

**ATASCOCITA RECYCLING AND DISPOSAL FACILITY
HARRIS COUNTY, TEXAS
TCEQ PERMIT APPLICATION NO. MSW 1307D**

PERMIT AMENDMENT APPLICATION

**PART III:
Attachment D – Waste Management Unit Design**

Volume 3

Prepared for



Waste Management of Texas

September 2010

Prepared by



BIGGS & MATHEWS ENVIRONMENTAL
1700 Robert Road, Suite 100 ♦ Mansfield, Texas 76063 ♦ 817-563-1144

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VOLUME 3 OF 5

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TEXAS BOARD OF PROFESSIONAL ENGINEERS
FIRM REGISTRATION No. F-256

TEXAS BOARD OF PROFESSIONAL GEOSCIENTISTS
FIRM REGISTRATION No. 50222

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VOLUME 3 OF 5

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PART III FACILITY INVESTIGATION AND DESIGN

Attachment D – Waste Management Unit Design



9/13/2010

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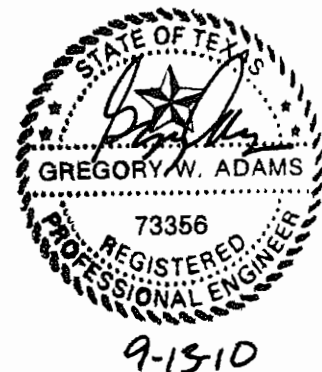
PERMIT AMENDMENT APPLICATION

**PART III – FACILITY INVESTIGATION AND DESIGN
ATTACHMENT D
WASTE MANAGEMENT UNIT DESIGN**

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1 LANDFILL UNIT DESIGN

30 TAC §330.63(d)(4)

The landfill unit design includes the all weather operation, landfilling methods, landfill design parameters, site life projection, landfill cross sections, and the liner and final cover quality control plans for the Atascocita Recycling and Disposal Facility (RDF), as discussed below.

1.1 All Weather Operation

30 TAC §330.63(d)(4)(A)

The landfill interior access roads (see Attachment D1 – Landfill Unit Design – Site Layout Plan) are constructed of crushed stone, gravel, concrete rubble, masonry rubble, wood chips, or other similar materials to provide access to the disposal area during all weather conditions. To enhance operating efficiency during wet weather, a disposal area close to the all weather roads may be reserved for wet weather operations. The wet weather area will move as operations progress.

Site personnel will maintain the landfill access road for all weather access. Stockpiles of crushed stone, gravel, concrete rubble, masonry demolition debris, wood chips or other similar material will be available for use in maintaining passable access roads. Grading equipment or other appropriate equipment will be used, as necessary, to control or remove mud accumulations on the landfill access roads around the landfill and the landfill entrance road.

Tracking of mud onto public access roads is minimized by the all weather surfaces of the interior access roads and the landfill entrance road. The landfill entrance road is a 36-foot-wide concrete paved roadway and provides mud control for waste hauling vehicles prior to exiting the site and returning to public access roads. Additional mud control is provided by the truck wheel wash located near the gatehouse.

1.2 Landfilling Methods

30 TAC §330.63(d)(4)(B)

The development method for the landfill is a combination of area-excitation fill followed by aerial fill to the proposed landfill completion height. Six sectors, each consisting of multiple cells, will be developed and filled.

The drawings in Attachment D1 depict existing site conditions, excavation, final fill height, drainage structures, and entrance facilities. Final excavation side slopes will not be steeper than 3H:1V, the aerial fill side slopes will be approximately 4H:1V, and the aerial fill top slope will vary from about 2 to 6 percent. Final cover placement will generally follow the sequence of development as shown in Part II, Appendix IIA, and will

be ongoing as the site is developed. Sectors will be closed according to the closure plan provided in Part III, Attachment H – Closure Plan.

1.3 Landfill Design Parameters

30 TAC §330.63(d)(4)(C)

The 647 permitted acres will include 424 acres for waste disposal and 223 acres of buffer and other non-fill areas. The elevation of deepest excavation will be 11.7 feet msl and the maximum elevation of final cover will be 255 feet msl. The maximum elevation of disposed waste will be 252 feet msl.

1.4 Site Life Projection

30 TAC §330.63(d)(4)(D)

Once expanded, the total remaining landfill volume available for waste disposal is approximately 49,400,000 cubic yards (waste and daily cover), which will provide an estimated 26 years of site life. Calculations and assumptions for the waste volume and site life estimate are included in Attachment D4.

1.5 Landfill Cross Sections

30 TAC §330.63(d)(4)(E) and (F)

Cross sections of the landfill unit are provided in Attachment D2. These sections show the proposed excavation; bottom, side slope, and aerial fill elevations; the permitted fill elevations; the existing ground elevations; and the liner and cover system elevations. The soil borings, monitoring wells, and gas monitoring probes near the section have been projected onto the section. The section locations were selected to represent the conditions across the entire site.

1.6 Liner Quality Control Plan

30 TAC §330.63(d)(4)(G)

A quality control plan for the composite liner system prepared in accordance with §330.339 is provided in Attachment D7. The components of the composite liner system are listed from top to bottom in Table D-1. Details of the composite liner system are provided in Attachment D3.

**Table D-1
Atascocita RDF
Components of the Composite Liner System**

Liner System Component	Description	Thickness
Protective Cover	General earthfill	24 inches
Leachate Collection Layer	Single-sided geocomposite on floor Double-sided geocomposite on side slopes	0.25 inches
Geomembrane Liner	Smooth HDPE geomembrane on floor Textured HDPE geomembrane on side slopes	60 mil
Compacted Soil Liner	Compacted soil with a coefficient of permeability less than or equal to 1×10^{-7} cm/sec	24 inches

1.7 Final Cover Quality Control Plan

30 TAC §330.457

A quality control plan for the final cover system is provided in Attachment D8. Details of the final cover system are provided in Attachment D3. The components of the final cover system are listed from top to bottom in Table D-2.

