



# Texas Commission on Environmental Quality

## Waste Permits Division Correspondence

### Cover Sheet

Date: January 19, 2024 Facility

Name: Beck Landfill Permit or

Registration No.: 1848A

Nature of Correspondence:

Initial/New

Response/Revision to TCEQ Tracking No.:  
27818258 (from subject line of TCEQ letter  
regarding initial submission)

Affix this cover sheet to the front of your submission to the Waste Permits Division. Check appropriate box for type of correspondence. Contact WPD at (512) 239-2335 if you have questions regarding this form.

**Table 1 - Municipal Solid Waste Correspondence**

| Applications   | Reports and Notifications   |
|--|---|
| <input type="checkbox"/> New Notice of Intent                            | <input type="checkbox"/> Alternative Daily Cover Report             |
| <input type="checkbox"/> Notice of Intent Revision                       | <input type="checkbox"/> Closure Report                             |
| <input type="checkbox"/> New Permit (including Subchapter T)             | <input type="checkbox"/> Compost Report                             |
| <input type="checkbox"/> New Registration (including Subchapter T)       | <input type="checkbox"/> Groundwater Alternate Source Demonstration |
| <input checked="" type="checkbox"/> Major Amendment                      | <input type="checkbox"/> Groundwater Corrective Action              |
| <input type="checkbox"/> Minor Amendment                                 | <input type="checkbox"/> Groundwater Monitoring Report              |
| <input type="checkbox"/> Limited Scope Major Amendment                   | <input type="checkbox"/> Groundwater Background Evaluation          |
| <input type="checkbox"/> Notice Modification                             | <input type="checkbox"/> Landfill Gas Corrective Action             |
| <input type="checkbox"/> Non-Notice Modification                         | <input type="checkbox"/> Landfill Gas Monitoring                    |
| <input type="checkbox"/> Transfer/Name Change Modification               | <input type="checkbox"/> Liner Evaluation Report                    |
| <input type="checkbox"/> Temporary Authorization                         | <input type="checkbox"/> Soil Boring Plan                           |
| <input type="checkbox"/> Voluntary Revocation                            | <input type="checkbox"/> Special Waste Request                      |
| <input type="checkbox"/> Subchapter T Disturbance Non-Enclosed Structure | <input type="checkbox"/> Other:                                     |
| <input type="checkbox"/> Other:  |   |

**Table 2 - Industrial & Hazardous Waste Correspondence**

| Applications  | Reports and Responses   |
|---|---|
| <input type="checkbox"/> New                              | <input type="checkbox"/> Annual/Biennial Site Activity Report |
| <input type="checkbox"/> Renewal                          | <input type="checkbox"/> CPT Plan/Result                      |
| <input type="checkbox"/> Post-Closure Order               | <input type="checkbox"/> Closure Certification/Report         |
| <input type="checkbox"/> Major Amendment                  | <input type="checkbox"/> Construction Certification/Report    |
| <input type="checkbox"/> Minor Amendment                  | <input type="checkbox"/> CPT Plan/Result                      |
| <input type="checkbox"/> CCR Registration                 | <input type="checkbox"/> Extension Request                    |
| <input type="checkbox"/> CCR Registration Major Amendment | <input type="checkbox"/> Groundwater Monitoring Report        |
| <input type="checkbox"/> CCR Registration Minor Amendment | <input type="checkbox"/> Interim Status Change                |
| <input type="checkbox"/> Class 3 Modification             | <input type="checkbox"/> Interim Status Closure Plan          |
| <input type="checkbox"/> Class 2 Modification             | <input type="checkbox"/> Soil Core Monitoring Report          |
| <input type="checkbox"/> Class 1 ED Modification          | <input type="checkbox"/> Treatability Study                   |
| <input type="checkbox"/> Class 1 Modification             | <input type="checkbox"/> Trial Burn Plan/Result               |
| <input type="checkbox"/> Endorsement                      | <input type="checkbox"/> Unsaturated Zone Monitoring Report   |
| <input type="checkbox"/> Temporary Authorization          | <input type="checkbox"/> Waste Minimization Report            |
| <input type="checkbox"/> Voluntary Revocation             | <input type="checkbox"/> Other:                               |
| <input type="checkbox"/> 335.6 Notification               |   |
| <input type="checkbox"/> Other:                           |   |

Attachment 1 - Applicant Signature Page

### **Applicant Signature Page**

#### **Site Operator (Permittee or Registrant Name) or Authorized Signatory**

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name: Grant Norman Title: Director of Operations

Email Address: gnorman@beckcompanies.com

Signature: *Grant Norman* Date: 1/14/2024

#### **Authorization by Facility Owner for Operator to Submit Application**

*To be completed by the facility owner if the application is submitted by an operator who is not the facility owner.*

I am the owner of the facility that is the subject of this application, and authorize the operator, Grant Norman to submit this application pursuant to 30 TAC 305.43(c).

Name: Ben Davis Title: President/Owner

Email Address: bdavis@beckcompanies.com

Signature: *Ben Davis* Date: 1/14/2024

#### **Notary**

SUBSCRIBED AND SWORN to before me by the said BEN DAVIS

On this 14 day of JANUARY, 2024

My commission expires on the 24 day of OCTOBER, 2025

*Lori S Navarro*

Notary Public in and for

BEXAR, TEXAS (notary's jurisdiction, including county and state)

Note: Application Must Bear Signature & Seal of Notary Public



## Attachment 2 – NOD Responses

Municipal Solid Waste Permit Amendment No. 1848A  
 Beck Landfill  
 6<sup>th</sup> Notice of Technical Deficiency

| NOD ID | MRI ID | Citation                                | Location  | NOD Description  | Response   |
|--------|--------|---|---|--|--|
| 1      | 22     | 330.57(g)(3)                            | Master Table of Contents, and Part III, Attachment D5         | Revise the Master Table of Contents; the Part III, Attachment D5 table of contents; and the Appendix D5-C title page to indicate the following:<br>a. Identify the Snowden 1985 report as Appendix D5-C.1.<br>b. Add the Snowden 1987 report to the list and identify it as Appendix D5-C.2.<br>c. Identify the Terracon 2020 report as Appendix D5-C.3.   | The Master Table of Contents; the Part III, Attachment D5 table of contents; and the Appendix D5-C title page have been revised as requested.                    |
| 2      | 22     | 330.57(g)(3)                            | Part III, Attachment D5-C                                     | Revise Appendix D5-C to include title pages for Appendices D5-C.1, D5-C.2, and D5-C.3  | Title pages for each of these sub-appendices have been added.  |
| 3      | 24     | 330.57(g)(5) and 330.63(e)              | Part III, Attachment E  | Correct the page numbers on revised pages E-4 and E-9 (both are labeled "E-1" in the NOD5 response).   | Page numbers on Page E-4 and E-9 are corrected from NOD5 response, as well as the Table of Contents for this Attachment.   |
| 4      | 150    | 330.61(j)(3), 330.63(e)(2), and 330.557 | Part II, Attachment G, and Part III, Attachment E, Figure E-9 | Provide a legible copy of a USGS seismic hazard map that shows information in the format required by 330.557.<br>Use the map at the location described in item 9 in NOD4 table—2014 map showing peak horizontal acceleration with 2% probability of exceedance in 50 years, available at <a href="https://pubs.usgs.gov/sim/3325/">https://pubs.usgs.gov/sim/3325/</a> (on that webpage, scroll down to Contents, click on Sheets, pick SIM3325_sheet2.pdf).<br>Provide a copy of the map in Part II, Attachment G-5, and a copy of the same map in place of current Figure E-9 in Part III, Attachment E. | The USGS Seismic Map is included in Part II, Attachment G, page 5a in 11x17, full color, with the whole US shown.<br><br>The same map is provided as Figure E-9. |

| NOD ID | MRI ID | Citation        | Location   | NOD Description   | Response   |
|--------|--------|-----------------|--|---|--|
| 5      | 335    | 330.63(c)(2)(D) | Part III, Attachment C2                              | Provide a Letter of Map Revision (LOMR) from FEMA. If the facility is unable to provide the LOMR from FEMA, explain how the facility plans to proceed with application process. A Conditional Letter of Map Amendment, or LOMR from FEMA would be required for the application to be technically complete.  | The LOMR review by FEMA is nearly complete. FEMA recently asked us to revise the extents of our study to make the tie-in to the existing flood maps more seamless. Copies of the most recent communications with FEMA are attached to this response. |
| 6      | 494    | 330.63(e)(4)(G) | Part III, Attachment E, Appendix E-3, Cross Sections | <p>Revise the boring data references on pages 2 through 9 of Appendix E-3 to indicate the following:</p> <ul style="list-style-type: none"> <li>a. Add to note 1 that the data are included in this application, in Part III, Attachment D, Appendix D5-C.1.</li> <li>b. Add to note 2 that the data are included in this application, in Part III, Attachment D, Appendix D5-C.2.</li> </ul> | <p>Note 1 and note 2 have been added as needed. The Bore Data reference the cross-sections were developed from the 1995 bore logs this spread sheet references just Snowden's 1985 data.</p>   |

| NOD ID | MRI ID | Citation        | Location   | NOD Description  | Response  |
|--------|--------|-----------------|--|--|---|
| 7      | 494    | 330.63(e)(4)(G) | Part III, Attachment E, Appendix E-3, Cross Sections | <p>a. Change the color of the boring location symbols for borings C-7, D-7, and E-1 to orange to indicate they are 1987 borehole locations.</p> <p>b. Provide boring log for boring E-2.5.</p> | <p>Changed the color of C—7, D-7, and E-1 to orange to indicate they are 1987 borehole locations.</p> <p>C7, D7 and E1 (1987 boring) were removed from the cross-sections and Figures 1-2 and 4-2. Borehole E-2.5 was removed from Figure 4-2. 1987 borehole data was removed from the cross-sections to eliminate uncertainty regarding the starting elevation of the borings. Removing these boreholes did not change the cross sections and ensures a higher degree of factual information to the cross sections provided.</p> <p>All borings advanced are shown on the figures, for references and remain included in Part III, Attachment D, Appendix D5-C3.</p> |
| 8      | 494    | 330.63(e)(4)(G) | Part III, Attachment E, Appendix E-3, Cross Sections | Revise the boring data references on pages 10, 11, and 12 of Appendix E-3 to indicate that the data are included in this application, in Part III, Attachment D, Appendix D5-C.3.              | Notes were added to pages 10, 11, and 12 to reflect data in Part III, Attachment D, Appendix D5-C3.   |
| 9      | 29     | 330.57(h)(4)(B) | Part III, Attachment E, Appendix E-3, Cross Sections | Add bar scales to the boring location maps on pages 1, 4, 7, and 10 in Appendix E-3.   | Bar scales were added to pages 1, 4, 7 and 10.  |

| NOD ID | MRI ID | Citation | Location                             | NOD Description  | Response   |
|--------|--------|----------|--------------------------------------|--|--|
| 10     | 634    | 330.421  | Part III, Attachment F, Appendix F-1 | Confirm whether the clearance (approximately 0.3 inches) indicated on the monitor well and piezometer data sheets between the tops of casings and the protective covers of the flush-mount surface completions is correct. | A 24" stick up and protective cover is installed around each monitor well (not piezometers). Three sets of data sheets are provided in this response: the original sheets (do not show the stick up), the 2000 updates resulting from replacing MW-D (show the stick up), and a new set on the updated TCEQ form that show historical data with new pad survey elevations (taken in October 2023). POWER has relied on historical information for well construction details below the ground surface and is carrying forward the historically permitted and accepted designs through this process. |



## NOD Response 1 – Updated Master Table of Contents



BECK LANDFILL  
GUADALUPE COUNTY, TEXAS  
TCEQ PERMIT APPLICATION NO. MSW 1848A

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|-------------------|
| 1 FACILITY ACCESS |
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BECK LANDFILL  
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2 SUBSURFACE MATERIALS

3 EARTHWORK

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5 SETTLEMENT AND HEAVE ANALYSIS

6 SLOPE STABILITY ANALYSES

7 LINER CONSTRUCTION

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3 INTERMEDIATE COVER AND GRADING

4 INFILTRATION LAYER

5 EROSION LAYER

6 DOCUMENTATION

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1.5 GEOTECHNICAL DATA (§330.63(e)(5))

1.6 OVERVIEW OF ENCOUNTERED GROUNDWATER (330.63(e)(5)(C))

1.7 RECORDS OF GROUNDWATER LEVEL MEASUREMENTS IN WELLS (330.63(e)(5)(D))

1.8 RECORDS OF GROUNDWATER MONITORING DATA (330.63(e)(5)(E))

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# MUNICIPAL SOLID WASTE PERMIT MAJOR AMENDMENT

---

## PART III-ATTACHMENT D5 GEOTECHNICAL DESIGN



***NAME OF PROJECT: Beck Landfill***

***MSW PERMIT APPLICATION NO.: 1848A***

***OWNER: Nido, LTD (CN603075011)***

***OPERATOR: Beck Landfill (RN102310968)***

***CITY, COUNTY: Schertz, Guadalupe County***

***Major Amendment: Revised ~~March 2023~~ January 2024***

Prepared by:



Civil & Environmental Consultants, Inc.

Texas Registration Number F-38  
3711 S MoPac Expressway  
Building 1 Suite 550,  
Austin, Texas 78746  
(512) 329-0006



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D5-C.1 Geotechnical Investigation (Attachment 11) prepared by Snowden , Inc. (1985)

D5-C.2 Geotechnical Investigation prepared by Snowden , Inc. (1987)

D5-C.3 Geotechnical Data Report prepared by Terracon Consultants, Inc. (2020)



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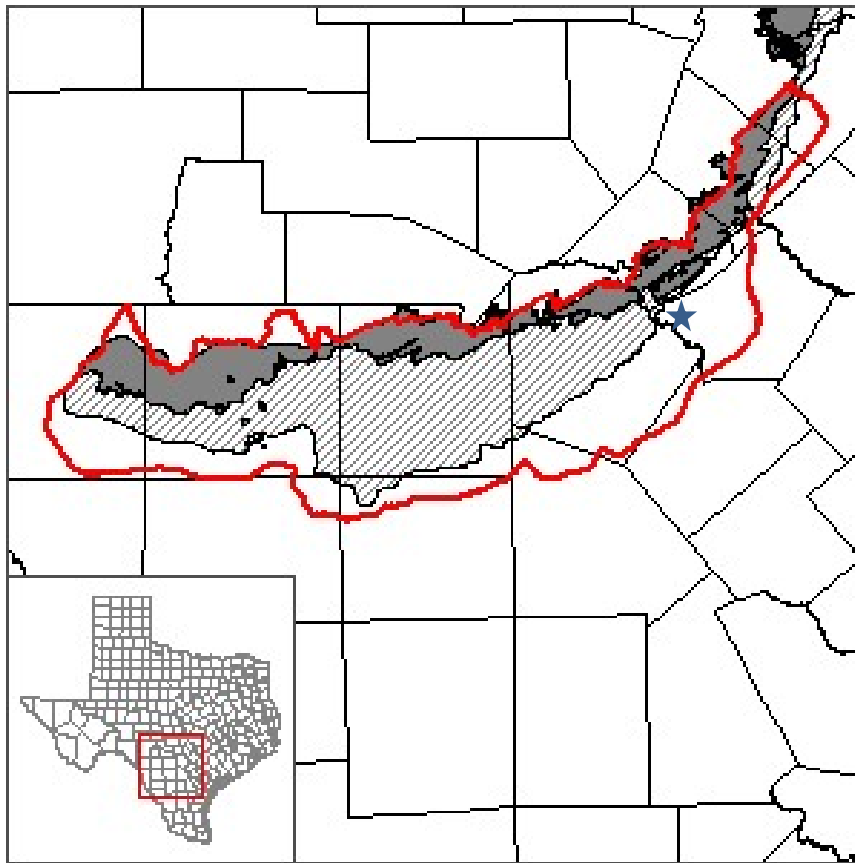
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NOD Response 3 – Corrected Pages Part III, Attachment E, Pages E-4 and E-9

## 1.2 Local Geological Processes (§330.63(e)(2))

30 TAC 330.559 defines an unstable area as a location that is susceptible to natural or human-induced events or forces capable of impairing the integrity of some or all landfill structural components responsible for preventing releases from the landfill. Unstable areas can include poor foundation conditions, areas susceptible to mass movement, and karst terrains. The Beck Landfill was excavated through alluvial materials (sand and gravel) to the undivided Navarro Group and Marlbrook Marl, which consist of clay and shale material (impermeable). Evidence of active detrimental on-site geologic activity has not been documented within the landfill area. No on-site or local human-made features or events were observed to have created unstable conditions.

The Balcones Fault Zone is a system of normal faults that traverses the review region from the northeast to the southwest. This fault zone is associated with the Paleozoic-age Ouachita Fold Belt, a remnant of an ancient highly eroded mountain range which is buried beneath the Balcones Fault Zone. Movement along the Balcones faults took place mainly during the Miocene Epoch. Data contained within the USGS Quaternary Fault and Fold Database indicates that no Holocene displacement of faults within the Balcones Fault Zone has occurred. The Beck Landfill (shown with a star) is not located within the Balcones Fault Zone as shown in the image below.



**FIGURE ABOVE DEPICTS THE BALCONES FAULT ZONE AND THE LOCATION OF THE BECK LANDFILL (STAR) LOCATED TO THE SOUTH.**

Per Snowden (Subsurface Conditions, 1989), a series of borings, along a 400 foot grid layout within the confines of the project area was proposed to the Texas Department of Health (TDH). The TDH approved the investigative proposal with the understanding that some individual boring locations were subject to equipment accessibility and thus may be delayed. Omission of boring could not however compromise the development of an adequate subsurface stratigraphic relationship. A total of fifty-four (54) borings were advanced. Each of the proposed boring locations is indicated on the original boring plan, but only those designated by grid numbers were actually drilled. A continuous flight auger system, either of a solid or hollow stem type, was employed in the advancement of the borings. An updated cross-sectional analysis of this boring plan and boring lot set is provided as **Part III, Attachment 3, Appendix E-3** of this Report. The locations and elevations are approximated based on best available information today. A Table is provided for references.

Representative samples of the subsurface sediments were obtained from selected borings. Undisturbed or Shelby tube samples were recovered to represent much of the clay-shale penetration as recorded on the accompanying logs. Auger samples were generally recovered to represent the stream deposited stratum. All samples were immediately sealed to preserve in-situ states and moisture conditions as near as possible.

The analysis of the soil samples was performed in a soils laboratory. Testing generally conformed to an appropriate A.S.T.M specification as per the soil property being determined. The values of permeability, each expressed as centimeters per second, were derived by a constant head method utilizing flexible wall permeameters. The recompacted samples were also tested by the same method. Permeability was determined for selected clay samples from six (6) widely spaced borings. The samples were chosen as to be representative of the entirety of the clay formation underlying the proposed site and/or to confirm the impermeable nature of the natural clay. Atterberg Limits were determined from un-tested portions of the permeability samples, in order to formulate a basis of comparison, with the plasticity indexes, as determined from other sampled borings. A comparison of this nature should support the suitability of the particular natural clay, as relevant to the proposed site usage. Sieve and Hydrometer analysis were not performed, as the majority of the laboratory investigation was concentrated on materials predominantly of clay minerals. Such clay materials would generally pass the #200 sieve.

The conclusions of the laboratory testing are given on the tables included in **Part III, Attachment D-5, Appendix D5-C**. The findings of the exploratory borings as depicted by the boring logs, along with the other aspects of the field accumulated datum, allowed an analysis of the subsurface conditions existing at the proposed site.

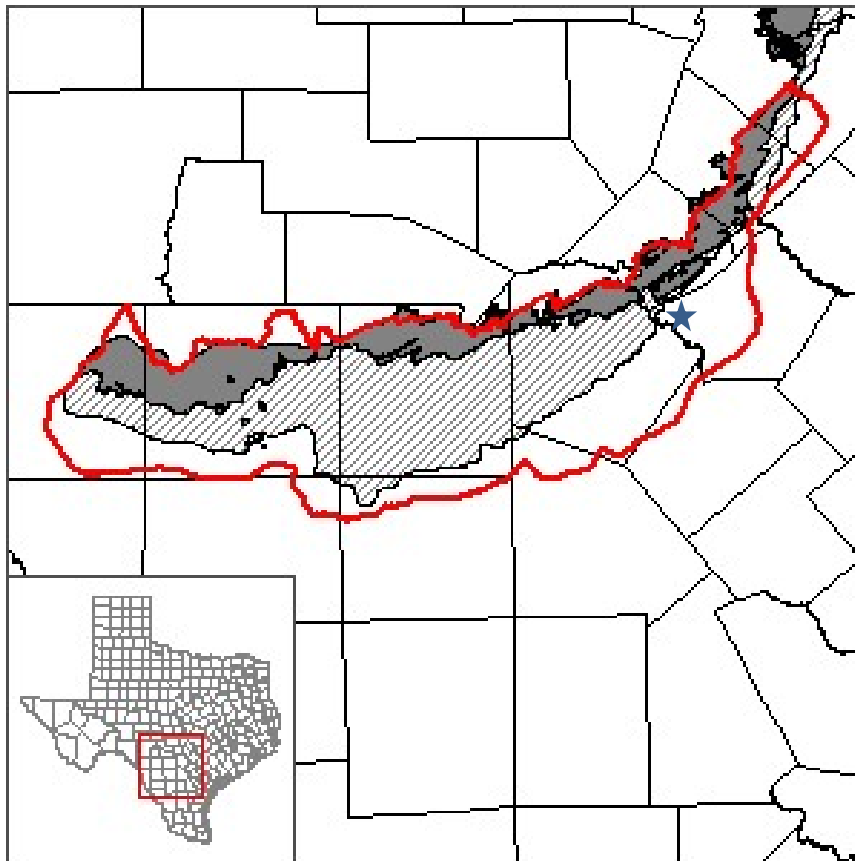
A supplemental geotechnical investigation was conducted by Terracon in the southeast portion of the landfill in September 2020 to revisit the findings of the original investigation. The investigation was conducted in accordance with 30 TAC §330.63(e)(4) and §330.63(e)(5). A total of eight borings were advanced in the approximately 12-acre area, consistent with the guidance of 6-10 borings in 30 TAC §330.63(e)(4)(B) for a study area of 10-20 acres. A boring plan detailing the proposed investigation was submitted by POWER Engineers, Inc. to the TCEQ Municipal Solid Waste Permits section on August 17, 2020. No changes to the proposed number and depth of the borings were requested due to site conditions in the proposed boring plan. No geophysical methods, such as electrical resistivity, were proposed for use as part of this study to reduce the number of required borings. The TCEQ received the boring plan for review on August 31, 2020, and issued an approval letter dated September 3, 2020. A copy of the approved boring plan and TCEQ approval letter are included with this submittal as **Part III, Attachment D5, Appendix D5-C**.

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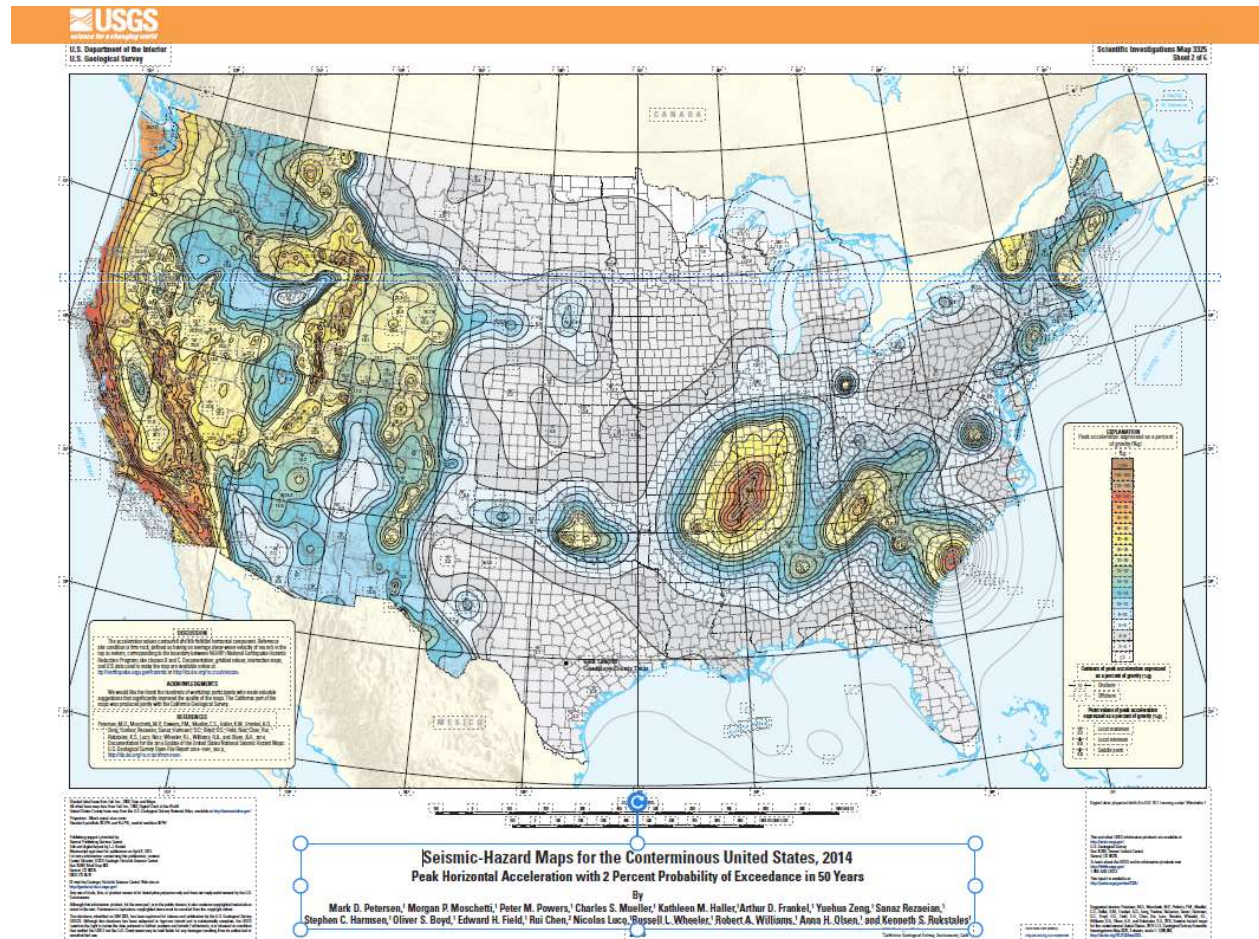
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NOD Response 4 – Part II Attachment G and Part III Attachment E, Figure E-9 (updated)

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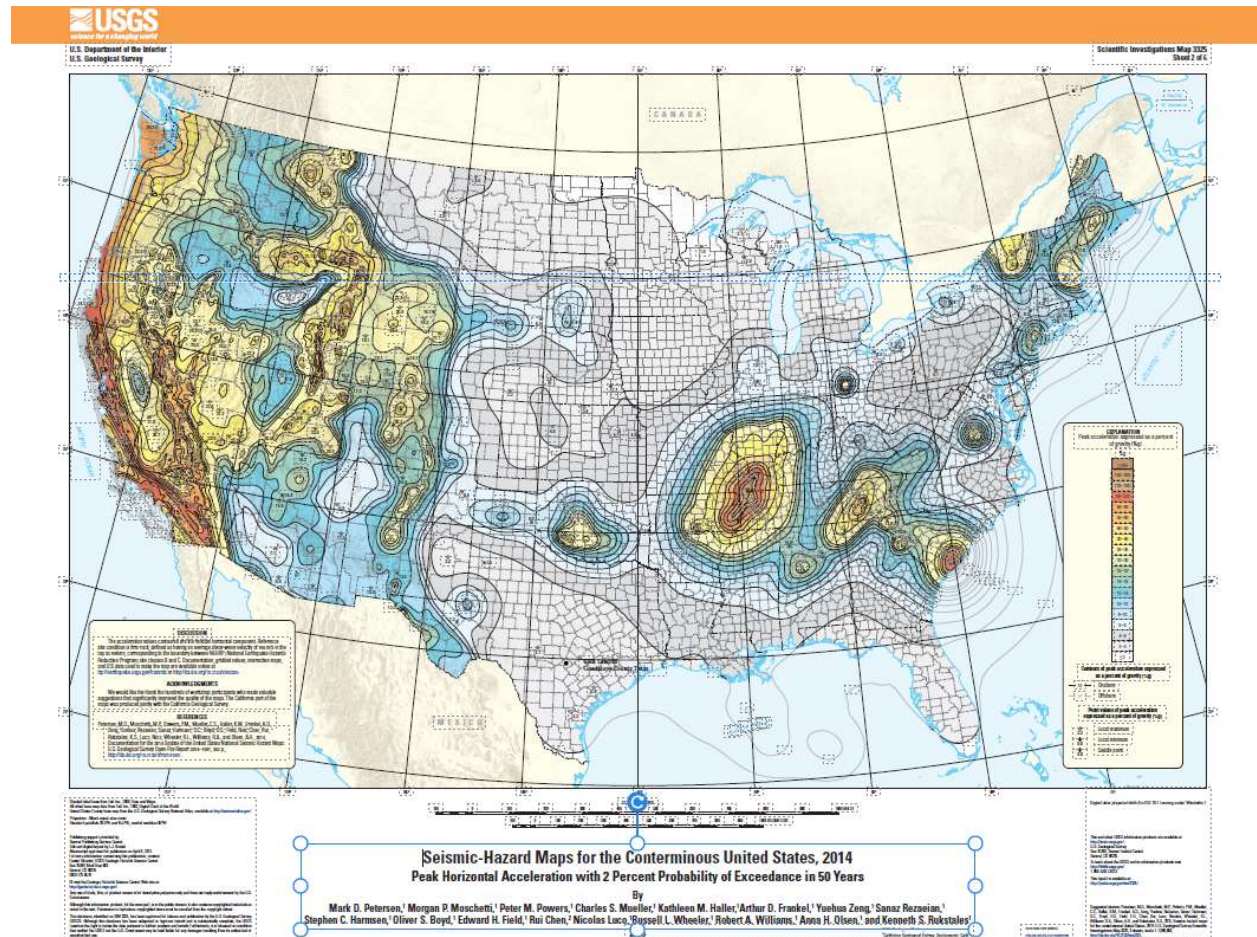
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- (1) on-site or local soil conditions that may result in significant differential settling;
- (2) on-site or local geologic or geomorphologic features; and
- (3) on-site or local human-made features or events (both surface and subsurface).

