### PART III, ATTACHMENT 7 CLOSURE PLAN

Hawthorn Park Recycling and Disposal Facility
Houston, Harris County, Texas
TCEQ Permit MSW-2185A

### Owner/Site Operator/Permittee:



USA Waste of Texas Landfills, Inc. 24275 Katy Freeway, Suite 450 Katy, Texas 77494



Submitted By:



GOLDER ASSOCIATES INC. Professional Engineering Firm Registration Number F-2578

INTENDED FOR PERMITTING PURPOSES ONLY

Golder Associates Inc. 14950 Heathrow Forest Pkwy, Suite 280 Houston, TX 77032 USA Professional Engineering Firm Registration Number F-2578

Submitted: February 2021 Project No. 1894269

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GOLDER ASSOCIATES INC. Professional Engineering Firm Registration Number F-2578

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### 1.0 INTRODUCTION

This Closure Plan has been developed for the Hawthorn Park Recycling and Disposal Facility (referred to hereinafter as "Hawthorn Park RDF," or "facility," "landfill," or "site"), located in Harris County, Texas. This plan addresses the requirements of 30 Texas Administrative Code (TAC) §330.63(h) and Chapter 330, Subchapter K for closure of a municipal solid waste (MSW) landfill. A copy of this plan will be placed in the facility's Site Operating Record.

The Hawthorn Park RDF is an existing 171.6-acre Type IV MSW landfill facility owned and operated by USA Waste of Texas Landfills, Inc. (USA Waste) under Permit No. MSW-2185. The facility is located at 10550 Tanner Road, approximately 500 feet east of Beltway 8 (Sam Houston Parkway), north of Tanner Road in Houston, Harris County, Texas.

The facility will receive MSW as specified in the Site Operating Plan in Part IV. This Closure Plan includes a description of the steps that will be undertaken to close each filled disposal unit, a general schedule for final closure, a description of the final cover system, and the methods used to install the cover. Information supplemental to this Closure Plan, such as design drawings and a description of groundwater and methane monitoring system design, are included elsewhere in the Site Development Plan.

Per the Permit Amendment Application (PAA), the proposed Hawthorn Park RDF expansion area includes a Type IV landfill that was constructed with final cover and closed, and that completed post-closure care approved by the Texas Natural Resource Conservation Commission (TNRCC), now TCEQ, on May 1, 2000 (see Appendix III-7A). This area is summarized in Table III-7-1 below. Other waste areas under the current Hawthorn Park permit (Permit No. MSW-2185) are considered active and have not been constructed with final cover.

Table III-7-1: Areas with Completion of Post-Closure Care

Description	Area	Date
Watts/Tanner Type IV Landfill (Permit No MSW-1135)	10.2 acres	May 1, 2000

The proposed expansion under the PAA joins the existing West Block, Center Block, East Block waste disposal areas permitted under Permit No. MSW-2185, and the closed landfill previously permitted under Permit No. MSW-1135, and proposes a vertical expansion of all existing waste disposal areas. These areas are shown on Figure III-3-1, in Attachment 3 of Part III.

### 2.0 FINAL COVER

### 2.1 Final Cover Design

The final cover system is designed to meet the requirements of 30 TAC §330.453(a)-(c).

The final landfill contours and final cover details are provided on Figures III-7-1 and III-7-2. Landfill cross-sections are included as Figures III-7-3.1 through III-7-3.4. The remaining final cap will consist of 4 horizontals to 1 vertical (4H:1V) side slopes to an elevation of approximately 215 feet above mean sea level (ft-msl) for the main crown and 153 ft-msl for the southeast crown. The upper portions of the final cover are sloped at a minimum 4% grade to a maximum elevation of approximately 227 (max elevation) ft-msl and 157 ft-msl for the main crown and southeast crown, respectively.

Add-on berms intercept run-off from the top surface and along the side slopes of the cover and direct the run-off to downchutes. These downchutes convey rainfall run-off down the side slopes to the perimeter channels. The perimeter ditches route the stormwater run-off to an existing detention pond. Details of the surface water management features are included in Part III, Attachment 2.

The final cover will be constructed in accordance with 30 TAC §330.453(a) and (b). The final cover shall be composed of no less than two (2) feet of soil:

- The first eighteen (18) inches or more of cover shall be of clayey soil, classification sandy clay (SC) or low plasticity clayey (CL) as defined in the "Unified Soils Classification System" developed by the United States Army Corps of Engineers, compacted in layers of no more than six (6) inches to minimize the potential for water infiltration.
  - A high plasticity clayey (CH) soil may be used; however, this soil may experience excessive cracking and shall therefore be covered by a minimum of twelve (12) inches of topsoil to retain moisture. Other types of soil may be used with prior written approval from the executive director.
- The final six (6) inches of cover shall be of suitable topsoil that can sustain native plant growth and shall be seeded or sodded immediately following the application of the final cover in order to minimize erosion.

The first layer of final cover system is referred in this plan as the infiltration layer.

Details for the proposed and existing final cover designs are depicted on Figure III-7-2.

### 2.2 Final Cover Installation Procedure

Site preparation activities will include removing grass/vegetation to the root zone in areas where intermediate cover exists. Any temporary erosion control features that were constructed on the intermediate cover will be removed in the area where the final cover is to be constructed. The subgrade will be graded

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and prepared in a manner to allow proper construction of the 18-inch-thick infiltration layer. Waste or clean fill material may be used to bring the subgrade to the proper grades.

The 18-inch infiltration layer will be placed in nominal 9-inch loose lifts of material that is free of foreign material. The material will be compacted into layers of no more than 6 inches.