**Table D-2
Atascocita RDF
Components of the Final Cover System**

SUBTITLE D FINAL COVER		
Cover System Component	Description	Thickness
Erosion Layer	Soil that is capable of sustaining native plant growth	18 inches
Drainage Layer	Geotextile on the top slopes Double-sided geocomposite on side slopes	varies
Flexible Membrane Cover (FMC)	Smooth LLDPE or HDPE geomembrane on top slopes Textured LLDPE or HDPE geomembrane on side slopes	40 mils (LLDPE) 60 mils (HDPE)
Infiltration Layer	Compacted soil with a maximum coefficient of permeability less than or equal to 1×10^{-5} cm/sec	18 inches
PRE-SUBTITLE D FINAL COVER		
Cover System Component	Description	Thickness
Erosion Layer	Soil that is capable of sustaining native plant growth	6 inches
Infiltration Layer	Compacted soil with a maximum coefficient of permeability less than or equal to 1×10^{-7} cm/sec	18 inches

2 STORAGE AND TRANSFER UNITS

30 TAC §330.63(d)(1)(A) and (B)

The storage and transfer units will be designed for the rapid processing and minimum detention of solid waste at the facility and will be managed to prevent nuisances and fire hazards. The design of the storage and transfer units will be sufficient to control and contain a worst-case spill or release from the units and the unenclosed areas associated with the units, and will account for precipitation from the 25-year, 24-hour rainfall event for the facility in Harris County, Texas. The storage and transfer units include the large item storage area, citizen's disposal facility, liquid stabilization facility, the leachate storage tanks, and the truck wheel wash.

2.1 Large Item Storage

A storage area for large items and white goods may be provided near the active working face, typically over lined landfill cells. Large items and white goods include ovens, dishwashers, freezers, air conditioners, and other large items. Any rainfall runoff or runoff from this area will be contained within the active area and handled as contaminated water, as discussed in Part IV – Site Operating Plan. The large items and white goods are transferred into steel roll-off containers for storing until transport to an off-site recycler. The roll-offs will be covered with tarps to prevent rainfall from accumulating inside the containers. These items will be recycled to prevent a nuisance and to preclude discharge, but will not be stored in excess of 180 days. Large items that are not recycled will be disposed of at the working face. The procedures for the acceptance, storage, processing, and disposal of large items are addressed in Part IV – Site Operating Plan.

2.2 Reusable Materials Staging Area

Inert materials such as brick, concrete, asphalt, shingles, etc., are often received and staged at the facility for use as roadbase materials for facility access roads and staging areas or erosion control in drainage structures. The reusable materials staging area will be located above existing lined areas and will be relocated periodically as the active working face moves. The size of the stockpiles may vary depending on the amount of inert materials received at any given time. Since these materials are inert, runoff and runoff from rainfall will not be controlled in a special manner. Also, since these materials will continuously be reused for site operations, there is no time limit on the storage of these materials.

2.3 Citizen Disposal Facility

A citizen drop-off area may be provided within the citizen disposal facility/solidification facility, as shown in Attachment D1, Drawing D1.5. The covered unloading area may be used as an unloading area for citizens. The unloading area will include a minimum of two (2) roll-off boxes for collection of solid waste. The maximum time the waste will remain in this area is one week. The Atascocita RDF will transport the collected waste to the active working face for disposal. All citizen disposal collection activities will be conducted under the facility roof; therefore, contaminated water will not be generated.

2.4 Liquid Stabilization

Sludges, grease trap waste, grit trap waste, Class 2 or Class 3 liquid industrial waste, liquid waste from drilling activities, or liquid wastes from municipal sources may be accepted at the Atascocita RDF; refer to Part IV, Appendix IVC – Special Waste Acceptance Plan. The facility may perform on-site liquid processing/stabilization of sludges, grease trap wastes, grit trap wastes, Class 2 or Class 3 liquid industrial wastes, or liquids from municipal sources.

The existing solidification facility will receive material requiring solidification. Trucks will discharge directly into the concrete basin. Lime, fly ash, cement kiln dust, Portland cement, sawdust, dirt, auto fluff, or any combination of these materials may be used for liquid stabilization. Mixing will be accomplished with a backhoe or other appropriate machinery. Each batch of stabilized material will be tested for free liquids in accordance with Method 9095 (Paint Filter Liquids Test), as described in "Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods" (EPA Publication Number SW-846), as amended. Upon verification of the stabilized material passing the paint filter test, the mixture will be removed from the basin and deposited in the active face for landfilling. The procedures for acceptance, processing, and stabilizing liquid wastes accepted at the facility are addressed in Part IV – Site Operating Plan.

The liquid stabilization facility is a three-sided, covered facility with a reinforced concrete floor slab and basin. The open end is the entrance area for trucks unloading and for mixing equipment. The unloading area will be cleaned once per week when in use by sweeping with a rotary broom. The processing area is covered; therefore, rainfall will not create contaminated runoff. Wash water will be directed to the stabilization basin for stabilization with other materials for disposal in the landfill. The structure is open on one end, and is also equipped with wall louvers and particulate control equipment. Refer to Attachment D1, Drawing D1.5.

2.5 Leachate Storage Facility

Primary leachate storage will be provided by the leachate sumps, which are located within each landfill cell. Leachate will be pumped from the sumps to transport trucks or to an existing on-site leachate storage facility through a leachate forcemain. The

Atascocita RDF will continually evaluate the leachate production rate to determine if and when the existing leachate storage tank will be used.

The existing leachate storage tank is located in the entrance facility area as shown in Attachment D1, Drawing D1.5. The storage facility consists of one 65,000-gallon storage tank. The calculations in Appendix D6-D demonstrate that the secondary containment provides containment for a maximum allowable storage of 51,700 gallons of leachate and precipitation from the 25-year, 24-hour storm event. Therefore, storage will not exceed approximately 80 percent of the storage tank capacity, which has a maximum storage volume of 65,000 gallons, in order for the secondary containment area to accommodate a worst-case release. The Atascocita RDF will recirculate leachate or transport to an off-site POTW from the leachate storage tank, not to exceed storage volume available.