The Beck Landfill excavates through Pleistocene-age terrace deposits (clay, sand and gravel) and into the undivided Cretaceous-age Navarro Group and Marlbrook Marl, which consist of clay and shale material (impermeable). No on-site geologic or geomorphologic features have been observed. No on-site or local

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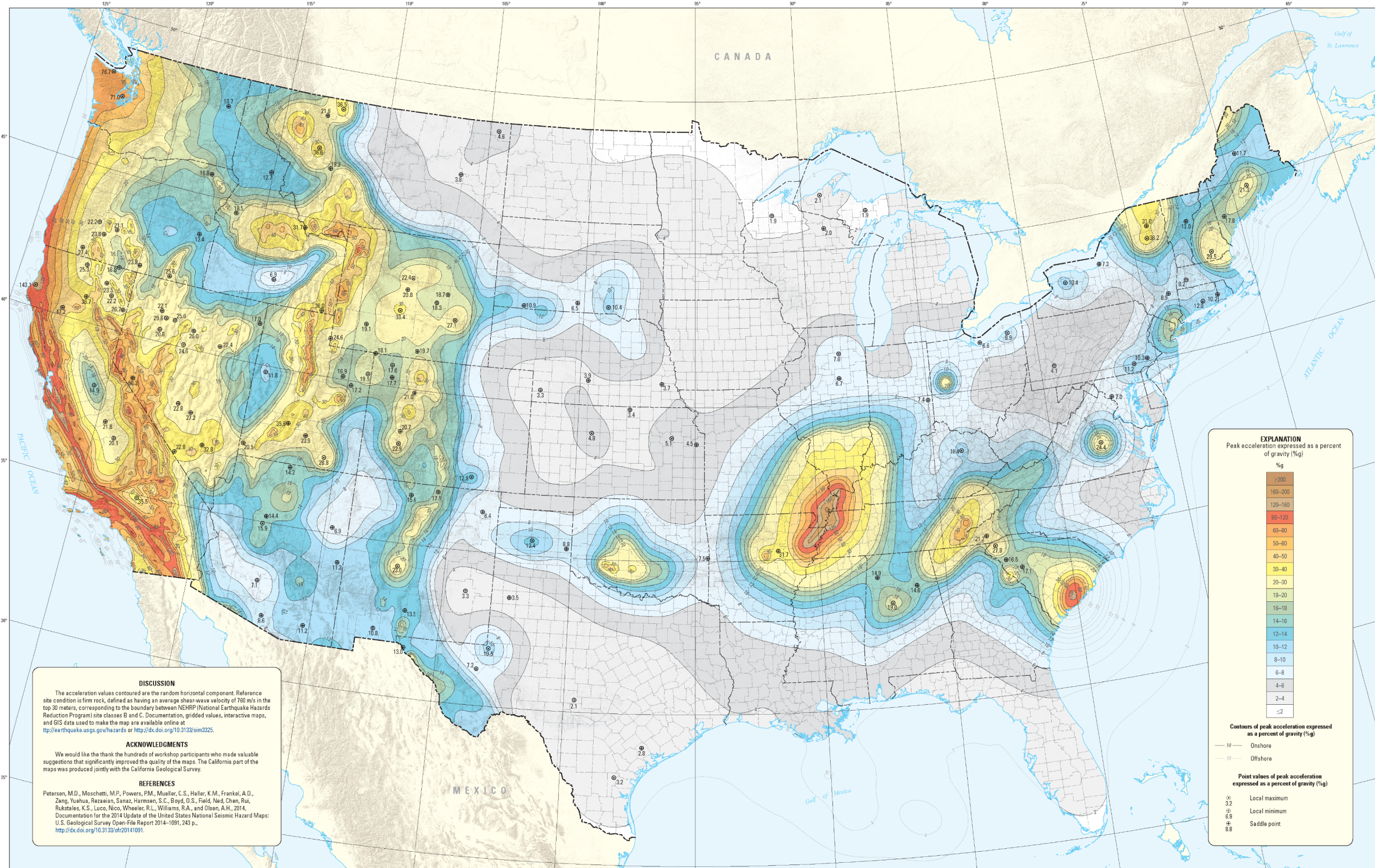


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**EXPLANATION**  
Peak acceleration expressed as a percent of gravity (%g)

|         |
|---------|
| 200     |
| 160-200 |
| 120-160 |
| 80-120  |
| 60-80   |
| 50-60   |
| 40-50   |
| 30-40   |
| 20-30   |
| 18-20   |
| 16-18   |
| 14-16   |
| 12-14   |
| 10-12   |
| 8-10    |
| 6-8     |
| 4-6     |
| 2-4     |
| <2      |

Contours of peak acceleration expressed as a percent of gravity (%g)

- Onshore
- Offshore

Point values of peak acceleration expressed as a percent of gravity (%g)

- Local maximum
- Local minimum
- Saddle point

**DISCUSSION**  
The acceleration values contoured are the random horizontal component. Reference site condition is firm rock, defined as having an average shear-wave velocity of 760 m/s in the top 30 meters, corresponding to the boundary between NEHRP (National Earthquake Hazards Reduction Program) site classes B and C. Documentation, gridded values, interactive maps, and GIS data used to make the map are available online at <http://earthquake.usgs.gov/hazards> or <http://dx.doi.org/10.3133/sim3325>.

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NIDO, LTD  
BECK LANDFILL

**FIGURE G-5A**  
**SEISMIC IMPACT ZONE MAP -**  
**REGIONAL SCALE**

SCHERTZ, GUADALUPE COUNTY,  
TEXAS



Shaded relief base from Esri Inc., 2008. Data and Maps  
All other base map data from Esri Inc., 1988. Digital Chart of the World  
United States County base map from the U.S. Geological Survey National Atlas, available at <http://nationalatlas.gov/>  
Projector: Albers equal-area conic  
Standard parallels 25.5°N and 45.5°N, central meridian 105°W

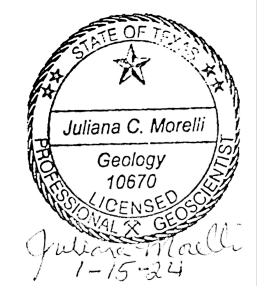
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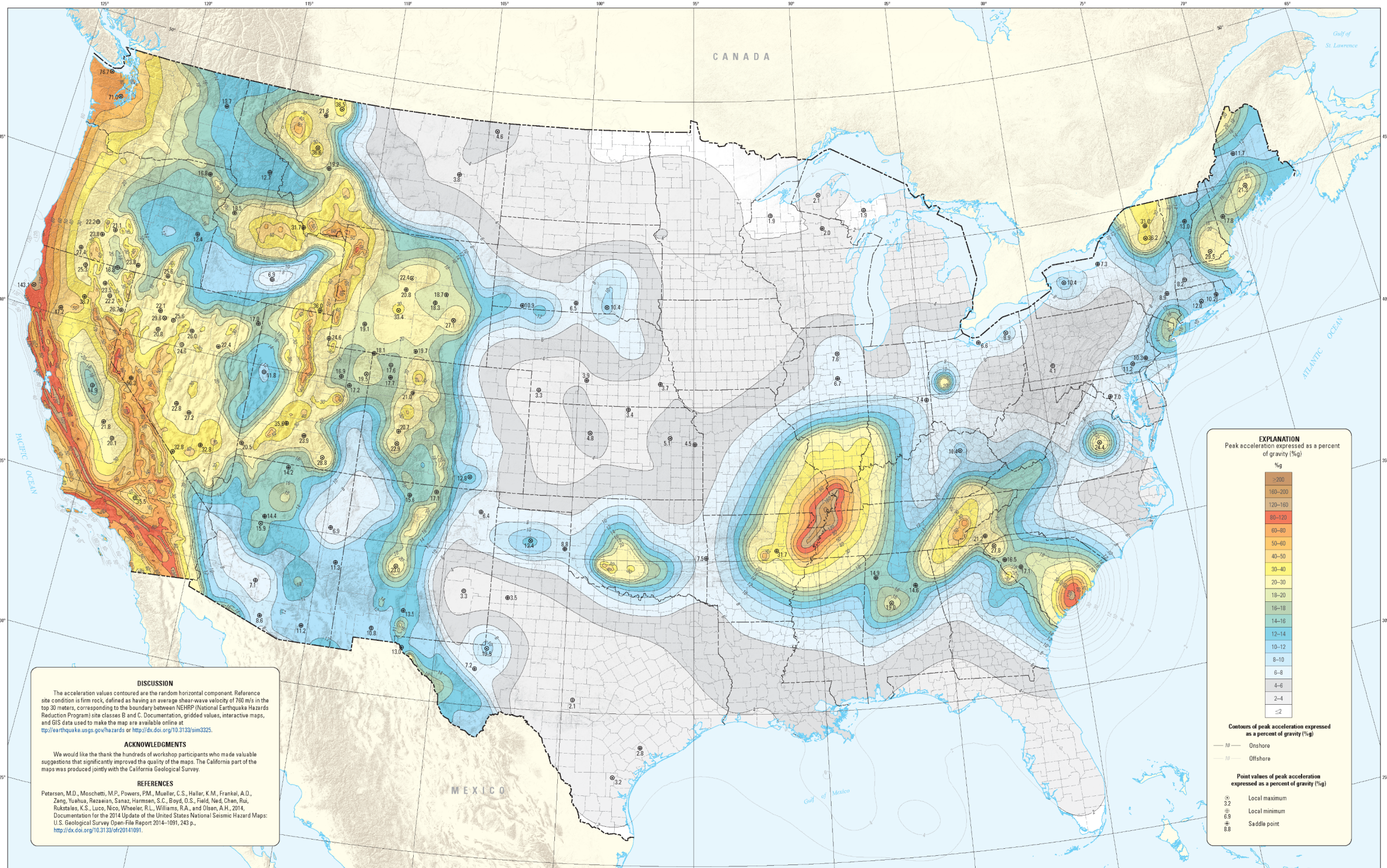
Digital data prepared with ArcGIS 10.1 running under Windows 7

**Seismic-Hazard Maps for the Conterminous United States, 2014**  
**Peak Horizontal Acceleration with 2 Percent Probability of Exceedance in 50 Years**

By  
**Mark D. Petersen,<sup>1</sup> Morgan P. Moschetti,<sup>1</sup> Peter M. Powers,<sup>1</sup> Charles S. Mueller,<sup>1</sup> Kathleen M. Haller,<sup>1</sup> Arthur D. Frankel,<sup>1</sup> Yuehua Zeng,<sup>1</sup> Sanaz Rezaeian,<sup>1</sup> Stephen C. Harmsen,<sup>1</sup> Oliver S. Boyd,<sup>1</sup> Edward H. Field,<sup>1</sup> Rui Chen,<sup>2</sup> Nicolas Luco,<sup>1</sup> Russell L. Wheeler,<sup>1</sup> Robert A. Williams,<sup>1</sup> Anna H. Olsen,<sup>1</sup> and Kenneth S. Rukstales<sup>1</sup>**

2015





**EXPLANATION**  
Peak acceleration expressed as a percent of gravity (%g)

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| 2-4     |
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NIDO, LTD  
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**FIGURE 3-9**  
**SEISMIC IMPACT ZONE MAP -**  
**REGIONAL SCALE**

SCHERTZ, GUADALUPE  
COUNTY, TEXAS



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Denver, CO 80225  
3039727829

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100 0 100 200 300 400 500 600 700 800 900 1000 MILES

100 0 100 200 300 400 500 600 700 800 900 1000 KILOMETERS

**Seismic-Hazard Maps for the Conterminous United States, 2014**  
**Peak Horizontal Acceleration with 2 Percent Probability of Exceedance in 50 Years**

By  
**Mark D. Petersen,<sup>1</sup> Morgan P. Moschetti,<sup>1</sup> Peter M. Powers,<sup>1</sup> Charles S. Mueller,<sup>1</sup> Kathleen M. Haller,<sup>1</sup> Arthur D. Frankel,<sup>1</sup> Yuehua Zeng,<sup>1</sup> Sanaz Rezaeian,<sup>1</sup> Stephen C. Harmsen,<sup>1</sup> Oliver S. Boyd,<sup>1</sup> Edward H. Field,<sup>1</sup> Rui Chen,<sup>2</sup> Nicolas Luco,<sup>1</sup> Russell L. Wheeler,<sup>1</sup> Robert A. Williams,<sup>1</sup> Anna H. Olsen,<sup>1</sup> and Kenneth S. Rukstales<sup>1</sup>**

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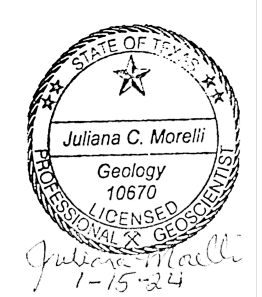
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## NOD Response 5 – LOMR Update



December 15, 2023

Bosulu Lokulutu, E.I.T. CFM  
AECOM  
13355 Noel Road, Suite 400  
Dallas, TX 75240

Dear Mr. Lokulutu :

Subject: City of Schertz, and Unincorporated Areas of Bexar County  
LOMR Case No.: 22-06-2567P  
Community Nos.: 480269 and 480035  
CEC Project 311-653

We received your comments related to LOMR Case No. 22-06-2567P on December 12, 2023 and have prepared the following responses.

1. Our review revealed that the unencroached (natural) base flood profile in the floodway plan is different from the base flood profile in the multiple profile plan. The unencroached profile for the existing conditions floodway plan should be exactly the same as the base flood profile in the existing conditions multiple profile plan. Please revise the floodway plan so that the natural base flood profiles are the same in both the floodway plan and the multiple profile plan.

**R1: A new HEC-RAS model has been developed that models between cross-sections 445235 and 433408 and the floodway model has been incorporated into this new model. An electronic copy of the revised model along with the revised topographic work and annotated FIRMs have been provided with this response.**

2. Our review revealed a surcharge of more than 1.0 foot between the natural and encroached profiles of the proposed conditions Hydrologic Engineering Center-River Analysis System (HEC-RAS) hydraulic model at Cross Sections 444240, 445235, and 445573. Please revise the floodway analysis to produce maximum surcharges of no more than 1.00 foot throughout the revised reach of Cibolo Creek.

**R2: In the new model, the maximum surcharge for the floodway model is 0.78 feet. The HEC-RAS results for the floodway analysis are attached to this letter.**

3. The topwidths of the 1-percent-annual-chance (base) floodplain/regulatory floodway computed in the proposed project hydraulic model at the cross sections listed in the table below do not match the



approximate floodplain and floodway topwidths shown on the topographic work map. Please submit revised hydraulic analysis or revised work maps as appropriate.

| Cross Section | Regulatory Floodway Topwidth (feet) |      | Base Floodplain Topwidth (feet) |      |
|---------------|-------------------------------------|------|---------------------------------|------|
|               | Model                               | Map  | Model                           | Map  |
| 433181        | 1880                                | 828  | 1879                            | 1570 |
| 433408        | 1103                                | 1030 | 1111                            | 2025 |
| 433539        | 1027                                | 834  | 1027                            | 1047 |
| 433730        | 927                                 | 642  |                                 |      |
| 436536        | 924                                 | 713  |                                 |      |
| 437265        | 748                                 | 1187 |                                 |      |
| 437996        | 1827                                | 1564 |                                 |      |
| 738740        | 1847                                | 1757 |                                 |      |

**R3: A new HEC-RAS model has been developed that models between cross-sections 445235 and 433408 and the top widths at each section have been checked against the revised topographic work map and annotated FIRMs.. An electronic copy of the revised model along with the revised topographic work and annotated FIRMs have been provided with this response.**

If you have any questions or comments, please contact me directly at [amehevec@cecinc.com](mailto:amehevec@cecinc.com) or at 512-329-0006.

Sincerely,

CIVIL & ENVIRONMENTAL CONSULTANTS, INC.

Adam Mehevec, PE  
 Vice President

Enclosures:

## HEC-RAS RESULTS-EFFECTIVE VERSUS POST-PROJECT MODELS

HEC-RAS Locations: User Defined Profile: 1% ACE

| River        | Reach   | River Sta | Profile | Plan               | Q Total<br>(cfs) | Min Ch El<br>(ft) | W.S. Elev<br>(ft) | Crit W.S.<br>(ft) | E.G. Elev<br>(ft) | E.G. Slope<br>(ft/ft) | Vel Chnl<br>(ft/s) | Flow Area<br>(sq ft) | Top Width<br>(ft) | Froude # Chl |
|--------------|---------|-----------|---------|--------------------|------------------|-------------------|-------------------|-------------------|-------------------|-----------------------|--------------------|----------------------|-------------------|--------------|
| Cibolo Creek | Reach 1 | 445573    | 1% ACE  | Post Project Model | 83554.00         | 685.00            | 716.33            |                   | 717.49            | 0.001617              | 10.13              | 13903.63             | 1267.56           | 0.33         |
| Cibolo Creek | Reach 1 | 445573    | 1% ACE  | Effective Blocked  | 83554.00         | 685.00            | 716.52            |                   | 717.65            | 0.001580              | 10.11              | 14139.90             | 1269.16           | 0.33         |
| Cibolo Creek | Reach 1 | 445235    | 1% ACE  | Post Project Model | 74844.00         | 684.97            | 716.31            |                   | 716.90            | 0.000959              | 7.22               | 14230.23             | 784.98            | 0.24         |
| Cibolo Creek | Reach 1 | 445235    | 1% ACE  | Effective Blocked  | 74844.00         | 684.97            | 716.49            |                   | 717.11            | 0.000833              | 7.37               | 14374.53             | 792.01            | 0.24         |
| Cibolo Creek | Reach 1 | 444777    | 1% ACE  | Post Project Model | 74844.00         | 684.09            | 715.19            |                   | 716.31            | 0.001488              | 9.10               | 9556.74              | 430.00            | 0.29         |
| Cibolo Creek | Reach 1 | 444777    | 1% ACE  | Effective Blocked  | 74844.00         | 684.20            | 715.35            |                   | 716.58            | 0.001357              | 9.39               | 9235.35              | 417.72            | 0.31         |
| Cibolo Creek | Reach 1 | 444240    | 1% ACE  | Post Project Model | 74844.00         | 683.12            | 713.39            |                   | 715.23            | 0.002385              | 11.28              | 7269.22              | 306.51            | 0.37         |
| Cibolo Creek | Reach 1 | 444240    | 1% ACE  | Effective Blocked  | 74844.00         | 684.49            | 713.31            |                   | 715.49            | 0.002604              | 12.32              | 6748.23              | 307.94            | 0.42         |
| Cibolo Creek | Reach 1 | 443555    | 1% ACE  | Post Project Model | 74844.00         | 682.52            | 712.86            |                   | 713.77            | 0.001329              | 8.14               | 10211.69             | 427.87            | 0.28         |
| Cibolo Creek | Reach 1 | 443555    | 1% ACE  | Effective Blocked  | 74844.00         | 680.04            | 713.01            |                   | 713.99            | 0.001171              | 8.18               | 9897.52              | 424.26            | 0.28         |
| Cibolo Creek | Reach 1 | 442891    | 1% ACE  | Post Project Model | 74844.00         | 679.79            | 712.11            |                   | 712.98            | 0.001050              | 7.66               | 10414.51             | 412.84            | 0.25         |
| Cibolo Creek | Reach 1 | 442891    | 1% ACE  | Effective Blocked  | 74844.00         | 678.42            | 712.32            |                   | 713.27            | 0.000989              | 8.00               | 10008.96             | 397.34            | 0.26         |
| Cibolo Creek | Reach 1 | 442214    | 1% ACE  | Post Project Model | 74844.00         | 678.90            | 710.42            |                   | 711.89            | 0.002478              | 11.32              | 9098.95              | 549.91            | 0.37         |
| Cibolo Creek | Reach 1 | 442214    | 1% ACE  | Effective Blocked  | 74844.00         | 676.91            | 710.46            |                   | 712.21            | 0.002367              | 12.02              | 8614.65              | 540.82            | 0.39         |
| Cibolo Creek | Reach 1 | 441476    | 1% ACE  | Post Project Model | 74844.00         | 678.52            | 708.61            |                   | 710.15            | 0.002182              | 10.28              | 8156.91              | 425.31            | 0.35         |
| Cibolo Creek | Reach 1 | 441476    | 1% ACE  | Effective Blocked  | 74844.00         | 677.25            | 708.78            |                   | 710.56            | 0.002093              | 11.14              | 7726.18              | 399.56            | 0.37         |
| Cibolo Creek | Reach 1 | 440762    | 1% ACE  | Post Project Model | 74844.00         | 677.76            | 706.06            |                   | 708.08            | 0.003085              | 11.63              | 6785.59              | 305.44            | 0.41         |
| Cibolo Creek | Reach 1 | 440762    | 1% ACE  | Effective Blocked  | 74844.00         | 679.50            | 706.06            |                   | 708.44            | 0.003177              | 12.54              | 6289.95              | 305.02            | 0.45         |
| Cibolo Creek | Reach 1 | 439971    | 1% ACE  | Post Project Model | 74844.00         | 677.96            | 705.69            |                   | 705.88            | 0.000435              | 4.08               | 22424.98             | 1145.69           | 0.15         |
| Cibolo Creek | Reach 1 | 439971    | 1% ACE  | Effective Blocked  | 74844.00         | 678.56            | 705.77            |                   | 706.00            | 0.000425              | 4.55               | 21419.25             | 1135.09           | 0.17         |
| Cibolo Creek | Reach 1 | 438740    | 1% ACE  | Post Project Model | 74844.00         | 675.84            | 705.48            |                   | 705.57            | 0.000231              | 3.16               | 33361.12             | 1844.96           | 0.11         |
| Cibolo Creek | Reach 1 | 438740    | 1% ACE  | Effective Blocked  | 74844.00         | 676.64            | 705.57            |                   | 705.67            | 0.000225              | 3.40               | 32676.14             | 1821.83           | 0.12         |
| Cibolo Creek | Reach 1 | 437996    | 1% ACE  | Post Project Model | 74844.00         | 674.71            | 705.38            |                   | 705.46            | 0.000193              | 2.96               | 35489.29             | 1825.40           | 0.10         |
| Cibolo Creek | Reach 1 | 437996    | 1% ACE  | Effective Blocked  | 74844.00         | 676.58            | 705.47            |                   | 705.56            | 0.000206              | 3.24               | 34322.86             | 1832.38           | 0.12         |
| Cibolo Creek | Reach 1 | 437265    | 1% ACE  | Post Project Model | 74844.00         | 674.32            | 705.21            |                   | 705.34            | 0.000302              | 3.74               | 28020.88             | 1488.46           | 0.13         |
| Cibolo Creek | Reach 1 | 437265    | 1% ACE  | Effective Blocked  | 74844.00         | 678.00            | 705.30            |                   | 705.44            | 0.000297              | 3.90               | 27791.23             | 1494.76           | 0.14         |
| Cibolo Creek | Reach 1 | 436536    | 1% ACE  | Post Project Model | 74844.00         | 673.98            | 704.48            |                   | 704.99            | 0.000880              | 6.62               | 15479.80             | 923.23            | 0.22         |
| Cibolo Creek | Reach 1 | 436536    | 1% ACE  | Effective Blocked  | 74844.00         | 670.17            | 704.58            |                   | 705.10            | 0.000740              | 6.74               | 15861.17             | 934.28            | 0.22         |
| Cibolo Creek | Reach 1 | 435810    | 1% ACE  | Post Project Model | 74844.00         | 672.59            | 703.19            |                   | 704.08            | 0.001392              | 8.23               | 10610.23             | 527.07            | 0.28         |
| Cibolo Creek | Reach 1 | 435810    | 1% ACE  | Effective Blocked  | 74844.00         | 673.05            | 703.32            |                   | 704.29            | 0.001210              | 8.57               | 10550.53             | 531.03            | 0.29         |
| Cibolo Creek | Reach 1 | 435043    | 1% ACE  | Post Project Model | 74844.00         | 672.92            | 702.35            |                   | 703.04            | 0.000945              | 6.93               | 11792.06             | 512.94            | 0.23         |
| Cibolo Creek | Reach 1 | 435043    | 1% ACE  | Effective Blocked  | 74844.00         | 671.34            | 702.69            |                   | 703.41            | 0.000677              | 7.07               | 11841.27             | 517.90            | 0.24         |
| Cibolo Creek | Reach 1 | 434453    | 1% ACE  | Post Project Model | 74844.00         | 672.90            | 700.85            |                   | 702.02            | 0.001992              | 9.83               | 10154.40             | 654.54            | 0.34         |

HEC-RAS Locations: User Defined Profile: 1% ACE (Continued)

| River        | Reach   | River Sta | Profile | Plan               | Q Total<br>(cfs) | Min Ch El<br>(ft) | W.S. Elev<br>(ft) | Crit W.S.<br>(ft) | E.G. Elev<br>(ft) | E.G. Slope<br>(ft/ft) | Vel Chnl<br>(ft/s) | Flow Area<br>(sq ft) | Top Width<br>(ft) | Froude # Chl |
|--------------|---------|-----------|---------|--------------------|------------------|-------------------|-------------------|-------------------|-------------------|-----------------------|--------------------|----------------------|-------------------|--------------|
| Cibolo Creek | Reach 1 | 434453    | 1% ACE  | Effective Blocked  | 74844.00         | 671.52            | 700.83            |                   | 702.36            | 0.002117              | 10.96              | 9268.25              | 650.06            | 0.38         |
| Cibolo Creek | Reach 1 | 433730    | 1% ACE  | Post Project Model | 74844.00         | 668.74            | 700.11            |                   | 700.75            | 0.001065              | 7.30               | 13939.37             | 925.58            | 0.25         |
| Cibolo Creek | Reach 1 | 433730    | 1% ACE  | Effective Blocked  | 74844.00         | 668.17            | 700.10            |                   | 700.83            | 0.001236              | 7.78               | 13099.96             | 923.11            | 0.26         |
| Cibolo Creek | Reach 1 | 433539    | 1% ACE  | Post Project Model | 74844.00         | 667.11            | 700.02            |                   | 700.51            | 0.000836              | 6.53               | 15784.71             | 1026.66           | 0.22         |
| Cibolo Creek | Reach 1 | 433539    | 1% ACE  | Effective Blocked  | 74844.00         | 666.70            | 700.00            |                   | 700.56            | 0.000976              | 6.97               | 14923.82             | 1051.88           | 0.24         |
| Cibolo Creek | Reach 1 | 433408    | 1% ACE  | Post Project Model | 74844.00         | 667.31            | 699.97            |                   | 700.38            | 0.000803              | 6.39               | 16975.52             | 1110.54           | 0.21         |
| Cibolo Creek | Reach 1 | 433408    | 1% ACE  | Effective Blocked  | 74844.00         | 667.07            | 699.95            |                   | 700.41            | 0.000903              | 6.66               | 16371.05             | 1123.09           | 0.23         |
| Cibolo Creek | Reach 1 | 433181    | 1% ACE  | Post Project Model | 83554.00         | 667.56            | 699.84            |                   | 700.17            | 0.000720              | 5.94               | 22460.16             | 1879.24           | 0.20         |
| Cibolo Creek | Reach 1 | 433181    | 1% ACE  | Effective Blocked  | 83554.00         | 667.56            | 699.84            |                   | 700.17            | 0.000720              | 5.94               | 22460.16             | 1879.24           | 0.20         |
| Cibolo Creek | Reach 1 | 432987    | 1% ACE  | Post Project Model | 83554.00         | 665.50            | 699.57            | 686.61            | 699.99            | 0.000717              | 6.65               | 20414.85             | 1531.52           | 0.22         |
| Cibolo Creek | Reach 1 | 432987    | 1% ACE  | Effective Blocked  | 83554.00         | 665.50            | 699.57            | 686.61            | 699.99            | 0.000717              | 6.65               | 20414.85             | 1531.52           | 0.22         |

## HEC-RAS RESULTS-FLOODWAY ANALYSIS

HEC-RAS Plan: Floodway Locations: User Defined

| River        | Reach   | River Sta | Profile  | W.S. Elev<br>(ft) | Prof Delta WS<br>(ft) | E.G. Elev<br>(ft) | Top Wdth Act<br>(ft) | Q Left<br>(cfs) | Q Channel<br>(cfs) | Q Right<br>(cfs) | Enc Sta L<br>(ft) | Ch Sta L<br>(ft) | Ch Sta R<br>(ft) | Enc Sta R<br>(ft) |
|--------------|---------|-----------|----------|-------------------|-----------------------|-------------------|----------------------|-----------------|--------------------|------------------|-------------------|------------------|------------------|-------------------|
| Cibolo Creek | Reach 1 | 445235    | 1% ACE   | 716.31            |                       | 716.90            | 784.98               | 12147.41        | 49299.51           | 13397.08         |                   | 1718.90          | 1954.83          |                   |
| Cibolo Creek | Reach 1 | 445235    | Floodway | 716.90            | 0.59                  | 717.59            | 561.03               | 9143.84         | 52608.68           | 13091.47         | 1612.00           | 1718.90          | 1954.83          | 2173.03           |
| Cibolo Creek | Reach 1 | 444777    | 1% ACE   | 715.19            |                       | 716.31            | 430.00               | 2325.26         | 61820.13           | 10698.61         |                   | 2348.62          | 2577.53          |                   |
| Cibolo Creek | Reach 1 | 444777    | Floodway | 715.83            | 0.64                  | 717.00            | 351.13               | 2071.83         | 63528.69           | 9243.49          | 2322.13           | 2348.62          | 2577.53          | 2673.26           |
| Cibolo Creek | Reach 1 | 444240    | 1% ACE   | 713.39            |                       | 715.23            | 306.52               | 3092.78         | 68284.32           | 3466.90          |                   | 2814.71          | 3024.63          |                   |
| Cibolo Creek | Reach 1 | 444240    | Floodway | 714.02            | 0.63                  | 715.93            | 254.12               | 2180.56         | 70262.38           | 2401.07          | 2791.69           | 2814.71          | 3024.63          | 3045.81           |
| Cibolo Creek | Reach 1 | 443555    | 1% ACE   | 712.86            |                       | 713.77            | 427.87               | 12544.75        | 58058.31           | 4240.94          |                   | 3000.16          | 3262.25          |                   |
| Cibolo Creek | Reach 1 | 443555    | Floodway | 713.54            | 0.67                  | 714.47            | 371.65               | 11188.20        | 59847.24           | 3808.56          | 2926.87           | 3000.16          | 3262.25          | 3298.52           |
| Cibolo Creek | Reach 1 | 442891    | 1% ACE   | 712.11            |                       | 712.98            | 412.84               | 2310.55         | 70922.86           | 1610.59          |                   | 3213.13          | 3524.42          |                   |
| Cibolo Creek | Reach 1 | 442891    | Floodway | 712.80            | 0.69                  | 713.70            | 343.15               | 1124.71         | 72914.93           | 804.37           | 3195.80           | 3213.13          | 3524.42          | 3538.95           |
| Cibolo Creek | Reach 1 | 442214    | 1% ACE   | 710.42            |                       | 711.89            | 549.91               | 916.59          | 49074.88           | 24852.52         |                   | 3677.07          | 3827.83          |                   |
| Cibolo Creek | Reach 1 | 442214    | Floodway | 711.15            | 0.72                  | 712.63            | 497.50               | 910.80          | 50241.29           | 23691.91         | 3651.93           | 3677.07          | 3827.83          | 4149.43           |
| Cibolo Creek | Reach 1 | 441476    | 1% ACE   | 708.61            |                       | 710.15            | 425.31               | 1119.58         | 69133.02           | 4591.40          |                   | 4342.78          | 4591.52          |                   |
| Cibolo Creek | Reach 1 | 441476    | Floodway | 709.35            | 0.74                  | 710.94            | 298.32               | 715.41          | 71251.67           | 2876.92          | 4327.32           | 4342.78          | 4591.52          | 4625.64           |
| Cibolo Creek | Reach 1 | 440762    | 1% ACE   | 706.06            |                       | 708.08            | 305.44               | 410.04          | 70906.33           | 3527.64          |                   | 4983.33          | 5228.52          |                   |
| Cibolo Creek | Reach 1 | 440762    | Floodway | 706.79            | 0.74                  | 708.90            | 260.00               | 105.17          | 73591.01           | 1147.82          | 4980.00           | 4983.33          | 5228.52          | 5240.00           |
| Cibolo Creek | Reach 1 | 439971    | 1% ACE   | 705.69            |                       | 705.88            | 1145.69              | 37010.35        | 36320.68           | 1512.97          |                   | 5591.93          | 5988.60          |                   |
| Cibolo Creek | Reach 1 | 439971    | Floodway | 706.47            | 0.78                  | 706.67            | 1048.32              | 35731.63        | 37622.93           | 1489.45          | 4981.76           | 5591.93          | 5988.60          | 6030.08           |
| Cibolo Creek | Reach 1 | 438740    | 1% ACE   | 705.48            |                       | 705.57            | 1844.96              | 46312.37        | 26455.61           | 2076.02          |                   | 6282.64          | 6619.35          |                   |
| Cibolo Creek | Reach 1 | 438740    | Floodway | 706.19            | 0.71                  | 706.31            | 1480.00              | 64435.22        | 10408.78           |                  | 4920.00           | 6282.64          | 6619.35          | 6400.00           |
| Cibolo Creek | Reach 1 | 437996    | 1% ACE   | 705.38            |                       | 705.46            | 1825.41              | 53170.65        | 20227.27           | 1446.08          |                   | 6407.33          | 6675.95          |                   |
| Cibolo Creek | Reach 1 | 437996    | Floodway | 705.95            | 0.57                  | 706.10            | 1260.00              | 70715.84        | 4128.15            |                  | 5200.00           | 6407.33          | 6675.95          | 6460.00           |
| Cibolo Creek | Reach 1 | 437265    | 1% ACE   | 705.21            |                       | 705.34            | 1488.46              | 45899.66        | 28741.95           | 202.39           |                   | 6061.46          | 6357.85          |                   |
| Cibolo Creek | Reach 1 | 437265    | Floodway | 705.32            | 0.11                  | 705.75            | 755.00               | 28599.25        | 46244.75           |                  | 5600.00           | 6061.46          | 6357.85          | 6355.00           |
| Cibolo Creek | Reach 1 | 436536    | 1% ACE   | 704.48            |                       | 704.99            | 923.24               | 24135.79        | 50398.27           | 309.94           |                   | 5441.48          | 5719.48          |                   |
| Cibolo Creek | Reach 1 | 436536    | Floodway | 704.78            | 0.30                  | 705.26            | 919.73               | 24529.86        | 49995.44           | 318.70           | 4820.00           | 5441.48          | 5719.48          | 5845.00           |
| Cibolo Creek | Reach 1 | 435810    | 1% ACE   | 703.19            |                       | 704.08            | 527.07               | 17806.27        | 56820.14           | 217.60           |                   | 4685.27          | 4939.04          |                   |
| Cibolo Creek | Reach 1 | 435810    | Floodway | 703.53            | 0.34                  | 704.40            | 506.62               | 17972.73        | 56641.11           | 230.16           | 4450.00           | 4685.27          | 4939.04          | 4970.00           |
| Cibolo Creek | Reach 1 | 435043    | 1% ACE   | 702.35            |                       | 703.04            | 512.95               | 5051.99         | 67433.95           | 2358.06          |                   | 3712.57          | 4066.13          |                   |
| Cibolo Creek | Reach 1 | 435043    | Floodway | 702.60            | 0.25                  | 703.39            | 423.00               | 5779.35         | 69064.65           |                  | 3627.00           | 3712.57          | 4066.13          | 4050.00           |
| Cibolo Creek | Reach 1 | 434453    | 1% ACE   | 700.85            |                       | 702.02            | 654.55               | 10141.88        | 54005.66           | 10696.46         |                   | 3142.32          | 3348.79          |                   |
| Cibolo Creek | Reach 1 | 434453    | Floodway | 700.90            | 0.05                  | 702.22            | 450.69               | 8871.69         | 56163.98           | 9808.34          | 3021.00           | 3142.32          | 3348.79          | 3471.69           |