An erosion layer consisting of a minimum 6 inches of earthen material that can support native vegetation growth will be installed on the final cover surfaces. The 6-inch erosion layer will be placed in a manner not to be detrimental to the cohesive soil cover and graded to the final elevations shown on Figure III-7-1.

### 2.2.1 Final Cover Installed During Site Operations

In the course of landfill operations, final cover may be installed. It is anticipated that these soils will meet final cover requirements. Rather than remove soils placed as part of landfill operations, in-place cover soils placed by site personnel during operations will be tested to verify if the existing in-place cover soil meets the final cover design requirements. This procedure will allow verification of the infiltration layer installation without removing and reconstructing the portions of the final cover system completed by site personnel.

An independent licensed engineer experienced in geotechnical engineering and soils testing, or his designated representative, will obtain samples and perform testing of in-place soils to verify:

- In-place soils consist of SC, CL, or CH soils;
- 2. A minimum of 18-inches of the in-place soils has been placed as the infiltration layer; and
- 3. A minimum of 6 inches of soils (12 inches if the infiltration layer consists of CH soils) has been placed as the vegetative cover layer.

Soil samples will be collected continuously from the existing top of final cover soils to the top of landfilled waste at a frequency of no less than one sample location per acre of evaluation area using a hand auger, a geoprobe, by pushing sampling tube with a bulldozer/excavator, or by other similar methods. The location and the elevation of the sample locations will be determined using surveying methods. The boreholes will be backfilled with bentonite or a cement-bentonite grout tremied into the borehole from the bottom to the top of the existing final cover soils.

Atterberg Limits (ASTM D4318) and percent passing the number 200 sieve (ASTM D1140), will be performed to determine if the in-place soils consist of SC, CL, or CH soils according to ASTM D2487 (soil classification). The soil testing will be performed at a frequency of no less than one set of tests per acre. Based on the results of the soil testing and field sampling, the thickness of the in-place soils at the soil sample locations will be evaluated to determine if the minimum 18-inch infiltration layer and the vegetative cover layer has been provided.

Results of the Final Cover System Evaluation (FCSE) will be included in the Final Cover System Certification Report (FCSCR), which will be submitted to the TCEQ.

### 2.2.2 Final Cover Installed by a Third-Party Contractor

Final cover may be placed by a third-party contractor in areas that have not received final cover during operations or in areas where the evaluation of the final cover installed as part of operations indicates the in-place final cover does not meet final cover design requirements.

The 18-inch compacted clay soil layer will be placed over existing waste and an erosion layer consisting of a minimum 6 inches of earthen material that is capable of sustaining native plant growth will be installed. The erosion layer will be placed in a manner not to be detrimental to the compacted clayey soil layer and graded to the final elevations shown on Figure III-7-1. The erosion layer will be a minimum 6-inches thick if the clay soils are classified as SC or CL clays. The erosion layer will be a minimum of 12-inches thick if the clay soils are classified as CH clays.

An independent licensed engineer experienced in geotechnical engineering and soils testing, or his designated representative, will obtain soils for testing after placement by the third-party contractor.

Soil samples will be collected continuously from the top of constructed infiltration layer soils to the top of landfilled waste at a frequency of no less than one sample location per acre of final cover using a hand auger, a geoprobe, by pushing sampling tube with a bulldozer/excavator, or by other similar methods. The location and the elevation of the sample locations will be determined using surveying methods. The sample locations will be backfilled with bentonite or a cement-bentonite grout tremied into the borehole from the bottom to the top of the existing final cover soils.

Atterberg Limits (ASTM D4318) and percent passing the number 200 sieve (ASTM D1140), will be performed to determine if the in-place soils consist of SC, CL, or CH soils according to ASTM D2487 (soil classification). The soil testing will be performed at a frequency of no less than one set of tests per acre, and the tests will be evenly distributed through the lifts. Based on the results of the soil testing and field sampling, the thickness of the in-place soils at the soil sample locations will be evaluated to determine if the minimum 18-inch infiltration layer and the minimum appropriate thickness (i.e. 6 or 12 inches) vegetative cover layer has been provided.

Results of the Final Cover System Evaluation (FCSE) will be included in the Final Cover System Certification Report (FCSCR), which will be submitted to the TCEQ.

### 2.3 Vegetation

To minimize erosion, the final cover surface will be seeded or sodded immediately following application of the final cover. Bermuda or a native grass mix is recommended for permanent vegetative cover. Naturally occurring grasses and wildflowers may also be used. A temporary cover of rye grass, winter wheat, or other cool-weather vegetation may also be used. These vegetative species generate root depths that are less than the soil depths on top of the infiltration layer, or less than 6 inches. During the early stages of vegetative growth, mulching, slope soil regrading, and mowing will be performed, as required, to promote erosion control. Temporary or permanent erosion control materials (e.g., mulches, containment meshes, geomatting systems, etc.) may be used to minimize erosion and aid the establishment of vegetation.

### 2.4 Soil Loss

Soil erosion losses for various slopes representing worst-case conditions were analyzed. The results indicate that, for these worst-case slopes, the erosion losses will be less than 3.0 tons/acre/year. These calculations are presented in Part III, Attachment 2, Appendix III-2E.

Best Management Practices (BMPs) will be utilized at the site to ensure minimal erosion losses. BMPs will include proper seeding techniques, diverting stormwater, managing overland flow, trapping sediment in channelized flow, controlling erosive velocity impacts through channel protection, and preventing the tracking of mud by constructing adequate access roads. Additional information regarding the surface water run-off system and design is available in Part III, Attachment 2.