If additional or replacement on-site storage tanks are needed, a permit modification consistent with 30 TAC §305.70(j)(19) for changes to an existing leachate collection system or other request for authorization will be submitted prior to installing the leachate storage facility. The storage tanks will be sized to provide leachate storage plus the contaminated water anticipated to be generated by the 25-year, 24-hour storm event. Secondary containment will be provided surrounding the leachate storage tank(s) providing storage volume for the leachate tank(s) and the 25-year, 24-hour storm event to accommodate the worst-case release.

2.6 Truck Wheel Wash

The truck wheel wash station is a reinforced concrete structure that may be used to further minimize tracking onto public roads, as necessary. Water from the wheel wash will be collected and stored in a concrete settlement basin for reuse in the wheel wash. Periodically, the settlement basin will be drained and the sediment will be removed from the basin, or the sediments within the settlement basin will be solidified in place and then removed from the basin. The wash water may be hauled to an authorized off-site facility for treatment and disposal if not solidified in place. The sediment, following solidification and passing the paint filter test, will be disposed of in the landfill. Refer to Attachment D1, Drawing D1.5 for the truck wheel wash location.

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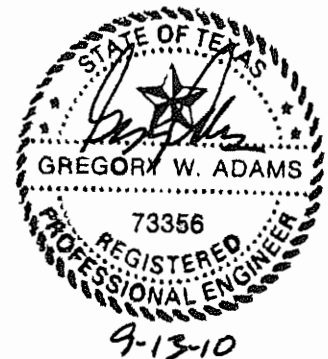
PERMIT AMENDMENT APPLICATION

**PART III – FACILITY INVESTIGATION AND DESIGN
ATTACHMENT D1
LANDFILL UNIT DESIGN – SITE LAYOUT PLAN**

Prepared for

Waste Management of Texas, Inc.

September 2010



Prepared by

BIGGS & MATHEWS ENVIRONMENTAL

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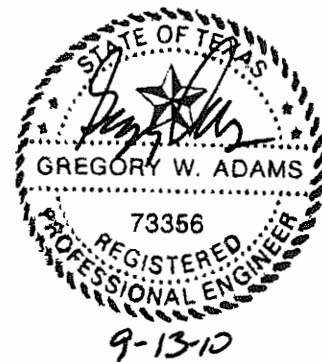
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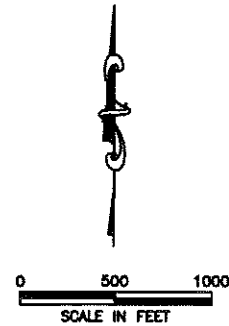
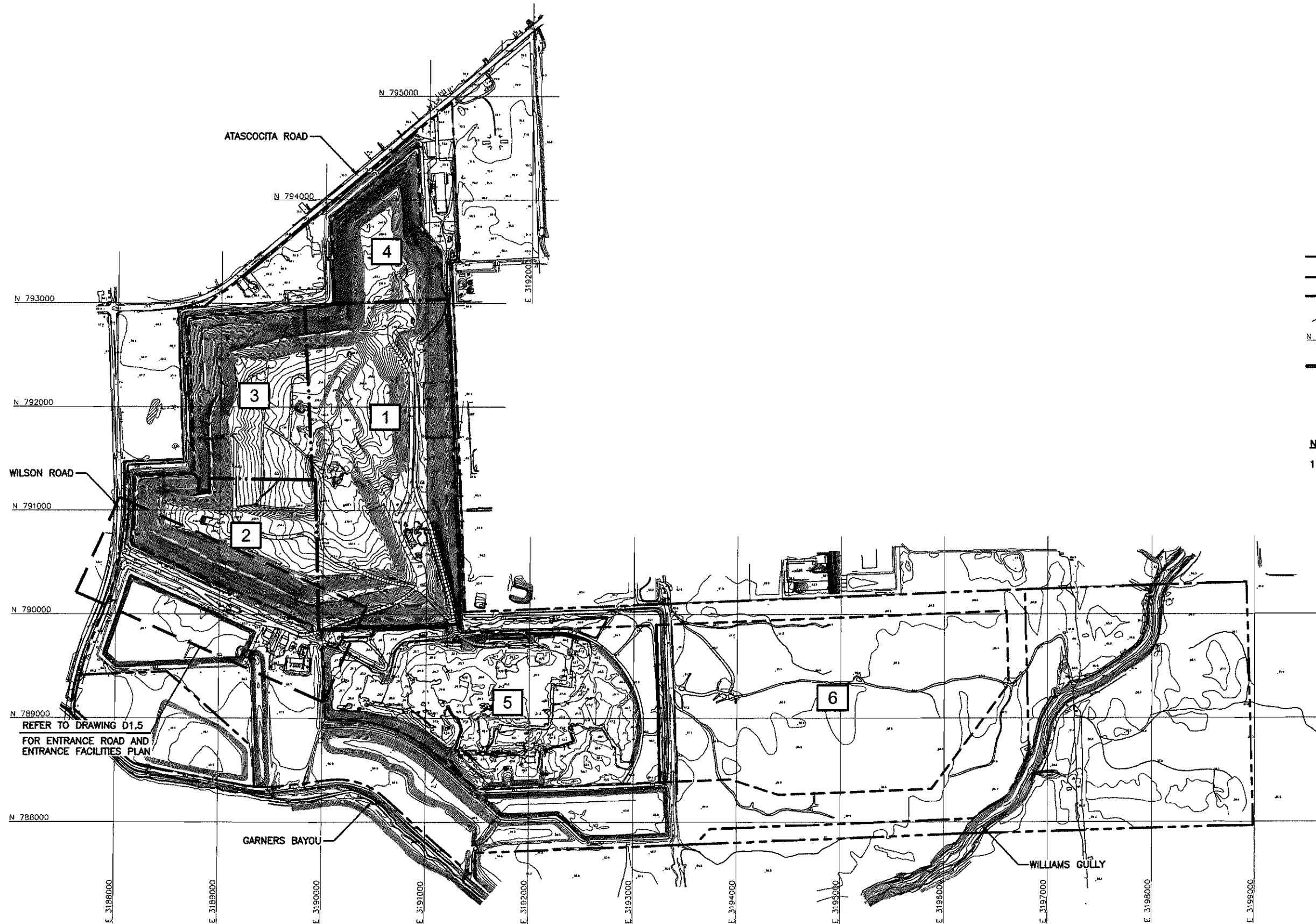
CONTENTS

