repeated passages of compaction equipment.

The landfill manager or designee will be present during the placement of the first 5 feet of waste over the liner system. The landfill manager or designee will verify and document that the initial 5 feet of waste does not contain large bulky items that could damage the liner system or that cannot be compacted to the required density. Waste ballast must be compacted to a density of not less than 1,200 lb/cy or 44 pcf. The landfill will document that the waste used for ballast has been compacted with repeated passes of a wheeled compactor that weighs in excess of 40,000 pounds. The form to be used by the landfill is provided by TCEQ.

8.18 Landfill Cover

8.18.1 Soil Management

Management of soil for use in and around the landfill area will be an ongoing process at the CTD Landfill. In general, soil for use as weekly cover, intermediate cover, final cover, and other uses will be available adjacent to the active area. Soil will be obtained from excavation that is ongoing as part of the initial development of future landfill cells or from other suitable sources. This on-site material will be available near the working face (the exact distance varying daily, weekly, etc., depending on the exact stage of development).

In addition to this available material located on the landfill property, a stockpile of material will be kept available adjacent to the working face. The stockpile will consist of soil that has not previously come in contact with waste, and will be of sufficient volume to provide at least one application of 6 inches of protective cover over the working face. As this stockpile is used, it will be replenished. The soil may also be used in emergency situations for fire control, as discussed in Section 7.

8.18.2 Weekly Cover

All solid waste will be covered at the end of each week with at least 6 inches of well compacted soil that has not been previously mixed with garbage, rubbish, or other solid waste. The following procedures will be followed to ensure that the weekly cover soil will be adequate (i.e., minimize vectors, contaminated stormwater runoff, odors, etc.):

- The weekly cover will be sloped to drain.
- The weekly cover will be compacted with a minimum of two passes with the dozer tracks to minimize infiltration of storm water and graded to drain.
- The landfill manager will document, on a weekly basis, the weekly cover placement area and thickness in the Cover Inspection Record, as discussed in Section 8.18.8.
- Runoff from areas that have intact daily cover is not considered to have come into contact with the working face or leachate and is considered uncontaminated stormwater runoff.
- After each rainfall event, the landfill manager or his designee will inspect all weekly cover areas for erosion, exposed waste, or other damage, and repair as necessary.

Areas with six inches of weekly cover must be inspected weekly for erosion, ponded water, seeps, protruding waste, or other detrimental conditions that may cause contaminated runoff from the weekly cover. Once the area becomes active again, the weekly cover may be stripped off prior to additional waste placement and used as weekly cover in other areas.

Wastes that may generate significant odors will be identified in accordance with Section 8.10, and will be covered with a minimum of 6- inches of soil promptly.

8.18.3 Intermediate Cover

All areas that receive waste and then become inactive for longer than 180 days will be covered with an additional six inches of well compacted earthen material, for a total cover thickness of at least 12 inches. The intermediate cover will be graded to prevent erosion and ponding of water as specified in Part III, Attachment C. The additional six inches of earthen material will be capable of sustaining native plant growth and will be seeded or sodded following its application for erosion control. Plant growth and other erosion control features placed as part of the intermediate cover will be maintained. Runoff from areas that have received intermediate cover are considered to have not come into contact with the active working face or leachate, and are considered uncontaminated stormwater runoff.

The landfill manager will document, on a daily basis, when intermediate cover is being placed, the intermediate cover placement area, the thickness and condition in the Cover Inspection Record as discussed in Section 8.18.8.

Areas with twelve inches of intermediate cover must be inspected weekly for erosion, ponded water, seeps, protruding waste, or other detrimental conditions that may cause contaminated runoff from the intermediate cover. Once the area becomes active again, the intermediate cover may be stripped off prior to additional waste placement and used as intermediate cover in other areas.

8.18.4 Alternative Daily Cover

The CTD Landfill is not currently authorized to use alternative daily (weekly) cover. Should the landfill decide to request authorization to use alternative daily (weekly) cover, the landfill will request authorization in accordance with §330.165(d).

8.18.5 Temporary Waiver

The CTD Landfill may request a waiver from cover requirements due to extreme seasonal climatic conditions in accordance with §330.165(e).

8.18.6 Final Cover

Final cover placement over individual areas will be in accordance with Part III, Attachment H and §330.453 and will permit ongoing landfilling operations to continue until the time of final closure. Surface water will be managed throughout the active life of the site to minimize infiltration into the filled areas and to minimize contact with solid waste. Erosion of final or intermediate cover will be repaired promptly by restoring the cover material, grading, compacting, and seeding it as necessary. Periodic inspections and restorations are required during the entire operational life and for the postclosure maintenance period. Refer to Section 8.27 for a site inspection and maintenance schedule.

In general, final cover placement over completed portions of the site will consist of the following steps:

- Survey controls will be implemented to control the filling of solid waste to the bottom level of the weekly/intermediate cover layer elevation.
- The final cover system layers will be constructed. Testing of the various components of the final cover system will be performed in accordance with Part III, Appendix H2.

- A final cover certification report complete with an as-built survey will be prepared by an independent registered professional engineer and submitted to the TCEQ for approval.

- The TCEQ-approved final cover certification report will be maintained in the site operating record, and the cover inspection record as described in Section 8.18.8 will be updated to reflect the area where final cover has been placed. The TCEQ regional office will also be notified that final cover placement has occurred at the site.

8.18.7 Erosion of Cover

The landfill will inspect intermediate cover at the site on a weekly basis and within 24 hours of a rainfall event of 0.5 inches or more. During the active life of the site, the landfill will inspect the final cover system on a weekly basis and within 24 hours of a rainfall event of 0.5 inches or more. The final cover system, including the erosion control structures (drainage swales and chutes), will be maintained during and after construction. Erosion gullies or washed-out areas will be repaired within five days of detection if they are deep enough (greater than four inches) to jeopardize the final or intermediate cover. Repair of final cover includes restoring cover, grading, compacting, and seeding as required. Should additional time be required for repairs due to weather related delays, the landfill will request from the TCEQ regional office approval of an alternate schedule. Documentation of weather delays for the repairs will be included in the cover inspection record. Inspections and restorations are required during the entire operational life and for the post-closure maintenance period of the landfill. Documentation of dates of inspections, detection of erosion, and completion of repairs are required in accordance with Section 8.18.8. Refer to Section 8.27 for a site inspection and maintenance schedule. Postclosure care inspection and repair procedures of the final cover are outlined in Part III, Attachment I

8.18.8 Cover Inspection Record

Throughout the landfill operation, a cover inspection record will be maintained and be readily available for inspection in accordance with §330.165(h). For weekly, and intermediate cover, the record will specify the date cover was accomplished (no exposed waste), area covered (by use of the grid system or annotated maps), how it was placed, and when it was completed. For final cover, the record will show the final cover area completed, date cover was applied, and thickness of final cover. The final cover certification report for each area will be referenced in the record. Each entry in the record will be certified by the signature of the landfill manager or designee that the work was accomplished as stated in the record. The cover inspection record will document inspections required under Section 8.18.7 and §330.165(g), including findings and corrective action taken.

8.19 Ponded Water

The CTD Landfill will prevent ponding of water over areas that have received waste through site operations including grading and maintenance. The Ponded Water Plan provides direction to the landfill operators for the prevention and elimination of ponded water. The Ponded Water Plan is as follows:

- The landfill will place weekly cover, intermediate cover, and final cover in accordance with requirements established in Section 8.18.
- The landfill will inspect the surface of areas that have received waste and landfill cover consistent with Section 8.18 and Section 8.27.
- Site grading and maintenance as required by Section 8.18 will minimize the ponding of water over areas containing waste.
- Should ponding occur, the depression will be filled in and regraded within 7 days of the occurrence, weather permitting. Landfill cover will be repaired consistent with procedures specified in Section 8.18.
- Diversion berms are constructed to direct uncontaminated water away from the active working face. Should ponding of water occur behind the diversion berms, depressions will be filled in and regraded within seven days of the occurrence, weather permitting.
- Diversion berms and containment berms are constructed and maintained at the active working face to minimize contaminated water within the active working face in accordance with Part III, Attachment D6.
- If the ponded water has come into contact with waste or waste contaminated soils, it will be treated as contaminated water and handled in accordance with Part III, Attachment D6.

