APPENDIX I/II-I

WETLANDS DOCUMENTATION

Geosyntec consultants

engineers | scientists | innovators

Summary of Ecological Site Assessment and Visit Findings: Waters of the U.S. and Threatened and Endangered Species

Austin Community Transfer Station

Travis County, Texas

Prepared for

Waste Management
9900 Giles Lane
Austin, TX 78754

Prepared by

Geosyntec Consultants, Inc.
8217 Shoal Creek Blvd, Suite 200
Austin, Texas 78757

Project Number GW7107

September 2019

TABLE OF CONTENTS

ATTACHMENTS:

1. PROJECT BACKGROUND

Geosyntec Consultants (Geosyntec), on behalf of Waste Management of Texas, Inc., conducted an ecological site assessment to evaluate environmental features within the proposed location of a new transfer station within the eastern portion of the existing Austin Community Recycling & Disposal Facility property (site). This included:

- Assessing the potential presence or absence of wetlands/waters of the U.S. and make related delineations (if present); and
- Assessing the potential presence of threatened or endangered species and their habitats for federally and state-listed species.

The site is located at 9900 Giles Lane, Austin 78754 (Figure 1) northeast of the intersection of Highway 183 and Highway 290. The transfer station will be positioned at the far eastern extent of the approximately 359.71-acre property, and will result in erecting a building, creation of additional gravel or paved areas, site grading, and proposed stormwater detention area(s). The majority of the area to be developed for the transfer station is existing paved or gravel parking lots and roads and maintained lawns. A study area of 21.2 acres in and around the transfer station was evaluated for this project. Within this area, it is estimated that the actual "limit of disturbance (LOD)" will be less than approximately 10 acres; however, for the purposes of this evaluation, the entire study area is referenced as being potentially within the LOD, and are indicated as such on the figures that accompany this study.

A Geographic Information Systems (GIS) desktop review was conducted using publicly-available vector datasets such as National Wetland Inventory (NWI) polygons and National Hydrography Dataset (NHD) flowlines and waterbodies which were overlain onto U.S. Geological Survey (USGS) 1:24,000 topographical quadrangles and current/historical aerial imagery to provide a general understanding of the landscape characteristics of the site. No features of concern were identified from this desktop assessment.

A pedestrian survey and wetland delineation were conducted on September 24, 2019 within the identified environmental survey limits. The purpose of the survey was to identify waters of the U.S. and for listed species and/or potentially suitable habitat for federally and state-listed species. A photographic log of the field inspection is provided in **Appendix A**.

2. ENVIRONMENTAL FEATURES

2.1 Waters of the U.S.

2.1.1 Hydrology

The eastern side of the site is located within the Gilleland Creek-Colorado River watershed (8-digit hydrologic unit code 12090301). The eastern side of the site drains generally towards the northeast. The site currently maintains a vegetated swale along the eastern boundary of the property that allows water to flow north. An existing detention area on the north eastern corner of the site allows water to settle before draining off site. No named waterways are present within the proposed study area.

2.1.2 Wetlands

Wetlands are defined by the U.S. Army Corps of Engineers (USACE) (33 CFR 328.3, 1986) and the U.S. EPA (40 CFR 230.3, 1980) as “areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions." Many wetlands and other aquatic features, including ephemeral, intermittent, and perennial streams, are considered Waters of the U.S. by the USACE and deemed “jurisdictional” under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act of 1899.

A Geosyntec ecologist conducted a wetland survey on September 24, 2019 to delineate wetland features within the proposed study area. One channel with indications of an ordinary high water mark (OHWM) was observed on site south of the existing wheel wash. The channel is approximately 4 feet wide and 160 feet long. The channel exists between a gravel road and the existing wheel wash; however, is does not have continuous bed and bank features. Additionally, the feature is not connected waterways or wetlands and would not be considered jurisdictional by the USACE. No wetland features were identified within the proposed study area.

2.2 Threatened and Endangered Species

The Endangered Species Act of 1973 (ESA) provides protection and conservation for threatened and endangered wildlife and plants. Per the ESA, it is against the law to harm, hurt, shoot, pursue, lure, wound, kill, destroy, harass, gig, spear, ensnare, trap, capture, collect, or to attempt to engage in such conduct with any threatened or endangered (T&E) species or adversely impact critical habitat. The USFWS maintains lists for federally-listed species and the Texas Parks and Wildlife Department (TPWD) manages species at a state level.

Initial USFWS Information for Planning and Consultation (IPaC) review returned 18 resources managed or regulated by the USFWS, including threatened, endangered, and candidate species. Initial consultation of the TPWD list of Rare, Threatened, and Endangered Species of Travis county identified 20 state-listed species with the potential to occur in the county. Habitat identified during the site assessment was unsuitable for the listed species, precluding their presence within the proposed project area. Species and habitat requirements are expanded on

below. Both the USFWS IPaC Official Species List and TPWD Travis County species lists are provided in **Appendix B**.

Five bird species were included on the official IPaC species list of threatened and endangered species with the potential to occur within the project area: Golden-cheeked Warbler (*Setophaga chrysoparia*), Least Tern (*Sterna antillarum*), Piping Plover (*Charadrius melodus*), Red Knot (*Calidris canutus rufa*), and Whooping Crane (*Grus Americana*). Of these, only the Golden-cheeked Warbler persists in Travis county longer than the duration of a migratory stopover. This warbler breeds in central Texas and requires specific ashe juniper and oak habitat not found within or around the proposed project area. The proposed action will not affect federally listed avian species.

Three federally listed amphibians were identified during the IPaC review: Austin blind salamander (*Eurycea waterlooensis*), Barton Springs salamander (*Erycea sosorum*), and Jollyville Plateau salamander (*Erycea tonkawae*). The Austin blind and Jollyville Plateau salamanders have final critical habitat that is outside of the proposed project area. The Barton Springs salamander is only known to occur within Barton Springs in Austin. In addition, the project area falls outside known karst zones as indicated by USFWS provided GIS data layers. The proposed action will not affect federally listed amphibian species.

Five candidate mussel species were returned during the IPaC review. However, mussels require perennially flowing water and no perennial streams or rivers occur within the proposed project boundary. The proposed action will not affect these candidates for federal listing.

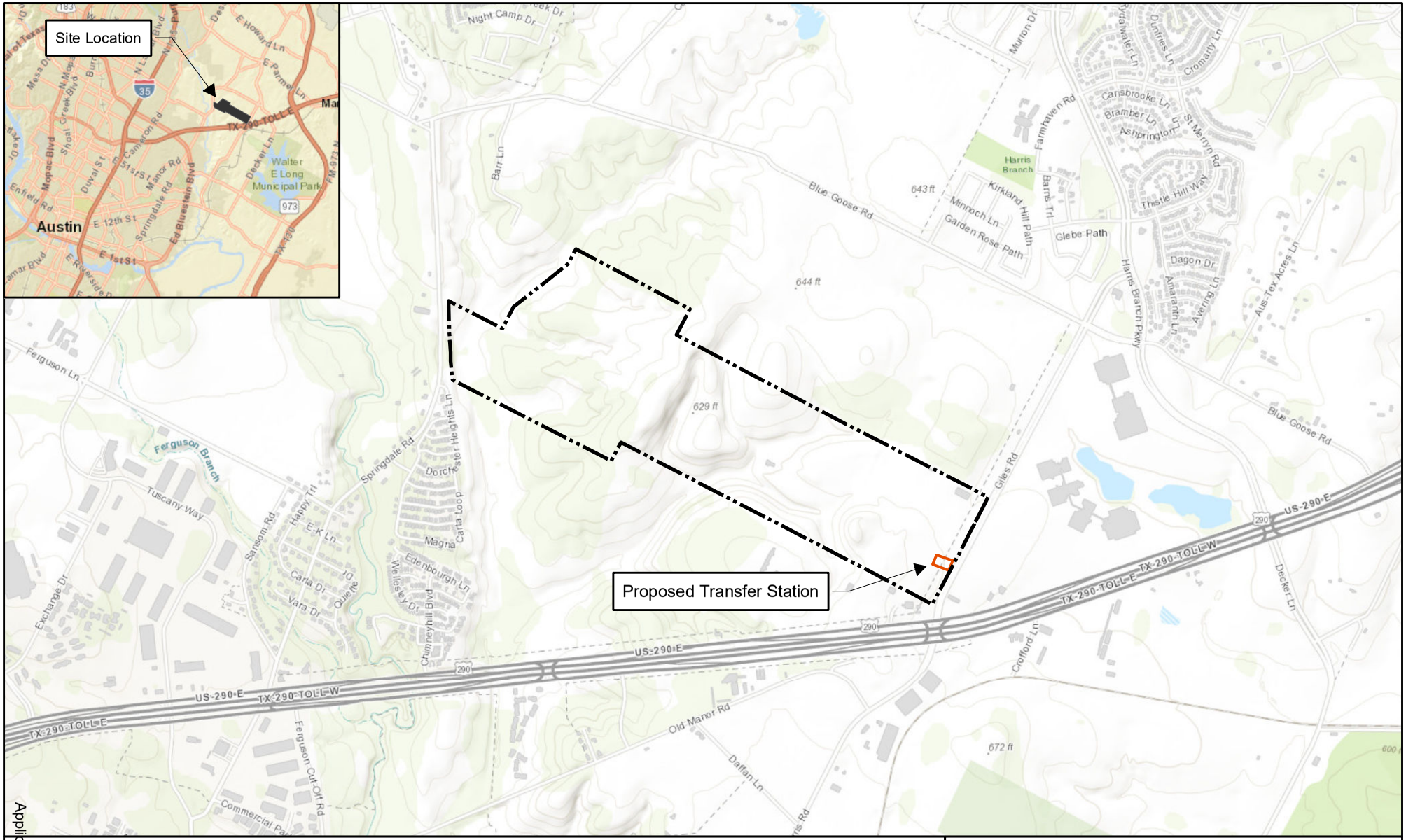
Two endangered insects and four endangered arachnids were identified during the IPaC review as having the potential to occur within the area of impact. All six species require cave and karst features which are not found within or around the proposed project area based on review of USFWS provided karst zone GIS data layers. The proposed action will not affect federally listed insects or arachnids.

The bracted twistflower (*Streptanthus bracteatus*), a candidate for federal listing, is the only flowering plant included on the IPaC review. These plants are known to occur on rocky hillsides in the western half of Travis county. Suitable habitat was not identified during the site visit. The proposed action will not affect federally listed plant species.

3. REFERENCES

U.S. Army Corps of Engineers (USACE), 2010. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region (Version 2.0),* ed. J.S. Wakeley, R.W. Lichvar, and C.V. Noble, ERDC/EL TR-10-1. Vicksburg, MS: U.S. Army Engineer Research and Development Center.

FIGURES



Site Location (Registration Boundary)

Proposed Transfer Station

0 0.125 0.25 0.5 0.75 1 Miles

N

Austin Community Transfer Station

Project Vicinity

Austin, Travis County, Texas

WASTE MANAGEMENT

Geosyntec consultants

Austin, TX | September 2019

Figure 1

Application Page No. I/II8

September 2019

P:\Projects\WM Austin Community\GIS\Austin_Community_Landfill_vicinity.mxd 9/25/2019 9:16:53 AM

Site Location (Registration Boundary)
Study Area
Proposed Transfer Station (approximate building footprint)

N

0 125 250 500 750 1,000 Feet

Austin Community Transfer Station

Transfer Station Location

Austin, Travis County, Texas

WM WASTE MANAGEMENT

Geosyntec consultants

Austin, TX | September 2019

Figure 2

Application Page No. I/II9
September 2019

P:\Projects\WM Austin Community\GIS\Austin_Community_Landfill_transferStation.mxd 9/25/2019 9:17:48 AM

APPENDIX A

Photographic Log

GEOSYNTEC CONSULTANTS Photographic Record	
Client: WMTX	**Project Number: GW7107**
Site Name: Austin Community Transfer Station - General Site Area	**Site Location: Austin, TX**

Photograph 1 **Date: 9/24/2019 8:35 AM** **Direction:** **Comments: None**	
Photograph 2 **Date: 9/24/2019 8:35 AM** **Direction:** **Comments: None**	

GEOSYNTEC CONSULTANTS Photographic Record	
Client: WMTX	**Project Number: GW7107**
Site Name: Austin Community Transfer Station - General Site Area	**Site Location: Austin, TX**

Photograph 3 **Date: 9/24/2019 8:35 AM** **Direction:** **Comments: None**	
Photograph 4 **Date: 9/24/2019 8:36 AM** **Direction:** **Comments: None**	

GEOSYNTEC CONSULTANTS Photographic Record	
Client: WMTX	**Project Number: GW7107**
Site Name: Austin Community Transfer Station - General Site Area	**Site Location: Austin, TX**

Photograph 5 **Date: 9/24/2019 8:37 AM** **Direction:** **Comments: None**	
Photograph 6 **Date: 9/24/2019 8:37 AM** **Direction:** **Comments: None**	

GEOSYNTEC CONSULTANTS Photographic Record	
Client: WMTX	**Project Number: GW7107**
Site Name: Austin Community Transfer Station - General Site Area	**Site Location: Austin, TX**

Photograph 7 **Date: 9/24/2019 8:39 AM** **Direction:** **Comments: None**	
Photograph 8 **Date: 9/24/2019 8:39 AM** **Direction:** **Comments: None**	

GEOSYNTEC CONSULTANTS Photographic Record	
Client: WMTX	**Project Number: GW7107**
Site Name: Austin Community Transfer Station - General Site Area	**Site Location: Austin, TX**

Photograph 9 **Date: 9/24/2019 8:40 AM** **Direction:** **Comments: None**	
Photograph 10 **Date: 9/24/2019 8:41 AM** **Direction:** **Comments: None**	

GEOSYNTEC CONSULTANTS Photographic Record	
Client: WMTX	**Project Number: GW7107**
Site Name: Austin Community Transfer Station - General Site Area	**Site Location: Austin, TX**

Photograph 11 **Date: 9/24/2019 8:42 AM** **Direction:** **Comments: None**	
Photograph 12 **Date: 9/24/2019 8:42 AM** **Direction:** **Comments: None**	

GEOSYNTEC CONSULTANTS Photographic Record	
Client: WMTX	**Project Number: GW7107**
Site Name: Austin Community Transfer Station - General Site Area	**Site Location: Austin, TX**

Photograph 13 **Date: 9/24/2019 8:42 AM** **Direction:** **Comments: None**	
Photograph 14 **Date: 9/24/2019 8:43 AM** **Direction:** **Comments: None**	

GEOSYNTEC CONSULTANTS Photographic Record	
Client: WMTX	**Project Number: GW7107**
Site Name: Austin Community Transfer Station - General Site Area	**Site Location: Austin, TX**

Photograph 15	
Date: 9/24/2019 8:44 AM	
Direction:	
Comments: None	

Photograph 16	
Date: 9/24/2019 8:47 AM	
Direction:	
Comments: None	

GEOSYNTEC CONSULTANTS Photographic Record	Geosyntec consultants
Client: WMTX	**Project Number: GW7107**
Site Name: Austin Community Transfer Station - General Site Area	**Site Location: Austin, TX**

Photograph 17 **Date: 9/24/2019 8:47 AM** **Direction:** **Comments: None**	
Photograph 18 **Date: 9/24/2019 8:47 AM** **Direction:** **Comments: None**	

GEOSYNTEC CONSULTANTS Photographic Record	
Client: WMTX	**Project Number: GW7107**
Site Name: Austin Community Transfer Station - General Site Area	**Site Location: Austin, TX**

Photograph 19 **Date: 9/24/2019 8:49 AM** **Direction:** **Comments: None**	
Photograph 20 **Date: 9/24/2019 8:49 AM** **Direction:** **Comments: None**	

GEOSYNTEC CONSULTANTS Photographic Record	Geosyntec consultants
Client: WMTX	**Project Number: GW7107**
Site Name: Austin Community Transfer Station - General Site Area	**Site Location: Austin, TX**

Photograph 21 **Date: 9/24/2019 8:50 AM** **Direction:** **Comments: None**	
Photograph 22 **Date: 9/24/2019 8:50 AM** **Direction:** **Comments: None**	

GEOSYNTEC CONSULTANTS
Photographic Record

Geosyntec consultants

Client: WMTX	**Project Number: GW7107**
Site Name: Austin Community Transfer Station - General Site Area	**Site Location: Austin, TX**

Photograph 23	
Date: 9/24/2019 8:52 AM	
Direction:	
Comments: None	

Photograph 24	
Date: 9/24/2019 8:52 AM	
Direction:	
Comments: None	

GEOSYNTEC CONSULTANTS Photographic Record	
Client: WMTX	**Project Number: GW7107**
Site Name: Austin Community Transfer Station - General Site Area	**Site Location: Austin, TX**

Photograph 25 **Date: 9/24/2019 8:53 AM** **Direction:** **Comments: None**	
Photograph 26 **Date: 9/24/2019 8:53 AM** **Direction:** **Comments: None**	

GEOSYNTEC CONSULTANTS Photographic Record	
Client: WMTX	**Project Number: GW7107**
Site Name: Austin Community Transfer Station - General Site Area	**Site Location: Austin, TX**

Photograph 27 **Date: 9/24/2019 8:54 AM** **Direction:** **Comments: None**	
Photograph 28 **Date: 9/24/2019 8:56 AM** **Direction:** **Comments: None**	

GEOSYNTEC CONSULTANTS Photographic Record	
Client: WMTX	**Project Number: GW7107**
Site Name: Austin Community Transfer Station - General Site Area	**Site Location: Austin, TX**

Photograph 29 **Date: 9/24/2019 9:00 AM** **Direction:** **Comments: None**	
Photograph 30 **Date: 9/25/2019 1:55 PM** **Direction:** **Comments: None**	

GEOSYNTEC CONSULTANTS Photographic Record	Geosyntec consultants
Client: WMTX	**Project Number: GW7107**
Site Name: Austin Community Transfer Station - General Site Area	**Site Location: Austin, TX**

Photograph 31 **Date: 9/25/2019 1:56 PM** **Direction:** **Comments: None**	
Photograph 32 **Date: 9/25/2019 2:00 PM** **Direction:** **Comments: None**	

GEOSYNTEC CONSULTANTS Photographic Record	
Client: WMTX	**Project Number: GW7107**
Site Name: Austin Community Transfer Station - General Site Area	**Site Location: Austin, TX**

Photograph 33 **Date: 9/25/2019 2:00 PM** **Direction:** **Comments: None**	
Photograph 34 **Date: 9/25/2019 2:00 PM** **Direction:** **Comments: None**	

GEOSYNTEC CONSULTANTS Photographic Record	
Client: WMTX	**Project Number: GW7107**
Site Name: Austin Community Transfer Station - General Site Area	**Site Location: Austin, TX**

Photograph 35 **Date: 9/25/2019 2:00 PM** **Direction:** **Comments: None**	
Photograph 36 **Date: 9/25/2019 2:01 PM** **Direction:** **Comments: None**	

APPENDIX B

USFWS IPaC and TPWD Travis County Sensitive Species Lists

Last Update: 7/17/2019

TRAVIS COUNTY

AMPHIBIANS

Austin blind salamander *Eurycea waterlooensis*

Mostly restricted to subterranean cavities of the Edwards Aquifer; dependent upon water flow/quality from the Barton Springs segment of the Edwards Aquifer; only known from the outlets of Barton Springs (Sunken Gardens (Old Mill) Spring, Eliza Spring, and Parthenia (Main) Spring which forms Barton Springs Pool); feeds on amphipods, ostracods, copepods, plant material, and (in captivity) a wide variety of small aquatic invertebrates

Federal Status: LE	State Status: E	SGCN: Y
Endemic: Y	Global Rank: G1	State Rank: S1

Barton Springs salamander *Eurycea sosorum*

Dependent upon water flow/quality from the Barton Springs pool of the Edwards Aquifer; known from the outlets of Barton Springs and subterranean water-filled caverns; found under rocks, in gravel, or among aquatic vascular plants and algae, as available; feeds primarily on amphipods

Federal Status: LE	State Status: E	SGCN: Y
Endemic: Y	Global Rank: G1	State Rank: S1

Jollyville Plateau salamander *Eurycea tonkawae*

Known from springs and waters of some caves north of the Colorado River

Federal Status: LT	State Status:	SGCN: Y
Endemic: Y	Global Rank: G1	State Rank: S2

Pedernales River Springs salamander *Eurycea sp. 6*

Known only from springs

Federal Status:	State Status:	SGCN: N
Endemic: Y	Global Rank: G1	State Rank: S1S2

Strecker's chorus frog *Pseudacris streckeri*

Wooded floodplains and flats, prairies, cultivated fields and marshes. Likes sandy substrates.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S3

Texas salamander *Eurycea neotenes*

Troglobitic; springs, seeps, cave streams, and creek headwaters; often hides under rocks and leaves in water; restricted to Helotes and Leon Creek drainages

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G1	State Rank: S1S2

TRAVIS COUNTY

AMPHIBIANS

Woodhouse's toad *Anaxyrus woodhousii*

Extremely catholic up to 5000 feet, does very well (except for traffic) in association with man.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: SU

ARACHNIDS

Bandit Cave spider *Cicurina bandida*

Very small, subterrestrial, subterranean obligate

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G2Q	State Rank: S1

Bone Cave harvestman *Texella reyesi*

Small, blind, cave-adapted harvestman endemic to several caves in Travis and Williamson counties; weakly differentiated from Texella reddelli

Federal Status: LE	State Status:	SGCN: Y
Endemic: Y	Global Rank: G2G3	State Rank: S2

No accepted common name *Tartarocreagris altimana*

Habitat description is not available at this time.

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G1G2	State Rank: S1

No accepted common name *Texella spinoperca*

Habitat description is not available at this time.

Federal Status:	State Status:	SGCN: Y
Endemic:	Global Rank: GNR	State Rank: SNR

No accepted common name *Tartarocreagris attenuata*

Habitat description is not available at this time.

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G1G2	State Rank: S1

No accepted common name *Tartarocreagris domina*

Habitat description is not available at this time.

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G1G2	State Rank: S1

TRAVIS COUNTY

ARACHNIDS

No accepted common name *Tartarocreagris proserpina*
Habitat description is not available at this time.
Federal Status: State Status: SGCN: Y
Endemic: Y Global Rank: G1G2 State Rank: S1

No accepted common name *Eidmannella reclusa*
Habitat description is not available at this time.
Federal Status: State Status: SGCN: Y
Endemic: Y Global Rank: G1G2 State Rank: S1

No accepted common name *Cicurina travisae*
Habitat description is not available at this time.
Federal Status: State Status: SGCN: Y
Endemic: Y Global Rank: G1G2Q State Rank: S1

No accepted common name *Texella mulaiki*
Habitat description is not available at this time.
Federal Status: State Status: SGCN: Y
Endemic: Y Global Rank: G2G3 State Rank: S2

No accepted common name *Tartarocreagris infernalis*
Habitat description is not available at this time.
Federal Status: State Status: SGCN: Y
Endemic: Y Global Rank: G2G3 State Rank: S2?

No accepted common name *Tartarocreagris intermedia*
Habitat description is not available at this time.
Federal Status: State Status: SGCN: Y
Endemic: Y Global Rank: G1G2 State Rank: S1

No accepted common name *Texella grubbsi*
Habitat description is not available at this time.
Federal Status: State Status: SGCN: Y
Endemic: Y Global Rank: G1G2 State Rank: S1

TRAVIS COUNTY

ARACHNIDS

Reddell harvestman *Texella reddelli*

Small, blind, cave-adapted harvestman endemic to a few caves in Travis and Williamson counties

Federal Status: LE	State Status:	SGCN: Y
Endemic: Y	Global Rank: G2G3	State Rank: S2

Tooth Cave pseudoscorpion *Tartarocreagris texana*

Small, cave-adapted pseudoscorpion known from small limestone caves of the Edwards Plateau

Federal Status: LE	State Status:	SGCN: Y
Endemic: Y	Global Rank: G1G2	State Rank: S1

Tooth Cave spider *Neoleptoneta myopica*

Very small, cave-adapted, sedentary spider

Federal Status: LE	State Status:	SGCN: Y
Endemic:	Global Rank: G1G2	State Rank: S1

BIRDS

bald eagle *Haliaeetus leucocephalus*

Found primarily near rivers and large lakes; nests in tall trees or on cliffs near water; communally roosts, especially in winter; hunts live prey, scavenges, and pirates food from other birds

Federal Status:	State Status: T	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S3B,S3N

black rail *Laterallus jamaicensis*

Salt, brackish, and freshwater marshes, pond borders, wet meadows, and grassy swamps; nests in or along edge of marsh, sometimes on damp ground, but usually on mat of previous years dead grasses; nest usually hidden in marsh grass or at base of Salicornia

Federal Status: PT	State Status:	SGCN: Y
Endemic: N	Global Rank: G3G4	State Rank: S2

black-capped vireo *Vireo atricapilla*

Oak-juniper woodlands with distinctive patchy, two-layered aspect; shrub and tree layer with open, grassy spaces; requires foliage reaching to ground level for nesting cover; return to same territory, or one nearby, year after year; deciduous and broad-leaved shrubs and trees provide insects for feeding; species composition less important than presence of adequate broad-leaved shrubs, foliage to ground level, and required structure; nesting season March-late summer

Federal Status:	State Status: E	SGCN: Y
Endemic: N	Global Rank: G3	State Rank: S2B

TRAVIS COUNTY

BIRDS

Franklin's gull *Leucophaeus pipixcan*

Habitat description is not available at this time.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G4G5	State Rank: S2N

golden-cheeked warbler *Setophaga chrysoparia*

Ashe juniper in mixed stands with various oaks (Quercus spp.). Edges of cedar brakes. Dependent on Ashe juniper (also known as cedar) for long fine bark strips, only available from mature trees, used in nest construction; nests are placed in various trees other than Ashe juniper; only a few mature junipers or nearby cedar brakes can provide the necessary nest material; forage for insects in broad-leaved trees and shrubs; nesting late March-early summer.

Federal Status: LE	State Status: E	SGCN: Y
Endemic: N	Global Rank: G2	State Rank: S2B

interior least tern *Sternula antillarum athalassos*

Sand beaches, flats, bays, inlets, lagoons, islands. Subspecies is listed only when inland (more than 50 miles from a coastline); nests along sand and gravel bars within braided streams, rivers; also know to nest on man-made structures (inland beaches, wastewater treatment plants, gravel mines, etc); eats small fish and crustaceans, when breeding forages within a few hundred feet of colony

Federal Status: LE	State Status: E	SGCN: Y
Endemic: N	Global Rank: G4T2Q	State Rank: S1B

mountain plover *Charadrius montanus*

Breeding: nests on high plains or shortgrass prairie, on ground in shallow depression; nonbreeding: shortgrass plains and bare, dirt (plowed) fields; primarily insectivorous

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G3	State Rank: S2

piping plover *Charadrius melodus*

Beaches, sandflats, and dunes along Gulf Coast beaches and adjacent offshore islands. Also spoil islands in the Intracoastal Waterway. Based on the November 30, 1992 Section 6 Job No. 9.1, Piping Plover and Snowy Plover Winter Habitat Status Survey, algal flats appear to be the highest quality habitat. Some of the most important aspects of algal flats are their relative inaccessibility and their continuous availability throughout all tidal conditions. Sand flats often appear to be preferred over algal flats when both are available, but large portions of sand flats along the Texas coast are available only during low-very low tides and are often completely unavailable during extreme high tides or strong north winds. Beaches appear to serve as a secondary habitat to the flats associated with the primary bays, lagoons, and inter-island passes. Beaches are rarely used on the southern Texas coast, where bayside habitat is always available, and are abandoned as bayside habitats become available on the central and northern coast. However, beaches are probably a vital habitat along the central and northern coast (i.e. north of Padre Island) during periods of extreme high tides that cover the flats. Optimal site characteristics appear to be large in area, sparsely vegetated, continuously available or in close proximity to secondary habitat, and with limited human disturbance.

Federal Status: LT	State Status: T	SGCN: Y
Endemic: N	Global Rank: G3	State Rank: S2N

TRAVIS COUNTY

BIRDS

swallow-tailed kite *Elanoides forficatus*

Lowland forested regions, especially swampy areas, ranging into open woodland; marshes, along rivers, lakes, and ponds; nests high in tall tree in clearing or on forest woodland edge, usually in pine, cypress, or various deciduous trees

Federal Status:	State Status: T	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S2B

western burrowing owl *Athene cunicularia hypugaea*

Open grasslands, especially prairie, plains, and savanna, sometimes in open areas such as vacant lots near human habitation or airports; nests and roosts in abandoned burrows

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G4T4	State Rank: S2

white-faced ibis *Plegadis chihi*

Prefers freshwater marshes, sloughs, and irrigated rice fields, but will attend brackish and saltwater habitats; currently confined to near-coastal rookeries in so-called hog-wallow prairies. Nests in marshes, in low trees, on the ground in bulrushes or reeds, or on floating mats.

Federal Status:	State Status: T	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S4B

whooping crane *Grus americana*

Small ponds, marshes, and flooded grain fields for both roosting and foraging. Potential migrant via plains throughout most of state to coast; winters in coastal marshes of Aransas, Calhoun, and Refugio counties.

Federal Status: LE	State Status: E	SGCN: Y
Endemic: N	Global Rank: G1	State Rank: S1N

wood stork *Mycteria americana*

Prefers to nest in large tracts of baldcypress (Taxodium distichum) or red mangrove (Rhizophora mangle); forages in prairie ponds, flooded pastures or fields, ditches, and other shallow standing water, including salt-water; usually roosts communally in tall snags, sometimes in association with other wading birds (i.e. active heronries); breeds in Mexico and birds move into Gulf States in search of mud flats and other wetlands, even those associated with forested areas; formerly nested in Texas, but no breeding records since 1960

Federal Status:	State Status: T	SGCN: Y
Endemic: N	Global Rank: G4	State Rank: SHB,S2N

zone-tailed hawk *Buteo albonotatus*

Arid open country, including open deciduous or pine-oak woodland, mesa or mountain county, often near watercourses, and wooded canyons and tree-lined rivers along middle-slopes of desert mountains; nests in various habitats and sites, ranging from small trees in lower desert, giant cottonwoods in riparian areas, to mature conifers in high mountain regions

Federal Status:	State Status: T	SGCN: Y
Endemic: N	Global Rank: G4	State Rank: S3B

TRAVIS COUNTY

CRUSTACEANS

Balcones Cave amphipod *Stygobromus balconis*

Subaquatic, subterranean obligate amphipod

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G2G3	State Rank: S2

Ezell's Cave amphipod *Stygobromus flagellatus*

Known only from artesian wells

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G2G3	State Rank: S3

No accepted common name *Lirceolus bisetus*

Habitat description is not available at this time.

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G1G2	State Rank: S1

FISH

american eel *Anguilla rostrata*

Originally found in all river systems from the Red River to the Rio Grande. Aquatic habtiats include large rivers, streams, tributaries, coastal watersheds, estuaries, bays, and oceans. Spawns in Sargasso Sea, larva move to coastal waters, metamorphose, and begin upstream movements. Females tend to move further upstream than males (who are often found in brackish estuaries). American Eel are habitat generalists and may be found in a broad range of habitat conditions including slow- and fast-flowing waters over many substrate types. Extirpation in upstream drainages attributed to reservoirs that impede upstream migration.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G4	State Rank: S4

Guadalupe bass *Micropterus treculii*

Endemic to the streams of the northern and eastern Edwards Plateau including portions of the Brazos, Colorado, Guadalupe, and San Antonio basins; species also found outside of the Edwards Plateau streams in decreased abundance, primarily in the lower Colorado River; two introduced populations have been established in the Nueces River system. A pure population was re-established in a portion of the Blanco River in 2014. Species prefers lentic environments but commonly taken in flowing water; numerous smaller fish occur in rapids, many times near eddies; large individuals found mainly in riffle tail races; usually found in spring-fed streams having clear water and relatively consistent temperatures.

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G3	State Rank: S3

sharpnose shiner *Notropis oxyrhynchus*

Range is now restricted to upper Brazos River upstream of Possum Kingdom Lake. May be native to Red River and Colorado River basins. Typically found in turbid water over mostly silt and shifting sand substrates.

Federal Status: LE	State Status:	SGCN: Y
Endemic: Y	Global Rank: G3	State Rank: S3

TRAVIS COUNTY

FISH

silverband shiner *Notropis shumardi*

In Texas, found from Red River to Lavaca River; Main channel with moderate to swift current velocities and moderate to deep depths; associated with turbid water over silt, sand, and gravel.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S4

smalleye shiner *Notropis buccula*

Restricted to the Rio Grande basin in Texas including the lower Pecos River. Typically found in large rivers and creeks associated with a variety of flowng-water habitats such as runs and riffles over gravel, cobble, and sand.

Federal Status: LE	State Status:	SGCN: Y
Endemic: Y	Global Rank: G2	State Rank: S2

Texas shiner *Notropis amabilis*

In Texas, it is found primarily in Edwards Plateau streams from the San Gabriel River in the east to the Pecos River in the west. Typical habitat includes rocky or sandy runs, as well as pools.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G4	State Rank: S4

INSECTS

a cave obligate beetle *Rhadine austinica*

Habitat description is not available at this time.

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G1G2	State Rank: S1S2

American bumblebee *Bombus pensylvanicus*

Habitat description is not available at this time.

Federal Status:	State Status:	SGCN: Y
Endemic:	Global Rank: G3G4	State Rank: SNR

Comanche harvester ant *Pogonomyrmex comanche*

Habitat description is not available at this time.

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G2G3	State Rank: S2

Kretschmarr Cave mold beetle *Texamaurops reddelli*

Small, cave-adapted beetle found under rocks buried in silt; small, Edwards Limestone caves in of the Jollyville Plateau, a division of the Edwards Plateau

Federal Status: LE	State Status:	SGCN: Y
Endemic: Y	Global Rank: G1G2	State Rank: S1

TRAVIS COUNTY

INSECTS

No accepted common name *Andrena scotoptera*
Habitat description is not available at this time.
Federal Status: State Status: SGCN: Y
Endemic: Global Rank: GNR State Rank: SNR

No accepted common name *Xiphocentron messapus*
Habitat description is not available at this time.
Federal Status: State Status: SGCN: Y
Endemic: Y Global Rank: G1G3 State Rank: S2?

No accepted common name *Bombus variabilis*
Habitat description is not available at this time.
Federal Status: State Status: SGCN: Y
Endemic: Global Rank: GU State Rank: SNR

No accepted common name *Lymantes nadineae*
Habitat description is not available at this time.
Federal Status: State Status: SGCN: Y
Endemic: Global Rank: GNR State Rank: SNR

No accepted common name *Macrotera parkeri*
Habitat description is not available at this time.
Federal Status: State Status: SGCN: Y
Endemic: Global Rank: GNR State Rank: SNR

No accepted common name *Neotrichia juani*
Habitat description is not available at this time.
Federal Status: State Status: SGCN: Y
Endemic: Global Rank: G1 State Rank: S1

No accepted common name *Rhadine subterranea*
Habitat description is not available at this time.
Federal Status: State Status: SGCN: Y
Endemic: Y Global Rank: G2 State Rank: S2

TRAVIS COUNTY

INSECTS

No accepted common name *Oncopodura fenestra*

Habitat description is not available at this time.

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G2G3	State Rank: S2?

Tooth Cave ground beetle *Rhadine persephone*

Resident, small, cave-adapted beetle found in small Edwards Limestone caves in Travis and Williamson counties

Federal Status: LE	State Status:	SGCN: Y
Endemic: Y	Global Rank: G1G2	State Rank: S1

MAMMALS

American badger *Taxidea taxus*

Habitat description is not available at this time.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S5

Aransas short-tailed shrew *Blarina hylophaga plumbea*

Excavates burrows in sandy soils underlying mottes of live oak trees or in areas with little to no ground cover; 2-3 litters of 4-6 young per year

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G5T1Q	State Rank: S1

big brown bat *Eptesicus fuscus*

Any wooded areas or woodlands except south Texas. Riparian areas in west Texas.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S5

big free-tailed bat *Nyctinomops macrotis*

Habitat data sparse but records indicate that species prefers to roost in crevices and cracks in high canyon walls, but will use buildings, as well; reproduction data sparse, gives birth to single offspring late June-early July; females gather in nursery colonies; winter habits undetermined, but may hibernate in the Trans-Pecos; opportunistic insectivore

Federal Status:	State Status:	SGCN: Y
Endemic:	Global Rank: G5	State Rank: S3

cave myotis bat *Myotis velifer*

Colonial and cave-dwelling; also roosts in rock crevices, old buildings, carports, under bridges, and even in abandoned Cliff Swallow (Hirundo pyrrhonota) nests; roosts in clusters of up to thousands of individuals; hibernates in limestone caves of Edwards Plateau and gypsum cave of Panhandle during winter; opportunistic insectivore.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G4G5	State Rank: S4

TRAVIS COUNTY

MAMMALS

eastern red bat *Lasiurus borealis*

Found in a variety of habitats in Texas. Usually associated with wooded areas. Found in towns especially during migration.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G3G4	State Rank: S4

eastern spotted skunk *Spilogale putorius*

Catholic; open fields prairies, croplands, fence rows, farmyards, forest edges & woodlands. Prefer wooded, brushy areas & tallgrass prairies. S.p. ssp. interrupta found in wooded areas and tallgrass prairies, preferring rocky canyons and outcrops when such sites are available.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G4	State Rank: S1S3

hoary bat *Lasiurus cinereus*

Known from montane and riparian woodland in Trans-Pecos, forests and woods in east and central Texas.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G3G4	State Rank: S4

long-tailed weasel *Mustela frenata*

Includes brushlands, fence rows, upland woods and bottomland hardwoods, forest edges & rocky desert scrub. Usually live close to water.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S5

Mexican free-tailed bat *Tadarida brasiliensis*

Roosts in buildings in east Texas. Largest maternity roosts are in limestone caves on the Edwards Plateau. Found in all habitats, forest to desert.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S5

Mexican long-tongued bat *Choeronycteris mexicana*

Only Texas record is from riparian forest; in general--neotropical nectivorous species roosting in caves, mines, and large crevices found in deep canyons along the Rio Grande ; also found in buildings and often associated with big-eared bats (Plecotus spp.); single TX record from Santa Ana NWR

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G3G4	State Rank: S1

mink *Neovison vison*

Intimately associated with water; coastal swamps & marshes, wooded riparian zones, edges of lakes. Prefer floodplains.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S4

TRAVIS COUNTY

MAMMALS

mountain lion *Puma concolor*

Rugged mountains & riparian zones.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S2S3

plains spotted skunk *Spilogale putorius interrupta*

Catholic; open fields, prairies, croplands, fence rows, farmyards, forest edges, and woodlands; prefers wooded, brushy areas and tallgrass prairie

Federal Status:	State Status:	SGCN: N
Endemic: N	Global Rank: G4T4	State Rank: S1S3

southern short-tailed shrew *Blarina carolinensis*

Habitat description is not available at this time.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S4

swamp rabbit *Sylvilagus aquaticus*

Habitat description is not available at this time.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S5

tricolored bat *Perimyotis subflavus*

Forest, woodland and riparian areas are important. Caves are very important to this species.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G2G3	State Rank: S3S4

western hog-nosed skunk *Conepatus leuconotus*

Habitats include woodlands, grasslands & deserts, to 7200 feet, most common in rugged, rocky canyon country; little is known about the habitat of the ssp. telmalestes

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G4	State Rank: S4

woodland vole *Microtus pinetorum*

Include grassy marshes, swamp edges, old-field/pine woodland ecotones, tallgrass fields; generally sandy soils.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S3

TRAVIS COUNTY

MOLLUSKS

false spike mussel *Fusconaia mitchelli*

Possibly extirpated in Texas; probably medium to large rivers; substrates varying from mud through mixtures of sand, gravel and cobble; one study indicated water lilies were present at the site; Rio Grande, Brazos, Colorado, and Guadalupe (historic) river basins

Federal Status:	State Status: T	SGCN: Y
Endemic: N	Global Rank: G1	State Rank: S1

No accepted common name *Phreatodrobia punctata*

Habitat description is not available at this time.

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G2	State Rank: S1

No accepted common name *Patera leatherwoodi*

Habitat description is not available at this time.

Federal Status:	State Status:	SGCN: Y
Endemic:	Global Rank: G1	State Rank: S1

No accepted common name *Millerelix gracilis*

Habitat description is not available at this time.

Federal Status:	State Status:	SGCN: Y
Endemic:	Global Rank: G2G3	State Rank: S2?

No accepted common name *Stygopyrgus bartonensis*

Habitat description is not available at this time.

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G1	State Rank: S1

smooth pimpleback *Quadrula houstonensis*

Small to moderate streams and rivers as well as moderate size reservoirs; mixed mud, sand, and fine gravel, tolerates very slow to moderate flow rates, appears not to tolerate dramatic water level fluctuations, scoured bedrock substrates, or shifting sand bottoms, lower Trinity (questionable), Brazos, and Colorado River basins

Federal Status: C	State Status: T	SGCN: Y
Endemic: Y	Global Rank: G2	State Rank: S1S2

Texas fatmucket *Lampsilis bracteata*

Streams and rivers on sand, mud, and gravel substrates; intolerant of impoundment; broken bedrock and course gravel or sand in moderately flowing water; Colorado and Guadalupe River basins

Federal Status: C	State Status: T	SGCN: Y
Endemic: Y	Global Rank: G1	State Rank: S1

TRAVIS COUNTY

MOLLUSKS

Texas pimpleback *Cyclonaias petrina*

Mud, gravel and sand substrates, generally in areas with slow flow rates; Colorado River basin.

Federal Status: C	State Status: T	SGCN: Y
Endemic: Y	Global Rank: G2	State Rank: S1

REPTILES

American alligator *Alligator mississippiensis*

Coastal marshes; inland natural rivers, swamps and marshes; manmade impoundments.

Federal Status:	State Status:	SGCN: N
Endemic: N	Global Rank: G5	State Rank: S4

common garter snake *Thamnophis sirtalis*

Irrigation canals and riparian-corridor farmlands in west; marshy, flooded pastureland, grassy or brushy borders of permanent bodies of water; coastal salt marshes.

Federal Status:	State Status:	SGCN: N
Endemic:	Global Rank: G5	State Rank: S2

eastern box turtle *Terrapene carolina*

Eastern box turtles inhabit forests, fields, forest-brush, and forest-field ecotones. In some areas they move seasonally from fields in spring to forest in summer. They commonly enters pools of shallow water in summer. For shelter, they burrow into loose soil, debris, mud, old stump holes, or under leaf litter. They can successfully hibernate in sites that may experience subfreezing temperatures. In Maryland bottomland forest, some hibernated in pits or depressions in forest floor (usually about 30 cm deep) usually within summer range; individuals tended to hibernate in same area in different years (Stickel 1989). Also attracted to farms, old fields and cut-over woodlands, as well as creek bottoms and dense woodlands. Egg laying sites often are sandy or loamy soils in open areas; females may move from bottomlands to warmer and drier sites to nest. In Maryland, females used the same nesting area in different years (Stickel 1989).

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S3

northern spot-tailed earless lizard *Holbrookia lacerata lacerata*

Habitat description is not available at this time.

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G3G4TNR	State Rank: S2

TRAVIS COUNTY

REPTILES

slender glass lizard *Ophisaurus attenuatus*

Prefers relatively dry microhabitats, usually associated with grassy areas. Habitats include open grassland, prairie, woodland edge, open woodland, oak savannas, longleaf pine flatwoods, scrubby areas, fallow fields, and areas near streams and ponds, often in habitats with sandy soil. This species often appears on roads in spring. During inactivity, it occurs in underground burrows. In Kansas, slender glass lizards were scarce in heavily grazed pastures, increased as grass increased with removal of grazing, and declined as brush and trees replaced grass (Fitch 1989). Eggs are laid underground, under cover, or under grass clumps (Ashton and Ashton 1985); in cavities beneath flat rocks or in abandoned tunnels of small mammals (Scalopus, Microtus) (Fitch 1989).

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S3

spot-tailed earless lizard *Holbrookia lacerata*

Central and southern Texas and adjacent Mexico; moderately open prairie-brushland; fairly flat areas free of vegetation or other obstructions, including disturbed areas; eats small invertebrates; eggs laid underground

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G3G4	State Rank: S2

Texas garter snake *Thamnophis sirtalis annectens*

Irrigation canals and riparian-corridor farmlands in west; marshy, flooded pastureland, grassy or brushy borders of permanent bodies of water; coastal salt marshes. Wet or moist microhabitats are conducive to the species occurrence, but is not necessarily restricted to them; hibernates underground or in or under surface cover; breeds March-August.

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G5T4	State Rank: S1

Texas horned lizard *Phrynosoma cornutum*

Occurs to 6000 feet, but largely limited below the pinyon-juniper zone on mountains in the Big Bend area. Open, arid and semi-arid regions with sparse vegetation, including grass, cactus, scattered brush or scrubby trees; soil may vary in texture from sandy to rocky; burrows into soil, enters rodent burrows, or hides under rock when inactive; breeds March-September.

Federal Status:	State Status: T	SGCN: Y
Endemic: N	Global Rank: G4G5	State Rank: S3

Texas map turtle *Graptemys versa*

Rivers with moderate current, abundant aquatic vegetation, and basking logs; also associated oxbows and lakes (Bartlett and Bartlett 1999).

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G4	State Rank: SU

Texas tortoise *Gopherus berlandieri*

Open brush with a grass understory is preferred; open grass and bare ground are avoided. Seasonally flooded tidal flats are not utilized. When inactive occupies shallow depressions at base of bush or cactus, sometimes in underground burrows or under objects; longevity greater than 50 years; active March-November; breeds April-November

Federal Status:	State Status: T	SGCN: Y
Endemic: N	Global Rank: G4	State Rank: S2

TRAVIS COUNTY

REPTILES

timber (canebrake) rattlesnake *Crotalus horridus*

Swamps, floodplains, upland pine and deciduous woodland, riparian zones, abandoned farmland. Limestone bluffs, sandy soil or black clay. Prefers dense ground cover, i.e. grapevines, palmetto.

Federal Status:	State Status: T	SGCN: Y
Endemic: N	Global Rank: G4	State Rank: S4

western box turtle *Terrapene ornata*

Ornate or western box trutles inhabit prairie grassland, pasture, fields, sandhills, and open woodland. They are essentially terrestrial but sometimes enter slow, shallow streams and creek pools. For shelter, they burrow into soil (e.g., under plants such as yucca) (Converse et al. 2002) or enter burrows made by other species; winter burrow depth was 0.5-1.8 meters in Wisconsin (Doroff and Keith 1990), 7-120 cm (average depth 54 cm) in Nebraska (Converse et al. 2002). Eggs are laid in nests dug in soft well-drained soil in open area (Legler 1960, Converse et al. 2002). Very partial to sandy soil.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S3

PLANTS

arrowleaf milkvine *Matelea sagittifolia*

Most consistently encountered in thornscrub in South Texas; Perennial; Flowering March-July; Fruiting April-July and Dec?

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G3	State Rank: S3

basin bellflower *Campanula reverchonii*

Among scattered vegetation on loose gravel, gravelly sand, and rock outcrops on open slopes with exposures of igneous and metamorphic rocks; may also occur on sandbars and other alluvial deposits along major rivers; flowering May-July

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G2	State Rank: S2

bracted twistflower *Streptanthus bracteatus*

Shallow, well-drained gravelly clays and clay loams over limestone in oak juniper woodlands and associated openings, on steep to moderate slopes and in canyon bottoms; several known soils include Tarrant, Brackett, or Speck over Edwards, Glen Rose, and Walnut geologic formations; populations fluctuate widely from year to year, depending on winter rainfall; flowering mid April-late May, fruit matures and foliage withers by early summer

Federal Status: C	State Status:	SGCN: Y
Endemic: Y	Global Rank: G1	State Rank: S1

Buckley tridens *Tridens buckleyanus*

Occurs in juniper-oak woodlands on rocky limestone slopes; Perennial; Flowering/Fruiting April-Nov

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G3G4	State Rank: S3S4

TRAVIS COUNTY

PLANTS

canyon bean *Phaseolus texensis*

Narrowly endemic to rocky canyons in eastern and southern Edwards Plateau occurring on limestone soils in mixed woodlands, on limestone cliffs and outcrops, frequently along creeks.

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G2	State Rank: S2

canyon mock-orange *Philadelphus texensis var. ernestii*

Usually found growing from honeycomb pits on outcrops of Cretaceous limestone exposed as rimrock along mesic canyons, usually in the shade of mixed evergreen-deciduous canyon woodland; flowering April-June, fruit dehiscing September-October

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G2	State Rank: S3

canyon sedge *Carex edwardsiana*

Habitat description is not available at this time.

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G3G4	State Rank: S3S4

Correll's false dragon-head *Physostegia correllii*

Wet, silty clay loams on streamsides, in creek beds, irrigation channels and roadside drainage ditches; or seepy, mucky, sometimes gravelly soils along riverbanks or small islands in the Rio Grande; or underlain by Austin Chalk limestone along gently flowing spring-fed creek in central Texas; flowering May-September

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G2	State Rank: S2

Engelmann's bladderpod *Physaria engelmannii*

Grasslands and calcareous rock outcrops in a band along the eastern edge of the Edwards Plateau, ranging as far north as the Red River (Carr 2015).

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G4	State Rank: S3

glandular gay-feather *Liatris glandulosa*

Occurs in herbaceous vegetation on limestone outcrops (Carr 2015)

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G3	State Rank: S3

TRAVIS COUNTY

PLANTS

Glass Mountains coral-root *Hexalectris nitida*

Apparently rare in mixed woodlands in canyons in the mountains of the Brewster County, but encountered with regularity, albeit in small numbers, under Juniperus ashei in woodlands over limestone on the Edwards Plateau, Callahan Divide and Lampasas Cutplain; Perennial; Flowering June-Sept; Fruiting July-Sept

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G3	State Rank: S3

gravelbar brickellbush *Brickellia dentata*

Essentially restricted to frequently-scoured gravelly alluvial beds in creek and river bottoms; Perennial; Flowering June-Nov; Fruiting June-Oct

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G3G4	State Rank: S3S4

Greenman's bluet *Houstonia parviflora*

Habitat description is not available at this time.

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G3	State Rank: S3

Heller's marbleseed *Onosmodium helleri*

Occurs in loamy calcareous soils in oak-juniper woodlands on rocky limestone slopes, often in more mesic portions of canyons; Perennial; Flowering March-May

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G3	State Rank: S3

low spurge *Euphorbia peplidion*

Occurs in a variety of vernally-moist situations in a number of natural regions; Annual; Flowering Feb-April; Fruiting March-April

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G3	State Rank: S3

narrowleaf brickellbush *Brickellia eupatorioides var. gracillima*

Moist to dry gravelly alluvial soils along riverbanks but also on limestone slopes; Perennial; Flowering/Fruiting April-Nov

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G5T3	State Rank: S3

net-leaf bundleflower *Desmanthus reticulatus*

Mostly on clay prairies of the coastal plain of central and south Texas; Perennial; Flowering April-July; Fruiting April-Oct

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G3	State Rank: S3

TRAVIS COUNTY

PLANTS

Plateau loosestrife *Lythrum ovalifolium*

Banks and gravelly beds of perennial (or strong intermittent) streams on the Edwards Plateau, Llano Uplift and Lampasas Cutplain; Perennial; Flowering/Fruiting April-Nov

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G3G4	State Rank: S3S4

plateau milkvine *Matelea edwardsensis*

Occurs in various types of juniper-oak and oak-juniper woodlands; Perennial; Flowering March-Oct; Fruiting May-June

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G3	State Rank: S3

rock grape *Vitis rupestris*

Occurs on rocky limestone slopes and in streambeds; Perennial; Flowering March-May; Fruiting May-July

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G3	State Rank: S1

scarlet leather-flower *Clematis texensis*

Usually in oak-juniper woodlands in mesic rocky limestone canyons or along perennial streams; Perennial; Flowering March-July; Fruiting May-July

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G3G4	State Rank: S3S4

spreading leastdaisy *Chaetopappa effusa*

Limestone cliffs, ledges, bluffs, steep hillsides, sometimes in seepy areas, oak-juniper, oak, or mixed deciduous woods, 300-500 m elevation; Perennial; Flowering (May) July-Oct

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G3G4	State Rank: S3S4

Stanfield's beebalm *Monarda stanfieldii*

Largely confined to granite sands along the middle course of the Colorado River and its tributaries; Perennial

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G3	State Rank: S3

sycamore-leaf snowbell *Styrax platanifolius ssp. platanifolius*

Rare throughout range, usually in oak-juniper woodlands on steep rocky banks and ledges along intermittent or perennial streams, rarely far from some reliable source of moisture; Perennial; Flowering April-May; Fruiting May-Aug.

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G3T3	State Rank: S3

Texabama croton *Croton alabamensis var. texensis*

TRAVIS COUNTY

PLANTS

In duff-covered loamy clay soils on rocky slopes in forested, mesic limestone canyons; locally abundant on deeper soils on small terraces in canyon bottoms, often forming large colonies and dominating the shrub layer; scattered individuals are occasionally on sunny margins of such forests; also found in contrasting habitat of deep, friable soils of limestone uplands, mostly in the shade of evergreen woodland mottes; flowering late February-March; fruit maturing and dehiscing by early June

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G3T2	State Rank: S2

Texas almond *Prunus minutiflora*

Wide-ranging but scarce, in a variety of grassland and shrubland situations, mostly on calcareous soils underlain by limestone but occasionally in sandier neutral soils underlain by granite; Perennial; Flowering Feb-May and Oct; Fruiting Feb-Sept

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G3G4	State Rank: S3S4

Texas amorpha *Amorpha roemeriana*

Juniper-oak woodlands or shrublands on rocky limestone slopes, sometimes on dry shelves above creeks; Perennial; Flowering May-June; Fruiting June-Oct

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G3	State Rank: S3

Texas barberry *Berberis swaseyi*

Shallow calcareous stony clay of upland grasslands/shrublands over limestone as well as in loamier soils in openly wooded canyons and on creek terraces; Perennial; Flowering/Fruiting March-June

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G3	State Rank: S3

Texas fescue *Festuca versuta*

Occurs in mesic woodlands on limestone-derived soils on stream terraces and canyon slopes; Perennial; Flowering/Fruiting April-June

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G3	State Rank: S3

Texas milk vetch *Astragalus reflexus*

Grasslands, prairies, and roadsides on calcareous and clay substrates; Annual; Flowering Feb-June; Fruiting April-June

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G3	State Rank: S3

Texas seymeria *Seymeria texana*

Found primarily in grassy openings in juniper-oak woodlands on dry rocky slopes but sometimes on rock outcrops in shaded canyons; Annual; Flowering May-Nov; Fruiting July-Nov

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G3	State Rank: S3

TRAVIS COUNTY

PLANTS

tree dodder *Cuscuta exaltata*

Parasitic on various Quercus, Juglans, Rhus, Vitis, Ulmus, and Diospyros species as well as Acacia berlandieri and other woody plants; Annual; Flowering May-Oct; Fruiting July-Oct

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G3	State Rank: S3

turnip-root scurfea *Pediomelum cyphocalyx*

Grasslands and openings in juniper-oak woodlands on limestone substrates on the Edwards Plateau and in north-central Texas (Carr 2015).