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Hawthorn Park Recycling and Disposal Facility Permit Amendment Application TCEQ Permit MSW-2185A Part III, Attachment 7, Closure Plan

### 3.0 MAXIMUM INVENTORY OF WASTES

The total estimated airspace of the Hawthorn Park RDF is approximately 19,510,000 cubic yards. This volume figure represents the total volume available for in-place solid waste and daily and intermediate cover soils.

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### 4.0 MAXIMUM CLOSURE AREA

Based on the maximum closure area of the current operational fill (provided as Figure III-7-4), the largest area estimated to require final cover should unforeseen circumstances occur that would force closure of the site during the active life is approximately 129.8 acres. This area includes the active face and areas with daily or intermediate cover in place.

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### 5.0 CLOSURE COMPLETION SCHEDULE

Final facility closure is planned to commence when the permitted disposal capacity has been exhausted; however, closure could commence prior to completely exhausting the permitted disposal capacity if it becomes necessary to close the facility at an earlier time.

In accordance with 30 TAC §330.5(a)(2), USA Waste will follow the closure requirements described in 30 TAC §330.453. Implementation of this this Closure Plan will be consistent with the following schedule:

- In accordance with §330.461(a), <u>no later than 90 days before final site closure begins</u>, public notice for the final closure of the facility will be published in the newspaper with the largest circulation in the area of the facility. The name, address and location of the facility, the permit number, and the last date that waste will be received are to be included in the published notice. Adequate copies of the approved closure and post-closure plan will be provided for public review.
- In accordance with §330.461(b), USA Waste will post a minimum of one sign at the main entrance notifying all persons who may utilize the facility of the date of closing for the entire facility and the prohibition against further receipt of waste materials after the stated date.

In accordance with 30 TAC §330.461(c)(1) and (2), USA Waste will provide the following within 10 days after completion of final closure activities at the facility:

- Affidavit to the Public and Certified Notation on the Deed:
  A certified copy of an "affidavit to the public" will be submitted to the TCEQ in accordance with 30 TAC §330.19 and a copy will be placed in the Site Operating Record. In addition, USA Waste will record a certified notation of the deed to the facility property, that will in perpetuity notify any potential purchaser of the property that the land has been used as a landfill and that future uses of the land are restricted according to the provisions specified in 30 TAC §330.465. A certified copy of the modified deed will be submitted to the TCEQ, and a copy will be placed in the site's operating record.
- Professional Engineer Final Closure Certification: USA Waste will submit to the TCEQ a documented certification, signed by an independent licensed professional engineer, verifying that final closure has been completed in accordance with this Closure Plan. The submittal to the TCEQ will include all applicable documentation necessary to certify final closure. Once approved, the certification will be placed in the Site Operating Record.

After acceptance of the final closure certification, post-closure care maintenance will begin immediately upon the date of final closure as approved by the TCEQ. All post-closure land use will comply with 30 TAC §330.463(a), and as indicated in the Post-Closure Plan included in Part III, Attachment 8.