30 TAC §330.63(d)

- D1.1 – General Site Plan
- D1.2 – Site Layout Plan
- D1.3 – Excavation Plan
- D1.4 – Landfill Completion Plan
- D1.5 – Entrance Road and Entrance Facilities Plan
- D1.6 – Landfill Road Details



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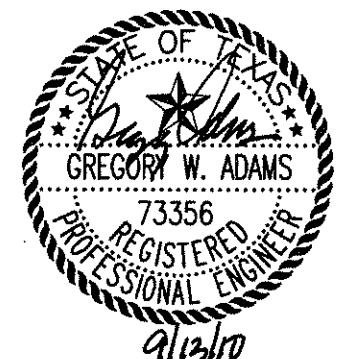
LEGEND

- PERMIT BOUNDARY
- PROPERTY BOUNDARY
- FOOTPRINT FOOTPRINT
- 60 EXISTING CONTOUR
- N. 6753000 STATE PLANE GRID
- PHASE BOUNDARY
- 2 PHASE DESIGNATION

NOTE:

1. EXISTING CONTOURS AND ELEVATIONS COMPILED BY DALLAS AERIAL SURVEYS FROM AERIAL SURVEY FLOWN APRIL 13, 2009.

REFER TO DRAWING D1.5
FOR ENTRANCE ROAD AND
ENTRANCE FACILITIES PLAN



GENERAL SITE PLAN

WASTE MANAGEMENT OF TEXAS, INC.
ATASCOCITA RECYCLING AND DISPOSAL FACILITY
MAJOR PERMIT AMENDMENT

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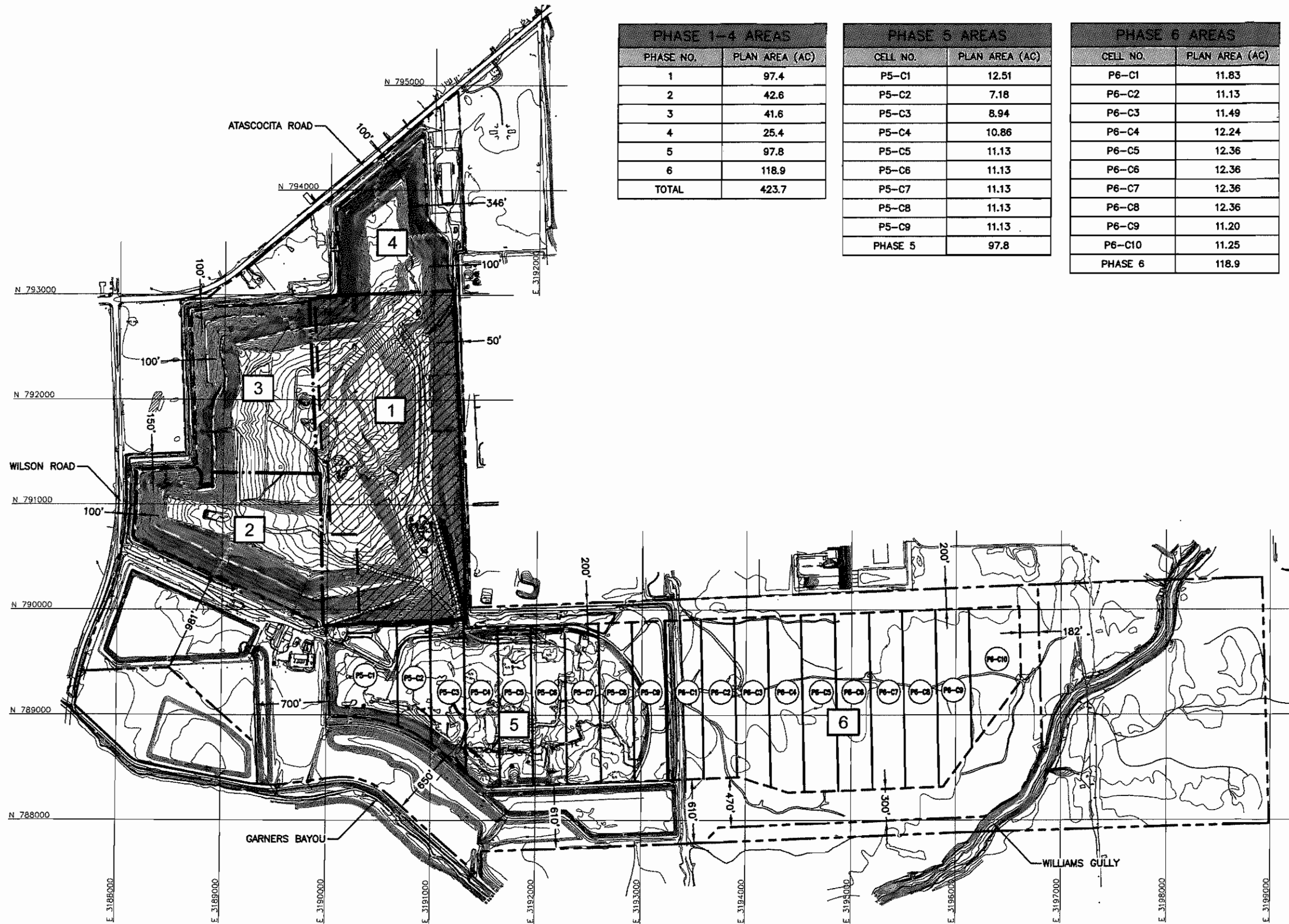
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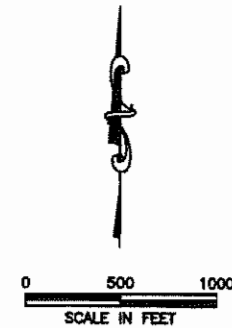
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PHASE 1-4 AREAS	
PHASE NO.	PLAN AREA (AC)
1	97.4
2	42.6
3	41.6
4	25.4
5	97.8
6	118.9
TOTAL	423.7