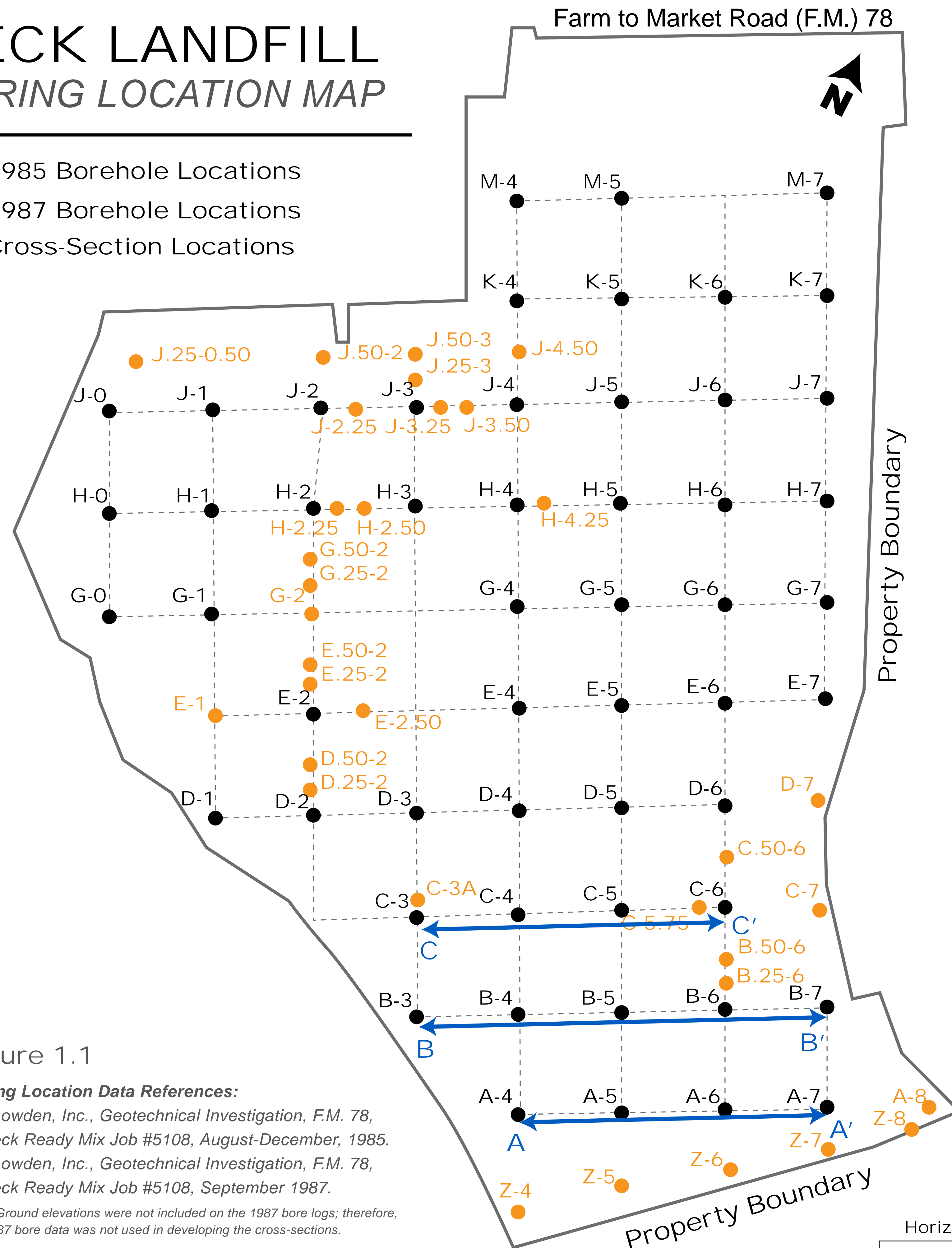
HEC-RAS Plan: Floodway Locations: User Defined (Continued)

| River        | Reach   | River Sta | Profile  | W.S. Elev<br>(ft) | Prof Delta WS<br>(ft) | E.G. Elev<br>(ft) | Top Wdth Act<br>(ft) | Q Left<br>(cfs) | Q Channel<br>(cfs) | Q Right<br>(cfs) | Enc Sta L<br>(ft) | Ch Sta L<br>(ft) | Ch Sta R<br>(ft) | Enc Sta R<br>(ft) |
|--------------|---------|-----------|----------|-------------------|-----------------------|-------------------|----------------------|-----------------|--------------------|------------------|-------------------|------------------|------------------|-------------------|
| Cibolo Creek | Reach 1 | 433730    | 1% ACE   | 700.12            |                       | 700.75            | 925.62               | 14707.64        | 52450.11           | 7686.25          |                   | 2634.02          | 2896.74          |                   |
| Cibolo Creek | Reach 1 | 433730    | Floodway | 700.17            | 0.06                  | 700.84            | 718.64               | 14561.61        | 53329.66           | 6952.73          | 2300.00           | 2634.02          | 2896.74          | 3018.64           |
| Cibolo Creek | Reach 1 | 433539    | 1% ACE   | 700.03            |                       | 700.51            | 1026.67              | 18145.53        | 49113.52           | 7584.95          |                   | 2235.56          | 2507.18          |                   |
| Cibolo Creek | Reach 1 | 433539    | Floodway | 700.10            | 0.07                  | 700.60            | 926.00               | 17282.68        | 49542.28           | 8019.04          | 1738.00           | 2235.56          | 2507.18          | 2664.00           |
| Cibolo Creek | Reach 1 | 433408    | 1% ACE   | 699.97            |                       | 700.38            | 1110.54              | 25434.09        | 39721.38           | 9688.54          |                   | 2028.53          | 2253.30          |                   |
| Cibolo Creek | Reach 1 | 433408    | Floodway | 700.00            | 0.03                  | 700.48            | 1000.00              | 23615.96        | 41941.90           | 9286.13          | 1400.00           | 2028.53          | 2253.30          | 2400.00           |

NOD Responses 6, 7, 8, and 9 – Part III, Attachment E, Appendix E-3  
Cross Sections

# BECK LANDFILL BORING LOCATION MAP

- 1985 Borehole Locations
- 1987 Borehole Locations
- ↔ Cross-Section Locations



## 1985 BORING DATA

Figure 1.2

| Boring ID | Latitude (N) | Longitude (W) | Collar Elevation (ft.) | Total Depth (ft.) | TD Elevation (ft.) | Depth to Water (ft.) | Static Water Elevation (ft.) | Lithology (Youngest to Oldest)                            |
|-----------|--------------|---------------|------------------------|-------------------|--------------------|----------------------|------------------------------|---|
| A-4       | 29.5429°     | -98.2614°     | 679.2                  | 20.0              | 659.20             | 19.0                 | 660.2                        | Silty Clay, Clayey Gravel, Stiff Clay                     |
| A-5       | 29.5434°     | -98.2604°     | 689.8                  | 20.0              | 669.80             | Dry                  | -----                        | Clayey Gravel, Stiff Clay, Clay Shale                     |
| A-6       | 29.5439°     | -98.2593°     | 684.6                  | 20.0              | 664.60             | 6.0                  | 678.6                        | Fill, Silty Clay, Clayey Gravel, Stiff Clay, Shale        |
| A-7       | 29.5444°     | -98.2583°     | 682.4                  | 20.0              | 662.40             | 1.5                  | 680.9                        | Clayey -Silty Gravel, Clayey Shale                        |
| B-3       | 29.5433°     | -98.2630°     | 687.3                  | 20.0              | 667.3              | 7.0                  | 380.36                       | Silty Clay, Stiff Clay, Clayey Shale                      |
| B-4       | 29.5439°     | -98.2620°     | 684.4                  | 20.0              | 664.4              | 8.0                  | 676.4                        | Silty Clay, Silty-Clayey Gravel, Stiff Clay, Clayey Shale |
| B-5       | 29.5448°     | -98.2609°     | 682.4                  | 20.0              | 662.4              | 7.0                  | 675.4                        | Silty Clay, Sandy-Clayey Gravel, Stiff Clay, Clayey Shale |
| B-6       | 29.5449°     | -98.2599°     | 687.6                  | 25.0              | 662.6              | 11.7                 | 675.9                        | Clayey Gravel, Stiff Clay, Clayey Shale                   |
| B-7       | 29.5454°     | -98.2589°     | 676.8                  | 20.0              | 656.8              | 1.5                  | 675.3                        | Sandy Gravel, Clayey Shale                                |
| C-3       | 29.5443°     | -98.25636°    | 697.8                  | 25.0              | 672.8              | 22.0                 | 675.8                        | Fill, Silty Clay, Silty Gravel, Stiff Clay                |
| C-4       | 29.5448°     | -98.2626°     | 685.3                  | 20.0              | 665.3              | 9.0                  | 676.3                        | Fill, Clayey Gravel, Stiff Clay, Clayey Shale             |
| C-5       | 29.5453°     | -98.2615°     | 681.5                  | 20.0              | 661.5              | Dry                  | -----                        | Sandy Gravel, Stiff Clay, Clayey Shale                    |
| C-6       | 29.5458°     | -98.2605°     | 690.5                  | 25.0              | 665.60             | 15.5                 | 675.1                        | Fill, Clayey Gravel, Stiff Clay, Clayey Shale             |

### Boring Data Reference:

- Snowden, Inc., Geotechnical Investigation, F.M. 78, Beck Ready Mix Job #5108, August-December, 1985.

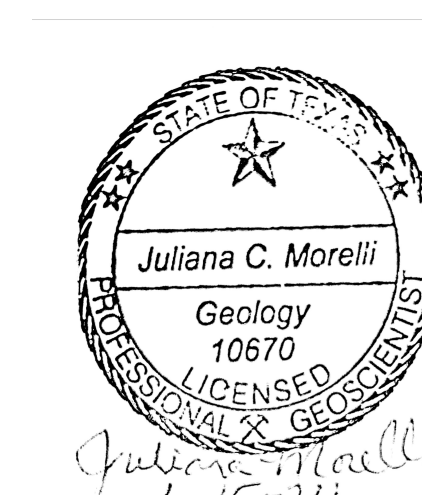
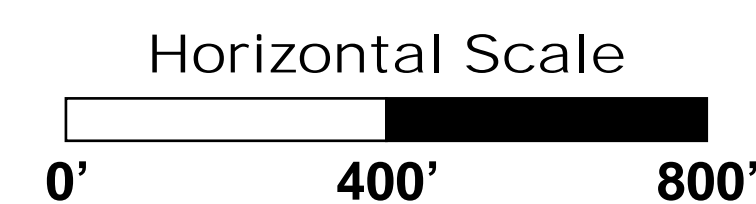
Note: Data are included in this application, in Part III, Attachment D, Appendix D5-C1. Ground elevations were not included on the 1987 bore logs; therefore, the 1987 bore data was not used in developing the cross-sections.

Figure 1.1

### Boring Location Data References:

- Snowden, Inc., Geotechnical Investigation, F.M. 78, Beck Ready Mix Job #5108, August-December, 1985.
- Snowden, Inc., Geotechnical Investigation, F.M. 78, Beck Ready Mix Job #5108, September 1987.

Note: Ground elevations were not included on the 1987 bore logs; therefore, the 1987 bore data was not used in developing the cross-sections.



## BECK LANDFILL Bore Hole Location & Data Schertz, TX



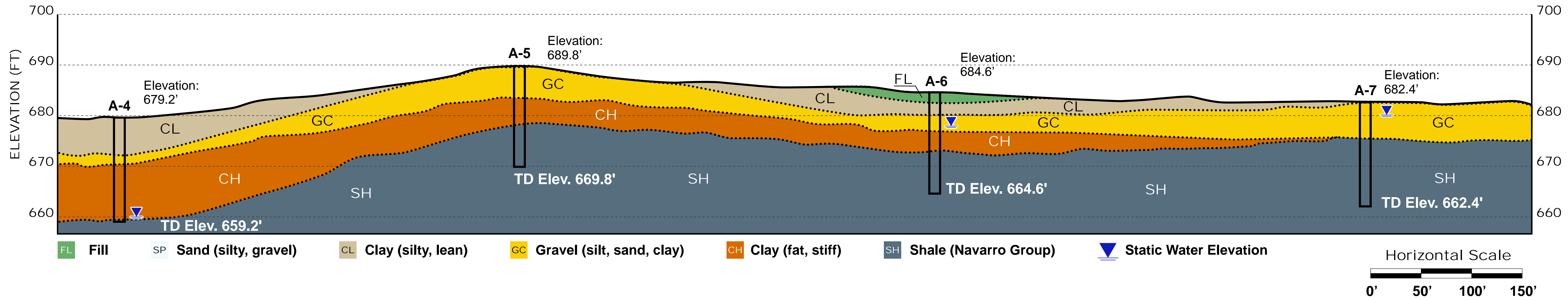
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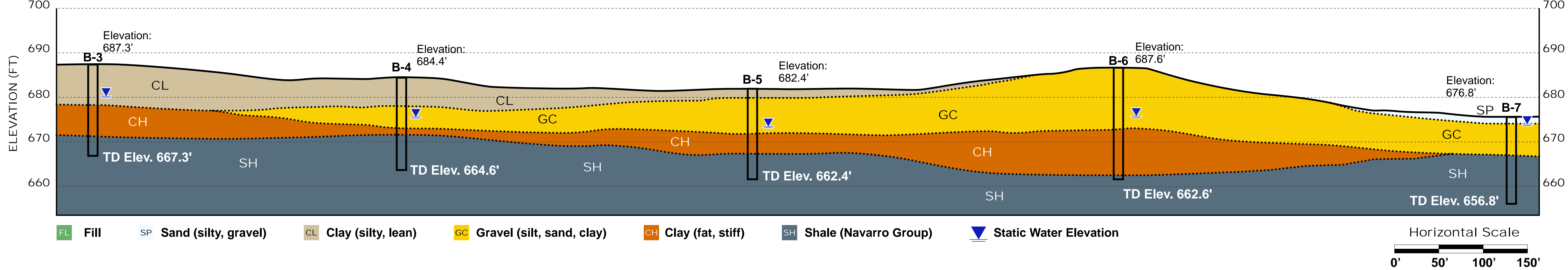
A Figure 2.1

A'



B Figure 2.2

B'

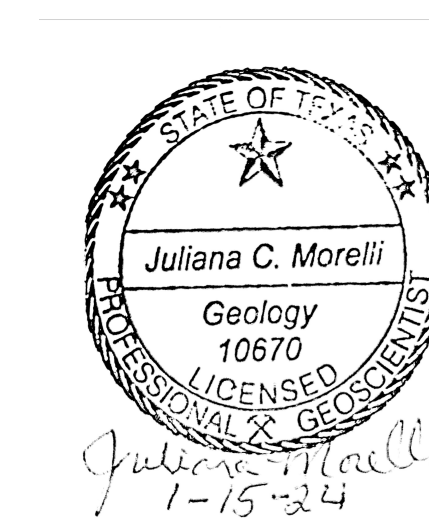


**Boring Data Reference:**

1. Snowden, Inc., Geotechnical Investigation, F.M. 78, Beck Ready Mix Job #5108, August-December, 1985.

Note: Data are included in this application, in Part III, Attachment D, Appendix D5-C1

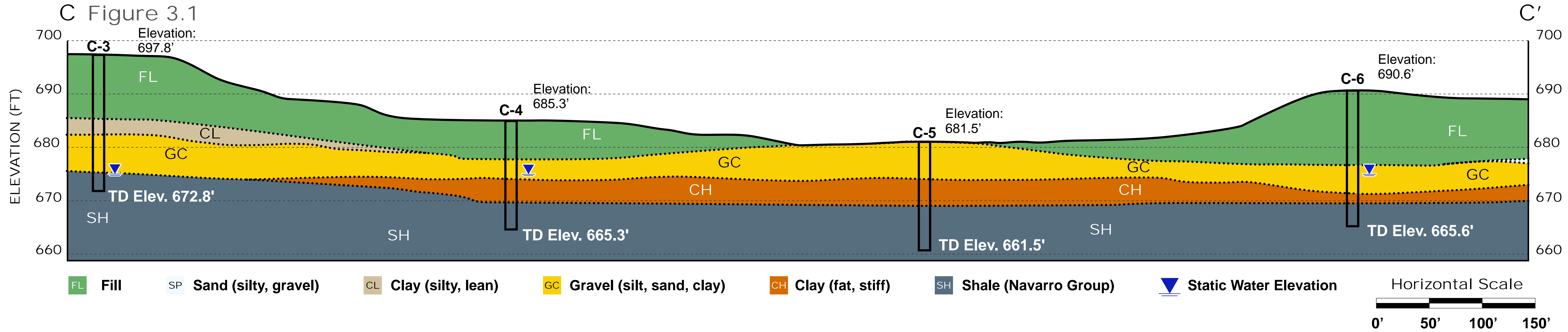
Ground elevations were not included on the 1987 bore logs therefore, the 1987 bore data was not used in developing the cross-sections.



|   |  |
|---|--|
| <p><b>BECK LANDFILL</b><br/>Lithologic Cross Sections<br/>Schertz, TX</p> |  |
|   | <p><b>Appendix E-4</b></p>             |
|   | <p>Page: <b>02</b></p>                 |
|   | <p>Revision Date: <b>1/12/2024</b></p> |



C Figure 3.1

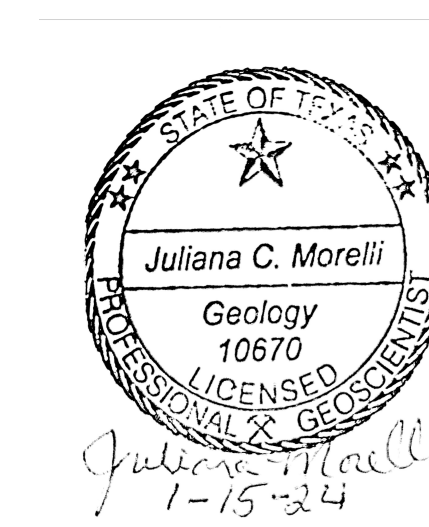


**Boring Data Reference:**

1. Snowden, Inc., Geotechnical Investigation, F.M. 78, Beck Ready Mix Job #5108, August-December, 1985.

Note: Data are included in this application, in Part III, Attachment D, Appendix D5-C1

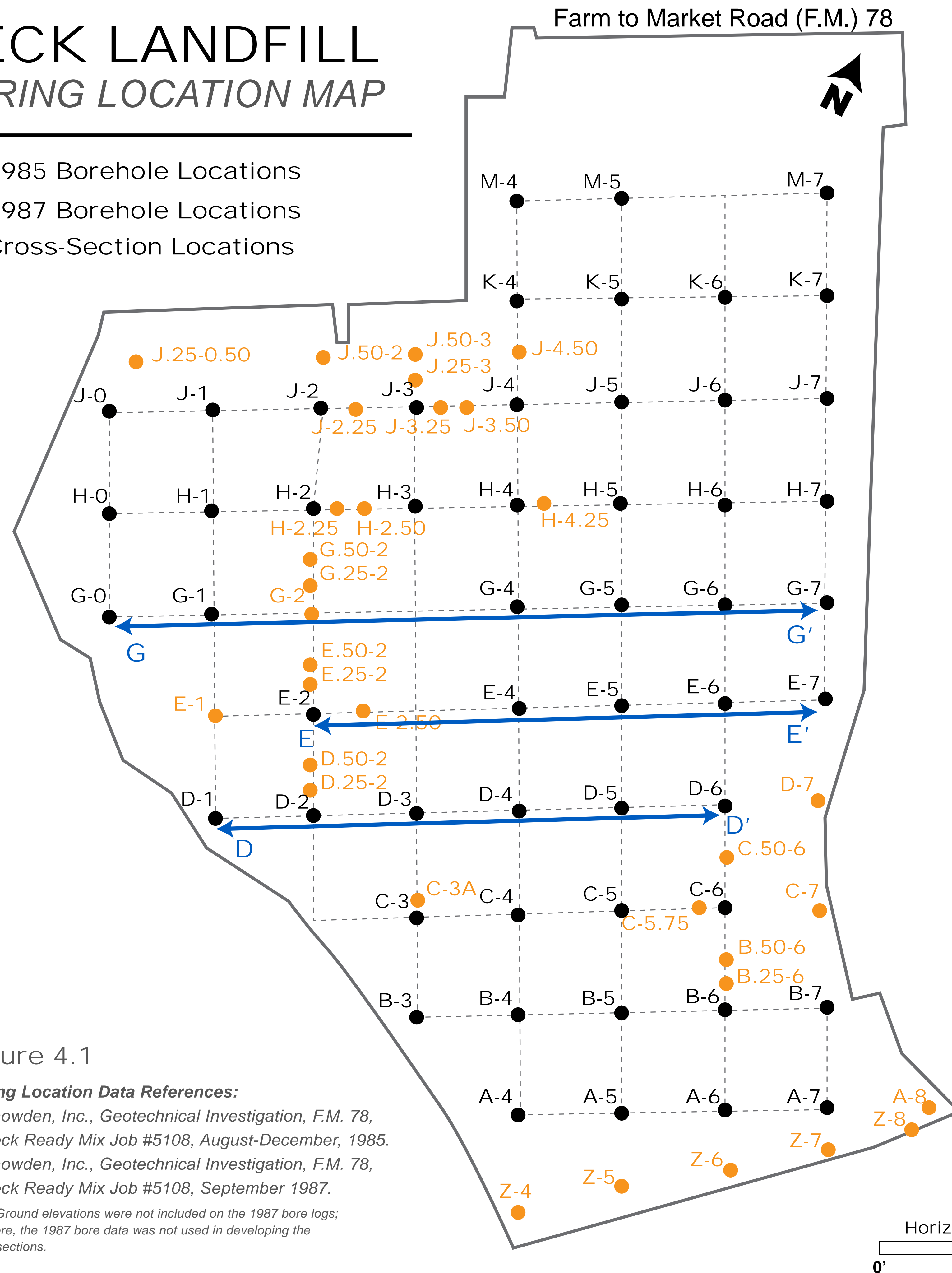
Ground elevations were not included on the 1987 bore logs therefore, the 1987 bore data was not used in developing the cross-sections.



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|---|--|
| <p><b>BECK LANDFILL</b><br/>Lithologic Cross Sections<br/>Schertz, TX</p> |  |
|   | <p><b>Appendix E-4</b></p>             |
|   | <p>Page: <b>03</b></p>                 |
|   | <p>Revision Date: <b>1/12/2024</b></p> |

# BECK LANDFILL BORING LOCATION MAP

- 1985 Borehole Locations
- 1987 Borehole Locations
- ↔ Cross-Section Locations



## 1985 BORING DATA

Figure 4.2

| Boring ID | Latitude (N) | Longitude (W) | Collar Elevation (ft.) | Total Depth (ft.) | TD Elevation (ft.) | Depth to Water (ft.) | Static Water Elevation (ft.) | Lithology (Youngest to Oldest)                                  |
|-----------|--------------|---------------|------------------------|-------------------|--------------------|----------------------|------------------------------|---|
| D-1       | 29.5442°     | -98.2663°     | 692.4                  | 25.0              | 667.4              | 11.5                 | 680.9                        | Silty Clay, Silty Gravel, Stiff Clay, Clayey Shale              |
| D-2       | 29.5447°     | -98.2652°     | 696.4                  | 30.0              | 666.4              | 16.0                 | 680.4                        | Clayey Gravel, Stiff Clay, Clay Shale                           |
| D-3       | 29.5453°     | -98.2642°     | 692.3                  | 20.0              | 672.3              | 12.9                 | 679.4                        | Silty Clay, Silty Gravel, Stiff Clay                            |
| D-4       | 29.5458°     | -98.2632°     | 704.1                  | 35.0              | 669.1              | 28.1                 | 676.0                        | Silty Clay, Sandy Gravel, Stiff Clay, Clayey Shale              |
| D-5       | 29.5463°     | -98.2641°     | 703.3                  | 35.0              | 668.3              | 27.0                 | 676.3                        | Silty Sand, Sandy Gravel, Stiff Clay, Clayey Shale              |
| D-6       | 29.5468°     | -98.2611°     | 699.8                  | 35.0              | 664.0              | 24.0                 | 675.8                        | Silty Clay, Silty Sand, Sandy Gravel, Stiff Clay, Clayey Shale  |
| E-2       | 29.5457°     | -98.2658      | 702.6                  | 30.0              | 672.6              | 22.0                 | 680.6                        | Fill, Sandy Gravel, Stiff Clay, Clayey Shale                    |
| E-4       | 29.5448°     | -98.2626°     | 693.3                  | 25.0              | 668.3              | 16.0                 | 677.3                        | Fill, Stiff Clay, Clayey Shale                                  |
| E-5       | 29.5453°     | -98.2615°     | 703.3                  | 35.0              | 668.3              | 27.0                 | -676.3                       | Silty Clay, Silty Sand, Sandy Gravel, Stiff Clay                |
| E-6       | 29.5458°     | -98.2605°     | 700.1                  | 35.0              | 665.1              | 25.6                 | 674.5                        | Silty Clay, Silty Gravel, Stiff Clay                            |
| E-7       | 29.5462°     | -98.2595°     | 675.9                  | 20.0              | 655.9              | 2.0                  | 673.9                        | Sandy Gravel, Stiff Clay, Clayey Shale                          |
| G-0       | 29.5456°     | -98.2685°     | 693.7                  | 20.0              | 673.7              | 13.0                 | 680.7                        | Sandy Clay, Sandy Gravel, Stiff Clay, Clayey Shale              |
| G-1       | 29.5461°     | -98.2675°     | 702.0                  | 35.0              | 667.0              | 22.0                 | 680.0                        | Silty Clay, Silty-Clayey Gravel, Silty Sand, Clayey Shale       |
| G-4       | 29.55477°    | -98.2643°     | 679.4                  | 25.0              | 654.4              | 10.0                 | 669.4                        | Silty-Clayey Gravel, Clayey Shale                               |
| G-5       | 29.5482°     | -98.2634°     | 700.7                  | 35.0              | 665.7              | 25.0                 | 675.7                        | Silty Clay, Silty Sand, Clayey Shale                            |
| G-6       | 29.5487°     | -98.2622°     | 692.7                  | 30.0              | 662.2              | 17.0                 | 675.7                        | Silty Clay, Clayey Gravel, Silty Sand, Stiff Clay, Clayey Shale |
| G-7       | 29.5492°     | -98.2612°     | 677.3                  | 20.0              | 657.3              | 3.0                  | 674.3                        | Silty Sand, Clayey Gravel, Stiff Clay, Clayey Shale             |

### Boring Data Reference:

- Snowden, Inc., Geotechnical Investigation, F.M. 78, Beck Ready Mix Job #5108, August-December, 1985.

Note: Data are included in this application, in Part III, Attachment D, Appendix D5-C1.

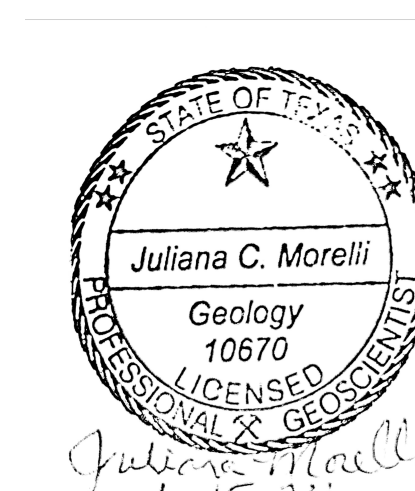
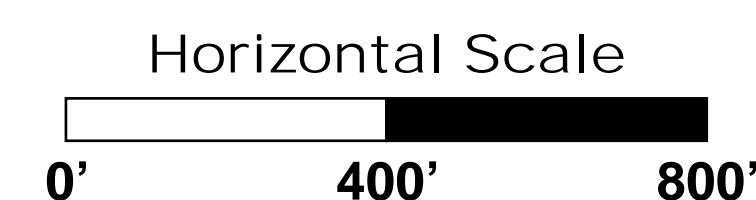
Ground elevations were not included on the 1987 bore logs; therefore, the 1987 bore data was not used in developing the cross-sections.

Figure 4.1

### Boring Location Data References:

- Snowden, Inc., Geotechnical Investigation, F.M. 78, Beck Ready Mix Job #5108, August-December, 1985.
- Snowden, Inc., Geotechnical Investigation, F.M. 78, Beck Ready Mix Job #5108, September 1987.

Note: Ground elevations were not included on the 1987 bore logs; therefore, the 1987 bore data was not used in developing the cross-sections.