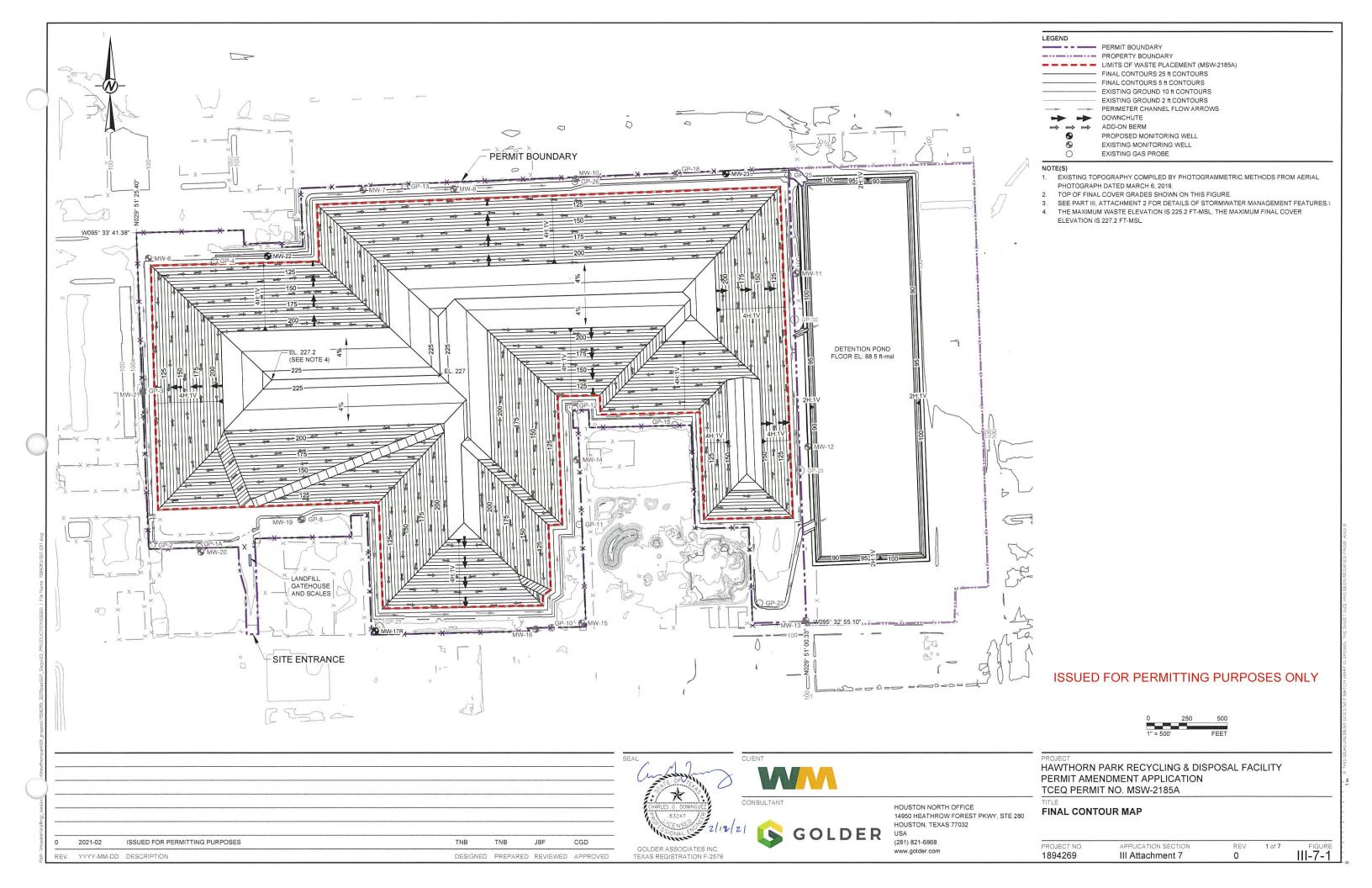
### 6.0 CLOSURE OF STORAGE AND PROCESSING UNITS

Closure for the storage and processing units at the site is addressed as follows:

- Large Item Salvage/White Goods Staging Area: Large items/white goods stored on-site at the time of closure will be transported off-site for recycling or disposal at an authorized facility.
- Wood Recyclable Materials Staging and Processing Area: Recyclable wood materials stored on-site at the time of closure will be used on-site if need, or transported off-site for use.
- C&D Recyclable Materials Staging and Processing Area: Recyclable materials stored onsite at the time of closure will be used on-site if need, or transported off-site for use.

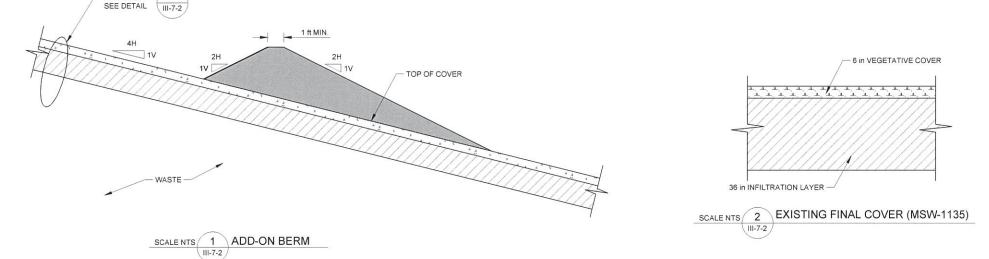
If there is evidence of a release from a storage and processing unit, the TCEQ may require an investigation into the nature and extent of the release and an assessment of measures necessary to correct an impact to groundwater.

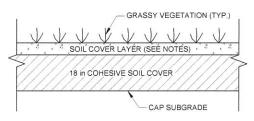
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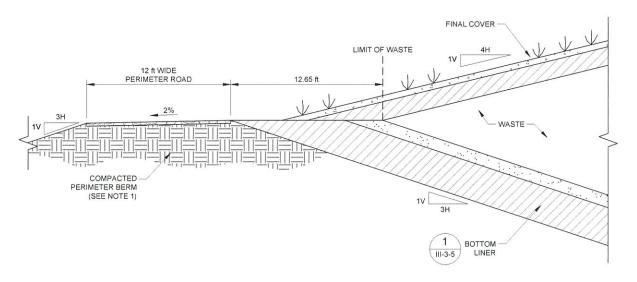
### NOTE(S)

1. THE SOIL COVER LAYER WILL CONSIST OF A SINGLE PROTECTIVE/EROSION LAYER WITH A MINIMUM 6-INCH THICKNESS WHEN OVERLYING A COHESIVE COVER WITH A USCS CLASSIFICATION OF SC AND CL, OR MINIMUM 12-INCH THICKNESS WHEN OVERLYING A COHESIVE SOIL COVER WITH A USCS CLASSIFICATION OF SC AND CL.