PHASE 5 AREAS	
CELL NO.	PLAN AREA (AC)
P5-C1	12.51
P5-C2	7.18
P5-C3	8.94
P5-C4	10.86
P5-C5	11.13
P5-C6	11.13
P5-C7	11.13
P5-C8	11.13
P5-C9	11.13
PHASE 5	97.8

PHASE 6 AREAS	
CELL NO.	PLAN AREA (AC)
P6-C1	11.83
P6-C2	11.13
P6-C3	11.49
P6-C4	12.24
P6-C5	12.36
P6-C6	12.36
P6-C7	12.36
P6-C8	12.36
P6-C9	11.20
P6-C10	11.25
PHASE 6	118.9

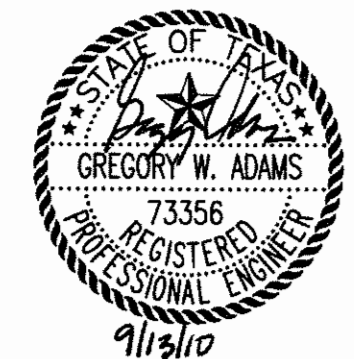


LEGEND

- LANDFILL PERMIT BOUNDARY
- PROPERTY BOUNDARY
- LANDFILL FOOTPRINT
- ~ 60 ~ EXISTING CONTOUR
- N 6753000 STATE PLANE GRID
- ▨ PRE-SUBTITLE D LINED AREA
- P5-C1 TRENCH/CELL DESIGNATION
- PHASE BOUNDARY
- 2 PHASE DESIGNATION

NOTE:

- EXISTING CONTOURS AND ELEVATIONS COMPILED BY DALLAS AERIAL SURVEYS FROM AERIAL SURVEY FLOWN APRIL 13, 2009.



SITE LAYOUT PLAN

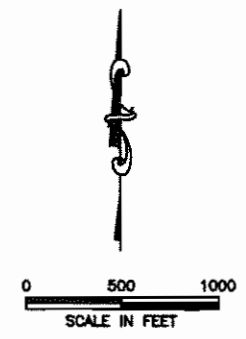
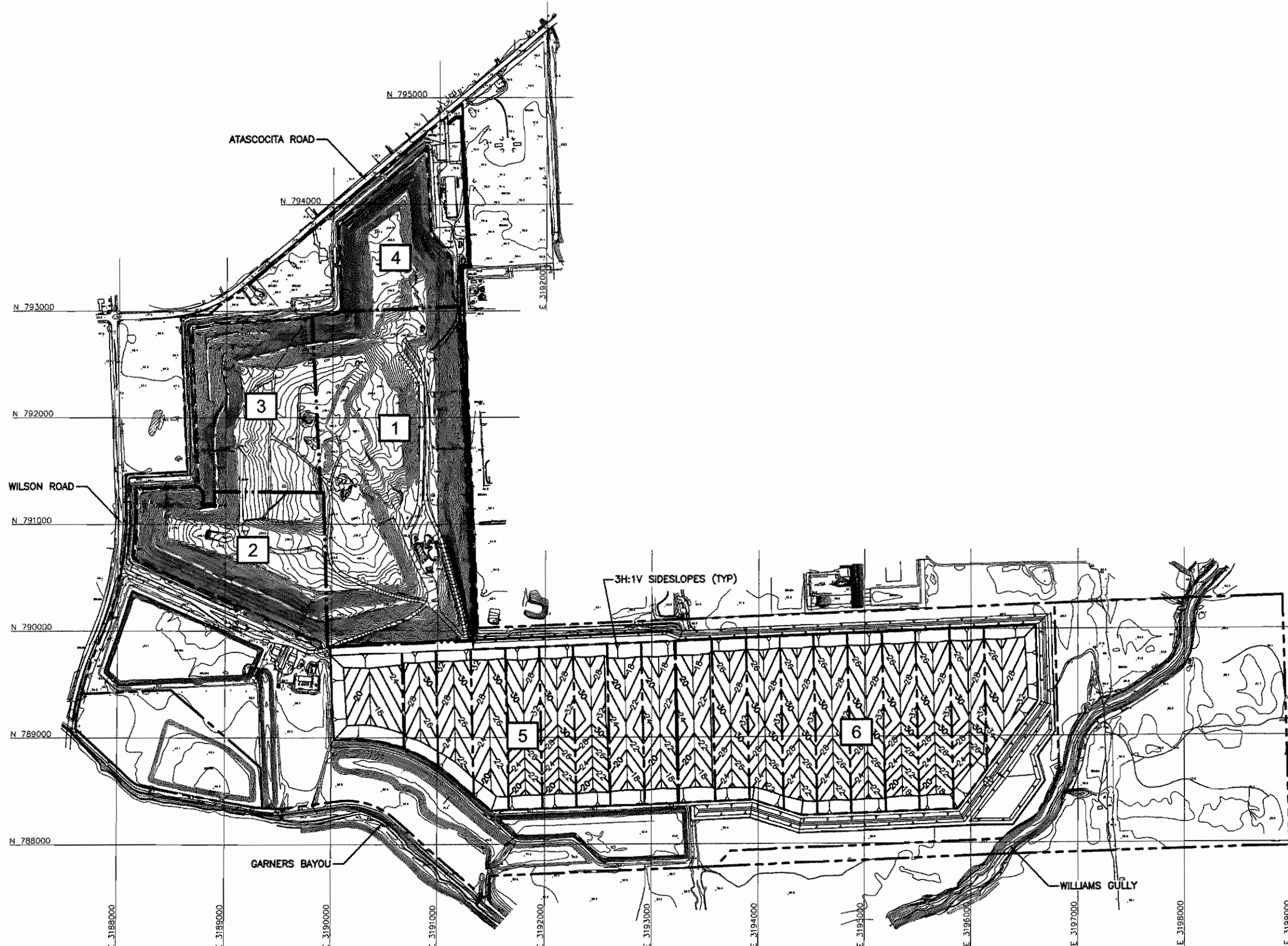
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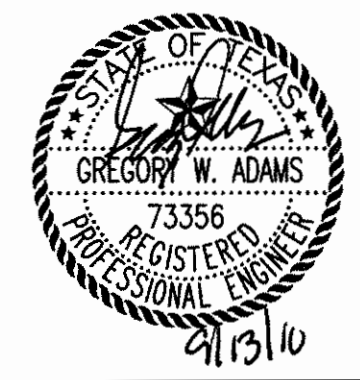
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- LEGEND**
- PERMIT BOUNDARY
 - - - PROPERTY BOUNDARY
 - LANDFILL FOOTPRINT
 - 60 --- EXISTING CONTOUR
 - N 6753000 --- STATE PLANE GRID
 - 24--- PROPOSED EXCAVATION CONTOUR
 - *--- PHASE BOUNDARY
 - 2 PHASE DESIGNATION