8.20 Waste in Enclosed Containers or Enclosed Vehicles Accepted at Type IV Landfills

Waste in enclosed containers or enclosed vehicles will not be accepted for disposal at CTD Landfill unless all of the following conditions are met:

- The landfill is participating in the funding program to monitor these activities as detailed in §330.169(2).
- Each enclosed container or enclosed vehicle will have all required approvals and/or permits from the executive director in accordance with §330.7.
- Enclosed containers or enclosed vehicles will only be accepted at their designated time and on the specified day in accordance with §330.169, TCEQ permits, or other orders of the TCEQ.
- If requested by the TCEQ, an inspector will be on site and will witness the unloading process to ensure that no putrescible or household waste is present. Any waste considered nonallowable by the TCEQ inspector will be removed from

the working face and subsequently removed from the facility in accordance with §330.133.

- Each transporter delivering waste in enclosed containers or enclosed vehicles will, prior to discharging the load, provide to the landfill operator a transporter trip ticket for the route being delivered. Trip tickets will be maintained as part of the site operating record.

- The TCEQ may revoke a transporter's authorization to deliver waste to a Type IV municipal solid waste facility for failure to comply with the above conditions.

Stationary compactors permitted in accordance with 30 TAC §330.7 and municipalities having transporter routes permitted in accordance with this rule are exempt from the requirements identified in 30 TAC §330.169(1)-(3), and transporters will be allowed to discharge waste from these compactors at the facility. However, the landfill operator will obtain from the transporter a hauler trip ticket for a municipal transporter route or a stationary compactor, as appropriate, prior to allowing discharge of the material at the landfill. These trip tickets will be maintained in the Site Operating Record.

In accordance with §330.133(h), the CTD Landfill will post large conspicuous warning signs at the entrance to the site stating that putrescible and household wastes are not accepted and stating the landfill's requirements for transporters, such as certificates, manifests, and surcharges or other penalties that may be imposed in the event that transporters do not meet the requirements of this SOP and 30 TAC §330.

8.21 Disposal of Special Wastes

The CTD Landfill is not permitted to accept special waste.

8.22 Disposal of Industrial Wastes

Industrial waste (nonhazardous) is defined by §330.3 as solid waste resulting from or incidental to any process of industry or manufacturing, or mining or agricultural operations. Class 1 wastes will not be accepted for disposal. Class 2 and 3 industrial waste will be accepted for disposal, provided disposal of these wastes does not interfere with proper operation of the facility. Class 2 and 3 industrial waste will be accepted as classified below:

> Class 2 Industrial Solid Waste – industrial solid waste that is construction or demolition waste, brush, or rubbish.
>
> Class 3 Industrial Solid Waste – inert and essentially insoluble industrial solid waste, usually including, but not limited to, materials such as rock, brick, glass, dirt, and certain plastics and rubber, etc., that are not readily decomposable, as further defined in §335.507.

8.23 Visual Screening of Deposited Waste

Visual screening of deposited waste is provided as part of normal waste disposal operations and sequence of development. As the landfill is developed above ground, final cover will be constructed as the landfill reaches final grades.

8.24 Leachate and Gas Condensate Recirculation

The CTD Landfill is a Type IV landfill and is not authorized to and will not recirculate leachate or gas condensate.

8.25 Contaminated Water Discharge

The CTD Landfill will take all steps necessary to control and prevent the discharge of contaminated water from the facility. Should the discharge of contaminated water become necessary, the landfill will obtain specific written authorization from the TCEQ prior to discharge. All water coming in contact with waste or contaminated soils will be treated as contaminated water. Runon and runoff for the 25-year, 24-hour storm event will be controlled following the procedures set forth in Part III, Attachment D6. The landfill will be operated consistent with §330.15(h)(1)-(4) regarding discharge of solid wastes or pollutants into waters of the United States.

8.26 Material Staging Areas

8.26.1 Large Item Staging Area

A staging area for large items and white goods may be provided over existing lined areas near the active working face prior to disposal. Large items and white goods include ovens, dishwashers, freezers, air conditioners, and other large items. These items will be disposed of after following standard procedures for removing any chlorinated fluorocarbons (freon) and within 10 days of acceptance at the facility. The procedures for the acceptance, disposal, and possible staging of large items are addressed in Section 8.9. The large item staging area is located within the landfill footprint as noted on Part III, Attachment B, Appendix B1.

Surface water runoff will be diverted around the large item staging area by placement of earthen diversion berms. Surface water runoff from the large item staging area will be managed as contaminated water and contained by placement of earthen containment and diversion berms to preclude discharge from this area. Contaminated water will be pumped into a transport truck for off-site treatment and disposal after each rainfall event. Containment and diversion berms will be placed consistent with Part III, Attachment D6. Windblown wastes, odors, and vectors will be maintained consistent with Sections 8.5, 8.10, and 8.11.

8.26.2 Reusable Materials Staging Area

Source-separated inert materials such as brick, concrete, rubble, aggregate, and old reclaimed asphalt pavement, are often received and staged at the facility for use on facility access roads, staging areas, and drainage structures. The reusable materials staging area for inert materials will be located within the waste disposal footprint and will be relocated as the active working face moves. The size of the stockpiles may vary depending on the amount of materials received at any given time. Since brick, concrete, rubble, aggregate materials, and old reclaimed asphalt pavement are inert, their staging will not create a public health hazard or nuisance and runon and runoff from rainfall will not be controlled in a special manner for these materials. Since these inert materials will continuously be reused for site operations, there is no time limit on the staging of these materials. Windblown wastes, odors, and vectors will be maintained consistent with Sections 8.5, 8.10, and 8.11.

A reusable materials storage and staging area is provided for source-separated reusable materials. The reusable materials staging area is located within the landfill footprint over existing lined areas as noted in Part III, Attachment B, Appendix B1.

8.27 Site Inspection and Maintenance Schedule

ITEM	TASK	Frequency	Inspector	Type of Inspection
Fence/Gate	Inspect perimeter fence and gate for damage. Make repairs if necessary.	Twice per month (An unofficial inspection of the perimeter fence and gate will also be conducted while policing for windblown waste, but the official detailed inspection of the perimeter fence and gate will be conducted twice per month.)	Landfill Manager or Designee	Document in the Site Operating Record
Windblown Waste	Police working fence area, wind fences, access roads, entrance area, and perimeter fence for loose trash. Clean up as necessary.	Daily	Landfill Manager or Designee	Document in the Site Operating Record
Waste Spilled on Route to the Site	Police the entrance area and all roads at least two miles from the site entrance for loose trash. Clean up as necessary.	Daily	Landfill Manager or Designee	Document in the Site Operating Record
Mud Removal	Inspect entrance road and CR 4668 for mud or other debris during wet weather. Remove mud and other debris.	Daily during wet weather	Landfill Manager or Designee	Document in the Site Operating Record
Landfill Markers	Inspect all landfill markers for damage, color-coding, and general location. Correct or replace damaged markers within 15 days of discovery.	Monthly	Landfill Manager or Designee	Document in the Site Operating Record
Site Access Road	Inspect site access road for damage from vehicle traffic, erosion, or excessive mud accumulation. Maintain as needed with crushed rock or stone.	Weekly – more often during wet weather or extended dry weather periods. Monthly regrading or more frequently in wet weather.	Landfill Manager or Designee	Document in the Site Operating Record
Weekly Cover	Inspect for proper placement, thickness, and compaction. Correct problems as needed.	Weekly at the active face. All daily cover areas will be inspected within 24 hours of a rainfall event of 0.5 inches or more.	Landfill Manager or Designee	Document in the Site Operating Record

8.27 Site Inspection and Maintenance Schedule (Continued)

ITEM	TASK	Frequency	Inspector	Type of Inspection
Intermediate Cover	Inspect for proper placement, thickness, erosion, compaction and for presence of waste or other contamination. Correct problems as needed.	Weekly and within 24 hours of a rainfall event of 0.5 inches or more. Repair erosion within five days of detection.	Landfill Manager or Designee	Document in the Site Operating Record
Final Cover	Inspect for proper placement, thickness, compaction, slope, settlement, and erosion. Maintenance will be ongoing throughout postclosure care period. Correct problems as needed.	Weekly and within 24 hours of a rainfall event of 0.5 inches or more. Repair erosion within five days of detection.	Landfill Manager or Designee	Document in the Site Operating Record
Ponded Water	Inspect daily cover, intermediate cover, and final cover areas for potential areas that may pond water. Regrade as required. Remove ponded water over intermediate cover and final cover areas. Contaminated water is to be removed in accordance with Attachment D6 – Contaminated Water Management Plan.	Daily at active working face and daily cover areas. Weekly for intermediate and final cover areas. Remove ponded water within seven days of detection	Landfill Manager or Designee	Document in Site Operating Record

APPENDIX IVA
EXAMPLE LOAD INSPECTION REPORT

LOAD INSPECTION REPORT

Date: ______________________________ Time: ______________________________

Hauler's Name: ______________________________

Address: ______________________________

____

Driver's Name: ______________________________

Vehicle Type: ______________________________

Load Size: ______________________________

Source of Trash (from where?): ______________________________

____

Contents: ______________________________

____

Any Prohibitive Waste? Describe: ______________________________

____

____

Result of Inspection: ______________________________

Signature: ______________________________

Ticket#:: ______________________________

Actual form may vary.

APPENDIX IVB
FIRE PROTECTION SOIL CALCULATIONS

Fire Protection Soil Calculations

The working area cannot be larger than is able to be covered by 6" of soil within 1 hour.

The maximum working area is determined by:

- Available equipment to haul and spread soil
- Available soil in borrow source and in adjacent stockpiles

The following tables provide the production, transport, and application rates for the equipment listed in Table 3.

These calculations are for estimates only and are not meant to imply exact conditions in the field.

Load time for soil loading equipment.

Equipment	Cubic Yards per Load	Loads per Hour	Time per Load	Cubic Yards per Hour
Excavator	3	240	0.25 min	720[1]

Load, transport, and unload capacity for soil transport equipment.

Equipment	Cubic Yards per Load	Load Time	Transport Time (2500 ft at 15 mph, x2 for round trip)	Unload Time	Total Load, Transport, and Unload Time	Loads per Hour	Cubic Yards Delivered per Hour
Haul Truck	20	1.7 min (loaded by excavator)	3.8 min	1 min	6.5 min	9.2	184

Spreading capacity for soil spreading equipment.

Equipment	Spreading Rate (cubic yards per hour)	Area that Can Be Covered 6 Inches Deep in 1 Hour	Nominal Working Face Dimensions (square)	Nominal Working Face Dimensions (rectangle 2:1 width:depth)
Dozer	600[2]	32,400 sq ft	180 ft x 180 ft	254.6 ft x 127.3 ft
Compactor	600[2]	32,400 sq ft	180 ft x 180 ft	254.6 ft x 127.3 ft

Fire Protection Soil Calculations (Continued)

Example scenarios of equipment capacity and soil needs for covering working face within 1 hour. Other combinations achieving equivalent capacity may be used.

Working Face Dimensions (width x depth, ft)	Working Face Area (sq ft)	Volume of Soil to Cover 6 Inches Deep (cu yd)	Transport Equipment	Volume of Soil Transport from Borrow Source within 2500 ft (cu yd)	Volume of Soil Stockpile at Working Face (cu yd)	Equipment for Spreading Soil within 1 Hour
150 x 150	22,500	417	1 Haul Truck	184	233	1 Dozer or 1 Compactor
250 x 150	37,500	694	1 Haul Truck	184	510	1 Dozer and 1 Compactor
350 x 200	70,000	1,296	2 Haul Trucks	368	928	2 Dozers and 1 Compactor
450 x 200	90,000	1,667	2 Haul Trucks	368	1,299	2 Dozers and 1 Compactor

[1] One excavator can produce enough soil to load a haul truck 45 times per hour (up to 4 haul trucks).

[2] Low end of range published in *Excavation Handbook*, Horace C. Church 1991.