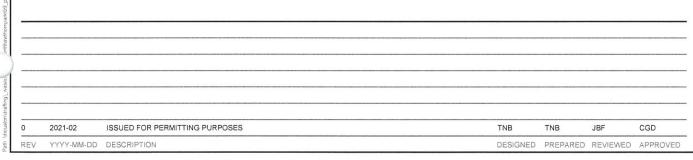


SCALE NTS 3 PROPOSED FINAL COVER | III-7-2



SCALE NTS 4 TYPICAL LANDFILL PERIMETER

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FINAL COVER 3





GOLDER

HOUSTON NORTH OFFICE 14950 HEATHROW FOREST PKWY, STE 280 HOUSTON, TEXAS 77032

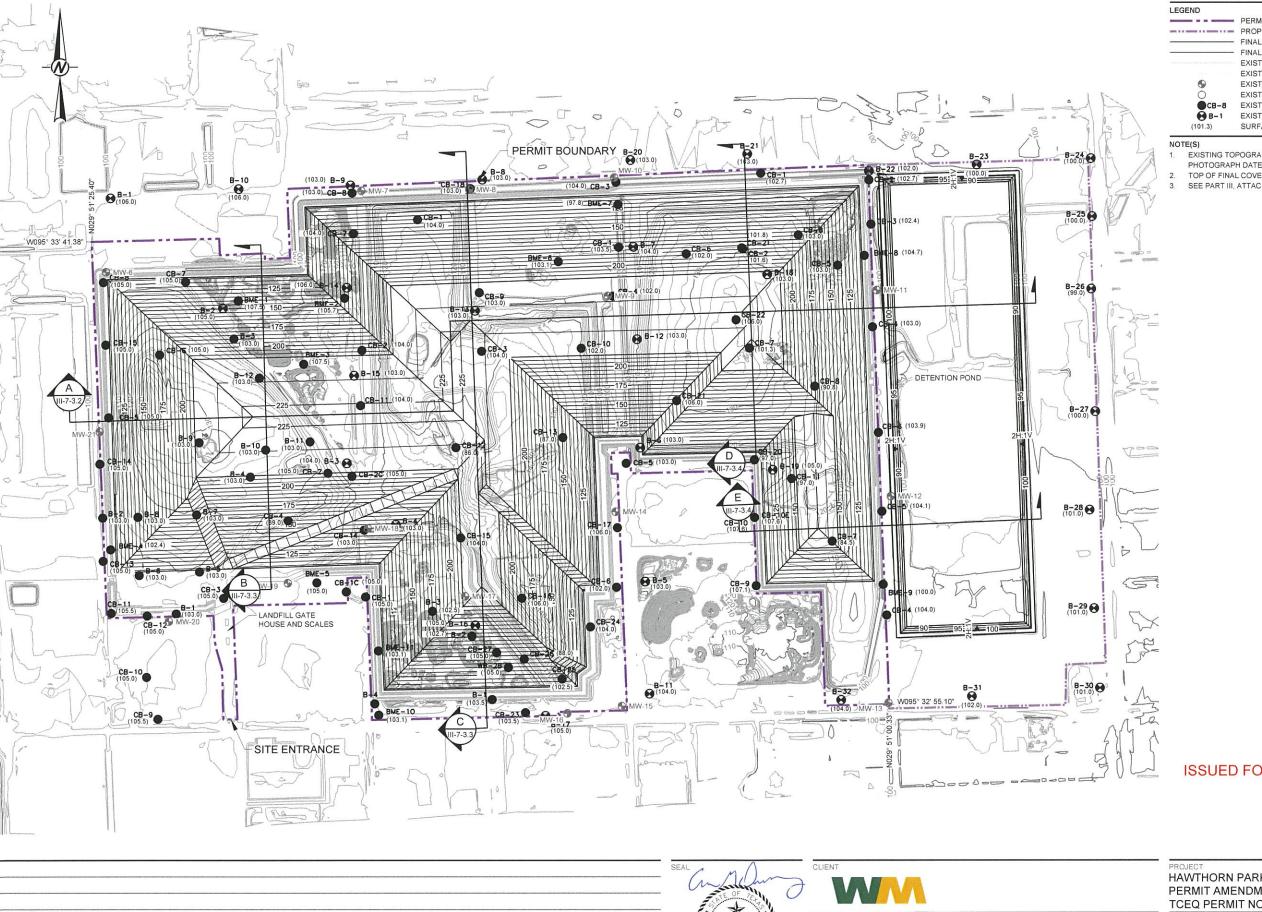
(281) 821-6868 www.golder.com

HAWTHORN PARK RECYCLING & DISPOSAL FACILITY PERMIT AMENDMENT APPLICATION TCEQ PERMIT NO. MSW-2185A

FINAL COVER DETAILS

ROJECT NO.	APPLICATION SECTION	R
894269	III Attachment 7	0

REV. 2 of 7



JBF

DESIGNED PREPARED REVIEWED APPROVED

CGD

GOLDER ASSOCIATES INC. TEXAS REGISTRATION F-2578

ISSUED FOR PERMITTING PURPOSES

2021-02

REV. YYYY-MM-DD DESCRIPTION

LEGEND PERMIT BOUNDARY ----- PROPERTY BOUNDARY FINAL CONTOURS 25 ft CONTOURS FINAL CONTOURS 5 ft CONTOURS EXISTING GROUND 10 ft CONTOURS EXISTING GROUND 2 ft CONTOURS EXISTING MONITORING WELL EXISTING GAS PROBE EXISTING SOIL BORING EXISTING GEOPHYSICAL BORING SURFACE ELEVATION

> EXISTING TOPOGRAPHY COMPILED BY PHOTOGRAMMETRIC METHODS FROM AERIAL PHOTOGRAPH DATED MARCH 6, 2019.

TOP OF FINAL COVER GRADES SHOWN ON THIS FIGURE.
SEE PART III, ATTACHMENT 2 FOR DETAILS OF STORMWATER MANAGEMENT FEATURES.

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HAWTHORN PARK RECYCLING & DISPOSAL FACILITY PERMIT AMENDMENT APPLICATION TCEQ PERMIT NO. MSW-2185A

FILL CROSS-SECTION LOCATION MAP

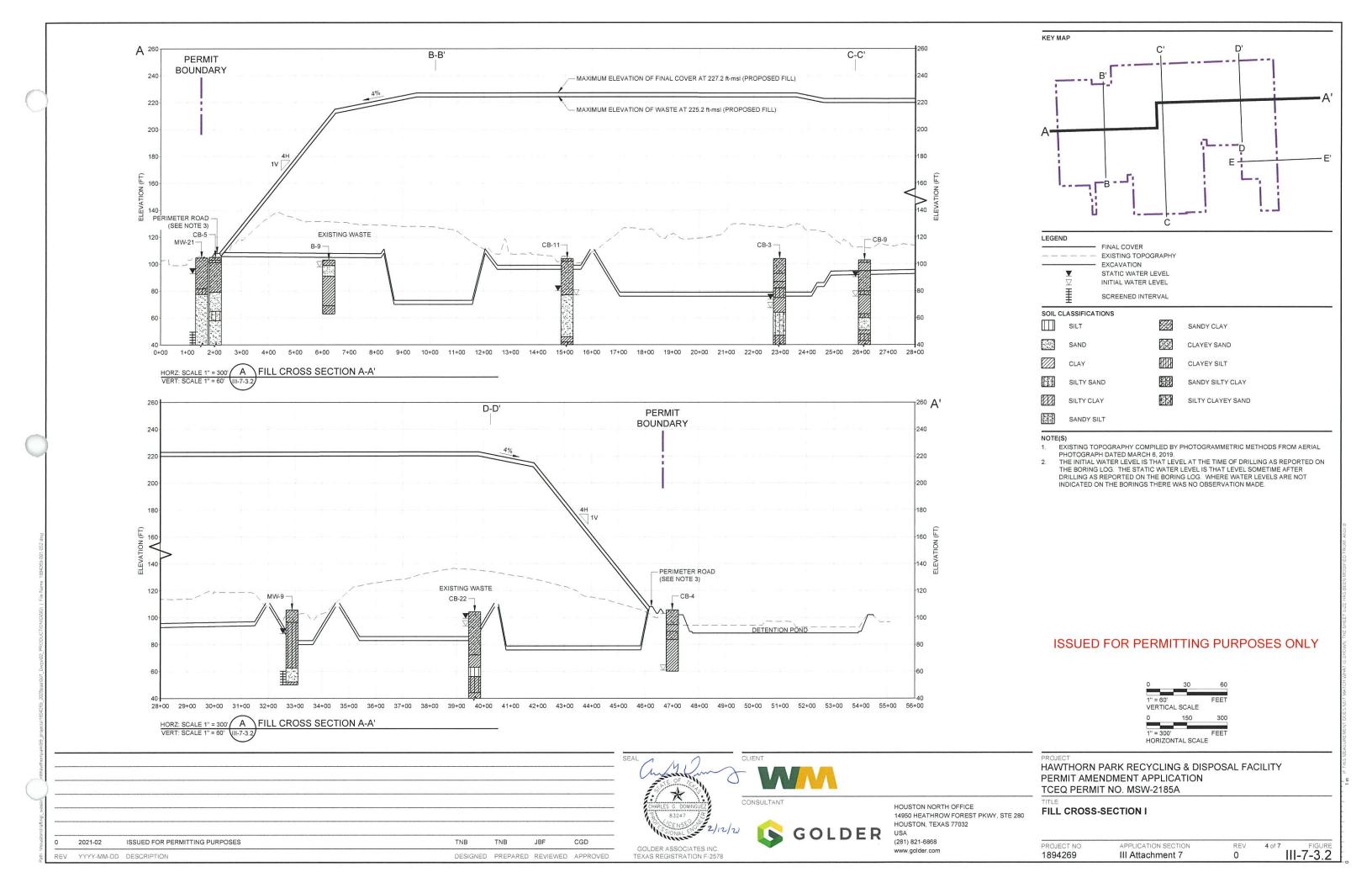
HOUSTON NORTH OFFICE 14950 HEATHROW FOREST PKWY, STE 280

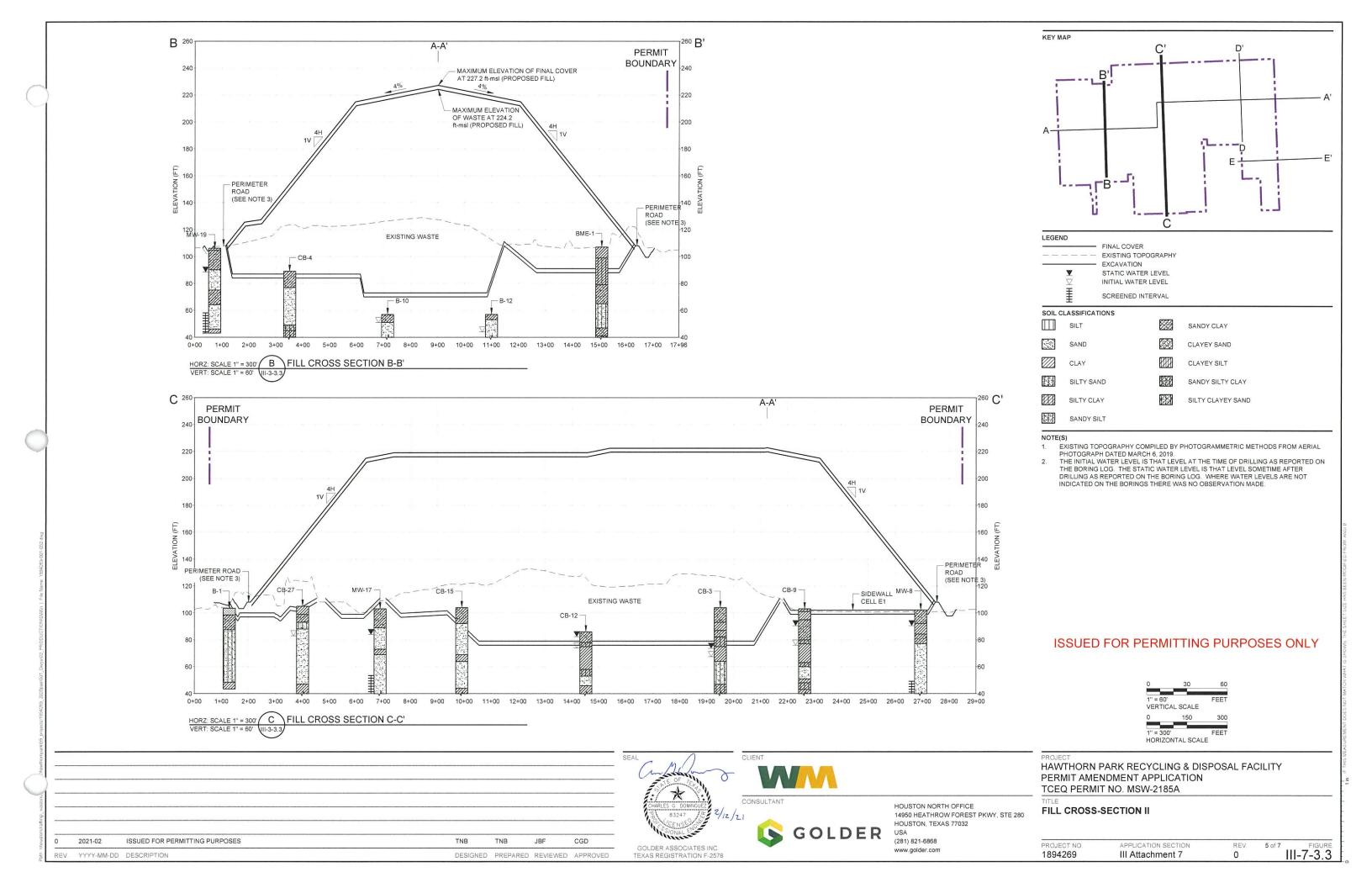
HOUSTON, TEXAS 77032 USA (281) 821-6868

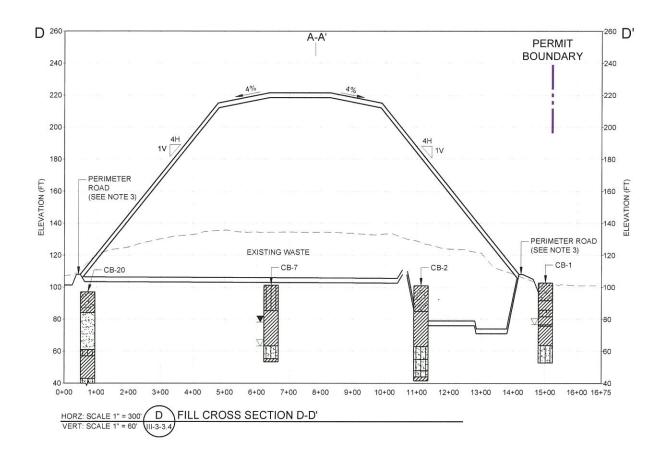
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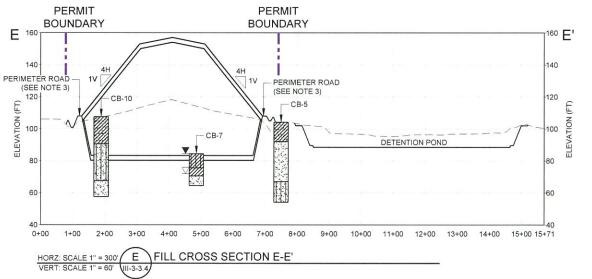
GOLDER

1894269	III Attachment 7	0	- 11	l-7-3.1
PROJECT NO.	APPLICATION SECTION	REV.	3 of 7	FIGURE









DESIGNED PREPARED REVIEWED APPROVED

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REV. YYYY-MM-DD DESCRIPTION



TEXAS REGISTRATION F-2578

HOUSTON NORTH OFFICE 14950 HEATHROW FOREST PKWY, STE 280 HOUSTON, TEXAS 77032

# KEY MAP

_EGEND		
	- FINAL COVER	
	EXISTING TOPOGRAPHY	
	- EXCAVATION	
•	STATIC WATER LEVEL	
$\nabla$	INITIAL WATER LEVEL	
ቜ	SCREENED INTERVAL	

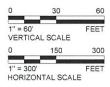


### NOTE(S)

- 1. EXISTING TOPOGRAPHY COMPILED BY PHOTOGRAMMETRIC METHODS FROM AERIAL
- EXISTING TOPOGRAPHY COMPILED BY PHOTOGRAMMETRIC METHODS FROM AERIAL PHOTOGRAPH DATED MARCH 6, 2019.

  THE INITIAL WATER LEVEL IS THAT LEVEL AT THE TIME OF DRILLING AS REPORTED ON THE BORING LOG. THE STATIC WATER LEVEL IS THAT LEVEL SOMETIME AFTER DRILLING AS REPORTED ON THE BORING LOG. WHERE WATER LEVELS ARE NOT INDICATED ON THE BORINGS THERE WAS NO OBSERVATION MADE.