- NOTE:**
1. EXISTING CONTOURS AND ELEVATIONS COMPILED BY DALLAS AERIAL SURVEYS FROM AERIAL SURVEY FLOWN APRIL 13, 2009.
 2. PROPOSED EXCAVATION CONTOURS DEPICT LINER SUBGRADE (EXCAVATION) GRADES.
 3. ELEVATION OF DEEPEST EXCAVATION AT BOTTOM OF LEACHATE COLLECTIONS SUMPS - CELLS P5-C8, P5-C9 AND P6-C1: 11.69 FT-MSL.
 4. PHASE 1 HAS EXISTING PRE-SUBTITLE D AND SUBTITLE D LINER SYSTEMS.
 5. PHASES 2-4 HAVE EXISTING SUBTITLE D LINER SYSTEMS.



EXCAVATION PLAN

WASTE MANAGEMENT OF TEXAS, INC.
ATASCOCITA RECYCLING AND DISPOSAL FACILITY
MAJOR PERMIT AMENDMENT

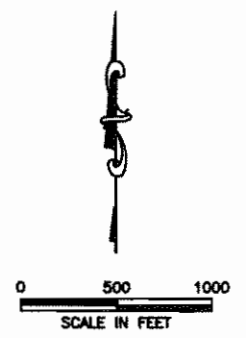
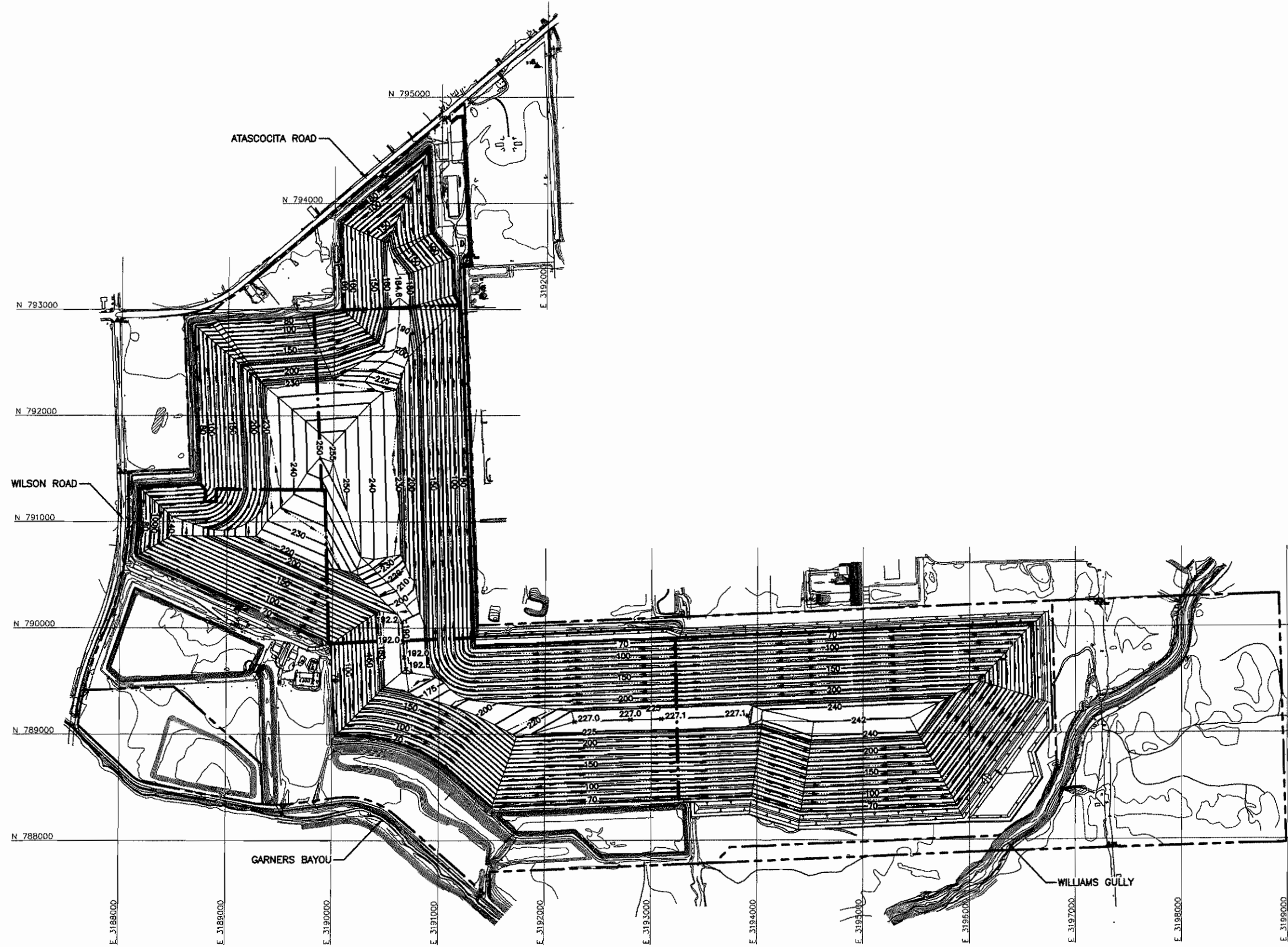