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G3G4	State Rank: S3S4

Warnock's coral-root *Hexalectris warnockii*

In leaf litter and humus in oak-juniper woodlands on shaded slopes and intermittent, rocky creekbeds in canyons; in the Trans Pecos in oak-pinyon-juniper woodlands in higher mesic canyons (to 2000 m [6550 ft]), primarily on igneous substrates; in Terrell County under Quercus fusiformis mottes on terrraces of spring-fed perennial streams, draining an otherwise rather xeric limestone landscape; on the Callahan Divide (Taylor County), the White Rock Escarpment (Dallas County), and the Edwards Plateau in oak-juniper woodlands on limestone slopes; in Gillespie County on igneous substrates of the Llano Uplift; flowering June-September; individual plants do not usually bloom in successive years

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G2G3	State Rank: S2

Wright's milkvetch *Astragalus wrightii*

Habitat description is not available at this time.

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G3	State Rank: S3

IPaC **U.S. Fish & Wildlife Service**

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Project information

NAME

ACL Transfer Station

LOCATION

Travis County, Texas

Local office

Austin Ecological Services Field Office

(512) 490-0057
(512) 490-0974

10711 Burnet Road, Suite 200
Austin, TX 78758-4460

http://www.fws.gov/southwest/es/AustinTexas/
http://www.fws.gov/southwest/es/EndangeredSpecies/lists/

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population, even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Log in to IPaC.
2. Go to your My Projects list.
3. Click PROJECT HOME for this project.
4. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information.
2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Birds

NAME	STATUS

Golden-cheeked Warbler (=wood) Dendroica chrysoparia — Endangered

No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/33

Least Tern Sterna antillarum — Endangered

This species only needs to be considered if the following condition applies:

- Wind Energy Projects

No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/8505

Piping Plover Charadrius melodus — Threatened

This species only needs to be considered if the following condition applies:

- Wind Energy Projects

There is **final** critical habitat for this species. Your location is outside the critical habitat.
https://ecos.fws.gov/ecp/species/6039

Red Knot Calidris canutus rufa — Threatened

This species only needs to be considered if the following condition applies:

- Wind Energy Projects

No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/1864

Whooping Crane Grus americana — Endangered

There is **final** critical habitat for this species. Your location is outside the critical habitat.
https://ecos.fws.gov/ecp/species/758

Amphibians

NAME	STATUS

Austin Blind Salamander Eurycea waterlooensis — Endangered

There is **final** critical habitat for this species. Your location is outside the critical habitat.
https://ecos.fws.gov/ecp/species/5737

Barton Springs Salamander Eurycea sosorum — Endangered

No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/1113

NAME	STATUS
Jollyville Plateau Salamander Eurycea tonkawae There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/3116	Threatened

Clams

NAME	STATUS
Texas Fatmucket Lampsilis bracteata No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9041	Candidate
Texas Fawnsfoot Truncilla macrodon No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/8965	Candidate
Texas Pimpleback Quadrula petrina No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/8966	Candidate

Insects

NAME	STATUS
Kretschmarr Cave Mold Beetle Texamaurops reddelli No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/3140	Endangered
Tooth Cave Ground Beetle Rhadine persephone No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/5625	Endangered

Arachnids

NAME	STATUS
Bee Creek Cave Harvestman Texella reddelli No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/2464	Endangered
Bone Cave Harvestman Texella reyesi No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/5306	Endangered
Tooth Cave Pseudoscorpion Tartarocreagris texana No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/6667	Endangered

NAME	STATUS
Tooth Cave Spider Neoleptoneta myopica No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/2360	Endangered

Flowering Plants

NAME	STATUS
Bracted Twistflower Streptanthus bracteatus No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/2856	Candidate

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

THERE ARE NO CRITICAL HABITATS AT THIS LOCATION.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php
- Measures for avoiding and minimizing impacts to birds http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php
- Nationwide conservation measures for birds http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general

public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON (IF A BREEDING SEASON IS INDICATED FOR A BIRD ON YOUR LIST, THE BIRD MAY BREED IN YOUR PROJECT AREA SOMETIME WITHIN THE TIMEFRAME SPECIFIED, WHICH IS A VERY LIBERAL ESTIMATE OF THE DATES INSIDE WHICH THE BIRD BREEDS ACROSS ITS ENTIRE RANGE. "BREEDS ELSEWHERE" INDICATES THAT THE BIRD DOES NOT LIKELY BREED IN YOUR PROJECT AREA.)
American Golden-plover Pluvialis dominica This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds elsewhere
Bald Eagle Haliaeetus leucocephalus This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Sep 1 to Jul 31
Harris's Sparrow Zonotrichia querula This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds elsewhere
Lesser Yellowlegs Tringa flavipes This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9679	Breeds elsewhere

Long-billed Curlew Numenius americanus — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/5511

Sprague's Pipit Anthus spragueii — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/8964

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (■)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

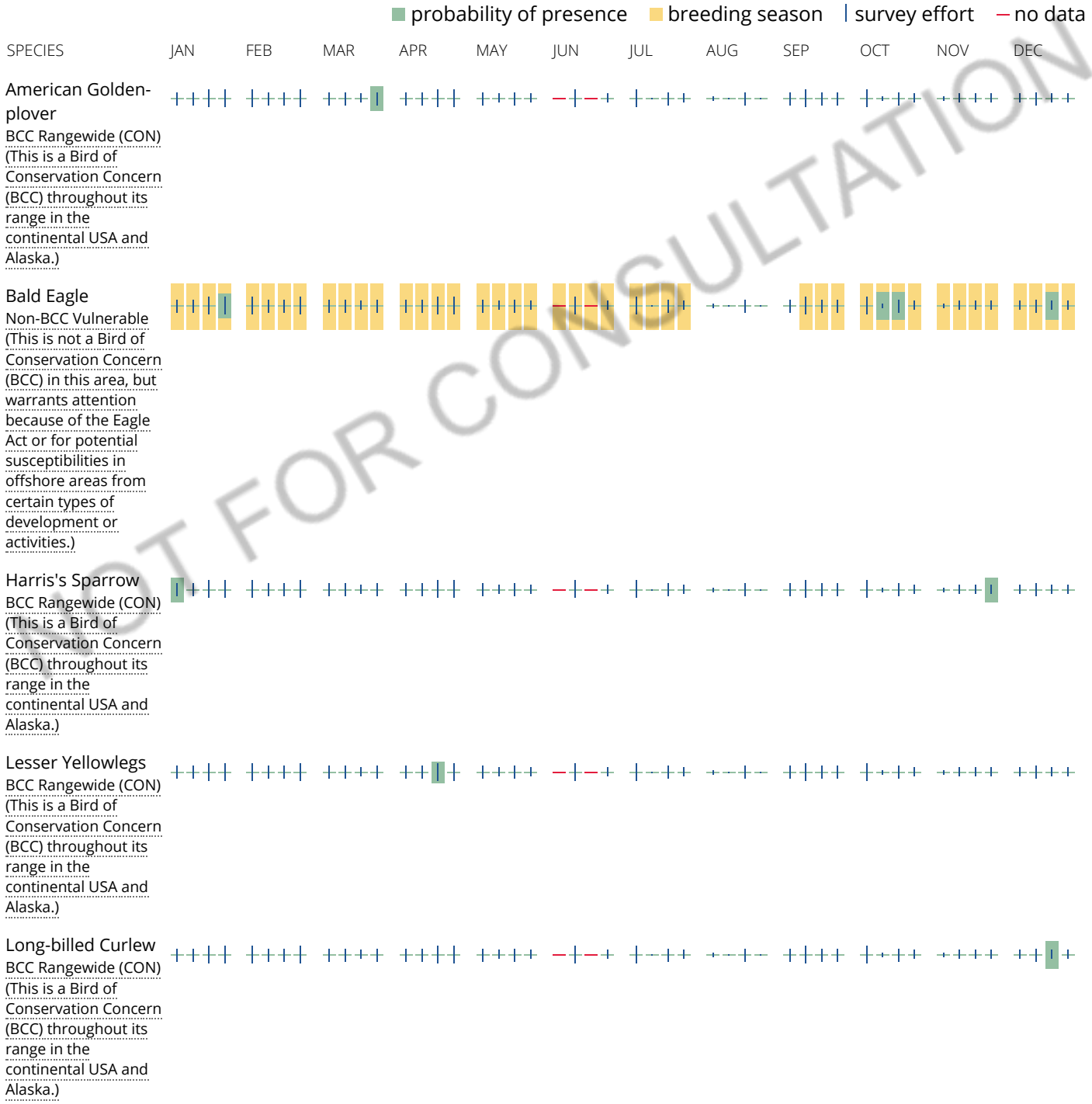
Survey Effort (|)

Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



Sprague's Pipit
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures and/or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the AKN Phenology Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets .

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: The Cornell Lab of Ornithology All About Birds Bird Guide, or (if you are unsuccessful in locating the bird of interest there), the Cornell Lab of Ornithology Neotropical Birds guide. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ “What does IPaC use to generate the migratory birds potentially occurring in my specified location”. Please be aware this report provides the “probability of presence” of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the “no data” indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ “Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds” at the bottom of your migratory bird trust resources page.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS AT THIS LOCATION.

Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

Wetlands in the National Wetlands Inventory

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

THERE ARE NO KNOWN WETLANDS AT THIS LOCATION.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

COPY OF WETLANDS DOCUMENTATION FOR EXISTING FACILITY AREAS

WETLANDS DETERMINATION
AUSTIN COMMUNITY RECYCLING AND DISPOSAL FACILITY
TRAVIS COUNTY, TEXAS

Pursuant to 30 Tex. Admin. Code (TAC) §330.61(m)(2)-(3), the following provides the results of Horizon Environmental Services, Inc.'s (Horizon) determination of wetlands and other "waters of the US" within the subject site (Figure 1, attached) under applicable federal, state, and local laws and regulations. The jurisdictional determination consisted of a pre-field literature review and a site assessment conducted according to the routine determination methodology prescribed by the 1987 *US Army Corps of Engineers (USACE) Wetlands Delineation Manual* and USACE Regulatory Guidance Letter (RGL) 05-05 (7 December 2005).

Federal Criteria

Areas subject to jurisdiction under Section 404 of the federal Clean Water Act are commonly called "wetlands." However, "wetlands" are subsets of areas subject to jurisdiction (Section 404 jurisdictional areas) and potential permitting constraints. The overall term used in the federal regulations is "waters of the US," which includes wetlands; all surface tributary streams with a defined channel; all major streams, rivers, and lakes; ponds constructed on jurisdictional streams; and occasionally artificial features such as ditches or abandoned borrow pits within floodplains that have developed wetlands characteristics or that are directly connected to other waters of the US. Federal regulations define jurisdictional wetlands as areas within floodplains or adjacent to other "waters of the US" that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support (and that under normal circumstances do support) a prevalence of vegetation typically adapted for life in saturated soil conditions (33 CFR §328.3(b); 40 CFR §230.3(t)).

State Criteria

The applicable State of Texas regulations define "wetlands" as an area (including a swamp, marsh, bog, prairie pothole, or similar area) having a predominance of hydric soils that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support (and that under normal circumstances do support) the growth and regeneration of hydrophytic vegetation. The term "hydric soil" means soil that, in its undrained condition, is saturated, flooded, or ponded long enough during a growing season to develop an anaerobic condition that supports the growth and regeneration of hydrophytic vegetation. The term "hydrophytic vegetation" means a plant growing in water or a substrate that is at least periodically deficient in oxygen during a growing season as a result of excessive water content.

Under the state regulations, the term "wetland" specifically does not include irrigated acreage used as farmland; a man-made wetland of less than one acre; or a man-made wetland for which construction or creation commenced on or after August 28, 1989, and which was not constructed with wetland creation as a stated objective, including but not limited to an impoundment made for the purpose of soil and water conservation which has been approved or requested by soil and water conservation districts (30 TAC §307.3(69)).

If the state definition of wetland conflicts with the federal definition in any manner, the state regulations provide that the federal definition prevails.

Local Criteria

The City of Austin (COA) defines a wetland as "a transitional land between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water, and conforms to the Army Corps of Engineers definition" (COA Land Development Code (LDC) §25-8-1(11)).

Background

The Austin Community Recycling and Disposal Facility is an existing Type I municipal solid waste landfill operated by Waste Management of Texas, Inc. pursuant to Permit No. MSW 249C and located in Travis County, Texas. The existing facility consists of approximately 289 acres. Waste Management proposes an approximate 71-acre expansion of the existing facility.

Literature Review

The pre-field evaluation included a review of the Natural Resources Conservation Service (NRCS) Soil Survey of Travis County, US Geological Survey (USGS), Austin East, Texas, quadrangle map; National Wetland Inventory (NWI) maps; and aerial photography.

Wetland Determination

As mapped by the NRCS Soil Survey, soils on the subject site consist of the following soil types (Werchan et al., 1974, Soils Survey of Travis County, Texas, USDA Soil Conservation Service):

TABLE 1: ON-SITE MAPPED SOIL TYPES

SOIL NAME	SOIL TYPE	SOIL DEPTH (FEET)	UNDERLYING MATERIAL	PERMEABILITY	AVAILABLE WATER CAPACITY	SHRINK-SWELL CAPACITY
Ferris-Heiden clay, 8 to 20% slopes, severely eroded (FhF3)	clay	4.2	silty clay	very slow	high	high
Heiden clay, 1 to 3% slopes (HeB)	clay	4.2	silty clay	very slow	high	high
Heiden clay, 3 to 5% slope (HeC3)	clay	6	Chalk	very slow	high	high
Trinity clay, frequently flooded (Tw)	clay	8	Chalk	very slow	high	high

Trinity clay is the only soil type that occurs on the subject site which is classified as a hydric soil by the NRCS list of Hydric Soils of Texas as viewed at http://soils.usda.gov/use/hydric.htm. This soils type occurs only along the lower reaches of the main tributary along the western boundary of the expansion area.

Based on field observations and a review of USGS topographic maps and color infrared photography, Horizon determined that federal jurisdictional "waters of the US" and state- and COA-defined wetlands are present on the subject site. Areas associated with the largest on-site tributary of Walnut Creek as well as short distances of 2 small drainages would be considered jurisdictional by the USACE under Federal criteria for waters of the US. Only the lower-most reach of the main tributary in the southwestern corner of the expansion area exhibits hydrophytic vegetation and hydric soils sufficient to meet the criteria for wetlands under 30 TAC §307.3(69) and COA LDC §25-8-1(11).

During the field investigation, six (6) stock ponds were observed on the proposed expansion area. None of the ponds were located on a defined waterway. The associated drainages for these ponds up-stream or downstream of the ponds did not exhibit a defined bed and bank condition (ordinary high water mark) as required by RGL 05-05. Therefore, the ponds would be considered off-channel and non-jurisdictional by the USACE. Additionally, all six ponds were determined to be man-made and less than one acre in size; therefore, they would not be

considered wetlands under the state wetlands definition in 30 TAC §307.3(69). The largest pond in the north central portion of the expansion area exhibits hydric vegetation and soils, thus, meeting the definition of a wetland under COA LDC §13-7-3.

A non-jurisdictional erosional gully occurs in the northwest portion of the subject site which was created by the construction of an earthen contour to the east of the main drainage. The erosional gully does not contain hydric soils and does not contain (and would not be expected to support) hydrophytic vegetation. Additionally, the gully does not exhibit an ordinary high water mark. Accordingly, the gully would not be considered jurisdictional under federal, state, or local criteria.

Field Investigations

During the site reconnaissance, Horizon noted 1 main unnamed drainage that flows across the site from north to south along the west site boundary and eventually drains into Walnut Creek southeast of the subject site. Walnut Creek flows south and west to an eventual confluence with the Colorado River, a navigable stream. The approximately 3088 foot long main tributary exhibited an ordinary high water mark of varying widths ranging from 4 feet to 8 feet. An additional small tributary branches eastward from the main tributary on the northern portion of the expansion area and is approximately 350 feet long and 3 feet wide. A third small tributary branches eastward from the main in the central portion of the site and is 345 feet long and 4 feet wide. These areas, as mentioned above, would be considered jurisdictional "waters of the US" under federal criteria. The lower-most reach of the main tributary in the southwestern corner of the expansion area was confirmed to exhibit hydrophytic vegetation and hydric soils to meet the criteria for wetlands under 30 TAC §307.3(69) and COA LDC §13-7-3. Additionally, the largest pond in the north central portion of the expansion area exhibits hydric vegetation and soils, thus, meeting the definition of a wetland under COA LDC §13-7-3, but was determined to be less than 1 acre in size. Therefore, this pond would not be considered wetlands under the state wetlands definition in 30 TAC §307.3(69).

Figure 1 (attached) identifies these areas that would be subject to federal, state, and local jurisdiction as "waters of the US" or wetlands. During site reconnaissance efforts, a 100% pedestrian reconnaissance of the entire length of all mapped streams was conducted and measurements were taken of the average jurisdictional width and length of all "waters of the US"/wetlands. These widths and lengths represent approximately 1.15 acres of defined stream bed within the subject site. All streams on-site are judged to be ephemeral in nature due to the lack of any observable evidence of groundwater contributions.

No other areas on the land fill expansion were noted to exhibit hydric soils, hydrophytic vegetation, or wetland hydrology.

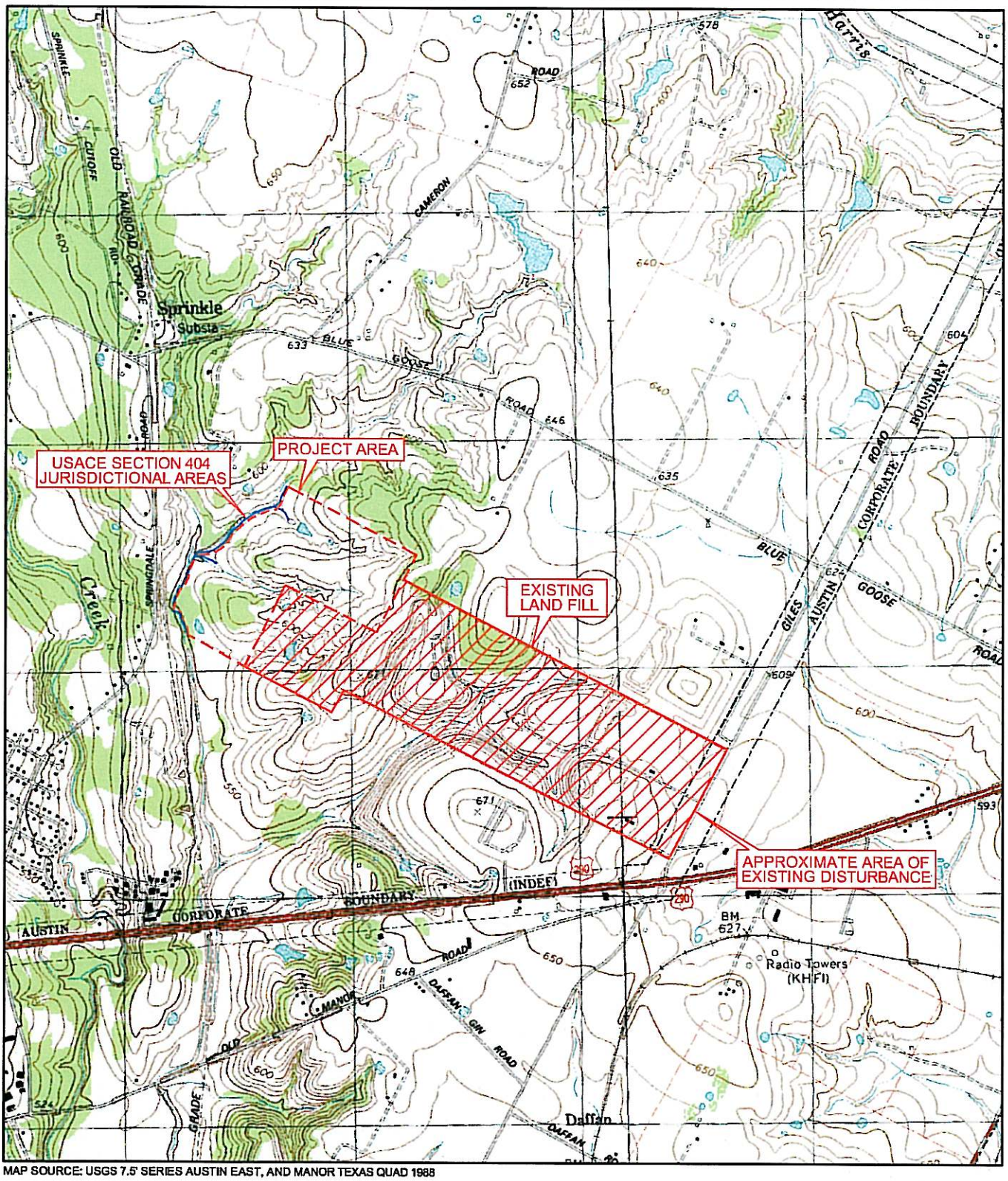
Recommendations

In the event that the areas defined as jurisdictional "waters of the US"/wetlands above may be determined to be impacted by project-specific development activities resulting in the placement of fill material into any of these drainages, authorization from the USACE should be sought. Pursuant to 30 TAC §330.61(m)(2), the requisite state demonstration under 30 TAC §330.553 can be made by providing evidence that the facility has a USACE permit for the use of any jurisdictional areas.

If the extent of fill into jurisdictional areas will not exceed 0.5 acres for the entire project, 1 or more Nationwide Permits that provide streamlined coordination and timing may be available. Ninety to 120 days plus permit application preparation time should be allowed for obtaining authorization for minimal impacts under the Nationwide Permits (land fill, roadway, or utility crossings, etc.). Impacts greater than 0.5 acres would require authorization under an Individual Permit. Individual Permits necessitate a 30-day public notice and review by all applicable state and federal natural resource agencies and frequently take up to a year to finalize. It should be noted that no Nationwide Permit exists specifically for landfills. However, the USACE has allowed landfills to claim NWP #39 (for commercial, residential, and institutional projects) under some circumstances.

C. Lee Sherrod, Certified Professional Wetland Scientist No. 000155

030198WD\030198vic3WD.dwg\CRB\01-16-04



MAP SOURCE: USGS 7.5' SERIES AUSTIN EAST, AND MANOR TEXAS QUAD 1988

0 1000 2000
SCALE IN FEET

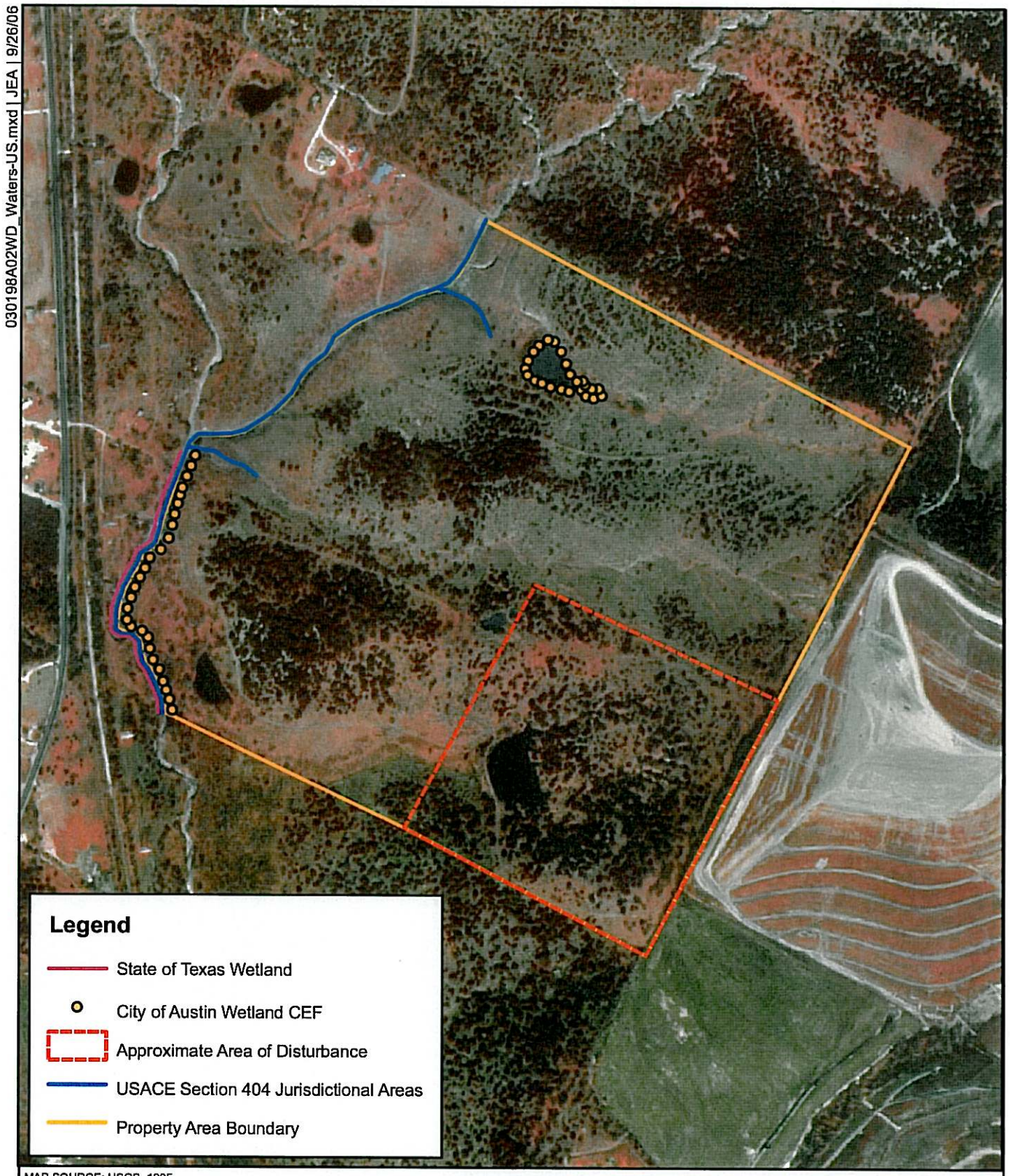
N

TRAVIS COUNTY

FIGURE 1

VICINITY MAP
AUSTIN COMMUNITY RECYCLING
AND DISPOSAL FACILITY
AUSTIN, TRAVIS COUNTY, TEXAS

Horizon
Environmental Services, Inc.



MAP SOURCE: USGS, 1995.

Horizon Environmental Services, Inc.

0 300 600
Feet

FIGURE 2

WETLAND DETERMINATION
AUSTIN COMMUNITY RECYCLING
AND DISPOSAL FACILITY
AUSTIN, TRAVIS COUNTY, TEXAS

Horizon™

Environmental Services, Inc.

6 January 2006

Ms. Carol Stewart
Doucet & Associates, Inc.
7401 W. Hwy 71, Suite 160
Austin, TX 78735

Re: Austin Community Recycling and Disposal Facility
CEF Ponds in Expansion Area
Corps of Engineers Jurisdiction and Regulatory Requirements
HJN 030198

An issue has apparently been raised by the City of Austin regarding the potential Section 404 jurisdiction of one or more stock ponds within the expansion area for Austin Community Land Fill and any requirements for notification of the Corps of Engineers for any impacts related to the landfill expansion. Horizon conducted a Section 404 jurisdictional determination for the expansion in 2004. Below is an excerpt from our report regarding 404 jurisdiction:

"Based on field observations and a review of USGS topographic maps and color infrared photography, Horizon determined that jurisdictional "waters of the US" are present on the subject site. Areas associated with the largest on-site tributary of Walnut Creek as well as short distances of 2 small drainages would be considered jurisdictional by the USACE. During the field investigation, 6 stock ponds were observed; however, the associated drainages for these ponds up stream or down stream of the ponds did not have a defined bed and bank. Therefore, the ponds would not be considered jurisdictional by the USACE."

We determined that all ponds on the expansion area were non-jurisdictional upland stock ponds (Figure 1). Therefore, any modification to those ponds would not require authorization by the U.S. Army Corps of Engineers. Our map of Section 404 jurisdiction is attached for reference.

The expansion plans you have provided include a storm water management facility that will affect a short segment of one of the ephemeral waterways. Construction of new storm water management facilities with impacts less than ½ acre of jurisdictional area can be authorized by existing nationwide permit #43. Impacts greater than 1/10th acre must be reviewed by the USACE under a Pre-Construction Notification (PCN) that includes a mitigation plan, a maintenance plan, and demonstrated compliance with state mandated BMPs. If impacts to ephemeral waters of the US are less than 1/10th acre, no PCN or mitigation plan is required. However, the project must comply with the nationwide permit general conditions.

CORPORATE OFFICE:
P.O. Box 162017 ★ Austin, Texas 78716 ★ 2600 Dellana Lane, Suite 200 ★ Austin, Texas 78746
(512) 328-2430 ★ FAX (512) 328-1804 ★ www.horizon-esi.com
DBE/WBE/SBE Certified

Based on the project plans you have provided (Figure 2), less than 1/10th acre of ephemeral waters of the US would be affected. The project is therefore authorized under NWP #43 without the need for PCN to the USACE. Compliance with the NWP General Conditions (attached) is required during construction.

Please call with any questions.

Sincerely,

C. Lee Sherrod
Vice President
Certified Professional Wetland Scientist No. 000155

c: John Joseph

0301198\WD\030198water2WD.dwg\CRB\01-14-04

MAP SOURCE: USGS 7.5' SERIES AUSTIN EAST NE, AND MANOR NW TEXAS QUARTER QUAD 1996

0 300 600
SCALE IN FEET

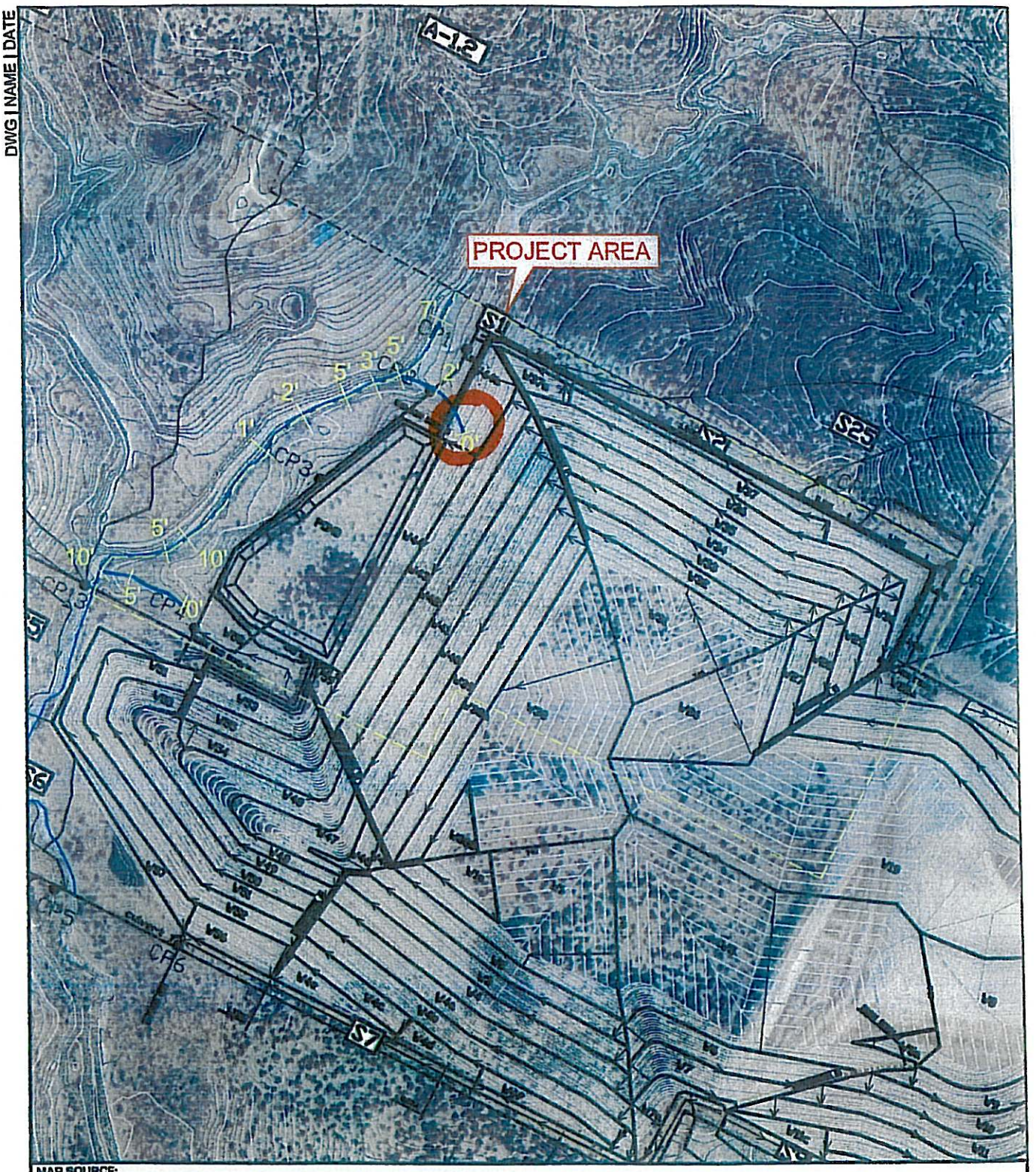
N

TRAVIS COUNTY

Horizon
Environmental Services, Inc.

FIGURE 1

WATERS OF THE US DETERMINATION
AUSTIN COMMUNITY RECYCLING
AND DISPOSAL FACILITY
AUSTIN, TRAVIS COUNTY, TEXAS



DWG | NAME | DATE

MAP SOURCE:
DIGITAL ORTHOIMAGERY QUARTER QUADS (DOQQ); CIR; 1-METER RESOLUTION
AUSTIN EAST, TEXAS QUADRANGLE (NE QUARTER, 1996)
MANOR, , TEXAS QUADRANGLE (NW QUARTER, 1996)

N

0 250 500
FEET

Horizon
Environmental Services, Inc.

"Do Not Scale This Drawing"

FIGURE 2

WATERS OF THE US DETERMINATION
AUSTIN COMMUNITY RECYCLING
AND DISPOSAL FACILITY
AUSTIN, TRAVIS COUNTY, TEXAS

APPENDIX I/IIJ

ENDANGERED AND THREATENED SPECIES DOCUMENTATION

Geosyntec consultants

engineers | scientists | innovators

Summary of Ecological Site Assessment and Visit Findings: Waters of the U.S. and Threatened and Endangered Species

Austin Community Transfer Station

Travis County, Texas

Prepared for

Waste Management
9900 Giles Lane
Austin, TX 78754

Prepared by

Geosyntec Consultants, Inc.
8217 Shoal Creek Blvd, Suite 200
Austin, Texas 78757

Project Number GW7107

September 2019

TABLE OF CONTENTS

ATTACHMENTS:

Figure 1 – Project Vicinity

Figure 2 – Transfer Station Location

Appendix A – Photographic Log

Appendix B – USFWS IPaC and TPWD Travis County Sensitive Species Lists

1. PROJECT BACKGROUND

Geosyntec Consultants (Geosyntec), on behalf of Waste Management of Texas, Inc., conducted an ecological site assessment to evaluate environmental features within the proposed location of a new transfer station within the eastern portion of the existing Austin Community Recycling & Disposal Facility property (site). This included:

- Assessing the potential presence or absence of wetlands/waters of the U.S. and make related delineations (if present); and
- Assessing the potential presence of threatened or endangered species and their habitats for federally and state-listed species.

The site is located at 9900 Giles Lane, Austin 78754 (Figure 1) northeast of the intersection of Highway 183 and Highway 290. The transfer station will be positioned at the far eastern extent of the approximately 359.71-acre property, and will result in erecting a building, creation of additional gravel or paved areas, site grading, and proposed stormwater detention area(s). The majority of the area to be developed for the transfer station is existing paved or gravel parking lots and roads and maintained lawns. A study area of 21.2 acres in and around the transfer station was evaluated for this project. Within this area, it is estimated that the actual "limit of disturbance (LOD)" will be less than approximately 10 acres; however, for the purposes of this evaluation, the entire study area is referenced as being potentially within the LOD, and are indicated as such on the figures that accompany this study.

A Geographic Information Systems (GIS) desktop review was conducted using publicly-available vector datasets such as National Wetland Inventory (NWI) polygons and National Hydrography Dataset (NHD) flowlines and waterbodies which were overlain onto U.S. Geological Survey (USGS) 1:24,000 topographical quadrangles and current/historical aerial imagery to provide a general understanding of the landscape characteristics of the site. No features of concern were identified from this desktop assessment.

A pedestrian survey and wetland delineation were conducted on September 24, 2019 within the identified environmental survey limits. The purpose of the survey was to identify waters of the U.S. and for listed species and/or potentially suitable habitat for federally and state-listed species. A photographic log of the field inspection is provided in **Appendix A**.

2. ENVIRONMENTAL FEATURES

2.1 Waters of the U.S.

2.1.1 Hydrology

The eastern side of the site is located within the Gilleland Creek-Colorado River watershed (8-digit hydrologic unit code 12090301). The eastern side of the site drains generally towards the northeast. The site currently maintains a vegetated swale along the eastern boundary of the property that allows water to flow north. An existing detention area on the north eastern corner of the site allows water to settle before draining off site. No named waterways are present within the proposed study area.

2.1.2 Wetlands

Wetlands are defined by the U.S. Army Corps of Engineers (USACE) (33 CFR 328.3, 1986) and the U.S. EPA (40 CFR 230.3, 1980) as “areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions." Many wetlands and other aquatic features, including ephemeral, intermittent, and perennial streams, are considered Waters of the U.S. by the USACE and deemed “jurisdictional” under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act of 1899.

A Geosyntec ecologist conducted a wetland survey on September 24, 2019 to delineate wetland features within the proposed study area. One channel with indications of an ordinary high water mark (OHWM) was observed on site south of the existing wheel wash. The channel is approximately 4 feet wide and 160 feet long. The channel exists between a gravel road and the existing wheel wash; however, is does not have continuous bed and bank features. Additionally, the feature is not connected waterways or wetlands and would not be considered jurisdictional by the USACE. No wetland features were identified within the proposed study area.

2.2 Threatened and Endangered Species

The Endangered Species Act of 1973 (ESA) provides protection and conservation for threatened and endangered wildlife and plants. Per the ESA, it is against the law to harm, hurt, shoot, pursue, lure, wound, kill, destroy, harass, gig, spear, ensnare, trap, capture, collect, or to attempt to engage in such conduct with any threatened or endangered (T&E) species or adversely impact critical habitat. The USFWS maintains lists for federally-listed species and the Texas Parks and Wildlife Department (TPWD) manages species at a state level.

Initial USFWS Information for Planning and Consultation (IPaC) review returned 18 resources managed or regulated by the USFWS, including threatened, endangered, and candidate species. Initial consultation of the TPWD list of Rare, Threatened, and Endangered Species of Travis county identified 20 state-listed species with the potential to occur in the county. Habitat identified during the site assessment was unsuitable for the listed species, precluding their presence within the proposed project area. Species and habitat requirements are expanded on

below. Both the USFWS IPaC Official Species List and TPWD Travis County species lists are provided in **Appendix B**.

Five bird species were included on the official IPaC species list of threatened and endangered species with the potential to occur within the project area: Golden-cheeked Warbler (*Setophaga chrysoparia*), Least Tern (*Sterna antillarum*), Piping Plover (*Charadrius melodus*), Red Knot (*Calidris canutus rufa*), and Whooping Crane (*Grus Americana*). Of these, only the Golden-cheeked Warbler persists in Travis county longer than the duration of a migratory stopover. This warbler breeds in central Texas and requires specific ashe juniper and oak habitat not found within or around the proposed project area. The proposed action will not affect federally listed avian species.

Three federally listed amphibians were identified during the IPaC review: Austin blind salamander (*Eurycea waterlooensis*), Barton Springs salamander (*Erycea sosorum*), and Jollyville Plateau salamander (*Erycea tonkawae*). The Austin blind and Jollyville Plateau salamanders have final critical habitat that is outside of the proposed project area. The Barton Springs salamander is only known to occur within Barton Springs in Austin. In addition, the project area falls outside known karst zones as indicated by USFWS provided GIS data layers. The proposed action will not affect federally listed amphibian species.

Five candidate mussel species were returned during the IPaC review. However, mussels require perennially flowing water and no perennial streams or rivers occur within the proposed project boundary. The proposed action will not affect these candidates for federal listing.

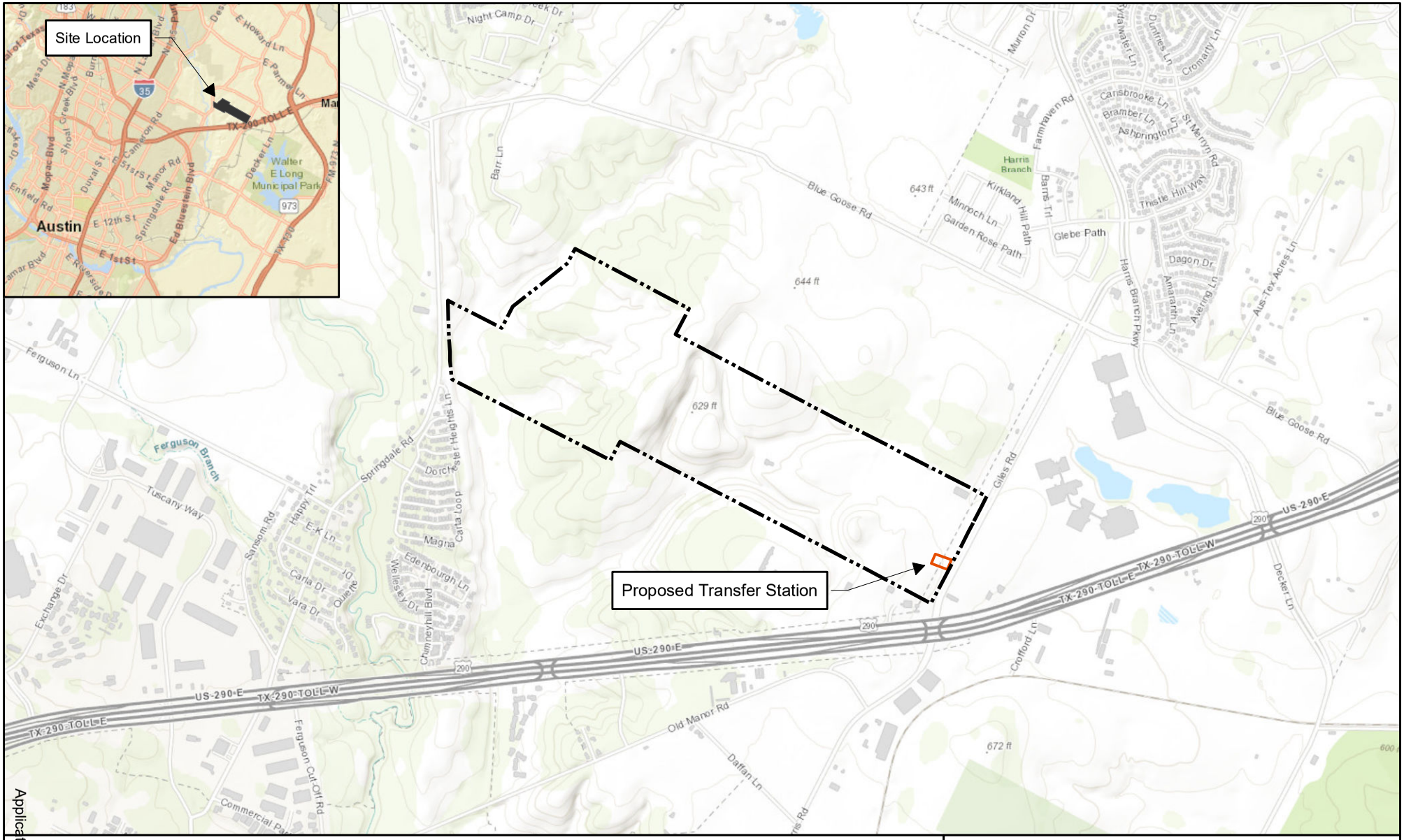
Two endangered insects and four endangered arachnids were identified during the IPaC review as having the potential to occur within the area of impact. All six species require cave and karst features which are not found within or around the proposed project area based on review of USFWS provided karst zone GIS data layers. The proposed action will not affect federally listed insects or arachnids.

The bracted twistflower (*Streptanthus bracteatus*), a candidate for federal listing, is the only flowering plant included on the IPaC review. These plants are known to occur on rocky hillsides in the western half of Travis county. Suitable habitat was not identified during the site visit. The proposed action will not affect federally listed plant species.

3. REFERENCES

U.S. Army Corps of Engineers (USACE), 2010. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region (Version 2.0),* ed. J.S. Wakeley, R.W. Lichvar, and C.V. Noble, ERDC/EL TR-10-1. Vicksburg, MS: U.S. Army Engineer Research and Development Center.

FIGURES



Site Location (Registration Boundary)

Proposed Transfer Station

0 0.125 0.25 0.5 0.75 1 Miles

N

Austin Community Transfer Station

Project Vicinity

Austin, Travis County, Texas

WASTE MANAGEMENT

Geosyntec consultants

Austin, TX | September 2019

Figure 1

Application Page No. I/II-8

September 2019

P:\Projects\WM Austin Community\GIS\Austin_Community_Landfill_vicinity.mxd 9/25/2019 9:16:53 AM

Site Location (Registration Boundary)

Study Area

Proposed Transfer Station (approximate building footprint)

N

0 125 250 500 750 1,000 Feet

Austin Community Transfer Station

Transfer Station Location

Austin, Travis County, Texas

WM WASTE MANAGEMENT

Geosyntec consultants

Austin, TX | September 2019

Figure 2

Application Page No. I/II-J-9
September 2019

P:\Projects\WM Austin Community\GIS\Austin_Community_Landfill_transferStation.mxd 9/25/2019 9:17:48 AM

APPENDIX A

Photographic Log

See Part I/II, Appendix I/II-I (Wetlands) for the Photographic Log that accompanies this report. It has been omitted from this Application Appendix in order to avoid unnecessary duplication.

APPENDIX B

USFWS IPaC and TPWD Travis County Sensitive Species Lists

See Part I/II, Appendix I/II-I (Wetlands) for the Species Lists that accompany this report. They have been omitted from this Application Appendix in order to avoid unnecessary duplication.

COPY OF ENDANGERED AND THREATENED SPECIES DOCUMENTATION FOR EXISTING FACILITY AREAS

Golder Associates Inc.

15603 W. Hardy Road, Suite 345
Houston, TX USA 77060
Telephone (281) 931-8674
Fax (281) 931-3246

February 2, 2004

Project No.: 033-4651
SENT VIA CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. Bob Pine
Field Supervisor
Ecological Services
U.S. Fish and Wildlife Services
10711 Burnett Road, Suite 200
Austin,, Texas 78758

Re: Threatened or Endangered Species Review
Municipal Solid Waste Expansion Application
Permit No. MSW-249D
Austin Community Recycling & Disposal Facility
Travis County, Texas

Dear Mr. Bob Pine:

Waste Management of Texas, Inc. is currently preparing a Permit Expansion Application to be submitted to the TCEQ Solid Waste Permits Division for a proposed major amendment to the Austin Community Recycling & Disposal Facility, Permit No. MSW-249C. Since initial waste placement began at the Austin Community site in late 1970, there have been a number of owners, permit revisions, and waste types for the facility. The existing ±290-acre Type I and IX facility is located east of the City of Austin in Travis, County Texas. Golder Associates is preparing the application for Waste Management of Texas, Inc. to expand the permit boundary to 359.71 acres. Maps showing the site location and the existing and the proposed limits of the permit boundary are attached.

In order to comply with current solid waste regulations, 30 TAC §330.51(b)(8) and §330.53(b)(13), on behalf of Waste Management of Texas, Inc., we are requesting a review of the site for information on federally-listed endangered or threatened species that may exist in this area. Also for your information, we have attached a Threatened or Endangered Species Assessment that was performed by Horizon Environmental Services, Inc.

If further information or documentation is required by your department to aid in your review, please give me a call at (281) 931-8674. You may also contact Lee Sherrod of Horizon at (512) 328-2430 if you have specific questions related to the Horizon assessment.

Sincerely,

GOLDER ASSOCIATES, INC.

Lou Ann Lowe, P.E.
Senior Engineer

Attachments

P:\033-4651\Agency Correspondence\USFISH letter.DOC

SOURCE: TxDOT MAP, GENERAL HIGHWAY MAP, TRAVIS COUNTY, TEXAS, MARCH 1, 2001.

N

GENERAL HIGHWAY MAP
TRAVIS COUNTY
TEXAS

PREPARED BY THE

TEXAS DEPARTMENT OF TRANSPORTATION

TRANSPORTATION PLANNING AND PROGRAMMING DIVISION

MAPPING SECTION

IN COOPERATION WITH THE

U.S. DEPARTMENT OF TRANSPORTATION

FEDERAL HIGHWAY ADMINISTRATION

SCALE IN MILES

2000

1990 CENSUS FIGURES

HIGHWAYS REVISED TO MARCH 1, 2001

LAMBERT CONFORMAL CONIC PROJECTION - 1927 NORTH AMERICAN DATUM
STANDARD PARALLELS 27°25' AND 34°55'

NOTES:

1. THERE ARE NO ACTIVE PUBLIC-USE AIRPORTS WITHIN 5 MILES OF THE SITE. THE ROBERT MUELLER AIRPORT LOCATED WITHIN THE 5-MILE RADIUS IS CLOSED PERMANENTLY.

FOR PERMITTING PURPOSES ONLY

Golder Associates

WASTE MANAGEMENT

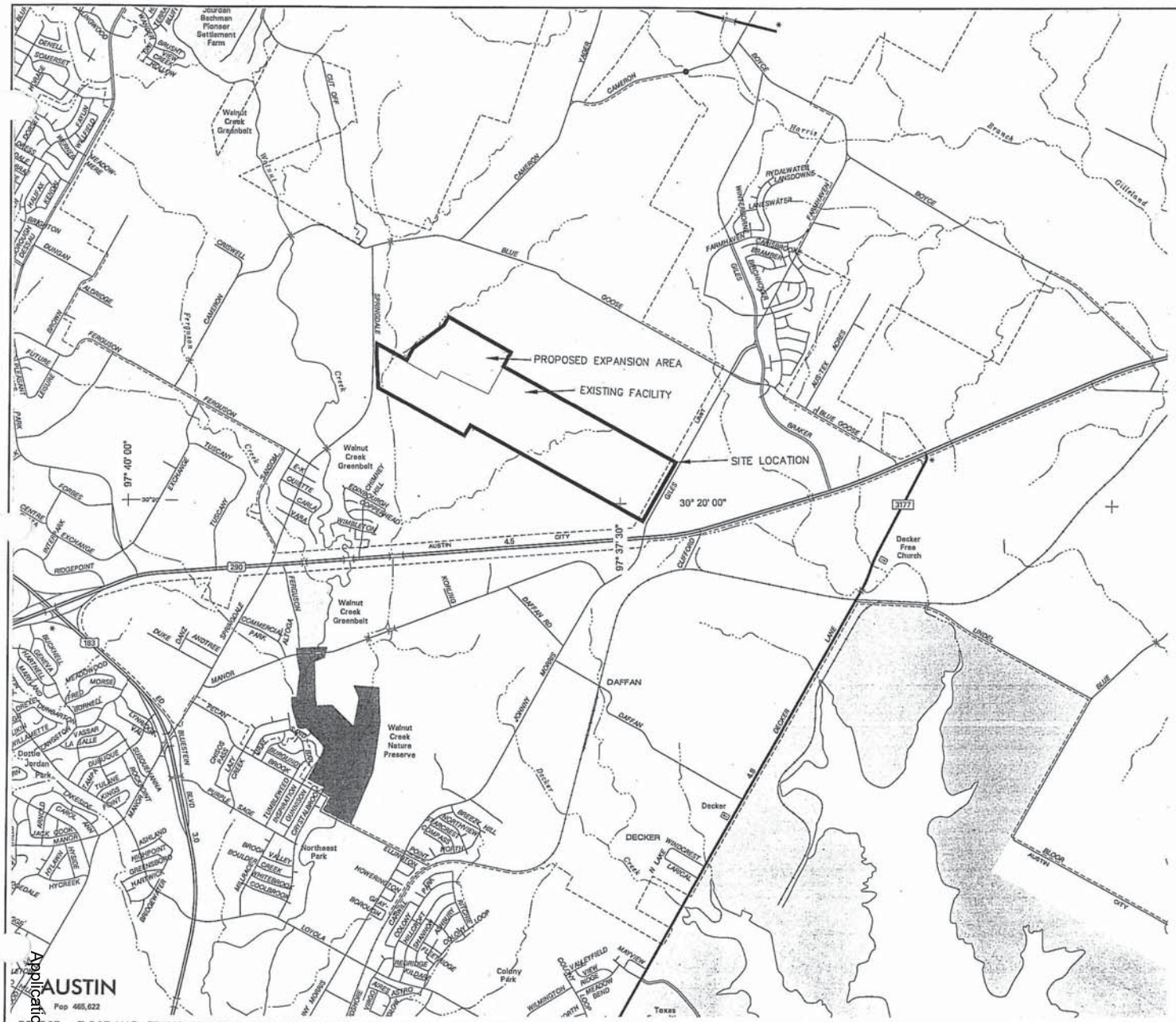
PROJECT: MUNICIPAL SOLID WASTE EXPANSION APPLICATION
PERMIT MSW-2490
AUSTIN COMMUNITY RECYCLING AND DISPOSAL FACILITY
TRAVIS COUNTY, TEXAS

TITLE: GENERAL LOCATION MAP

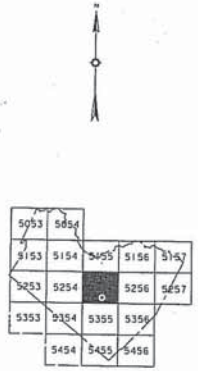
DRAWN | REVIEWED
CHECKED | APPROVED
DATE: DECEMBER 2003
SCALE: AS SHOWN
JOB NO.: 033-4651
DWG. NO.:

FIGURE NUMBER
1

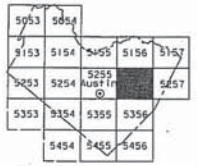
Application Page No. I/II-14
September 2019



SOURCE: TxDOT MAP, TRAVIS COUNTY, TEXAS, SHEETS 5255 AND 5256, MARCH 1, 2001.