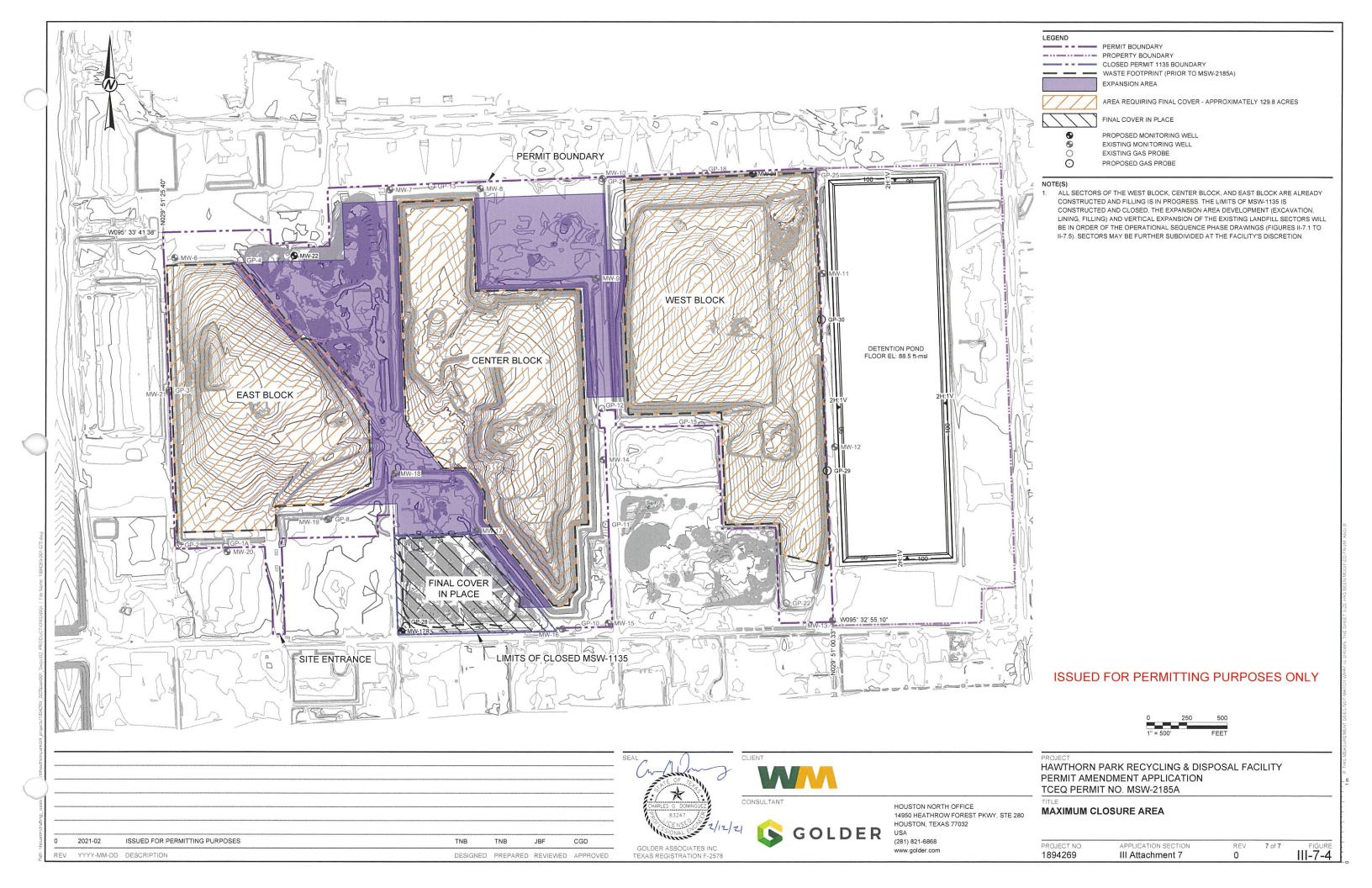
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HAWTHORN PARK RECYCLING & DISPOSAL FACILITY PERMIT AMENDMENT APPLICATION TCEQ PERMIT NO. MSW-2185A

FILL CROSS-SECTION III

1894269	III Attachment 7	0	II	1-7-3.4
PROJECT NO.	APPLICATION SECTION	REV.	6 of 7	FIGUR



## PART III, ATTACHMENT 7 APPENDIX III-7A TNRCC FINAL COVER ACCEPTANCE LETTER FOR MSW-1135

Robert J. Huston, *Chairman*R. B. "Ralph" Marquez, *Commissioner*John M. Baker, *Commissioner*Jeffrey A. Saitas, *Executive Director* 



### TEXAS NATURAL RESOURCE CONSERVATION COMMISSION

Protecting Texas by Reducing and Preventing Pollution

May 1, 2000

SANIFILL OF TEXAS, INC PO BOX 803828 HOUSTON, TEXAS 77280

Subject: Completion of Post-Closure Care Period and Permit Expiration, Permit No. 01135

### Dear Landfill Permittee:

A recent research of the Texas Natural Resource Conservation Commission (TNRCC), Municipal Solid Waste central records reveal the subject municipal solid waste (MSW) facility has completed the post-closure care maintenance requirements established by rules in effect during the operational life of this site. Therefore, this site is eligible to exit the post-closure care maintenance period.

As this site has satisfied all post-closure care maintenance requirements, the permit for this facility has now expired by its own terms. No additional waste disposal activities may be conducted at this site unless they are authorized by a new MSW permit.

Your cooperation in maintaining this closed site is greatly appreciated. Any future maintenance problems that arise are the Permittee's responsibility to correct as soon as practical.

If you have any questions concerning this matter, please contact the Municipal Solid Waste Permits Section at 512/239-6724.

Sincerely,

Dorca Zaragoza-Stone, Manager

MSW Permits Section Waste Permits Division

DZS/lcs