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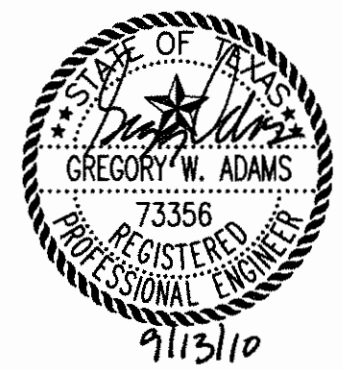
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- LEGEND**
- PERMIT BOUNDARY
 - PROPERTY BOUNDARY
 - WASTE DISPOSAL FOOTPRINT
 - 60 EXISTING CONTOUR
 - 100 FINAL COVER CONTOUR
 - N 6253000 STATE PLANE GRID

- NOTE:**
1. EXISTING CONTOURS AND ELEVATIONS COMPILED BY DALLAS AERIAL SURVEYS FROM AERIAL SURVEY FLOWN APRIL 13, 2009.
 2. PROPOSED CONTOURS DEPICT TOP OF FINAL COVER.
 3. MAXIMUM FINAL COVER ELEVATION: 255 FT-MSL
MAXIMUM WASTE FILL ELEVATION: 252 FT-MSL



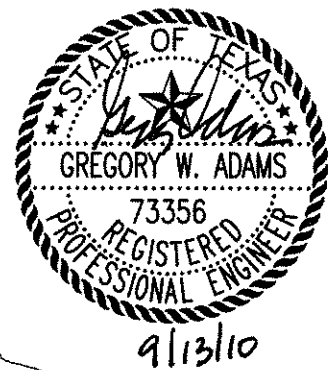
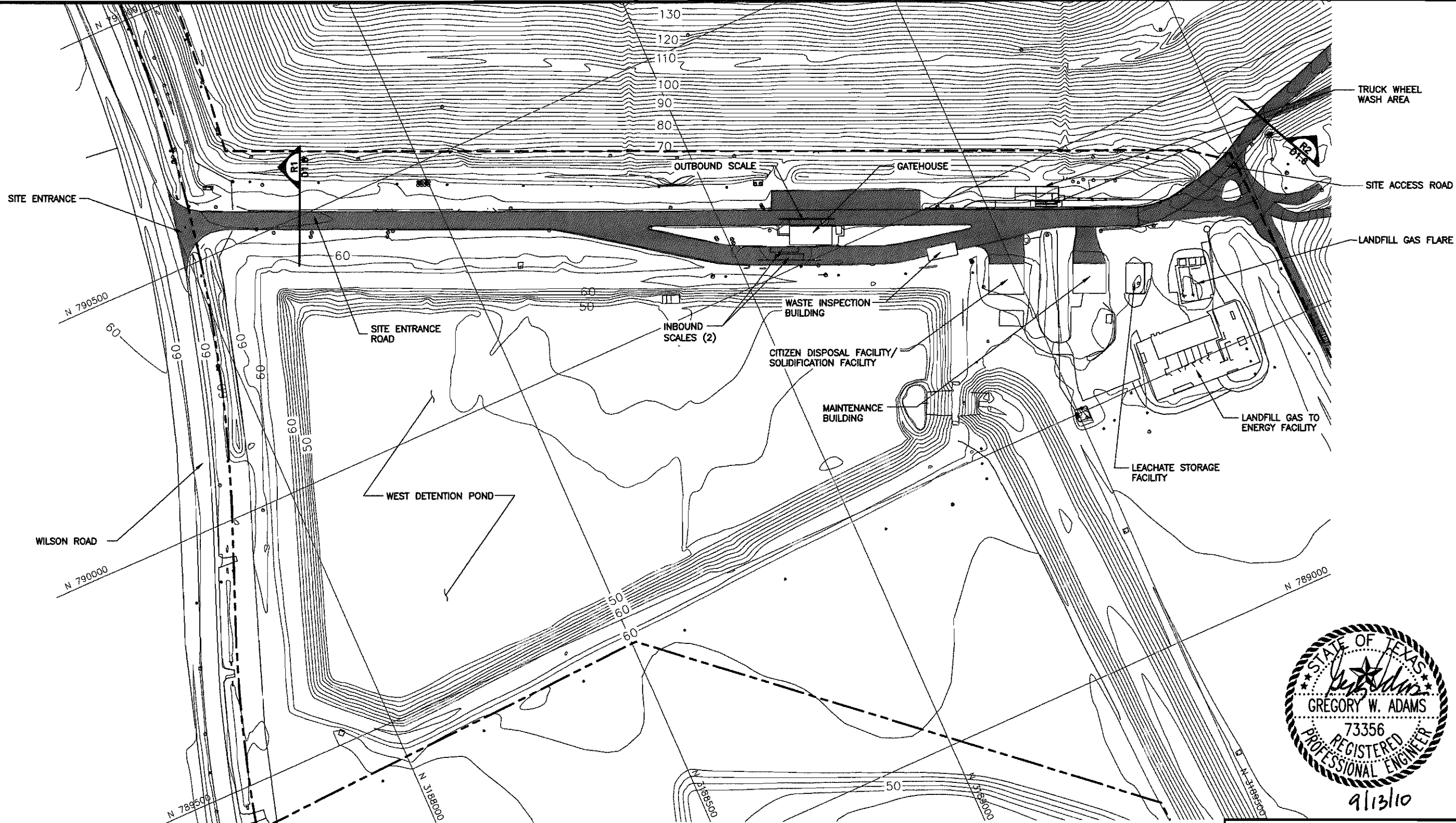
LANDFILL COMPLETION PLAN
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ENTRANCE ROAD AND ENTRANCE FACILITIES PLAN
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ATASCOCITA RECYCLING AND DISPOSAL FACILITY
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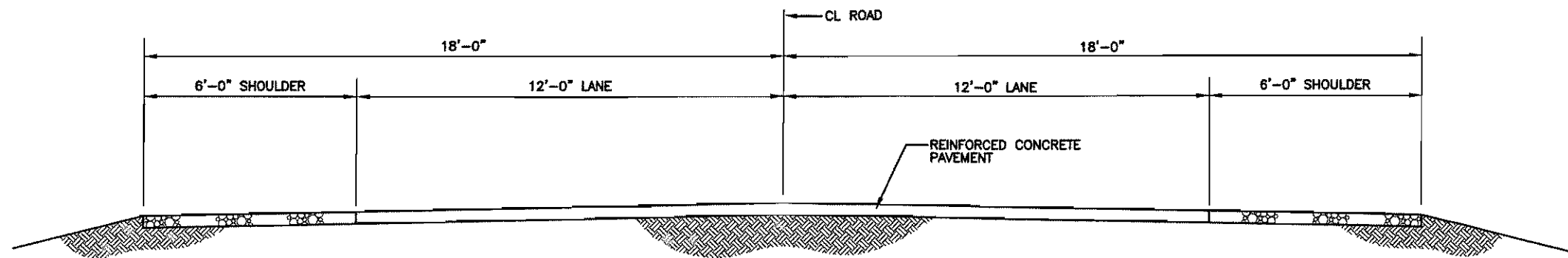
LEGEND