KEY TO SUPPLEMENTARY SHEETS



KEY TO SUPPLEMENTARY SHEETS

TRAVIS COUNTY

TEXAS

SCALE IN MILES

0 1/4 1/2 1

2000

1990 CENSUS FIGURES

HIGHWAYS REVISED TO MARCH 1, 2001

NOTICE

This map has been prepared for internal use within the Texas Department of Transportation. Accuracy is limited to the validity of available data as of dates shown.

TRAVEL INFORMATION

Dial 1-800-452-9292 for travel assistance from a professional Texas travel counselor, including routing in Texas, emergency road condition information, and other travel services, or to register a comment or complaint about department operations.

Copies of this map are available for public use at nominal cost from the Texas Department of Transportation, 118 E Riverside Dr Austin, Texas 78704 or mail requests may be sent to the Finance Division, P O Box 5020, Austin, Texas 78763-5020

FOR PERMITTING PURPOSES ONLY

Golder Associates

WASTE MANAGEMENT

PROJECT: MUNICIPAL SOLID WASTE EXPANSION APPLICATION
PERMIT MSW-2490
AUSTIN COMMUNITY RECYCLING AND DISPOSAL FACILITY
TRAVIS COUNTY, TEXAS

FILE

DRAWN: RICHARDS

CHECKED: APPROVED

DATE: DECEMBER 2003

SCALE: AS SHOWN

JOB NO. 033-4651

DWG. NO.

SITE LOCATION MAP

FIGURE NUMBER

2

Horizon™
Environmental Services, Inc.

19 January 2004

Steve Jacobs
Waste Management of Texas, Inc.
9900 Giles Road
Austin, Texas 78754

RE: Threatened or Endangered Species Assessment, Approximate 360-acre Austin Community Recycling and Disposal Facility, Travis County, Texas
HJN 030198 TE

Dear Mr. Jacobs:

The following provides the results of Horizon Environmental Services, Inc.'s (Horizon) assessment of listed threatened or endangered species on the subject site.

Federally listed species of potential occurrence in Travis County include the golden-cheeked warbler, black-capped vireo, whooping crane, bald eagle, the Barton Springs salamander, and several cave-adapted invertebrates. State-listed species include these same organisms and, in addition, two peregrine falcons and the Texas horned lizard.

The golden-cheeked warbler and black-capped vireo are migratory species known to nest in central Texas and western Travis County. Both species occur generally west of IH 35 in Travis County and are not known from the eastern portion of the county. Suitable habitat for either species is not present on the site.

The whooping crane is migratory and passes over central Texas on its migration route between the Texas coast and southern Canada. It may occasionally stop over at points along the way that provide temporary feeding or resting habitat such as large wetlands, playa lakes, or agricultural fields. No such areas exist on the subject site and the whooping crane would not be expected on the site.

The bald eagle (currently proposed to be delisted by the US Fish and Wildlife Service) is represented in Texas by both migratory and non-migratory individuals. Nesting or wintering eagles are increasing in Texas and are found around large bodies of water such as rivers and reservoirs. Bald eagles are known to occur along the Colorado River and several of its major tributaries in Travis County. No large bodies of water exist on or adjacent to the proposed landfill site. Eagles can range a considerable distance in

daily flights or migrations and it is not uncommon to see them flying over any area within 20 or 30 miles of suitable habitat areas. They rarely land in or utilize any other habitats other than near large water bodies since fish and waterfowl make up the majority of their diets. While an eagle could temporarily fly over the subject site, it would not be expected to utilize the site.

The Barton Springs salamander is listed as endangered in Travis County, but is restricted to the Edwards Aquifer in the south-central portion of the county. The subject site does not overlay or drain to the Edwards Aquifer Recharge Zone, therefore this species is not of concern.

The cave-adapted invertebrates in Travis County are similarly restricted to the underground karstic formations of the Edwards geologic formation in western Travis County. The subject site is not within this area and these species are not of concern.

The two peregrine falcons were federally delisted in 1999, but the state has not as yet followed suit. Both birds are migratory across central Texas and could temporarily occur in the area as transients who are opportunistic feeders. Any such temporary occurrence during migrations would not be precluded by the landfill and the potential attraction of small birds to landfills could actually provide a beneficial feeding opportunity for passing peregrines. No adverse affects to peregrines would be expected.

The Texas horned lizard formerly occurred throughout most of Texas, but now is generally restricted to the western and southern two-thirds of the state. Its preferred habitat is open to semi-open grasslands and savannahs. Its primary food source is the harvester ant. The presence of these ants is a prerequisite for good horned lizard habitat. The subject site exhibits marginal habitat characteristics for the horned lizard and horned lizards have occasionally been observed in eastern Travis County in similar habitats. During the field reconnaissance, no horned lizards were observed, but their occurrence cannot be completely discounted.

The horned lizard is only state-listed and state law only protects individuals of listed species from direct injury or death, collection, transport, export, or sale. There are no habitat protections or incidental take provisions or permits in the state law (ie., the accidental and unintentional taking of a species by otherwise legal actions such as land development or even driving a car down the highway). In the case of the occurrence of a state listed species on a site for a proposed state-permitted activity such as a landfill, water reservoir, surface coal mine, or the like, the typical means of minimizing impacts to the species that is recommended by Texas Parks and Wildlife Department is through the formulation and implementation of a management plan for the species.

These plans can include a number of actions or management activities, depending on the species, but generally focus on education of project personnel to be observant and recognize the species for avoidance of direct death or injury. In many cases, qualified and permitted biologists conduct detailed surveys for the species prior to clearing or grading to find and relocate as many of the individuals as possible to another suitable habitat area. These surveys may be conducted each year in as yet undisturbed areas of the project site scheduled for clearing that year. If possible, favorable habitats for the species may be created, managed, or enhanced on an area away from the project site to increase the species' available habitat. The collection and transport of any state-listed species must be done under a State Scientific Collection Permit specific to that species.

Please call with any questions.

Sincerely,

C. Lee Sherrod
Vice President/Partner

TELEPHONE RECORD

MEMORANDUM

TO: Jana Milliken
U.S. Fish and Wildlife Service
512-490-0057 ext. 243
fax 512-490-0974

DATE: 2/13/04

FR: Lou Ann Lowe, P.E.

OUR REF: Project No. 033-4651

RE: **AUSTIN COMMUNITY RECYCLING AND DISPOSAL FACILITY**
U.S. FISH AND WILDLIFE SERVICES CONSULTATION # 2-15-04-I-0140

This Telephone Record Memorandum is to document a conversation with you regarding our letter dated February 2, 2004. Based on your review of our letter and the Threatened and Endangered Species Assessment performed by Horizon Environmental Services, Inc., it is my understanding from our discussion that you have "no concerns related to the proposed expansion project" at the Austin Community Recycling and Disposal Facility. It is also my understanding that this Telephone Record Memorandum will serve as the documented response from the U.S. Fish and Wildlife Service in lieu of any formal letter from your department.

P:\033-4651\Agency Correspondence\USFISH phone record.doc

Golder Associates Inc.

15603 W. Hardy Road, Suite 345
Houston, TX USA 77060
Telephone (281) 931-8674
Fax (281) 931-3246

February 2, 2004

Project No.: 003-4651
SENT VIA CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Ms. Celeste Brancel-Brown
Environmental Review Coordinator
Wildlife Division
Wildlife Diversity Program
Texas Parks and Wildlife Department
3000 IH-35 South, Suite 100
Austin, Texas 78704

Re: Threatened or Endangered Species Review
Municipal Solid Waste Expansion Application
Permit No. MSW-249D
Austin Community Recycling & Disposal Facility
Travis County, Texas

Dear Ms. Brancel-Brown:

Waste Management of Texas, Inc. is currently preparing a Permit Expansion Application to be submitted to the TCEQ Solid Waste Permits Division for a proposed major amendment to the Austin Community Recycling & Disposal Facility, Permit No. MSW-249C. Since initial waste placement began at the Austin Community site in late 1970, there have been a number of owners, permit revisions, and waste types for the facility. The existing ±290-acre Type I and IX facility is located east of the City of Austin in Travis, County Texas. Golder Associates is preparing the application for Waste Management of Texas, Inc. to expand the permit boundary to 359.71 acres. Maps showing the site location and the existing and the proposed limits of the permit boundary are attached.

In order to comply with current solid waste regulations, 30 TAC §330.51(b)(8) and §330.53(b)(13), on behalf of Waste Management of Texas, Inc., we are requesting a review of the site for information on state-listed endangered or threatened species that may exist in this area. Also for your information, we have attached a Threatened or Endangered Species Assessment that was performed by Horizon Environmental Services, Inc.

If further information or documentation is required by your department to aid in your review, please give me a call at (281) 931-8674. You may also contact Lee Sherrod of Horizon at (512) 328-2430 if you have specific questions related to the Horizon assessment.

Sincerely,

GOLDER ASSOCIATES, INC.

Lou Ann Lowe, P.E.
Senior Engineer

Attachments

P:\033-4651\Agency Correspondence\TxPWD,HAB letter.DOC

SOURCE: TxDOT MAP, GENERAL HIGHWAY MAP, TRAVIS COUNTY, TEXAS, MARCH 1, 2001.

GENERAL HIGHWAY MAP
TRAVIS COUNTY
TEXAS

PREPARED BY THE

TEXAS DEPARTMENT OF TRANSPORTATION
TRANSPORTATION PLANNING AND PROGRAMMING DIVISION
MAPPING SECTION
IN COOPERATION WITH THE
U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

SCALE IN MILES

2000
1990 CENSUS FIGURES
HIGHWAYS REVISED TO MARCH 1, 2001

LAMBERT CONFORMAL CONIC PROJECTION - 1927 NORTH AMERICAN DATUM
STANDARD PARALLELS 27°25' AND 34°55'

NOTES:

1. THERE ARE NO ACTIVE PUBLIC-USE AIRPORTS WITHIN 5 MILES OF THE SITE. THE ROBERT MUELLER AIRPORT LOCATED WITHIN THE 5-MILE RADIUS IS CLOSED PERMANENTLY.

FOR PERMITTING PURPOSES ONLY

Golder Associates

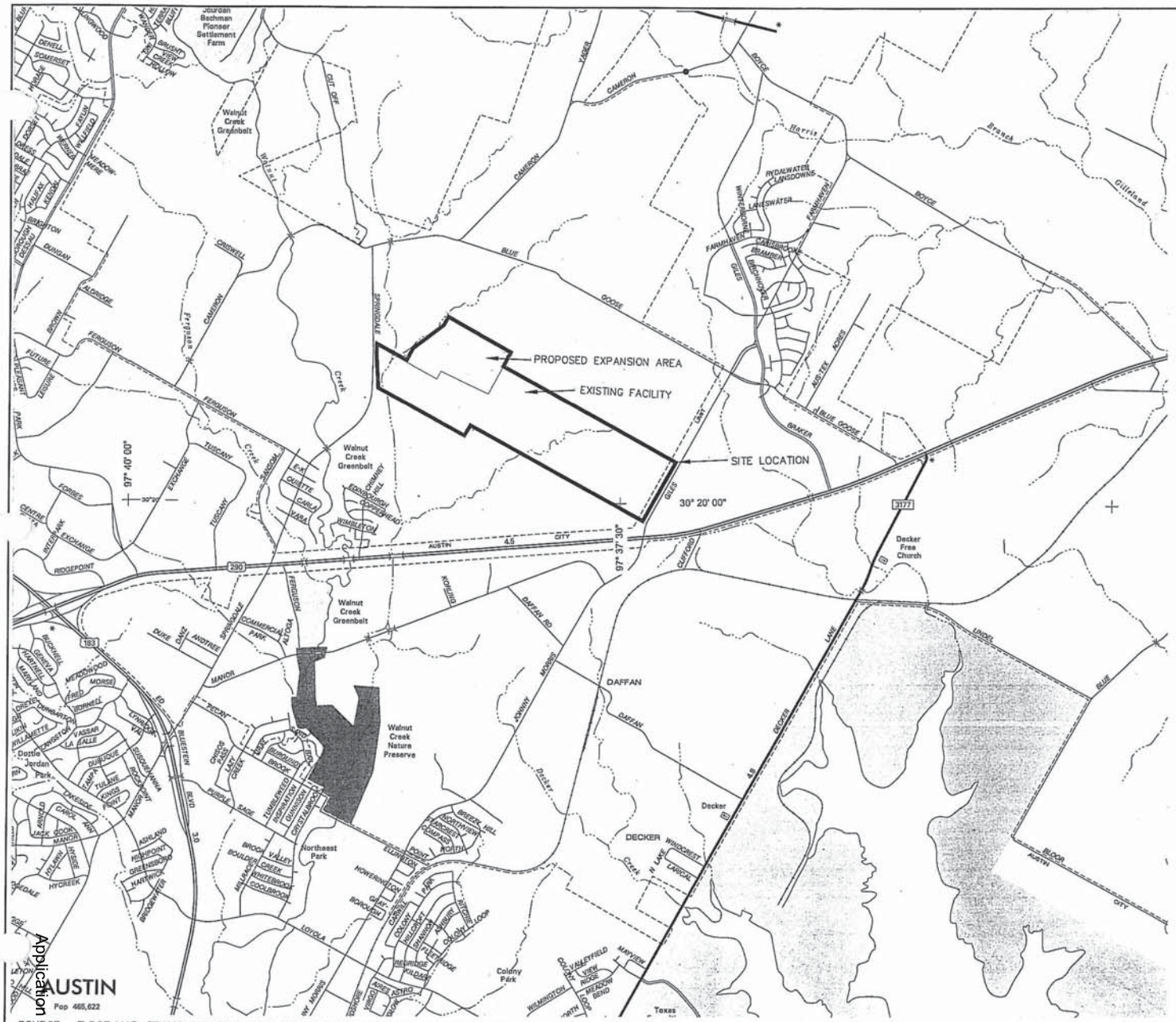
WASTE MANAGEMENT

PROJECT: MUNICIPAL SOLID WASTE EXPANSION APPLICATION
PERMIT MSW-249D
AUSTIN COMMUNITY RECYCLING AND DISPOSAL FACILITY
TRAVIS COUNTY, TEXAS

TITLE: GENERAL LOCATION MAP

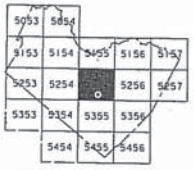
DRAWN | REVIEWED
CHECKED | APPROVED
DATE: DECEMBER 2003
SCALE: AS SHOWN
JOB NO.: 033-4651
DWG. NO.:

FIGURE NUMBER
1

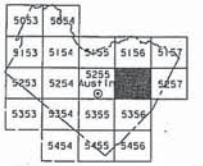


SOURCE: TxDOT MAP, TRAVIS COUNTY, TEXAS, SHEETS 5255 AND 5256, MARCH 1, 2001.

FOR PERMITTING PURPOSES ONLY



KEY TO SUPPLEMENTARY SHEETS



KEY TO SUPPLEMENTARY SHEETS

TRAVIS COUNTY

TEXAS

SCALE IN MILES

0 ¼ ½ ¾

2000

1990 CENSUS FIGURES

HIGHWAYS REVISED TO MARCH 1, 2001

NOTICE

This map has been prepared for internal use within the Texas Department of Transportation. Accuracy is limited to the validity of available data as of dates shown.

TRAVEL INFORMATION

Dial 1-800-452-9292 for travel assistance from a professional Texas travel counselor, including routing in Texas, emergency road condition information, and other travel services, or to register a comment or complaint about department operations.

Copies of this map are available for public use at nominal cost from the Texas Department of Transportation, 118 E Riverside Dr Austin, Texas 78704 or mail requests may be sent to the Finance Division, P O Box 5020, Austin, Texas 78763-5020

Golder Associates

WASTE MANAGEMENT

PROJECT: MUNICIPAL SOLID WASTE EXPANSION APPLICATION
PERMIT MSW-2490
AUSTIN COMMUNITY RECYCLING AND DISPOSAL FACILITY
TRAVIS COUNTY, TEXAS

FILE

DRAWN: RCHEUNG

CHECKED: APPROVED

DATE: DECEMBER 2003

SCALE: AS SHOWN

ADR NO. 033-4651

DWG. NO.

FIGURE NUMBER

2

SITE LOCATION MAP

Application Page No. I/II-22
September 2019

Horizon™
Environmental Services, Inc.

19 January 2004

Steve Jacobs
Waste Management of Texas, Inc.
9900 Giles Road
Austin, Texas 78754

RE: Threatened or Endangered Species Assessment, Approximate 360-acre Austin Community Recycling and Disposal Facility, Travis County, Texas
HJN 030198 TE

Dear Mr. Jacobs:

The following provides the results of Horizon Environmental Services, Inc.'s (Horizon) assessment of listed threatened or endangered species on the subject site.

Federally listed species of potential occurrence in Travis County include the golden-cheeked warbler, black-capped vireo, whooping crane, bald eagle, the Barton Springs salamander, and several cave-adapted invertebrates. State-listed species include these same organisms and, in addition, two peregrine falcons and the Texas horned lizard.

The golden-cheeked warbler and black-capped vireo are migratory species known to nest in central Texas and western Travis County. Both species occur generally west of IH 35 in Travis County and are not known from the eastern portion of the county. Suitable habitat for either species is not present on the site.

The whooping crane is migratory and passes over central Texas on its migration route between the Texas coast and southern Canada. It may occasionally stop over at points along the way that provide temporary feeding or resting habitat such as large wetlands, playa lakes, or agricultural fields. No such areas exist on the subject site and the whooping crane would not be expected on the site.

The bald eagle (currently proposed to be delisted by the US Fish and Wildlife Service) is represented in Texas by both migratory and non-migratory individuals. Nesting or wintering eagles are increasing in Texas and are found around large bodies of water such as rivers and reservoirs. Bald eagles are known to occur along the Colorado River and several of its major tributaries in Travis County. No large bodies of water exist on or adjacent to the proposed landfill site. Eagles can range a considerable distance in

daily flights or migrations and it is not uncommon to see them flying over any area within 20 or 30 miles of suitable habitat areas. They rarely land in or utilize any other habitats other than near large water bodies since fish and waterfowl make up the majority of their diets. While an eagle could temporarily fly over the subject site, it would not be expected to utilize the site.

The Barton Springs salamander is listed as endangered in Travis County, but is restricted to the Edwards Aquifer in the south-central portion of the county. The subject site does not overlay or drain to the Edwards Aquifer Recharge Zone, therefore this species is not of concern.

The cave-adapted invertebrates in Travis County are similarly restricted to the underground karstic formations of the Edwards geologic formation in western Travis County. The subject site is not within this area and these species are not of concern.

The two peregrine falcons were federally delisted in 1999, but the state has not as yet followed suit. Both birds are migratory across central Texas and could temporarily occur in the area as transients who are opportunistic feeders. Any such temporary occurrence during migrations would not be precluded by the landfill and the potential attraction of small birds to landfills could actually provide a beneficial feeding opportunity for passing peregrines. No adverse affects to peregrines would be expected.

The Texas horned lizard formerly occurred throughout most of Texas, but now is generally restricted to the western and southern two-thirds of the state. Its preferred habitat is open to semi-open grasslands and savannahs. Its primary food source is the harvester ant. The presence of these ants is a prerequisite for good horned lizard habitat. The subject site exhibits marginal habitat characteristics for the horned lizard and horned lizards have occasionally been observed in eastern Travis County in similar habitats. During the field reconnaissance, no horned lizards were observed, but their occurrence cannot be completely discounted.

The horned lizard is only state-listed and state law only protects individuals of listed species from direct injury or death, collection, transport, export, or sale. There are no habitat protections or incidental take provisions or permits in the state law (ie., the accidental and unintentional taking of a species by otherwise legal actions such as land development or even driving a car down the highway). In the case of the occurrence of a state listed species on a site for a proposed state-permitted activity such as a landfill, water reservoir, surface coal mine, or the like, the typical means of minimizing impacts to the species that is recommended by Texas Parks and Wildlife Department is through the formulation and implementation of a management plan for the species.

These plans can include a number of actions or management activities, depending on the species, but generally focus on education of project personnel to be observant and recognize the species for avoidance of direct death or injury. In many cases, qualified and permitted biologists conduct detailed surveys for the species prior to clearing or grading to find and relocate as many of the individuals as possible to another suitable habitat area. These surveys may be conducted each year in as yet undisturbed areas of the project site scheduled for clearing that year. If possible, favorable habitats for the species may be created, managed, or enhanced on an area away from the project site to increase the species' available habitat. The collection and transport of any state-listed species must be done under a State Scientific Collection Permit specific to that species.

Please call with any questions.

Sincerely,

C. Lee Sherrod
Vice President/Partner

September 30, 2004

Ms. Lou Ann Lowe
Golder Associates Inc.
15603 W. Hardy Road, Suite 345
Houston, Texas 77060

Dear Ms. Lowe:

This letter is in response to your review request, dated February 2, 2004, for potential impacts to rare species within or near the proposed Austin Community Recycling & Disposal facility landfill expansion from approximately 290 to 360 acres in Travis County (No. MSW-249D).

Given the small proportion of public versus private land in Texas, the TPWD Natural Diversity Database (TxNDD) does not include a representative inventory of rare resources in the state. Although it is based on the best data available to TPWD regarding rare species, the data from the TxNDD do not provide a definitive statement as to the presence, absence, or condition of special species, natural communities, or other significant features within your project area. These data cannot substitute for an on-site evaluation by your qualified biologists. The TxNDD information is intended to assist you in avoiding harm to species that may occur on your site.

Based on the project description and when suitable habitat is present, the state listed threatened Timber/Canebrake Rattlesnake (*Crotalus horridus*) could potentially be impacted by the proposed project. Please review the entire county list, as other rare species could be present depending upon habitat availability. If during construction, the project area is found to contain rare species, natural plant communities, or special features, TPWD recommends that precautions be taken to avoid impacts to them.

Excluding clearing activities during the breeding season for migratory bird species, March through August, will help minimize impacts to this group. The Migratory Bird Treaty Act (MBTA) implicitly prohibits intentional and unintentional take of migratory birds, including their nests and eggs, except when authorized under a US Fish and Wildlife (FWS) permit. Additional information regarding the MBTA may be obtained through the Southwest Regional Office (Region 2) Division of Migratory Birds, FWS, at (505) 248-7882.

4200 SMITH SCHOOL ROAD
AUSTIN, TEXAS 78744-3291
512-389-4800

www.tpwd.state.tx.us

Please contact me if you have any questions or need additional information (512/912-7021).

Sincerely,

Celeste Brancel, Environmental Review Coordinator
Habitat Assessment Program, Wildlife Division
Threatened and Endangered Species

Enclosures (2)

Notes for County Lists of Texas' Special Species

The Texas Parks and Wildlife (TPWD) county lists **include**:

Vertebrates, Invertebrates, and Vascular Plants on the special species lists of the Texas Biological and Conservation Data System. These special species lists are comprised of all species, subspecies, and varieties that are federally listed; proposed to be federally listed; have federal candidate status; are state listed; or carry a global conservation status indicating a species is imperiled, very rare, or vulnerable to extirpation.

Colonial Waterbird Nesting Areas and Migratory Songbird Fallout Areas are contained on the county lists for coastal counties only.

The TPWD county lists **exclude**:

Natural Plant Communities such as Little Bluestem-Indiangrass Series (native prairie remnant), Water Oak-Willow Oak Series (bottomland hardwood community), Saltgrass-Cordgrass Series (salt or brackish marsh), Sphagnum-Beakrush Series (seepage bog).

Other Significant Features such as non-coastal bird rookeries, migratory bird information, bat roosts, bat caves, invertebrate caves, and prairie dog towns.

These lists will never be all inclusive for all rare species distributions. In order to keep the lists to a reasonable length, historic ranges for some state extirpated species, full historic distributions for some extant species, accidentals and irregularly appearing species, and portions of migratory routes for particular species are not included.

The **revised date** on each county list reflects the last date any changes or revisions were made for that county and reflects current listing statuses and taxonomy.

Species that appear on county lists do not all share the same probability of occurrence within a county. Some species are migrants or wintering residents only. Additionally, a few species may be historic or considered extirpated within a county. Species considered extirpated within the state are so flagged on each list.

This information is for your assistance only; due to continuing data updates, **please do not reprint or redistribute the information, instead refer all requesters to our office to obtain the most current information available.**

Last Revised Date: 21 Nov 2003

TRAVIS COUNTY

	Federal Status	State Status
***AMPHIBIANS ***		
Austin Blind Salamander (*Eurycea waterlooensis*) – mostly restricted to subterranean cavities of the Edwards Aquifer; dependent upon water flow/quality from the Barton Springs segment of the Edwards Aquifer; only known from the outlets of Barton Springs [Sunken Gardens (Old Mill) Spring, Eliza Spring, and Parthenia (Main) Spring which forms Barton Springs Pool]; feeds on amphipods, ostracods, copepods, plant material, and (in captivity) a wide variety of small aquatic invertebrates	C1	
Barton Springs Salamander (*Eurycea sosorum*) - dependent upon water flow/quality from the Barton Springs segment of the Edwards Aquifer; only known from the outlets of Barton Springs; spring dweller, but ranges into subterranean water-filled caverns; found under rocks, in gravel, or among aquatic vascular plants & algae, as available; feeds primarily on amphipods	LE	E
Edwards Plateau Spring Salamanders (*Eurycea* **sp. 7**) - endemic; springs and waters of some caves of this region		
Jollyville Plateau Salamander (*Eurycea tonkawae*) - known from springs and waters of some caves of Travis and Williamson counties north of the Colorado River		
Pedernales River Springs Salamander (*Eurycea* **sp. 6**) - endemic; known only from springs		
ARACHNIDS		
A Cave Spider (*Cicurina cueva*) - very small, cave-adapted spider		
Bandit Cave Spider (*Cicurina bandida*) - very small, cave-adapted spider		
Bee Creek Cave Harvestman (*Texella reddelli*) - small, blind, cave-adapted harvestman endemic to a few caves in Travis and Williamson counties	LE	
Bone Cave Harvestman (*Texella reyesi*) - small, blind, cave-adapted harvestman endemic to a few caves in Travis and Williamson counties; weakly differentiated from *Texella reddelli*	LE	
Tooth Cave Pseudoscorpion (*Tartarocreagris texana*) - small, cave-adapted pseudoscorpion known from small limestone caves of the Edwards Plateau	LE	
Tooth Cave Spider (*Neoleptoneta myopica*) - very small, cave-adapted, sedentary spider	LE	
Warton's Cave Spider (*Cicurina wartoni*) - very small, cave-adapted spider	C1	
*** BIRDS ***		
American Peregrine Falcon (*Falco peregrinus anatum*) - potential migrant; nests in west Texas	DL	E
Arctic Peregrine Falcon (*Falco peregrinus tundrius*) - potential migrant	DL	T
Bald Eagle (*Haliaeetus leucocephalus*) - found primarily near seacoasts, rivers, and large lakes; nests in tall trees or on cliffs near water; communally roosts, especially in winter; hunts live prey, scavenges, and pirates food from other birds	LT-PDL	T
Black-capped Vireo (*Vireo atricapillus*) - oak-juniper woodlands with distinctive patchy, two-layered aspect; shrub and tree layer with open, grassy spaces; requires foliage reaching to ground level for nesting cover; return to same territory, or one nearby, year after year; deciduous and broad-leaved shrubs and trees provide insects for feeding; species composition less important than presence of adequate broad-leaved shrubs, foliage to ground level, and required structure; nesting season March-late summer	LE	E

	Federal Status	State Status
Golden-cheeked Warbler (*Dendroica chrysoparia*) - juniper-oak woodlands; dependent on Ashe juniper (also known as cedar) for long fine bark strips, only available from mature trees, used in nest construction; nests are placed in various trees other than Ashe juniper; only a few mature junipers or nearby cedar brakes can provide the necessary nest material; forage for insects in broad-leaved trees and shrubs; nesting late March-early summer	LE	E
Henslow's Sparrow (*Ammodramus henslowii*) - wintering individuals (not flocks) found in weedy fields or cut-over areas where lots of bunch grasses occur along with vines and brambles; a key component is bare ground for running/walking; likely to occur, but few records within this county		
Mountain Plover (*Charadrius montanus*) – breeding: nests on high plains or shortgrass prairie, on ground in shallow depression; nonbreeding: shortgrass plains and bare, dirt (plowed) fields; primarily insectivorous		
Whooping Crane (*Grus americana*) - potential migrant; winters in and around Aransas National Wildlife Refuge and migrates to Canada for breeding; only remaining natural breeding population of this species	LE	E

CRUSTACEANS

An Amphipod (*Stygobromus russelli*) - subterranean waters, usually in caves & limestone aquifers; resident of numerous caves in ca. 10 counties of the Edwards Plateau

Bifurcated Cave Amphipod (*Stygobromus bifurcatus*) - found in cave pools

FISHES

American Eel (*Anguilla rostrata*) - most aquatic habitats with access to ocean; spawns January-February in ocean, larva move to coastal waters, metamorphose, then females move into freshwater; muddy bottoms, still waters, large streams, lakes; can travel overland in wet areas; males in brackish estuaries

Guadalupe Bass (*Micropterus treculi*) – introduced in Nueces River system; endemic to perennial streams of the Edwards Plateau region

Smalleye shiner (*Notropis buccula*) - endemic to upper Brazos River system and its tributaries; apparently introduced into adjacent Colorado River drainage; medium to large prairie streams with sandy substrate and turbid to clear warm water; presumably eats small aquatic invertebrates	C1	

INSECTS

Balcones Cave Amphipod (*Stygobromus balconis*) – A small subterranean amphipod. Found in cave pools

Kretschmarr Cave Mold Beetle (*Texamaurops reddelli*) - small, cave-adapted beetle found under rocks buried in silt; small, Edwards Limestone caves in of the Jollyville Plateau, a division of the Edwards Plateau	LE	

Tooth Cave Blind Rove Beetle (*Cylindropsis* sp. 1) - one specimen collected from Tooth Cave; only known North American collection of this genus

Tooth Cave Ground Beetle (*Rhadine persephone*) - resident, small, cave-adapted beetle found in small Edwards Limestone caves in Travis and Williamson counties	LE	

	Federal Status	State Status

*** MAMMALS ***

Cave Myotis Bat (*Myotis velifer*) - roosts colonially in caves, rock crevices, old buildings, carports, under bridges, and even in abandoned Cliff Swallow (*Petrochelidon pyrrhonota*) nests; roosts in clusters of up to thousands of individuals; hibernates in limestone caves of Edwards Plateau and gypsum caves of Panhandle during winter; opportunistic insectivore

Plains Spotted Skunk (*Spilogale putorius interrupta*) – catholic in habitat; open fields, prairies, croplands, fence rows, farmyards, forest edges, and woodlands; prefers wooded, brushy areas and tallgrass prairie

*** REPTILES ***

Spot-tailed Earless Lizard (*Holbrookia lacerata*) - central & southern Texas & adjacent Mexico; moderately open prairie-brushland; fairly flat areas free of vegetation or other obstructions, including disturbed areas; eats small invertebrates; eggs laid underground

Texas Garter Snake (*Thamnophis sirtalis annectens*) - wet or moist microhabitats are conducive to the species occurrence, but is not necessarily restricted to them; hibernates underground or in or under surface cover; breeds March-August

Texas Horned Lizard (*Phrynosoma cornutum*) - open, arid and semi-arid regions with sparse vegetation, including grass, cactus, scattered brush or scrubby trees; soil may vary in texture from sandy to rocky; burrows into soil, enters rodent burrows, or hides under rock when inactive; breeds March-September — State Status: T

Timber/Canebrake Rattlesnake (*Crotalus horridus*) - swamps, floodplains, upland pine and deciduous woodlands, riparian zones, abandoned farmland; limestone bluffs, sandy soil or black clay; prefers dense ground cover, i.e. grapevines or palmetto — State Status: T

*** VASCULAR PLANTS ***

Basin bellflower (*Campanula reverchonii*) - endemic; dry gravels and very shallow sandy soils derived from Precambrian igneous and metamorphic rocks, on open slopes and rock outcrops; flowering May-July, September-October

Bracted twistflower (*Streptanthus bracteatus*) - endemic; shallow clay soils over limestone, mostly on rocky slopes, in openings in juniper-oak woodlands; flowering April-May

Canyon mock-orange (*Philadelphus ernestii*) - endemic; solution-pitted outcrops of Cretaceous limestone in mesic canyons, usually in shade of mostly deciduous slope forest; flowering April-May

Correll's false dragon-head (*Physostegia correllii*) - wet soils including roadside ditches and irrigation channels; flowering June-July

Texabama croton (*Croton alabamensis* **var.** *texensis*) - mostly deciduous or evergreen deciduous woodlands in duff-covered loamy clay soils on rocky slopes in comparatively mesic limestone ravines, often locally abundant on deeper soils on small terraces in canyon bottoms; flowering late February-March; fruit maturing and dehiscing by early June

Status Key:
- LE, LT - Federally Listed Endangered/Threatened
- PE, PT - Federally Proposed Endangered/Threatened
- E/SA, T/SA - Federally Listed Endangered/Threatened by Similarity of Appearance
- C1 - Federal Candidate for Listing, Category 1; information supports proposing to list as Endangered/Threatened
- DL, PDL - Federally Delisted/Proposed for Delisting

	Federal Status	State Status
NL - Not Federally Listed		
E, T - State Listed Endangered/Threatened		
"blank" - Rare, but with no regulatory listing status		

Species appearing on these lists do not all share the same probability of occurrence. Some species are migrants or wintering residents only, or may be historic or considered extirpated.

Horizon™
Environmental Services, Inc.

November 15, 2004

Steve Jacobs
Waste Management of Texas, Inc.
9900 Giles Road
Austin, Texas 78754

Re: Response to Correspondence from Texas Parks and Wildlife Department Regarding the Land Fill Expansion

Dear Mr. Jacobs:

In review of correspondence from Texas Parks and Wildlife Department (TPWD) dated September 30, 2004, I have the following comments and suggestions. TPWD indicates that the state-listed threatened timber/canebrake rattlesnake, or other listed species could potentially be impacted by the proposed project if suitable habitat is present on the project site. The timber rattlesnake is an unlikely species for this site. Its range is generally east of Travis County and its primary habitat is dense woodlands along stream bottoms and flood plains. Such habitat does not exist on the subject site. We believe this species is very unlikely to occur on the site.

As noted in our assessment of threatened or endangered species (January 2004) for the subject site, the only state or federally listed species with any potential for occurrence on the site is the state listed Texas horned lizard. Our assessment of the site for habitat characteristics for this species resulted in an opinion that only marginal habitat characteristics for this species were present. However, no Texas horned lizards were observed on the site during our field reconnaissance efforts. The typical method for ensuring the appropriate protection for the Texas horned lizard if it should occur on the site is to adopt an employee education program to aid in the identification of this species and avoidance if it should ever be seen. A typically accepted management plan for this species on land fill sites is attached for your use.

The TPWD also provides a comment regarding the protection of migratory birds, particularly during the nesting season (March to August). This protection is mandated by both state and federal law. Compliance is afforded by acceptance of a migratory bird management plan into your operations. A commonly accepted management plan for migratory birds is attached. The primary management goal is to avoid clearing of woody vegetation (trees and shrubs) during the season when migratory birds are nesting. Clearing of the next season's land fill activity areas can be accomplished during the fall and winter and seeded with temporary grasses for erosion control. Once woody vegetation

is removed, there is no longer a constraint on land disturbance activities and land filling can proceed routinely within the previously cleared area.

If you have questions regarding these species management plans, please call.

Sincerely,

C. Lee Sherrod
Vice President

c: Lou Ann Lowe
John Riley

Survey/Relocation:

When disturbances are proposed to suitable Texas horned lizard habitat, a once-per-year search and removal/relocation survey of that impacted habitat. Surveys will be conducted by a qualified biologist, permitted by TPWD to handle this species, with additional field assistants as needed. Surveys will be pedestrian style ground surveys conducted during the season when the Texas horned lizard is active. All individuals of this species encountered and captured will be relocated to adjacent areas, at suitable distances to discourage re-invasion of surveyed sites by relocated individuals. Since only specimens that are observed and captured can be relocated, it is conceivable that, if in fact these animals occur in surveyed areas, some may be missed, regardless of the intensity of the survey.

Managed Clearing Operations:

Major clearing operations (exceeding 20 acres) affecting potential Texas horned lizard habitat may be conducted during the months of April through September following an annual survey by qualified and permitted biologists of the habitat areas to be affected. Non-habitat areas may be cleared any time of the year. Clearing for minor ancillary or mining activities (not to exceed 20 acres) may be conducted any time of the year provided a competent survey for Texas horned lizard has been conducted within two months of the anticipated clearing activity within the affected area. Additionally, immediately following such clearing activities, biologists will again search the affected area to attempt to find and relocate any Texas horned lizards that might have been displaced.

Literature cited:

Fair, W.S., 1995. Habitat requirements and capture techniques of Texas horned lizards in South Texas. M.S. thesis, Texas A&M University-Kingsville, TX. 101pp.

Milne, L.J., and M.J. Milne. 1950. Notes on the behavior of horned toads. American Midland Naturalist 44:720-741.

Potter, G.E., and H.B. Glass. 1931. A study of respiration in hibernating horned lizards, *Phrynosoma cortnutum*. Copeia 1931:128-131.

Price, A.H. 1990. *Phrynosoma cornutum* (Harlan): Texas horned lizard. Catalogue of American Amphibians and Reptiles 469:1-7.

Reeve, W.L. 1952. Taxonomy and distribution of the horned lizard genus *Phrynosoma*. University of Kansas Science Bulletin 34:817-960.

Whiting, M.J., J.R. Dixon, and R.C. Murray. 1993. Spatial distribution of a population of Texas horned lizards (*Phrynosoma cornutum*: Phrynosomatidae) relative to habitat and prey. Southwestern Naturalist 38:150-154.

Wright, A.H. 1949. Handbook of lizards. Comstock Publ. Co., Ithaca, NY. 557pp.

MIGRATORY BIRD MANAGEMENT PLAN

Nearly all birds are migratory. Migratory birds are protected under the Migratory Bird Treaty Act from intentional acts of direct death or injury, or possession of the birds or their parts or nests. This migratory bird management plan includes a number of conservation elements for migratory birds, including scheduling of clearing activities around major nesting periods, avoidance of any observed active nests, power line construction according to guidelines for prevention of impacts to raptors, and covering of ponds or pits that may contain any hazardous materials.

The Migratory Bird Treaty Act (USC 16 § 703) and the Texas Parks and Wildlife Code (TPWC § 63) provide for the protection of all bird species considered to be migratory by the U.S. Fish and Wildlife Service (FWS) and the Texas Parks and Wildlife Department (TPWD). This includes all birds except European starlings, English sparrows, ravens (but not crows), and feral pigeons. Protection is afforded to prevent direct death or injury, capture, possession, transport, or sale of individuals of the species, dead or alive, including their parts, eggs and nests.

Since most migratory birds are highly mobile as adults, direct death or injury as an incidental occurrence to land disturbance activities is not likely. The principal concern is nests, eggs, or fledglings that might be destroyed during land clearing activities during the nesting season. The primary protection strategy is to conduct most land clearing in woodland and shrubland habitats outside of the primary nesting season. In most of Texas, the primary season for nesting and fledging is March 1 to June 1. After June 1st, only sporadic late nesting occurs until August. To the extent reasonably possible, major clearing operations should be conducted outside of the primary nesting season. If clearing is necessary between June and August, site personnel will be alerted to watch for active nests and avoid them until fledglings have dispersed. Only the amount of area determined necessary for ongoing land disturbance during the following spring and summer should be cleared each year. The overall intent is to minimize clearing at any given time by generally progressing in smaller increments as needed each year rather than clear large acreages at one time. This minimization results in less erosion and sedimentation as well as maintains existing habitats longer for utilization by wildlife. Site personnel will be especially vigilant for raptor nests and colonial-waterbird rookeries for avoidance. However, at present time, no colonial waterbird rookeries have been observed in the project area.

To the extent feasible, preclusion of access by wildlife or birds to any pits or tanks containing potential toxic-forming materials by fencing, covering, or otherwise discouraging use of these areas by wildlife should be implemented.

Construction or marking of power lines within the site in a manner consistent with recommendations from the USFWS and TPWD to avoid or minimize the potential for strikes or electrocution by large raptors is also advisable. While the site manager does not own or operate any large communication towers on the site, if any are constructed by others in the future on the site which is still owned or controlled by the current management, the owner or operator of the tower will be advised to construct and light the tower in accordance with guidelines for minimizing impacts to migratory birds.

BIOLOGICAL ASSESSMENT REPORT
THREATENED OR ENDANGERED SPECIES
AUSTIN COMMUNITY RECYCLING AND DISPOSAL FACILITY
TRAVIS COUNTY, TEXAS

The following provides the results of Horizon Environmental Services, Inc.'s (Horizon) assessment of listed threatened or endangered species on the subject site pursuant to 30 Tex. Admin. Code §330.61(n). This assessment considers species listed as threatened or endangered under federal and/or state law.

Background

The Austin Community Recycling and Disposal Facility is an existing Type I municipal solid waste landfill operated by Waste Management of Texas, Inc. pursuant to Permit No. MSW 249C and located in Travis County, Texas. The existing facility consists of approximately 289 acres. Waste Management proposes an approximate 71-acre expansion of the existing facility.

Listed Threatened and Endangered Species

Federally listed species of potential occurrence in Travis County include 5 birds (the golden-cheeked warbler, black-capped vireo, whopping crane, bald eagle, and interior least tern); 1 amphibian (the Barton Springs salamander); and 6 cave adapted invertebrates (the Bee Creek Cave harvestman, Bone Cave harvestman, Kretschmarr Cave mold beetle, Tooth Cave pseudoscorpion, Tooth Cave ground beetle, and the Tooth Cave spider).

State-listed species of potential occurrence in Travis County include all these federally-listed species in addition to the peregrine falcon and 1 reptile, the Texas horned lizard. The state list also references the red wolf as of potential occurrence in Travis County; however, the red wolf is considered extirpated in the state (TPWD, NDD, 2006). The TPWD NDD list also includes numerous rare species as possibly occurring in Travis County. However, none of these species is listed by the state or federal government as threatened or endangered. No threatened or endangered plant species were listed by either TPWD or USFWS for Travis County. The USFWS and TPWD lists area attached as Appendix A.

Birds

Golden-cheeked Warbler and Black-capped Vireo (state and federal list)

The golden-cheeked warbler and black-capped vireo are migratory species known to nest in central Texas and western Travis County (www.fws.gov/ifw2es/EndangeredSpecies/lists/listspecies.cfm). Both species occur generally west of IH 35 in Travis County and are not known to occur in the eastern portion of the county. Suitable habitat for either species is not present on the site.

Whooping Crane (state and federal lists)

The whooping crane is migratory and passes over central Texas on its migration route between the Texas coast and southern Canada. It may occasionally stop over at points along the way that provide temporary feeding or resting habitat such as large wetlands, playa lakes, or

agricultural fields (www.fws.gov/ifw2es/EndangeredSpecies/lists/listspecies.cfm). No such areas exist on the subject site and the whooping crane would not be expected on the site.

Bald Eagle (state and federal lists)

The bald eagle (currently proposed to be delisted by USFWS) is represented in Texas by both migratory and non-migratory individuals. Nesting or wintering eagles are increasing in Texas and are found around large bodies of water such as rivers and reservoirs. No large bodies of water exist on or adjacent to the facility or proposed expansion area. Eagles can range a considerable distance in daily flights or migrations, and it is not uncommon to see them flying over any area within 20 or 30 miles of suitable habitat areas. They rarely land in or utilize any other habitats other than near large water bodies, which is an essential component of suitable habitat because fish and waterfowl make up the majority of their diets (www.fws.gov/ifw2es/EndangeredSpecies/lists/listspecies.cfm). While an eagle could temporarily fly over the subject site, it would not be expected to utilize the site.

Interior Least Tern (state and federal lists)

The interior least tern is also migratory and nests along large bodies of water such as rivers or lakes where generally barren shorelines or sandbars exist (www.fws.gov/ifw2es/EndangeredSpecies/lists/listspecies.cfm). No such habitats exist on or near the subject site, and this species would not be expected to occur there.

Peregrine Falcons (state list)

The two peregrine falcons were federally delisted in 1999, but TPWD has not as yet followed suit at the state level. Suitable nesting habitat for the two peregrines includes large rocky bluffs and canyons in the western portion of the state (www.tpwd.state.tx.us/landwater/land/maps/gis/ris/endangered_species.phtml). However, no bluffs or canyons occur on the subject site. Both birds are migratory across Texas and could temporarily occur in the area as transients who are opportunistic feeders. Any such temporary occurrence during migrations would not be precluded by the landfill; however, no adverse effects to peregrines would be expected because they are quite tolerant of human activity and are known to winter in urban areas and very active ports along the Gulf Coast.

Amphibians

Barton Springs Salamander

The Barton Springs salamander is listed as endangered in Travis County, but is restricted to the Edwards Aquifer in the south-central portion of the county (www.fws.gov/ifw2es/EndangeredSpecies/lists/listspecies.cfm). The subject site does not overlay or drain to the Edwards Aquifer Recharge Zone, therefore this species is not of concern.

Cave Invertebrates

The cave-adapted invertebrates in Travis County are similarly restricted to the underground karstic formations of the Edwards geologic formation in western Travis County (www.fws.gov/ifw2es/EndangeredSpecies/lists/listspecies.cfm). The subject site is not within this area and these species are not of concern.

Reptiles

Texas Horned Lizard (state list)

The Texas horned lizard formerly occurred throughout most of Texas, but now is generally restricted to the western and southern two-thirds of the state. Its preferred habitat is open to semi-open grasslands and savannahs. Its primary food source is the harvester ant. The presence of these ants is a prerequisite for suitable horned lizard habitat (www.tpwd.state.tx.us/landwater/land/maps/gis/ris/endangered_species.phtml). The expansion area has been used for grazingland for the past several decades and exhibits a dense grass cover over most of its extent. The dense grass cover does not exhibit suitable habitat conditions for the horned lizard. Additionally, no harvester ant colonies (the primary food source for horned lizards) were noted on the site. Despite the lack of suitable habitat conditions for the horned lizard, field surveys were conducted on-site by three qualified biologists on 15 May 2006 and 10 July 2006. No horned lizards or harvester ant colonies were observed. It is unlikely that horned lizards would utilize the site due to lack of suitable habitat conditions.

Conclusion

All of the threatened or endangered species were reviewed for possible impact by the proposed expansion of landfill operations. The site is not in an area designated as critical habitat for any listed threatened or endangered species, nor does the site provide suitable habitat for any such species. The landfill, its operation and expansion, will not result in the destruction or adverse modification of any federally designated critical habitat for any threatened or endangered species, nor cause or contribute to the taking of any federal or state listed threatened or endangered species.

C. Lee Sherrod, Vice President

APPENDIX A
USFWS AND TPWD LISTS

U.S. Fish & Wildlife Service

Endangered Species List

Back to Start

List of species by county for Texas:

Counties Selected: Travis

Select one or more counties from the following list to view a county list:

Anderson
Andrews
Angelina
Aransas
Archer

View County List

Travis County

Common Name	Scientific Name	Species Group	Listing Status	Species Image	Species Distribution Map	Critical Habitat	More Info
Austin blind Salamander	*Eurycea waterlooensis*	Amphibians	C				
Barton Springs salamander	*Eurycea sosorum*	Amphibians	E				
Bee Creek Cave harvestman	*Texella reddelli*	Arachnids	E	No Image			
black-capped Vireo	*Vireo atricapilla*	Birds	E				
Bone Cave harvestman	*Texella reyesi*	Arachnids	E				
golden-cheeked warbler (=wood)	*Dendroica chrysoparia*	Birds	E				
Kretschmarr Cave mold beetle	*Texamaurops reddelli*	Insects	E				
Tooth Cave ground beetle	*Rhadine persephone*	Insects	E				
Tooth Cave pseudoscorpion	*Tartarocreagris texana*	Arachnids	E				
Tooth Cave spider	*Neoleptoneta myopica*	Arachnids	E				
Warton's cave meshweaver	*Cicurina wartoni*	Arachnids	C	No Image			
whooping crane	*Grus americana*	Birds	E, EXPN				

Last Revision: 7/6/2006 10:56:00 AM

TRAVIS COUNTY

AMPHIBIANS

		Federal Status	State Status
Austin blind salamander	*Eurycea waterlooensis*	C	

mostly restricted to subterranean cavities of the Edwards Aquifer; dependent upon water flow/quality from the Barton Springs segment of the Edwards Aquifer; only known from the outlets of Barton Springs (Sunken Gardens (Old Mill) Spring, Eliza Spring, and Parthenia (Main) Spring which forms Barton Springs Pool); feeds on amphipods, ostracods, copepods, plant material, and (in captivity) a wide variety of small aquatic invertebrates

Barton Springs salamander	*Eurycea sosorum*	LE	E

dependent upon water flow/quality from the Barton Springs segment of the Edwards Aquifer; only known from the outlets of Barton Springs; spring dweller, but ranges into subterranean water-filled caverns; found under rocks, in gravel, or among aquatic vascular plants and algae, as available; feeds primarily on amphipods

Jollyville Plateau salamander *Eurycea tonkawae*

known from springs and waters of some caves north of the Colorado River

Pedernales River springs salamander *Eurycea sp 6*

endemic; known only from springs

ARACHNIDS

		Federal Status	State Status
A cave spider	*Cicurina cueva*		

subterrestrial, subterranean obligate; cave-adapted spider

Bandit Cave spider *Cicurina bandida*

very small, subterrestrial, subterranean obligate

Bone Cave harvestman	*Texella reyesi*	LE	

small, blind, cave-adapted harvestman endemic to a few caves in Travis and Williamson counties; weakly differentiated from Texella reddelli

Reddell harvestman	*Texella reddelli*	LE	

small, blind, cave-adapted harvestman endemic to a few caves in Travis and Williamson counties

Tooth Cave pseudoscorpion	*Tartarocreagris texana*	LE	

small, cave-adapted pseudoscorpion known from small limestone caves of the Edwards Plateau

Tooth Cave spider	*Neoleptoneta myopica*	LE	

very small, cave-adapted, sedentary spider

Warton's cave meshweaver	*Cicurina wartoni*	C	

very small, cave-adapted spider

TRAVIS COUNTY

BIRDS		Federal Status	State Status
Arctic Peregrine Falcon	*Falco peregrinus tundrius*	DL	T

currently potential migrant through most of state, winters along gulf coast

Bald Eagle	*Haliaeetus leucocephalus*	LT-PDL	T

found primarily near rivers and large lakes; nests in tall trees or on cliffs near water; communally roosts, especially in winter; hunts live prey, scavenges, and pirates food from other birds

Black-capped Vireo	*Vireo atricapilla*	LE	E

oak-juniper woodlands with distinctive patchy, two-layered aspect; shrub and tree layer with open, grassy spaces; requires foliage reaching to ground level for nesting cover; return to same territory, or one nearby, year after year; deciduous and broad-leaved shrubs and trees provide insects for feeding; species composition less important than presence of adequate broad-leaved shrubs, foliage to ground level, and required structure; nesting season March-late summer

Golden-cheeked Warbler	*Dendroica chrysoparia*	LE	E

juniper-oak woodlands; dependent on Ashe juniper (also known as cedar) for long fine bark strips, only available from mature trees, used in nest construction; nests are placed in various trees other than Ashe juniper; only a few mature junipers or nearby cedar brakes can provide the necessary nest material; forage for insects in broad-leaved trees and shrubs; nesting late March-early summer

Interior Least Tern	*Sterna antillarum athalassos*	LE	E

subspecies is listed only when inland (more than 50 miles from a coastline); nests along sand and gravel bars within braided streams, rivers; also know to nest on man-made structures (inland beaches, wastewater treatment plants, gravel mines, etc); eats small fish and crustaceans, when breeding forages within a few hundred feet of colony

Mountain Plover *Charadrius montanus*

breeding: nests on high plains or shortgrass prairie, on ground in shallow depression; nonbreeding: shortgrass plains and bare, dirt (plowed) fields; primarily insectivorous

Peregrine Falcon	*Falco peregrinus*	DL	E T

subspecies (F p tundrius) potential migrant through most of state, winters along coast; subspecies (F p anatum) resident, nests in west Texas

Western Burrowing Owl *Athene cunicularia hypugaea*

open grasslands, especially prairie, plains, and savanna, sometimes in open areas such as vacant lots near human habitation or airports; nests and roosts in abandoned burrows

Whooping Crane	*Grus americana*	LE	E

potential migrant via plains throughout most of state to coast; winters in coastal marshes of Aransas, Calhoun, and Refugio counties

CRUSTACEANS		Federal Status	State Status
An amphipod	*Stygobromus russelli*		

TRAVIS COUNTY

CRUSTACEANS		Federal Status	State Status

subterranean waters, usually in caves and limestone aquifers; resident of numerous caves in ca. 10 counties of the Edwards Plateau

Balcones Cave amphipod *Stygobromus balconis*

subaquatic, subterranean obligate amphipod

Bifurcated cave amphipod *Stygobromus bifurcatus*

found in cave pools

FISHES		Federal Status	State Status

Guadalupe bass *Micropterus treculii*

endemic to perennial streams of the Edward's Plateau region; introduced in Nueces River system

Smalleye shiner *Notropis buccula* C

endemic to upper Brazos River system and its tributaries (Clear Fork and Bosque); apparently introduced into adjacent Colorado River drainage; medium to large prairie streams with sandy substrate and turbid to clear warm water; presumably eats small aquatic invertebrates

INSECTS		Federal Status	State Status

Kretschmarr Cave mold beetle *Texamaurops reddelli* LE

small, cave-adapted beetle found under rocks buried in silt; small, Edwards Limestone caves in of the Jollyville Plateau, a division of the Edwards Plateau

Leonora's dancer damselfly *Argia leonorae*

south central and western Texas; small streams and seepages

Rawson's metalmark *Calephelis rawsoni*

moist areas in shaded limestone outcrops in central Texas, desert scrub or oak woodland in foothills, or along rivers elsehwere; larval hosts are Eupatorium havanense, E. greggi.

Tooth Cave blind rove beetle *Cylindropsis sp 1*

one specimen collected from Tooth Cave; only known North American collection of this genus

Tooth Cave ground beetle *Rhadine persephone* LE

resident, small, cave-adapted beetle found in small Edwards Limestone caves in Travis and Williamson counties

MAMMALS		Federal Status	State Status

Cave myotis bat *Myotis velifer*

TRAVIS COUNTY

MAMMALS

Federal Status State Status

colonial and cave-dwelling; also roosts in rock crevices, old buildings, carports, under bridges, and even in abandoned Cliff Swallow (Hirundo pyrrhonota) nests; roosts in clusters of up to thousands of individuals; hibernates in limestone caves of Edwards Plateau and gypsum cave of Panhandle during winter; opportunistic insectivore

Plains spotted skunk *Spilogale putorius interrupta*

catholic; open fields, prairies, croplands, fence rows, farmyards, forest edges, and woodlands; prefers wooded, brushy areas and tallgrass prairie

Red wolf *Canis rufus* LE E

extirpated; formerly known throughout eastern half of Texas in brushy and forested areas, as well as coastal prairies

MOLLUSKS

Federal Status State Status

Creeper (squawfoot) *Strophitus undulatus*

small to large streams, prefers gravel or gravel and mud in flowing water; Colorado, Guadalupe, San Antonio, Neches (historic), and Trinity (historic) River basins

False spike mussel *Quincuncina mitchelli*

substrates of cobble and mud, with water lilies present; Rio Grande, Brazos, Colorado, and Guadalupe (historic) river basins

Pistolgrip *Tritogonia verrucosa*

stable substrate, rock, hard mud, silt, and soft bottoms, often buried deeply; east and central Texas, Red through San Antonio River basins

Rock-pocketbook *Arcidens confragosus*

mud, sand, and gravel substrates of medium to large rivers in standing or slow flowing water, may tolerate moderate currents and some reservoirs, east Texas, Red through Guadalupe River basins

Smooth pimpleback *Quadrula houstonensis*

small to moderate streams and rivers as well as moderate size reservoirs; mixed mud, sand, and fine gravel, tolerates very slow to moderate flow rates, appears not to tolerate dramatic water level fluctuations, scoured bedrock substrates, or shifting sand bottoms, lower Trinity (questionable), Brazos, and Colorado River basins

Texas fatmucket *Lampsilis bracteata*

streams and rivers on sand, mud, and gravel substrates; intolerant of impoundment; broken bedrock and course gravel or sand in moderately flowing water; Colorado and Guadalupe River basins

Texas fawnsfoot *Truncilla macrodon*

little known; possibly rivers and larger streams, and intolerant of impoundment; flowing rice irrigation canals, possibly sand, gravel, and perhaps sandy-mud bottoms in moderate flows; Brazos and Colorado River basins

Texas pimpleback *Quadrula petrina*

TRAVIS COUNTY

MOLLUSKS

Federal Status State Status

mud, gravel and sand substrates, generally in areas with slow flow rates; Colorado and Guadalupe river basins

REPTILES

Federal Status State Status

Spot-tailed earless lizard *Holbrookia lacerata*

central and southern Texas and adjacent Mexico; moderately open prairie-brushland; fairly flat areas free of vegetation or other obstructions, including disturbed areas; eats small invertebrates; eggs laid underground

Texas garter snake *Thamnophis sirtalis annectens*

wet or moist microhabitats are conducive to the species occurrence, but is not necessarily restricted to them; hibernates underground or in or under surface cover; breeds March-August

Texas horned lizard *Phrynosoma cornutum* T

open, arid and semi-arid regions with sparse vegetation, including grass, cactus, scattered brush or scrubby trees; soil may vary in texture from sandy to rocky; burrows into soil, enters rodent burrows, or hides under rock when inactive; breeds March-September

PLANTS

Federal Status State Status

Basin bellflower *Campanula reverchonii*

endemic; dry gravels and very shallow sandy soils derived from Precambrian igneous and metamorphic rocks, on open slopes and rock outcrops; flowering May-July, September-October

Bracted twistflower *Streptanthus bracteatus*

endemic; shallow clay soils over limestone, mostly on rocky slopes, in openings in juniper-oak woodlands; flowering April-May

Canyon mock-orange *Philadelphus ernestii*

endemic; solution-pitted outcrops of Cretaceous limestone in mesic canyons, usually in shade of mostly deciduous slope forest; flowering April-May

Correll's false dragon-head *Physostegia correllii*

wet soils including riverbanks, streamsides, creekbeds, roadside ditches and irrigation channels; flowering June-July

Texabama croton *Croton alabamensis var texensis*

mostly deciduous or evergreen deciduous woodlands in duff-covered loamy clay soils on rocky slopes in comparatively mesic limestone ravines, often locally abundant on deeper soils on small terraces in canyon bottoms; flowering late February-March; fruit maturing and dehiscing by early June

APPENDIX I/IIK

TEXAS HISTORICAL COMMISSION (THC), ANTIQUITIES CODE DOCUMENTATION

Geosyntec consultants

8217 Shoal Creek Blvd, Suite 200
Austin, Texas 78757
PH 512.451.4003
FAX 512.306.8042
www.Geosyntec.com

Hand-delivered via Courier

25 September 2019

Mr. Mark Wolfe
State Historic Preservation Officer
Texas Historical Commission
108 W. 16th Street
Austin, Texas 78701

Subject: **Request for THC Project Review**
Proposed Transfer Station
Type V MSW Facility
Austin Community Transfer Station
Austin, Travis County, Texas

Dear Mr. Wolfe:

Geosyntec Consultants (Geosyntec) has prepared this letter on behalf of our client, Waste Management of Texas, Inc. (WMTX), who will be the owner and operator of the above-referenced proposed transfer station (i.e., a Type V municipal solid waste (MSW) facility as defined by the Texas Commission on Environmental Quality (TCEQ).

BACKGROUND

Please note that this proposed facility will be situated within the permitted boundary of an existing landfill, the Austin Community Recycling & Disposal Facility (RDF), Type I MSW Landfill, TCEQ Permit No. 249D. The site is on the east side of Travis County, just north of the intersection of US290 and Giles Road. The address of the facility is 9900 Giles Road, Austin, TX, 78754.

As part of previous landfill permitting efforts, THC coordination has taken place. Copies of previous THC coordination, including a "No Historic Properties Affected, Project May Proceed" determination in 2004, are attached to this letter.

REQUEST FOR CURRENT PROJECT

The purpose of this letter is to:

- Notify the THC of a proposed MSW transfer station situated within the permitted boundary of the existing landfill facility (and located on the east side of the property, east of the landfill areas (see attached figures)).

- Request review by THC for compliance of the proposed project with the Natural Resources Code, Chapter 191, Texas Antiquities Code, in accordance with TCEQ MSW regulation 30 TAC §330.71(o).

- Request a written response from THC in the form of a review letter, acknowledging and documenting that, if THC concurs, the proposed transfer station facility will be compliance with the Natural Resources Code, Chapter 191, Texas Antiquities Code, via a "project may proceed" determination.

DESCRIPTION OF CURRENT PROJECT

While the overall permitted landfill boundary occupies approximately 359.6 acres situated between Giles Road and Walnut Creek, the current project (the proposed transfer station area) will only occupy relatively small in footprint compared to the overall facility boundary. The transfer station itself (i.e., the building) will be less than one (1) acre in size. In total, the area to actually be developed for transfer station operations (the building, associated all-weather access roads and vehicle turnaround areas, approach ramps, parking, support features, etc.) will be less than approximately 10 acres.

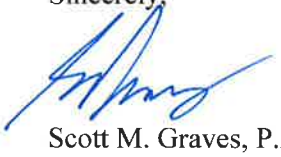
The proposed transfer station building will be a pre-engineered metal building with a roof, exterior walls, openings for collection vehicles to enter the building to unload, covered loadout areas on the sides of the building, and ancillary support features. Inside the building, solid waste will be unloaded and transferred to larger transfer trailer vehicles, who will transport the waste to an approved off-site landfill for disposal.

Figures and photographs from a site visit on September 24, 2019 are attached. As shown, the transfer station area is on already-developed land that includes gravel and paved roads and parking areas, office and maintenance buildings, truck scales, and landscaped areas with manicured grass and planted trees.

CLOSING

Geosyntec would appreciate your timely review of the information submitted with this letter, and are respectfully requesting a written response within 30 days of this letter, documenting that the proposed Austin Community Transfer Station be compliance with the Natural Resources Code, Chapter 191, Texas Antiquities Code. This will allow us to proceed with the registration process. If you have any questions, comments, or require additional information, please do not hesitate to contact me at (512) 451-4003, or by email at sgraves@geosyntec.com.

Sincerely,

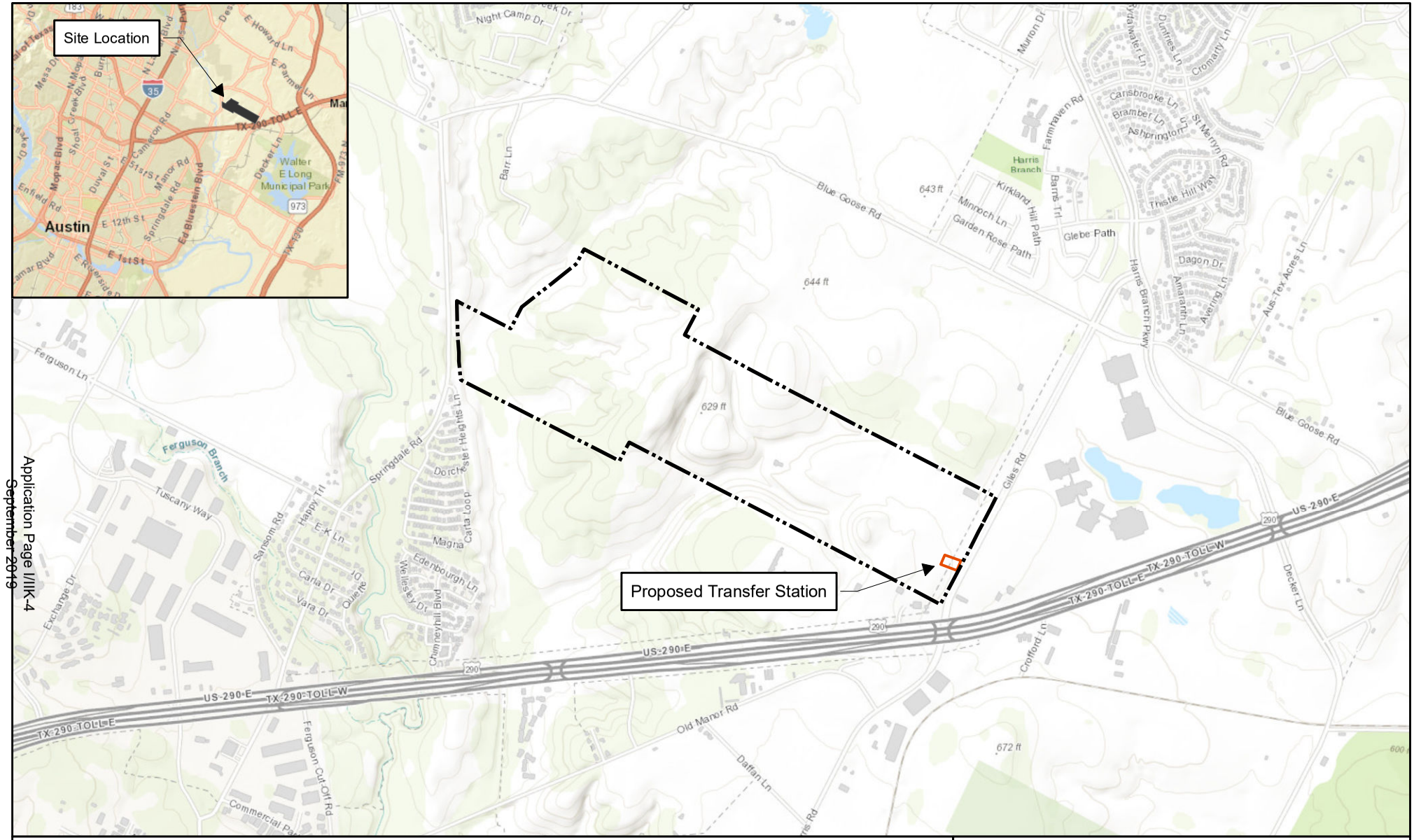


Scott M. Graves, P.E.
Principal

Attachments

Mr. Chuck Rivette, WMTX

FIGURES and PHOTOGRAPHS



Austin Community Transfer Station

Project Vicinity

Austin, Travis County, Texas

WASTE MANAGEMENT

Geosyntec consultants

Austin, TX | September 2019

Figure 1

Application Page I/IK-4
September 2019

P:\Projects\WM Austin Community\GIS\Austin_Community_Landfill_vicinity.mxd 9/25/2019 9:16:53 AM

Application Page I/IK-5
September 2019

Site Location (Registration Boundary)
Approximate Limits of Disturbance
Proposed Transfer Station (approximate new building footprint)

N

0 125 250 500 750 1,000 Feet

Austin Community Transfer Station

Transfer Station Location

Austin, Travis County, Texas

WM WASTE MANAGEMENT

Geosyntec consultants

Austin, TX | September 2019

Figure 2

P:\Projects\WM Austin Community\GIS\Austin_Community_Landfill_transferStation.mxd 9/25/2019 9:17:48 AM

Photograph 1 (9/24/2019). Eastern facility boundary along Giles Road, looking south towards US 290

Photograph 2 (9/24/2019). Eastern facility boundary along Giles Road, looking north

Photograph 3 (9/24/2019). General area of proposed transfer station (entrance road on right, scales in right background, transfer station building area to the left)

Photograph 4 (9/24/2019). General area of proposed transfer station

Photograph 5 (9/24/2019). Facility areas north of proposed transfer station (at main site office)

Photograph 6 (9/24/2019). General area of proposed transfer station vehicle turn-around area and parking area

COPIES OF PREVIOUS THC CORRESPONDENCE

Golder Associates Inc.

15603 W. Hardy Road, Suite 345
Houston, TX USA 77060
Telephone (281) 931-8674
Fax (281) 931-3246

February 2, 2004

Project No.: 033-4651
SENT VIA CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. James Bruseth, Ph.D.
Deputy State Historic Preservation Officer
Texas Historical Commission
P.O. Box 12276
Austin, Texas 78711-2276

Re: Archaeological/Historical Resources Review
Municipal Solid Waste Expansion Application
Permit No. MSW-249D
Austin Community Recycling & Disposal Facility
Travis County, Texas

Dear Mr. Bruseth:

Waste Management of Texas, Inc. is currently preparing a Permit Expansion Application to be submitted to the TCEQ Solid Waste Permits Division for a proposed major amendment to the Austin Community Recycling & Disposal Facility, Permit No. MSW-249C. Since initial waste placement began at the Austin Community site in late 1970, there have been a number of owners, permit revisions, and waste types for the facility. The existing ±290-acre Type I and IX facility is located east of the City of Austin in Travis, County Texas. Golder Associates is preparing the application for Waste Management of Texas, Inc. to expand the permit boundary to 359.71 acres. Maps showing the site location and the existing and the proposed limits of the permit boundary are attached.

On behalf of Waste Management of Texas, Inc., we are requesting a review of the Cultural Resources Survey performed by Horizon Environmental Services, Inc. for the proposed expansion project. Horizon's report concluded that the expansion of the landfill facility would not impact cultural resources (i.e., archaeological and historical resources), which may exist in these areas. This review is being requested in order to comply with the regulatory requirements of 30 TAC §330.51(b)(9) and §330.52(b)(4)(A)(xi).

If further information or documentation is required by your department to aid in your review, please give me a call at (281) 931-8674. You may also contact Sergio Iruegas of Horizon at (512) 328-2430 if you have specific questions related to the cultural resources investigation.

Sincerely,

GOLDER ASSOCIATES

Lou Ann Lowe, P.E.
Senior Engineer

Attachments

P:\033-4651\agency correspondence\archeology letter

NO HISTORIC
PROPERTIES AFFECTED
PROJECT MAY PROCEED

By _____
for F. Lawerence Oaks
State Historic Preservation Officer
Date 2/11/04

DRAFT REPORT
ACCEPTABLE
Please submit 20 final report copies
by _____
for F. Lawerence Oaks
State Historic Preservation Officer
Date 2/11/04

SOURCE: TxDOT MAP, GENERAL HIGHWAY MAP, TRAVIS COUNTY, TEXAS, MARCH 1, 2001.

GENERAL HIGHWAY MAP
TRAVIS COUNTY
TEXAS

PREPARED BY THE

TEXAS DEPARTMENT OF TRANSPORTATION

TRANSPORTATION PLANNING AND PROGRAMMING DIVISION

MAPPING SECTION

IN COOPERATION WITH THE

U.S. DEPARTMENT OF TRANSPORTATION

FEDERAL HIGHWAY ADMINISTRATION

SCALE IN MILES

2000

1990 CENSUS FIGURES

HIGHWAYS REVISED TO MARCH 1, 2001

LAMBERT CONFORMAL CONIC PROJECTION - 1927 NORTH AMERICAN DATUM
STANDARD PARALLELS 27°25' AND 34°55'

NOTES:

1. THERE ARE NO ACTIVE PUBLIC-USE AIRPORTS WITHIN 5 MILES OF THE SITE. THE ROBERT MUELLER AIRPORT LOCATED WITHIN THE 5-MILE RADIUS IS CLOSED PERMANENTLY.

FOR PERMITTING PURPOSES ONLY

Golder Associates

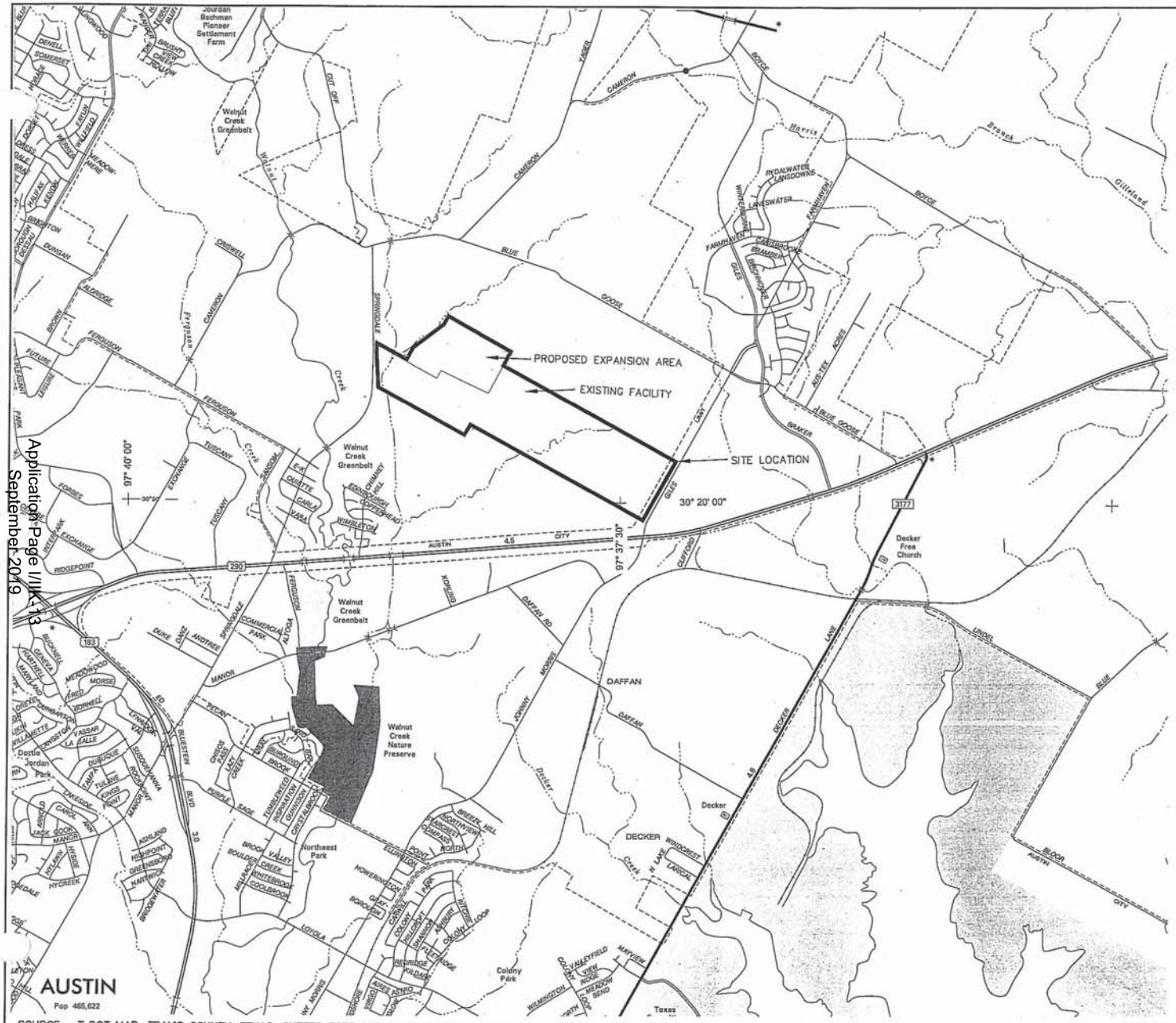
WASTE MANAGEMENT

PROJECT: MUNICIPAL SOLID WASTE EXPANSION APPLICATION
PERMIT MSW-2490
AUSTIN COMMUNITY RECYCLING AND DISPOSAL FACILITY
TRAVIS COUNTY, TEXAS

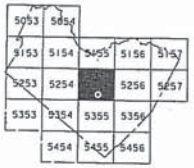
TITLE: GENERAL LOCATION MAP

DRAWN | REVIEWED
CHECKED | APPROVED
DATE: DECEMBER 2003
SCALE: AS SHOWN
JOB NO.: 033-4651
DWG. NO.:

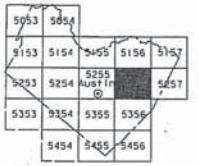
FIGURE NUMBER
1



SOURCE: TxDOT MAP, TRAVIS COUNTY, TEXAS, SHEETS 5255 AND 5256, MARCH 1, 2001.



KEY TO SUPPLEMENTARY SHEETS



KEY TO SUPPLEMENTARY SHEETS

TRAVIS COUNTY

TEXAS

SCALE IN MILES

0 ¼ ½ ¾

2000

1990 CENSUS FIGURES

HIGHWAYS REVISED TO MARCH 1, 2001

NOTICE

This map has been prepared for internal use within the Texas Department of Transportation. Accuracy is limited to the validity of available data as of dates shown.

TRAVEL INFORMATION

Dial 1-800-452-9292 for travel assistance from a professional Texas travel counselor, including routing in Texas, emergency road condition information, and other travel services, or to register a comment or complaint about department operations.

Copies of this map are available for public use at nominal cost from the Texas Department of Transportation, 118 E Riverside Dr Austin, Texas 78704 or mail requests may be sent to the Finance Division, P O Box 5020, Austin, Texas 78763-5020

FOR PERMITTING PURPOSES ONLY

Golder Associates

WASTE MANAGEMENT

PROJECT: MUNICIPAL SOLID WASTE EXPANSION APPLICATION
PERMIT MSW-2490
AUSTIN COMMUNITY RECYCLING AND DISPOSAL FACILITY
TRAVIS COUNTY, TEXAS

FILE

DRAWN: RCHEUNG

CHECKED: APPROVED

DATE: DECEMBER 2003

SCALE: AS SHOWN

JOB NO.: 033-4651

DWG. NO.

SITE LOCATION MAP

FIGURE NUMBER

2

Application Page I/IIK-13
September 2019

Horizon™
Environmental Services, Inc.

AN INTENSIVE CULTURAL RESOURCES SURVEY OF THE PROPOSED 110-ACRE EXPANSION AREA FOR THE AUSTIN COMMUNITY RECYCLING AND DISPOSAL FACILITY TRAVIS COUNTY, TEXAS HJN 030198 AR

PREPARED FOR:

WASTE MANAGEMENT OF TEXAS, INC.

PREPARED BY:

HORIZON ENVIRONMENTAL SERVICES, INC.

PRINCIPAL INVESTIGATOR:

SERGIO IRUEGAS, MA, RPA

AUTHOR:

SERGIO IRUEGAS

DECEMBER 2003

CORPORATE OFFICE:
P.O. Box 162017 • Austin, Texas 78716 • 2600 Dellana Lane, Suite 200 • Austin, Texas 78746
(512) 328-2430 • FAX (512) 328-1804 • www.horizon-esi.com

ABSTRACT

This document reports the results of an intensive cultural resource survey of the 110-acre tract of land for the proposed Austin Community Recycling and Disposal Facility expansion area (Project Area). The property is located north of US Highway 290, south of Blue Goose Road, and east of Walnut Creek in Travis County, Texas. The survey was conducted at the request of Waste Management of Texas, Inc., a privately owned landfill company. The Texas Historical Commission (THC) Atlas database showed that no archeological sites were within the Project Area. Accordingly, the purpose of the survey was to identify any cultural resources within the boundaries of the Project Area, and, if any existed, to assess their eligibility for inclusion in the National Register of Historic Places (NRHP).

Horizon Environmental Services, Inc. (Horizon) conducted the survey in October 2003 and December 2003. This entailed intensive surface inspection and shovel testing. Backhoe trenching was not considered necessary, as there was a low probability for deeply buried cultural material and the exposed banks of the unnamed tributary were easily inspected. A total of 55 shovel tests were conducted; each shovel test was negative. It is Horizon's opinion that the proposed 110-acre landfill expansion area will have "No Effect" to cultural resources. Horizon recommends project clearance within the 110-acre tract of land east of the unnamed tributary that parallels Walnut Creek.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF APPENDICES

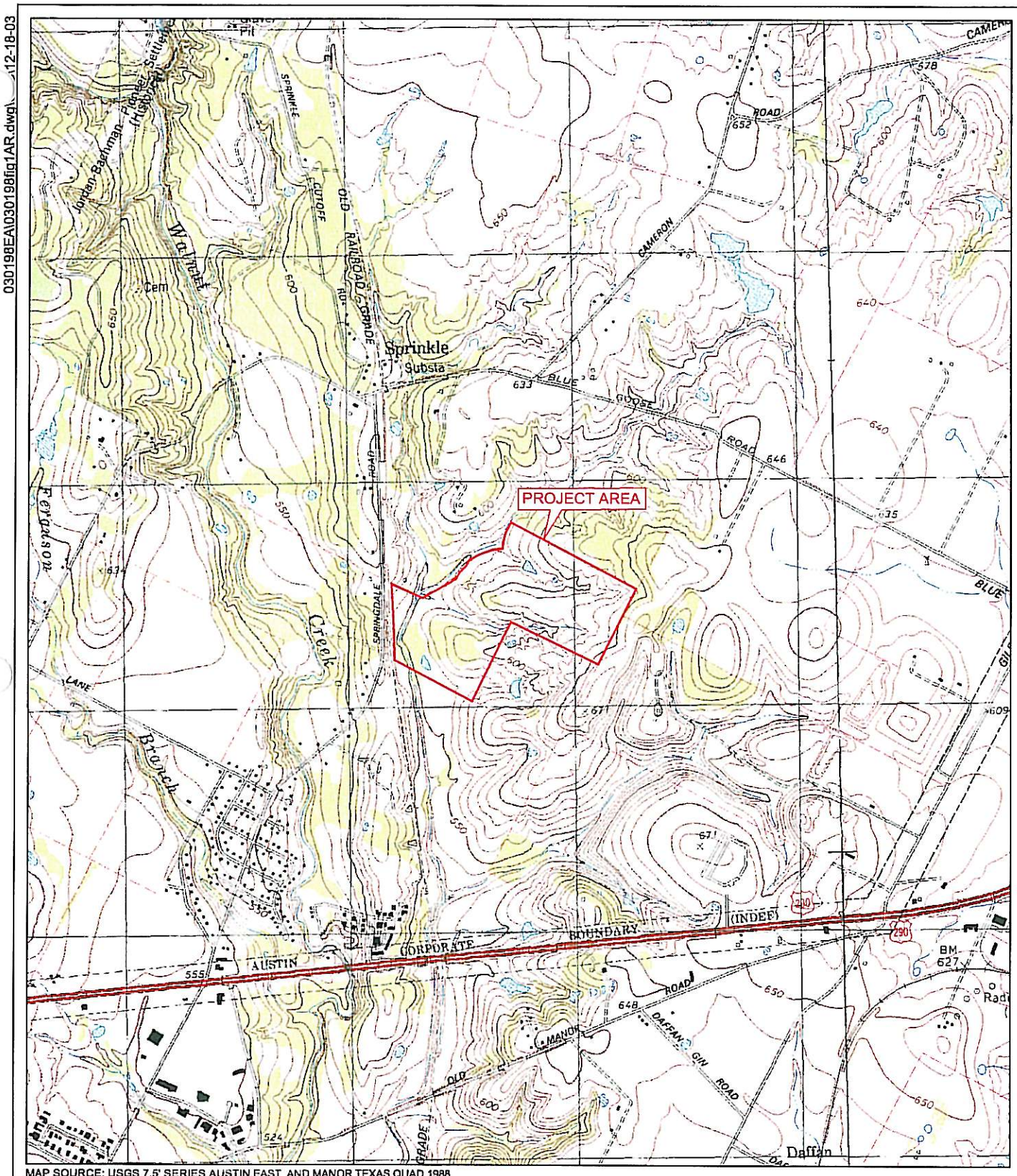
1.0 INTRODUCTION

This document reports the results of an intensive cultural resources survey of a 110-acre landfill expansion (Project Area) located north of US Highway 290 (US 290), south of Blue Goose Road, and east of Walnut Creek in Travis County, Texas (Figure 1). Horizon Environmental Services, Inc. (Horizon) conducted the survey at the request of Waste Management of Texas, Inc., a privately owned company. The purpose of the survey was to identify any unknown cultural resources within the boundaries of the Project Area, and, if any existed, to assess their eligibility for inclusion in the National Register of Historic Places (NRHP).

The cultural resources investigation consisted of an archival search, an intensive archeological survey, and the production of a report suitable for review by the State Historic Preservation Officer in accordance with the Texas Historical Commission (THC) Rules of Practice and Procedure, Chapter 26.24; the Council of Texas Archeologists Guidelines for Cultural Resources Management Reports; and the Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation. A 2-man crew consisting of Sergio Iruegas (Horizon principal investigator) and Russell Brownlow (Horizon cultural resources director) conducted the survey in October 2003. This entailed intensive surface inspection and shovel testing. Backhoe trenching was not necessary, as the there was a low probability for deeply buried cultural deposits, and the exposed cut bank of the unnamed tributary was easily inspected. A total of 35 shovel tests was excavated in high-probability areas along toe-slopes throughout the Project Area. All 35 shovel tests were negative. There was no evidence of archeological sites or isolated finds within the 110-acre Project Area, and no artifacts were collected.

2.0 PROJECT AREA DESCRIPTION

The Project Area is located between US 290 and Blue Goose Road and east of an unnamed ephemeral tributary that parallels Walnut Creek (Figure 2). The Project Area soils have a high clay content with limestone gravel and visible bedrock outcrops (Appendix A, Photos 1 and 2), and old push piles with decayed tree limbs indicate that previous terracing was conducted along the major contour lines leading down to the ephemeral stream that forms the western boundary of the Project Area. The soils also appeared to be deeper closest to the ephemeral stream, as evidenced by the cutbank profile. The ephemeral stream is deeply incised into the soil profile down to the bedrock, exposing a well-stratified soil profile and fossilized shells at the bottom of the profile. This unnamed ephemeral stream traverses the Project Area in a northeast-by-southwest direction and serves as the western boundary for the Project Area. It also parallels and then drains into Walnut Creek. Ground visibility was greater than 30% at the time of the survey.



MAP SOURCE: USGS 7.5' SERIES AUSTIN EAST, AND MANOR TEXAS QUAD 1988

0 1000 2000
SCALE IN FEET

N

TRAVIS COUNTY

FIGURE 1

TOPOGRAPHIC MAP
AUSTIN COMMUNITY LAND FILL
AUSTIN, TRAVIS COUNTY, TEXAS

Horizon
Environmental Services, Inc.

0301 98EA\030198fig1AR.dwg\ 12-18-03

MAP SOURCE: USGS 7.5' SERIES AUSTIN EAST NE, AND MANOR NW TEXAS QUARTER QUAD 1996

0 1000 2000
SCALE IN FEET

N

TRAVIS COUNTY

FIGURE 2

AERIAL PHOTOGRAPH
AUSTIN COMMUNITY LAND FILL
AUSTIN, TRAVIS COUNTY, TEXAS

Horizon
Environmental Services, Inc.

0301 98EA\0301 98fig2AR.dwg\ 12-18-03

Soils

Most of the soils within the proposed Project Area are classified within the Ferris-Heiden complex, with moderate amounts within the Heiden Series soils (USDA 1974). In particular, this classification consists of Ferris-Heiden (FhF3) and Heiden (Heb and HeC2) soils (USDA 1974).

The Ferris-Heiden soil series consists of rolling to hilly topography with a 10 to 15% slope. Approximately 60% of these soils are composed of Ferris soils, while the Heiden soils comprise the remaining 40% of these types of soil areas. The Heiden soils are found predominantly in gullies and near foot slopes with brownish-colored, calcareous sandstones on the surface. The upper surface layer is about 15 inches thick and dark grayish-brown. The soils become mottled with olive and yellow down to 50 inches below ground surface, with yellow silty clay at the lowest levels. These types of soil areas are very eroded and of limited use as farm land (USDA 1974).

During the intensive survey, the dark grayish-brown soil was clearly evident with the mottled olive and yellow clay soils substrata (Appendix A, Photos 1 and 3).

3.0 ARCHIVAL REVIEW

Archival research included a review of the THC Atlas database; THC map files and library; Travis County Tax Assessors plat records; General Land Office database and its historical Travis County map collections; aerial photographs; and the *Handbook of Texas.* Archival research focused on the 110-acre portion of the Project Area. There were no historic structures shown on any of the historic maps and plat records that would indicate the possibility of any historical archeological sites to be present within the Project Area.

4.0 REGIONAL ARCHEOLOGICAL CHRONOLOGY

The general temporal framework for most prehistoric archeological sites in Texas is based on the seriation of projectile point types originally established by Suhm et al. (1954) and later revised by Suhm and Jelks (1962), Prewitt (1981, 1985), and Turner and Hester (1985). This temporal framework, consisting of a tri-partite system based on technological changes in diagnostic artifacts that occurred as a result of indigenous adaptation to changing environments and subsistence strategies, is broken down into 3 main periods: the Paleoindian (pre-8500 BP), the Archaic (8500 to 1250 BP), and the Late Prehistoric (1250 to 250 BP). The Archaic period is further subdivided into the Early Archaic (8500 to 6000 BP), the Middle Archaic (6000 BP to 3500 BP), and the Late Archaic (3500 to 1250 BP).

Paleoindian (pre-8500 BP)

The Paleoindian period is characterized by highly mobile groups hunting over large areas. Although now-extinct megafauna such as mammoth and bison are often found associated with sites of this time period, smaller game, such as deer and turtles, were also likely utilized as food items. Undoubtedly, plant foods made up a portion of the diet as well. Based upon the low number of diagnostic artifacts recovered from sites of this period, as well as the low frequency of sites, population densities are considered low and probably consisted of small family groups. An increase in projectile point frequency toward the end of the period may suggest an increased population density or, perhaps, an increase in macro-band aggregation for the purpose of communal hunts. Sites from this time period are found mostly in upland tributary and spring settings, as well as deeply buried in floodplain alluvium. Clovis and Folsom points are indicative of Early Paleoindian occupations, while Plainview, Golondrina, Scottsbluff, Meserve, Eden, Dalton, San Patrice, and Angostura points are characteristic of the later span of the period.

Early Archaic (8500 to 6000 BP)

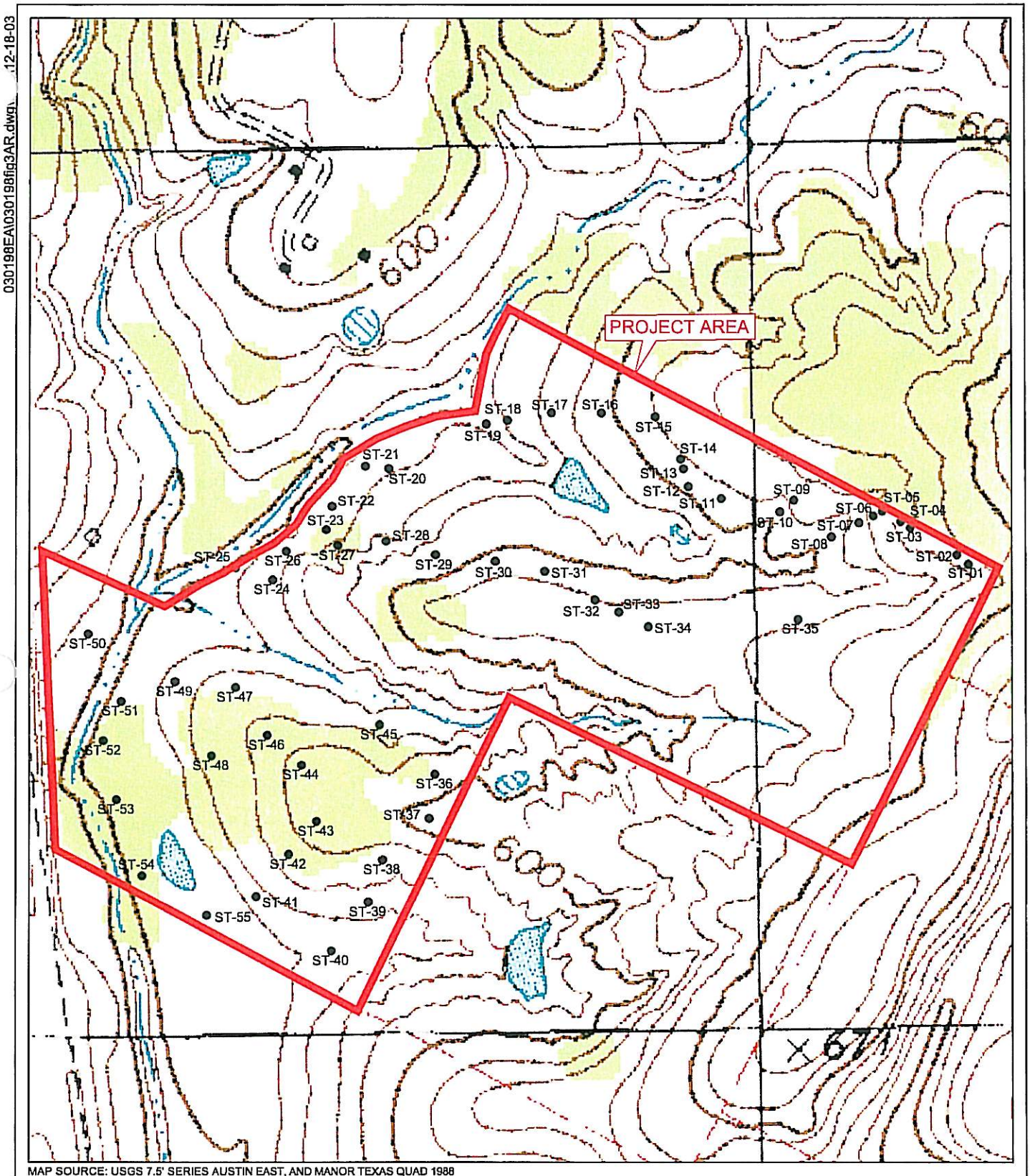
Like the Paleoindian period, Early Archaic population densities remained low, still consisting of small mobile bands. However, a more generalized hunting-and-gathering strategy is evidenced by the use of river mussels. Early Archaic sites are typically located on terraces along tributary watercourses, but are also often found deeply buried in floodplain alluvium. Site locale and an increased use of river mussels possibly indicate a shift in subsistence strategies in order to exploit the bottomlands of major waterways during this period of wetter climates. Split-stemmed points such as Gower, Martindale, and Uvalde, as well as Big Sandy, Hardin, and Hoxie, are diagnostic of Early Archaic occupations.

Middle Archaic (6000 to 3500 BP)

During the Middle Archaic, the trend toward bottomland exploitation increases, with fewer sites found along minor tributaries. Population density remained relatively low, but obviously increased over prior periods, with broad-spectrum hunting and gathering represented at larger sites where food sources were more abundant.

Late Archaic (3500 to 1250 BP)

In contrast to earlier time periods, the Late Archaic represents a period of increased population and site density. Subsistence is focused on hunting and gathering within the bottomlands of major creeks and rivers. Deer remains are quite common at Late Archaic sites, and the exploitation of plant foods (nuts) seems to have increased during this period, based upon an increase in plant-processing tools. Late Archaic sites are typically found on sandy terraces along tributaries, as well as on clayey floodplains.



MAP SOURCE: USGS 7.5' SERIES AUSTIN EAST, AND MANOR TEXAS QUAD 1988

0 250 500
SCALE IN FEET

N

TRAVIS COUNTY

FIGURE 3

SHOVEL TEST
AUSTIN COMMUNITY LAND FILL
AUSTIN, TRAVIS COUNTY, TEXAS

Horizon
Environmental Services, Inc.

030198EA\030198fig3AR.dwg 12-18-03

Late Prehistoric (1250 to 250 BP)

The Late Prehistoric, in general, is characterized by the advent of the bow and arrow, as well as ceramics, in Texas. Hunting and gathering continued with an emphasis on deer and other small game. Horticulture also became evident in some areas. As in the Late Archaic, sites continue to be located on sandy terraces along major creeks and rivers. In fact, the majority of Late Prehistoric sites contain some traces of Late Archaic occupations. A marked population increase is highly evident, and increased territorial conflicts possibly explain the recovery of burials with indications of violent deaths. Furthermore, differentiated burial practices also suggest the development of non-egalitarian societies.

5.0 SURVEY METHODOLOGY

A 2-man crew completed the intensive archeological survey of the Project Area. This was accomplished by performing a reconnaissance of the Project Area and then walking 10-meter transects across the high-probability areas within the Project Area. All soils within the Project Area that consisted of compact clay had little potential to contain buried intact cultural deposits. Excavation of shovel tests was conducted in high-probability areas along toe-slopes and terraces, and they were shallow and generally discontinued within 30 centimeters. The shovel tests, however, were excavated to at least 2 sterile levels where it was possible and, in some cases, 3 to 4 levels. Archeologists attempted to screen the soil matrix through 1/4-inch wire mesh, but resorted to trowel sorting the matrix. Field notes were maintained on terrain, vegetation, soils, land forms, the lack of cultural material observed, etc. Photographs with a photo log were completed when appropriate (Appendix A). Shovel test-location data were acquired via handheld Global Positioning System (GPS) units (Garmin, Rino, and Etrex) using the UTM coordinate system and map datum NAD 27. The locations of the shovel tests are presented in Figure 3. Shovel test data are presented in Appendix B.

6.0 SURVEY RESULTS

Results of the intensive survey revealed no prehistoric or historic archeological sites within the Project Area. Shovel testing was initiated within the toe-slope topography along the northern boundary of the Project Area adjacent to a minor ephemeral tributary of the main ephemeral stream area. A total of 55 shovel tests were excavated, and each shovel test was negative. These shovel tests also covered the more level toe-slopes in the southwestern portion of the Project Area directly adjacent to the main ephemeral stream and at the confluence of another ephemeral tributary. This area showed evidence of secondary growth shrubs and trees, indicating the historic land-clearing practices of terracing the soils (Appendix A, Photo 4). The central portion of the Project Area showed a radical slope greater than 40% (Appendix A, Photo 5), and the southeastern portion of the Project Area showed evidence of the calcareous sandstone exposures on the surface (Appendix A, Photo 6). A clearly visible cutbank profile was exposed along the entire western Project Area. This entire area was intensively inspected for

the possibility of any buried paleosols or evidence of cultural materials. The examination of the cutbank profile did not reveal any evidence of prehistoric archeological sites or the potential for such sites to be present (Appendix A, Photo 7). In general, the northern portion of the project area showed evidence of early 20th-century land clearing and terrace practices for farming, and the shovel test data revealed that the mottled olive green and yellowish clays were closer to the surface than the depths of these soils reported in the Travis County Soil Surveys. Where as the southern portion of the project area maintained a greater degree of natural topography and the shovel tests showed the upper dark brown colored soils to be deeper than the soils in the northern half of the project area.

7.0 RECOMMENDATIONS

Waste Management of Texas, Inc., which is a privately owned company, contracted with Horizon Environmental Services, Inc. to conduct an intensive cultural resource survey within its 110-acre expansion area. The Texas Historical Commission Atlas database showed that no archeological sites were within the Project Area. An ephemeral stream that parallels and drains into Walnut Creek runs along the western survey boundary of the 110-acre property. A total of 33 shovel tests were proposed to meet the minimum survey standards. Because of recent archeological site discoveries along the southern end of Walnut Creek in southeast Austin and known recorded sites along Walnut Creek, the Principle Investigator deemed it prudent to conduct a total of 55 shovel tests, as an ephemeral stream that drains into Walnut Creek partially crosses the project area. It should be noted that Walnut Creek is not within the project area. The shovel tests were located in high-probability areas, such as toe-slopes that had soil accumulations. Shovel tests were not conducted on toe-slopes that showed bedrock outcrops. Backhoe trenching was not considered necessary as there was a low probability for deeply buried cultural material, and the exposed banks of the unnamed tributary were easily inspected. The entire 110-acre Project Area was intensively surface inspected. The purpose of the survey was to identify any cultural resources within the boundaries of the Project Area, and, if any existed, to assess their archeological site boundaries and their potential eligibility for inclusion in the NRHP. Most of the shovel tests were shallow (less than 30 centimeters), as the upper levels of clayey-rocky soils were sterile of any cultural materials or features. No artifacts were observed in the shovel tests or on the ground surface, and no artifacts were collected.

It is Horizon's opinion that the proposed 110-acre landfill expansion area will have "No Effect" to cultural resources. Horizon recommends project clearance within the 110-acre tract of land east of the unnamed tributary that parallels Walnut Creek be allowed to proceed.

8.0 REFERENCES

Blair, W. F.
1950 The Biotic Provinces of Texas. *The Texas Journal of Science* 2(1):93-117.

Prewitt, E. R.
1981 Cultural Chronology in Central Texas. *Bulletin of the Texas Archeological Society* 52:65-89.

1985 From Circleville to Toyah: Comments on Central Texas Chronology. *Bulletin of the Texas Archeological Society* 54 (for 1983): 201-238.

Suhm, D. A., and E. B. Jelks
1962 Handbook of Texas Archeology: Type Descriptions. *The Texas Archeological Society Special Publication* No. 1 and *The Texas Memorial Museum Bulletin* No. 4. Austin, Texas.

Suhm, D. A., A. D. Krieger, and E. B. Jelks
1954 An Introductory Handbook of Texas Archeology. *Bulletin of the Texas Archeological Society* 25: 1-562.

Turner, E. S., and T. R. Hester
1985 *Field Guide to Stone Artifacts of Texas Indians.* Lone Star Books. Houston, Texas.

USDA
1974 *Soil Survey of Travis County, Texas.* US Department of Agriculture, Soil Conservation Service, in cooperation with the Texas Agricultural Experiment Station.

APPENDIX A

PROJECT PHOTOGRAPHS

PHOTO 1
View of profile with soil clay content

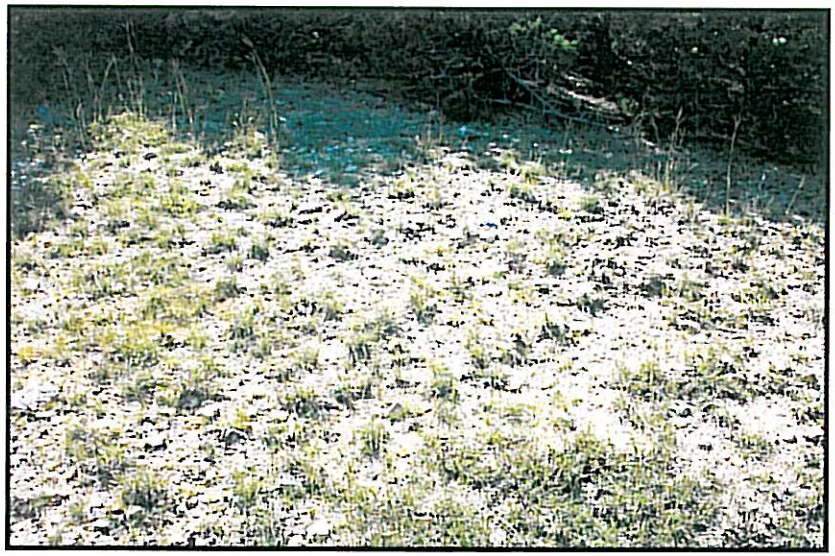


PHOTO 2
View showing calcareous limestone on ground surface with ground visibility greater than 30%

PHOTO 3
View of mottled olive clay and lower yellow clay soil content

PHOTO 4
View showing evidence of secondary growth, indicating historic land-clearing practices

Horizon
Environmental Services, Inc.

PHOTO 5
View of slope greater than 40%

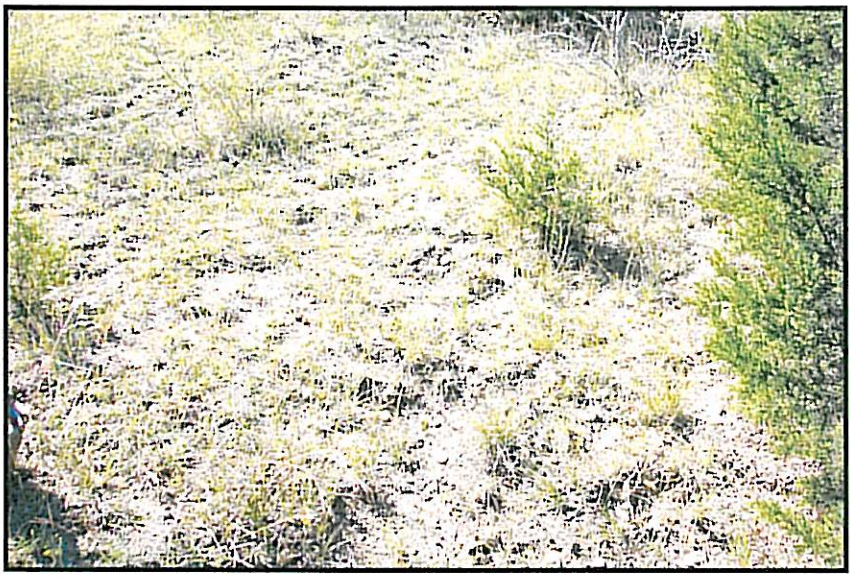


PHOTO 6
View of calcareous sandstone exposures in southeastern Project Area

PHOTO 7
View of western Project Area boundary cutbank profile

Horizon
Environmental Services, Inc.

APPENDIX B

SHOVEL TEST DATA

Horizon
Environmental Services, Inc.

Shovel Test Data-Austin Public Landfill

ST#	Easting	Northing	Depth	Soil	Artifacts
ST-01	631240	3357528	0-10 cm	Dark brown silty clay loam	Neg
			10 cm+	Dark olive gray clay	Neg
ST-02	631227	3357539	0-10 cm	Dark brown silty clay loam	Neg
			10 cm+	Dark olive gray clay	Neg
ST-03	631174	3357570	0-10 cm	Dark brown silty clay loam	Neg
			10 cm+	Dark olive gray clay	Neg
ST-04	631163	3357577	0-10 cm	Dark brown silty clay loam	Neg
			10 cm+	Dark olive gray clay	Neg
ST-05	631142	3357589	0-10 cm	Dark brown silty clay loam	Neg
			10 cm+	Dark olive gray clay	Neg
ST-06	631132	3357584	0-10 cm	Dark brown silty clay loam	Neg
			10 cm+	Dark olive gray clay	Neg
ST-07	631116	3357574	0-10 cm	Dark brown silty clay loam	Neg
			10 cm+	Dark olive gray clay	Neg
ST-08	631084	3357561	0-10 cm	Dark brown silty clay loam	Neg
			10 cm+	Dark olive gray clay	Neg
ST-09	631042	3357603	0-10 cm	Dark brown silty clay loam	Neg
			10 cm+	Dark olive gray clay	Neg
ST-10	631026	3357590	0-10 cm	Dark brown silty clay loam	Neg
			10 cm+	Dark olive gray clay	Neg
ST-11	630960	3357606	0-10 cm	Dark brown silty clay loam	Neg
			10 cm+	Dark olive gray clay	Neg
ST-12	630923	3357620	0-10 cm	Dark brown silty clay loam	Neg
			10 cm+	Dark olive gray clay	Neg
ST-13	630918	3357640	0-10 cm	Dark brown silty clay loam	Neg
			10 cm+	Dark olive gray clay	Neg
ST-14	630915	3357651	0-10 cm	Dark brown silty clay loam	Neg
			10 cm+	Dark olive gray clay	Neg
ST-15	630887	3357699	0-10 cm	Dark brown silty clay loam	Neg
			10 cm+	Dark olive gray clay	Neg
ST-16	630826	3357704	0-10 cm	Dark brown silty clay loam	Neg
			10 cm+	Dark olive gray clay	Neg
ST-17	630769	3357705	0-10 cm	Dark brown silty clay loam	Neg
			10 cm+	Dark olive gray clay	Neg
ST-18	630719	3357697	0-10 cm	Dark brown silty clay loam	Neg
			10 cm+	Dark olive gray clay	Neg
ST-19	630695	3357693	0-10 cm	Dark brown silty clay loam	Neg
			10 cm+	Dark olive gray clay	Neg
ST-20	630585	3357644	0-10 cm	Dark brown silty clay loam	Neg
			10 cm+	Dark olive gray clay	Neg
ST-21	630559	3357647	0-10 cm	Dark brown silty clay loam	Neg
			10 cm+	Dark olive gray clay	Neg
ST-22	630521	3357602	0-10 cm	Dark brown silty clay loam	Neg
			10 cm+	Dark olive gray clay	Neg
ST-23	630514	3357576	0-10 cm	Dark brown silty clay loam	Neg
			10 cm+	Dark olive gray clay	Neg
ST-24	630452	3357520	0-10 cm	Dark brown silty clay loam	Neg
			10 cm+	Dark olive gray clay	Neg
ST-25	630410	3357534	0-10 cm	Dark brown silty clay loam	Neg
			10 cm+	Dark olive gray clay	Neg

ST#	Easting	Northing	Depth	Soil	Artifacts
ST-52	630291	3357362	0-22 cm	Lt. brown silty loam with mttled yellowish clay	Neg
ST-53	630300	3357199	0-25 cm	Brown silty clay loam	Neg
ST-54	630341	3357136	0-23 cm	Lt. brown silty clay loam	Neg
ST-55	630522	3357103	0-26 cm	Lt. brown silty clay loam	Neg

APPENDIX I/IIL

CAPITOL AREA COUNCIL OF GOVERNMENTS (CAPCOG) DOCUMENTATION

Geosyntec consultants

8217 Shoal Creek Blvd, Suite 200
Austin, Texas 78757
PH 512.451.4003
FAX 512.306.8042
www.Geosyntec.com

Mr. Kenneth May
Regional Program Coordinator
Regional Services – Solid Waste Planning
Capital Area Council of Governments
6800 Burleson Road, Building 310, Suite 165
Austin, TX 78744

26 September 2019

Subject: Council of Governments Review Request
Proposed Type V MSW Facility (Transfer Station) Registration
Austin Community Transfer Station
Travis County, Texas

Dear Mr. May:

On behalf of our client, Waste Management of Texas, Inc. (WMTX) Geosyntec Consultants (Geosyntec) has prepared a registration application for a proposed transfer station located at 9900 Giles Road, Austin, TX 78754. The transfer station will be a Type V Municipal Solid Waste (MSW) Facility.

Per 30 TAC §330.9(b)(4), this proposed transfer station facility qualifies for a registration because it will be located within the permitted boundaries of an MSW Type I facility (namely, the Austin Community Recycling and Disposal Facility (RDF), TCEQ Permit No. MSW-249D).

The registration application is being submitted to TCEQ, and is composed of four parts designated as Parts I through IV. Now that the application has been finalized and is being submitted to TCEQ and in accordance with 30 TAC §330.61(p) we are submitting Parts I and II of the application to CAPCOG with this letter, and are requesting CAPCOG's review for compliance with the regional solid waste management plan

We appreciate your assistance in this matter. Please contact me at (512) 451-4003 or by email at sgraves@geosyntec.com if you have any questions or require any additional information. Alternately, you are welcome to contact Mr. Chuck Rivette, a representative of WMTX, the Applicant, at (713) 647-5542 for further information or assistance.

Sincerely,

Scott M. Graves, P.E.
Principal, Geosyntec Consultants, Inc.

Enclosure
Copy to: Chuck Rivette, WMTX

GW7107/Austin Transfer Station CAPCOG Ltr

TCEQ TYPE V MSW FACLITY REGISTRATION APPLICATION

AUSTIN COMMUNITY TRANSFER STATION

PARTS I AND II

[PROVIDED IN THE ENCLOSED 3-RING BINDER]

Applicant:
Waste Management of Texas, Inc.

REGISTRATION APPLICATION

PART III – SITE DEVELOPMENT PLAN

AUSTIN COMMUNITY TRANSFER STATION
TYPE V MSW FACILITY
REGISTRATION NO. MSW-____ [to be assigned]
AUSTIN, TRAVIS COUNTY, TEXAS

Owner and Operator:
Waste Management of Texas, Inc.

9/26/2019

FOR REGISTRATION PURPOSES ONLY

GEOSYNTEC CONSULTANTS, INC.
TEXAS ENG. FIRM
REGISTRATION NO. F-1182

THE ABOVE P.E. SEAL APPLIES TO THIS TITLE PAGE ONLY. WITHIN PART III, EACH INDIVIDUAL ENGINEERING REPORT, PLAN, OR CALCULATION, AND EACH ENGINEERING DRAWING IS SIGNED, SEALED, AND DATED BY THE RESPONSIBLE ENGINEER AS REQUIRED BY THE TEXAS ENGINEERING PRACTICE ACT.

Physical Site Address:
9900 Giles Road
Austin, Texas 78754
(512) 272-6245

September 2019

PART III TABLE OF CONTENTS
SITE DEVELOPMENT PLAN

THE P.E. SEAL ON THIS PAGE APPLIES TO THIS TABLE OF CONTENTS PAGE ONLY. WITHIN PART III, EACH INDIVIDUAL ENGINEERING REPORT, PLAN, OR CALCULATION, AND EACH ENGINEERING DRAWING IS SIGNED, SEALED, AND DATED BY THE RESPONSIBLE ENGINEER AS REQUIRED BY THE TEXAS ENGINEERING PRACTICE ACT.

9/26/2019

FOR REGISTRATION PURPOSES ONLY

GEOSYNTEC CONSULTANTS, INC.
TEXAS ENG. FIRM
REGISTRATION NO. F-1182

Prepared for:
Waste Management of Texas, Inc.

REGISTRATION APPLICATION

PART III – SITE DEVELOPMENT PLAN NARRATIVE REPORT

AUSTIN COMMUNITY TRANSFER STATION
TYPE V MSW FACILITY
REGISTRATION NO. MSW-____ [to be assigned]
AUSTIN, TRAVIS COUNTY, TEXAS

SEALED FOR THIS PART III NARRATIVE REPORT, AND FOR REGISTRATION PURPOSES ONLY.

WITHIN EACH ATTACHMENT, ITEMS THAT REQUIRE A SIGNATURE AND SEAL BY A LICENSED PROFESSIONAL (E.G., ENGINEER, SURVEYOR, OR GEOSCIENTIST) ARE SIGNED, SEALED, AND DATED, AS APPROPRIATE, BY THE RESPONSIBLE PROFESSIONAL.

Prepared by:

Geosyntec consultants
Texas Board of Professional Engineers Firm Registration No. F-1182
8217 Shoal Creek Blvd, Suite 200
Austin, Texas 78757
(512) 451-4003

September 2019

TABLE OF CONTENTS
PART III – SITE DEVELOPMENT PLAN

NARRATIVE REPORT

9/26/2019

FOR REGISTRATION PURPOSES ONLY

GEOSYNTEC CONSULTANTS, INC.
TEXAS ENG. FIRM
REGISTRATION NO. F-1182

9/26/2019

STATE OF TEXAS
SCOTT M. GRAVES
86557
LICENSED
PROFESSIONAL ENGINEER

GEOSYNTEC CONSULTANTS, INC.
TEXAS ENG. FIRM REGISTRATION NO. F-1182

SEALED FOR THIS PART III NARRATIVE REPORT, AND FOR REGISTRATION PURPOSES ONLY.

ATTACHMENTS

WITHIN EACH ATTACHMENT, ITEMS THAT REQUIRE A SIGNATURE AND SEAL BY A LICENSED PROFESSIONAL (E.G., ENGINEER, SURVEYOR, OR GEOSCIENTIST) ARE SIGNED, SEALED, AND DATED, AS APPROPRIATE, BY THE RESPONSIBLE PROFESSIONAL.

1. INTRODUCTION

This Part III – Site Development Plan (SDP) Narrative Report has been prepared for the Austin Community Transfer Station (hereafter also referred to as the "facility" or "site") consistent with the requirements of 30 TAC §330.63. The Part III SDP addresses the criteria used in the selection and design of this facility for safeguarding the health, welfare, and physical property of the public and the environment. This Part III narrative report includes discussion of the drainage, land use, zoning, adequacy of access roads and highways, and other considerations specific to this facility.

1.1 Background

The Austin Community Transfer Station will provide an efficient means to process and transfer the waste that is generated in the City of Austin, Travis County, and the surrounding areas and transfer the waste to a Texas Commission on Environmental Quality (TCEQ) permitted MSW landfill. This facility qualifies for a registration, per Title 30 Texas Administrative Code (TAC) §330.9(b)(4), by being located within the permitted boundaries of an MSW Type I facility (namely, the Austin Community Recycling and Disposal Facility (RDF), TCEQ Permit No. MSW-249D). The registration boundary coincides with the landfill permit boundary.

1.2 Site Location

The transfer station facility is located at 9900 Giles Road, approximately 500 feet north of the intersection of Giles Road and US Highway 290, in Travis County, Texas. The site location is shown on the general location maps in Part I/II, Appendix A (e.g., see Drawing I/IIA-1).

1.3 Land Use and Zoning

An analysis of land use and zoning, and potential impact on the area surrounding the facility, is presented in the Part I/II narrative report (see Section 5 of the Part I/II report).

1.4 Adequacy of Access Roads and Highways

Adequacy of access roads and highways is addressed in the Part I/II Supplemental Technical Report (see Section 7 of that report). The traffic evaluation presented in Part I/II of the application, with additional supporting documentation including a comprehensive Transportation Study contained in Appendix I/IIH, concludes that for this transfer station access roads are available and adequate.

A facility layout plan showing the access points is presented on Part III, Attachment 1, Drawing III-1-1.

Access to the transfer station will continue via the existing landfill (i.e., Austin Community Recycling & Disposal Facility) driveway on Giles Road. As discussed in Part I/II, Appendix I/IIH, the primary access routes to the site are via Giles Road, Johnny Morris Road, and US Highway 290. Routine maintenance of Giles Road and Johnny Morris Road by Travis County should be adequate to keep these roadways in good condition over the life of the facility. There are no known weight restrictions on these roads in one-mile proximity to the facility, other than the maximum legal weight limit of 80,000 pounds.

1.5 Organization of Part III (Site Development Plan)

The remainder of this report is organized as follows:

- the general facility design is presented in Section 2;
- the facility surface water drainage design is discussed in Section 3;
- the waste processing facility design is discussed in Section 4;
- the facility closure plan is discussed in Section 5; and
- cost estimate for closure is discussed in Section 6.

The attachments to the Site Development Plan are organized as follows:

- Attachment 1 provides drawings that present additional information on the general facility design (related to waste movement and access);
- Attachment 2 is the Facility Surface Water Drainage Report, with related drawings and calculations;
- Attachment 3 is the Closure Plan;
- Attachment 4 is the Cost Estimate for Closure.

2. GENERAL FACILITY DESIGN

2.1 Introduction

Section 2 of this report has been prepared to address the general facility design topics required by 30 TAC §330.63(b).

2.2 Facility Access Control

This section describes how access will be controlled for the facility, pursuant to 30 TAC §330.63(b)(1). The access controls described below are designed to prevent the entry of livestock, protect the public from exposure to potential health and safety hazards, and to discourage unauthorized entry or uncontrolled disposal of solid waste or hazardous materials. Refer to Section 8 of Part IV (the SOP), for operating requirements related to access control.

Fencing and gates will serve as the primary landfill access controls. The facility perimeter is fenced to control access and prevent unauthorized access, and has lockable gates. Fencing will be composed of (at minimum) a four-foot barbed wire fence or a six-foot chain-link fence or equivalent (e.g., iron or metal bar-style fencing). The operating area (i.e., the transfer station) is a building. The location of the main entrance/exit gate is shown on Part III, Attachment 1, Drawing III-1-2 and in greater detail on Drawing III-1-4.

A facility attendant will be on-site during operating hours and will monitor entrance to the facility. Entry to the transfer station will be restricted to designated personnel, appropriate subcontractors, approved waste haulers, the public, TCEQ personnel, and properly identified persons whose entry is authorized by facility management. The facility attendant will direct waste transport drivers to the transfer station. There, the drivers will be directed to a specific unloading area. Additionally, when appropriate, signs with directional arrows and/or barricades may be placed along site roads to direct traffic and control interior access.

During normal operating hours, facility personnel will be on duty at the scale house and in the vicinity of transfer station operations to control access. When the site is closed to the public, the entry gate at the main entrance/exit will be closed to prevent site access, and locked when no personnel are present on site.

2.3 Waste Movement

2.3.1 Waste Flow Diagram

Pursuant to §330.63(b)(2)(A), a waste flow diagram indicating the processing and storage sequences (there is no disposal) for wastes received is shown on Part III, Attachment 1, Drawing III-1-1.

2.3.2 Waste Process Schematic

Pursuant to §330.63(b)(2)(B), a schematic indicating the waste processing and storage areas is shown on the "Facility Layout Plan" in Part III, Attachment 1, Drawing III-1-2. The Facility Layout Plan shows the location of the transfer station within the registration boundary, and also for informational purposes and context, references other features on the site that are not associated with the registration (e.g., the permitted landfill of Permit No. MSW-249). Additional drawings and provided in Part III Attachment 1 to show the layout of the transfer station within the registration boundary at an enlarged scale, and also show the traffic flow patterns to help better define the waste process schematics. Note that there is no disposal proposed as part of this registration application, and that there is no phased sequence of development (the transfer station will be built all at once in order to commence operations).

2.3.3 Ventilation and Odor Control

As required by §330.63(b)(2)(C), the transfer station structure is designed to provide adequate ventilation. Ventilation in the transfer station building will be provided by the openings through which waste hauling vehicles will enter and exit, and vents which will be installed on the building roof. The transfer facility doors on each end of the transfer truck loadout tunnel may also be opened, if needed, for additional ventilation. Excessive dust and particulates that occur at the transfer station facility will be controlled using water sprays or similar methods. No significant air pollution emissions are expected to result from the operation of the transfer station.

The transfer station will be operated to provide adequate ventilation for odor control and employee safety. The operator will prevent nuisance odors from leaving the transfer station registration boundary. If nuisance odors are detected near the transfer station registration boundary, the site will immediately take action to abate the condition. Odors are controlled by limiting operations to within the structure and limiting the time solid waste may be stored on the tipping floor (refer to Part IV - SOP, Sections 4.2 and 8.2). All processing of solid waste will

occur within the transfer station structure. Mist systems (using water) may be used within the transfer station structure to suppress odors, if needed. The mist (or similar) systems may also be used to control odors through the addition of chemical deodorizers. Ponding water will be controlled to avoid objectionable odors.

2.3.4 Generalized Construction Details

The proposed transfer station building will be a pre-engineered metal building with a roof, exterior walls, openings for collection vehicles to enter the building to unload, covered loadout areas on the sides of the building, and ancillary support features. The inside of the transfer station building will have a reinforced concrete slab tipping floor with an area of approximately 25,000 square feet, and reinforced concrete push walls to resist typical forces for transfer operations.

The tipping floor is designed with a slope to drain toward the south of the structure. The north side of the building has openings for collection vehicles to enter the tipping floor for unloading. The east and west sides of the building have openings for loading of transfer trailer vehicles in the loadout tunnels. The tipping floor is designed with a slope to drain toward a grate drain at one end of the tipping floor. The grate drain will convey water (primarily wash water), which will be managed as contaminated water, to a minimum 2,000-gallon (nominal) holding tank.

Engineering drawings presenting the site plan, general construction details, and associated design criteria for the transfer station are provided in Part III, Attachment 1

2.3.5 Noise Pollution Control

As required by §330.63(b)(2)(I), the transfer station will be designed to control noise pollution. Since transfer station activities take place within the building structure, generated noise is mostly confined to the structure. Waste transfer operations are screened and buffered from the public roadway (Giles Road) by a vegetated earthen berm and mature trees. The transfer station structure is located at a sufficient distance from nearby residences and businesses so that activities at the site are not readily visible. The transfer station structure is located approximately 350 feet from the nearest business. There is one church near the southeast corner of the facility, on the other side of Giles Road, but the transfer station will not accept waste or transfer waste on Sundays. There are no schools or aesthetically significant sites within a half mile radius of the facility.

2.4 Sanitation and Water Pollution Control

As required by §330.63(b)(3) and (4), the transfer station will be designed to facilitate proper cleaning. The transfer station structure will include a metal or equivalent material roof that covers the concrete slab waste processing area (tipping floor) and the waste storage area. Waste will be unloaded and processed on the concrete tipping floor. Floor washdown water management is discussed below. The transfer station site will be graded to prevent run-on drainage and flow of stormwater onto the tipping floor.

2.4.1 Surface Water and Groundwater Protection

As required by §330.63(b)(3)(A) and §330.63(b)(4), surface drainage in the vicinity of the facility will be controlled to prevent surface water runoff onto, into, and off the treatment area. Based on the facility design information presented in this Site Development Plan, the transfer station is designed to prevent discharge of pollutants into waters of the United States, as defined by the Texas Water Code and the Federal Clean Water Act, respectively. The facility will be constructed, maintained, and operated to manage run-on and runoff during the peak discharge of a 25-year rainfall event and prevent the off-site discharge of waste material, including, but not limited to, in-process and/or processed materials. Surface water drainage in and around the facility will be controlled to prevent surface water from running into, onto, and off the processing area. Since all contaminated water is managed in a controlled manner, as discussed above, surface water and groundwater is protected.

2.4.2 Floor Wash Down

As required by §330.63(b)(3)(A) through (D) and §330.243(a), the transfer station will be constructed to facilitate proper cleaning. Waste processing operations within the transfer station structure will be conducted on a covered tipping floor. All floors in operating areas will be constructed of reinforced concrete. The push walls will be composed of reinforced concrete to resist typical forces on transfer operations and be able to be hosed down and scrubbed. Other walls in operating areas will be masonry, concrete, or other hard-surfaced materials that can be hosed down and scrubbed. A connection to a supply of water under pressure will be provided for cleaning. Tipping floor washdown water will drain through a grate drain and be directed to a minimum 2,000-gallon (nominal) contaminated water holding tank. All contaminated water will be managed in accordance with the procedures set forth in Section 5 of the SOP.

2.5 Protection of Endangered Species

Pursuant to 30 TAC §330.61(n), §330.63(b)(5), and §330.551, site-specific endangered and threatened species assessments were conducted by a qualified biologist for this project site. The assessment included a review of state and federal reference information of the United States Fish and Wildlife Service (USFWS) and the Texas Parks and Wildlife Department (TPWD) and a field survey for threatened or endangered species and their habitats. The endangered species assessment and related documentation is provided in Part I/II, Appendix I/IIJ.

The outcome of the assessment is that no federally-listed or state-listed endangered or threatened species, or any critical habitats for such species, were found at the site. The findings are that ongoing facility development and operation is not expected to cause or result in the destruction or adverse modification of critical habitats or contribute to the taking or harming of any endangered or threatened species.

3. SURFACE WATER DRAINAGE REPORT

3.1 Introduction

Section 3 of this report has been prepared to address the applicable surface water drainage design topics required by 30 TAC §330.63(c).

3.2 Drainage Design

The transfer station will be constructed, maintained, and operated to manage run-on and runoff during the peak discharge of a 25-year storm event and prevent the off-site discharge of waste material, including, but not limited to, in-process and/or processed materials. Surface water drainage in and around the facility will be controlled to minimize surface water running onto, into, and off the processing area. Details of the drainage system and associated design demonstrations are included in Part III, Attachment 2, Surface Water Drainage Report.

3.3 Floodplain Considerations

As shown on Drawing I/IIA-15 in Appendix I/IIA of Part I/II and documented/discussed further in Section 11 of the Part I/II Supplemental Technical Report, the transfer station area is not located within a 100-year floodplain.

4. WASTE PROCESSING FACILITY DESIGN

4.1 Introduction

Section 4 of this report presents waste management unit design information, pursuant to 30 TAC §330.63(d)(1). The general facility design was previously addressed in Section 2. Attachment 1 of this SDP provides the supporting engineering drawings, plans, specifications, and calculations for the design of the waste processing facility.

4.2 Waste Operations

Pursuant to 30 TAC §330.63(d)(1)(A), the transfer station facility is designed for rapid processing and minimum detention of solid waste, up to an including the registered maximum daily waste acceptance rate as set forth in the Waste Acceptance Plan (see Section 3 of the Part I/II Supplemental Technical Report). The area to be used for waste transfer operations will be the building footprint, which is approximately 140 feet by 180 feet.

All solid waste capable of creating public health hazards or nuisances will be stored within the building, processed or transferred promptly, and will not be allowed to result in a nuisance or public health hazard. All solid waste stored overnight at the facility will either be in a transfer trailer with a tarp over it or on the tipping floor with a tarp over it. Recyclable materials on the tipping floor or within enclosed containers will not require tarping.

Procedures for the unloading of waste are provided in Section 8 of the SOP. This includes procedures for traffic control on-site, and procedures for the detection and prevention of unauthorized waste.

Unloading of waste in unauthorized areas is prohibited. Any waste that is identified as having been deposited in an unauthorized area will be immediately moved to the proper unloading areas.

4.3 Spill Prevention and Control

Pursuant to 30 TAC §330.63(d)(1)(B), the transfer station facility is designed to control and contain spills and contaminated water. Staging and processing areas at this facility will be located within the transfer station structure. The unloading areas are designed to control and contain spills and contaminated water. The building walls in waste operations areas (discussed above in Section 2.4.2 of this report) will serve as a form of spill containment. Additionally, the tipping floor is designed with a slope to drain toward a grate drain at one end of the tipping floor. The grate drain will convey water (primarily wash water), which will be managed as

contaminated water, to a minimum 2,000-gallon (nominal) holding tank. All contaminated water will be managed in accordance with the procedures set forth in Section 5 of the SOP.

Uncontaminated stormwater run-on and run-off will be directed away from the transfer station building entrances by site grading. The transfer station building interior where waste is managed will not result in any storm-generated run-off since the transfer station building is completely covered.

4.4 Waste Storage Period

Pursuant to 30 TAC §330.63(d)(1)(A) and (C), the period of time that wastes will remain on site will be limited. The facility will not accumulate solid waste in quantities that cannot be processed within such time as will preclude the creation of odors, insect breeding, or harborage of other vectors. Solid waste will be stored in a manner to prevent fires, ensure safety, prevent a health hazard, or preclude food or harborage for animals and vectors, and contained to minimize windblown solid waste and litter. Solid waste will be stored either in a transfer trailer with a tarp cover or on the tipping floor with a tarp cover. Recyclable materials stored on the tipping floor or in enclosed containers will not require tarping. The maximum time waste material will be stored will not exceed 48 hours for the transfer station, except on holidays or weekends. On holidays and/or weekends the maximum time will not exceed 72 hours.

5. CLOSURE PLAN

Pursuant to 30 TAC §330.63(h), a facility Closure Plan is included with Part III. This Plan is provided in Part III, Attachment 3. The Closure Plan has been prepared to meet the requirements of 30 TAC §330.459 (closure requirements for MSW Storage and Processing Units).

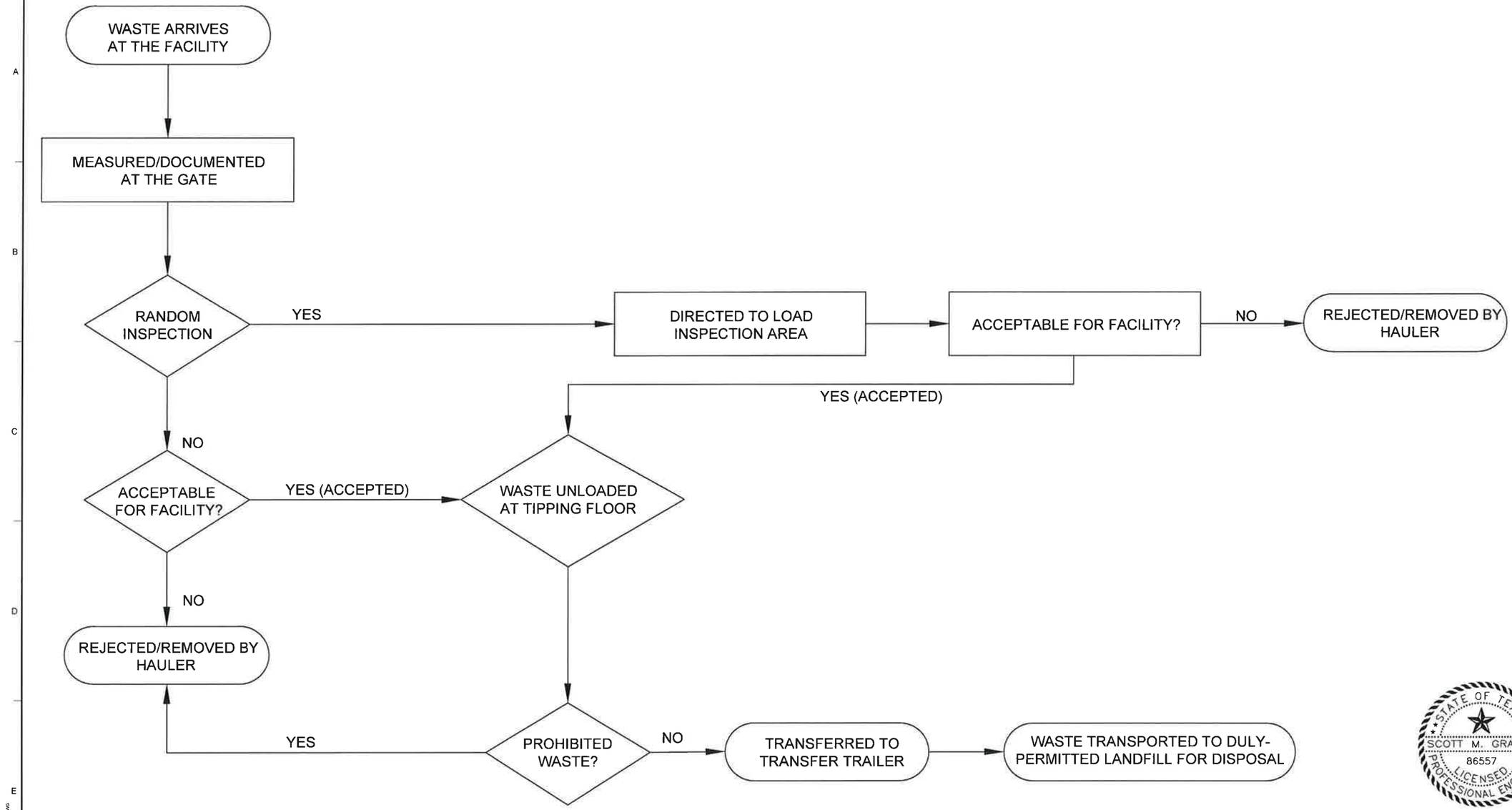
6. COST ESTIMATE FOR CLOSURE

Pursuant to 30 TAC §330.63(j), the cost estimate for closure is included with Part III. This information is provided in Part III, Attachment 4. The closure cost estimate has been prepared to meet the requirements of 30 TAC §330.505.

ATTACHMENT 1

GENERAL FACILITY DESIGN

LIST OF DRAWINGS		
Drawing No.	Title	Drawing Date (latest revision)
III-1-1	Flow Diagram	September 2019
III-1-2	Facility Layout Plan	September 2019
III-1-3	Existing Site Conditions - Transfer Station Area	September 2019
III-1-4	Transfer Station Site Plan	September 2019
III-1-5	Transfer Station Design	September 2019



STATE OF TEXAS
SCOTT M. GRAVES
86557
LICENSED
PROFESSIONAL ENGINEER

9/26/2019

FOR REGISTRATION PURPOSES ONLY

REV	DATE	DESCRIPTION	DRN	APP
0	SEP 2019	INITIAL SUBMITTAL	ACB	SMG

WASTE MANAGEMENT OF TEXAS, INC

SITE ADDRESS
9900 GILES RD
AUSTIN, TEXAS 78754
PHONE 512.272.6245

Geosyntec consultants

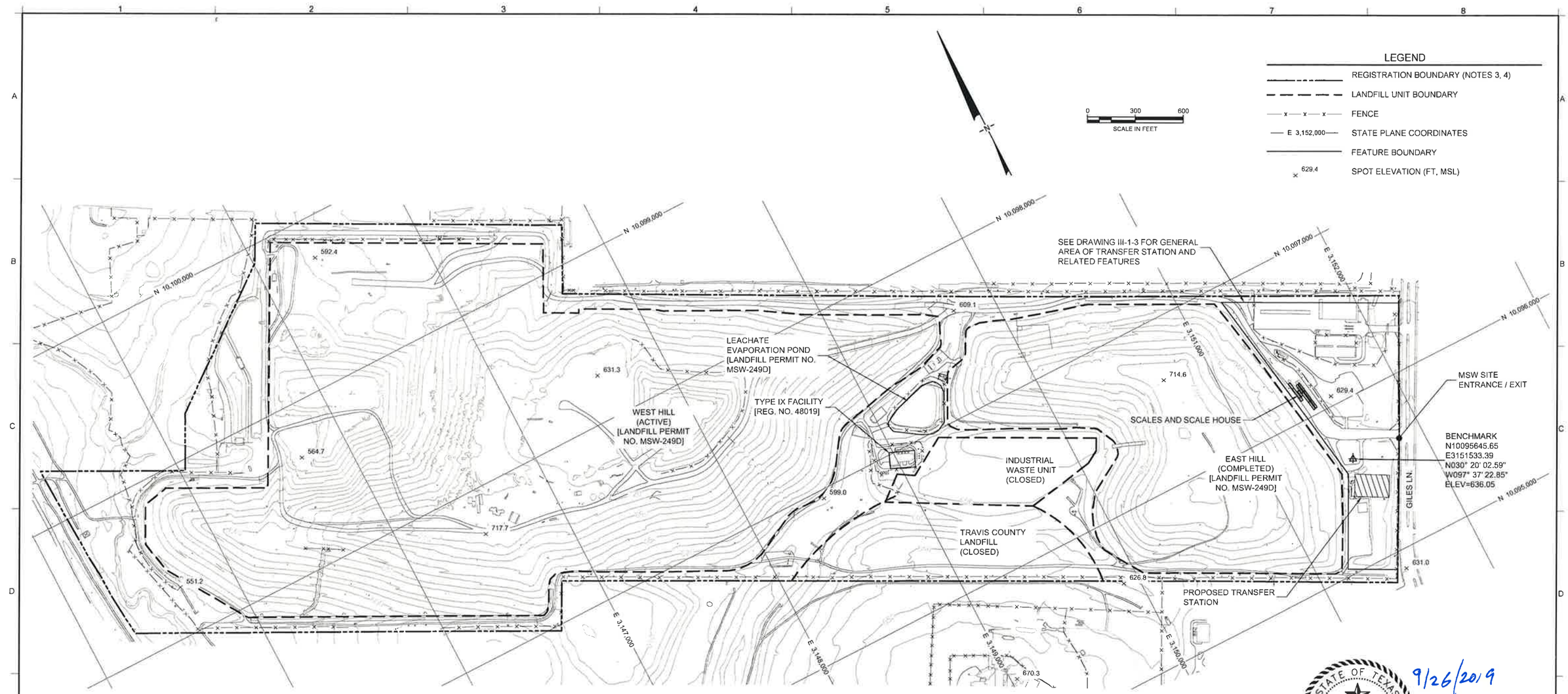
GEOSYNTEC CONSULTANTS, INC
TEXAS ENG. FIRM REGISTRATION NO. 1182
6217 SHOAL CREEK BLVD, SUITE 200
AUSTIN, TEXAS 78757
PHONE 512.451.4003

TITLE:
FLOW DIAGRAM

PROJECT
AUSTIN COMMUNITY TRANSFER STATION
TYPE V MSW FACILITY REGISTRATION APPLICATION

PROJECT NO.	GW7107	DESIGN BY:	ACB	REVIEWED BY:	SMG	PART NO.:	DRAWING
FILE:	GW7107-P3-1	DRAWN BY:	ACB	APPROVED BY:	SMG	III	III-1-1

REGISTRATION DRAWING



NOTES:

1. TOPOGRAPHIC BASE MAP BASED ON AERIAL PHOTOGRAPHY, FLOWN 20 FEBRUARY 2019 BY DAS GEOSPATIAL.
2. ELEVATIONS ARE IN FEET ABOVE MEAN SEA LEVEL (FT, MSL) AS DEFINED BY THE NORTH AMERICAN VERTICAL DATUM (NAVD) OF 1988. COORDINATE GRID CORRESPONDS TO TEXAS STATE PLANE COORDINATE SYSTEM, TEXAS CENTRAL ZONE (4203), NORTH AMERICAN DATUM 83 (NAD-83) 1983.
3. REGISTRATION BOUNDARY COINCIDES WITH THE TYPE I MSW FACILITY LANDFILL PERMIT BOUNDARY OF TCEQ PERMIT NO. MSW-249D.
4. THE ENTIRE FACILITY BOUNDARIES IS FENCED, AND HAS A LOCKABLE GATE AT THE MAIN SITE ENTRANCE. FENCING LOCATION IS APPROXIMATELY ALIGNED WITH THE FACILITY BOUNDARY.
5. THE ONLY WASTE STORAGE/PROCESSING AREA/UNIT ASSOCIATED WITH THE TYPE V MSW FACILITY REGISTRATION IS THE TRANSFER STATION SHOWN ON THIS DRAWING.
6. THE LIMITS OF THE INDUSTRIAL WASTE UNIT AND TRAVIS COUNTY LANDFILL ARE SHOWN AS APPROXIMATE.

STATE OF TEXAS
SCOTT M. GRAVES
86557
LICENSED
PROFESSIONAL ENGINEER
9/26/2019

FOR REGISTRATION PURPOSES ONLY

REV	DATE	DESCRIPTION	DRN	APP
0	SEP 2019	INITIAL SUBMITTAL	ACB	SMG

WASTE MANAGEMENT OF TEXAS, INC.
SITE ADDRESS:
9900 GILES RD
AUSTIN, TEXAS 78754
PHONE 512.272.6245

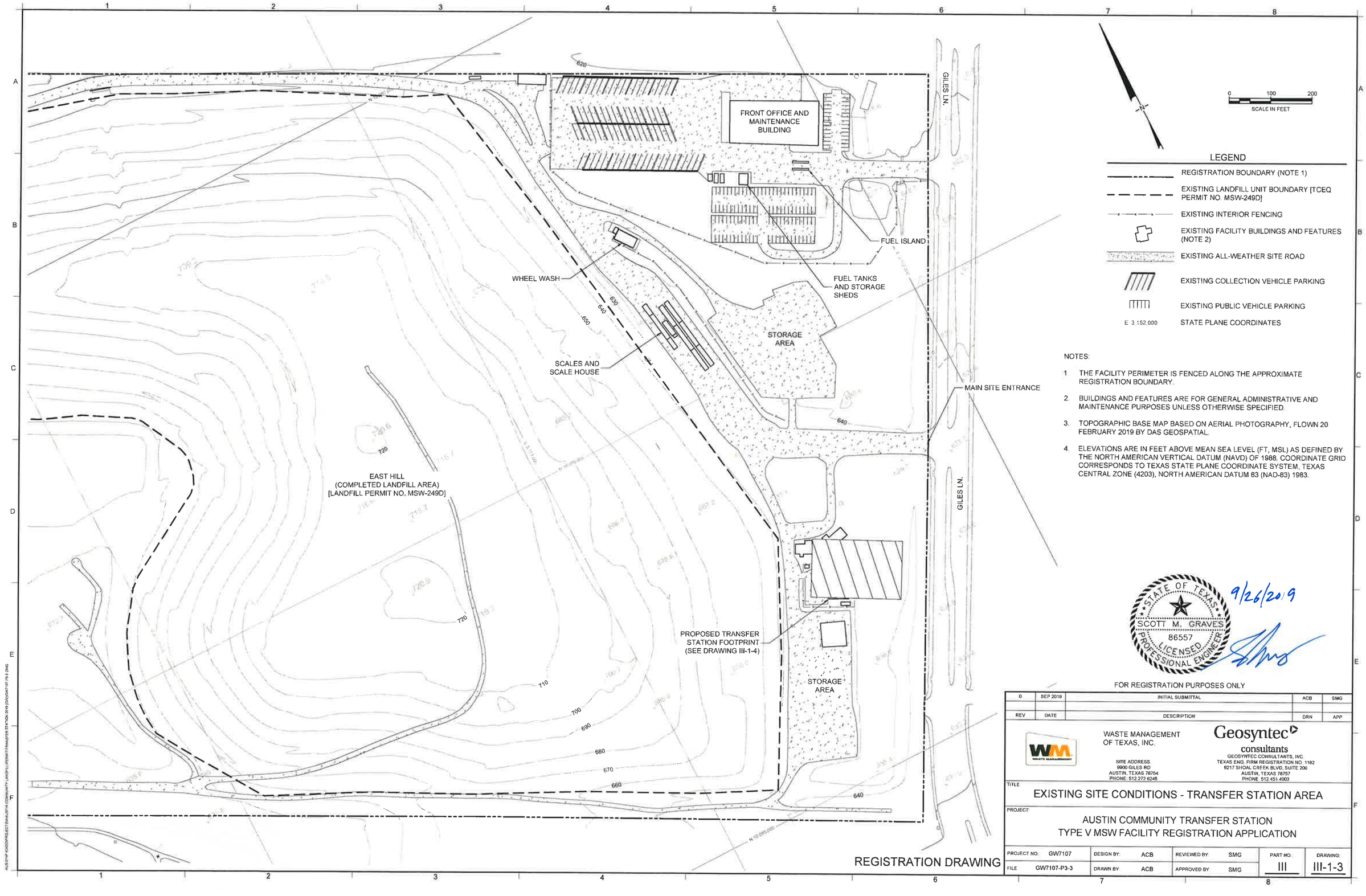
Geosyntec consultants
GEOSYNTEC CONSULTANTS, INC
TEXAS ENG. FIRM REGISTRATION NO. 1182
8217 SHOAL CREEK BLVD, SUITE 200
AUSTIN, TEXAS 78757
PHONE 512.451.4003

TITLE: FACILITY LAYOUT PLAN

PROJECT: AUSTIN COMMUNITY TRANSFER STATION
TYPE V MSW FACILITY REGISTRATION APPLICATION

PROJECT NO.	GW7107	DESIGN BY	ACB	REVIEWED BY	SMG	PART NO.	DRAWING
FILE	GW7107-P3-2	DRAWN BY	ACB	APPROVED BY	SMG	III	III-1-2

REGISTRATION DRAWING



NOTES:

1. THE FACILITY PERIMETER IS FENCED ALONG THE APPROXIMATE REGISTRATION BOUNDARY.
2. BUILDINGS AND FEATURES ARE FOR GENERAL ADMINISTRATIVE AND MAINTENANCE PURPOSES UNLESS OTHERWISE SPECIFIED.
3. TOPOGRAPHIC BASE MAP BASED ON AERIAL PHOTOGRAPHY, FLOWN 20 FEBRUARY 2019 BY DAS GEOSPATIAL.
4. ELEVATIONS ARE IN FEET ABOVE MEAN SEA LEVEL (FT, MSL) AS DEFINED BY THE NORTH AMERICAN VERTICAL DATUM (NAVD) OF 1988. COORDINATE GRID CORRESPONDS TO TEXAS STATE PLANE COORDINATE SYSTEM, TEXAS CENTRAL ZONE (4203), NORTH AMERICAN DATUM 83 (NAD-83) 1983.

STATE OF TEXAS
SCOTT M. GRAVES
86557
LICENSED
PROFESSIONAL ENGINEER
9/26/2019

FOR REGISTRATION PURPOSES ONLY

REV	DATE	DESCRIPTION	DRN	APP
0	SEP 2019	INITIAL SUBMITTAL	ACB	SMG

WASTE MANAGEMENT OF TEXAS, INC.

SITE ADDRESS
9900 GILES RD
AUSTIN, TEXAS 78754
PHONE: 512.272.6245

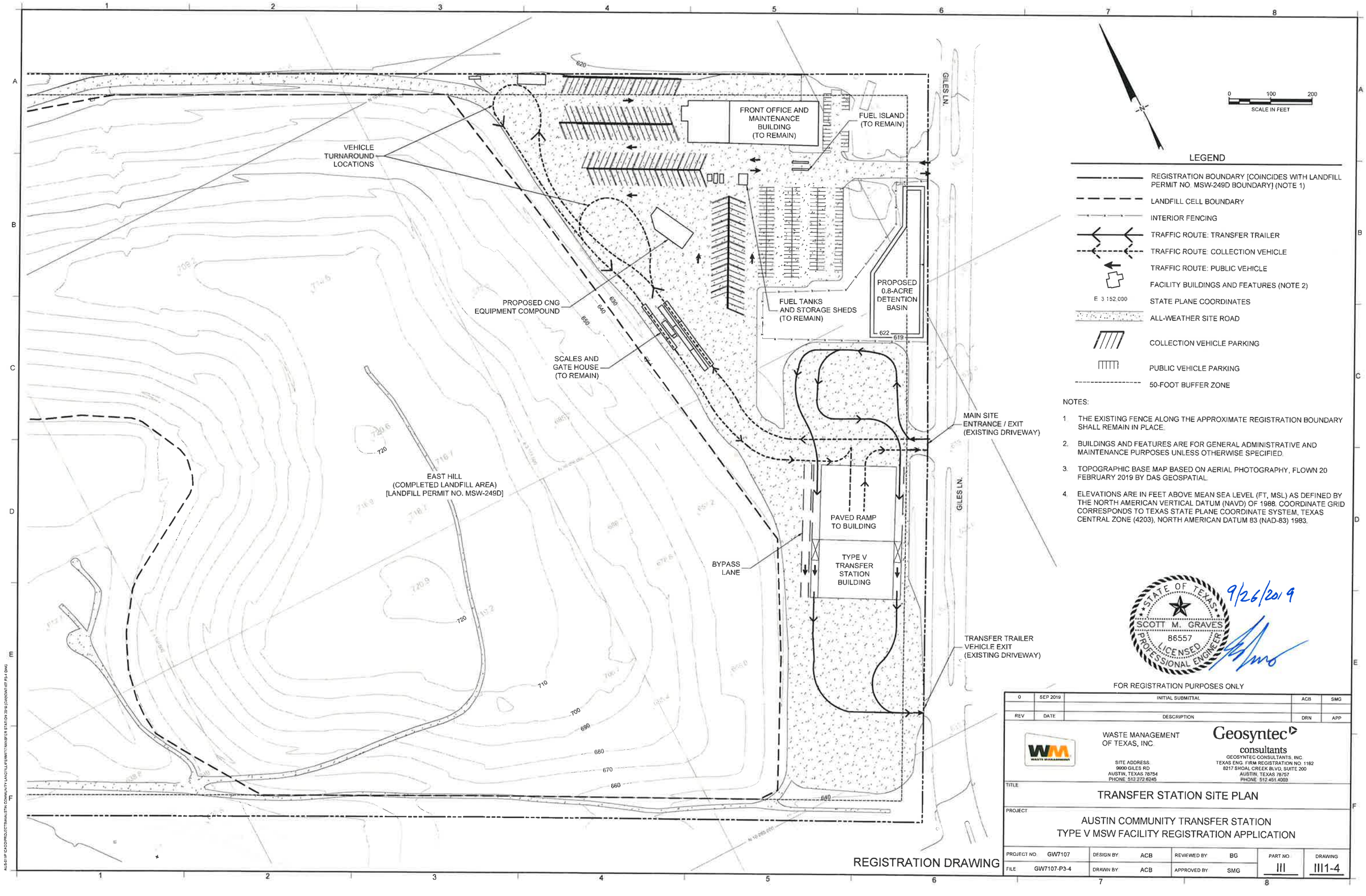
Geosyntec consultants
GEOSYNTEC CONSULTANTS, INC
TEXAS ENG. FIRM REGISTRATION NO. 1182
6217 SHOAL CREEK BLVD, SUITE 200
AUSTIN, TEXAS 78757
PHONE 512.451.4003

TITLE
EXISTING SITE CONDITIONS - TRANSFER STATION AREA

PROJECT
AUSTIN COMMUNITY TRANSFER STATION
TYPE V MSW FACILITY REGISTRATION APPLICATION

PROJECT NO.	GW7107	DESIGN BY:	ACB	REVIEWED BY:	SMG	PART NO.	DRAWING:
FILE	GW7107-P3-3	DRAWN BY:	ACB	APPROVED BY:	SMG	III	III-1-3

REGISTRATION DRAWING



NOTES:

1. THE EXISTING FENCE ALONG THE APPROXIMATE REGISTRATION BOUNDARY SHALL REMAIN IN PLACE.
2. BUILDINGS AND FEATURES ARE FOR GENERAL ADMINISTRATIVE AND MAINTENANCE PURPOSES UNLESS OTHERWISE SPECIFIED.
3. TOPOGRAPHIC BASE MAP BASED ON AERIAL PHOTOGRAPHY, FLOWN 20 FEBRUARY 2019 BY DAS GEOSPATIAL.
4. ELEVATIONS ARE IN FEET ABOVE MEAN SEA LEVEL (FT, MSL) AS DEFINED BY THE NORTH AMERICAN VERTICAL DATUM (NAVD) OF 1988. COORDINATE GRID CORRESPONDS TO TEXAS STATE PLANE COORDINATE SYSTEM, TEXAS CENTRAL ZONE (4203), NORTH AMERICAN DATUM 83 (NAD-83) 1983.

STATE OF TEXAS
SCOTT M. GRAVES
86557
LICENSED
PROFESSIONAL ENGINEER
9/26/2019

FOR REGISTRATION PURPOSES ONLY

REV	DATE	DESCRIPTION	DRN	APP
0	SEP 2019	INITIAL SUBMITTAL	ACB	SMG

WASTE MANAGEMENT OF TEXAS, INC.
SITE ADDRESS:
9900 GILES RD
AUSTIN, TEXAS 78754
PHONE: 512.272.6245

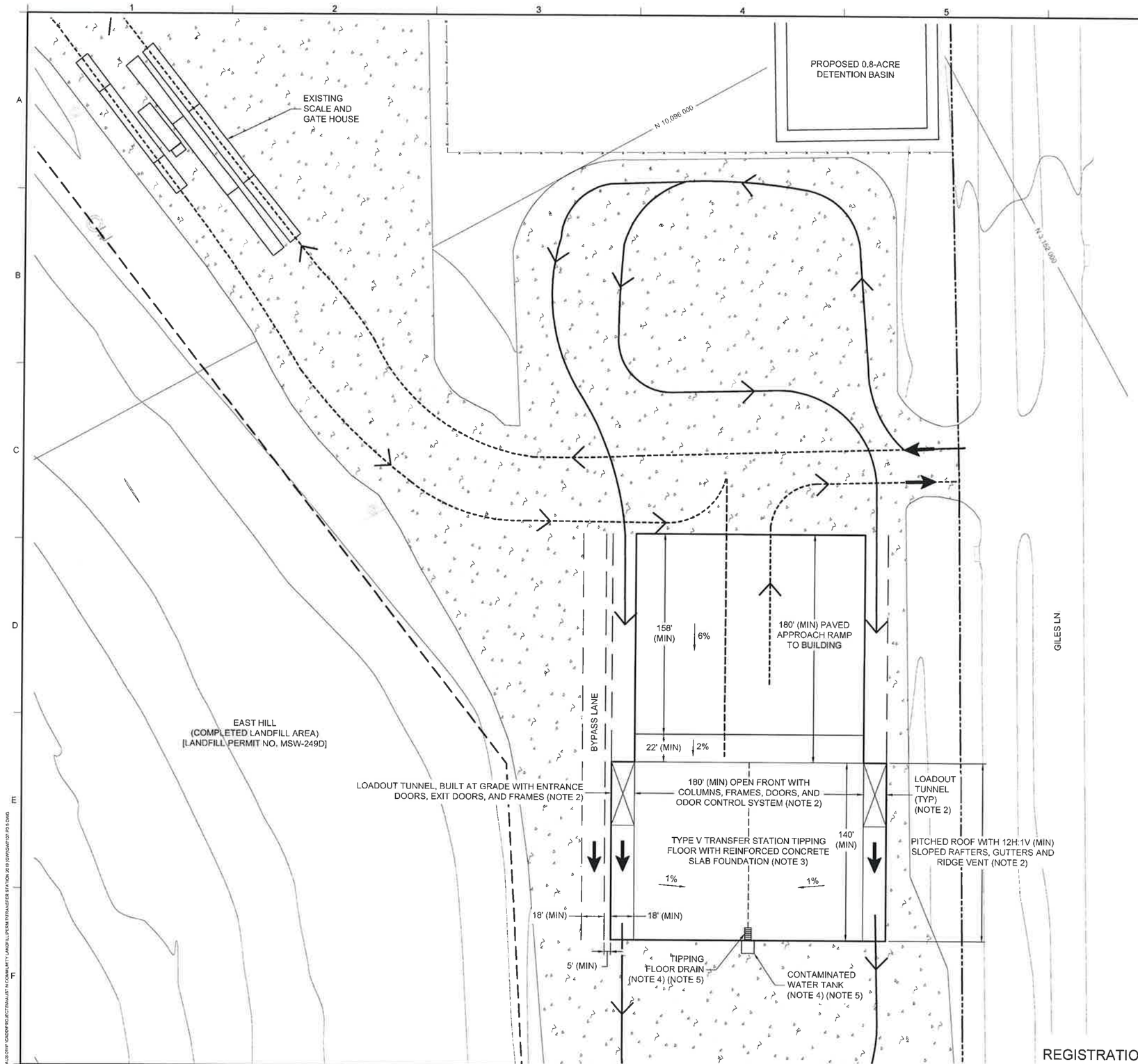
Geosyntec consultants
GEOSYNTEC CONSULTANTS, INC.
TEXAS ENG. FIRM REGISTRATION NO. 1182
8217 SHOAL CREEK BLVD, SUITE 200
AUSTIN, TEXAS 78757
PHONE: 512.451.4003

TITLE: TRANSFER STATION SITE PLAN

PROJECT: AUSTIN COMMUNITY TRANSFER STATION
TYPE V MSW FACILITY REGISTRATION APPLICATION

PROJECT NO.	GW7107	DESIGN BY	ACB	REVIEWED BY	BG	PART NO.	DRAWING
FILE	GW7107-P3-4	DRAWN BY	ACB	APPROVED BY	SMG	III	III1-4

REGISTRATION DRAWING



NOTES:

1. ALL FOUNDATION, SUBGRADE, CONTAMINATED WATER TANK, AND STRUCTURAL SPECIFICATIONS OF THE TYPE V TRANSFER STATION SHALL CONFORM WITH APPLICABLE LOCAL BUILDING CODES.
2. BUILDING CONSTRUCTION AND MATERIAL SELECTION SHALL CONFORM WITH APPLICABLE LOCAL BUILDING CODES WHILE MEETING THE MINIMUM DIMENSIONS SHOWN (I.E., PRE-FABRICATED STEEL OR EQUIVALENT).
3. TIPPING FLOOR SHALL BE CONSTRUCTED OF 8-INCH THICK (MIN) CONCRETE SLAB WITH STEEL REBAR REINFORCEMENT AND ACHIEVE A 3,500 PSI (MIN) 28-DAY COMPRESSIVE STRENGTH. OTHER REBAR, FOUNDATION, AND SUBGRADE REQUIREMENTS SHALL BE DESIGNED BY A TEXAS PROFESSIONAL ENGINEER, AS DETERMINED FROM A GEOTECHNICAL FIELD INVESTIGATION AND FOUNDATION LOADING ANALYSIS (I.E., BEARING CAPACITY ANALYSIS) OF THE TIPPING FLOOR AREA.
4. CONTAMINATED WATER TANK SHALL HAVE A MINIMUM 2,000 GALLON (NOMINAL) CAPACITY AND BE COMPATIBLE WITH LIQUIDS ASSOCIATED WITH TRANSFER ACTIVITIES OF MSW WASTE (I.E., HIGH-DENSITY POLYETHYLENE OR EQUIVALENT).
5. CONTAMINATED WATER TANK AND THE CONTRIBUTING TIPPING FLOOR DRAIN SHALL SHALL UTILIZE A RISER STRUCTURE OR OVERFLOW VALVE TO PREVENT CONTAMINATED OVERFLOW DURING HIGH-VOLUME MSW TRANSFER AND WASHDOWN ACTIVITIES. GRADING OF THE AREAS ADJACENT TO THE BUILDING,, ROOF GUTTERS, AND ALL-WEATHER SITE ROAD SHALL ROUTE STORMWATER AWAY FROM THE BUILDING AND CONTAMINATED WATER TANK, SUCH THAT THE TIPPING FLOOR DRAIN AND CONTAMINATED WATER TANK ONLY RECEIVE LIQUIDS ASSOCIATED WITH WASTE TRANSFER AND WASHDOWN ACTIVITIES. A SECONDARY CONTAINMENT STRUCTURE (REINFORCED CONCRETE OR EQUIVALENT) SHALL BE INSTALLED AROUND THE WATER TANK. THE INSTALLATION, OPERATION, AND LEAK PREVENTION PROCEDURES OF THE CONTAMINATED WATER TANK AND CONTRIBUTING TIPPING FLOOR DRAIN SHALL BE PLACED INTO THE SITE OPERATING RECORDS.
6. TOPOGRAPHIC BASE MAP BASED ON AERIAL PHOTOGRAPHY, FLOWN 20 FEBRUARY 2019 BY DAS GEOSPATIAL.
7. ELEVATIONS ARE IN FEET ABOVE MEAN SEA LEVEL (FT, MSL) AS DEFINED BY THE NORTH AMERICAN VERTICAL DATUM (NAVD) OF 1988. COORDINATE GRID CORRESPONDS TO TEXAS STATE PLANE COORDINATE SYSTEM, TEXAS CENTRAL ZONE (4203), NORTH AMERICAN DATUM 83 (NAD-83) 1983.

STATE OF TEXAS
SCOTT M. GRAVES
86557
LICENSED
PROFESSIONAL ENGINEER
9/26/2019

FOR REGISTRATION PURPOSES ONLY

REV	DATE	DESCRIPTION	DRN	APP
0	SEP 2019	INITIAL SUBMITTAL	ACB	SMG

WASTE MANAGEMENT OF TEXAS, INC.
SITE ADDRESS
9900 GILES RD
AUSTIN, TEXAS 78754
PHONE 512.272.6245

Geosyntec consultants
GEOSYNTEC CONSULTANTS, INC.
TEXAS ENG. FIRM REGISTRATION NO. 1182
8217 SHOAL CREEK BLVD, SUITE 200
AUSTIN, TEXAS 78757
PHONE 512.451.4003

TITLE: TRANSFER STATION DESIGN

PROJECT: AUSTIN COMMUNITY TRANSFER STATION
TYPE V MSW FACILITY REGISTRATION APPLICATION

PROJECT NO.	GW7107	DESIGN BY	ACB	REVIEWED BY	BG	PART NO.	DRAWING:
FILE	GW7107-P3-5	DRAWN BY	ACB	APPROVED BY	SMG	III	III-1-5

REGISTRATION DRAWING

ATTACHMENT 2

FACILITY SURFACE WATER DRAINAGE REPORT

Prepared for:
Waste Management of Texas, Inc.

REGISTRATION APPLICATION

PART III – SITE DEVELOPMENT PLAN
ATTACHMENT 2

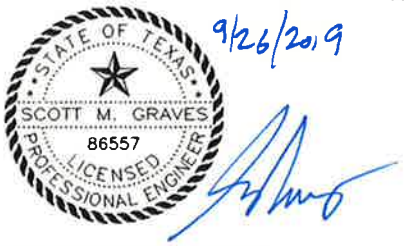
FACILITY SURFACE WATER DRAINAGE REPORT

AUSTIN COMMUNITY TRANSFER STATION
AUSTIN, TRAVIS COUNTY, TEXAS

Prepared by:

Geosyntec consultants

Texas Board of Professional Engineers Firm Registration No. F-1182
8217 Shoal Creek Blvd, Suite 200
Austin, Texas 78757
(512) 451-4003



FOR REGISTRATION PURPOSES ONLY

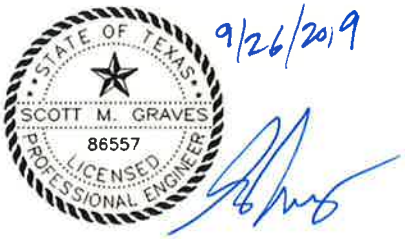
September 2019

TABLE OF CONTENTS

STATE OF TEXAS
SCOTT M. GRAVES
86557
LICENSED
PROFESSIONAL ENGINEER
9/26/2019
FOR REGISTRATION PURPOSES ONLY
GEOSYNTEC CONSULTANTS, INC
TEXAS ENG. FIRM
REGISTRATION NO. F-1182

ATTACHMENTS

Attachment 2A On-Site Drainage Analysis – Hydrology
Attachment 2B On-Site Analysis and Design – Drainage Channels and Culverts



FOR REGISTRATION PURPOSES ONLY

GEOSYNTEC CONSULTANTS, INC.
TEXAS ENG. FIRM
REGISTRATION NO. F-1182

1. INTRODUCTION

1.1 Purpose

Pursuant to 30 TAC §330.63(c), this Facility Surface Water Drainage Report (Drainage Report) has been developed as part of the Type V Municipal Solid Waste (MSW) Transfer Station (TS) registration application for the Austin Community Transfer Station, Austin, Texas (site). This Drainage Report has been prepared to demonstrate that the facility design complies with the requirements of 30 TAC §330.303. The Drainage Report includes a narrative description of the drainage setting and features at the site under pre-development and post-development conditions and is accompanied by supporting hydrology and hydraulic structural design calculations for the site's drainage features. Specific objectives of this Drainage Report are to:

- establish the pre-development drainage conditions;
- summarize the proposed post-development surface water management system design and describe the drainage features and components within the TS facility area;
- describe the post-development drainage conditions;
- describe the hydrologic method and design parameters applied to estimate peak flow rates and runoff volumes for both the pre-development and post-development drainage conditions;
- compare pre-development versus post-development discharges from the site and provide analyses and discussion to demonstrate that the existing pre-development drainage patterns will not be adversely altered as a result of the proposed TS facility;
- describe the hydraulic methods and design parameters applied to analyze and design the features and components of the surface water management system;
- present the erosion and sediment control measures, including requirements for surface water inspections and maintenance; and
- present overall conclusions that summarize the results of the surface water drainage analysis and design.

1.2 Project Overview

The Austin Community TS facility is located at 9900 Giles Road, approximately 500 feet north of the intersection at Giles Road and US Highway 290, in Travis County, Texas. The Austin Community TS facility will provide an efficient means to process and transfer the waste that is generated in the City of Austin, Travis County, and the surrounding areas and transfer the waste to a Texas Commission on Environmental Quality (TCEQ) permitted MSW landfill.

This plan addresses surface water drainage design and erosion control as part of the MSW Transfer Station Registration Application. Consistent with the requirements of 30 TAC §330.63(c) and §330.303, the facility will be constructed, maintained, and operated to manage run-on and runoff during the peak discharge of a 25-year rainfall event and will prevent the off-site discharge of waste materials.

1.3 100-Year Floodplain Information

The proposed TS facility will not be located in a 100-year floodplain.

This is demonstrated and documented in Part I and II of the registration application (in particular, the Part I/II Supplemental Technical Report, Section 11.1, and floodplain map in Appendix I/IIA, Drawing I/IIA-15.

2. DESCRIPTION OF THE PRE-DEVELOPMENT CONDITION

Pre-development drainage areas for the applicable portions of the facility where the TS will be located were delineated for this TS registration application. These pre-development areas are consistent with those delineated for the landfill facility on which the TS will be situated, as set forth in the approved 2008 Permit Amendment Application Facility Surface Water Drainage Report (Golder Associates, 2008). For this TS registration application, minor adjustments and updates were made based on current conditions, using the latest topographic survey (DAS, Inc., 2019). This pre-development assessment will allow a proper comparison to post-development conditions at the common point-of-interest (the outfall where surface water exits the site) as discussed later in this report.

Because the TS will occupy only a portion of the overall facility boundary occupied by the permitted Type I landfill (TCEQ Permit MSW-249D), only the affected sub-areas of the facility were analyzed herein. The other facility sub-areas will not be disturbed, modified, or otherwise affected by the proposed TS facility, and therefore by definition the pre-development and post-development conditions would be the same – and therefore were excluded from analysis in this application.

The proposed TS facility is located in drainage areas S12, S13, and S14 (using the nomenclature and sub-areas identified in the approved 2008 Permit Amendment Application for the landfill for consistency). For this analysis, the drainage areas are delineated on Figure 2A-1, presented in Attachment 2A of this Drainage Report. Figure 2A-1 delineates the approximately 17.49 acres for both pre-development and post-development that drain to the site outfall location. The pre-development and post-development surface conditions are presented in this Drainage Report. A description of the selected hydrologic method and design parameters is presented subsequently in this Drainage Report.

3. PROPOSED SURFACE WATER MANAGEMENT SYSTEM

3.1 General

This section summarizes the proposed surface water management system design and describes the drainage features and components within the TS facility. The surface water management system has been designed and will be operated to achieve the following objectives:

1. Prevent the discharge of wastes or pollutants into or adjacent to Waters of the United States.
2. Prevent the discharge of pollutants into Waters of the United States.
3. Prevent the discharge of dredged or fill material to Waters of the United States.
4. Prevent the discharge of nonpoint source pollution to Waters of the United States.
5. Prevent erosion over areas associated with the registration boundary.

The TS facility consists of a reinforced concrete slab (tipping floor) under a steel frame roofed structure, where unloading and transfer of waste from delivery vehicles to transfer trailers will occur. The TS site will be graded to prevent run-on drainage and flow of stormwater onto the tipping floor to prevent the potential for off-site discharge of waste materials. Surface water drainage in and around the facility is controlled to prevent surface water running onto, into, and off the TS facility tipping floor. Tipping floor washdown water will drain through a grate drain and be directed to a minimum 2,000-gallon (nominal) contaminated water holding tank. All contaminated water will be managed in accordance with the procedures set forth in Section 5 of the SOP.

The TS facility site area will be graded to route stormwater runoff to off-site discharge using drainage patterns that are similar to the pre-developed drainage patterns.

3.2 Surface Water Management System Components

The drainage patterns for the post-development conditions are consistent with the pre-development drainage patterns. The post-development areas are graded to drain towards a stormwater detention pond (Detention Pond) that will be added to attenuate post-development flowrates, designed northeast of the TS building. The transfer station site plan in Part III, Attachment 1, Drawing III-1-4 shows the detention pond layout. Stormwater runoff from post-development drainage areas will be directed through a conveyance drainage channel (Channel C1) routed to the Detention Pond. Ultimately, surface water will discharge from the Detention Pond at the site outfall to the north for both pre-development and post-development conditions. Two existing 24-inch diameter culverts (Culvert 1) will serve as the Detention Pond outlet structure at the site outfall.

4. DESCRIPTION OF THE POST-DEVELOPMENT CONDITION

The post-development conditions and resulting drainage areas are delineated on Figure 2A-2 presented in Attachment 2A of this Drainage Report. The post-development surface water management features at the site and the routing of surface water was discussed in Section 3. Figure 2A-2 shows that the total post-development drainage area is 17.49 acres and the same site outfall is identified as in pre-development conditions.

A description of the hydrologic method and design parameters is presented subsequently in this Drainage Report. Also, in Section 5.5.1, comparisons of the pre-development and post-development conditions are discussed.

5. DRAINAGE CALCULATIONS

5.1 General

In accordance with 30 TAC §330.303(a), the surface water management system has been designed to be capable of conveying the peak discharges from the 25-year, 24-hour rainfall event. Design and analysis calculations are made to demonstrate that post-development peak discharges exiting the facility are less than pre-development flows exiting the facility from the 25-year, 24-hour rainfall event. Calculations have been performed to size the drainage features and to demonstrate that flow velocities and tractive stresses in conveyance components will not cause erosion. The calculations related to the site surface water management features are presented as additional attachments to the Drainage Report, and are as follows:

- Hydrology calculations (i.e., calculations of peak runoff rates and total runoff volumes for the pre-development conditions and post-development conditions) are presented in Attachment 2A.

- Hydraulic calculations for the sizing and the design of the proposed drainage channels and culvert are presented in Attachment 2B.

5.2 Design Rainfall Event

As indicated above and pursuant to 30 TAC §330.63(c)(1)(D)(i), the 25-year, 24-hour rainfall depth was utilized as the design rainfall event for the surface water management system design. The rainfall depth-duration frequency relationships for this analysis was designed using a rainfall depth of 8.65 inches to represent the 25-year, 24-hour rainfall in Travis County (NOAA Atlas 14, 2019).

5.3 Hydrologic Model

The U.S. Army Corps of Engineers Hydrologic Engineering Center – Hydrologic Modeling System (HEC-HMS) computer program was used to model the pre-development conditions and the post-development conditions. HEC-HMS is the successor to and replacement for the HEC-1 program. Modeling was used to calculate surface water runoff volumes, peak flow rates, routing of rainfall event hydrographs through channels, and runoff discharge quantities. Attachment 2A of this Drainage Report presents detailed drainage calculations, including a detailed discussion of the parameters used in the analyses and results of the hydrologic modeling efforts.

5.4 Hydraulics

Principles of open channel flow using Manning's equation (Chow, 1959) were used to size the drainage channels based on the peak flows derived from the HEC-HMS hydrologic modeling.

Manning's Equation in its general form is expressed as:

$$Q = \frac{1.49}{n} A R^{2/3} S_o^{1/2}$$

where:
- Q = discharge (cfs);
- n = manning's roughness coefficient;
- A = area of cross-section of flow (ft^2);
- P = wetted perimeter (ft);
- R = hydraulic radius (ft) = A/P; and
- S_0 = longitudinal slope (ft/ft).

The average tractive stress for a given depth of flow in a channel is calculated by:

$$\tau_o = \gamma_w R S$$

where:
- τ_o = average tractive stress (lb/ft^2);
- γ_w = unit weight of water (lb/ft^3);
- R = hydraulic radius (ft); and
- S = channel slope (ft/ft).

Tractive stresses, as well as flow velocities resulting from peak flows, were calculated to select the type of channel lining that would be necessary to prevent erosion of the drainage features.

As mentioned, the computations for sizing surface water management system components are found in the following attachments to this Drainage Report:

- Attachment 2A – Hydrology; and
- Attachment 2B – Culverts and Drainage Channels.

5.5 Calculation Results Summary

5.5.1 Discharge Comparisons

Table 5-1 summarizes the pre- and post-development peak discharge, total discharge volume, peak velocities, and the time to the peak discharge rate. The pre- and post-development drainage sub-areas contributing to the discharge at the site outfall are 17.49 acres. For post-development conditions, the Detention Pond discharge contributes to the site outfall. A more detailed description of the hydrologic analysis and modeling results summarized above are provided in Attachment 2A.

TABLE 5-1

SUMMARY OF PEAK DISCHARGE CONDITIONS AT SITE OUTFALLS (PRE- VS. POST-DEVELOPMENT COMPARISON)

LOCATION	OUTPUT PARAMETER	PRE-DEVELOPMENT CONDITIONS (25-YEAR EVENT)	POST-DEVELOPMENT CONDITIONS (25-YEAR EVENT)
SITE OUTFALL	PEAK DISCHARGE (CFS)	121.6	114.1
	TOTAL RUNOFF VOLUME (AC-FT)	10.34	12.25
	TIME TO PEAK DISCHARGE (MIN)	7	9
	PEAK VELOCITY (FPS)	4.80	4.71

Examination of the calculation results shown above indicates that the predicted peak post-development discharge rates and velocities are less than the peak pre-development discharge rates at the site outfall. The computed runoff volumes are similar for pre-development and post-development conditions at the site outfall. Additionally, the times to peak discharge are similar between pre- and post-development conditions for the site outfall. Because the post-development flows are reduced, the final construction-level design may be further adjusted to optimize the Detention Pond size and outlet structure. Any such changes shall be made by a Professional Engineer licensed in Texas and must demonstrate that the post-development discharges achieve the required design criteria (i.e., post-development peak discharge less than pre-development, with acceptable non-erosive discharge velocities).

In summary, the proposed site outfall will be in the same locations as the existing site outfall, and surface water runoff under proposed post-development conditions is generally routed towards the site outfall in a similar manner to pre-development conditions. The proposed drainage areas and patterns of runoff will be similar to the existing permitted pre-development drainage patterns. The reduced peak discharge rates under post-development conditions are considered to be beneficial given the importance of reducing runoff during storm events.

The other areas of the facility beyond the limits of this drainage analysis will not be affected by the proposed transfer station, and therefore pre-development and post-conditions will be by definition identical.

This information demonstrates that the existing pre-development drainage patterns will not be adversely affected by the proposed TS facility development.

5.5.2 Drainage Channel

The proposed drainage Channel C1, has been designed to convey the peak flows from the 25-year, 24-hour rainfall event while maintaining at least 0.5 feet of freeboard. Additionally, Channel C1 was designed with the capacity to convey the 100-year, 24-hour rainfall event without overtopping. Tractive stresses and velocities for peak flows during the 25-year, 24-hour rainfall event have been computed and the channel lining has been selected to withstand the predicted tractive stresses. Figure 2A-2 of Attachment 2A, shows the location of the proposed drainage Channel C1. Table 5-2 summarizes the peak 25-year, 24-hour and peak 100-year, 24-hour rainfall event design and analysis values in the proposed channel. Table 5-3 summarizes the channel width, depth, and slope.

TABLE 5-2

DRAINAGE CHANNEL RESULTS

Channel Segment Designation	25-Yr Peak Flow Rate (ft^3/s)	25-Yr Peak Flow Depth (ft)	25-Yr Peak Flow Velocity (ft/s)	25-Yr Peak Tractive Stress (lb/ft^2)	25-Yr Freeboard (ft)	100-Yr Freeboard (ft)	Proposed Channel Lining Material
Drainage Channel C1	48.7	1.48	4.42	0.42	0.52	0.26	grass

TABLE 5-3

DRAINAGE CHANNEL DESIGN

Channel Segment Designation	Width (ft)	Depth (ft)	Horizontal slope	Longitudinal slope (ft/ft)
Drainage Channel C1	3.0	2.0	3:1	0.0075

5.5.3 Culvert

As mentioned, there is one existing culvert at the site outfall location (Culvert 1). The proposed culvert under post-development conditions (Culvert 2) is identified on Figure 2A-2. Culvert 2 was designed to adequately function during a 25-year, 24-hour rainfall event. The hydraulic analysis for the design of Culvert 2 is presented in Attachment 2B of this Drainage Report. Culvert 2 was analyzed by utilizing the HY-8 Culvert Analysis Program v.7.5 (HY-8) developed by the Federal Highway Administration (FHWA). The performance of the culvert is modeled and assessed based on boundary conditions of the structure, culvert configuration, peak flow criteria, and tailwater levels.

6. EROSION AND SEDIMENT CONTROL

6.1 General

As required, the erosion control measures will be documented in the Stormwater Pollution Prevention Plan (SWPPP) required by the applicable Texas Pollutant Discharge Elimination System (TPDES) stormwater permitting requirements administered by TCEQ, that will be developed/updated by the operator for the transfer station facility before it begins operation, consistent with TPDES requirements. These features include the establishment of vegetation or other landscaping on the non-paved portion of the property. In addition, site grading is designed to convey runoff from the TS site to the on-site stormwater Detention Pond without causing erosion (i.e., runoff velocities are less than five feet per second).

6.2. Surface Water Maintenance Plan

6.2.1 General

During site construction activities and site operations, inspection and maintenance of disturbed areas and their surface water management system features will be conducted in accordance with the facility's TPDES Multi-Sector General storm water permit. Written records of these inspections and maintenance activities will be maintained as required by the TPDES permits.

6.2.2 Site Maintenance Activities

In general, the following procedures will be followed when deemed necessary by the inspections performed as part of the TPDES permit to maintain and ensure functionality of the surface water management system and erosion and sedimentation controls:

- Eroded areas or areas with ponding water will be regraded to their original slopes and reseeded or covered with an erosion resistant material. Upgrades to the original design specifications can be considered at this remedial stage depending upon the severity of systems degradation.

- Additional temporary erosion protection and sediment control measures using established BMPs will be implemented (seeding, temporary berms, ditches, silt fences, erosion mat, check dams, silt traps, etc.), as necessary, during operation to minimize the amount of erosion and sedimentation. These measures can be removed once the

erosion has been stopped and long-term vegetation is established and permanent conveyance structures are in place.

- Piped structures (i.e., culvert) will be kept free of debris to allow flows to achieve the design.

- Vegetated water conveyance areas will be mowed periodically to encourage healthy growth and to maintain design flow capacities and erosion resistance.

- Erosion control structures and drainage features will be cleaned periodically (removal of debris and sediment) in order to maintain design capacity. The excavated sediment will be transported to designated areas of the site for spreading and drying (must be surrounded by adequate temporary erosion controls).

- Areas of distressed vegetation will be identified and re-vegetated.

- Excess silt, weeds and other debris accumulated in drainage channels and other conveyances will be removed to restore their design configuration, followed by re-vegetating the disturbed areas as appropriate.

The decision on whether or not maintenance or repairs of site surface water features are needed and the timing on implementing any remedies will be selected based on the severity of the erosion or damage compared to the disturbance that will be caused by the repair and seasonal factors (weather patterns, growing season, etc.).

7. CONCLUSION

This Drainage Report has been prepared to demonstrate that the facility design complies with the requirements of 30 TAC §330.303 and to address the applicable requirements of 30 TAC Chapter 330, Subchapter G. The Drainage Report is accompanied by supporting hydrology calculations and hydraulic structural design calculations for the site's drainage features. The following conclusions summarize the results of the drainage analysis and design:

- The drainage design criteria selected meet the requirements of 30 TAC Chapter 330.
- The surface water management system drainage structures are designed to convey peak flows from the 25-year rainfall event with 0.5 feet of freeboard.
- Erosion will be minimized through the interim and permanent design features and best management practices described herein.
- The post-development discharge rates from the site are less than the pre-development discharge rates, and the discharge volumes, velocities, and time-to-peak discharge for the pre- and post-development conditions are similar.
- The proposed TS facility is not within the 100-year floodway or 100-year floodplain. The TS facility is protected from the 100-year frequency flood event.
- The post-development drainage patterns will be similar to the existing pre-development drainage patterns and will direct surface water runoff to the same outfall location. The existing pre-development drainage patterns will not be adversely altered.

8. REFERENCES

Chow, V. T. (1959). *Open Channel Hydraulics*, McGraw Hill.

DAS, Inc. (2019): Dallas Aerial Surveyors, Inc. topographic information obtained 20 February 2019.

Golder Associates (2008). Permit Amendment Application prepared for Waste Management of Texas, Inc.

NOAA Atlas 14 (2019). Point Precipitation Frequency Estimates, Volume 11, Version 2, National Oceanic and Atmospheric Administration, National Weather Service, Silver Spring, Maryland.

ATTACHMENT 2A

ON-SITE DRAINAGE ANALYSIS – HYDROLOGY

Written by: O. Bramlet Date: 9/25/2019 Reviewed by: S. Graves Date: 9/26/2019

Client: WM Project: Austin Community TS Project No.: GW7107 Phase No.: 01

ON-SITE DRAINAGE ANALYSIS – HYDROLOGY
AUSTIN COMMUNITY TRANSFER STATION

SEALED FOR REGISTRATION PURPOSES;
CALCULATION PAGES 1 TO 27

GEOSYNTEC CONSULTANTS, INC.
TX ENG. FIRM REGISTRATION NO. F-1182

1 PURPOSE

The purpose of this calculation package is to present the hydrology analysis for the estimation of surface water runoff as a part of the Austin Community Transfer Station Registration Application in Austin, Texas. The specific objectives of the hydrologic analysis include calculating peak discharges and total runoff volumes from the site for the: (i) pre-development conditions and (ii) post-development conditions. The calculated values of peak discharge and runoff volume of the proposed surface water system presented in this calculation package are compared against pre-development conditions in order to demonstrate that the proposed Transfer Station development does not adversely alter, to any significant degree, the drainage patterns of the watershed in the vicinity of the site.

The following definitions pertain to the two conditions analyzed in this package:

- Pre-Development Conditions – represent the currently permitted existing drainage conditions of the area-of-interest before construction of the Transfer Station.
- Post-Development Conditions – represent conditions of the site once the Transfer Station has been fully developed, with the permanent surface water management system installed.

2 METHODOLOGY

2.1 HEC-HMS Computer Model

Surface water discharges for the pre-development and post-development conditions are estimated using the Hydrologic Modeling System (HEC-HMS) computer program developed through the Hydraulic Engineering Center (HEC) of the United States Army Corps of Engineers (USACE). The program simulates natural and controlled precipitation-runoff and routing processes of a watershed. HEC-HMS is the successor to and replacement for the HEC-1 program (USACE, 2000). For precipitation-runoff-routing simulation, HEC-HMS provides the following components:

- Precipitation-specification options can describe an historical precipitation event, a frequency-based hypothetical precipitation event (i.e., design rainfall or storm event), or an event that represents the upper limit of precipitation possible at a given location. For this analysis, the 25-year (4% annual chance), 24-hour duration hypothetical precipitation event (herein referred to as the 25-year, 24-hour event) was used to compare pre-development and post-development conditions.

- Water loss models can estimate the volume of runoff given the precipitation and properties of the watershed. For this analysis, the Soil Conservation Service (SCS) Curve Number Loss Model was used (USDA, 1986).

- Direct runoff transform models can account for overland flow, storage, and energy losses as surface water runs off a watershed and into the drainage channels. For this analysis, the SCS Unit Hydrograph Model was selected.

- Hydraulic routing models account for storage and energy flux as surface water flows through drainage channels. The Kinematic Wave Model was selected for these analyses.

- Hydraulic models of water-control measures such as surface water pond outfall structures (i.e., outlet control structures).

HEC-HMS was used to model the pre-development conditions and the post-development conditions. More specifically, HEC-HMS modeling calculates surface water runoff volumes, peak flow rates, and flow characteristics for the perimeter channels and the

surface water ponds.

2.2 Pre-Development Condition

Figure 2A-1 presents the pre-development conditions. Existing topographic information was compiled from photogrammetric methods based on aerial photography performed on 20 February 2019 by Dallas Aerial Surveys (DAS), Inc. Approximately 17.49 acres for pre-development flow to the site outfall location.

2.3 Post-Development Condition

The post-development drainage areas are delineated on Figure 2A-2. The proposed surface water management system will maintain similar drainage patterns to the pre-development condition. The proposed surface water management system will discharge at the site outfall described in the pre-development condition section above. The pre-development and post-development total drainage areas to the site outfall are equivalent. The post-development areas are graded to drain towards a stormwater detention pond (Detention Pond) located to the northeast of the TS building. Stormwater runoff from post-development drainage areas will be directed through a conveyance drainage channel (Channel C1) routed to the Detention Pond. Ultimately, surface water discharges from the Detention Pond at the site outfall to the north for both pre-development and post-development conditions. Two existing culverts (Culvert 1) will serve as the Detention Pond outlet structure at the site outfall and are modeled as 24-inches in diameter culverts.

3 DESIGN PARAMETERS

The following data and assumptions were utilized in selecting engineering parameters to estimate surface water runoff.

3.1 Rainfall

- Rainfall Return Periods, Durations, and Depths – The Texas Department of Transportation (TxDOT) Hydraulic Design Manual (2019) provides guidance for rainfall frequency and duration depths. The rainfall depths corresponding to 24-hour duration hypothetical precipitation event and 25-year and 100-year frequency return periods for the site are 8.65 inches and 12.3 inches, respectively (NOAA Atlas 14, 2019). The design storm hyetograph is defined using a SCS Type III

rainfall distribution as shown in Figure 2A-3 (USDA, 1986).

3.2 Drainage Areas and Reaches

- Drainage Areas – The contributing watershed areas for each basin (drainage area) or reach (drainage channel) in the pre-development and post-development models are divided into multiple subbasins (subareas). Subbasins are modeled based on the receiving surface water drainage feature. The SCS Curve Number Loss Model was used to estimate the volume of runoff from a given subbasin. The SCS Unit Hydrograph Model was used to estimate the direct runoff flow rates from each subbasin. Each subbasin is assigned a curve number representing the type of ground cover for a given soil for the area. The subbasin area, curve number, and SCS Unit Hydrograph lag time input parameters are included in the HEC-HMS output in Appendix 2A-1.

- Curve Number (CN) – Curve numbers were selected based on the 2008 Permit Amendment Application (Golder Associates, 2008) and values consistent with previous work, local regulations/practice, and conservative assumptions. A CN = 80 was selected for unpaved areas within the drainage areas which is representative of open space with good grass cover (>75%) and Hydrologic Soil Group D. A CN = 98 was selected for areas that were paved and the stormwater detention pond. An area-weighted average was then completed for pre- and post-development at each drainage area. Table 2A-1 summarizes the CNs chosen for the analyses performed documented within this calculation package.

- Manning's Roughness Coefficients – Values of Manning's roughness coefficients used in the reach routing calculations were obtained from the TxDOT *Hydraulic Design Manual* (2019). Table 2A-2 summarizes the Manning's coefficients used in this calculation package. It should be noted that for design purposes, the culverts assume a Manning's coefficient for a reinforced concrete pipe (RCP). Any culvert material type may be used provided that the Manning's coefficient is equal to or less than that for RCP.

- Time of Concentration – The time of concentration is the time needed for water to flow from the hydraulically most remote point in a watershed to the watershed outlet. Computation of the time of concentration for the pre-development analysis

was completed according to the recommended methodology from USDA (1986). Table 2A-3 displays the pre-development time of concentration calculations. The time of concentration was conservatively assumed to be five minutes for all post-development drainage areas as recommended by the City of Austin Drainage Criteria Manual.

- Drainage Channel Reaches – Reaches in the HEC-HMS program represent drainage channels that route surface water from upstream subbasins to downstream subbasins through a junction. Reaches also may route surface water from upstream reaches. The Kinematic Wave Model is used to model the surface water flow in each of the reaches in the HEC-HMS program. The Kinematic Wave Model accounts for storage and energy flux as surface water moves through stream channels. Average geometric characteristics of the stream channel measured from the existing and proposed topography are input into HEC-HMS.

3.3 Surface Water Ponds

An existing pond (Existing Pond) is identified upon review of the latest topographic survey (DAS, Inc., 2019) and is therefore incorporated in the pre-development analysis. The Existing Pond's capacity is based on a topographic low point near Culvert 1 at the site outfall. The pond capacity will be increased under post-development conditions to maintain post-development discharge flow rates at or below pre-development discharge flow rates for a 25-year, 24-hour duration hypothetical precipitation event.

The proposed surface water Detention Pond is incorporated in the post-development analysis to temporarily detain surface water runoff and reduce discharge flow rates from the upstream areas. The pond is accounted for in the HEC-HMS program as a "reservoir" node. The elevation-area relationship is input for both the pre-development and post-development surface water ponds to describe the volume of storage provided, which is computed based on the surface water pond geometry. Specifically, the surface area at various elevations throughout the pond was used to compute the elevation-area relationship. Design characteristics of the outflow structures include pond outflow pipe diameter (i.e., Culvert 1) and emergency spillway (i.e., existing roadway) depth and breadth. Input and output files for the surface water ponds design are provided in Appendix 2A-1. The pond discharges to the existing Culvert 1 at the site outfall. The emergency spillway is the existing entry driveway to the site.

3.4 Nodal Network Diagrams

Nodal network diagrams used in HEC-HMS for the pre-development and post-development analyses are provided and correspond to the output results included in Appendix 2A-1.

- Pre-Development Nodal Network – Figure 2A-4 of this calculation package presents the nodal network drawing for the pre-development conditions. The nodal network diagram represents the existing conditions draining to the site outfall shown on Figure 2A-1.

- Post-Development Nodal Network – Figure 2A-5 of this calculation package presents the nodal network drawing for the post-development conditions. The post-development nodal network diagram shows the subbasins, reaches, surface water ponds, and site outfall. The nodal network diagram represents the proposed surface water management system and site outfall shown on Figure 2A-2.

4 RESULTS

Modeling results from calculations presented in this calculation package indicate that post-development peak discharges from the facility are less than the pre-development peak discharge rates at the site outfall for the 25-year, 24-hour precipitation event. Model results predicted a depth of approximately 0.4 feet overtopping the roadway elevation at the discharge point of the Detention Pond under post-development conditions, which is consistent with model results for the Existing Pond under pre-development conditions. Thus, the Transfer Station is not anticipated to adversely affect or significantly alter the drainage patterns in the vicinity of the site. Table 2A-4 summarizes analysis results for the pre- and post-development peak discharges and total discharge runoff volumes from the site. The calculation results described in Table 2A-4 are provided in Appendix 2A-1.

5 REFERENCES

Chow, V.T. (1959). *Open-Channel Hydraulics*, McGraw-Hill Book Company, Inc., New York, NY.

Golder Associates (2008). Permit Amendment Application prepared for Waste Management of Texas, Inc.

NOAA Atlas 14 (2019). Point Precipitation Frequency Estimates, Volume 11, Version 2, National Oceanic and Atmospheric Administration, National Weather Service, Silver Spring, Maryland.

TxDOT (2019). *Hydraulic Design Manual*, Texas Department of Transportation, revised September 2019.

USACE (2000). *Hydraulic Modeling System HEC-HMS Technical Reference Manual*, US Army Corps of Engineers, Hydrologic Engineering Center, CPD-74B, March 2000.

USDA (1986). *Urban Hydrology for Small Watersheds*, Technical Release 55 (TR-55), United States Department of Agriculture, Science and Education Administration, Agriculture Handbook Number 537.

TABLES

Table 2A-1. Summary of Curve Numbers used in Analysis[1] (from USDA, 1986)

Cover description: Cover type and hydrologic condition	Average percent impervious area [2/]	Curve numbers for hydrologic soil group: A	B	C	D
Fully developed urban areas (vegetation established)					
Open space (lawns, parks, golf courses, cemeteries, etc.) [3/]:					
Poor condition (grass cover < 50%)		68	79	86	89
Fair condition (grass cover 50% to 75%)		49	69	79	84
Good condition (grass cover > 75%)		39	61	74	80
Impervious areas:					
Paved parking lots, roofs, driveways, etc. (excluding right-of-way)		98	98	98	98
Streets and roads:					
Paved; curbs and storm sewers (excluding right-of-way)		98	98	98	98
Paved; open ditches (including right-of-way)		83	89	92	93
Gravel (including right-of-way)		76	85	89	91
Dirt (including right-of-way)		72	82	87	89

Table 2A-2. Manning's n Values
(from TxDOT, 2019)

Type of channel	Manning's n
B. Excavated or dredged channels	
1. Earth, straight and uniform	
a. Clean, recently completed	0.016-0.020
b. Clean, after weathering	0.018-0.025
c. Gravel, uniform section, clean	0.022-0.030
d. With short grass, few weeds	0.022-0.033
2. Earth, winding and sluggish	
a. No vegetation	0.023-0.030
b. Grass, some weeds	0.025-0.033
c. Deep weeds or aquatic plants in deep channels	0.030-0.040
d. Earth bottom and rubble sides	0.028-0.035
e. Stony bottom and weedy banks	0.025-0.040
f. Cobble bottom and clean sides	0.030-0.050
g. Winding, sluggish, stony bottom, weedy banks	0.025-0.040
h. Dense weeds as high as flow depth	0.050-0.120
3. Dragline-excavated or dredged	
a. No vegetation	0.025-0.033
b. Light brush on banks	0.035-0.060
4. Rock cuts	
a. Smooth and uniform	0.025-0.040
b. Jagged and irregular	0.035-0.050
5. Unmaintained channels	
a. Dense weeds, high as flow depth	0.050-0.120
b. Clean bottom, brush on sides	0.040-0.080
c. Clean bottom, brush on sides, highest stage	0.045-0.110
d. Dense brush, high stage	0.080-0.140
C. Lined channels	
1. Asphalt	0.013-0.016
2. Brick (in cement mortar)	0.012-0.018
3. Concrete	
a. Trowel finish	0.011-0.015
b. Float finish	0.013-0.016
c. Unfinished	0.014-0.020
d. Gunite, regular	0.016-0.023
e. Gunite, wavy	0.018-0.025
4. Riprap (n-value depends on rock size)	0.020-0.035
5. Vegetal lining	0.030-0.500

Table 2A-3. Pre-Development Times of Concentration

PRE-DEVELOPMENT CONDITIONS			Watershed Characterization			Sheet Flow				Shallow Concentrated Flow					Open Channel Flow												
Subcatchment Designation	Area A (mi^2)	Area A (acres)	Initial Abstraction (in)	Curve Number	Impervious Cover (%)	Flow Length (ft)	Manning's n	Slope (ft/ft)	Time T_t (min)	Flow Length (ft)	Velocity Factor (ft/s)	Slope (ft/ft)	Average Velocity (ft/s)	Time T_t (min)	Flow Length (ft)	Depth d (ft)	Area A (ft^2)	Wetted P (ft)	Hydraulic Radius (ft)	Manning's n	Slope (ft/ft)	Velocity (ft/s)	Time T_t (min)	Design T_c (min)	SCS Lag Time (min)	HMS 25-yr Flow (cfs)	HMS 100-yr Flow (cfs)
TS-1	0.00317	2.03	0.28	87.9	0.00	100	0.15	0.060	5.57	130	7.00	0.023	1.06	2.04	245	1.0	7.00	11.26	0.62	0.027	0.006	3.15	1.30	8.91	5.34	13.90	20.40
TS-2	0.00665	4.26	0.29	87.2	0.00	100	0.011	0.030	0.91	110	7.00	0.036	1.33	1.37	400	1.0	7.00	11.26	0.62	0.027	0.015	4.92	1.35	5.00	3.00	29.90	44.70
TS-3	0.01752	11.21	0.27	88.0	0.00	100	0.011	0.040	0.81	525	13.96	0.015	1.72	5.08	140	1.0	7.00	11.26	0.62	0.027	0.014	4.80	0.49	6.37	3.82	80.70	118.10

Total Area= 17.49 acres

2-year, 24-hour Design Rainfall Depth = 4.11 inches

Bench Left Side Slope = 3.0 H:V

Bench Right Side Slope = 5.0 H:V

Notes:

1) *Curve numbers were approximated through area-weighted averages. A curve number of 80 was selected for areas that were unpaved and developed while a curve number of 98 was selected for any paved areas (Golder Associates, 2008).*
2) *Manning's roughness coefficient: n = 0.15 represents short grass prairie for sheet flow (USDA, 1984).*
3) *Manning's roughness coefficient: n = 0.011 represents smooth surfaces (concrete, asphalt, gravel, or bare soil) for sheet flow (USDA, 1984).*
4) *Manning's roughness coefficient: n = 0.027 represents an excavated earth channel that is straight and uniform with short grass and few weeds (Chow, 1959).*
5) *Travel Time (T_t) is calculated using Manning's kinematic solutions for sheet flow (USDA, 1986).*

$$T_t = 0.007(nL)^{0.8} / (P_{2\text{-}24})^{0.5} S^{0.4}$$

6) *Velocity factor of 7.0 ft/s corresponds to short grass pasture from the Upland Method as reported by HydroCAD v.8 Owner's Manual.*
7) *Velocity factor of 20.33 ft/s corresponds to paved surfaces from the Upland Method as reported by HydroCAD v.8 Owner's Manual.*
8) *Open channel flow velocity is calculated using Manning's equation (USDA, 1986).*

$$V = (1.49r^{2/3} S^{1/2}) / n \quad \text{where: } r = \text{hydraulic radius (ft) and is equal to A/P [area (ft}^2\text{)/wetted perimeter (ft)]}$$

9) *Design rainfall depth taken from NOAA Atlas 14, Volume 11, Version 2.*

Table 2A-4. Summary of Peak Discharge and Total Discharge Volumes at Site Outfall

Location	Item	Pre-Development (25-year)	Post-Development (25-year)
Site Outfall	Peak Discharge (cfs)	121.6	114.1
	Total Runoff Volume (ac-ft)	10.3	12.3

FIGURES

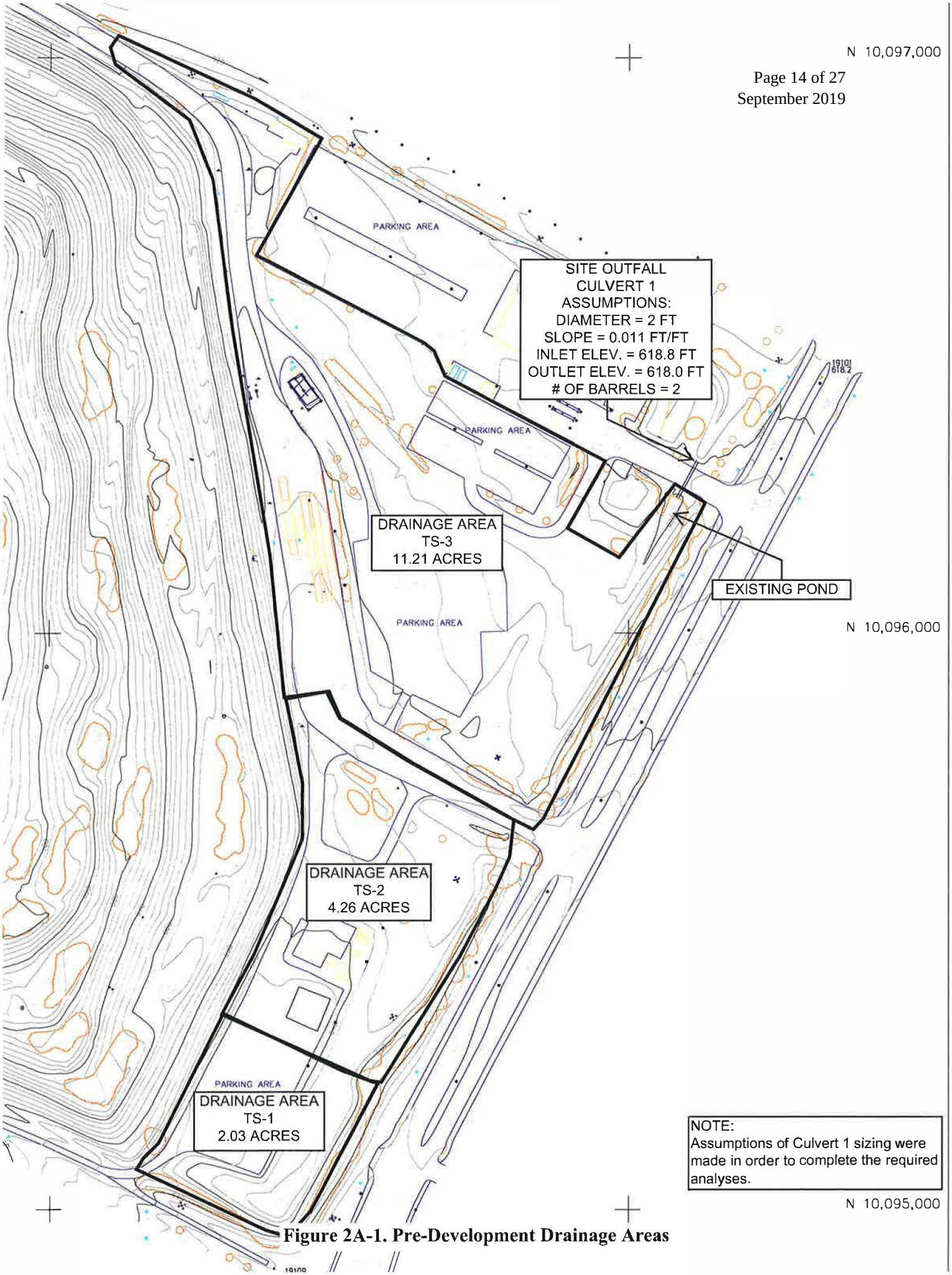


Figure 2A-1. Pre-Development Drainage Areas

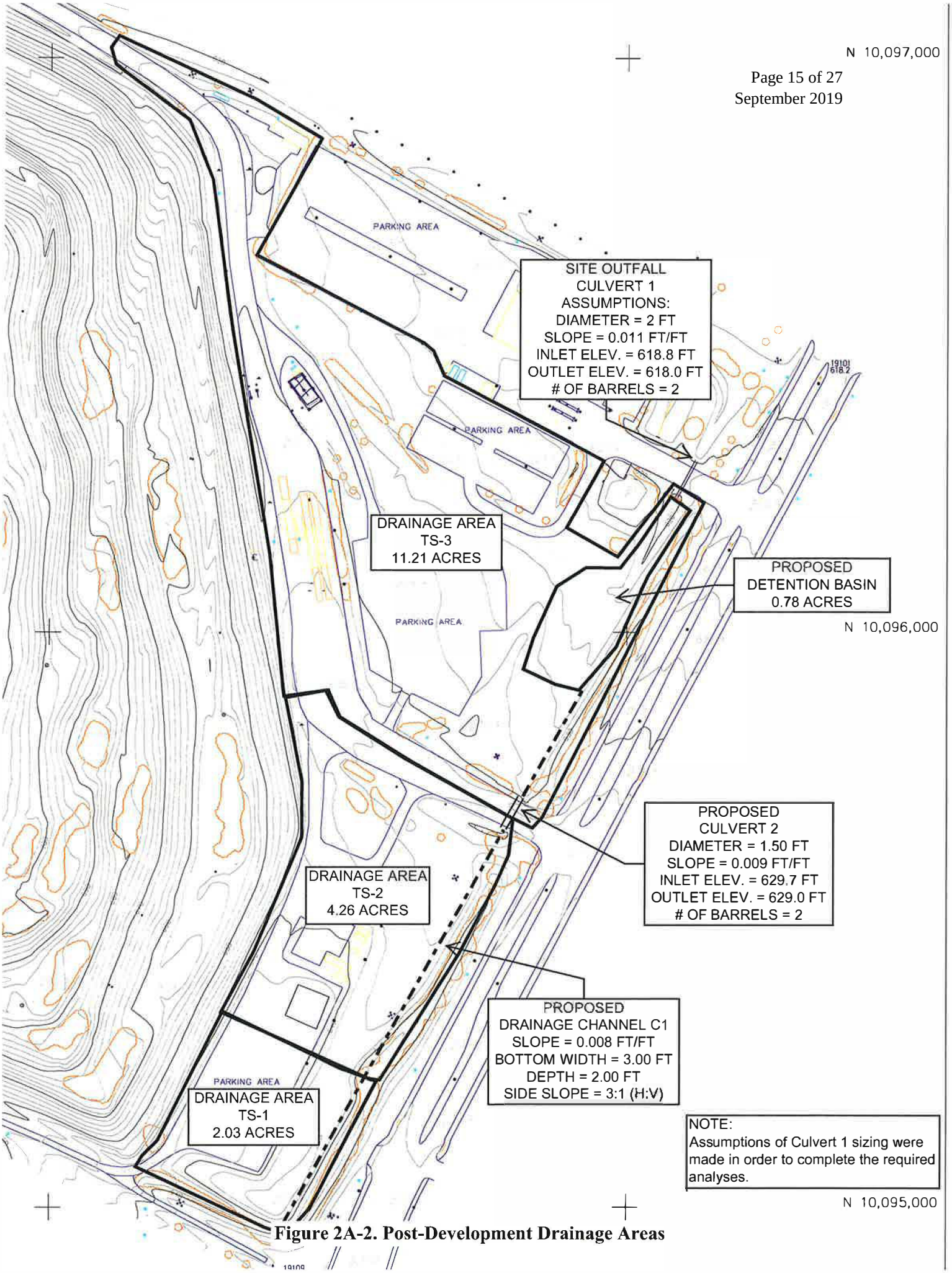


Figure 2A-2. Post-Development Drainage Areas

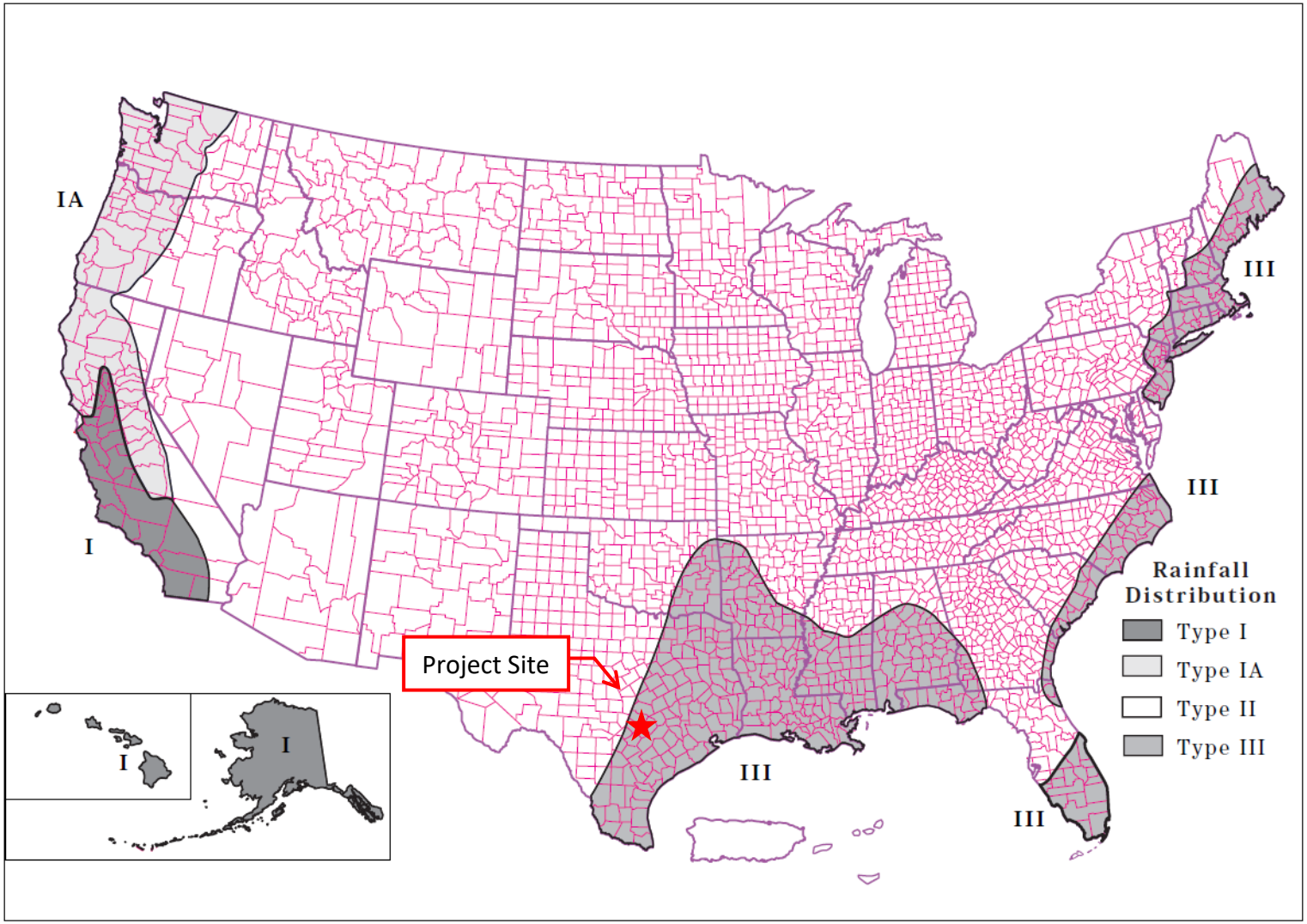


Figure 2A-3. SCS Rainfall Distributions (from USDA, 1986)

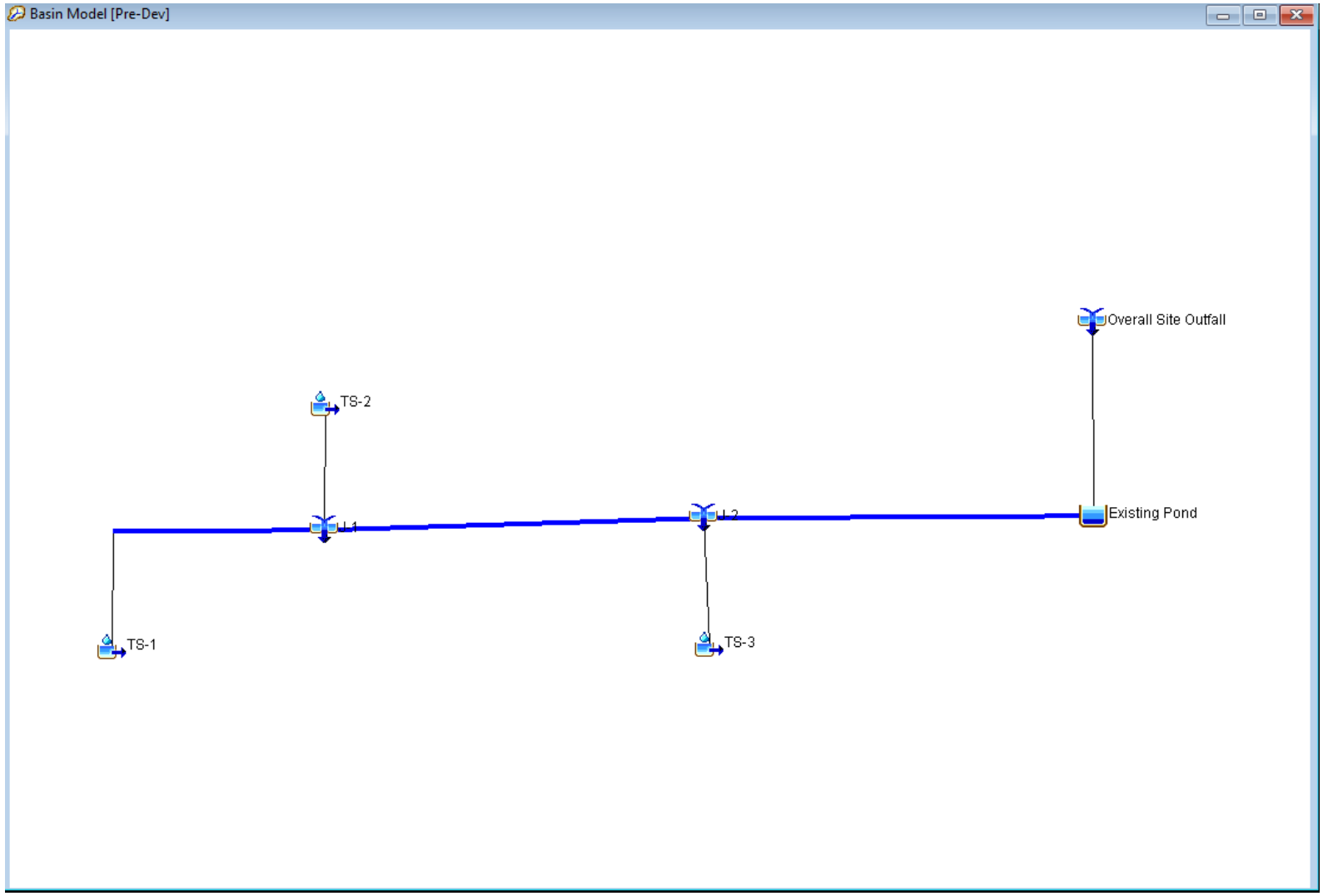


Figure 2A-4. Pre-Development HEC-HMS Nodal Network

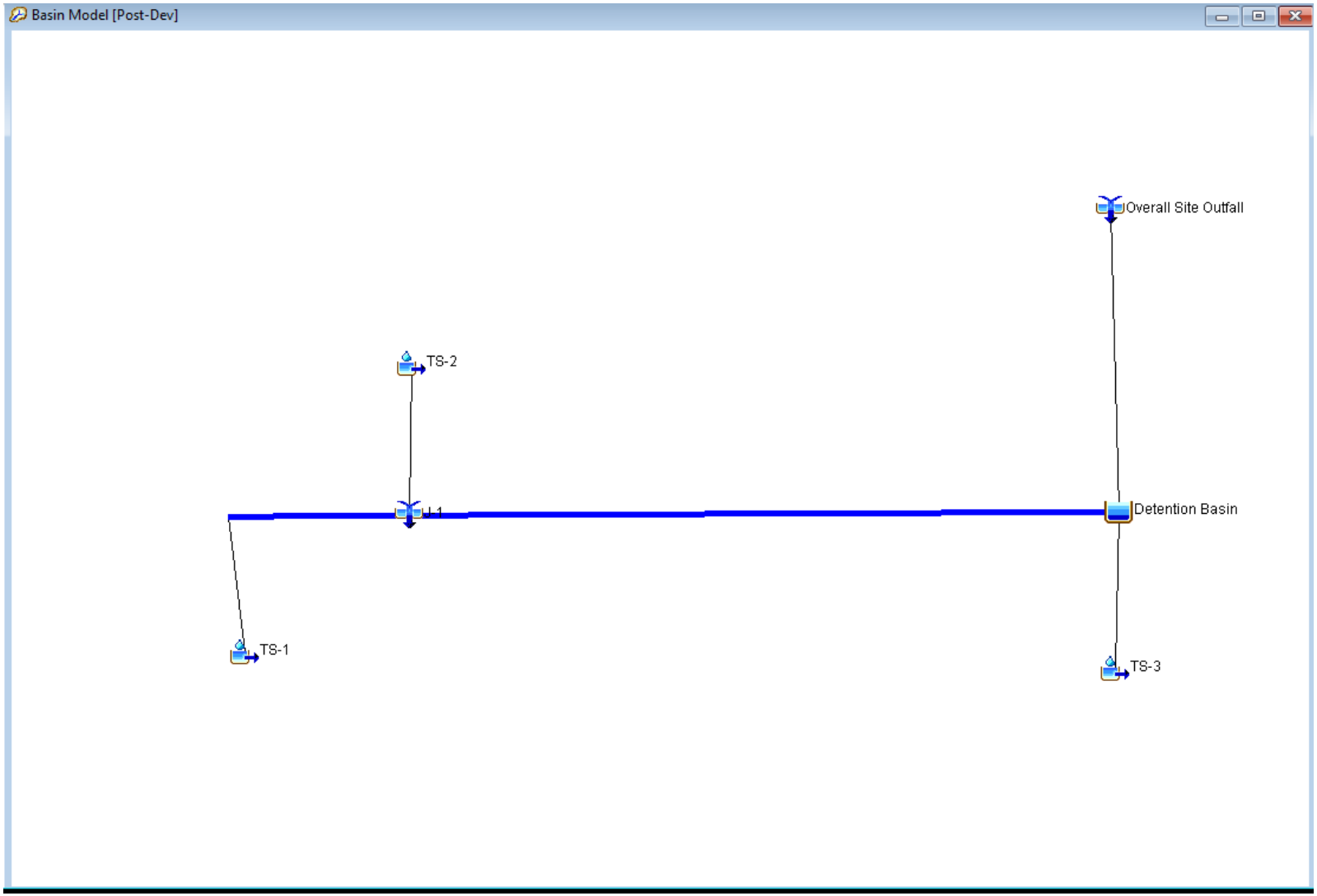


Figure 2A-5. Post-Development HEC-HMS Nodal Network

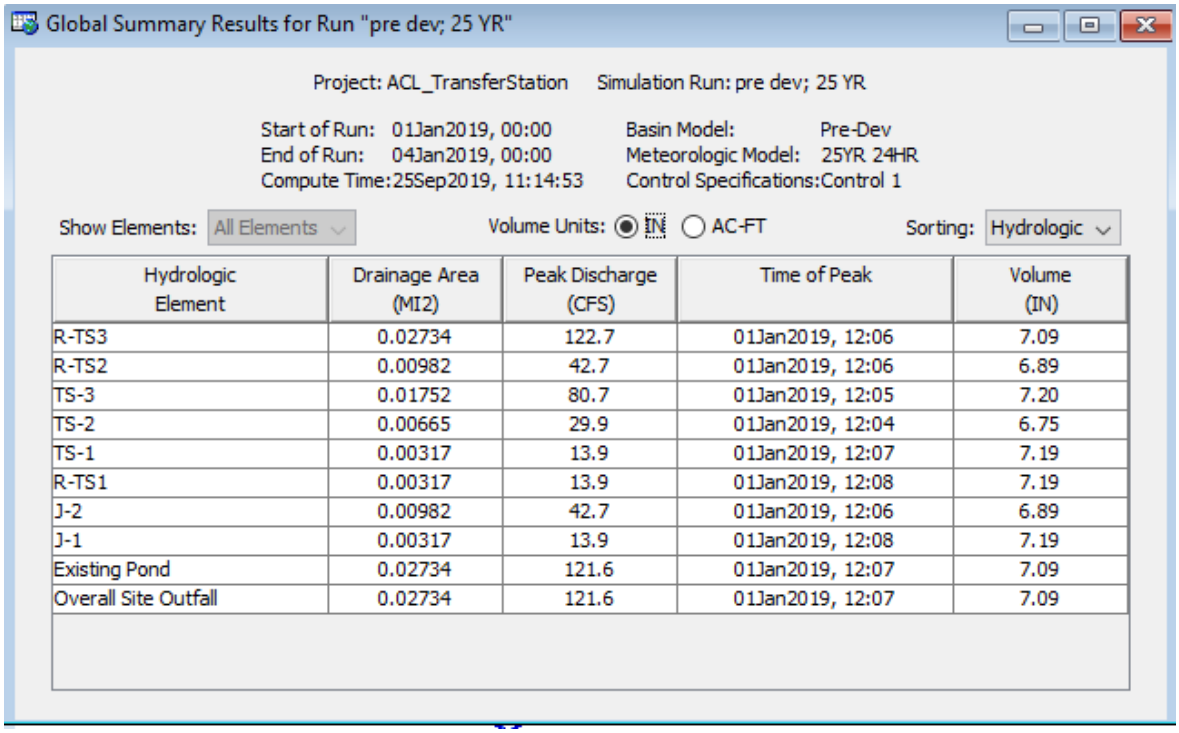
APPENDIX 2A-1
HEC-HMS HYDROLOGIC MODEL PARAMETERS

Table 2A-1-1. Pre-Development Existing Pond Elevation-Area Relationship

Paired Data | Table | Graph

Elevation (FT)	Area (AC)
618.8	0.00001
620.0	0.04223
622.0	0.18753
624.0	0.56704

Table 2A-1-2. Pre-Development 25-year, 24-hour Precipitation Event Nodal Areas, Peak Flow Rates, and Runoff Volumes



Global Summary Results for Run "pre dev; 25 YR"

Project: ACL_TransferStation Simulation Run: pre dev; 25 YR

Start of Run: 01Jan2019, 00:00 Basin Model: Pre-Dev
End of Run: 04Jan2019, 00:00 Meteorologic Model: 25YR 24HR
Compute Time: 25Sep2019, 11:14:53 Control Specifications: Control 1

Show Elements: All Elements Volume Units: (•) IN ( ) AC-FT Sorting: Hydrologic

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
R-TS3	0.02734	122.7	01Jan2019, 12:06	7.09
R-TS2	0.00982	42.7	01Jan2019, 12:06	6.89
TS-3	0.01752	80.7	01Jan2019, 12:05	7.20
TS-2	0.00665	29.9	01Jan2019, 12:04	6.75
TS-1	0.00317	13.9	01Jan2019, 12:07	7.19
R-TS1	0.00317	13.9	01Jan2019, 12:08	7.19
J-2	0.00982	42.7	01Jan2019, 12:06	6.89
J-1	0.00317	13.9	01Jan2019, 12:08	7.19
Existing Pond	0.02734	121.6	01Jan2019, 12:07	7.09
Overall Site Outfall	0.02734	121.6	01Jan2019, 12:07	7.09

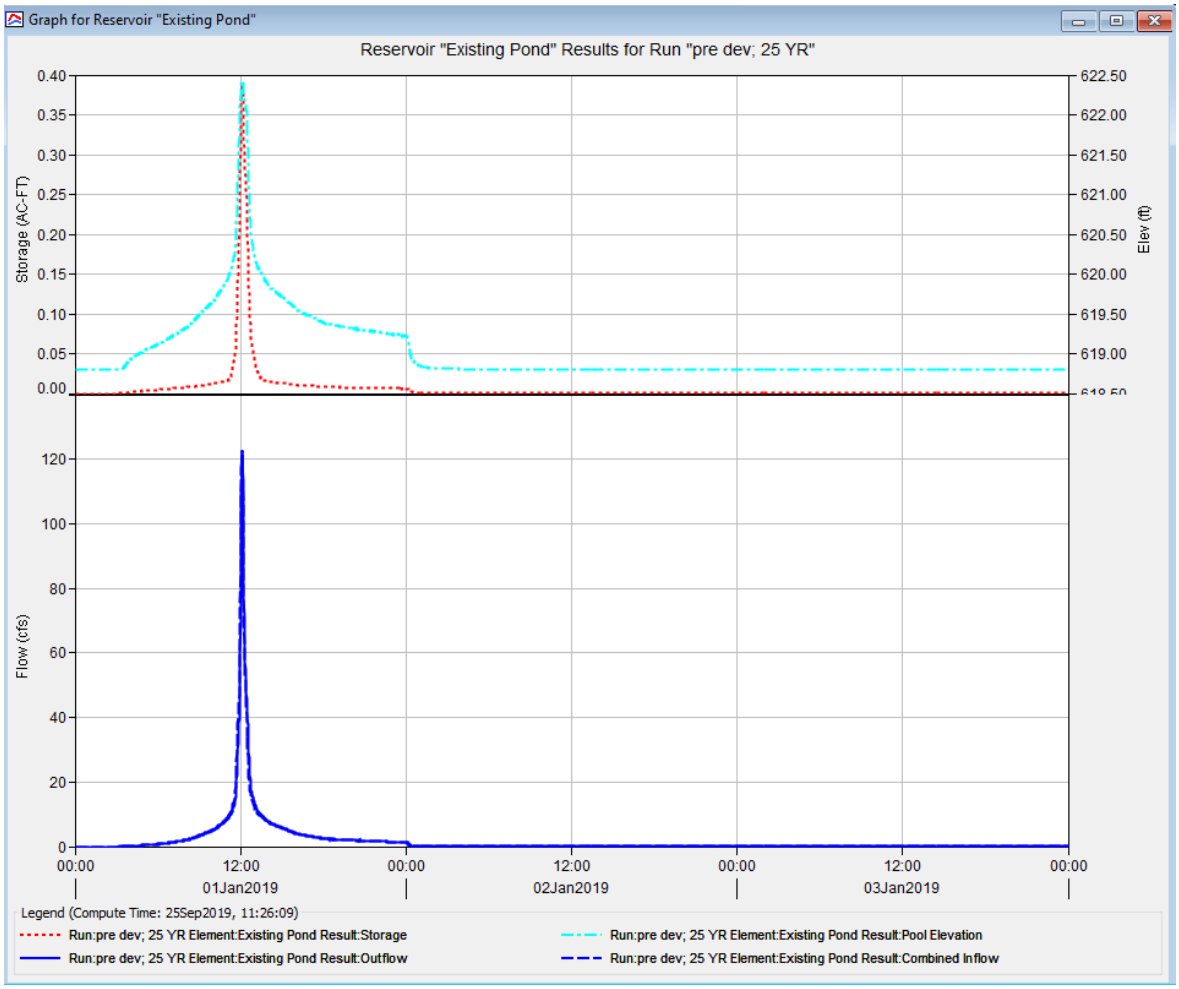


Figure 2A-1-1. Pre-Development 25-year, 24-hour Precipitation Event Existing Pond Hydrograph and Elevation/Storage Relationships

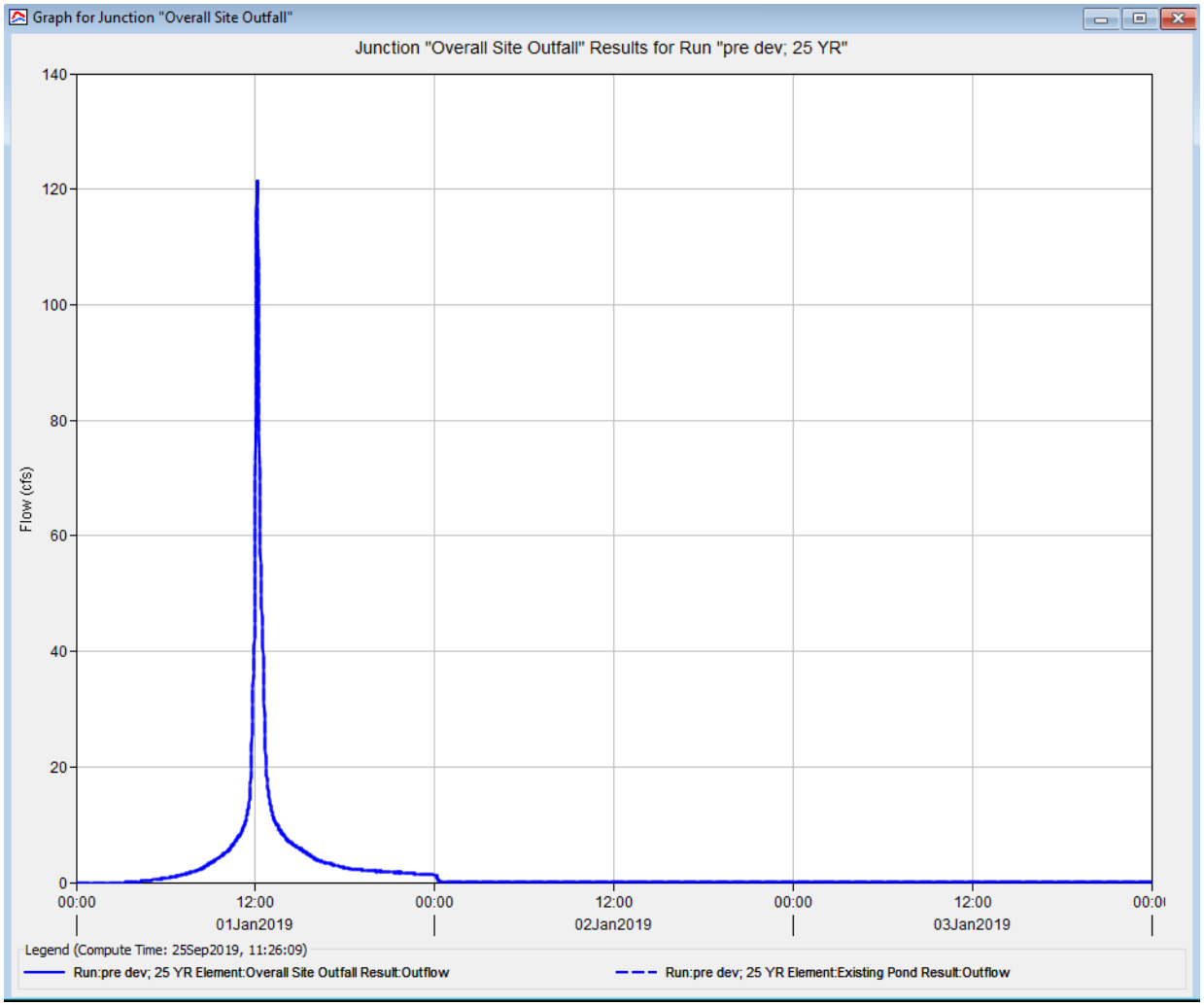


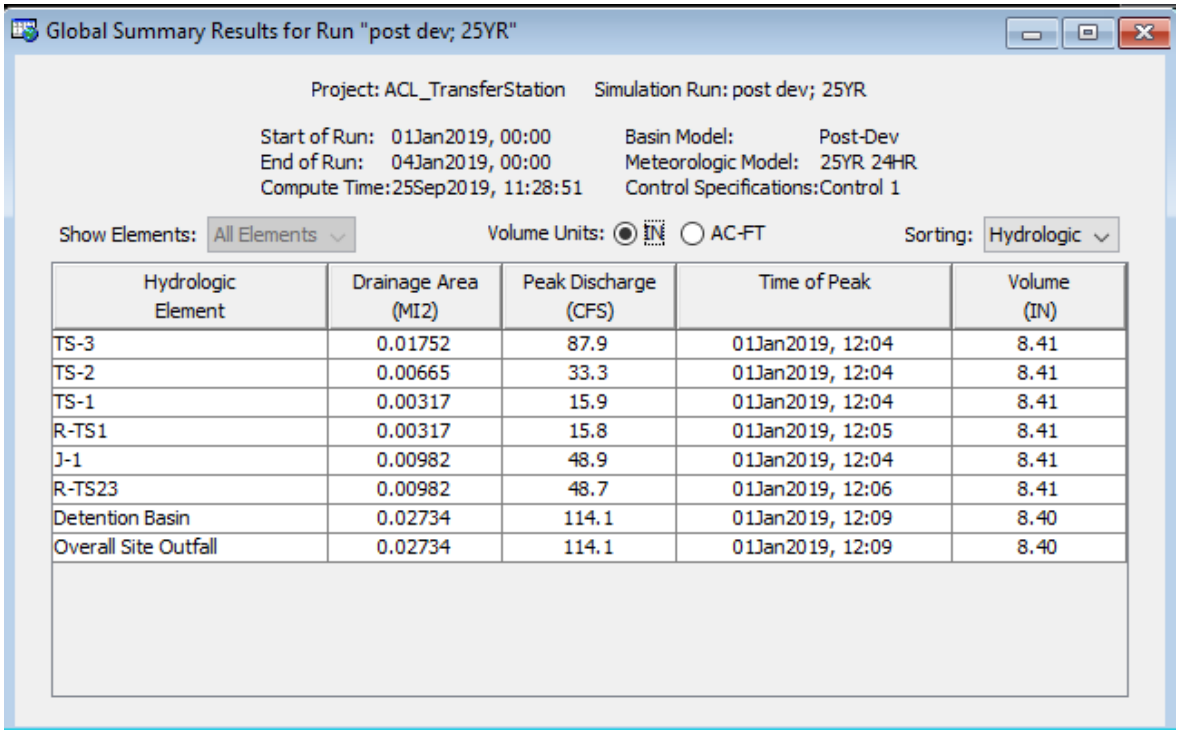
Figure 2A-1-2. Pre-Development 25-year, 24-hour Precipitation Event Runoff Hydrograph at Site Outfall

Table 2A-1-3. Post-Development Surface Water Detention Pond Elevation-Area Relationship

Paired Data | Table | Graph

Elevation (FT)	Area (AC)
618.8	0.40143
620.0	0.58968
622.0	0.77930
624.0	1.00000

Table 2A-1-4. Post-Development 25-year, 24-hour Precipitation Event Nodal Areas, Peak Flow Rates, and Runoff Volumes



Global Summary Results for Run "post dev; 25YR"

Project: ACL_TransferStation Simulation Run: post dev; 25YR

Start of Run: 01Jan2019, 00:00 Basin Model: Post-Dev
End of Run: 04Jan2019, 00:00 Meteorologic Model: 25YR 24HR
Compute Time: 25Sep2019, 11:28:51 Control Specifications: Control 1

Show Elements: All Elements Volume Units: (•) IN ( ) AC-FT Sorting: Hydrologic

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
TS-3	0.01752	87.9	01Jan2019, 12:04	8.41
TS-2	0.00665	33.3	01Jan2019, 12:04	8.41
TS-1	0.00317	15.9	01Jan2019, 12:04	8.41
R-TS1	0.00317	15.8	01Jan2019, 12:05	8.41
J-1	0.00982	48.9	01Jan2019, 12:04	8.41
R-TS23	0.00982	48.7	01Jan2019, 12:06	8.41
Detention Basin	0.02734	114.1	01Jan2019, 12:09	8.40
Overall Site Outfall	0.02734	114.1	01Jan2019, 12:09	8.40

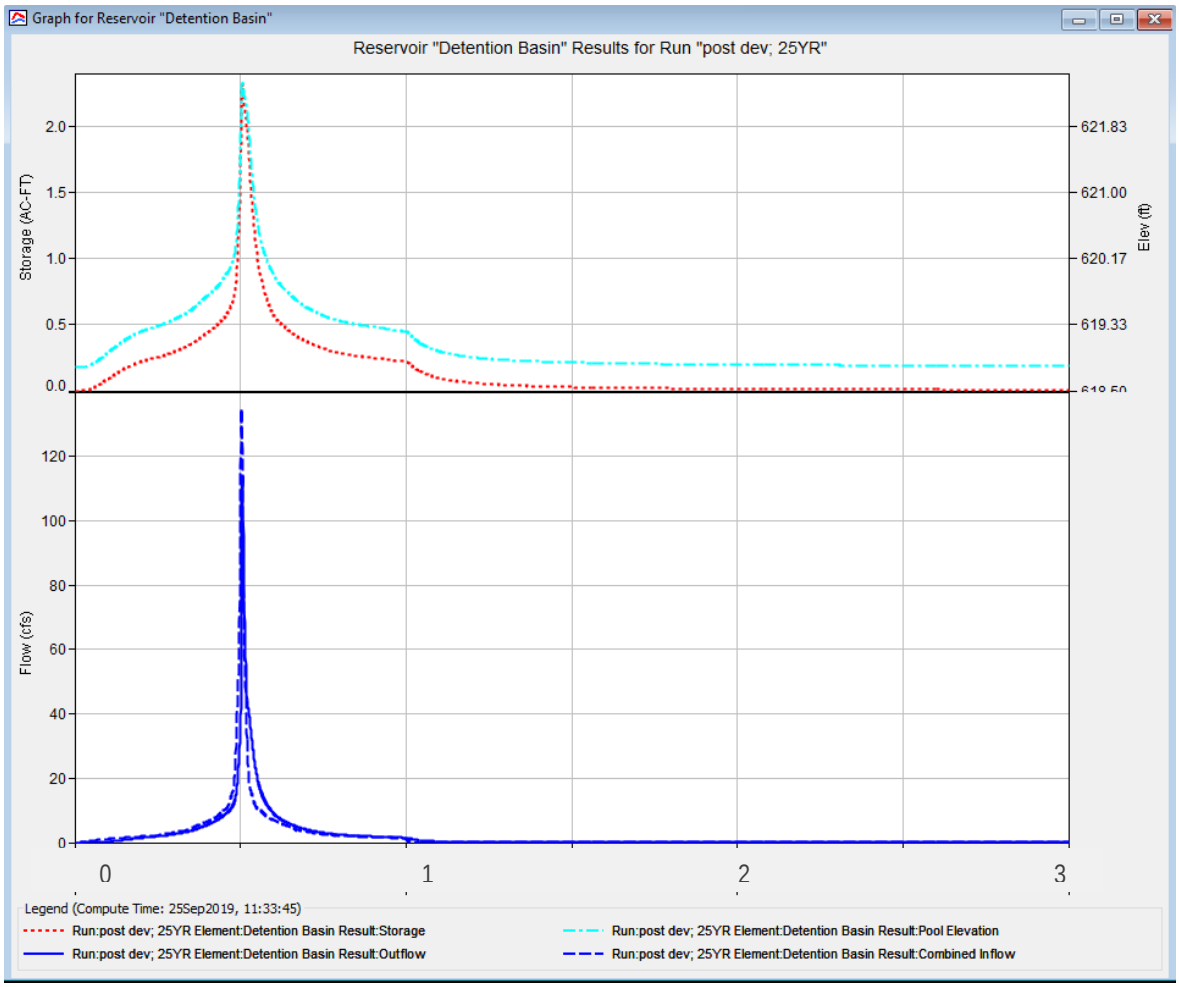


Figure 2A-1-4. Post-Development 25-year, 24-hour Precipitation Event Surface Water Detention Pond Hydrograph and Elevation/Storage Relationships

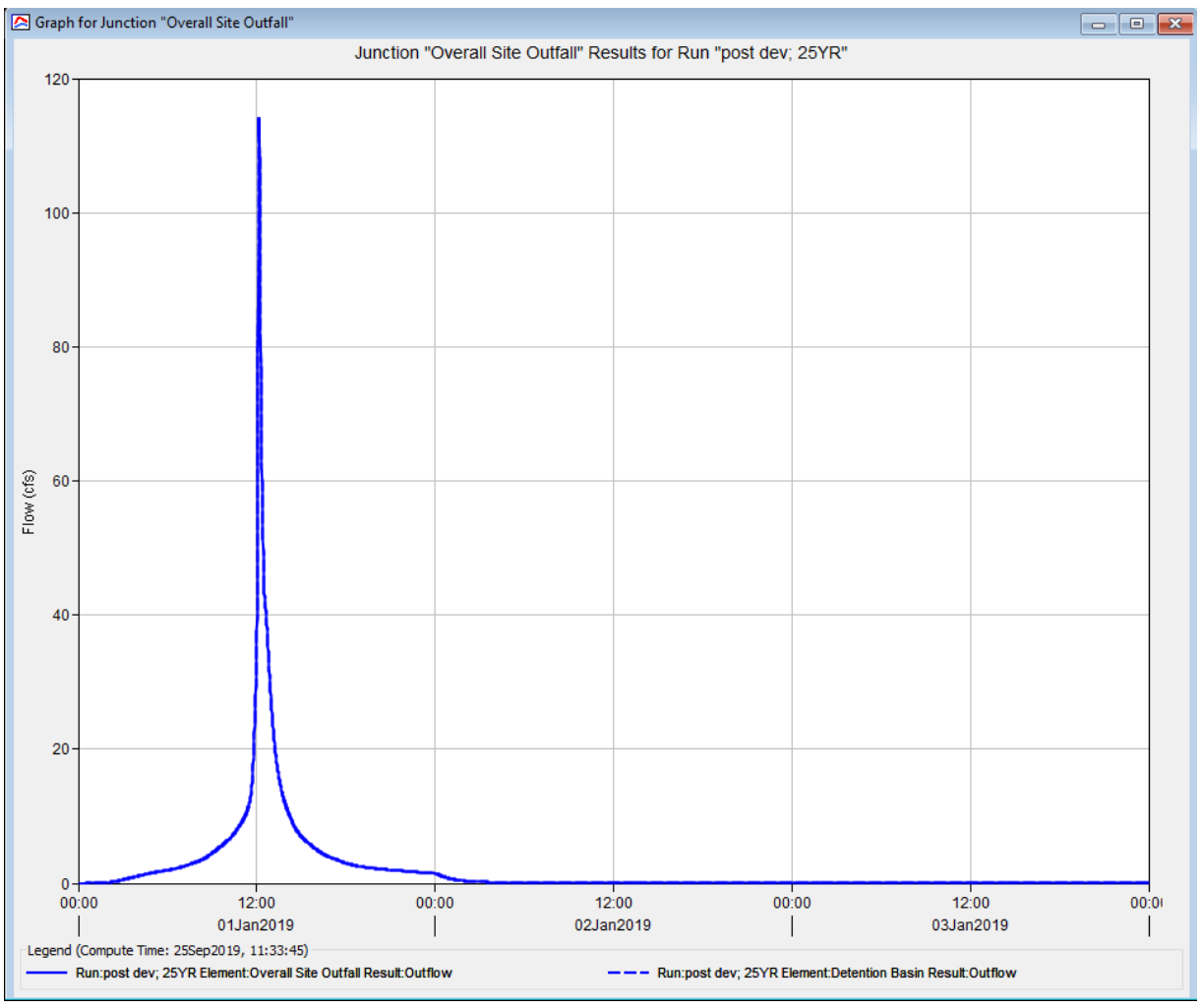


Figure 2A-1-5. Post-Development 25-year, 24-hour Precipitation Event Runoff Hydrograph at Site Outfall

ATTACHMENT 2B

ON-SITE DESIGN – CULVERTS AND DRAINAGE CHANNELS

Written by: O. Bramlet Date: 9/25/2019 Reviewed by: S. Graves Date: 9/26/2019

Client: WM Project: Austin Community TS Project No.: GW7107 Phase No.: 01

ON-SITE DESIGN – CULVERTS AND PERIMETER DRAINAGE CHANNELS AUSTIN COMMUNITY TRANSFER STATION

9/26/2019

SEALED FOR REGISTRATION PURPOSES, CALCULATION PAGES 1 TO

GEOSYNTEC CONSULTANTS, INC.
TX ENG. FIRM REGISTRATION NO. F-1182

1 PURPOSE

The purpose of this calculation package is to present the design of the drainage channel and roadway culvert for the proposed facility surface water management system for the Austin Community Transfer Station (site). The post-development areas at the site are graded to drain towards a stormwater detention pond (Detention Pond), designed northeast of the Transfer Station building. Stormwater runoff from post-development drainage areas will be directed to the Detention Pond via a conveyance channel (Channel C1). Channel C1 will flow through a proposed culvert, Culvert 2, in order to be routed under an existing roadway. Figure 2A-2 in Attachment 2A provides the proposed location of both Channel C1 and Culvert 2.

2 METHODOLOGY

Channel C1

Stormwater Channel C1 will be a grass-lined trapezoidal channel conveying flows to the Pond. The reach is designed to convey the peak surface water runoff corresponding the 24-hour rainfall event with a 4% annual chance of occurrence (referred to herein as the "25-year, 24-hour rainfall event") flowing to the channel, while maintaining a minimum of 0.5 feet of freeboard during this rainfall event. In addition, the reach was designed with the capacity to convey the peak discharge from the 24-hour rainfall event with a 1% annual chance of occurrence (refer to herein as the "100-year, 24-hour rainfall event") without overtopping. Calculations supporting the peak volumes of surface water runoff during

these rainfall events are provided in Attachment 2A of the Drainage Report.

The channel geometry and peak discharge during the design rainfall events are used to calculate the peak velocity and the peak tractive stress during the design rainfall event on the lining of the channel.

The capacity of the channel is calculated and assessed by solving Manning's equation. Manning's equation (Chow, 1959) is expressed as:

$$Q = \frac{1.49}{n} A R^{2/3} S^{1/2} \quad (1)$$

where:

Q = discharge (cfs),

n = Manning's roughness coefficient,

A = area of cross-section of flow (ft^2),

P = wetted perimeter (ft),

R = hydraulic radius = A/P (ft), and

S = longitudinal slope (ft/ft).

The peak average tractive stresses on the channel lining for various depths of flow are estimated using the following equation (Chow, 1959):

$$\tau_o = \gamma_w R S \quad (2)$$

where:

τ_o = average tractive stress (lb/ft^2),

γ_w = unit weight of water (lb/ft^3),

R = hydraulic radius = A/P (ft), and

S = channel slope (ft/ft).

Culvert 2

Culvert 2 was designed by utilizing the HY-8 Culvert Analysis Program v.7.50 (HY-8).

HY-8 was originally developed by the Federal Highway Administration (FHWA) and has since been updated and revised to its current version (Version 7.50). The performance of a culvert is modeled and evaluated based on boundary conditions, culvert configuration, and peak flow criteria. HY-8 is applied for the surface water drainage system to model Culvert 2, conveying the peak discharge from Channel C1 beneath a roadway. The performance of Culvert 2 is assessed under tailwater conditions for the computed water surface elevation within the channel, which coincide with the peak discharge during 25-year, 24-hour rainfall event. The HEC-HMS model developed in Attachment 2 of this Drainage Report was utilized to compute the peak inflows and tailwater conditions in order to model Culvert 2. Results from the HY-8 model are reviewed to demonstrate that the computed headwater elevation does not overtop the entry driveway at the culvert inlet by more than six inches during the peak discharge, considered acceptable as the driveway can function adequately under this condition.

3 DESIGN PARAMETERS

The design parameters for Channel C1, including channel geometry and calculated peak discharges as computed by the HEC-HMS model described in Attachment 2A to the Drainage Report for the 25-year and 100-year rainfall events, are summarized in Table 2B-1. The design parameters for Culvert 2 are summarized in Table 2B-2.

Channel C1

Channel C1 is designed as a grass-lined channel. A Manning's roughness coefficient is selected as 0.027 for excavated channels with short grass and few weeds, based on guidance in Table 2B-3 from TxDOT (2019). Permissible peak tractive stresses for grass-lined channels range from 0.35 psf to 3.70 psf depending on the retardation class of vegetation. Retardation Class C (which includes Bermuda and Crab grasses among others) was selected for the design of grass lined channels (as shown in Table 2B-4). Grass channels under Retardation Class C have a maximum permissible tractive stress of 1.0 psf (as shown in Table 2B-5 from TxDOT, 2019).

Culvert 2

The concrete circular Culvert 2 is designed using the following parameters to convey both the peak 25-year, 24-hour rainfall event discharge. The culvert is modeled as two circular 1.5-ft diameter barrels adjacent to each other and spanning a length of approximately 75

feet. The inlet invert and outlet invert elevations are 629.7 ft MSL and 629.0 ft MSL, respectively, resulting in a culvert slope of 0.9%. A Manning's roughness coefficient is selected as 0.012 for concrete culverts, based on guidance in Table 2B-6 from TxDOT (2019). The peak inflow into the culvert is computed by HEC-HMS, as discussed in Attachment 2B. The peak inflow from Channel C1 into Culvert 2 is calculated as 48.70 cfs for the 25-year, 24-hour rainfall event. The water surface elevations in the Channel C1 (i.e., tailwater conditions) coinciding with the peak discharge within the culvert is 630.48 ft MSL for the 25-year, 24-hour event.

4 RESULTS

The depth of flow, velocity, and average tractive stress for the calculated discharge for Channel C1 during the design rainfall events were calculated using Equations (1) and (2). Calculations for Channel C1 were performed using spreadsheets with results that are summarized in Table 2B-7. Results for Culvert 2 are presented in Table 2B-8.

- The available freeboard in Channel C1 is calculated to be greater than 0.5 feet during the 25-year, 24-hour rainfall event.
- Channel C1 was calculated to be able to convey the 100-year, 24-hour rainfall event without overtopping as presented in Table 2B-7.
- The average tractive stress during the 25-year, 24-hour rainfall event within Channel C1 is calculated to remain below the maximum one (1) psf, acceptable for grass-lined channels.

5 REFERENCES

FHWA (2006). *Hydraulic Design of Energy Dissipators for Culverts and Channels*, Federal Highway Administration, US Department of Transportation, Hydraulic Engineering Circular No. 14, Third Edition.

TxDOT (2019). *Hydraulic Design Manual*, Texas Department of Transportation, revised September 2019.

TABLES

Table 2B-1. Design Parameter Summary for Drainage Channel

Drainage Channel ID	Channel Shape	Longitudinal Slope (ft/ft)	Manning's Roughness n	Bottom Width (ft)	Depth (ft)	Side Slopes (H:V)	Lining Material	25-YR, 24-HR Peak Flow (cfs)	100-YR, 24-HR Peak Flow (cfs)
Channel C1	Trapezoid	0.0075	0.027	3.0	2.0	3:1	Grass	48.70	69.60

Table 2B-2. Design Parameter Summary for Culverts

Culvert ID	Culvert Shape	Pipe Slope (ft/ft)	Manning's Roughness n	Diameter (ft)	# of Barrels	Inlet Invert Elev. (ft)	Outlet Invert Elev. (ft)	Spillway Elev. (ft)	Pipe Length (ft)	Lining Material	25-YR, 24-HR Peak Flow (cfs)
Culvert 2	Circlular	0.009	0.012	1.5	2	629.7	629.0	631.80	75	Concrete	48.70

Table 2B-3. Manning's n Values for Open Channels

(from TxDOT, 2019)

Type of channel	Manning's n
B. Excavated or dredged channels	
1. Earth, straight and uniform	
a. Clean, recently completed	0.016-0.020
b. Clean, after weathering	0.018-0.025
c. Gravel, uniform section, clean	0.022-0.030
d. With short grass, few weeds	0.022-0.033
2. Earth, winding and sluggish	
a. No vegetation	0.023-0.030
b. Grass, some weeds	0.025-0.033
c. Deep weeds or aquatic plants in deep channels	0.030-0.040
d. Earth bottom and rubble sides	0.028-0.035
e. Stony bottom and weedy banks	0.025-0.040
f. Cobble bottom and clean sides	0.030-0.050
g. Winding, sluggish, stony bottom, weedy banks	0.025-0.040
h. Dense weeds as high as flow depth	0.050-0.120
3. Dragline-excavated or dredged	
a. No vegetation	0.025-0.033
b. Light brush on banks	0.035-0.060
4. Rock cuts	
a. Smooth and uniform	0.025-0.040
b. Jagged and irregular	0.035-0.050
5. Unmaintained channels	
a. Dense weeds, high as flow depth	0.050-0.120
b. Clean bottom, brush on sides	0.040-0.080
c. Clean bottom, brush on sides, highest stage	0.045-0.110
d. Dense brush, high stage	0.080-0.140
C. Lined channels	
1. Asphalt	0.013-0.016
2. Brick (in cement mortar)	0.012-0.018
3. Concrete	
a. Trowel finish	0.011-0.015
b. Float finish	0.013-0.016
c. Unfinished	0.014-0.020
d. Gunite, regular	0.016-0.023
e. Gunite, wavy	0.018-0.025
4. Riprap (n-value depends on rock size)	0.020-0.035
5. Vegetal lining	0.030-0.500

Table 2B-4. Retardation Class for Lining Materials

(from TxDOT, 2019)

Retardance Class	Cover	Condition
A	Weeping Lovegrass	Excellent stand, tall (average 30 in. or 760 mm)
	Yellow Bluestem Ischaemum	Excellent stand, tall (average 36 in. or 915 mm)
B	Kudzu	Very dense growth, uncut
	Bermuda grass	Good stand, tall (average 12 in. or 305 mm)
	Native grass mixture little bluestem, bluestem, blue gamma, other short and long stem midwest grasses	Good stand, unmowed
	Weeping lovegrass	Good Stand, tall (average 24 in. or 610 mm)
	Lespedeza sericea	Good stand, not woody, tall (average 19 in. or 480 mm)
	Alfalfa	Good stand, uncut (average 11 in or 280 mm)
	Weeping lovegrass	Good stand, unmowed (average 13 in. or 330 mm)
	Kudzu	Dense growth, uncut
	Blue gamma	Good stand, uncut (average 13 in. or 330 mm)
C	Crabgrass	Fair stand, uncut (10-to-48 in. or 55-to-1220 mm)
	Bermuda grass	Good stand, mowed (average 6 in. or 150 mm)
	Common lespedeza	Good stand, uncut (average 11 in. or 280 mm)
	Grass-legume mixture: summer (orchard grass redtop, Italian ryegrass, and common lespedeza)	Good stand, uncut (6-8 in. or 150-200 mm)
	Centipedegrass	Very dense cover (average 6 in. or 150 mm)
	Kentucky bluegrass	Good stand, headed (6-12 in. or 150-305 mm)
D	Bermuda grass	Good stand, cut to 2.5 in. or 65 mm
	Common lespedeza	Excellent stand, uncut (average 4.5 in. or 115 mm)
	Buffalo grass	Good stand, uncut (3-6 in. or 75-150 mm)
	Grass-legume mixture: fall, spring (orchard grass Italian ryegrass, and common lespedeza)	Good Stand, uncut (4-5 in. or 100-125 mm)
	Lespedeza sericea	After cutting to 2 in. or 50 mm (very good before cutting)
E	Bermuda grass	Good stand, cut to 1.5 in. or 40 mm
	Bermuda grass	Burned stubble

Table 2B-5. Permissible Shear Stress for Various Linings

(from TxDOT, 2019)

Protective Cover	(lb./sq.ft.)	tp (N/m^2)
Retardance Class A Vegetation (See the "Retardation Class for Lining Materials" table above)	3.70	177
Retardance Class B Vegetation (See the "Retardation Class for Lining Materials" table above)	2.10	101
Retardance Class C Vegetation (See the "Retardation Class for Lining Materials" table above)	1.00	48
Retardance Class D Vegetation (See the "Retardation Class for Lining Materials" table above)	0.60	29
Retardance Class E Vegetation (See the "Retardation Class for Lining Materials" table above)	0.35	17
Woven Paper	0.15	7
Jute Net	0.45	22
Single Fiberglass	0.60	29
Double Fiberglass	0.85	41
Straw W/Net	1.45	69
Curled Wood Mat	1.55	74
Synthetic Mat	2.00	96
Gravel, D_{50} = 1 in. or 25 mm	0.40	19
Gravel, D_{50} = 2 in. or 50 mm	0.80	38

Table 2B-6. Manning's n Values for Closed Conduits

(from TxDOT, 2019)

Material		Manning's n
Asbestos-cement pipe		0.011-0.015
Brick		0.013-0.017
Cast iron pipe		
	Cement-lined & seal coated	0.011-0.015
Concrete (monolithic)		
	Smooth forms	0.012-0.014
	Rough forms	0.015-0.017
	Concrete pipe	0.011-0.015
	Box (smooth)	0.012-0.015
Corrugated-metal pipe -- (2-1/2 in. x 1/2 in. corrugations)		
	Plain	0.022-0.026
	Paved invert	0.018-0.022
	Spun asphalt lined	0.011-0.015
	Plastic pipe (smooth)	0.011-0.015
Corrugated-metal pipe -- (2-2/3 in. by 1/2 in. annular)		0.022-0.027
Corrugated-metal pipe -- (2-2/3 in. by 1/2 in. helical)		0.011-0.023
Corrugated-metal pipe -- (6 in. by 1 in. helical)		0.022-0.025
Corrugated-metal pipe -- (5 in. by 1 in. helical)		0.025–0.026
Corrugated-metal pipe -- (3 in. by 1 in. helical)		0.027–0.028
Corrugated-metal pipe -- (6 in. by 2 in. structural plate)		0.033–0.035
Corrugated-metal pipe -- (9 in. by 2-1/2 in. structural plate)		0.033–0.037
Corrugated polyethylene		0.010–0.013
	Smooth	0.009-0.015
	Corrugated	0.018–0.025
Spiral rib metal pipe (smooth)		0.012-0.013
Vitrified clay		
	Pipes	0.011-0.015

Table 2B-7. Channel Capacity Calculation Results

Drainage Channel ID	25-YR, 24-HR Peak Flow (cfs)	Depth of Flow (ft)	Average Velocity (ft/s)	Average Tractive Stress (psf)	25-YR Freeboard (ft)	100-YR, 24-HR Peak Flow (cfs)	Depth of Flow (ft)	Average Velocity (ft/s)	Average Tractive Stress (psf)
Channel C1	48.70	1.48	4.42	0.42	0.52	69.60	1.74	4.84	0.48

Table 2B-8. Culvert Capacity Analysis Results

Culvert ID	25-YR, 24-HR Rainfall Event					
	Peak Flow (cfs)	Pipe Flow (cfs)	Pipe Velocity (fps)	Spillway Flow (cfs)	Tailwater Elev. (ft)	Headwater Elev. (ft)
Culvert 2	48.7	16.0	5.09	29.8	630.48	632.05

FIGURES

- Figure 2B-1. HY-8 Modeling Output for 25-Year Event Culvert 2

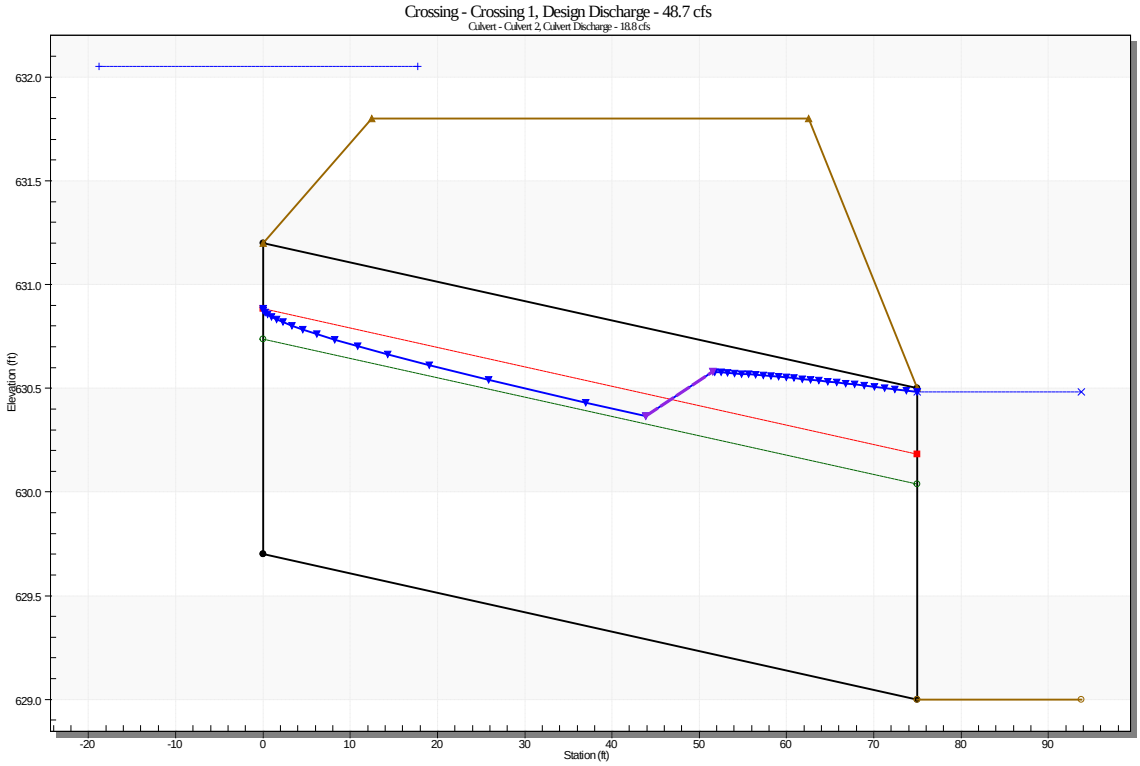


Figure 2B-1. HY-8 Modeling Output for 25-Year Event Culvert 2

Appendix 2B-1
Channel Calculations

Design/Check: Trapezoidal/Triangular Channel

Methodology: Manning's Equation

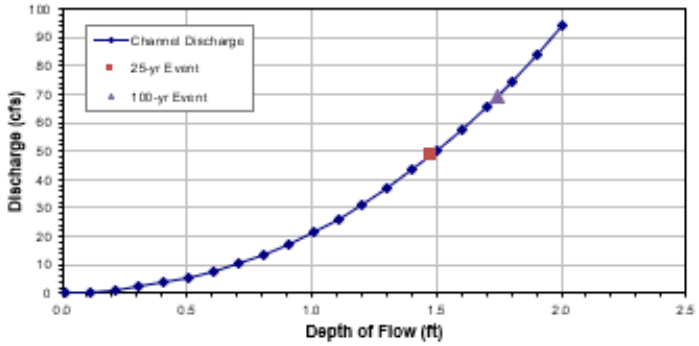
Project: Fort Worth C&D Landfill Expansion

Ditch ID: **Channel C1** **Design**

Peak Discharge, Q_{25} =	48.70	cfs (25-yr Event)
Peak Discharge, Q_{100} =	69.60	cfs (100-yr Event)
Bottom Width, B =	3.00	ft
Left Side Slope, Z_1 =	3.00	horizontal :1 vertical
Right Side Slope, Z_2 =	3.00	horizontal :1 vertical
Channel Depth, Y =	2.00	ft
Top Width, T =	15.0	ft
Manning's Roughness Coeff., n =	0.027	
Longitudinal Channel Slope, S_o =	0.0075	ft/ft

Depth of Flow Y ft	Area of Flow A ft^2	Wetted Perimeter P ft	Hydraulic Radius R=A/P ft	Average Velocity V ft/s	Discharge (Flow Rate) Q=AV ft^3/s	Avg. Tractive Stress τ_0 lb/ft^2	Comments
0.01	0.03	3.06	0.01	0.22	0.0	0.00	
0.11	0.36	3.69	0.10	1.02	0.4	0.05	
0.21	0.76	4.32	0.18	1.49	1.1	0.08	
0.31	1.21	4.95	0.24	1.86	2.3	0.11	
0.41	1.72	5.58	0.31	2.18	3.8	0.14	
0.51	2.30	6.21	0.37	2.46	5.6	0.17	
0.61	2.93	6.84	0.43	2.71	7.9	0.20	
0.71	3.62	7.47	0.48	2.94	10.6	0.23	
0.81	4.37	8.10	0.54	3.16	13.8	0.25	
0.91	5.18	8.73	0.59	3.37	17.4	0.28	
1.01	6.05	9.36	0.65	3.56	21.5	0.30	
1.10	6.97	9.99	0.70	3.75	26.2	0.33	
1.20	7.96	10.61	0.75	3.94	31.3	0.35	
1.30	9.01	11.24	0.80	4.11	37.1	0.37	
1.40	10.11	11.87	0.85	4.29	43.3	0.40	
1.50	11.28	12.50	0.90	4.45	50.2	0.42	
1.60	12.51	13.13	0.95	4.62	57.7	0.44	
1.70	13.79	13.76	1.00	4.78	65.9	0.47	
1.80	15.13	14.39	1.05	4.93	74.6	0.49	
1.90	16.54	15.02	1.10	5.09	84.1	0.51	
2.00	18.00	15.65	1.15	5.24	94.3	0.54	
1.48	11.02	12.36	0.89	4.42	48.65	0.42	Q [25-yr Event]
1.74	14.35	14.03	1.02	4.84	69.52	0.48	Q [100-yr Event]

Discharge versus Depth Relationship



ATTACHMENT 3

CLOSURE PLAN

ATTACHMENT 4

COST ESTIMATE FOR CLOSURE

Prepared for:
Waste Management of Texas, Inc.

REGISTRATION APPLICATION

PART III – SITE DEVELOPMENT PLAN
ATTACHMENT 4

CLOSURE COST ESTIMATE

AUSTIN COMMUNITY TRANSFER STATION
AUSTIN, TRAVIS COUNTY, TEXAS

Prepared by:

Geosyntec consultants
Texas Board of Professional Engineers Firm Registration No. F-1182
8217 Shoal Creek Blvd., Suite 200
Austin, Texas 78757
(512) 451-4003

9/26/2019

FOR REGISTRATION PURPOSES ONLY

September 2019

TABLE OF CONTENTS
CLOSURE COST ESTIMATE

TABLE

FOR REGISTRATION PURPOSES ONLY

GEOSYNTEC CONSULTANTS, INC.
TEXAS ENG. FIRM
REGISTRATION NO. F-1182

1. INTRODUCTION

This Cost Estimate for Closure (Cost Estimate) for the Austin Community Transfer Station (facility) was prepared to meet the applicable requirements of 30 TAC §330.63(j) and 30 TAC §330.501, and §330.505. The Cost Estimate is based upon the maximum inventory of stored waste allowed to be at the facility, and therefore represents the maximum anticipated closure cost. This Cost Estimate also presents information on financial assurance for closure which will be established for the facility in accordance with 30 TAC Chapter 37, Subchapter R.

2. CLOSURE COST ESTIMATE

The Closure Cost Estimate is provided in Table 4-1. This cost estimate, which is presented in current dollars, has been developed in accordance with 30 TAC §330.505. The cost estimate accounts for closure of the maximum inventory of waste potentially stored at the transfer facility and assumes that the work will be performed by a third party not affiliated with the owner or operator of the facility. The registrant will conduct an annual review to evaluate whether the cost estimate is sufficient based on current operating conditions. As outlined in Section 3, the estimate and financial assurance will be adjusted as necessary.

As outlined in 30 TAC Chapter 37, Subchapter R, the registrant will establish and maintain financial assurance for closure. The financial assurance for closure will be maintained continuously until all requirements of the final closure plan have been met as evidenced in writing by the TCEQ Executive Director. Cost estimate and financial assurance adjustments will be made as described in Section 3.

Table 4-1
Austin Community Transfer Station
Cost Estimate for Third-Party Closure

Item	Description	Unit	Amount	Unit Cost[1]	Cost[1]
A	**Administration of third-party closure**				
	Site survey and file review to determine closure activities	LS	1	$ 1,500	$ 1,500
	Preparation of engineering plans	LS	1	$ 1,500	$ 1,500
	Procurement of bids	LS	1	$ 1,500	$ 1,500
	Contract award and administration of contract	LS	1	$ 1,000	$ 1,000
	Installation of sign stating facility closure	LS	1	$ 500	$ 500
	Securing of building and site	LS	1	$ 500	$ 500
B	**Contractor mobilization**	LS	1	$ 500	$ 500
C	**Waste disposal**				
	Cleanup/removal of waste stored onsite	ton	2,500	$ 7.78	$ 19,450
	Waste transportation by properly authorized transporter	ton	2,500	$ 7.78	$ 19,450
	Treatment and/or disposal of waste at a properly authorized facility	ton	2,500	$ 14.44	$ 36,100
D	**General cleanup to include washdown of facility and removal, transport, treatment and disposal of all washdown waters/media**	LS	1	$ 1,500	$ 1,500
E	**Cleanup and decommissioning of process equipment/facility**	LS	1	$ 1,500	$ 1,500
F	**Inspection and certification of closure**	LS	1	$ 5,000	$ 5,000
	Closure Subtotal				$ 90,000
	Contingency cost (15%)				$ 13,500
	Total				$ 103,500

Notes:

[1]All costs are provided in 2019 dollars

9/26/2019

FOR REGISTRATION PURPOSES ONLY

GEOSYNTEC CONSULTANTS, INC.
TEXAS ENG. FIRM
REGISTRATION NO. F-1182

3. COST ESTIMATE AND FINANCIAL ASSURANCE ADJUSTMENTS

During the active life of the facility, the registrant will annually adjust the current cost estimates for inflation within 60 days prior to the anniversary date of the first establishment of the financial assurance mechanism. The adjustment may be made by recalculating the maximum costs of closure and post-closure care in current dollars, or by using an inflation factor published on TCEQ's website

The registrant will evaluate the closure cost annually to determine whether an increase in the closure cost is required as a result of continued facility development or otherwise changed facility conditions. This will include a review the facility's registration conditions on an annual basis to verify that the current active areas match the areas on which closure cost estimates are based. An increase in the closure cost estimate and the amount of financial assurance will be made if changes to the final Closure Plan or the facility conditions increase the maximum cost of closure.

A reduction in the closure cost estimate and amount of financial assurance provided may be requested if the cost estimate exceeds the maximum costs of closure at any time during the remaining life of the facility. The registrant will provide written notice to the TCEQ Executive Director of the detailed justification for the reduction of the closure cost estimate the amount of financial assurance. The registration may request a reduction in the cost estimate and the financial assurance as a registration modification.

Prepared for:
Waste Management of Texas, Inc.

REGISTRATION APPLICATION

PART III – SITE DEVELOPMENT PLAN
ATTACHMENT 3

CLOSURE PLAN

AUSTIN COMMUNITY TRANSFER STATION
AUSTIN, TRAVIS COUNTY, TEXAS

Prepared by:

Geosyntec consultants

Texas Board of Professional Engineers Firm Registration No. F-1182
8217 Shoal Creek Blvd., Suite 200
Austin, Texas 78757
(512) 451-4003

FOR REGISTRATION PURPOSES ONLY

September 2019

TABLE OF CONTENTS
CLOSURE PLAN

FOR REGISTRATION PURPOSES ONLY

GEOSYNTEC CONSULTANTS, INC.
TEXAS ENG. FIRM
REGISTRATION NO. F-1182

1. INTRODUCTION

Pursuant to 30 TAC §330.63(h), this Closure Plan has been developed in to address the applicable provisions of 30 TAC §330.459 and 30 TAC Subchapter K. The facility will be closed in accordance with the closure provisions of the registration, unless specifically authorized by the Executive Director of the Texas Commission on Environmental Quality (TCEQ).

2. CLOSURE ACTIVITES

Closure will be accomplished by the owner or operator removing all waste, waste residues, and any recovered materials. Facility units (i.e., the transfer station) will either be dismantled and removed off-site or decontaminated.

No later than 90 days prior to the initiation of final closure, the facility will, through a public notice in the newspaper(s) of largest circulation in the vicinity of the facility, provide public notice for final facility closure. The notice will include the name, address and physical location of the facility, the registration number, and the intended last day of receipt of materials at the facility. The facility will also make an adequate number of copies of the approved Closure Plan available for public review. The owner or operator will also provide written notification to the TCEQ of the intent to close the facility and place this notice of intent in the Site Operating Record.

Initiation of closure activities for the facility will begin no later than 30 days after the date on which the facility receives the known final receipt of waste. Closure of the facility must be completed within 180 days following the most recent acceptance of processed or unprocessed materials unless otherwise directed or approved in writing by the Executive Director.

The following steps will be taken for closure:

- Notify TCEQ when closure is initiated.
- At least one sign will be posted at the main entrance notifying all persons who may utilize the facility of the date of closing and the prohibition against further receipt of waste materials after the stated date. Additional signs will be posted at other frequently used points of access.
- Suitable barriers to all gates or access points will be installed, or alternatively, the entire perimeter property boundary will have a fence as a barrier, to adequately prevent the unauthorized dumping of solid waste at the closed facility.
- Waste, waste residues, contaminated water and any recovered materials will be removed and will be transported to an authorized facility for disposal.
- The facility units will be dismantled and removed, or decontaminated.
- The tipping floor and any surfaces that have been in contact with waste will be washed down, and that water will be managed as contaminated water.
- The closed facility will be inspected by an independent professional engineer who will verify that final facility closure has been completed in accordance with the approved closure plan, and who will the then prepare a certification of final facility closure as set forth in Section 3 of this Plan.

- The certification of closure will be submitted to the Executive Director as set forth in Section 3 of this Plan.
- If there is evidence of a release of waste from the facility, the Executive Director may require an investigation into the nature and extent of the release and an assessment of measures necessary to correct an impact to groundwater. As part of the closure activities, the underground contaminated water storage tank and any contaminated water in the tank will be removed and properly disposed of. Soils below the tank will be tested for contamination before regrading the area. As part of closure activities and prior to sampling for testing, TCEQ will be contacted for sampling and testing requirements of soil below (or around) the tank.

3. CERTIFICATION OF FINAL FACILITY CLOSURE

Within 10 days after completion of the final closure activities for the facility, the owner and operator will submit to the Executive Director by registered mail the following:

- A certification, signed by an independent licensed professional engineer, verifying that final facility closure has been completed in accordance with the approved closure plan. The submittal to the Executive Director shall include all applicable documentation necessary for certification of final facility closure; and

- A request for voluntary revocation of the facility registration.

Following receipt of the closure documents and the inspection report by the TCEQ Region, the Executive Director may acknowledge termination of operation and closure and deem the facility properly closed.

4. POST CLOSURE LAND USE

All wastes and waste residues will be removed from the facility as part of closure; no wastes will remain at the closed facility. Accordingly, this facility does not require post closure care requirement.

A request for voluntary revocation of the facility's registration will be submitted to the Executive Director within 10 days after completion of the final closure activities, in conjunction with the certification of closure described in Section 3 of this Plan.

Prepared for:

Waste Management of Texas, Inc.

REGISTRATION APPLICATION

PART IV – SITE OPERATING PLAN (SOP)

AUSTIN COMMUNITY TRANSFER STATION
TYPE V MSW FACILITY
REGISTRATION NO. MSW-_____ [to be assigned]
AUSTIN, TRAVIS COUNTY, TEXAS

Prepared by:

Geosyntec consultants

Texas Board of Professional Engineers Firm Registration No. F-1182
8217 Shoal Creek Blvd, Suite 200
Austin, Texas 78757
(512) 451-4003

9/26/2019

FOR REGISTRATION PURPOSES ONLY

SEALED FOR THIS PART IV SITE OPERATING PLAN, AND FOR REGISTRATION PURPOSES ONLY

September 2019

TABLE OF CONTENTS
SITE OPERATING PLAN (SOP)

9/26/2019

FOR REGISTRATION PURPOSES ONLY
GEOSYNTEC CONSULTANTS, INC.
TEXAS ENG. FIRM
REGISTRATION NO. F-1182

9/26/2019

STATE OF TEXAS
SCOTT M. GRAVES
86557
LICENSED
PROFESSIONAL ENGINEER

FOR REGISTRATION PURPOSES ONLY

GEOSYNTEC CONSULTANTS, INC.
TEXAS ENG. FIRM
REGISTRATION NO. F-1182

TABLES

FIGURE

FOR REGISTRATION PURPOSES ONLY

GEOSYNTEC CONSULTANTS, INC.
TEXAS ENG. FIRM
REGISTRATION NO. F-1182

SITE OPERATING PLAN (SOP)

1. INTRODUCTION

1.1 Terms of Reference

The Austin Community Transfer Station (hereafter also referred to as the "facility" or "site") is a proposed Type V municipal solid waste (MSW) facility, owned and operated by Waste Management of Texas, Inc. This Site Operating Plan (SOP) provides general and facility-specific instructions for site management and personnel to operate the facility on a daily basis in a manner consistent with the design of the facility and with the applicable rules of the Texas Commission on Environmental Quality (TCEQ). This SOP complies with the requirements of Texas Administrative Code (TAC) Title 30, Chapter 330, Subchapter E, "Operational Standards for Municipal Solid Waste Landfill Storage and Processing Units," applicable to Type V MSW transfer station registrations.

The specific procedures outlined in this SOP are operational requirements and must be understood, acknowledged, and followed by the site personnel. This SOP will be retained at the facility throughout the active life of the facility until after certification of closure.

References to the terms "Executive Director" or "TCEQ" used in this SOP shall refer to the Executive Director of the TCEQ or the designated representative(s) of the TCEQ. References to information in the "registration" or "registration application" for this facility shall refer to the most current version of those documents, including any amendments, modifications, or revisions as approved.

1.2 General Facility Information

The Austin Community Transfer Station is located on the east side of Austin, Texas, approximately 500 feet north of the intersection of Giles Road and US Highway 290. The facility will accept and process MSW from public and private waste hauling vehicles, and from the public generally (refer to Section 3 of this SOP for specific waste acceptance information), and then transfer this waste to a properly permitted MSW landfill for disposal.

2. RECORDKEEPING AND REPORTING REQUIREMENTS

The facility will maintain the Site Operating Record for the life of the facility until after certification of closure. The Site Operating Record will be maintained on-site, in an organized format, where information is readily locatable and retrievable, with the required records to be maintained as set forth herein. Site Operating Record files that are older than five (5) years may be stored at an alternate off-site location. The alternate off-site location will be recorded in the Site Operating Record. Records stored off-site will be made available for review within 72 hours of a request. Records, including waste manifests, may be maintained electronically and in a manner consistent with the e-manifest database requirements. Consistent with 30 TAC §330.219, copies of documents that are part of the approved registration process and are considered part of the Site Operating Record for the facility are listed in Table IV-1.

A list of records required to be maintained is provided below in Table IV-1. These documents will be made available for inspection by TCEQ agency representatives or other interested parties.

2.1 Required Records to be Maintained

The facility will promptly record and retain in the Site Operating Record, either electronically or in physical format, the information and records listed below in Table IV-1.

Table IV-1. Recordkeeping Requirements

Records to be Maintained in the Site Operating Record	Frequency	Rule Citation (30 TAC)
MSW Registration	Issuance of Registration	§330.219(a)
Approved Registration Application	Approval of Registration Application	§330.219(a)
Site Operating Plan	Approval of Registration Application	§330.219(a)
As-built set of construction plans and specifications	After completion of construction	§330.219(a)
Other required plans or related documents	As required	§330.219(a)

Records to be Maintained in the Site Operating Record	Frequency	Rule Citation (30 TAC)
All location restriction demonstrations	Approval of Registration Application	§330.219(b)(1)
Inspection records and training procedures	Per occurrence	§330.219(b)(2)
Closure plans and any monitoring, testing, or analytical data relating to closure requirements	As required	§330.219(b)(3)
Cost estimates and financial assurance documentation relating to closure	Annually	§330.219(b)(4)
Copies of all correspondence and responses relating to facility operation, registration modifications, approvals, and technical assistance	Per occurrence	§330.219(b)(5)
All shipping documents, manifests, and trip tickets, etc., involving special waste	Per occurrence	§330.219(b)(6)
Any other document(s) specified in the registration or by the Executive Director	As required	§330.219(b)(7)
Trip tickets as required by §312.145(b)(2)	Per occurrence (retained for 5 years)	§330.219(b)(8)
Dates, times, and durations of alternative operating hours (e.g., if not as stated in Section 8.4)	As required	§330.229(d)
Fire Protection Plan	Approval of Registration Application	§330.221(c)
Personnel training records and detailed job descriptions	As needed	§330.219(b)(2)
Records to document the annual waste acceptance rate, including the annual solid waste summary report	Annually	§330.675(b)
Random load inspection records	Per occurrence	§330.225
Personnel operator licenses issued under 30 TAC Chapter 30, Subchapter F	As needed	§330.59(f)(3)
All facility inspection and maintenance documentation noted in Section 8.15 - Facility Inspection and Maintenance Schedule	As required	§§330.223-330.243

Records to be Maintained in the Site Operating Record	Frequency	Rule Citation (30 TAC)
Documentation that all wastes leaving the facility are being adequately managed by other licensed or permitted facilities	As needed	§330.205(a)

Note that the recordkeeping requirements of 30 TAC §330.219(d) are not applicable because this facility is not a permitted solid waste compositing or landfill mining facility.

2.2 Report Signatories

The owner or operator will sign all reports and other information requested by the Executive Director as described in 30 TAC §305.44(a), or they will be signed by a duly authorized representative of the owner or operator only if:

- The authorization is made in writing by the owner or operator as described in 30 TAC §305.44(a);
- The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity or for environmental matters for the owner or operator (e.g., environmental manager, or a position of equivalent responsibility). A duly authorized representative may thus be either a named individual or any individual occupying a named position; and
- the written authorization is submitted to the Executive Director.

If an authorization under this section is no longer accurate because of a change in individuals or position, a new authorization satisfying the requirements of this section must be submitted to the Executive Director prior to, or together with, any reports, information, or applications to be signed by an authorized representative.

Any person signing a report shall make the certification in 30 TAC §305.44(b).

2.3 Executive Director Access to Information

All information contained in the Site Operating Record will be furnished to the Executive Director upon request and will be made available at reasonable times at the facility for inspection by the Executive Director.

2.4 Record Retention

The facility will retain the Site Operating Record (all information contained within the Site Operating Record and all plans required for the facility) for the life of the facility until after certification of closure.

2.5 Alternative Schedules for Recordkeeping and Notifications

The Executive Director, in accordance with 30 TAC §330.219(g), may set alternative schedules for recordkeeping and notification requirements specified in 30 TAC §330.219(a)-(e).

2.6 Personnel Training Records and Licenses

The facility will maintain personnel training records and operator licenses. Personnel training requirements will be as set forth in Section 3 of this SOP. Personnel training records will be maintained until closure of the facility. The facility will maintain operator licenses for MSW supervisors as required by 30 TAC Chapter 30, Subchapter F. Personnel training records and operator licenses will be maintained in the Site Operating Record as indicated in Table IV-1.

2.7 Waste Acceptance Rate and Waste Acceptance Records

As indicated in Table IV-1, the facility will maintain records in the Site Operating Record to document the annual waste acceptance rate for the facility, and documents associated with waste acceptance (e.g., trip tickets, agency correspondence, and other waste acceptance records). The Site Operating Record will also include copies of documents involving special waste (e.g., manifests, shipping documents, trip tickets, approval forms).

The facility will also submit to the Executive Director the annual waste summary reports as required by 30 TAC §330.675(b) and will maintain copies of these annual waste summary reports in the Site Operating Record.

3. PERSONNEL AND TRAINING

3.1 Facility Personnel

The general organizational structure for facility personnel who will be involved in the operation of the facility will be as shown on the organizational chart provided below as Figure IV-1. The Site Manager will have overall responsibility for daily operations. Individual job titles and personnel are subject to change based on changes in operational conditions and changes in roles and responsibilities. However, the total number of key site personnel will be sufficient to meet the requirements outlined in Table IV-1. In addition, personnel training regarding duties and responsibilities will be maintained to ensure ongoing compliance with the requirements of this SOP.

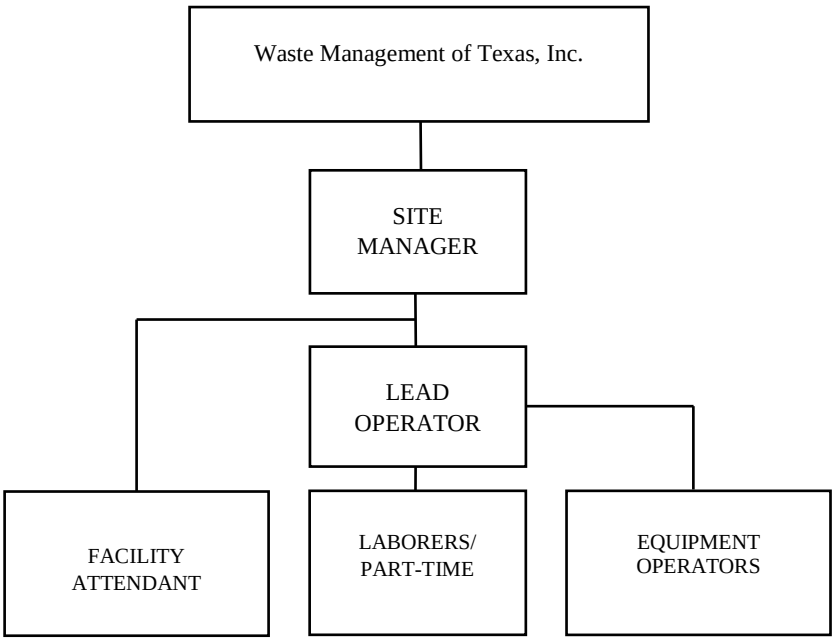


Figure IV-1. Austin Community Transfer Station Organizational Chart

A detailed description of roles and responsibilities of facility personnel are described in the remainder of this section.

3.1.1 Site Manager

The Site Manager will be ultimately responsible for daily facility operations. As such, this individual will be directly responsible for staff and equipment allocation to ensure operation of the facility in accordance with the approved Site Development Plan, SOP, and applicable local, state,

and federal regulations. The Site Manager serves as the emergency contact and coordinator for the facility and will be responsible for maintaining the Site Operating Record and required logs.

The Site Manager has overall responsibility for implementation and adherence to this SOP. Wherever this SOP describes procedures or requirements without naming a specific individual or position responsible for those requirements, the Site Manager shall have primary responsibility for those requirements. Where a specific individual or position is responsible for a particular task, that responsibility is described. Otherwise, the Site Manager may delegate authority and assign qualified personnel to accomplish the requirements of this SOP. The Site Manager will designate an individual(s) to fulfill his or her duties during periods when the Site Manager is absent.

The Site Manager will have a minimum education of a high school diploma or equivalent and will have experience in MSW processing operations. The Site Manager will have and maintain a MSW Facility Class B License as a MSW facility supervisor in accordance with 30 TAC Chapter 30, Subchapter F; and, as such, must meet the specific qualification standards (training, education, experience, applicable examination) contained in that Subchapter to obtain and maintain a Class B License. The Site Manager's designee will at a minimum also have a Class B license.

3.1.2 Lead Operator

The Site Manager will appoint a Lead Operator who will be responsible for the safe operation of the equipment involved in the facility's operation. This individual will be responsible for detecting prohibited waste, potentially dangerous conditions, and potentially careless or improper actions of persons while on the premises. The Lead Operator will consider personnel safety and will direct equipment operators on a daily basis regarding waste processing operations. The Lead Operator will also perform other required tasks as directed by the Site Manager. The Lead Operator must have a minimum of one (1) year of solid waste processing operations experience, be familiar with SOP requirements, and have the aptitude to manage personnel and implement operational aspects of solid waste processing operations.

3.1.3 Facility Attendant

The Facility Attendant is primarily responsible for maintaining complete and accurate records of vehicles and solid waste entering the facility. The Facility Attendant will be trained in facility safety procedures, to visually check for unauthorized wastes, to weigh vehicles, measure waste volumes if necessary, and to collect waste disposal fees. Specifically, the Facility Attendant is required to: (i) monitor the incoming vehicles for waste type(s) and to exclude prohibited waste; (ii) inspect waste loads to confirm that they are authorized for disposal; (iii) review manifests and other shipping documents; (iv) record incoming waste loads; (v) review and confirm special waste documents; and (vi) accept tipping fees. The Facility Attendant will be present at all hours when the transfer station facility is open to the

public. The facility attendant, at a minimum, will have a basic understanding of accounting principles and basic communication skills.

3.1.4 Equipment Operators

Equipment Operators' primary duties will include safe operation of the solid waste transfer-related and other facility equipment. Equipment Operators will be responsible for detecting potentially dangerous conditions and potentially careless or improper actions of persons while on the premises. Equipment Operators will monitor and direct unloading vehicles and are also responsible for maintenance, construction, litter abatement, and general facility cleanup. Equipment Operators will intervene as necessary to prevent accidents and report unsafe conditions immediately to the Lead Operator or Site Manager. Equipment Operators are also responsible for identifying prohibited wastes. Equipment Operators, at a minimum, must be experienced in the operation of heavy equipment and demonstrate the ability to be trained in MSW processing operations. Equipment operators will have a minimum of six (6) months experience in heavy equipment operation or supervised on-the-job training.

At all times when the facility is open to receive waste, at least one of the Equipment Operators will be designated as the Lead Operator on duty, who will assume the role and responsibilities as described above for that position.

3.1.5 Other Personnel (Laborers/Part-Time)

The Site Manager may hire other personnel or third-party outside workers to perform mechanic duties (e.g., equipment repairs, servicing, and fueling) as well as laborer activities (e.g., patrolling for and collecting litter, other cleanup, manual labor, and site maintenance activities). These personnel will be employed on an as-needed basis (e.g., part-time) and, accordingly, are not specifically reflected on the table of minimum personnel requirements.

3.2 Training

Training of facility personnel will consist of classroom instruction and/or on-the-job training that instructs site personnel in the performance of their duties and compliance with this SOP, the facility's registration requirements and provisions, and applicable regulations. Training will be directed by employees, supervisors, or other individuals experienced in waste management procedures and operations, health and safety, and related subjects needed for satisfactory job performance. This may include in-house training by qualified individuals within company affiliates, as well as training at TCEQ-sponsored training courses or training events provided by other organizations as deemed appropriate by facility management. Training will include instruction in the solid waste management and related skills, duties, and procedures relevant to

each position as set forth herein (e.g., fire prevention, facility safety, prohibited waste management procedures, etc.).

A description of the training provided to each employee will be maintained in the Site Operating Record.

3.3 Equipment

The minimum equipment required to operate the facility is one front-end loader. Refer to Section 8.2.1 of this SOP for a description of the equipment usage for the waste unloading and loading processes.

Additional company/affiliate-owned or rental equipment, such as road tractors, water trucks, backhoes, grapple loaders, etc., may be provided as necessary to enhance operational efficiency. Additionally, miscellaneous vehicles, pumps, portable lighting, litter fences, instruments, fire protection, and safety and training equipment may also be on-site as necessary to support operations. Whenever equipment breaks down or is taken out of service for maintenance or repair, back-up equipment will be rented from third parties or otherwise made available from other company-affiliated facilities.

Equipment used for waste staging and loading (e.g., the front-end loader) will be maintained in an operational state, and periodically will be cleaned (washing, sweeping) on an as-needed basis to prevent the accumulation of waste residue on the equipment and the creation of odors.

4. WASTE ACCEPTANCE AND ANALYSIS

4.1 Properties and Characteristics of Waste

The Part I/II Supplemental Technical Report presents the facility's comprehensive Waste Acceptance Plan, pursuant to 30 TAC §330.61(b). The major classifications of solid waste to be accepted at the facility for transfer to a properly permitted MSW facility include household waste, yard waste, commercial waste, Class 2 and Class 3 non-hazardous industrial waste, construction-demolition waste, brush, rubbish, shredded or quartered tires, and wastes incidental to MSW (e.g., municipal household hazardous waste, small dead animals). Certain special wastes may also be accepted at the facility (see Section 4.5 below for reference to the special waste acceptance and handling procedures). The waste classifications are defined in 30 TAC §330.3.

The facility will accept waste generated from residential, commercial, institutional, municipal, manufacturing, industrial, recreational, and construction sources within Travis County and surrounding counties. It is anticipated that accepted wastes will include paper, food wastes, glass, aluminum, metals, plastics, grass clippings, other organic wastes, wood wastes, textiles, bricks, and other inert materials.

Consistent with 30 TAC §330.15, the facility will not accept Class 1 non-hazardous industrial wastes, regulated hazardous wastes, regulated asbestos-containing material (RACM), liquid wastes, radioactive wastes, polychlorinated biphenyl (PCB) wastes, untreated medical wastes, or other wastes prohibited by TCEQ regulations.

Class 2 industrial solid waste is any individual industrial solid waste or combination of industrial solid wastes that cannot be described as Class 1 or Class 3, as defined in 30 TAC §335.506 (relating to Class 2 waste determination). Examples of Class 2 non-hazardous industrial waste include "plant trash" or waste originating in the facility offices or plant producing areas that are composed of paper and/or wooden packaging materials, glass, aluminum foil, aluminum cans, aluminum scrap, stainless steel, steel, iron scrap, Styrofoam, rope, twine, uncontaminated rubber, uncontaminated wooden materials, equipment belts, wiring, uncontaminated cloth, metal buildings, empty containers with a holding capacity of five gallons or less, uncontaminated floor sweepings, or food packaging that are produced as a result of plant production.

Class 3 industrial solid waste is any inert and essentially insoluble industrial solid waste, including materials such as rock, brick, glass, dirt, and certain plastics and rubber, etc., that are not readily decomposable as defined in 30 TAC §335.507 (relating to Class 3 waste determination). Class 2 and Class 3 industrial solid wastes may be accepted at the facility, provided processing of these wastes does not interfere with proper operation of the facility.

Bulky and large items arriving at the transfer station will be placed on the tipping floor so as to allow the front-end loader to crush and flatten the items prior to loading into the transfer trailer. Where this is not possible, bulky or large items will be loaded into transfer trailers that have been partially filled to prevent damage to the trailer from impact due to the heavy weight of the bulky and large items. Appliances potentially containing refrigerant will be inspected to ensure that any refrigerant has been extracted in accordance with Section 608 of the federal Clean Air Act. Items containing chlorinated fluorocarbons (CFCs) will be handled in accordance with the Code of Federal Regulations (CFR), Title 40, Part 82.

4.2 Volume and Rate of Transfer

The facility will serve, in general, the individuals, businesses, institutions, and public and private collection vehicles from Travis County and surrounding counties. The facility will process and transfer solid waste up to the registered maximum daily waste acceptance rate of 3,200 tons/day. The facility is designed for efficient waste processing. The area to be used for unloading and waste transfer operations will be approximately 140 feet by 180 feet. Facility layout drawings are included in the Site Development Plan (Part III, Attachment 1).

The following types and estimated percentages of waste are expected to be received at the facility. These waste types and percentages are estimates only and may vary based upon the actual wastes received at the facility.

Type of Waste	Expected Percentage of Waste Stream
Residential Waste	45 %
Commercial/Institutional Waste	30%
Const & Demo Waste	15%
Class 2 & 3 Non-Haz Industrial Waste	7%
Other Authorized Waste	3%

The facility is designed for the efficient transfer of MSW to trucks for transport to a permitted MSW landfill for disposal, typically on the same day the waste is received at the facility. As economic conditions, population growth, and waste generation rates change, the volume of incoming waste may vary. As noted in Section 2.7 of this SOP, the waste acceptance rate for the facility will be reported annually. The maximum amount of waste that may be stored at the facility is 2,500 tons. On average, MSW accepted at the facility will be transferred on a daily basis (i.e., less than 24-hours), and the maximum length of time material will remain on-site is 48 hours, except holidays and weekends. During holidays and/or weekends, waste may be temporarily stored at the facility for up to 72 hours.

The destination of the MSW collected by the facility is a properly permitted Type I municipal solid waste facility where the waste will be disposed. A Type I municipal solid waste facility within approximately 50 miles or less will typically be utilized for receiving the transferred waste for disposal.

The facility will maintain documentation in the Site Operating Record that all wastes leaving the facility are being adequately managed by other authorized solid waste management facilities.

4.3 Facility-Generated Wastes

The only facility-generated waste is wastewater (i.e., wash water resulting from washing the tipping floor and, potentially, small amounts of liquids contained within the incoming waste loads). This water will be handled and managed as contaminated water, in accordance with the provisions set forth in Section 5 of this SOP. All wastes generated by the facility must be processed or disposed of at an authorized facility.

4.4 Sampling and Analysis for Solid Waste Processing and Experimental Facilities

The requirements of 30 TAC §330.203(c) will be addressed by the facility as follows:

- This facility is not an experimental facility, and furthermore, will transfer only MSW. There is no on-site processing of grit trap wastes, sludge – nor the generation of effluent from a treatment process. As such, there will be no effluent discharged to a trap, interceptor, or treatment facility permitted under Texas Water Code, Chapter 26. Therefore, the sampling and analysis requirements of 30 TAC §330.203(c)(1) and (2) are not applicable.

- Management of contaminated water generated at the facility is discussed in Section 5.

4.5 Special Waste Acceptance and Handling Procedures

A Special Waste Acceptance Plan (SWAP) is provided in Section 10 of this SOP. The SWAP outlines the acceptance requirements and handling procedures for special wastes that are allowed for acceptance at this facility.

5. CONTAMINATED WATER MANAGEMENT

The facility shall implement necessary steps to control and prevent the unauthorized discharge of contaminated water from the facility. As noted in the Site Development Plan (Part III narrative report, Section 2), the facility is designed to manage stormwater in a controlled manner in order to not cause surface water or groundwater pollution.

Contaminated water generated by the facility will consist of wash water resulting from washing the tipping floor and, potentially, small amounts of liquids contained within the incoming waste loads (i.e., leachate). This contaminated water will be directed to a minimum 2,000-gallon (nominal) contaminated water holding tank where it will be collected and contained until properly managed. The contaminated water collected in the holding tank will be pumped as necessary into a tanker truck (properly registered hauler) for transportation to a duly-permitted off-site treatment and disposal facility that is authorized to accept this type of wastewater. The Austin Community Transfer Station will adhere to the sampling and analysis (testing) requirements of the receiving treatment facility (and associated treatment facility concentration or other parametric limit requirements of acceptance for treatment).

The discharge of stormwater from the tipping floor area will not occur. All water coming in contact with waste will be managed as contaminated water. The transfer station will be operated consistent with 30 TAC §330.15(h)(1)-(4), prohibiting the discharge of solid wastes or pollutants into waters of the United States. The facility will not discharge contaminated water without a separate, specific written authorization from TCEQ under the authority of the Texas Pollutant Discharge Elimination System (TPDES).

Uncontaminated stormwater run-on and run-off will be directed away from the transfer station building entrances by site grading. The building interior where waste is processed will not result in any storm-generated run-off since the transfer station building is completely covered. Stormwater will be managed by maintaining the stormwater patterns identified in the Site Development Plan (e.g., the Site Plan in Part III, Attachment 2) in areas outside of the transfer station building footprint.

6. STORAGE REQUIREMENTS

6.1 Solid Waste Storage

Solid waste entering the transfer station facility will be stored indoors in the covered transfer station building and inside transfer trailers awaiting transport. All solid waste will be stored in such a manner that it does not constitute a fire, safety, or health hazard, or provide food or harborage for animals and vectors, or cause odors; and will be contained to prevent windblown solid waste and litter.

The facility may designate an on-site storage area for source-separated or recyclable materials, and, if so, it will be separate from the transfer station waste tipping area and transfer vehicle loading operations.

No solid waste loading or storage will occur within any easement, buffer zone, or right-of-way that crosses the facility. On-site storage of waste will comply with the maximum storage times and volumes set forth in Section 4.2 of this SOP. Waste that is stored overnight will be in tarped transfer trailers or will be covered with a tarp on the transfer station tipping floor (except that tarping of segregated recyclable materials will not be required).

The transfer station will not recover materials from solid waste that contains putrescible materials. The transfer station will not process liquid waste.

6.2 Approved Containers

Incoming waste will be deposited onto the concrete tipping floor within the transfer station building. Waste will be transferred to transfer trailers. The transfer trailers will be maintained in a condition such that they do not create a nuisance or conditions conducive for the harborage, feeding, and propagation of vectors. The transfer trailers will be leak-proof, durable, and designed for safe handling and easy cleaning. The transfer trailers will be equipped with tarps or covers to be used during transport. These containers (mechanically handled) are designed to prevent spillage or leakage during storage, handling, and transport.

Non-reusable containers, if used, will be of suitable strength to minimize animal scavenging or rupturing during collection operations. All containers to be emptied manually will be capable of being serviced without the collector coming into contact with waste.

6.3 Citizen's Collection Station/Dropoff Area

A separate citizen's collection station/dropoff area will not be provided at the facility. Therefore, the requirements of 30 TAC §330.213 are not applicable to this facility.

6.4 Stationary Compactors

A stationary compactor will not be provided at the facility. Therefore, the requirements of 30 TAC §330.215 are not applicable to this facility.

7. FIRE PROTECTION PLAN

7.1 Fire Prevention

In order to minimize fire hazards at the facility, the following fire prevention steps or procedures will be implemented.

- Smoking is allowed only in designated areas. Smoking is specifically prohibited:
    - at fuel storage and dispensing areas;
    - at the active waste tipping and loading areas; and
    - other fire-sensitive areas.

- Fuels will be stored and dispensed only in authorized areas. Efforts will be made to contain and control fuel spills immediately upon discovery. Spilled fuel and impacted soil will be promptly collected, profiled, and properly disposed.

- The open burning of waste is prohibited at the facility.

- The facility will be equipped with fire extinguishers of a type, size, location, and number as recommended by the local fire department or the designated company fire prevention specialist. 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 a current inspection tag. Inspection and recharging will be performed following each use.

- An adequate supply of water under pressure will be available for fire-fighting purposes.

- "Hot loads" (burning waste from incoming loads) will be prevented from being dumped in the active area of the transfer station. The Facility Attendants and Equipment Operators will be alert and will observe incoming loads for signs of burning waste such as smoke, steam, or heat. The vehicle will be directed to an area outside the transfer station building where waste can be safely discharged and isolated, and the fire extinguished. Upon extinguishing the fire, the waste will be immediately moved inside the transfer station building.

7.2 General Fire-Fighting Procedures

The following general procedures will be implemented in the event of a fire.

- If it can be done safely, fires will be promptly extinguished by trained site personnel.
- If necessary:
    - Contact the local fire department by calling 911.
    - Notify the Site Manager and alert other facility personnel.
    - Assess the extent of the fire and the potential for the fire to spread.
    - If safe, attempt to contain or extinguish the fire until the local fire department arrives.
    - Direct the local fire department 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.
    - Evacuate the facility as necessary.

In general, fire-fighting methods include separating burning material from other waste and spraying the burning material with water from the wash-down hoses or using a fire extinguisher. All transfer station equipment and vehicles will be equipped with a fire extinguisher, and two additional fire extinguishers will be located in the transfer station building.

7.3 Specific Fire-Fighting Procedures

The following specific 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 outside of the facility away from fuel supplies, solid wastes, and other vehicles. The engine should be shut off and the brake engaged (or other methods implemented) to prevent movement of the vehicle or equipment. Fire extinguishers should be used to extinguish the fire, if possible without risk to the Equipment Operator.

- If a fire is on the tipping floor, the burning area should be promptly isolated and pushed away from the other waste. The burning area should be sprayed with water from the wash-down hoses, or, if small enough, extinguished with a hand-held fire extinguisher.

- If burning waste materials are discovered after having been unloaded at the transfer station, the load will be extinguished with water or by fire extinguisher, as appropriate.

- Use the fire extinguishers located in the transfer station building and equipment, or the water hoses, to extinguish a fire, as appropriate.

- The facility water supply for fighting fires is supplied by the public water supply system, via the wash-down hoses.

7.4 Fire Protection Training

Facility operations personnel (not including personnel with administrative duties only) will receive annual training in the contents of this section of the SOP. The training will include:

- review and discussion of this Fire Protection Plan;
- fire prevention and hazard awareness;
- fire safety; and
- fire-fighting procedures

Administrative personnel will receive training relating to fire prevention and hazard awareness and fire safety. Records of fire protection training will be kept in the Site Operating Record.

7.5 TCEQ Notification

If a fire is not extinguished within 10 minutes of detection, the facility will make every reasonable effort to immediately contact the TCEQ Region 11 office by phone, but not later than four (4) hours after detection. The facility will provide the Region with a written description of the fire and resulting response within 14 days of the event.

8. OPERATIONAL PROCEDURES

8.1 Access Control

Public access to the site will be limited to the gated facility entrance. The Facility Attendant controls access and monitors vehicles entering and exiting the facility. The facility perimeter is fenced to control access and prevent unauthorized access and has lockable gates. Fencing will be composed of (at minimum) a four-foot barbed wire fence or a six-foot chain-link fence or equivalent (e.g., iron or metal bar-style fencing). The operating area (i.e., the transfer station) is a building.

8.1.1 Facility Security

Facility security measures are designed to prevent unauthorized persons from entering the facility, to protect the facility and its equipment from possible damage caused by trespassers, and to prevent disruption of facility operations caused by unauthorized facility entry.

Unauthorized entry into the facility is minimized by controlling access to the site with the perimeter fence and by locking the gate at the entrance. The gate will be locked when the facility is not accepting waste and the offices are closed.

A Facility Attendant or other designated operating personnel will be on-site during operating hours and will monitor the entrance to the facility. Entry to the facility will be restricted to designated personnel, appropriate subcontractors, approved waste haulers, the public, TCEQ personnel, and properly identified persons whose entry is authorized by facility management.

8.1.2 Traffic Control

Access to the facility will be provided via the facility entrance driveway on Giles Road, and through the gates into the facility. The Facility Attendant stationed at the scales will restrict facility access to authorized vehicles, will direct waste collection vehicles appropriately, and will monitor waste vehicle traffic to ensure vehicles are following the directed route. After leaving the scale area, waste collection vehicles will drive to the tipping floor unloading area. These vehicles will deposit their loads and then depart the site. Transfer trailers will drive to the waste loadout tunnels at the transfer station building where they will be loaded before departing the site.

In addition to the Facility Attendant and other facility personnel providing traffic directions to facilitate the safe movement of vehicles at the facility (including into and out of the transfer station building), appropriate signs will be positioned at the facility to guide users and indicate where vehicles are to unload. Signs will be placed along the entrance road to direct vehicles, at a frequency/spacing that is adequate to guide users to the proper areas and identify which roads are to be used. The use of forced access lanes through barricades, flagging, or other means will be

used in conjunction with signs for the prevention of indiscriminate dumping. Roads not being used for access will be blocked or otherwise marked for no entry. Signs will also direct vehicles to the facility exit.

8.1.3 On-Site Access Roads and Parking

The entrance and the on-site roads will be all-weather surfaced (e.g., gravel, asphalt, concrete) and will have a minimum width of two-lanes. The scale area is equipped with a bypass lane in each direction (inbound and outbound). The entrance and facility roads have been designed for the expected traffic flow, to provide safe on-site access for commercial collection vehicles and the public, to avoid disruption of normal traffic patterns, and to provide safe turning radii for vehicles that utilize the facility. Vehicle parking is provided at the facility for employees and visitors, located north-northeast of the scale area (see Part III, Attachment 1, Drawing III-1-4).

Equipment parking and staging will be directed by transfer station personnel so as not to block or hinder waste collection vehicles or transfer trailers from ingress or egress to the tipping floor and loadout tunnels.

Refer to Section 8.8 of this SOP for access road dust and mud control requirements.

8.2 Unloading of Waste

8.2.1 Waste Unloading Procedures

The Facility Attendant will monitor all incoming loads of waste (see Section 8.2.2). Incoming waste hauling traffic will be directed to the tipping floor (waste unloading area) once the vehicle's incoming weight or volume has been recorded at the scale area by the Facility Attendant. As mentioned in the above section on access control, signs will be located as needed along the route to the unloading area. Waste loading and unloading operations will only occur within the transfer station building and will be confined to as small an area as practical. Safety bumpers at hoppers will be provided for vehicles.

Collection vehicles will unload solid waste within the transfer station building on the tipping floor. Equipment Operators will monitor the unloading of incoming waste (see Section 8.2.2). A front-end loader will typically push the solid waste towards the transfer trailer loading area at the loadout tunnels on the sides of the tipping floor and transfer it to transfer trailers. The facility will provide sufficient equipment to effectively operate in accordance with the operational standards required by this SOP, applicable TCEQ regulations, and applicable local, state, and federal regulations.

Unloading of waste in unauthorized areas will be prohibited. Any waste which is identified as having been deposited in an unauthorized area will be immediately moved to the unloading areas.

8.2.2 Procedures for the Detection and Prevention of Unauthorized Waste

This section provides procedures for the detection and prevention of unauthorized waste, including regulated hazardous waste as defined in 40 CFR Part 261 and polychlorinated biphenyl (PCB) wastes as defined in 40 CFR Part 761.

Prohibited waste will not be accepted at the facility. Additionally, the facility is not required to accept any solid waste that the facility determines will cause or may cause problems in maintaining full and continuous compliance with this SOP and applicable TCEQ regulations.

The Facility Attendant is the first point of contact with the hauler. The hauler will be asked to inform the Facility Attendant of the content of the load. The Facility Attendant may visually inspect containers to verify contents. In the event prohibited wastes are identified in the load, the entire load is turned away from the gate and not allowed entrance to the site. In addition, if the waste hauling vehicle is delivering special or industrial waste, facility personnel may visually compare the material presented for disposal with the waste profile form to confirm that the physical characteristics (e.g., color, odor, appearance) of the material matches that detailed on the profile. In the event that the physical characteristics of the waste differ from the approved waste stream, the waste load will be rejected.

Equipment Operators will visually monitor the unloading of waste. Should any indication of prohibited waste be detected, appropriate facility personnel will stop the unloading of the vehicle to allow facility personnel to conduct a thorough evaluation of the load. The driver will be directed to a load inspection area, where the load will be discharged from the vehicle. The load inspector 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 facility. Should any regulated hazardous waste be detected, the entire load will be rejected.

Any prohibited waste that is not discovered by the facility until after it is unloaded will be returned to the vehicle that delivered the waste. That party will be responsible for the proper disposal of this rejected waste. In the event the unauthorized waste is not discovered until after the vehicle that delivered it has departed the site, the waste will be segregated and controlled as necessary. An effort will first be made to identify the entity that deposited the prohibited waste and have them return to the facility and properly dispose of the waste. In the event that identification of the responsible party is not possible, the facility will arrange for the proper management of the waste or will notify the TCEQ and seek guidance on how to dispose of the waste.

In addition to the above procedure, incoming loads will be visually inspected on a random basis. The facility manager will be responsible for determining the random load inspection

schedule. The driver of the randomly selected load will be notified and instructed to proceed as above to a load inspection area.

The facility manager will maintain and include in the operating record the load inspection reports for randomly inspected loads. Load inspection reports, recorded on standardized forms, will be completed for each inspected load. 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.

8.3 Spill Prevention and Control

The tipping floor (unloading area) has been designed to control and contain spills and contaminated water from leaving the facility. Since the transfer station will be in a roofed-building, and because liquid wastes are not allowed to be delivered to the transfer station, only small amounts of liquids incidental to MSW may be within the materials delivered to the transfer station (i.e., precipitation from storm events will not enter the transfer station). The reinforced concrete transfer station tipping floor will be equipped with gravity drains and with walls to serve as containment of spills and wash waters. These liquids will be managed as contaminated water as described in Section 5 of this SOP.

8.4 Operating Hours

The facility will be authorized to accept waste from operator-owned or affiliated-company waste haulers and from other commercial waste hauling companies between 9:00 p.m. on Sunday through 7:00 p.m. on Saturday. Hours when the facility is open to the public may be at any times within these hours and will be posted on the facility entrance sign.

The facility will be allowed to process waste with heavy equipment, transfer it to transfer trailers, and transport waste and other materials on- or off-site any time between 9:00 p.m. on Sunday through 7:00 p.m. on Saturday.

On-site construction or maintenance activities involving heavy equipment and transport of non-waste materials on- or off-site are allowed any time between 5:00 a.m. on Monday through 9:00 p.m. on Saturday, and between 7:00 a.m. to 7:00 p.m. on Sunday.

The facility will not accept or process waste on Sundays.

Other activities not involving heavy equipment operation do not require specific approval and may be performed seven (7) days per week, 24 hours per day.

The facility may request TCEQ approval of alternate operating hours up to five (5) days in a calendar year period to accommodate special occasions, special purpose events, holidays, and other special occurrences. Also, the TCEQ Region 11 office may allow additional temporary waste acceptance hours to address disasters, emergency situations, or other unforeseen circumstances that could result in the disruption of waste management services in the area. The facility will record in the Site Operating Record the dates, times, and durations when any alternate operating hours are used.

8.5 Facility Entrance Sign

A conspicuous sign measuring at least 4-ft by 4-ft will be maintained at the entrance to the facility through which wastes are received. The sign will be readable from the facility entrance and will state, at a minimum, in letters at least three (3) inches high:

- the name of the facility;
- the facility MSW registration number.
- the type of site (i.e., Type V MSW facility);
- the hours and days of operation for waste acceptance;
- a 24-hour emergency contact phone number(s);
- the emergency phone number of the local fire department (i.e., 911); and
- facility rules (e.g., regarding prohibited wastes, stating that all loads must be properly covered or otherwise secured, etc.).

Other relevant information may also be included on the sign. Note that waste acceptance hours may differ for commercial waste haulers versus the public, and, if different, both categories of waste acceptance hours will be posted on the facility sign. In no instance will normal waste acceptance hours be outside the allowable hours for waste acceptance as set forth in Section 8.4 of this SOP.

8.6 Control of Windblown Material and Litter

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 must be enclosed or use adequate covers, such as a tarp, net, or other means, to effectively secure the load consistent with §330.235 and Section 8.7. The adequacy of covers or other means to secure incoming wastes will be checked at the facility gatehouse/scale area.

- Windblown material and litter along the entrance road that has accumulated along fences and the registration boundary and throughout the facility will be collected once a day on days that the facility is in operation and returned to the tipping floor for processing.

- The transfer station building will be a covered structure with openings (vehicle bays/doors) on the sides to facilitate the safe and efficient flow of vehicles through the facility. Unloading and loading of waste will be performed underneath the structure's roof to control windblown material and litter. The facility will provide litter control devices constructed of appropriate materials for the control of windblown material and litter, as necessary, at appropriate locations near the unloading areas and elsewhere.

8.7 Materials Along the Route to the Facility

The facility will take steps to encourage vehicles hauling waste to the facility to enclose or cover their loads with a tarpaulin, net, or other means to properly secure the load. These steps are necessary to prevent the escape of any part of the load by blowing or spilling. The facility will post a sign at the entrance notifying haulers of this requirement and associated enforcement measures. The facility will provide for the cleanup of waste materials spilled along and within the rights-of-way of the public access roads serving the facility for a distance of two miles in either direction from the entrance gate. Inspection and any necessary cleanup for the spilled materials will be performed once per day on days when the facility accepts waste. The facility will consult with TxDOT, county, and local government officials concerning cleanup of roads and rights-of-way consistent with 30 TAC §330.235.

8.8 Facility Access Roads

The facility entrance and on-site access roads will be as described in Section 8.1.3 of this SOP. Because the facility roads will have an all-weather surface, the road surfaces will serve as mud controls, and it is not anticipated that mud or other debris will be tracked onto Giles Road given the all-weather surface that will exist on the site roads.

The on-site access roads will be maintained in a reasonably mud- and dust-free condition by sweeping and/or periodic water spraying by a water truck dispatched to the site or with water obtained from the wash-down hoses, as necessary. The entrance, access, and internal roads will be maintained in a clean and safe condition. Grading and maintenance equipment will be used as needed to regrade the facility access roads to minimize depressions, ruts, and potholes.

8.9 Noise Pollution and Visual Screening

Since transfer activities will be mostly enclosed beneath the transfer station building structure, generated noise is largely confined to the transfer station facility, and waste unloading and transfer

operations are screened from the public to prevent adverse visual impacts. Additionally, the facility boundary along the public roadway (Giles Road) has a vegetated earthen berm and mature trees on top of the berm as a means of visual screening, and these features will remain in-place and be maintained.

8.10 Overloading and Breakdown

The allowable waste acceptance rate of the facility (see Section 4.2 of this SOP) will not be exceeded during the operation of the transfer station, and the waste storage volumes and times set forth in Section 4.2 of this SOP will not be exceeded. By assuring this as the registration requires, the design capacity of the facility will not be exceeded. Furthermore, the facility will not accumulate solid waste in quantities that cannot be processed within such time as will preclude the creation of odors, insect breeding, or harborage of vectors. If such accumulations occur, additional solid waste will not be received until the adverse conditions are abated.

If a significant work stoppage should occur at the facility due to a mechanical breakdown or other causes, or the facility is expected to become inoperable for a period of 24 hours or more beyond the storage periods listed in Section 4.2 of this SOP, or the facility cannot operate in accordance with this SOP, the facility will restrict the receiving of solid waste and direct incoming solid waste to other approved processing or disposal facilities. If the work stoppage is anticipated to last long enough to create objectionable odors, insect breeding, or harborage of vectors, the accumulated solid waste will be removed from the facility to an approved backup processing or disposal facility.

8.11 Sanitation

The tipping floor will be washed down at least once per week at the completion of the daily processing period, or more frequently if it is determined to be necessary to control odors within the transfer station facility. Wash waters will not be allowed to accumulate on the tipping floor; all wash water will be collected and managed as contaminated water, and properly disposed of in an authorized manner as set forth in Section 5 of this SOP.

8.12 Ventilation and Air Pollution Control

The facility is designed and will be operated to provide adequate ventilation for odor control and employee safety. Ventilation in the transfer station building will be provided by the openings through which waste hauling vehicles will enter and exit, and vents installed on the building roof. The transfer facility doors on each end of the transfer truck loadout tunnel may also be opened, if needed, for additional ventilation.

The operator will prevent nuisance odors from leaving the boundary of the facility. Misting systems (using water) may be used to suppress odors, if needed. The misting system may also be used to control odors through the addition of chemical deodorizers in the water or nonaqueous odor control systems may be utilized. Air authorization will be obtained from TCEQ as necessary for the odor control system used.

Ponded water will be controlled to avoid objectionable odors and nuisance conditions. In the event that objectionable odors do occur from any ponded water, appropriate measures shall be taken to alleviate the condition. The site will be graded to drain naturally so that stormwater will not accumulate. Any unanticipated low spots where stormwater may pond will be addressed by filling or grading.

There are no proposed process areas that recover material from any solid waste that contains putrescible wastes. Additionally, the facility will not accept liquid waste; thus, there will be no exposure of liquid waste to the air. There is also no proposed mobile waste processing unit equipment at the facility.

Prior to operations, the appropriate air permit or authorization will be obtained, and the facility will operate in accordance with applicable air permit/authorization provisions so that air emissions from the transfer station facilities do not cause or contribute to a condition of air pollution as defined in the Texas Clean Air Act.

8.13 Health and Safety

Facility personnel will be trained in accordance with the procedures and topics outlined in Section 3 of this SOP, which will include training on the facility's health and safety plan (which is addressed in Section 9 of this SOP).

8.14 Employee Sanitation Facilities

Potable water and sanitary facilities will be provided for all employees and visitors.

8.15 Facility Inspection and Maintenance Schedule

Table IV-2, presented on the following page, provides the facility inspection and maintenance schedule.

Table IV-2. Facility Inspection and Maintenance Schedule

Item	Task	Frequency	Inspector	Type of Inspection
Windblown Waste	Police working area, entrance area, and perimeter fence for loose trash. Clean up as necessary.	Daily	Site Manager or Designee	Document in the Operating Record
Materials along the Route to the Facility	Police the entrance area and public access roads for a distance of two (2) miles in either direction from the entrance for litter. Clean up as necessary.	Daily	Site Manager or Designee	Document in the Operating Record
Facility Access Roads	Inspect facility access road for damage from vehicle traffic, erosion, or excessive mud accumulation.	Weekly	Site Manager or Designee	Document in the Operating Record
Contaminated Water Holding Tank	Inspect integrity of the cover and check level in tank.	Weekly	Site Manager or Designee	Document in the Operating Record and Coordinate Contaminated Water Removal per Section 5

9. GENERAL INSTRUCTIONS

9.1 General Facility Safety

This section addresses general facility safety, and serves as a health and safety plan for the promotion of safe operations and activities at the facility. The facility may implement additional company policies regarding health and safety, but such policies are beyond the scope of this SOP.

Facility safety will be promoted by facility personnel using well-maintained equipment to perform standard work procedures. Facility safety will be enhanced by limiting access to working areas to only authorized personnel. In the event of an emergency, planned emergency response procedures will be followed.

Access to the facility will be limited to authorized personnel as described in the access control section of this SOP (Section 8.1). As indicated, access is controlled by physical barriers (i.e., fencing and lockable gates), and signage will be present to enhance access control and general facility safety. Facility personnel are responsible to be alert for the presence of unauthorized personnel or persons in prohibited areas.

In the event of an emergency, facility personnel will assess the situation, notify the Site Manager or designee, and take appropriate actions, such as rendering aid, calling for assistance, or closing access to the emergency scene. Additional measures specific to fire protection are provided in Section 7 of this SOP.

The **emergency phone number is 911**; this will be posted beside the telephone in the gatehouse.

10. SPECIAL WASTE ACCEPTANCE PLAN

10.1 Introduction

This Special Waste Acceptance Plan (SWAP) outlines the acceptance requirements and review and approval process that will be used to accept special waste. Special waste is defined by TCEQ's MSW regulations (30 TAC §330.3(148)).

- Only those special wastes specifically listed below will be accepted at this facility without prior written approval from the Executive Director.

- Dead animals and slaughterhouse waste that are incidental to routine collection of MSW and that can be systematically processed along with other solid waste.

- Drugs, contaminated foods, or contaminated beverages, other than those contained in normal household waste.

- Empty containers that have been used for pesticides, herbicides, fungicides, or rodenticides will be accepted for disposal provided the containers have been triple rinsed, crushed, or rendered unusable upon receipt at the gate.

- Incidental amounts of non-regulated asbestos-containing materials (non-RACM). The incidental amount is defined as the maximum of ten (10) percent of the waste received on an annual basis by scale weight (annual basis is defined as the latest four (4) consecutive quarters).

- Waste from oil, gas, and geothermal activities subject to regulation by the Railroad Commission of Texas when those wastes are to be processed, treated, or disposed of at a solid waste management facility. Only those wastes authorized for disposal at a solid waste management facility will be accepted.

- Waste generated outside of Texas that contains any industrial waste; any waste associated with oil, gas, and geothermal exploration, production, or development activities; or any material that is listed in the bullets above.

- Other waste than as described above and approved for acceptance by the Executive Director.

No special waste will be received at the facility unless it is compatible with the compaction and loading equipment operated at the facility or unless modifications are made to the facility to accommodate the special waste. Any changes in operations must be approved in writing by the Executive Director prior to implementation.

The following wastes will not be accepted at this facility:

- Regulated hazardous waste
- PCBs
- Liquid wastes
- Certain special wastes, including:
    - hazardous waste from conditionally exempt small-quantity generators that may be exempt from full controls under 30 TAC Chapter 335, Subchapter N (relating to Household Materials Which Could Be Classified as Hazardous Wastes);
    - Class 1 industrial nonhazardous waste;
    - untreated medical waste;
    - municipal wastewater treatment plant sludges, other types of domestic sewage treatment plant sludges, and water-supply treatment plant sludges;
    - septic tank pumpings;
    - grease and grit trap wastes;
    - wastes from commercial or industrial wastewater treatment plants; air pollution control facilities; and tanks, drums, or containers used for shipping or storing any material that has been listed as a hazardous constituent in 40 CFR, Part 261, Appendix VIII but has not been listed as a commercial chemical product in 40 CFR §261.33(e) or (f);
    - Soil contaminated by petroleum products, crude oils, or chemicals in concentrations of greater than 1,500 milligrams per kilogram total petroleum hydrocarbons; or contaminated by constituents of concern that exceed the concentrations listed in Table 1 of 30 TAC §335.521(a)(1).
    - incinerator ash;
    - used oil;
    - lead acid storage batteries; and
    - used-oil filters from internal combustion engines.

10.2 Special Waste Acceptance

Prior to being accepted at the facility, special wastes must be preapproved by the landfill that will be receiving the waste, in accordance with the receiving landfill's special waste screening and

acceptance procedures. Special waste evaluation and approval will take place prior to delivery of the waste to the transfer station. Typically, the special waste analyst for the landfill will utilize information provided by the generator (e.g., waste-specific chemical and characteristic information or process knowledge information) to determine the acceptability of a waste for disposal at the landfill. The special waste analyst will be responsible for maintaining and utilizing current regulatory guidelines and constituent limits for evaluation of wastes. The special waste analyst also will be responsible for knowing and applying applicable future changes to state and federal disposal regulations, review and acceptance procedures. This information will be provided to transfer station personnel prior to waste acceptance at the transfer station.

The preceding special waste review procedures will include the following.

- The Special Waste Profile (SWP) sheet or waste profile document will be reviewed for completeness. The SWP will typically be completed electronically through a Waste Management, Inc. portal set up for this process and may include electronic signatures. The review will include:

    - The SWP must be completely and legibly filled out by the generator of the waste with all appropriate addresses, contact names, phone and fax numbers, and signatures.

    - The "Waste Stream Information" must include sufficient information to provide the special waste analyst a clear understanding of the waste type(s), origin, shipping method, and anticipated frequency of disposal. This information will be used by the special waste analyst to compare the waste with applicable state and federal regulations. If the description is not explicit, additional information will be requested of the generator. The "Physical Characteristics of Waste" must include information on the chemical and physical properties of the waste sufficient to allow the special waste analyst to identify the waste and correlate the waste properties to applicable state and federal regulations.

    - The generator may be required to provide analytical data, safety data sheets (SDSs), or process knowledge information to the special waste analyst, showing the characteristics of the waste used as the basis to comply with 30 TAC §330.203(c)(2) and RG-003 for wastes regulated by the Railroad Commission and related wastes.

- Site Specific Evaluation - It will be confirmed that all special waste acceptance is acceptable in accordance with the following: (1) TCEQ and local regulations and (2) permit conditions of the receiving landfill. The special waste analyst may request additional information from the generator before rendering a decision. This may include additional analytical, process description, MSDS, or other applicable information.

As noted in Section 8.2.2 of this SOP, facility personnel may visually compare the material presented for disposal to the SWP to confirm that the physical characteristics (i.e., color, odor, and appearance) or manifest description of the material match those detailed on the SWP. In the event that the waste differs from the approved waste stream, the waste load will be held at the gate while the discrepancy is investigated and resolved; or if it cannot be resolved, the load will be rejected. The generator will be notified of the reasons for rejecting the load. Additional process information and/or chemical analyses may be required to further characterize the waste.

In accordance with 30 TAC §330.219(b)(6), the facility will maintain in the Site Operating Record all documents, manifests, shipping documents, trip tickets, etc., involving special waste.

10.3 Special Waste Operating Procedures

The transfer station facility will exercise appropriate care and safeguards when processing special wastes. Specific handling/disposal procedures are detailed in Table IV-3 for the special wastes that will be processed at this facility.

Drivers of transfer trucks containing special waste will provide the required documentation to the receiving landfill concerning the special waste contained within the transfer trailer. The receiving landfill will be responsible to ensure the transferred special waste is disposed of in accordance with the landfill's permit.

Table IV-3. Special Waste Processing Procedures

Special Waste Type	Special Handling Procedures
Slaughterhouse waste and dead animals	Slaughterhouse waste consisting primarily of plant trash, shipping and packaging waste will be accepted. Also, dead animals that are incidental to routine collection of municipal solid waste and that can be systematically processed along with other solid waste will be accepted at this facility. This waste may contain some animal remains; however, this facility will not accept bulk quantities of dead animals or animal remains in a specific shipment or load. All slaughterhouse waste, including contaminated packaging materials, and dead animals will be processed upon receipt or covered with a minimum of three feet of solid waste until it is processed into transfer trailers. The tipping floor and equipment will be cleaned at the end of each day when special waste containing dead animals or slaughterhouse waste is processed.
Drugs and contaminated foods that are not considered controlled substances	These wastes will be processed into transfer trailers promptly upon receipt. Operators will observe unloading and loading of these waste materials to ensure no scavenging or salvaging of the waste. The tipping floor and equipment will be cleaned at the end of each day when special waste of this type is processed.
Empty containers, including paper, cardboard, and metal; that have been used for pesticides, herbicides, fungicides, or rodenticides	These containers will be processed in the transfer station upon receipt. These containers will not be allowed to accumulate on the tipping floor. All containers received will be handled in accordance with Title 30 TAC Â§330.171 and will be triple rinsed prior to arrival. If containers cannot be processed upon receipt they will be crushed with the loader and rendered unusable.
Incidental amounts of non-regulated asbestos-containing materials (non-RACM)	Loads of primarily non-RACM will be transferred directly from the tipping floor of the transfer station into the transfer trailers. The front-end loader will not attempt to compact or travel over the non-RACM. These procedures will minimize the handling of non-RACM so that the integrity of the material is maintained.

Special Waste Type	Special Handling Procedures
Selected waste from oil, gas, and geothermal activities subject to regulation by the Railroad Commission of Texas	This waste will be accepted at this facility provided the incoming loads are delivered in quantities that will allow the waste to be processed safely and efficiently along with other solid waste. In addition, prior to acceptance at the transfer station, waste acceptance approval information from the landfill that will dispose of this waste will be obtained. The approval information will include all applicable information used to characterize this material. No liquids or sludges will be accepted. This waste material will only be accepted if the requirements set forth in TCEQ RG-003 are met.
Wastes generated outside the boundaries of Texas that contain any industrial waste; any waste associated with oil, gas, and geothermal exploration, production, or development activities; or any other special waste that is accepted at the transfer station	This waste shall be handled in accordance with the provisions outlined above and as indicated within this Special Waste Acceptance Plan for each specific type of waste.