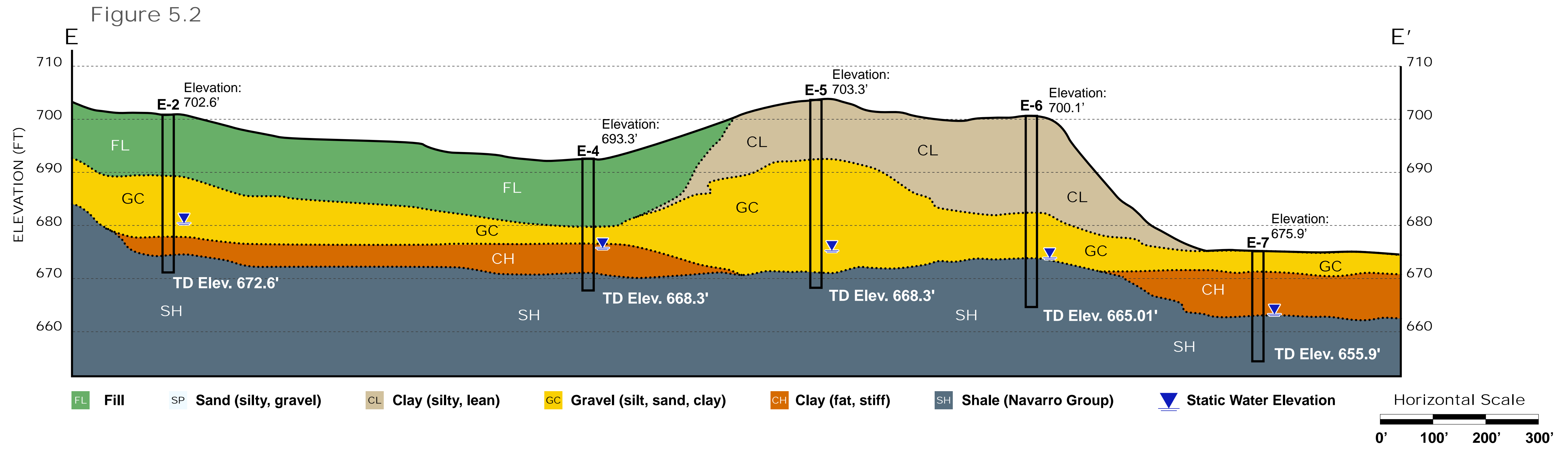
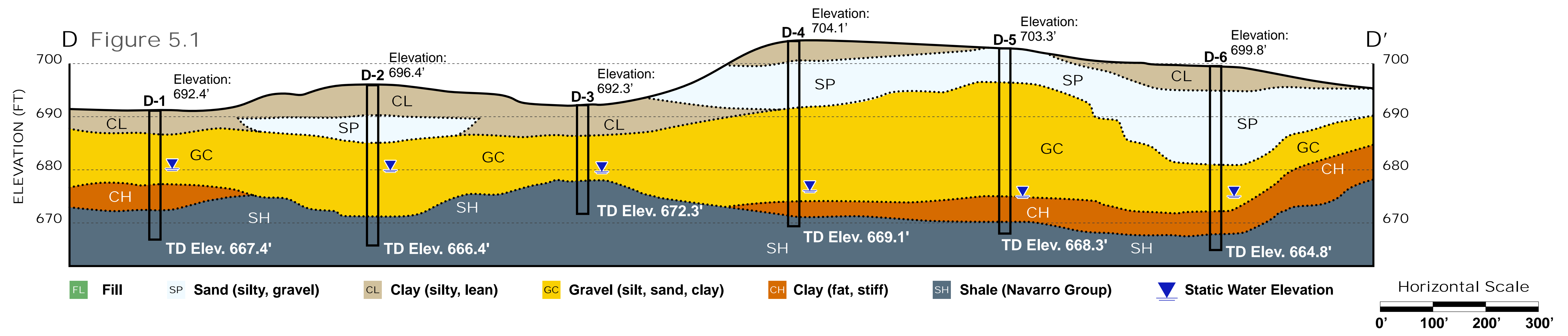
## BECK LANDFILL Bore Hole Location & Data Schertz, TX



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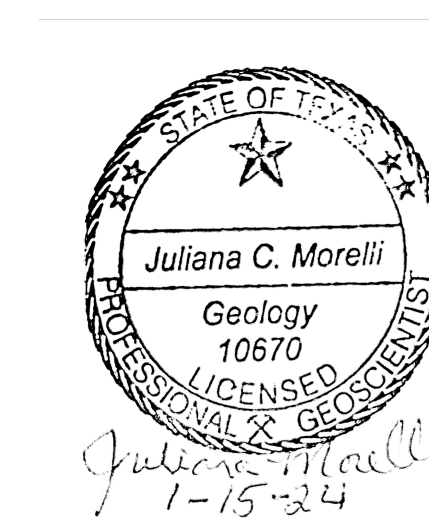


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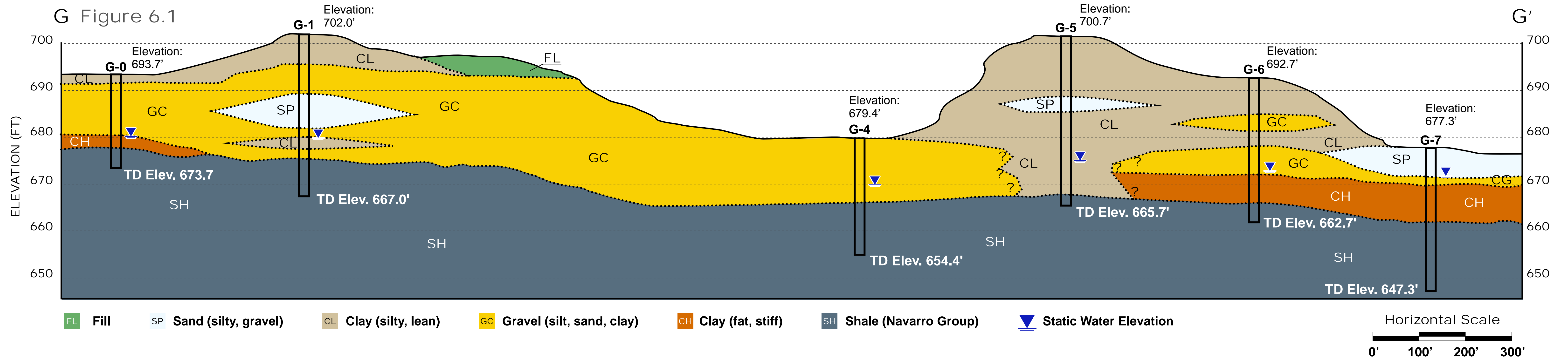
1. Snowden, Inc., Geotechnical Investigation, F.M. 78, Beck Ready Mix Job #5108, August-December, 1985.

Note: Data are included in this application, in Part III, Attachment D, Appendix D5-C1

Ground elevations were not included on the 1987 bore logs therefore, the 1987 bore data was not used in developing the cross-sections.



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| <p><b>BECK LANDFILL</b><br/>Lithologic Cross Sections<br/>Schertz, TX</p> |  |
|   | <p><b>Appendix E-4</b></p>             |
|   | <p>Page: <b>05</b></p>                 |
|   | <p>Revision Date: <b>1/12/2024</b></p> |

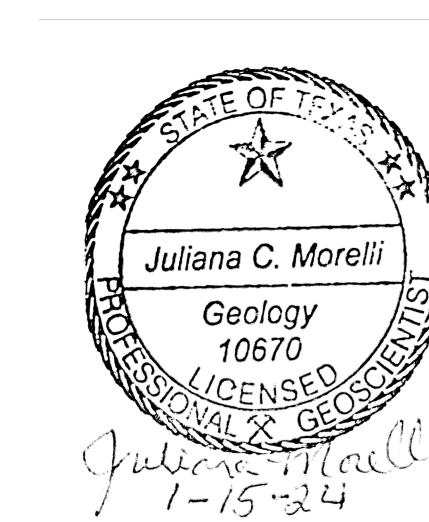


**Boring Data Reference:**

1. Snowden, Inc., Geotechnical Investigation, F.M. 78, Beck Ready Mix Job #5108, August-December, 1985.

Note: Data are included in this application, in Part III, Attachment D, Appendix D5-C1

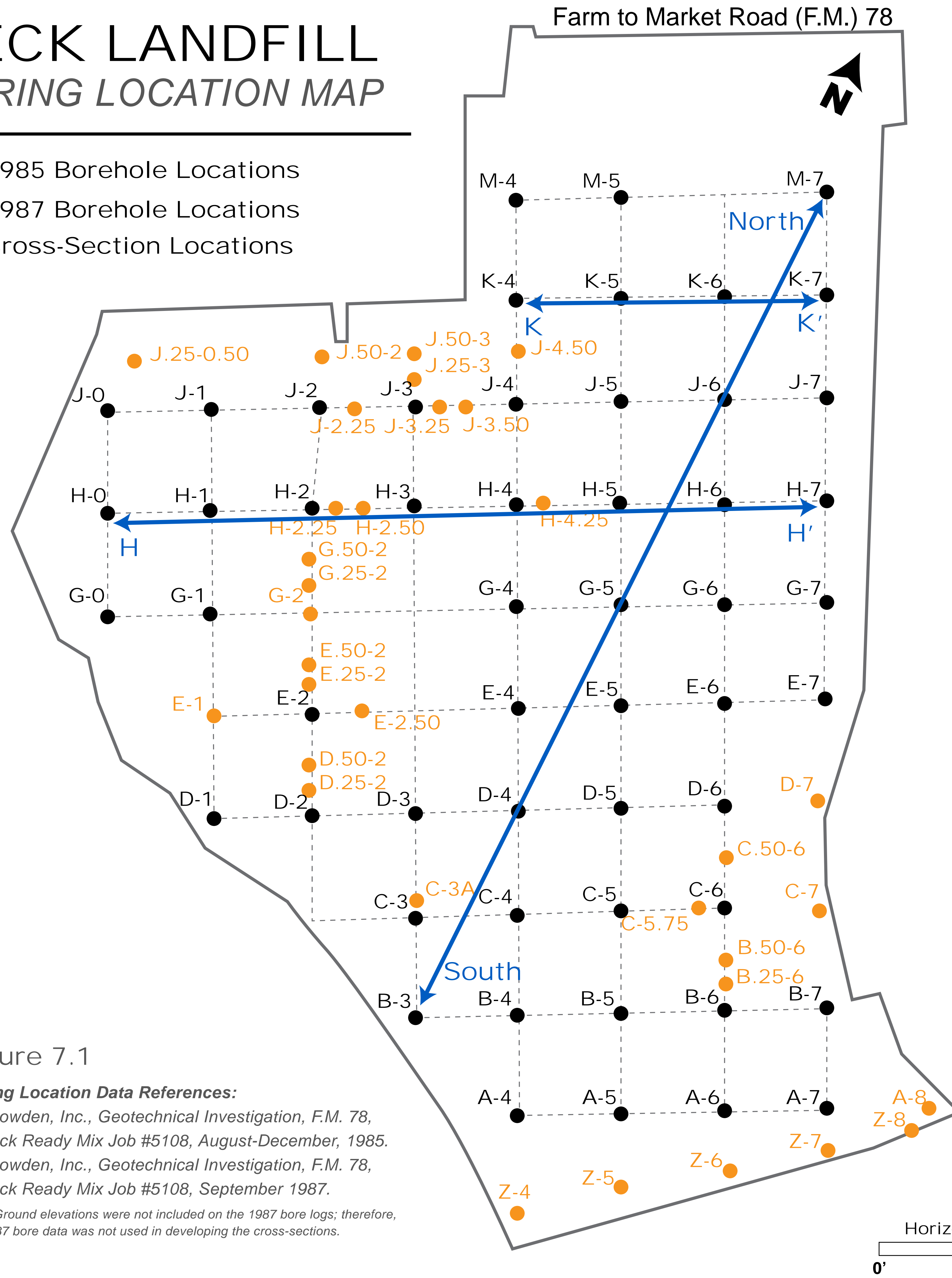
Ground elevations were not included on the 1987 bore logs therefore, the 1987 bore data was not used in developing the cross-sections.



|  |                                 |
|--|---------------------------------|
| <b>BECK LANDFILL</b><br>Lithologic Cross Sections<br>Schertz, TX |                                 |
|  | <b>Appendix E-4</b>             |
|  | Page: <b>06</b>                 |
|  | Revision Date: <b>1/12/2024</b> |

# BECK LANDFILL BORING LOCATION MAP

- 1985 Borehole Locations
- 1987 Borehole Locations
- ↔ Cross-Section Locations



## 1985 BORING DATA

Figure 7.2

| Boring ID | Latitude (N) | Longitude (W) | Collar Elevation (ft.) | Total Depth (ft.) | TD Elevation (ft.) | Depth to Water (ft.) | Static Water Elevation (ft.) | Lithology (Youngest to Oldest)                                  |
|-----------|--------------|---------------|------------------------|-------------------|--------------------|----------------------|------------------------------|---|
| H-0       | 29.5466°     | -98.2691°     | 691.0                  | 20.0              | 671.0              | 8.3                  | 682.7                        | Silty Clay, Silty Gravel, Stiff Clay, Clayey Shale              |
| H-1       | 29.5471°     | -98.2680°     | 706.0                  | 30.0              | 676.0              | Dry                  | -----                        | Clayey Gravel, Stiff Clay, Clay Shale                           |
| H-2       | 29.5453°     | -98.2642°     | 705.9                  | 30.0              | 675.9              | Dry                  | -----                        | Silty Clay, Silty Gravel, Stiff Clay                            |
| H-3       | 29.5458°     | -98.2632°     | 703.1                  | 30.0              | 673.1              | 23.0                 | 680.1                        | Silty Clay, Sandy Gravel, Stiff Clay, Clayey Shale              |
| H-4       | 29.5463°     | -98.2641°     | 704.9                  | 35.0              | 669.9              | 25.9                 | 679.0                        | Silty Sand, Sandy Gravel, Stiff Clay, Clayey Shale              |
| H-5       | 29.5468°     | -98.2611°     | 700.0                  | 35.0              | 665.0              | 25.5                 | 674.5                        | Silty Clay, Silty Sand, Sandy Gravel, Stiff Clay, Clayey Shale  |
| H-6       | 29.5473°     | -98.2601°     | 698.0                  | 35.0              | 663.0              | 21.0                 | 677.0                        | Silty Clay, Sandy-Clayey Gravel, Stiff Clay, Clayey Shale       |
| H-7       | 29.5451°     | -98.2673°     | 679.2                  | 20.0              | 659.2              | 7.0                  | 672.2                        | Sandy Clay, Silty Gravel, Clayey Shale                          |
| K-4       | 29.5457°     | -98.2658      | 695.3                  | 30.0              | 665.3              | 13.0                 | 682.3                        | Fill, Sandy Gravel, Stiff Clay, Clayey Shale                    |
| K-5       | 29.5459°     | -98.2657°     | 692.4                  | 30.0              | 662.4              | 19.0                 | 673.4                        | Fill, Sandy Gravel  |
| K-6       | 29.5448°     | -98.2626°     | 690.2                  | 30.0              | 660.2              | 16.0                 | 674.2                        | Fill, Stiff Clay, Clayey Shale                                  |
| K-7       | 29.5453°     | -98.2615°     | 687.5                  | 30.0              | 657.5              | 17.0                 | 670.5                        | Silty Clay, Silty Sand, Sandy Gravel, Stiff Clay                |
| B-3       | 29.5433°     | 98.2630°      | 687.3                  | 20.0              | 667.3              | 7.0                  | 380.4                        | Silty Clay, Stiff Clay, Clayey Shale                            |
| D-4       | 29.5458°     | -98.2632°     | 704.1                  | 35.0              | 669.1              | 28.14                | 676.0                        | Silty Clay, Sandy Gravel, Stiff Clay, Clayey Shale              |
| G-5       | 29.5482°     | -98.2634°     | 700.7                  | 35.0              | 665.7              | 25.0                 | 675.7                        | Silty Clay, Clayey Gravel, Silty Sand, Stiff Clay, Clayey Shale |
| J-6       | 29.5506°     | -98.2634°     | 693.3                  | 30.0              | 663.3              | 20.0                 | 673.3                        | Silty Clay, Sandy Gravel, Clayey Shale                          |
| M-7       | 29.5530°     | -98.2635°     | 685.7                  | 30.0              | 655.7              | 16.0                 | 669.7                        | Silty Clay, Sandy Gravel, Stiff Clay, Clayey Shale              |

### Boring Data Reference:

- Snowden, Inc., Geotechnical Investigation, F.M. 78, Beck Ready Mix Job #5108, August-December, 1985.
- Snowden, Inc., Geotechnical Investigation, F.M. 78, Beck Ready Mix Job #5108, September 1987.

Note: Data are included in this application, in Part III, Attachment D, Appendix D5-C1. Ground elevations were not included on the 1987 bore logs; therefore, the 1987 bore data was not used in developing the cross-sections.

Figure 7.1

### Boring Location Data References:

- Snowden, Inc., Geotechnical Investigation, F.M. 78, Beck Ready Mix Job #5108, August-December, 1985.
- Snowden, Inc., Geotechnical Investigation, F.M. 78, Beck Ready Mix Job #5108, September 1987.

Note: Ground elevations were not included on the 1987 bore logs; therefore, the 1987 bore data was not used in developing the cross-sections.

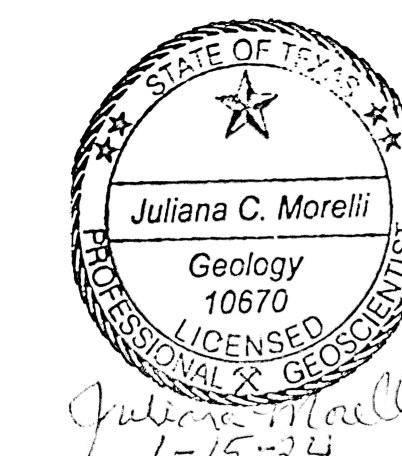
## BECK LANDFILL Bore Hole Location & Data Schertz, TX

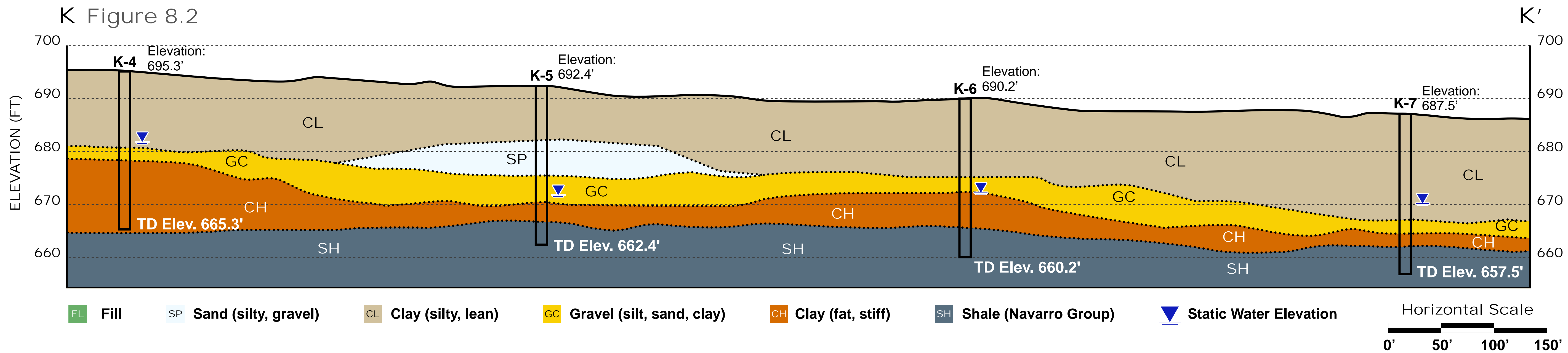
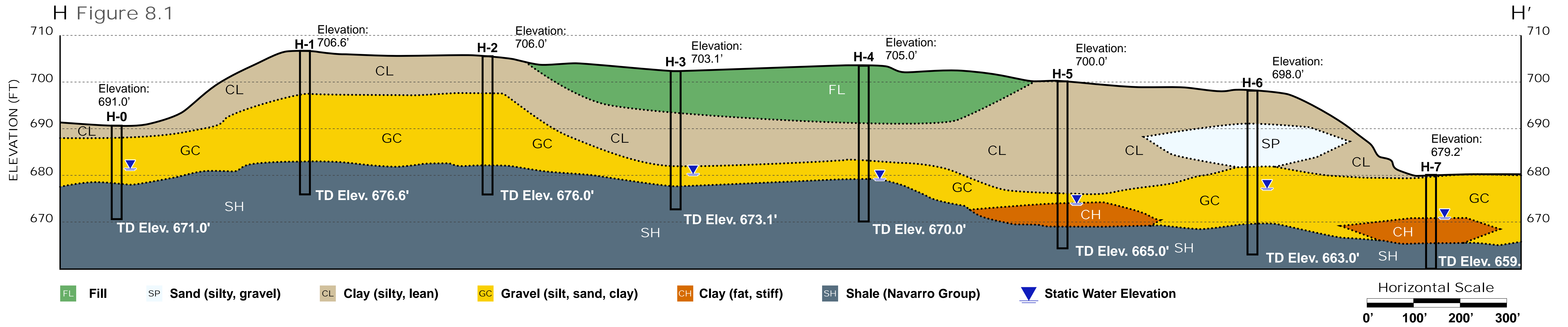


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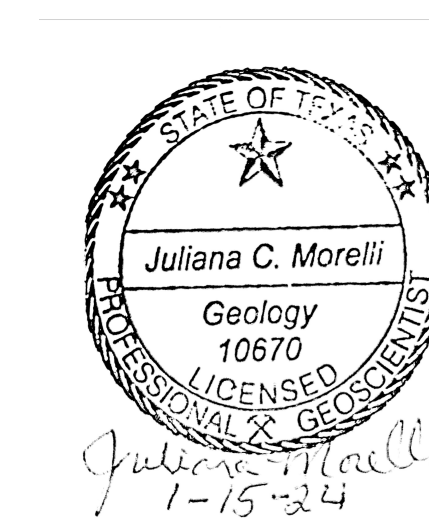


**Boring Data Reference:**

1. Snowden, Inc., Geotechnical Investigation, F.M. 78, Beck Ready Mix Job #5108, August-December, 1985.

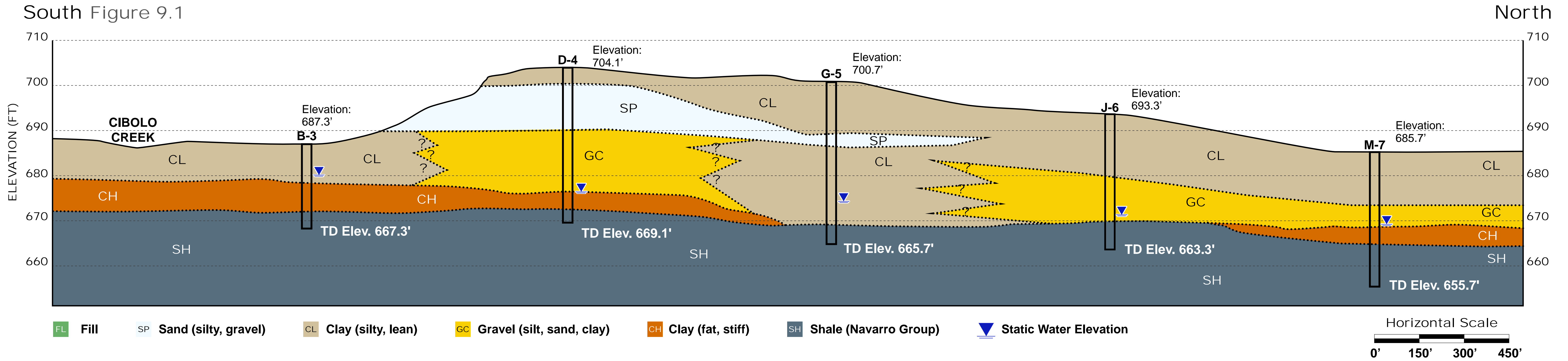
Note: Data are included in this application, in Part III, Attachment D, Appendix D5-C1

Ground elevations were not included on the 1987 bore logs therefore, the 1987 bore data was not used in developing the cross-sections.



|   |   |
|---|---|
| <h2 style="margin: 0;">BECK LANDFILL</h2> <p style="margin: 0;">Lithologic Cross Sections<br/>Schertz, TX</p> |   |
|   | <p style="margin: 0;"><b>Appendix E-4</b></p> <hr/> <p style="margin: 0;">Page: <b>08</b></p> <hr/> <p style="margin: 0;">Revision Date: <b>1/12/2024</b></p> |

South Figure 9.1

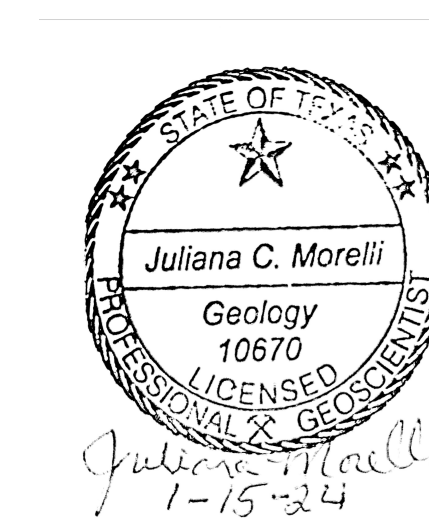


**Boring Data Reference:**

1. Snowden, Inc., Geotechnical Investigation, F.M. 78, Beck Ready Mix Job #5108, August-December, 1985.

Note: Data are included in this application, in Part III, Attachment D, Appendix D5-C1

Ground elevations were not included on the 1987 bore logs therefore, the 1987 bore data was not used in developing the cross-sections.



|   |  |
|---|--|
| <p><b>BECK LANDFILL</b><br/>Lithologic Cross Sections<br/>Schertz, TX</p> |  |
|   | <p><b>Appendix E-4</b></p>             |
|   | <p>Page: <b>09</b></p>                 |
|   | <p>Revision Date: <b>1/12/2024</b></p> |

# BECK LANDFILL BORING LOCATION MAP



Figure 10.1

**Boring Location Data Reference:**

1. Terracon, Inc., Geotechnical Engineering Report, Beck Landfill Southeast Section, 550 FM 78, Schertz, Texas, October 20, 2020.

## 2020 BORING DATA





Figure 10.2

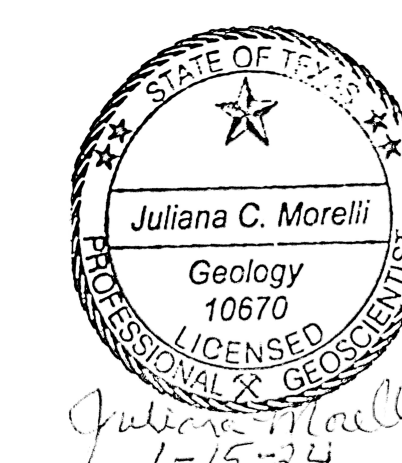
| Boring ID | Latitude (N) | Longitude (W) | Collar Elevation (ft.) | Total Depth (ft.) | TD Elevation (ft.) | Depth to Water (ft.) | Lithology (Youngest to Oldest)                       |
|-----------|--------------|---------------|------------------------|-------------------|--------------------|----------------------|--|
| FB-1      | 29.5437°     | -98.2628°     | 708.0                  | 45.0              | 663.0              | No Water             | Fill, Clayey Gravel, Lean Clay, Clay-Shale           |
| FB-2      | 29.5431°     | -98.2615°     | 710.0                  | 45.0              | 665.0              | No Water             | Fill, Fat Clay, Clay-Shale                           |
| FB-3      | 29.5425°     | -98.2602°     | 703.0                  | 50.0              | 653.0              | 38.0                 | Fill, Lean Clay, Clayey Gravel, Fat Clay, Clay-Shale |
| FB-4      | 29.5453°     | -98.261°      | 693.0                  | 35.0              | 658.0              | No Water             | Clay-Shale   |
| FB-5      | 29.5446°     | -98.26°       | 656.0                  | 35.0              | 621.0              | No Water             | Clay Shale   |
| FB-6      | 29.5443°     | -98.2597°     | 685.0                  | 35.0              | 650.0              | No Water             | Clay-Shale   |
| FB-7      | 29.5437°     | -98.2613°     | 682.0                  | 50.0              | 632.0              | 12.0                 | Fill, Clay-Shale                                     |
| FB-8      | 29.5441°     | -98.2608°     | 686.0                  | 50.0              | 636.0              | No Water             | Fat Clay, Clay-Shale                                 |
|           |              |               |                        |                   |                    |                      |  |

**Boring Data Reference:**

1. Terracon, Inc., Geotechnical Engineering Report, Beck Landfill Southeast Section, 550 FM 78, Schertz, Texas, October 20, 2020.

Note: Data are included in this application, in Part III, Attachment D, Appendix D5-C3.

-  Bore Hole Location
-  Cross Section A-A'
-  Cross Section B-B'
-  Cross Section C-C'



BECK LANDFILL  
2020 Bore Hole Locations & Data  
Schertz, TX

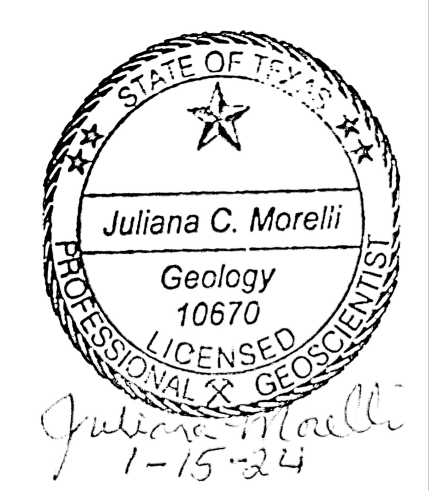
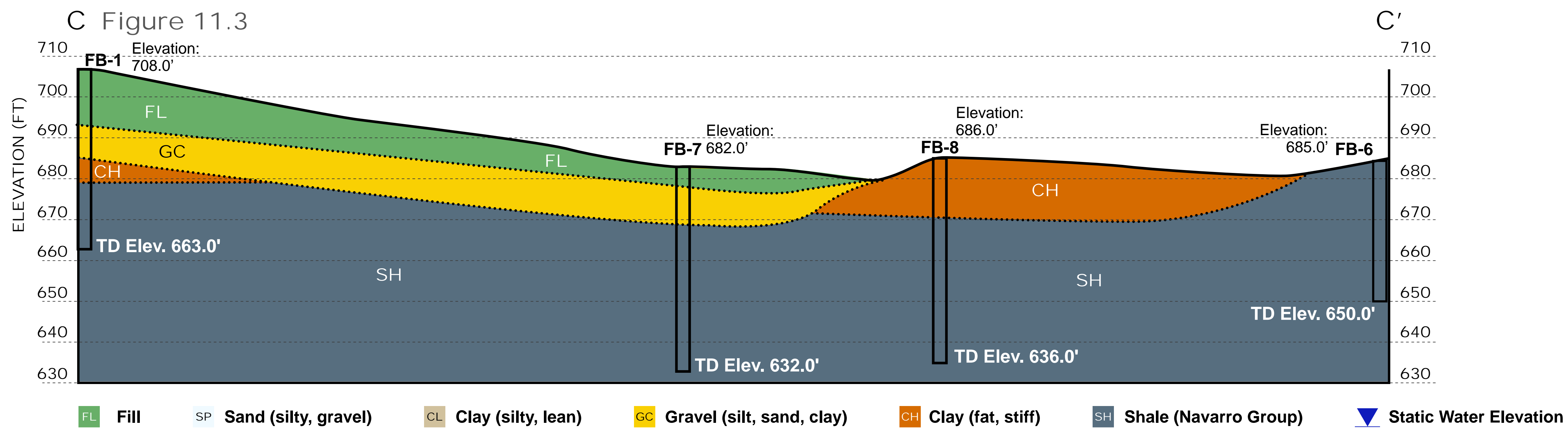
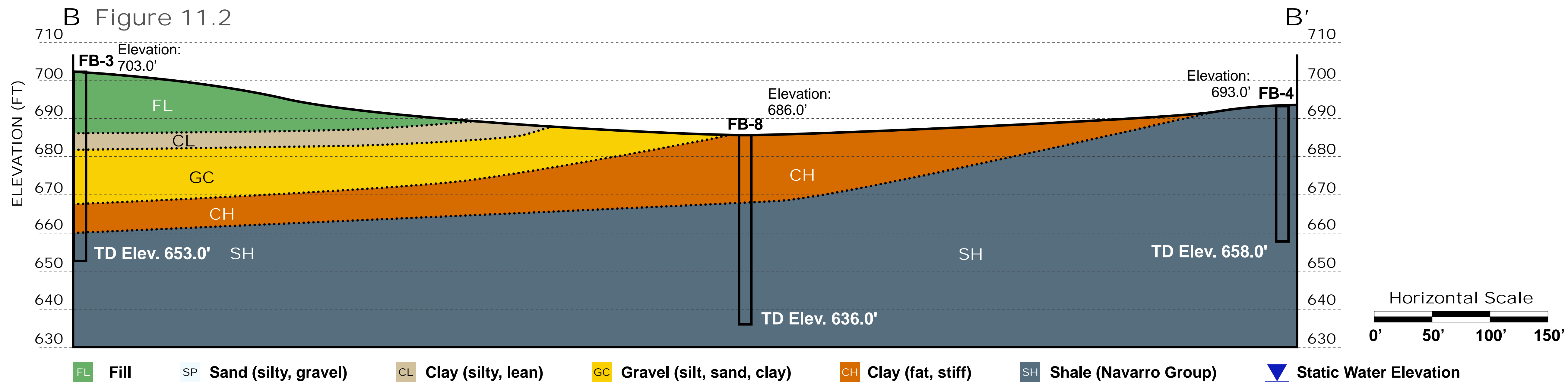
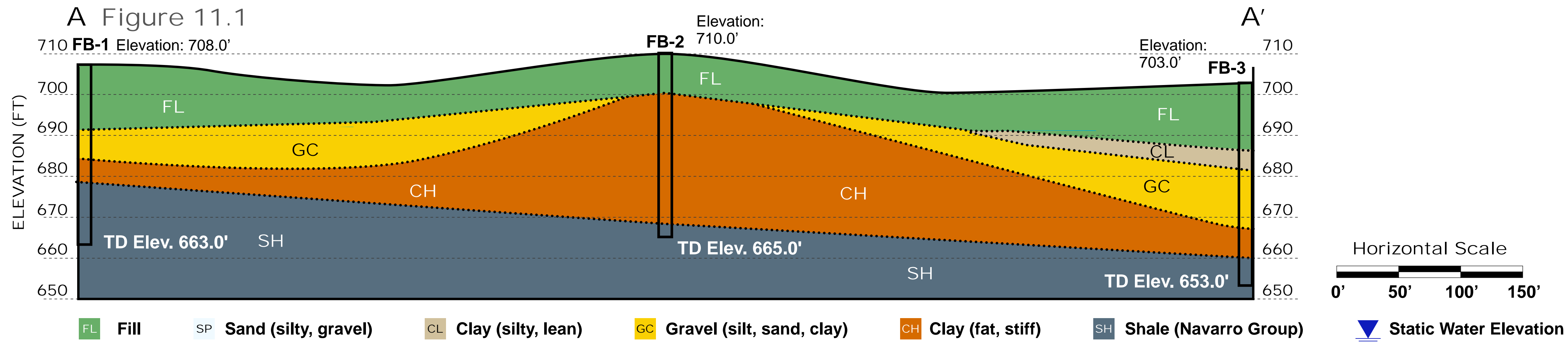


Appendix E-4

Page: 10

Revision Date: 1/12/2024





**BECK LANDFILL**  
 2020 Lithologic Cross Sections  
 Schertz, TX



Appendix E-4

Page: 11

Revision Date: 1/12/2024

**Boring Data Reference:**

1. Terracon, Inc., Geotechnical Engineering Report, Beck Landfill Southeast Section, 550 FM 78, Schertz, Texas, October 20, 2020.

Note: Data are included in this application, in Part III, Attachment D, Appendix D5-C3.

# FENCE DIAGRAM

View Looking Northeast

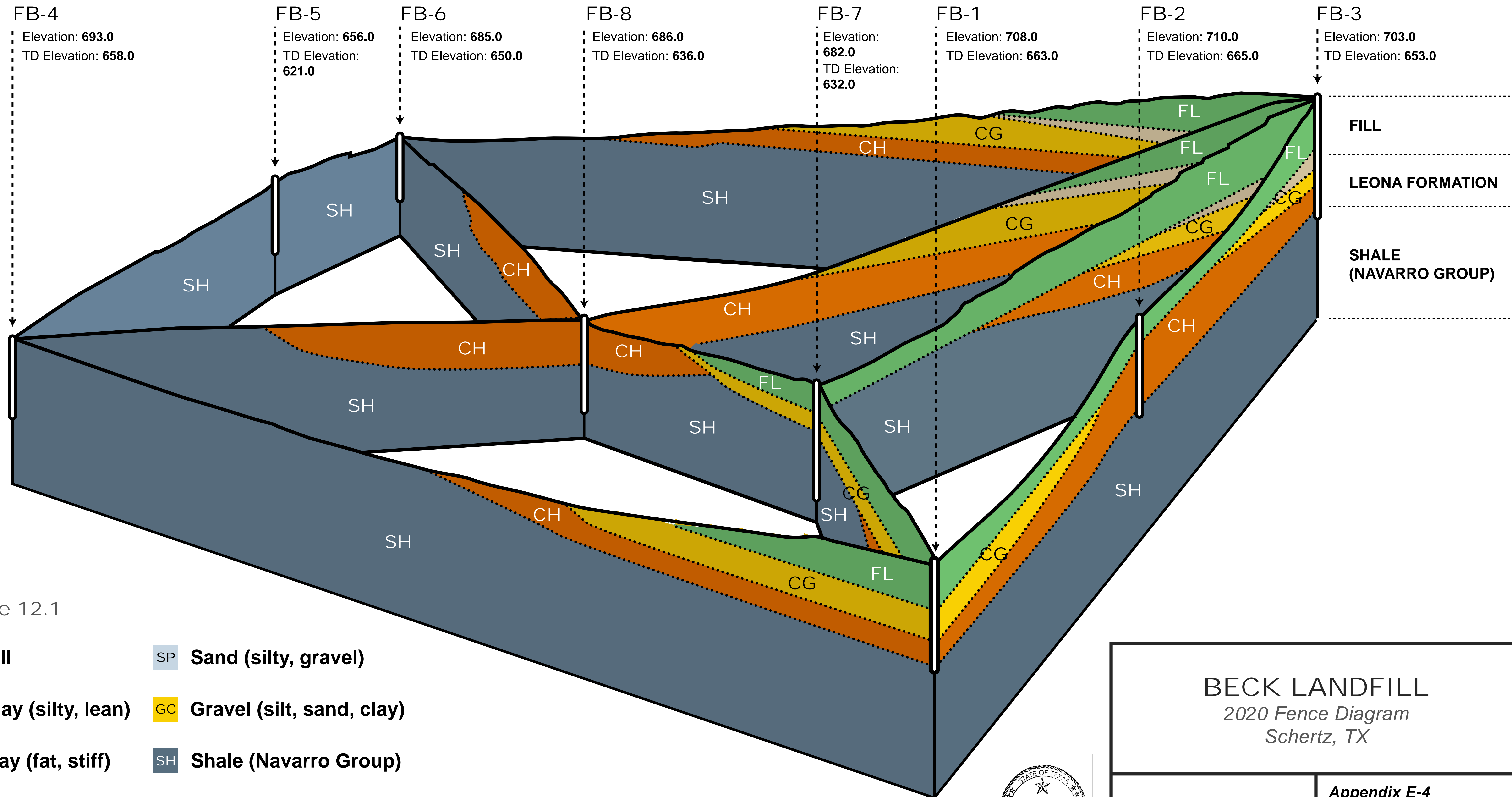


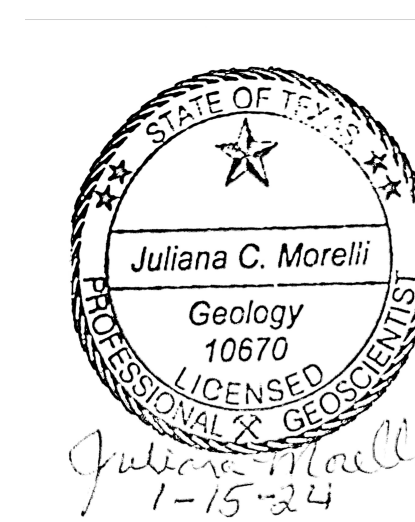
Figure 12.1

- FL **Fill**
- CL **Clay (silty, lean)**
- CH **Clay (fat, stiff)**
- SP **Sand (silty, gravel)**
- GC **Gravel (silt, sand, clay)**
- SH **Shale (Navarro Group)**

**Boring Data Reference:**

1. Terracon, Inc., Geotechnical Engineering Report, Beck Landfill Southeast Section, 550 FM 78, Schertz, Texas, October 20, 2020.

Note: Data are included in this application, in Part III, Attachment D, Appendix D5-C3.



|  |                            |
|--|----------------------------|
| <p><b>BECK LANDFILL</b><br/>2020 Fence Diagram<br/>Schertz, TX</p> |                            |
|  | <p><b>Appendix E-4</b></p> |
| <p>Page: 12</p>  |                            |
| <p>Revision Date: 1/12/2024</p>                                    |                            |

NOD Response 10 – Revised Part III, Attachment F, Appendix F-1 –  
Monitor Well Data Sheets

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## APPENDIX F-1 MONITOR WELL INSTALLATION INFORMATION

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A 24" stick up and protective cover is installed around each monitor well (not piezometers). Three sets of data sheets are provided in this response: the original sheets (do not show the stick up), the 2000 updates resulting from replacing MW-D (show the stick up), and a new set on the updated TCEQ form that show historical data with new pad survey elevations (taken in October 2023). POWER has relied on historical information for well construction details below the ground surface and is carrying forward the historically permitted and accepted designs through this process.

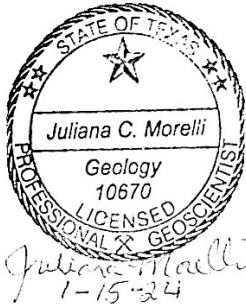
**Monitor Well Data Sheets Revised January 15, 2024**

**Monitor Well Data Sheets Revised November 2000**

**Monitor Well Data Sheets Original 1998**

## APPENDIX F-1 MONITOR WELL INSTALLATION INFORMATION

A 24” stick up and protective cover is installed around each monitor well (not piezometers). Three sets of data sheets are provided in this response: the original sheets (do not show the stick up), the 2000 updates resulting from replacing MW-D (show the stick up), and a new set on the updated TCEQ form that show historical data with new pad survey elevations (taken in October 2023). POWER has relied on historical information for well construction details below the ground surface and is carrying forward the historically permitted and accepted designs through this process.





## **Monitor Well Data Sheets Revised January 15, 2024**

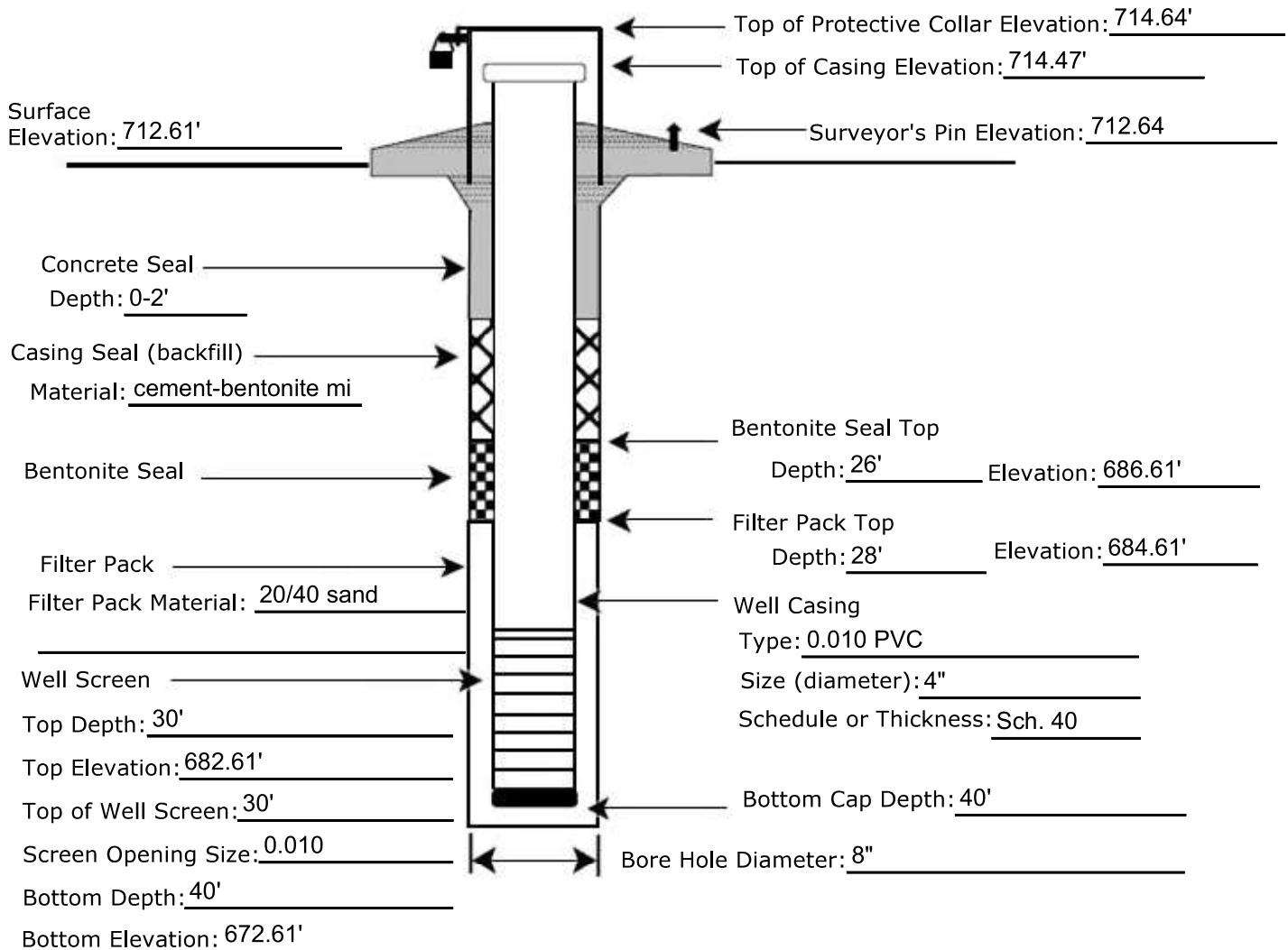


**Texas Commission on Environmental Quality**  
**Monitor Well Data Sheet for Municipal Solid Waste Permits**

1. Name of Facility: Beck Landfill
2. MSW Permit No.: 1848A
3. County: Guadalupe
4. Monitor Well I.D. No.: MW-A
5. Date of Monitor Well Installation: 5-20-1998
6. Date of Well Development: 1-16-2000
7. Monitor Well Latitude: 29° 32.9333 8. Longitude: -98° 16.10463
9. Monitor Well Driller Name: Jedi
10. Monitor Well Hydraulic Position:  
 Upgradient  Downgradient  License No.: 50205-M
11. Geologist, Hydrologist, or Engineer Supervising Well Installation: Harley Weid
12. Static Water Level Elevation (with respect to MSL) after Well Development: 673'
13. Name of Geologic Formation(s) in which Well is completed: Navarro / Taylor
14. Type of Locking Device: cap with padlock 15. Type of Casing Protection: Steel w/ hinged metal lid
16. Concrete Surface Pad (with steel reinforcement) Dimensions: 6' x 6' x 6"

**Notes:**

- Report all depths from Surface Elevation and all Elevations relative to Mean Sea Level (MSL), to nearest hundredth of a foot.
- Diameter of boring should be at least 4 inches larger than diameter of well casing.
- Use flush screw joint casing only, 2-inch diameter or larger, with o-rings or PTFE tape in joints (4-inch diameter recommend).
- Well development should continue until water is clear, and pH and conductivity are stable.



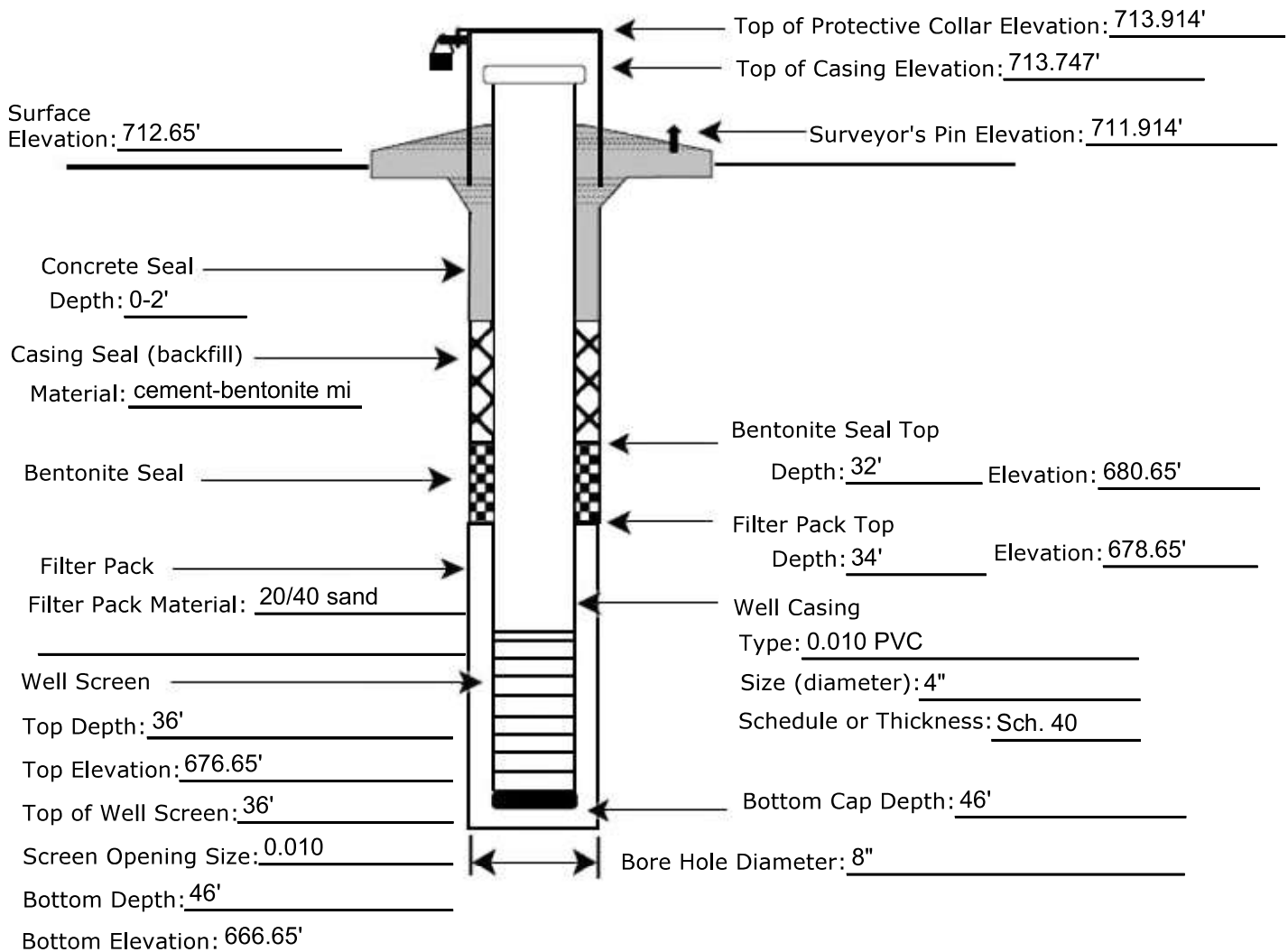


**Texas Commission on Environmental Quality**  
**Monitor Well Data Sheet for Municipal Solid Waste Permits**

1. Name of Facility: Beck Landfill
2. MSW Permit No.: 1848A
3. County: Guadalupe
4. Monitor Well I.D. No.: MW-C
5. Date of Monitor Well Installation: 5-20-1998
6. Date of Well Development: 1-16-2000
7. Monitor Well Latitude: 29° 32.6695 8. Longitude: -98° 15.93938
9. Monitor Well Driller Name: Jedi
10. Monitor Well Hydraulic Position:  
 Upgradient  Downgradient  License No.: 50205-M
11. Geologist, Hydrologist, or Engineer Supervising Well Installation: Harley Weid
12. Static Water Level Elevation (with respect to MSL) after Well Development: 675'
13. Name of Geologic Formation(s) in which Well is completed: Navarro / Taylor
14. Type of Locking Device: cap with padlock 15. Type of Casing Protection: Steel w/ hinged metal lid
16. Concrete Surface Pad (with steel reinforcement) Dimensions: 6' x 6' x 6"

**Notes:**

- Report all depths from Surface Elevation and all Elevations relative to Mean Sea Level (MSL), to nearest hundredth of a foot.
- Diameter of boring should be at least 4 inches larger than diameter of well casing.
- Use flush screw joint casing only, 2-inch diameter or larger, with o-rings or PTFE tape in joints (4-inch diameter recommend).
- Well development should continue until water is clear, and pH and conductivity are stable.



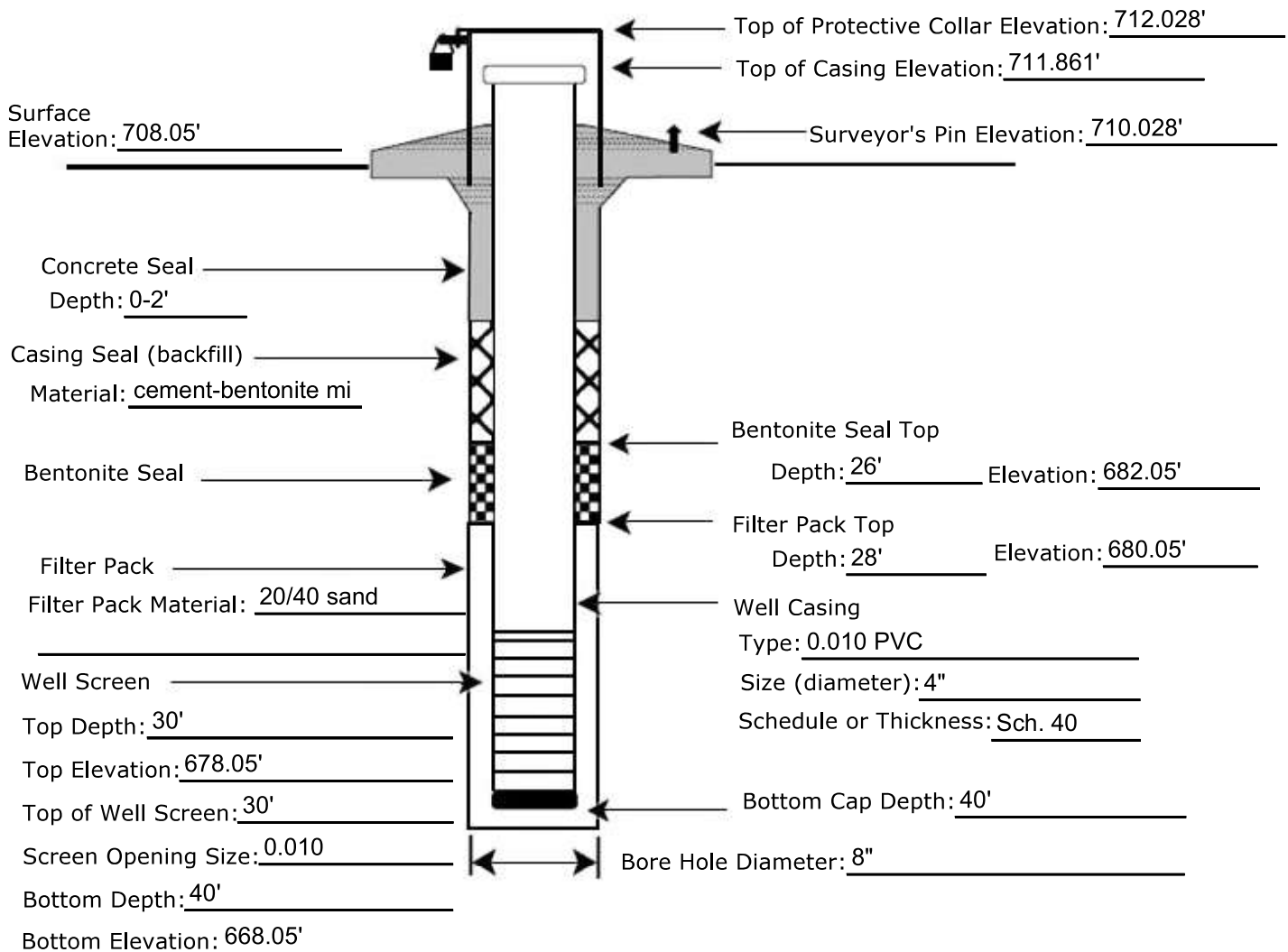


**Texas Commission on Environmental Quality**  
**Monitor Well Data Sheet for Municipal Solid Waste Permits**

1. Name of Facility: Beck Landfill
2. MSW Permit No.: 1848A
3. County: Guadalupe
4. Monitor Well I.D. No.: MW-D
5. Date of Monitor Well Installation: 2-29-2000
6. Date of Well Development: 3-7-2000
7. Monitor Well Latitude: 29° 32.6256 8. Longitude: -98° 15.50316
9. Monitor Well Driller Name: Jedi
10. Monitor Well Hydraulic Position:  
 Upgradient  Downgradient  License No.: 50205-M
11. Geologist, Hydrologist, or Engineer Supervising Well Installation: Harley Weid
12. Static Water Level Elevation (with respect to MSL) after Well Development: 671.05'
13. Name of Geologic Formation(s) in which Well is completed: Navarro / Taylor
14. Type of Locking Device: cap with padlock 15. Type of Casing Protection: Steel w/ hinged metal lid
16. Concrete Surface Pad (with steel reinforcement) Dimensions: 6' x 6' x 6"

**Notes:**

- Report all depths from Surface Elevation and all Elevations relative to Mean Sea Level (MSL), to nearest hundredth of a foot.
- Diameter of boring should be at least 4 inches larger than diameter of well casing.
- Use flush screw joint casing only, 2-inch diameter or larger, with o-rings or PTFE tape in joints (4-inch diameter recommend).
- Well development should continue until water is clear, and pH and conductivity are stable.



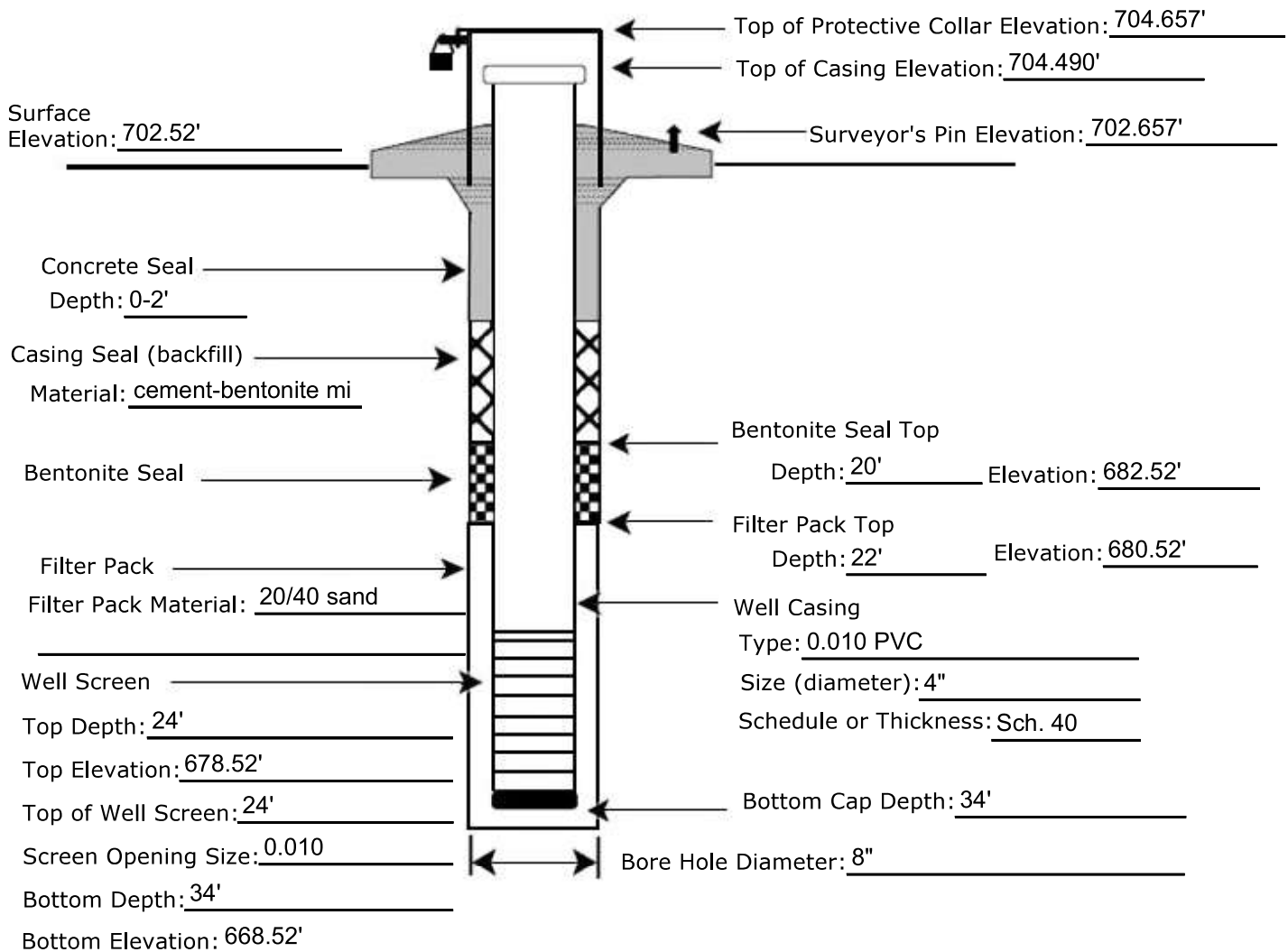


**Texas Commission on Environmental Quality**  
**Monitor Well Data Sheet for Municipal Solid Waste Permits**

- |  |   |
|--|---|
| 1. Name of Facility: <u>Beck Landfill</u>  | 2. MSW Permit No.: <u>1848A</u>                                 |
| 3. County: <u>Guadalupe</u>  | 4. Monitor Well I.D. No.: <u>MW-F</u>                           |
| 5. Date of Monitor Well Installation: <u>5-20-1998</u>   | 6. Date of Well Development: <u>1-16-2000</u>                   |
| 7. Monitor Well Latitude: <u>29° 32.8357</u>   | 8. Longitude: <u>-98° 15.61274</u>                              |
| 9. Monitor Well Driller Name: <u>Jedi</u>  | License No.: <u>50205-M</u>                                     |
| 10. Monitor Well Hydraulic Position:<br>Upgradient <input type="checkbox"/> Downgradient <input checked="" type="checkbox"/> |   |
| 11. Geologist, Hydrologist, or Engineer Supervising Well Installation: <u>Harley Weid</u>                                    |   |
| 12. Static Water Level Elevation (with respect to MSL) after Well Development: <u>674'</u>                                   |   |
| 13. Name of Geologic Formation(s) in which Well is completed: <u>Navarro / Taylor</u>  |   |
| 14. Type of Locking Device: <u>cap with padlock</u>  | 15. Type of Casing Protection: <u>Steel w/ hinged metal lid</u> |
| 16. Concrete Surface Pad (with steel reinforcement) Dimensions: <u>6' x 6' x 6"</u>  |   |

**Notes:**

- Report all depths from Surface Elevation and all Elevations relative to Mean Sea Level (MSL), to nearest hundredth of a foot.
- Diameter of boring should be at least 4 inches larger than diameter of well casing.
- Use flush screw joint casing only, 2-inch diameter or larger, with o-rings or PTFE tape in joints (4-inch diameter recommend).
- Well development should continue until water is clear, and pH and conductivity are stable.



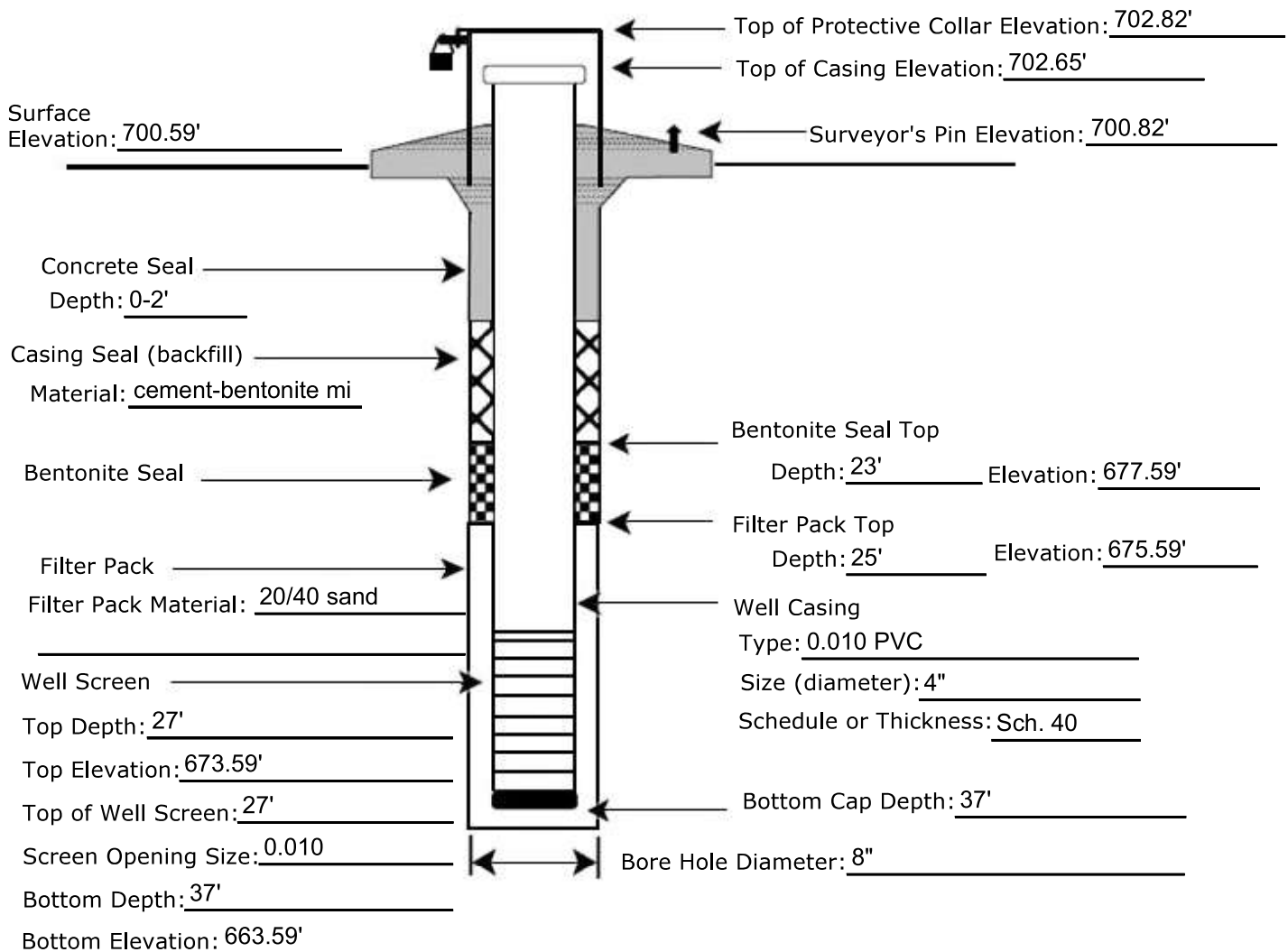


**Texas Commission on Environmental Quality**  
**Monitor Well Data Sheet for Municipal Solid Waste Permits**

1. Name of Facility: Beck Landfill
2. MSW Permit No.: 1848A
3. County: Guadalupe
4. Monitor Well I.D. No.: MW-G
5. Date of Monitor Well Installation: 5-20-1998
6. Date of Well Development: 1-16-2000
7. Monitor Well Latitude: 29° 33.1003 8. Longitude: -98° 15.72974
9. Monitor Well Driller Name: Jedi
10. Monitor Well Hydraulic Position:  
 Upgradient  Downgradient
- License No.: 50205-M
11. Geologist, Hydrologist, or Engineer Supervising Well Installation: Harley Weid
12. Static Water Level Elevation (with respect to MSL) after Well Development: 672'
13. Name of Geologic Formation(s) in which Well is completed: Navarro / Taylor
14. Type of Locking Device: cap with padlock 15. Type of Casing Protection: Steel w/ hinged metal lid
16. Concrete Surface Pad (with steel reinforcement) Dimensions: 6' x 6' x 6"

**Notes:**

- Report all depths from Surface Elevation and all Elevations relative to Mean Sea Level (MSL), to nearest hundredth of a foot.
- Diameter of boring should be at least 4 inches larger than diameter of well casing.
- Use flush screw joint casing only, 2-inch diameter or larger, with o-rings or PTFE tape in joints (4-inch diameter recommend).
- Well development should continue until water is clear, and pH and conductivity are stable.



## **Monitor Well Data Sheets Revised November 2000**

# A. Monitor Well Data Sheet

TEXAS NATURAL RESOURCE  
CONSERVATION COMMISSION  
MSWD-SE67

Permittee or Site Name: Beck Readymix Concrete Co.

MSW PERMIT NO: 1848

County: Guadalupe

Monitor Well I.D. No. MW-A

Date of Monitor Well Installation: 5-20-98

Date of Monitor Well Development: 1-16-00

State Plane No.: N13,747,961 E2, 201,033

Monitor Well Driller Name: JEDI

Monitor Well Groundwater Gradient: Upgradient      Downgradient X

License No.: 50205-M

### NOTE:

- (A) The information shown in the sketch below should be considered the minimum required for an installed ground-water monitor well.
- (B) Report All Depths from Surface Elevation and all Elevations relative to Mean Sea Level.
- (C) The minimum distance between the inside wall of the Bore Hole and the outside of the Well Casing shall be 3".
- (D) Use Flush Screw Joint Casing only, 2" diameter or larger. Recommend 4" diameter minimum & Teflon Taping Casing Joints.
- (E) Well development should continue until water is clear, and pH and conductivity are stable.

Geologist, Hydrologist or Engineer Supervising Well Installation: Harley Wied

Static Water Level Elevation (with respect to MSL) after Well Development: 673'

Name of Geologic Formation(s) in which Well is completed: Navarro/Taylor

Type of Locking Device: with padlock Type of Casing Protection: Steel

Concrete Surface Pad - Recommend steel reinforcement in the Surface Pad.

Surface Pad Dimensions: 6' x 6' x 6"

Surface Elevation: 712.61'

Top of Protective Collar Elevation: 714.86'

Top of Casing Elevation: 714.61'

Surveyor's Elevation: 712.61'

Concrete Seal  
Depth: 0' to 2'  
Casing Seal (Backfill)  
Material: cement-bentonite mixture

Bentonite Seal  
Filter Pack

Filter Pack Material: 20/40 sand  
Sterilized Sand or Glass Beads

Bentonite Seal Top Depth: 26' Elevation: 686.61'  
Filter Pack Top Depth: 28' Elevation: 684.61'

Well Screen  
Top Depth: 30'  
Top Elevation: 682.61'

Type of Well Screen: PVC

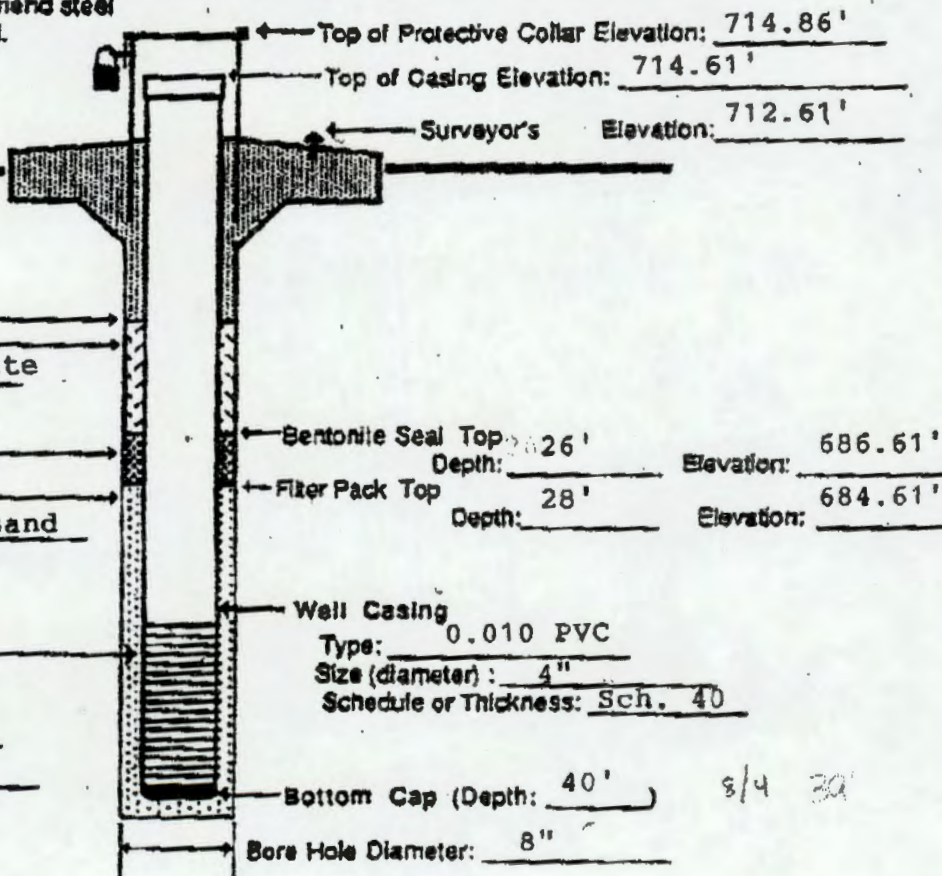
Screen Opening Size: 0.010

Well Casing  
Type: 0.010 PVC  
Size (diameter): 4"  
Schedule or Thickness: Sch. 40

Bottom Cap (Depth: 40')

Bore Hole Diameter: 8"

8/4 30'





# A. Monitor Well Data Sheet

TEXAS NATURAL RESOURCE  
CONSERVATION COMMISSION  
MSWD-SK67

Permittee or Site Name: Beck Readymix Concrete Co.

MSW PERMIT NO: 1848

County: Guadalupe

Monitor Well I.D. No. MW-C

Date of Monitor Well Installation: 5-20-98

Date of Monitor Well

State Plane No.: N13,746,077 E2,201,987

Development: 1-16-00

NAD-83

Monitor Well Groundwater

Monitor Well Driller

Gradient: Upgradient  Downgradient

Name: JEDI

License No.: 50205-M

### NOTE:

- (A) The information shown in the sketch below should be considered the minimum required for an installed ground-water monitor well.
- (B) Report All Depths from Surface Elevation and all Elevations relative to Mean Sea Level.
- (C) The minimum distance between the inside wall of the Bore Hole and the outside of the Well Casing shall be 3".
- (D) Use Flush Screw Joint Casing only, 2" diameter or larger. Recommend 4" diameter minimum & Teflon Taping Casing Joints.
- (E) Well development should continue until water is clear, and pH and conductivity are stable.

Geologist, Hydrologist or Engineer Supervising Well Installation: Harley Wied

Static Water Level Elevation (with respect to MSL) after Well Development: 675'

Name of Geologic Formation(s) in which Well is completed: Navarro/Taylor

hinged metal lid

Type of Locking Device: with padlock

Type of Casing Protection: Steel

Concrete Surface Pad - Recommend steel reinforcement in the Surface Pad.

Surface Pad Dimensions:

6' x 6' x 6"

Surface Elevation: 712.65'

Top of Protective Collar Elevation: 712.90'

Top of Casing Elevation: 714.65'

Surveyor's Elevation: 712.65'

Concrete Seal

Depth: 0 to 2'

Casing Seal (Backfill)

Material: cement-bentonite mixture

Bentonite Seal

Filter Pack

Filter Pack Material: 20/40 sand

Sterilized Sand or Glass Beads

Bentonite Seal Top Depth: 32'

Elevation: 680.65'

Filter Pack Top Depth: 34'

Elevation: 678.65'

Well Casing

Type: 0.010 PVC

Size (diameter): 4"

Schedule or Thickness: Sch. 40

Well Screen

Top Depth: 36'

Top Elevation: 676.65'

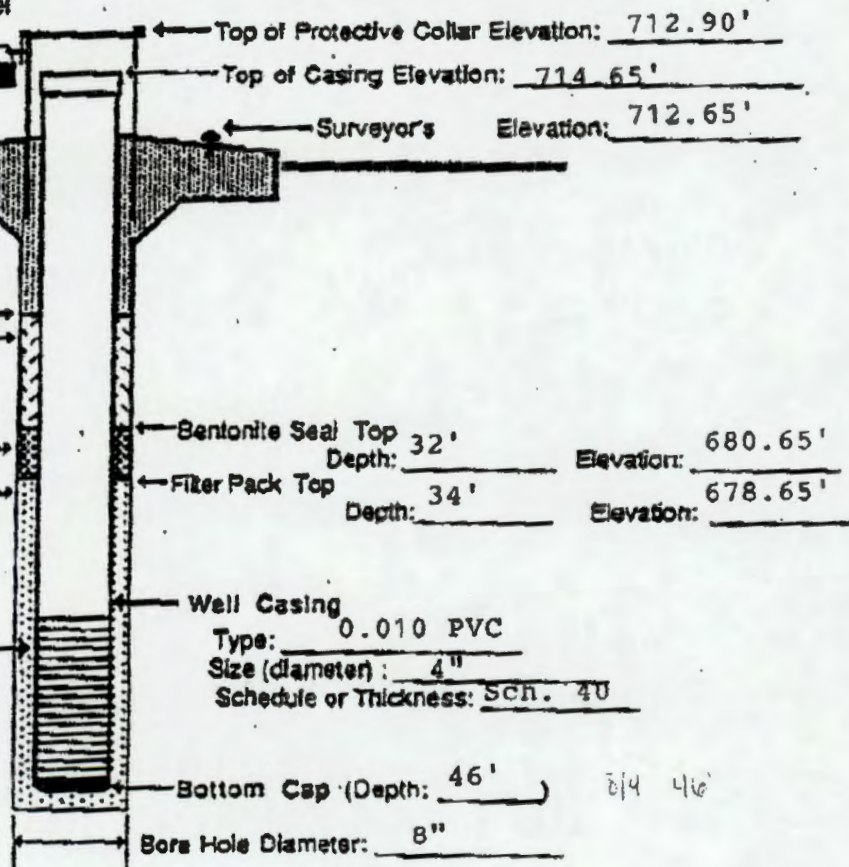
Type of Well Screen: PVC

Screen Opening Size: 0.010

Bottom Cap (Depth: 46')

8 1/4 4 1/2'

Bore Hole Diameter: 8"



# A. Monitor Well Data Sheet

TEXAS NATURAL RESOURCE  
CONSERVATION COMMISSION  
MSWD-SE67

Permittee or Site Name: Beck Readymix Concrete Co.

County: Guadalupe

Date of Monitor Well Installation: 2-29-00

State Plane No.: N13,745,998 E2,204,102

Monitor Well Groundwater

Gradient: Upgradient  Downgradient

MSW PERMIT NO.: 1848

Monitor Well I.D. No.: MW-D

Date of Monitor Well

Development: 3-7-00

Monitor Well Driller

Name: JEDI

License No.: 50205-M

**NOTE:**

- (A) The information shown in the sketch below should be considered the minimum required for an installed ground-water monitor well.
- (B) Report All Depths from Surface Elevation and all Elevations relative to Mean Sea Level.
- (C) The minimum distance between the inside wall of the Bore Hole and the outside of the Well Casing shall be 3".
- (D) Use Flush Screw Joint Casing only, 2" diameter or larger. Recommend 4" diameter minimum & Teflon Taping Casing Joints.
- (E) Well development should continue until water is clear, and pH and conductivity are stable.

Geologist, Hydrologist or Engineer Supervising Well Installation: Julie Morelli

Static Water Level Elevation (with respect to MSL) after Well Development: 671.05

Name of Geologic Formation(s) in which Well is completed: Navarro/Taylor

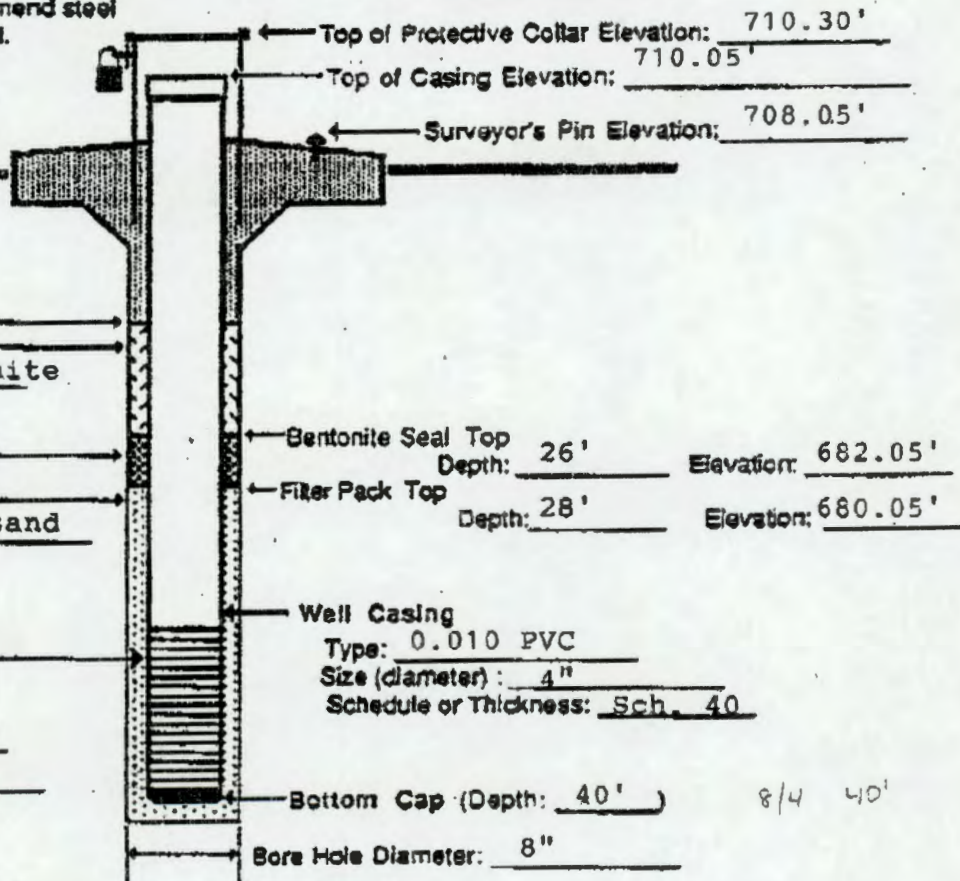
Type of Locking Device: with padlock  
hinged metal lid

Type of Casing Protection: Steel

Concrete Surface Pad - Recommend steel reinforcement in the Surface Pad.

Surface Pad Dimensions: 6' x 6' x 6"

Surface Elevation: 708.05'



Concrete Seal  
Depth: 0 - 2'

Casing Seal (Backfill)  
Material: cement-bentonite grout

Bentonite Seal  
Filter Pack

Filter Pack Material: 20/40 sand  
Sterilized Sand or Glass Beads

Well Screen  
Top Depth: 30'  
Top Elevation: 678.05'  
Type of Well Screen: PVC  
Screen Opening Size: 0.010

Top of Protective Collar Elevation: 710.30'  
Top of Casing Elevation: 710.05'  
Surveyor's Pin Elevation: 708.05'

Bentonite Seal Top  
Depth: 26' Elevation: 682.05'  
Filter Pack Top  
Depth: 28' Elevation: 680.05'

Well Casing  
Type: 0.010 PVC  
Size (diameter): 4"  
Schedule or Thickness: Sch. 40

Bottom Cap (Depth: 40') 8/4 40'  
Bore Hole Diameter: 8"

# A. Monitor Well Data Sheet

TEXAS NATURAL RESOURCE  
CONSERVATION COMMISSION  
MSWD-5667

Permittee or Site Name: Beck Readymix Concrete Co.

MSW PERMIT NO: 1848

County: Guadalupe

Monitor Well I.D. No. MW-F

Date of Monitor Well Installation: 5-20-98

Date of Monitor Well

State Plane No.: N13,747,091 E2,203,907

Development: 1-16-00

NAD-83

Monitor Well Groundwater

Monitor Well Driller

Gradient: Upgradient  Downgradient

Name: JEDI

License No.: 50205-M

### NOTE:

- (A) The information shown in the sketch below should be considered the minimum required for an installed ground-water monitor well.
- (B) Report All Depths from Surface Elevation and all Elevations relative to Mean Sea Level.
- (C) The minimum distance between the inside wall of the Bore Hole and the outside of the Well Casing shall be 3".
- (D) Use Flush Screw Joint Casing only, 2" diameter or larger. Recommend 4" diameter minimum & Teflon Taping Casing Joints.
- (E) Well development should continue until water is clear, and pH and conductivity are stable.

Geologist, Hydrologist or Engineer Supervising Well Installation: Harley Wied

Static Water Level Elevation (with respect to MSL) after Well Development: 674'

Name of Geologic Formation(s) in which Well is completed: Navarro/Taylor

hinged metal lid

Type of Locking Device: with padlock

Type of Casing Protection: Steel

Concrete Surface Pad - Recommend steel reinforcement in the Surface Pad.

Surface Pad Dimensions:

6' x 6' x 6"

Surface Elevation: 702.52'

Top of Protective Collar Elevation: 704.77'

Top of Casing Elevation: 704.52

Surveyor's Elevation: 702.52'

Concrete Seal

Depth: 0' to 2'

Casing Seal (Backfill)

Material: cement-bentonite mixture

Bentonite Seal

Filter Pack

Filter Pack Material: 20/40 sand

Sterilized Sand or Glass Beads

Bentonite Seal Top  
Depth: 20'

Elevation: 682.52'

Filter Pack Top

Depth: 22'

Elevation: 680.52

Well Casing

Type: 0.010 PVC

Size (diameter): 4"

Schedule or Thickness: Sch. 40

Well Screen

Top Depth: 24'

Top Elevation: 678.52'

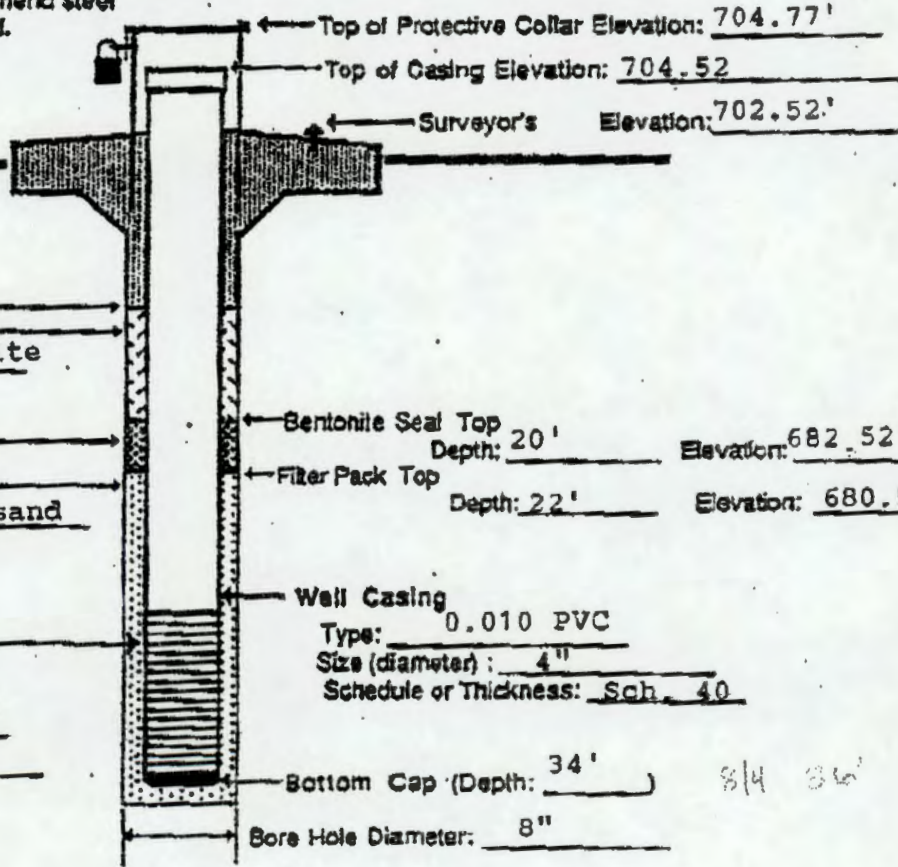
Type of Well Screen: PVC

Screen Opening Size: 0.010

Bottom Cap (Depth: 34')

Bore Hole Diameter: 8"

8/4 36'



# A. Monitor Well Data Sheet

TEXAS NATURAL RESOURCE  
CONSERVATION COMMISSION  
MSWD-SE67

Permittee or Site Name: Beck Readymix Concrete Co.

MSW PERMIT NO: 1848

County: Guadalupe

Monitor Well I.D. No. MW-G

Date of Monitor Well Installation: 5-20-98

Date of Monitor Well

State Plane No.: N13,748,957 E2,203,027

Development: 1-16-00

NAD-83  
Monitor Well Groundwater

Monitor Well Driller

Gradient: Upgradient  Downgradient

Name: JEDI

License No.: 50205-M

**NOTE:**

- (A) The information shown in the sketch below should be considered the minimum required for an installed ground-water monitor well.
- (B) Report All Depths from Surface Elevation and all Elevations relative to Mean Sea Level.
- (C) The minimum distance between the inside wall of the Bore Hole and the outside of the Well Casing shall be 3".
- (D) Use Flush Screw Joint Casing only, 2" diameter or larger. Recommend 4" diameter minimum & Teflon Taping Casing Joints.
- (E) Well development should continue until water is clear, and pH and conductivity are stable.

Geologist, Hydrologist or Engineer Supervising Well Installation: Harley Wied

Static Water Level Elevation (with respect to MSL) after Well Development: 672'

Name of Geologic Formation(s) in which Well is completed: Navarro/Taylor

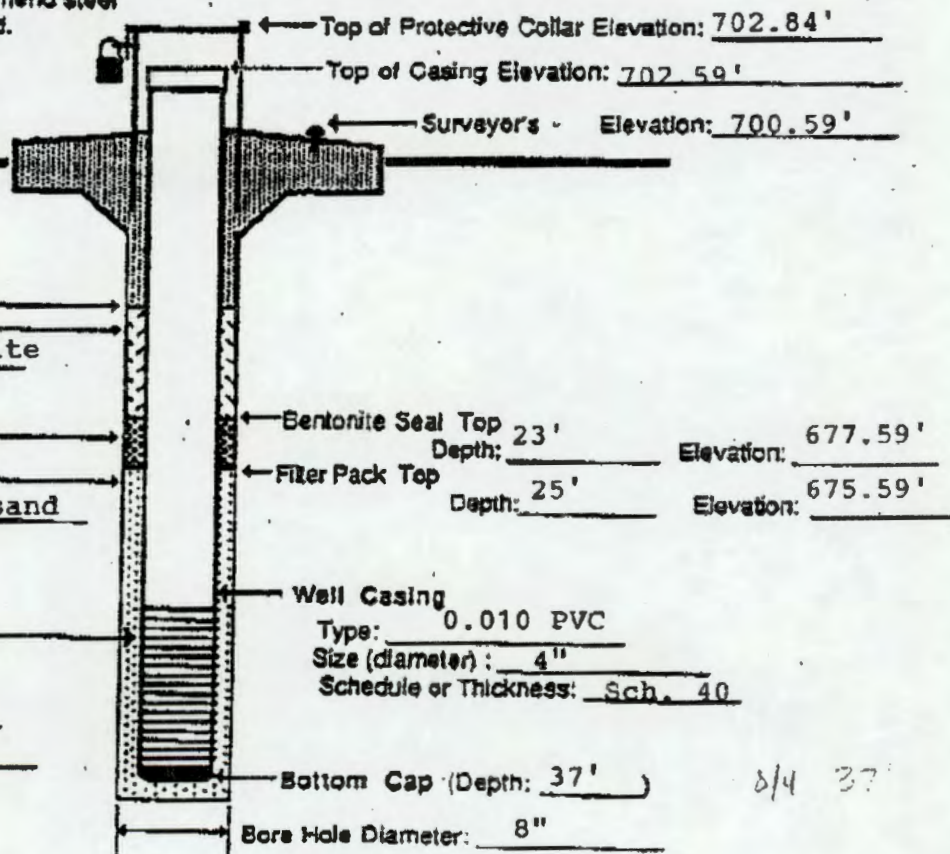
Type of Locking Device: with padlock  
hinged metal lid

Type of Casing Protection: Steel

Concrete Surface Pad - Recommend steel reinforcement in the Surface Pad.

Surface Pad Dimensions: 6' x 6' x 6"

Surface Elevation: 700.59'



Concrete Seal  
Depth: 0' to 2'  
Casing Seal (Backfill)  
Material: cement-bentonite mixture

Bentonite Seal  
Filter Pack

Filter Pack Material: 20/40 sand  
Sterilized Sand or Glass Beads

Well Screen  
Top Depth: 27'  
Top Elevation: 673.59'  
Type of Well Screen: PVC  
Screen Opening Size: 0.010

Well Casing  
Type: 0.010 PVC  
Size (diameter): 4"  
Schedule or Thickness: Sch. 40

Bottom Cap (Depth: 37')  
Bore Hole Diameter: 8"

8/4 37'

## **Monitor Well Data Sheets Original 1998**

# A. Monitor Well Data Sheet

TEXAS NATURAL RESOURCE  
CONSERVATION COMMISSION  
MSWD-SE67

Permittee or Site Name: Beck Readymix Concrete Co.

MSW PERMIT NO: 1848

County: Guadalupe

Monitor Well I.D. No.: A-22+25W

Date of Monitor Well Installation: 5-20-98

Date of Monitor Well \_\_\_\_\_

Monitor Well: Latitude: \_\_\_\_\_ Longitude: \_\_\_\_\_

Development: \_\_\_\_\_

Monitor Well Groundwater

Monitor Well Driller

Gradient: Upgradient \_\_\_\_\_ Downgradient \_\_\_\_\_

Name: JEDI

License No.: 50205-M

**NOTE:**

- (A) The information shown in the sketch below should be considered the minimum required for an installed ground-water monitor well.
- (B) Report All Depths from Surface Elevation and all Elevations relative to Mean Sea Level.
- (C) The minimum distance between the inside wall of the Bore Hole and the outside of the Well Casing shall be 3".
- (D) Use Flush Screw Joint Casing only, 2" diameter or larger. Recommend 4" diameter minimum & Teflon Taping Casing Joints.
- (E) Well development should continue until water is clear, and pH and conductivity are stable.

Geologist, Hydrologist or Engineer Supervising Well Installation: Harley Weid

Static Water Level Elevation (with respect to MSL) after Well Development: dry

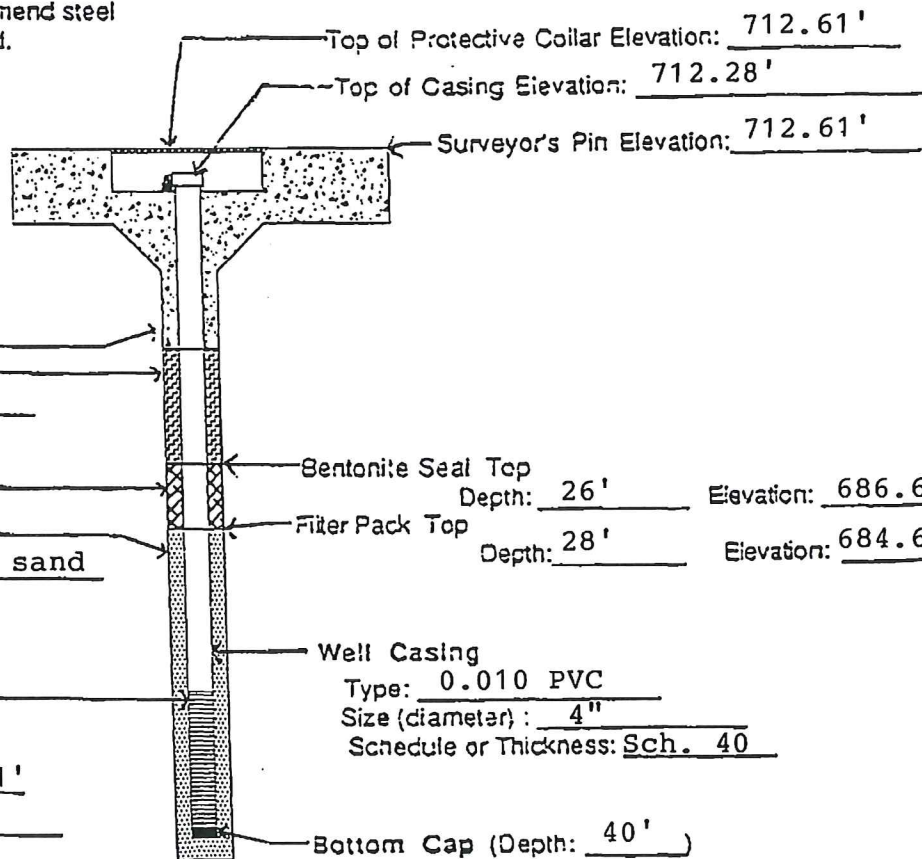
Name of Geologic Formation(s) in which Well is completed: Navarro/Taylor

Type of Locking Device: top lock cap & bolted metal lid Type of Casing Protection: stand up well cover

Concrete Surface Pad - Recommend steel reinforcement in the Surface Pad.

Surface Pad Dimensions: 6' x 6'

Surface Elevation: 712.61'



Concrete Seal  
Depth: 0' to 26'

Casing Seal (Backfill)  
Material: cement

Bentonite Seal

Filter Pack

Filter Pack Material: 20/40 sand  
Sterilized Sand or Glass Beads

Well Screen

Top Depth: 30'

Top Elevation: 682.61'

Type of Well Screen: PVC

Screen Opening Size:  
4"

Well Casing

Type: 0.010 PVC

Size (diameter): 4"

Schedule or Thickness: Sch. 40

Bottom Cap (Depth: 40')

Bore Hole Diameter: 8"

# A. Monitor Well Data Sheet

TEXAS NATURAL RESOURCE  
CONSERVATION COMMISSION  
MSWD-SE67

Permittee or Site Name: Beck Readymix Concrete Co.

MSW PERMIT NO: 1848

County: Guadalupe

Monitor Well I.D. No.: C-14+50W

Date of Monitor Well Installation: 5-20-98

Date of Monitor Well

Monitor Well: Latitude: \_\_\_\_\_ Longitude: \_\_\_\_\_

Development: \_\_\_\_\_

Monitor Well Groundwater

Monitor Well Driller

Gradient: Upgradient \_\_\_ Downgradient \_\_\_

Name: JEDI

License No.: 50205-M

**NOTE:**

- (A) The information shown in the sketch below should be considered the minimum required for an installed ground-water monitor well.
- (B) Report All Depths from Surface Elevation and all Elevations relative to Mean Sea Level.
- (C) The minimum distance between the inside wall of the Bore Hole and the outside of the Well Casing shall be 3".
- (D) Use Flush Screw Joint Casing only, 2" diameter or larger. Recommend 4" diameter minimum & Teflon Taping Casing Joints.
- (E) Well development should continue until water is clear, and pH and conductivity are stable.

Geologist, Hydrologist or Engineer Supervising Well Installation: Harley Weid

Static Water Level Elevation (with respect to MSL) after Well Development: dry

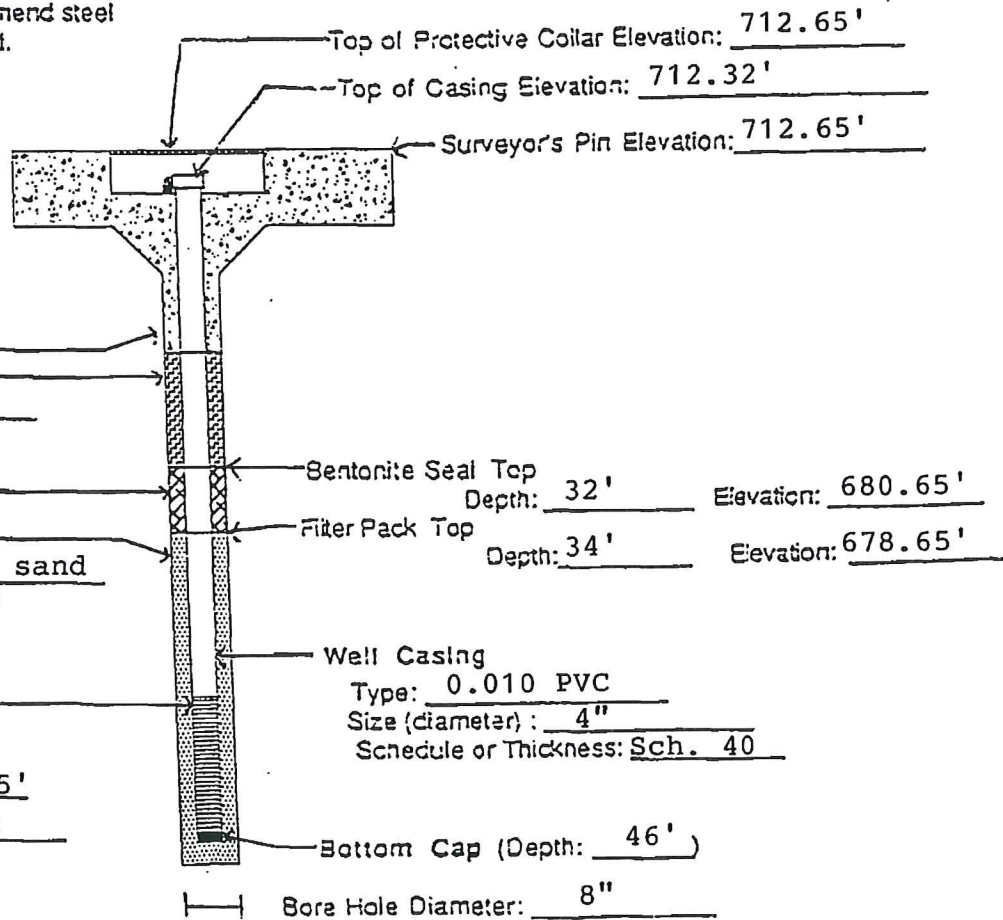
Name of Geologic Formation(s) in which Well is completed: Navarro/Taylor  
top lock cap &

Type of Locking Device: bolted metal lid Type of Casing Protection: stand up well cover

Concrete Surface Pad - Recommend steel reinforcement in the Surface Pad.

Surface Pad Dimensions: 6' x 6'

Surface Elevation: 712.65'



Concrete Seal  
Depth: 0' to 32'  
Casing Seal (Backfill)  
Material: cement

Bentonite Seal  
Filter Pack

Filter Pack Material: 20/40 sand  
Sterilized Sand or Glass Beads

Well Screen  
Top Depth: 36'  
Top Elevation: 676.65'

Type of Well Screen: PVC  
Screen Opening Size:  
4"

Well Casing  
Type: 0.010 PVC  
Size (diameter): 4"  
Schedule or Thickness: Sch. 40

Bottom Cap (Depth: 46')

Bore Hole Diameter: 8"

# A. Monitor Well Data Sheet

TEXAS NATURAL RESOURCE  
CONSERVATION COMMISSION  
MSWD-SE67

Permittee or Site Name: Beck Readymix Concrete Co.

MSW PERMIT NO.: 1848

County: Guadalupe

Monitor Well I.D. No. D-7+25W

Date of Monitor Well Installation: 5-20-98

Date of Monitor Well

Monitor Well: Latitude: \_\_\_\_\_ Longitude: \_\_\_\_\_

Development: \_\_\_\_\_

Monitor Well Groundwater

Monitor Well Driller

Gradient: Upgradient \_\_\_\_\_ Downgradient \_\_\_\_\_

Name: JEDI

License No.: 50205-M

**NOTE:**

- (A) The information shown in the sketch below should be considered the minimum required for an installed ground-water monitor well.
- (B) Report All Depths from Surface Elevation and all Elevations relative to Mean Sea Level.
- (C) The minimum distance between the inside wall of the Bore Hole and the outside of the Well Casing shall be 3".
- (D) Use Flush Screw Joint Casing only, 2" diameter or larger. Recommend 4" diameter minimum & Teflon Taping Casing Joints.
- (E) Well development should continue until water is clear, and pH and conductivity are stable.

Geologist, Hydrologist or Engineer Supervising Well Installation: Harley Weid

Static Water Level Elevation (with respect to MSL) after Well Development: dry

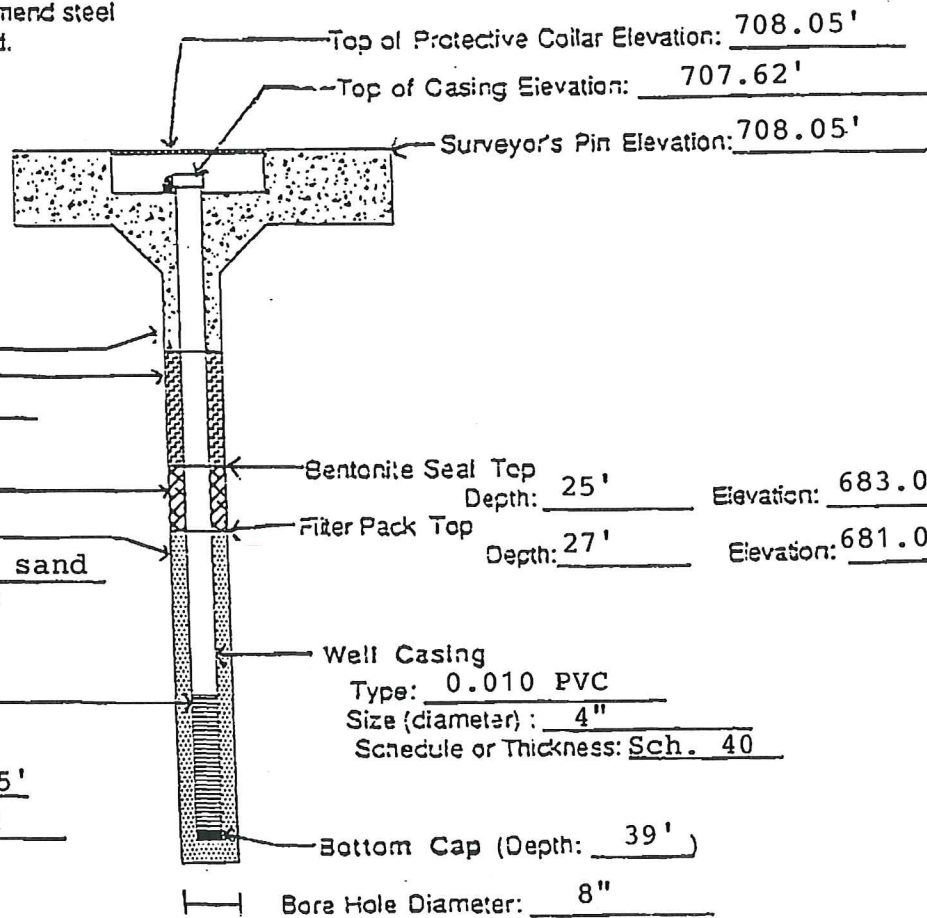
Name of Geologic Formation(s) in which Well is completed: Navarro/Taylor

Type of Locking Device: top lock cap & bolted metal lid Type of Casing Protection: stand up well cover

Concrete Surface Pad - Recommend steel reinforcement in the Surface Pad.

Surface Pad Dimensions: 6' x 6'

Surface Elevation: 708.05'



Concrete Seal  
Depth: 0' to 25'  
Casing Seal (Backfill)  
Material: cement

Bentonite Seal  
Filter Pack

Filter Pack Material: 20/40 sand  
Sterilized Sand or Glass Beads

Well Screen  
Top Depth: 29'  
Top Elevation: 679.05'  
Type of Well Screen: PVC  
Screen Opening Size: 4"

Well Casing  
Type: 0.010 PVC  
Size (diameter): 4"  
Schedule or Thickness: Sch. 40

Bottom Cap (Depth: 39')

Bore Hole Diameter: 8"



# A. Monitor Well Data Sheet

TEXAS NATURAL RESOURCE  
CONSERVATION COMMISSION  
MSWE-SE67

Permittee or Site Name: Beck Readymix Concrete Co.

MSW PERMIT NO: 1848

County: Guadalupe

Monitor Well I.D. No. F-2+00W

Date of Monitor Well Installation: 5-20-98

Date of Monitor Well

Monitor Well: Latitude: \_\_\_\_\_ Longitude: \_\_\_\_\_

Development: \_\_\_\_\_

Monitor Well Groundwater

Monitor Well Driller

Gradient: Upgradient  Downgradient

Name: JEDI

License No.: 50205-M

**NOTE:**

- (A) The information shown in the sketch below should be considered the minimum required for an installed ground-water monitor well.
- (B) Report All Depths from Surface Elevation and all Elevations relative to Mean Sea Level.
- (C) The minimum distance between the inside wall of the Bore Hole and the outside of the Well Casing shall be 3".
- (D) Use Flush Screw Joint Casing only, 2" diameter or larger. Recommend 4" diameter minimum & Teflon Taping Casing Joints.
- (E) Well development should continue until water is clear, and pH and conductivity are stable.

Geologist, Hydrologist or Engineer Supervising Well Installation: Harley Weid

Static Water Level Elevation (with respect to MSL) after Well Development: dry

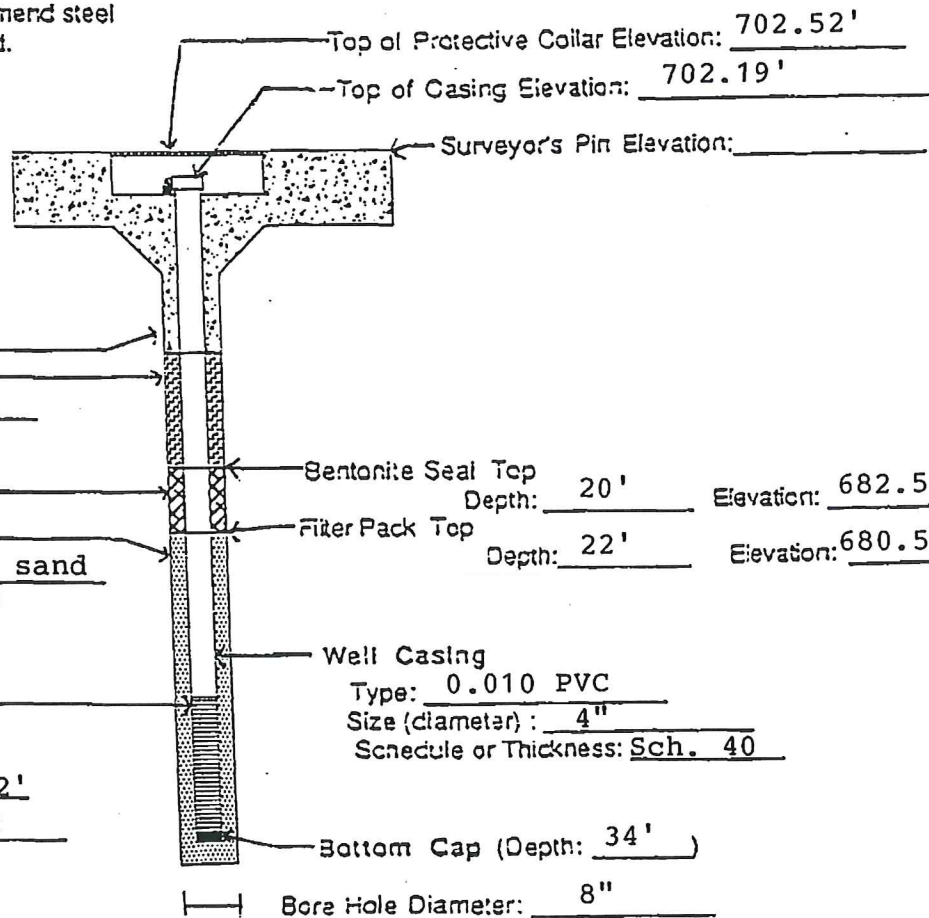
Name of Geologic Formation(s) in which Well is completed: Navarro/Taylor  
top lock cap &

Type of Locking Device: bolted metal lid Type of Casing Protection: stand up well cover

Concrete Surface Pad - Recommend steel reinforcement in the Surface Pad.

Surface Pad Dimensions: 6' x 6'

Surface Elevation: 702.52'



Concrete Seal  
Depth: 0' to 20'  
Casing Seal (Backfill)  
Material: cement

Bentonite Seal  
Filter Pack

Filter Pack Material: 20/40 sand  
Sterilized Sand or Glass Beads

Well Screen  
Top Depth: 24'  
Top Elevation: 678.52'  
Type of Well Screen: PVC  
Screen Opening Size: 4"

Bentonite Seal Top  
Depth: 20' Elevation: 682.52'  
Filter Pack Top  
Depth: 22' Elevation: 680.52'  
Well Casing  
Type: 0.010 PVC  
Size (diameter): 4"  
Schedule or Thickness: Sch. 40

Bottom Cap (Depth: 34')  
Bore Hole Diameter: 8"

# A. Monitor Well Data Sheet

TEXAS NATURAL RESOURCE  
CONSERVATION COMMISSION  
MSWD-S267

Permittee or Site Name: Beck Readymix Concrete Co.

MSW PERMIT NO: 1848

County: Guadalupe

Monitor Well I.D. No.: G-13+25W

Date of Monitor Well Installation: 5-20-98

Date of Monitor Well

Monitor Well: Latitude: \_\_\_\_\_ Longitude: \_\_\_\_\_

Development: \_\_\_\_\_

Monitor Well Groundwater

Monitor Well Driller

Gradient: Upgradient \_\_\_ Downgradient \_\_\_

Name: JEDI

License No.: 50205-M

**NOTE:**

- (A) The information shown in the sketch below should be considered the minimum required for an installed ground-water monitor well.
- (B) Report All Depths from Surface Elevation and all Elevations relative to Mean Sea Level.
- (C) The minimum distance between the inside wall of the Bore Hole and the outside of the Well Casing shall be 3".
- (D) Use Flush Screw Joint Casing only, 2" diameter or larger. Recommend 4" diameter minimum & Teflon Taping Casing Joints.
- (E) Well development should continue until water is clear, and pH and conductivity are stable.

Geologist, Hydrologist or Engineer Supervising Well Installation: Harley Weid

Static Water Level Elevation (with respect to MSL) after Well Development: dry

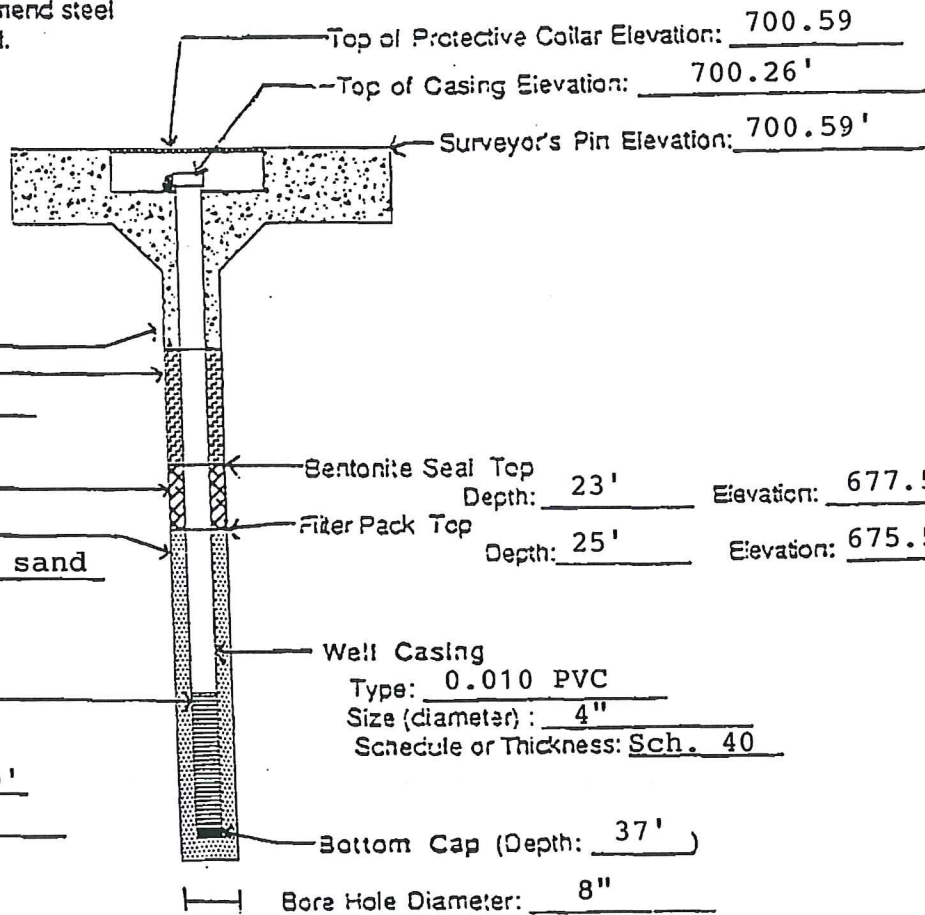
Name of Geologic Formation(s) in which Well is completed: Navarro/Taylor  
top lock cap &

Type of Locking Device: bolted metal lid Type of Casing Protection: stand up well cover

Concrete Surface Pad - Recommend steel reinforcement in the Surface Pad.

Surface Pad Dimensions: 6' x 6'

Surface Elevation: 700.59



Concrete Seal  
Depth: 0' to 23'  
Casing Seal (Backfill)  
Material: cement

Bentonite Seal  
Filter Pack

Filter Pack Material: 20/40 sand  
Sterilized Sand or Glass Beads

Well Screen  
Top Depth: 27'  
Top Elevation: 673.59'  
Type of Well Screen: PVC  
Screen Opening Size: 4"

Well Casing  
Type: 0.010 PVC  
Size (diameter): 4"  
Schedule or Thickness: Sch. 40

Bottom Cap (Depth: 37')  
Bore Hole Diameter: 8"

Top of Protective Collar Elevation: 700.59  
Top of Casing Elevation: 700.26'  
Surveyor's Pin Elevation: 700.59'

Bentonite Seal Top  
Depth: 23' Elevation: 677.59'  
Filter Pack Top  
Depth: 25' Elevation: 675.59'

# A. Monitor Well Data Sheet

TEXAS NATURAL RESOURCE  
CONSERVATION COMMISSION  
MSWD-SE67

Permittee or Site Name: Beck Readymix Concrete Co.

MSW PERMIT NO: 1848

County: Guadalupe

Monitor Well I.D. No. A-22+25P

Date of Monitor Well Installation: 5-20-98

Date of Monitor Well \_\_\_\_\_

Monitor Well: Latitude: \_\_\_\_\_ Longitude: \_\_\_\_\_

Development: \_\_\_\_\_

Monitor Well Groundwater

Monitor Well Driller

Gradient: Upgradient \_\_\_ Downgradient \_\_\_

Name: JEDI

License No.: 50205-M

**NOTE:**

- (A) The information shown in the sketch below should be considered the minimum required for an installed ground-water monitor well.
- (B) Report All Depths from Surface Elevation and all Elevations relative to Mean Sea Level.
- (C) The minimum distance between the inside wall of the Bore Hole and the outside of the Well Casing shall be 3".
- (D) Use Flush Screw Joint Casing only, 2" diameter or larger. Recommend 4" diameter minimum & Teflon Taping Casing Joints.
- (E) Well development should continue until water is clear, and pH and conductivity are stable.

Geologist, Hydrologist or Engineer Supervising Well Installation: Harley Weid

Static Water Level Elevation (with respect to MSL) after Well Development: dry

Name of Geologic Formation(s) in which Well is completed: Navarro/Taylor

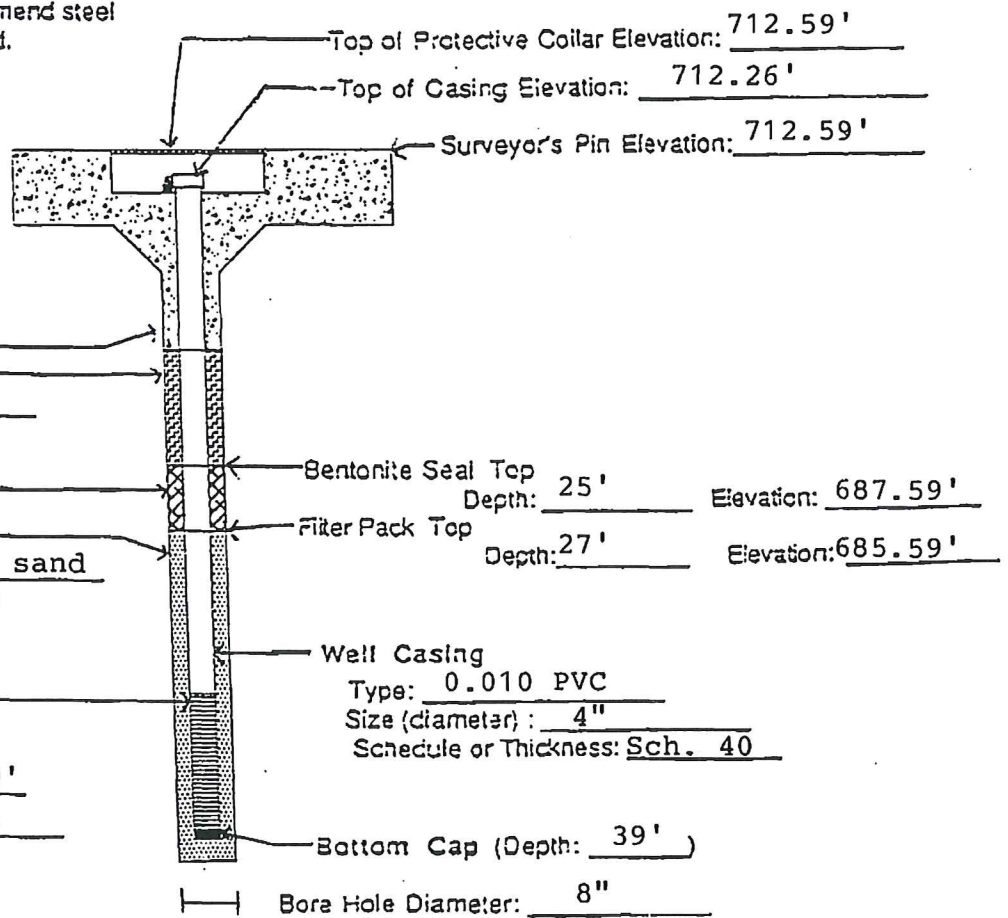
top lock cap &

Type of Locking Device: bolted metal lid Type of Casing Protection: stand up well cover

Concrete Surface Pad - Recommend steel reinforcement in the Surface Pad.

Surface Pad Dimensions: 6' x 6'

Surface Elevation: 712.59'



Concrete Seal  
Depth: 0' to 25'  
Casing Seal (Backfill)  
Material: cement

Bentonite Seal Depth: 25' Elevation: 687.59'

Filter Pack Top Depth: 27' Elevation: 685.59'

Filter Pack Material: 20/40 sand  
Sterilized Sand or Glass Beads

Well Casing Type: 0.010 PVC  
Size (diameter): 4"  
Schedule or Thickness: Sch. 40

Well Screen Top Depth: 29'  
Top Elevation: 683.59'  
Type of Well Screen: PVC

Screen Opening Size: 4"

Bottom Cap (Depth: 39')  
Bore Hole Diameter: 8"

# A. Monitor Well Data Sheet

TEXAS NATURAL RESOURCE  
CONSERVATION COMMISSION  
MSWD-SE67

Permittee or Site Name: Beck Readymix Concrete Co.

MSW PERMIT NO: 1848

County: Guadalupe

Monitor Well I.D. No.: C-14+50P

Date of Monitor Well Installation: 5-20-98

Date of Monitor Well \_\_\_\_\_

Monitor Well: Latitude: \_\_\_\_\_ Longitude: \_\_\_\_\_

Development: \_\_\_\_\_

Monitor Well Groundwater

Monitor Well Driller

Gradient: Upgradient \_\_\_ Downgradient \_\_\_

Name: JEDI

License No.: 50205-M

**NOTE:**

- (A) The information shown in the sketch below should be considered the minimum required for an installed ground-water monitor well.
- (B) Report All Depths from Surface Elevation and all Elevations relative to Mean Sea Level.
- (C) The minimum distance between the inside wall of the Bore Hole and the outside of the Well Casing shall be 3".
- (D) Use Flush Screw Joint Casing only, 2" diameter or larger. Recommend 4" diameter minimum & Teflon Taping Casing Joints.
- (E) Well development should continue until water is clear, and pH and conductivity are stable.

Geologist, Hydrologist or Engineer Supervising Well Installation: Harley Weid

Static Water Level Elevation (with respect to MSL) after Well Development: dry

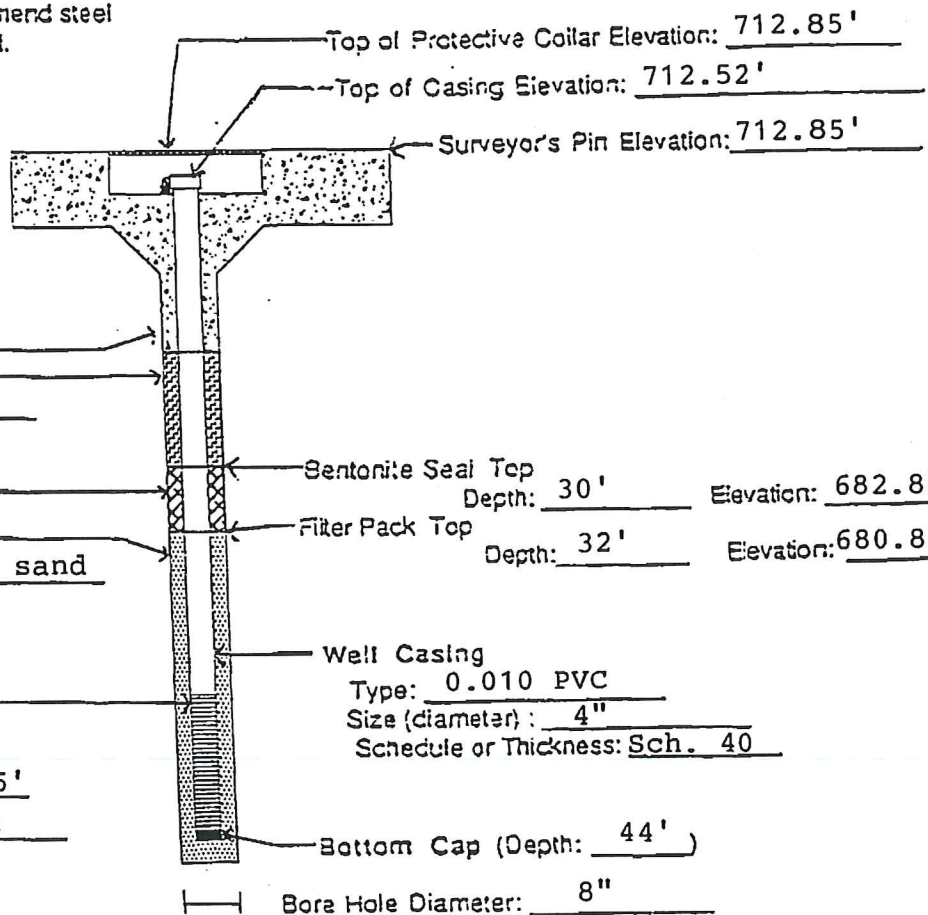
Name of Geologic Formation(s) in which Well is completed: Navarro/Taylor  
top lock cap &

Type of Locking Device: bolted metal lid Type of Casing Protection: stand up well cover

Concrete Surface Pad - Recommend steel reinforcement in the Surface Pad.

Surface Pad Dimensions: 6' x 6'

Surface Elevation: 712.85'



Top of Protective Collar Elevation: 712.85'

Top of Casing Elevation: 712.52'

Surveyor's Pin Elevation: 712.85'

Concrete Seal  
Depth: 0' to 30'

Casing Seal (Backfill)  
Material: cement

Bentonite Seal

Filter Pack

Filter Pack Material: 20/40 sand  
Sterilized Sand or Glass Beads

Well Screen

Top Depth: 34'

Top Elevation: 678.85'

Type of Well Screen: PVC

Screen Opening Size: 4"

Bentonite Seal Top  
Depth: 30' Elevation: 682.85'

Filter Pack Top  
Depth: 32' Elevation: 680.85'

Well Casing  
Type: 0.010 PVC  
Size (diameter): 4"  
Schedule or Thickness: Sch. 40

Bottom Cap (Depth: 44')

Bore Hole Diameter: 8"

# A. Monitor Well Data Sheet

TEXAS NATURAL RESOURCE  
CONSERVATION COMMISSION  
MSWD-SE67

Permittee or Site Name: Beck Readymix Concrete Co.

MSW PERMIT NO.: 1848

County: Guadalupe

Monitor Well I.D. No.: D-7+25P

Date of Monitor Well Installation: 5-20-98

Date of Monitor Well

Monitor Well: Latitude: \_\_\_\_\_ Longitude: \_\_\_\_\_

Development: \_\_\_\_\_

Monitor Well Groundwater

Monitor Well Driller

Gradient: Upgradient \_\_\_ Downgradient \_\_\_

Name: JEDI

License No.: 50205-M

**NOTE:**

- (A) The information shown in the sketch below should be considered the minimum required for an installed ground-water monitor well.
- (B) Report All Depths from Surface Elevation and all Elevations relative to Mean Sea Level.
- (C) The minimum distance between the inside wall of the Bore Hole and the outside of the Well Casing shall be 3".
- (D) Use Flush Screw Joint Casing only, 2" diameter or larger. Recommend 4" diameter minimum & Teflon Taping Casing Joints.
- (E) Well development should continue until water is clear, and pH and conductivity are stable.

Geologist, Hydrologist or Engineer Supervising Well Installation: Harley Weid

Static Water Level Elevation (with respect to MSL) after Well Development: dry

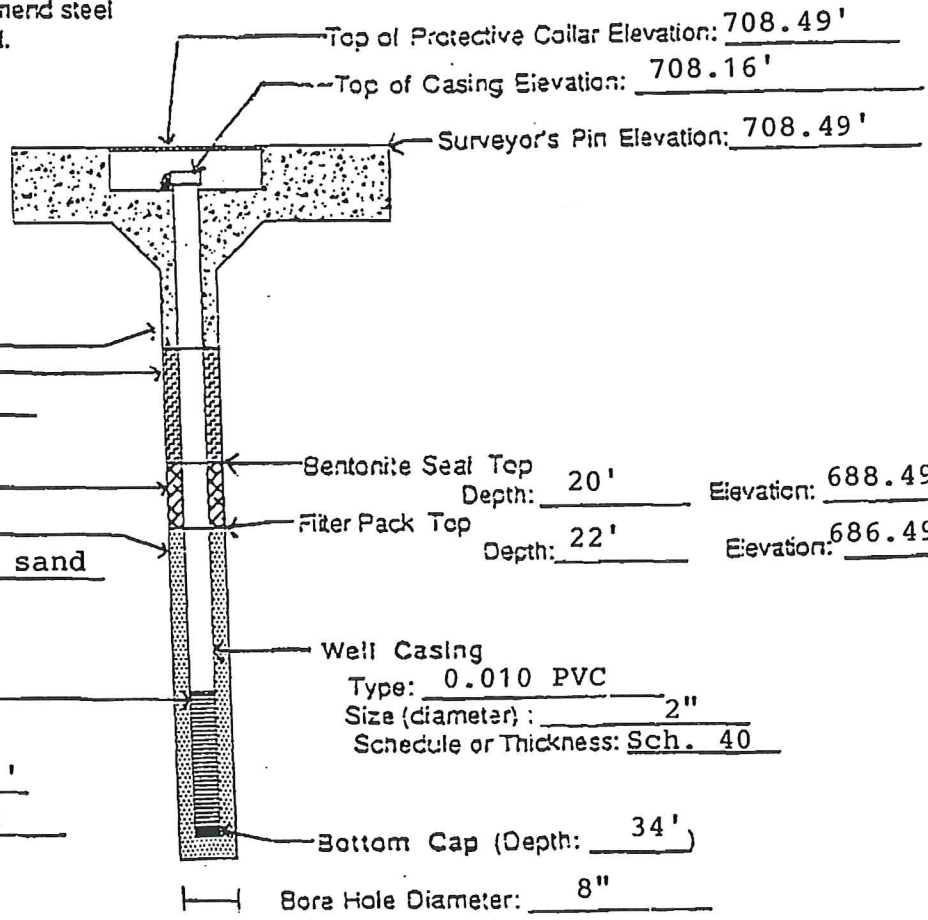
Name of Geologic Formation(s) in which Well is completed: Navarro/Taylor  
Top lock cap &

Type of Locking Device: bolted metal lid Type of Casing Protection: stand up well cover

Concrete Surface Pad - Recommend steel reinforcement in the Surface Pad.

Surface Pad Dimensions: 6' x 6'

Surface Elevation: 706.49'



Concrete Seal  
Depth: 0' to 20'  
Casing Seal (Backfill)  
Material: cement

Bentonite Seal  
Filter Pack

Filter Pack Material: 20/40 sand  
Sterilized Sand or Glass Beads

Well Screen  
Top Depth: 24'  
Top Elevation: 684.49'  
Type of Well Screen: PVC  
Screen Opening Size: 4"

Bentonite Seal Top  
Depth: 20' Elevation: 688.49'  
Filter Pack Top  
Depth: 22' Elevation: 686.49'

Well Casing  
Type: 0.010 PVC  
Size (diameter): 2"  
Schedule or Thickness: Sch. 40

Bottom Cap (Depth: 34')  
Bore Hole Diameter: 8"

# A. Monitor Well Data Sheet

TEXAS NATURAL RESOURCE  
CONSERVATION COMMISSION  
MSWD-SE67

Permittee or Site Name: Beck Readymix Concrete Co.

MSW PERMIT NO.: 1848

County: Guadalupe

Monitor Well I.D. No.: F-2+00P

Date of Monitor Well Installation: 5-20-98

Date of Monitor Well

Monitor Well: Latitude: \_\_\_\_\_ Longitude: \_\_\_\_\_

Development: \_\_\_\_\_

Monitor Well Groundwater

Monitor Well Driller

Gradient: Upgradient \_\_\_\_\_ Downgradient \_\_\_\_\_

Name: JEDI

License No.: 50205-M

**NOTE:**

- (A) The information shown in the sketch below should be considered the minimum required for an installed ground-water monitor well.
- (B) Report All Depths from Surface Elevation and all Elevations relative to Mean Sea Level.
- (C) The minimum distance between the inside wall of the Bore Hole and the outside of the Well Casing shall be 3".
- (D) Use Flush Screw Joint Casing only, 2" diameter or larger. Recommend 4" diameter minimum & Teflon Taping Casing Joints.
- (E) Well development should continue until water is clear, and pH and conductivity are stable.

Geologist, Hydrologist or Engineer Supervising Well Installation: Harley Weid

Static Water Level Elevation (with respect to MSL) after Well Development: dry

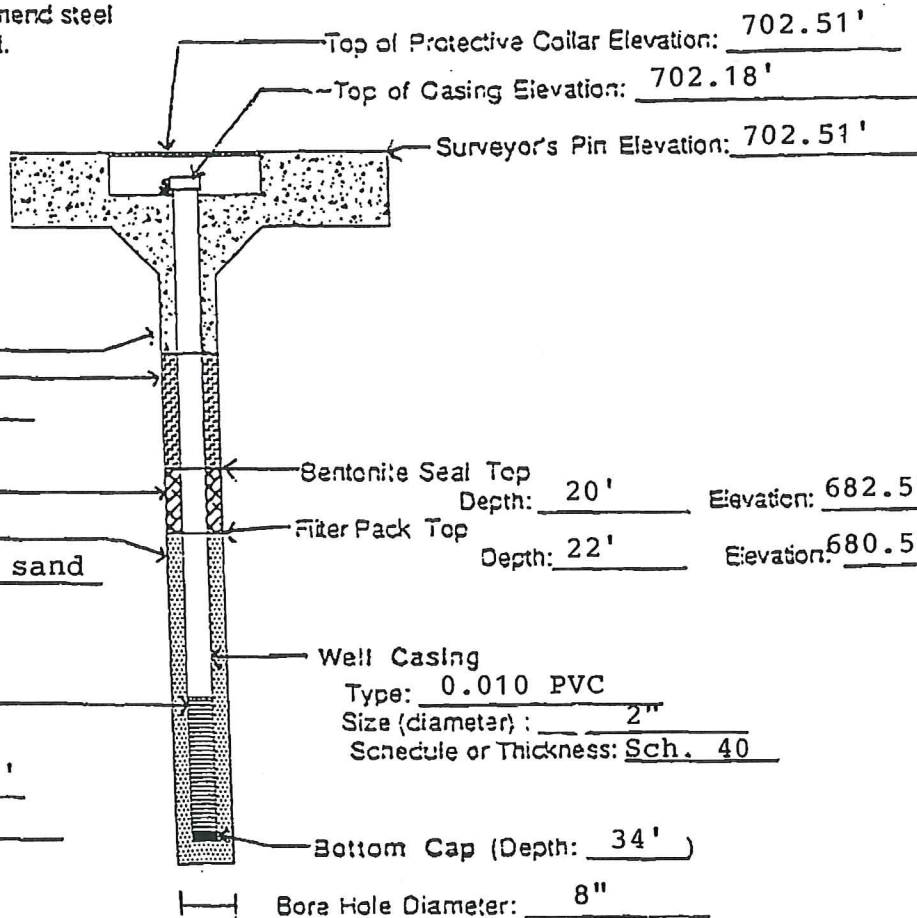
Name of Geologic Formation(s) in which Well is completed: Navarro/Taylor  
top lock cap &

Type of Locking Device: bolted metal lid Type of Casing Protection: stand up well cover

Concrete Surface Pad - Recommend steel reinforcement in the Surface Pad.

Surface Pad Dimensions: 6' x 6'

Surface Elevation: 702.51'



Concrete Seal  
Depth: 0' to 20'  
Casing Seal (Backfill)  
Material: cement

Bentonite Seal  
Filter Pack

Filter Pack Material: 20/40 sand  
Sterilized Sand or Glass Beads

Well Screen  
Top Depth: 24'  
Top Elevation: 678.51'  
Type of Well Screen: PVC  
Screen Opening Size: 4"

Bentonite Seal Top  
Depth: 20' Elevation: 682.51'  
Filter Pack Top  
Depth: 22' Elevation: 680.51'  
Well Casing  
Type: 0.010 PVC  
Size (diameter): 2"  
Schedule or Thickness: Sch. 40

Bottom Cap (Depth: 34')  
Bore Hole Diameter: 8"

# A. Monitor Well Data Sheet

TEXAS NATURAL RESOURCE  
CONSERVATION COMMISSION  
MSWD-SE67

Permittee or Site Name: Beck Readymix Concrete Co.

MSW PERMIT NO: 1848

County: Guadalupe

Monitor Well I.D. No. G-13+25P

Date of Monitor Well Installation: 5-20-98

Date of Monitor Well

Monitor Well: Latitude: \_\_\_\_\_ Longitude: \_\_\_\_\_

Development: \_\_\_\_\_

Monitor Well Groundwater

Monitor Well Driller

Gradient: Upgradient  Downgradient

Name: JEDI

License No.: 50205-M

**NOTE:**

- (A) The information shown in the sketch below should be considered the minimum required for an installed ground-water monitor well.
- (B) Report All Depths from Surface Elevation and all Elevations relative to Mean Sea Level.
- (C) The minimum distance between the inside wall of the Bore Hole and the outside of the Well Casing shall be 3".
- (D) Use Flush Screw Joint Casing only, 2" diameter or larger. Recommend 4" diameter minimum & Teflon Taping Casing Joints.
- (E) Well development should continue until water is clear, and pH and conductivity are stable.

Geologist, Hydrologist or Engineer Supervising Well Installation: Harley Weid

Static Water Level Elevation (with respect to MSL) after Well Development: dry

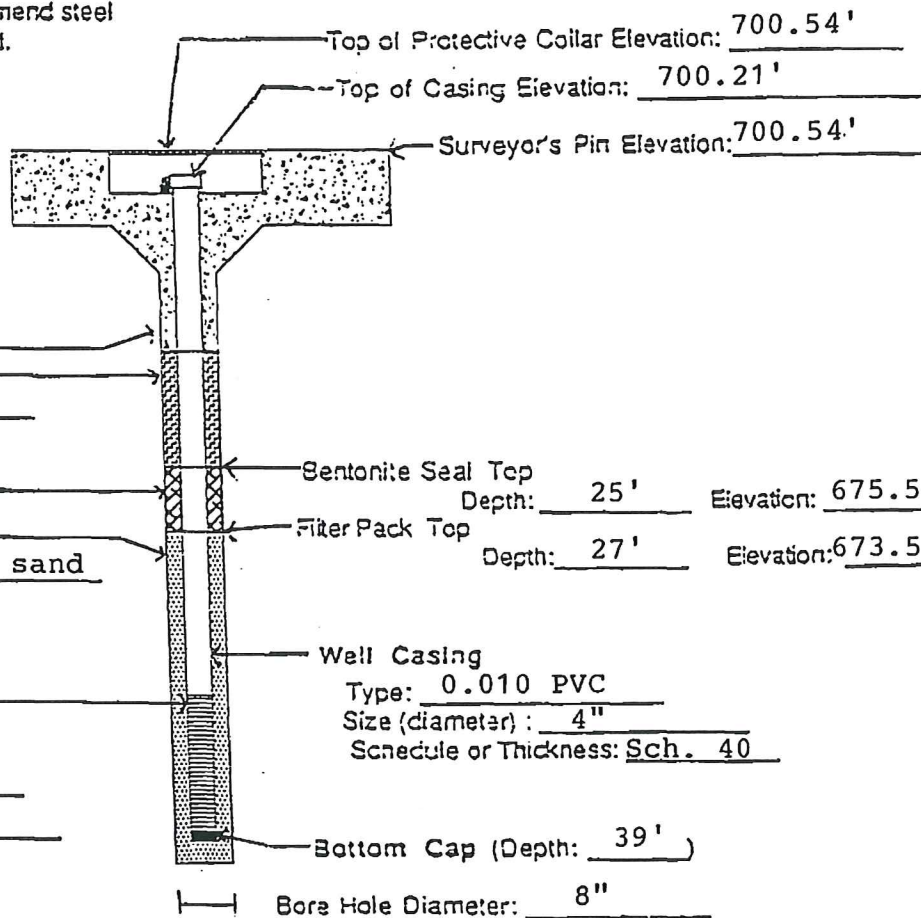
Name of Geologic Formation(s) in which Well is completed: Navarro/Taylor

Type of Locking Device: top lock cap & bolted metal lid Type of Casing Protection: stand up well cover

Concrete Surface Pad - Recommend steel reinforcement in the Surface Pad.

Surface Pad Dimensions: 6' x 6'

Surface Elevation: 700.54'



Concrete Seal  
Depth: 0' to 25'

Casing Seal (Beckitt)  
Material: cement

Bentonite Seal  
Filter Pack

Filter Pack Material: 20/40 sand  
Sterilized Sand or Glass Beads

Well Screen  
Top Depth: 29'

Top Elevation: \_\_\_\_\_

Type of Well Screen: PVC

Screen Opening Size: 4"

Well Casing  
Type: 0.010 PVC  
Size (diameter): 4"  
Schedule or Thickness: Sch. 40

Bottom Cap (Depth: 39')

Bore Hole Diameter: 8"

Send original copy by certified return receipt requested mail to: CG, MC 177, P.O. Box 19087, Austin, TX 78711-3087

Texas Water Well Drillers Advisory Council  
MC 177  
P.O. Box 19087  
Austin, TX 78711-3087  
512-258-0530

# State of Texas WELL REPORT

ATTENTION OWNER: Confidentiality  
Privilege Notice on on reverse side  
of Well Owner's copy (pink)

1) OWNER Ben Davis (Name) ADDRESS P.O. Box 790641 SIA, TX 78779-0641 (Street or RFD) (City) (State) (Zip)

2) ADDRESS OF WELL: County Candalaria 550 Fm 78 Shed Tx 78108 ARID 68-30-6  
(Street, RFD or other) (City) (State) (Zip)

3) TYPE OF WORK (Check):  
 New Well  Deepening  
 Reconditioning  Plugging

4) PROPOSED USE (Check):  Monitor  Environmental Soil Boring  Domestic  
 Industrial  Irrigation  Injection  Public Supply  De-watering  Testwell  
 If Public Supply well, were plans submitted to the TNRCC?  Yes  No

6) WELL LOG: ~~XXXXXXXXXX~~  
 Date Drilling: 1-2-99  
 Started 5-10 10 52  
 Completed 5-20 10 52

| DIAMETER OF HOLE |            |          |
|------------------|------------|----------|
| Dia. (in.)       | From (ft.) | To (ft.) |
| 8                | Surface    | 44       |

7) DRILLING METHOD (Check):  Driven  
 Air Rotary  Mud Rotary  Bored  
 Air Hammer  Cable Tool  Jetted  
 Other HSA 7/4

| From (ft.) | To (ft.) | Description and color of formation material |
|------------|----------|---|
| 0          | 2        | Reddish brown gravel                        |
| 2          | 42       | Tan grey clay shale                         |
| 42         | 44       | blue shell                                  |

8) Borehole Completion (Check):  Open Hole  Straight Well  
 Underreamed  Gravel Packed  Other 2 1/2" SA and  
 If Gravel Packed give interval ... from \_\_\_\_\_ ft. to \_\_\_\_\_ ft.

CASING, BLANK PIPE, AND WELL SCREEN DATA:

| Dia. (in.) | New or Used | Steel, Plastic, etc. Perf., Slotted, etc. Screen Mfg., if commercial | Setting (ft.) |    | Cage Casing Screen |
|------------|-------------|--|---------------|----|--------------------|
|            |             |  | From          | To |                    |
| 2          | N           | Blank  | 0             | 42 | 1/4" x 40          |
| 2          | N           | Screen   | 42            | 44 | 1/4" x 40          |

9) CEMENTING DATA [Rule 338.44(1)] all wells  
 Cemented from 0 ft. to 30 ft. No. of sacks used 15  
 \_\_\_\_\_ ft. to \_\_\_\_\_ ft. No. of sacks used \_\_\_\_\_  
 Method used hand mix  
 Cemented by Eric Jones / JED  
 Distance to septic system field lines or other concentrated contamination \_\_\_\_\_ ft.  
 Method of verification of above distance \_\_\_\_\_

13) TYPE PUMP: N/A  
 Turbine  Jet  Submersible  Cylinder  
 Other \_\_\_\_\_  
 Depth to pump bowls, cylinder, jet, etc., \_\_\_\_\_ ft.

14) WELL TESTS: N/A  
 Type test:  Pump  Baser  Jetted  Estimated  
 Yield: \_\_\_\_\_ gpm with \_\_\_\_\_ ft. drawdown after \_\_\_\_\_ hrs.

15) WATER QUALITY:  
 Did you knowingly penetrate any strata which contained undesirable constituents?  
 Yes  No If yes, submit "REPORT OF UNDESIRABLE WATER"  
 Type of water? \_\_\_\_\_ Depth of strata \_\_\_\_\_  
 Was a chemical analysis made?  Yes  No

10) SURFACE COMPLETION  
 Specified Surface Slab Installed [Rule 338.44(2)(A)]  
 Specified Steel Bleave Installed [Rule 338.44(3)(A)]  
 Fitness Adapter Used [Rule 338.44(3)(b)]  
 Approved Alternative Procedure Used [Rule 338.71]

11) WATER LEVEL:  
 Static level dry below land surface Date 5-20-99  
 Artesian flow \_\_\_\_\_ gpm. Date \_\_\_\_\_

12) PACKERS: N/A

| Type | Depth |
|------|-------|
|      |       |

I hereby certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief. I understand that failure to complete items 1 thru 15 will result in the log(s) being returned for completion and resubmittal.

COMPANY NAME JED (Type or print) WELL DRILLER'S LICENSE NO. 50205-44

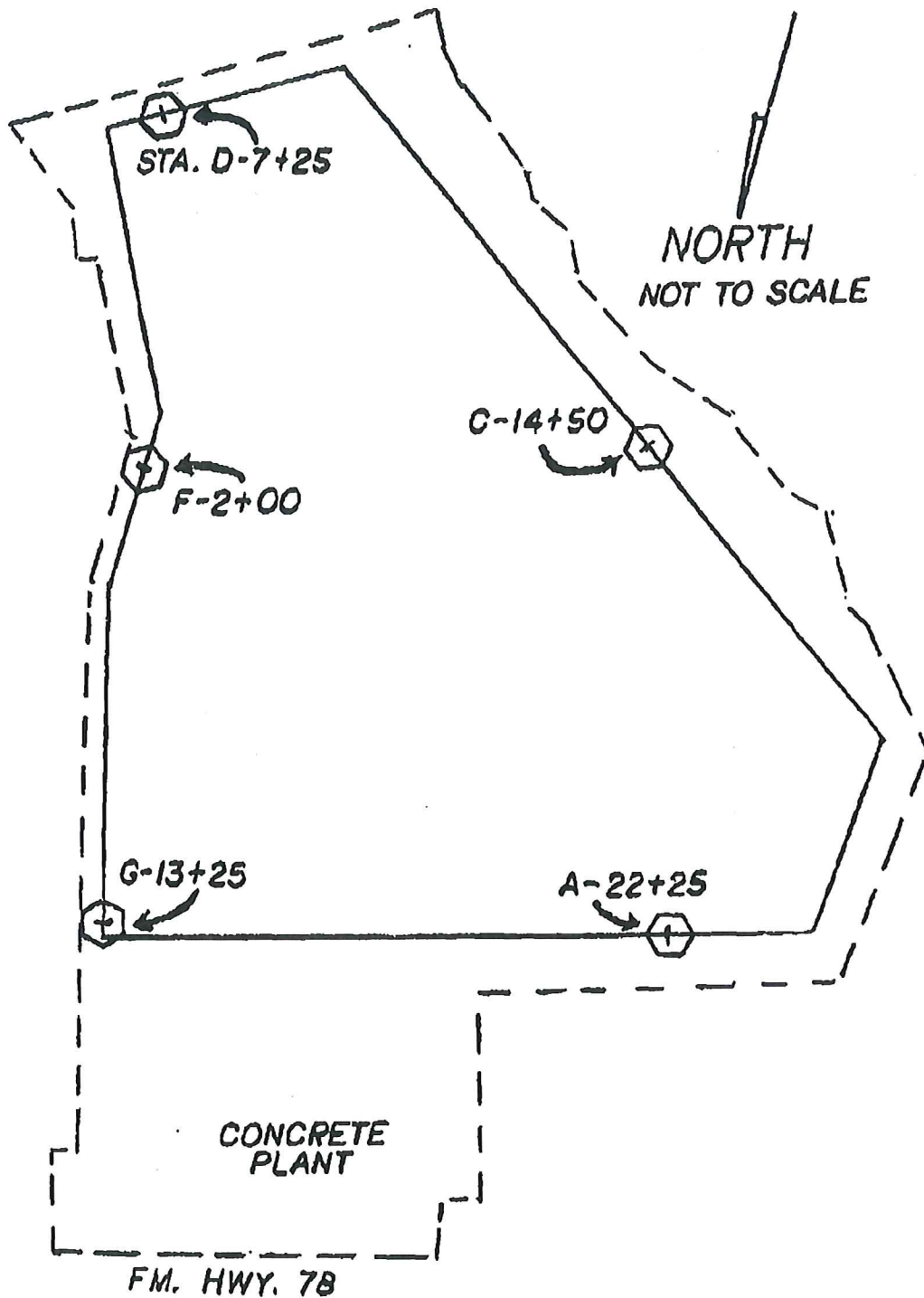
ADDRESS 806 N. Main (Street or RFD) (City) Tx 78102 (State) (Zip)

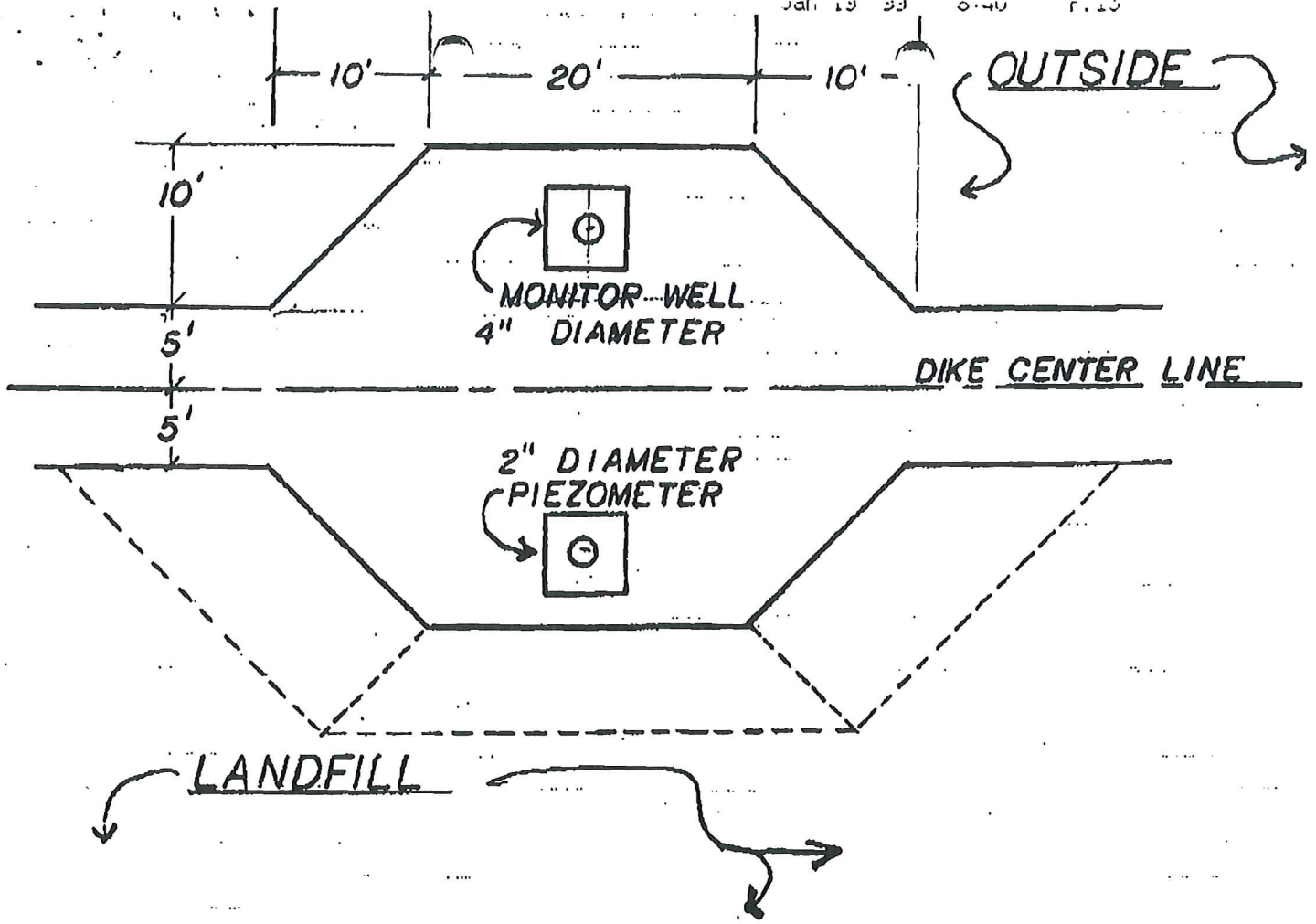
(Signed) Eric Jones (Licensed Well Driller) (Signed) \_\_\_\_\_ (Registered Driller Trainee)

Please attach electric log, chemical analysis, and other pertinent information, if available.



MONITOR WELL AND PIEZOMETER LOCATIONS





NOTE: LINE-STATION DESIGNATION SHALL BECOME IDENTIFICATION NUMBER

"W" SHALL INDICATE MONITOR WELL (X-0+00W)

"P" SHALL INDICATE PIEZOMETER (X-0+00P)

TYPICAL DETAIL:

MONITOR WELL / PIEZOMETER  
DIKE EXTENSIONS

A-22+25

C-14+53