- PERMIT BOUNDARY
- LANDFILL FOOTPRINT
- 60 EXISTING CONTOUR
- N. 6753000 STATE PLANE GRID

NOTE:

1. EXISTING CONTOURS AND ELEVATIONS COMPILED BY DALLAS AERIAL SURVEYS FROM AERIAL SURVEY FLOWN APRIL 13, 2009.

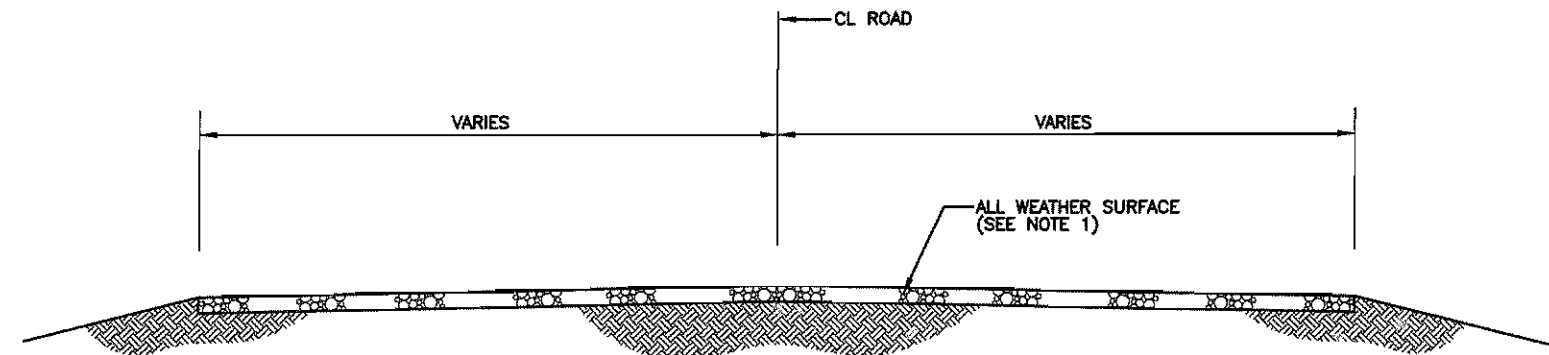




NOTES:

1. EXISTING SITE ENTRANCE ROAD SHALL BE MAINTAINED AS ALL WEATHER SURFACE (CONCRETE SURFACE).
2. EXISTING LANE WIDTHS SHALL BE MAINTAINED. (12'-0" MINIMUM).

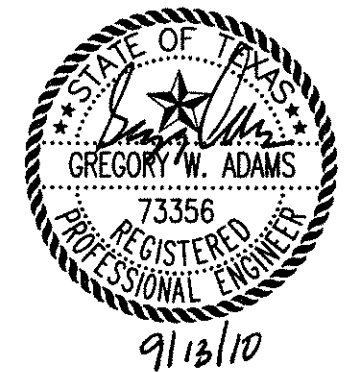
SITE ENTRANCE ROAD R1
D1.6



NOTES:

1. EXISTING LANDFILL ACCESS ROAD SHALL BE MAINTAINED WITH ALL WEATHER SURFACE (CRUSHED STONE, GRAVEL, CONCRETE RUBBLE, MASONRY DEMOLITION DEBRIS, WOOD CHIPS, OR OTHER SIMILAR MATERIALS) WHERE USED AS ACCESS TO WORKING FACE BY WASTE HAUL VEHICLES.
2. PAVEMENT THICKNESS SHALL BE BASED ON TRAFFIC LOADINGS AND SOIL CONDITIONS.

LANDFILL ACCESS ROAD R2
D1.6



LANDFILL ROAD DETAILS
WASTE MANAGEMENT OF TEXAS, INC.
ATASCOCITA RECYCLING AND DISPOSAL FACILITY
MAJOR PERMIT AMENDMENT



BIGGS & MATHEWS
ENVIRONMENTAL
CONSULTING ENGINEERS
 MANSFIELD
 DALLAS • WICHITA FALLS
 817-563-1144

ISSUED FOR PERMITTING PURPOSES ONLY

REVISIONS						TBPE FIRM NO. F-256		TBPG FIRM NO. 50222	
DSN.	GWA	DATE :	09/10					DRAWING	
DWN.	BBB	SCALE :	GRAPHIC					D1.6	
CHK.	GWA	DWG :	D1_6.dwg						
REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY			