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September 21, 2015

Mr. Pladej Prompuntagorn
Project Manager
MSW Permits Section
Waste Permits Division – MC 124
Texas Commission on Environmental Quality
P.O. Box 13087
Austin, Texas 78711-3087

Re: Pescadito Environmental Resource Center - Webb County
Municipal Solid Waste (MSW) Permit Application No. 2374
Permit Application – Notice of Deficiency (NOD)
Tracking Nos. 14669041(19052424 & 19376654); CN603835489/RN106119639

Dear Mr. Prompuntagorn;

CB&I Environmental and Infrastructure, Inc. (CB&I) is in receipt of your letter dated July 31, 2015 transmitting a request for additional information regarding the referenced application. Our response is formatted as follows:

Attachment A contains an error analysis table in response to comment 57.

Attachment B contains a revised signature page from the Part 1 form.

Attachment C contains the original version of the changed pages, including a new Master Table of Contents. Additionally, we have performed further subsurface investigation at the site to supplement previous work. It is also included in Attachment C to this letter and should be inserted as Appendix III-E.5 in the application. A divider tab for this section is included. A redline version is not included in Attachment D to this letter since this is a new submittal.

Attachment D contains a redline version of the changed pages. Please be advised that the page numbers listed in the responses below refer to the changed pages and will not match the page numbers on the redline version.

Attachment E contains three (3) copies of the original changed pages found in Attachment C.

We have listed each of your comments below followed by our response in italics.

General

1. Master Table of Contents provides only for Parts I and II without any page numbers. Please add Parts III and IV to the Master Table of Contents along with the corresponding page numbers for the contents listed, in accordance with 30 TAC §330.57(g)(3).

Response: *A Master Table of Contents was previously provided for Parts I and II and for Parts III and IV. However, we have combined them into a single Master Table of Contents for all four parts.*

PART I

2. A sentence on Page 12 was revised to state "Class 1 Industrial Waste amounts will not exceed 20 percent of the total amount of all waste". Please revise this sentence to clarify that this does not include Class 1 waste in accordance with 30 TAC §330.173(e).

    Response: *The sentence on Page 12 mentioned above has not changed since the September 14, 2011 revision and is currently how it was when Parts I and II were declared Technically Complete on July 2, 2012. However, the sentence has been revised to include that the 20 percent calculation does not include the Class 1 waste amount. A revised Title Page, Table of Contents for Part I and Page 12 of Part I is attached.*

PART II

3. A sentence in Section 2.1 was revised to state waste management units for liquid industrial wastes will include solidification (prior to landfill disposal) or underground injection by means of a Class 1 injection well (future units). Please revise this sentence to clarify that the mentioned underground injection well (future units) is not authorized by the issuance of this MSW permit and an appropriate authorization will be obtained prior to the construction of the underground injection well.

    Response: *The requested clarification has been added to Section 2.1. A revised Title Page, Table of Contents for Part II and Page 10 of Part II is attached.*

PART III

Attachment III-A

4. Section 1.2 indicates that information about a Storm Water Pollution Prevention Plan (SWPPP) is included in Part II, Attachment H. However, this information is not included. Please provide the SWPPP information accordingly.

    Response: *The statement regarding Part II, Attachment H was meant for the TPDES permit and not the SWPPP. The sentence has been revised to more accurately reflect that the information in Part II, Attachment H is for the TPDES permit only. A revised Title Page, Table of Contents for Part III, Attachment III-A and revised Page 3 of Attachment III-A is attached.*

Attachment III-B

5. Sections 2.1 and 2.2 indicate that Class 1 industrial solid waste (Class 1) will be accepted at the facility. Please make sure all Class 1 designated cells be depicted on all facility layout maps/drawings in Part III (e.g., Appendix III-D.1, Appendix III-D.3, etc.) in accordance with 30 TAC Section (§)330.331(e)(1).

    Response: *Note 5 on Drawing 1 in Attachment III-D.3 (III.D-3.1) indicates that all cells are designated to potentially receive Class 1 waste. This note has been added to all drawings where the cells are shown. Drawings 2 and 3 in Attachment III-D.1 and 5 in Attachment III-D.3 have been revised to include a note indicating that all cells are designated to receive Class 1 waste. Revised Title Pages and Table of Contents for Part III, Attachment III-D.1 and III-D.3 are attached, as well as Drawings III-D.1-2, III-D.1-3 and*

III-D.3-5.

6. Section 2.1 indicates that the design and details for a leachate collection system (LCS) are presented in Appendix III-D.3. Please depict the dedicated Class 1 LCS on Figure III-D.3-5.

   Response: *Each cell has been designed with a dedicated leachate collection system including sump and extraction pump. A note has been added to Drawing 5 in Attachment III-D.3 to indicate this. A revised drawing 5 of Attachment III-D.3 is attached.*

7. Section 2.1 describes two different types of Subtitle D composite liner system, a standard MSW liner system and a Class 1 liner system. However, Section 2.2 states "All cells are designated as potential Class 1 cells." Please explain or revise these sections as necessary.

   Response: *A note has been added to reflect that all cells are designated to receive Class 1 wastes and will be constructed as such unless a permit modification is submitted and approved to construct a cell for only MSW. A revised Title Page, Table of contents and Page 4 of Attachment III-B are attached*

8. Please address odor control measures for the liquid solidification unit in Section 2.3 in accordance with 30 TAC §330.63(b)(2)(C). Also, Section 2.3 states "Bulking agents such as on-site soil, <u>or other materials</u> with absorptive capacity." Please revise the underlined language to ensure that other bulking agents are inert materials.

   Response: *Section 2.3 has been revised to address odor control and explains that only inert materials, other than what is listed, will be used for liquid solidification. A revised Page 7 of Attachment III-B is attached.*

9. Section 2.8 indicates the evaporation pond will have the same composite bottom liner as the MSW disposal cells. Please include the pond capacity information to ensure that the evaporation pond will be designed and constructed to maintain less than a 30-centimeter depth of contaminated water over the liner, in accordance with 30 TAC §330.331(a)(2).

   Response: *30 TAC §330.331(a)(2) is not applicable to surface impoundments because 330.331(a) specifically refers to landfill units and not to surface impoundments. Surface impoundments are discussed in 30 TAC §330.63(d)(3), however there is no regulation that requires less than 30-cm of head over the liner. Additionally, there are many surface impoundments (evaporation ponds) approved under the MSW regulations that are designed and operated to contain more than 30 centimeters of contaminated water. Even for landfill units, the use of a composite liner doesn't automatically equate to 30-centimeters of head requirement. The head requirement applies only if a default, design standard (per 30 TAC §330.331(a)(2) and 331(b)) is being utilized for the landfill unit (i.e. no performance demonstration or modeling required).*
   Regardless, Section 2.8 has been revised to indicate that the pond will be two feet deep, allowing for 12-inches of contaminated water and 12-inches of freeboard for the 25-year, 24-hour storm . A revised page 9 of Attachment III-B is attached. Drawing 7 in Appendix III-B.1 (III-B.1-7) has also been updated and a new Title Page and Table of Contents are included.

10. In Section 3.3, please explain how contaminated water generated in the Citizen's Convenience Center area will be contained, in accordance with 30 TAC §330.227.

    Response: *Additional information has been added to Section 3.3 to describe the containment provisions, i.e. mountable curbs. Additional details have been added to Drawing 3 in Appendix III-B.1 to illustrate this. A revised page 10 of Attachment III-B and Drawing 3 are attached.*

11. Section 4.0 indicates that a site specific endangered and threatened species protection plan will be prepared prior to initial construction of the site. 30 TAC §330.63(b)(5) requires a site specific endangered and threatened species protection plan to describe how the facility will be designed to protect endangered species. This comment also applies to Appendix IV-C to Part IV as well.

    Response: *Section 4.0 has been updated to indicate that a site-specific threatened and endangered species plan is not needed due to the Biological Assessment and findings of the USFWS. A revised page 13 is provided.*

Attachment III-C – Appendix III-C.1

12. This appendix makes references to drainage patterns (pre-development, intermediate, post-development conditions, etc.) drawings located in Appendix III-C.2. Please include run-on and runoff flow patterns/directions for all catchment areas on these drawings (i.e., Drawings 1, 2, 3, & 4).

    Response: *Arrows indicating run-on and run-off directions have been included on drawings 1, 2, 3 and 4 in Appendix III-C.2. Revised drawings are attached.*

13. Section 2.0 indicates that several drainage modifications are designed to remove a 100-year floodplain, via the Conditional Letter of Map Revision (CLOMR), where landfilling is anticipated to occur. Most drainage structures for CLOMR implementation are outside the proposed permit boundary.

    Please explain how these structures will be maintained to ensure run-on protection from 100-year frequency flood as long as deposited waste remained in the landfill, or provide in this section the location in the permit application where this information is available.

    Response: *Appendix E in the CLOMR application (Attachment III-C.1-A to the MSW application) commits Rancho Viejo Cattle Co., Ltd and Ranch Viejo Waste Management, LLC to the proper operation and maintenance of the improvements. Section 2.0 has been revised to include a statement regarding maintenance of the structures and referencing the requirement in Appendix E of Attachment III-C.1-A. A revised Page 3 of Appendix III-C.1 is attached.*

14. Section 2.2 indicates that three new detention basins will be constructed to prevent run-on and also states "Two of these detention basins are to be located to the north of the site and have been be designed to completely capture the 100-year flood inflows." Please revise the underlined typographical error and also provide an explanation or clarification on the "completely capture the 100-year flood inflows" (e.g., 100-year flood generated from specific subcatchment/drainage areas).

    Response: *The typographical error has been fixed and an explanation provided regarding the two detention basins. A revised page 4 of Appendix III-C.1 has been provided for clarification.*

15. Section 5.3 indicates that Catchment B represents Catchments D, F, J, L, N, and P. If Catchment B representations also include Catchment H, please revise the Catchment B representation accordingly.

    Response: *Section 5.3 has been revised to indicate that Catchment B also represents Catchment H. A revised Page 14 of Appendix III-C.1 is included.*

16. Section 5.4.1 indicates that terrace berms will be located approximately every 200 horizontal feet. However, it seems that most terraces, except the ones at the bottom of the sideslopes, shown in Drawing 6 in Appendix III-C.2 are located approximately every 40 vertical feet. With

the 4:1 sideslopes, the terraces will be located approximately every 160 horizontal feet. Please revise accordingly. In addition, this section also indicates that each terrace berm will have check dams approximately every 250 to 450 feet to slow water and allow for a controlled release rate. Please include locations of these check dams in Drawing 6 or provide a new drawing to clearly illustrate the locations of these check dams in Appendix III-C.2.

> ***Response:*** *Terrace berms are provided approximately every 40 vertical feet; however due to the size of the terrace berms (48-feet as shown on detail 1 on drawing III-C.2-7), the horizontal spacing is closer to 200 feet, making the effective side slope closer to 5 horizontal to 1 vertical. No revisions needed for this.*
> *Drawing III-C.2-6 has been revised to show the locations of the check dams. A revised drawing is attached.*

17. Section 5.4.3 states "In the event that vegetation cannot be established within the ditches, they <u>may be</u> lined with an erosion control material." Please revise and avoid the word "may" and similar phrases with ambiguous language in this Appendix to specify what, when, and where such erosion control devices will be used to control erosion and sediment transport. The erosion control plan must clearly specify and commit to those erosion control measures that will be implemented. It is suggested that a commitment to implement the erosion control measures while maintaining flexibility could be provided by a statement such as "in the event that vegetation cannot be established within the ditches, one or more of the following measures will be implemented.

    Response: *Section 5.4.3 has been revised to indicate that erosion control material will be utilized in the event that vegetation cannot be established in the ditches. A revised page 16 of Appendix III-C.1 is included.*

18. Section 5.4.5 indicates that the South Detention Basin (SDB) has been designed based on a fully developed landfill but will be constructed in stages, provided that adequate storage capacity and discharge for each stage can be demonstrated. Please provide drawings to show each stage of the SDB and an adequate storage capacity and discharge demonstration and calculation for each stage. Please also provide references in this section to the locations containing the SDB stages drawings, storage capacity and discharge demonstrations in the permit application.

    Response: *Section 5.4.5 has been revised to remove language indicating the South Detention Basin (SDB) will be constructed in stages. The detention basin will be fully constructed as shown in Drawings 11 and 12 of Appendix III-C.2 prior to waste being placed above ground in the first cell constructed. A revised page 17 is attached.*

19. Section 5.4.7 states "... the <u>perimeter road</u>, which will surround both waste units, has been designed to be at least one foot higher than the surrounding existing topography", "... the waste boundary is located one-foot in elevation higher than <u>the crest of the perimeter channels</u>", and "Thus, the top of slope for the waste boundary is located at least two feet in elevation higher than the surrounding topography".

    Please explain the meaning for "crest of the perimeter channel" and how the "two feet in elevation higher than the surrounding topography" will protect stormwater run-on from 100-year frequency flood and provide at least three feet of freeboard in accordance with 30 TAC §330.307. Please also provide a drawing to clearly illustrate this statement including the three feet of freeboard.

    Response: *The term "crest of the perimeter channel" indicates the top of the channel adjacent to the perimeter road. Detail 2 on Drawing 7 in Appendix III-C.2 has been updated to show these features and a revised copy is attached.*

Drawings III-C.2-14 and III-C.2-15 are provided to illustrate the relationship between the 100-year flood elevations and the crest of the perimeter channel. The minimum elevation difference is approximately 4-feet (in excess of 3). As shown on Detail 2 on Drawing III-C.2-7, the top of liner (waste) is one foot higher than the channel crest. And the outside of the perimeter road is approximately 0.7-feet above the channel crest.

20. Section 6.0 indicates that the two stormwater models were compared at the "Junction 1 – Downstream Discharge Point". Please included [sic] in this section, the name and location of drawing(s) containing information about the "Junction 1".

    Response: *Drawings 1 and 3 in Appendix III-C.2 shows the location of Junction 1. A note to this effect has been added to Section 6.0 of Appendix III-C.1. A revised page 21 of III-C.2 is attached.*

    A revised Title Page and Table of Contents for Appendices III-C.2-1 and III-C.2-2 are also provided.

Attachment III-D – Appendix III-D.0

21. Section 1.1 indicates that if the liquid stabilization basins are filled to the maximum level, no additional liquid will be accepted until they are emptied. Please provide in this section the maximum level or make a reference to where this information is located. In addition, the size of the basin provided in this section (85-foot by 85-foot by 3-foot) is different from the one provided on Drawing IIIB.1-5 in Appendix III-B.1. Please explain or revise accordingly.

    Response: *The text in Section 1.1 is intended to indicate the size of basin needed for the maximum anticipated daily acceptance rate of 50,000 gallons per day. Multiple units of the sizes shown on Drawing 5 in Appendix III-B.1 are intended to be constructed as needed as the actual acceptance rates dictate. The next to the last paragraph in Section 1.1 (last line on page 1) explains this. Drawings 5 and 7 in Appendix III-B.1 have been updated to reflect the permanent solidification basin size. Also included is a new Title Page and Table of Contents for Appendix III-B.1.*

22. Section 1.1 indicates that a storage tank may be provided for a maximum of one day acceptance to account for temporary delays in bulking process and secondary containment will be provided by construction of an earthen berm around the tank. Please clarify that this storage tank will be located within the lined area of the landfill, in accordance with 30 TAC §330.207(b).

    Response: *Options for secondary containment have been provided in Section 1.1 and revised page 2 is provided, as well as a Revised Title Page and Table of Contents.*

23. Section 2.0 indicates that leachate, contaminated water, and gas condensate may be stored in storage tanks until the evaporation pond is emptied or recirculated back into the waste mass. Please note that only leachate and gas condensate are allowed and contaminated water is not allowed for recirculation. Please provide a clarification in this section to ensure that mixed contaminated liquid (leachate, contaminated water, and gas condensate) in the evaporation pond will not be recirculated, in accordance with 30 TAC §§330.65(c) and 330.177. Similarly, there are other sections in the application, including but not necessarily limited to, Section 3.5 in Appendix III-6.0 [sic III-D.6], Section 30.0 in Part IV which indicates contaminated water will be recirculated. Please revise applicable sections accordingly.

    Response: *Section 2.0 in Attachment III-D (page 5); Section 3.5 in Appendix IIID.6 (page*

5) and Section 30.0 in Part IV (page59) have all been revised to clearly indicate that contaminated water will not be re-circulated. Only leachate and gas condensate can be re-circulated. Revised pages indicated above are attached.

24. Section 3.1 indicates that a concrete paved roadway will provide mud control and details are provided in Appendix III-D.3. No details are provided in Appendix III-D.3. Please provide the mud control details as indicated.

    Response: *Section 3.1 discusses mud control provisions as being the concrete entrance road and the distance from the entrance to the nearest public road (over 2.9 miles). The reference to Appendix III-D.3 is incorrect and should have stated Appendix III-D.1, for details of the entrance road. Clarification language has been added. A revised Appendix III-D, page 7 is attached.*

25. Section 3.3 provides elevation in National Geodetic Vertical Datum (NGVD). Please verify that the NGVD is the sea level vertical datum that was established in 1929. The Permanent Benchmark in the Part I Form and elevation in drawings presented in various Appendices are given in the "Mean Sea Level (MSL)" datum. Please explain the difference between the NGVD and MSL and provide a justification for the use of NGVD, or make revision to replace the NGVD with MSL.

    Response: *The reference to NGVD should have stated NAVD 88. Elevations expressed in NAVD 88 are the same as mean sea level. All references to NGVD or NAVD have been changed to mean sea level (msl). A revised Attachment III-D, Page 7 is provided.*

Attachment III-D – Appendix III-D.1

26. In Drawing IIID.1-2, it appears that the entrance facility is located within the waste footprint (Cells S-6 & Cell S-7). Please address the entrance facility relocation in the Notes section of this drawing.

    Response: *A new note (#7) has been added to Drawing III-D.1-2 regarding relocation of the entrance facilities. A revised drawing is attached as well as a new Title Page and Table of Contents for Appendix III-D.1 for your convenience, along with III-D.1-3 as indicated above in response to comment number 5.*

    Further a new Title Page and Table of Contents are provided for Appendices III-D.2 and III-D.3 and Figure III-D.3-5 as indicated in response to comment number 5.

Attachment III-D – Appendix III-D.5.1

27. On Page 2, Item "Final Cover System (4H:1V Slope)" of the summary of Geotechnical Design Parameters lists the final cover components (from top to bottom) as 7-inch Vegetative Cover and 30-inch Infiltration Layer. However, Drawing III D.3-11 shows an intermediate layer beneath the 30-inch Infiltration Layer. Please represent the layers correctly and appropriately reevaluate applicable geotechnical analyses to incorporate the intermediate layer (approximately 12 inches thickness).

    Response: *The 12-inch thick layer of intermediate cover has been added to page 2. However, as stated on page 7, the waste fill parameters include daily and intermediate cover; therefore no additional analysis is required. Attached are revised Title Page, Table of Contents, and flysheet for III-D.5-1 and pages 2, 7, 12 and 13 for additional clarification.*

Attachment III-D – Appendix III-D.6.0

28. Section 5.4, Bullet "Cleanout" states "Contaminated water that is stored in the leachate storage facility may be used in cleanout activities." Please note that contaminated water is not allowed to be used in the cleanout activities that will be reintroduced into the waste units. Please revise this statement accordingly.

    Response: *The use of contaminated water in cleanout activities has been removed from Section 5.4. Only leachate, gas condensate or other clean water (on site ponds, water well, potable water, etc.) will be used. Sections 3.5 and 5.2 have also been updated accordingly. A revised Title Page, Table of Contents and pages 5, 14 and 16 are provided.*

Attachment III-D – Appendix III-D.8.0

29. Section 1.0 mentions an incorrect MSW Permit Number (MSW No. 234). Please revise accordingly.

    Response: *The typographical error in Section 1.0 has been corrected. A revised Title Page, Table of Contents and page 1 are` attached.*

Attachment III-E *(This comment is provided by Mr. Mamadou Balde, P.G.)*

30. The title pages of Appendix III-E-2 and appendix III-E-3 are not consistent with other appendices. Please add the Part, Attachment and Appendix numbers on the title pages of Appendix III-E-2 and appendix III-E-3; please ensure that other information on the title pages is consistently listed in the same order.

    Response: *The Title Pages for III-E.2 and III-E.3 have been revised and attached.*

Attachment III-E – Appendix E-1*(Comments are provided by Mr. Mamadou Balde, P.G.)*

31. Please provide the following in accordance with 30 TAC §330.57(g) & (d):

    a. Add to the Table of Contents (TOC); Tables 1, 2, and 3, with the corresponding page numbers;

    Response: *Pursuant to 30 TAC §330.57(g)(3), only the main sections of the application are required to be in the Table of Contents. However, for your convenience they have been added.*

    b. Add to the TOC; Figures 1 through 9;

    Response: *Pursuant to 30 TAC §330.57(g)(3), only the main sections of the application are required to be in the Table of Contents. However, for your convenience they have been added and a new Title page and Table of Contents included.*

    Add to the TOC; Plates 1 through 4;

    Response: *Pursuant to 30 TAC §330.57(g)(3), only the main sections of the application are required to be in the Table of Contents. However, for your convenience they have been added.*

    c. Add a title and a scale to Figure 1; please also indicate the geographic location and source of the information for this figure;

Response: An inset has been added to Figure 1 to indicate the geographic location and includes a bar scale. A revised Page 10 is provided.

d. Add a title to Figure 2;

Response: A title has been added to Figure 2 and a revised page 14 provided.

e. Give Plate 3 a title indicative of the type of information depicted;

Response: *A title has been added to Plate 3.*

f. Give Plate 4 a title indicative of the type of information depicted ;

Response: *A title has been added to Plate 4.*

g. Indicate the source of the information depicted on Figure 9.

Response: *The source (USGS) has been added to the Figure on Page 35.*

32. Figure 3 and Figure 4. Please address the following in accordance with 30 TAC §330.57(h) & (d):

a. The figures are not legible; Please, submit legible figures;

Response: *Revised figures provided on pages 15 and 16.*

b. the type of data depicted and the type of information derived from the data is not defined; please define/describe the data being used and outline the conclusion of your finding from analyzing the data;

Response: *Figure 3 has been annotated to show the areas of sand and clay based on the geophysical log information.*

c. the geographic location of the profiles is unspecified; please submit a map (inset) showing the location of profiles J-J and L-L.

Response: *A figure 3a has been added to page 15 to show the location of the profiles.*

33. The outline of the permit boundary shown in Plate 1, Plate 3 and Plate 4 (Appendix III-E-1), and in Drawing No. 1 (Appendix III-G-1) is significantly different from the boundary outline shown in Appendix III-E-2 (Figures 1 through 3, and 16 through 23). The former consists of two separate, approximately square blocks; the latter is shown as a truncated rectangle trending north-south. Please clarify which of these drawings is representative of the proposed permit boundary, and use consistently that boundary map throughout the application.

Response: *The boundary shown in III-E.2 and III-E.3 is what was used for the approved soil boring plan and is therefore correct for those documents. Since the boring plan was approved the boundary has been decreased (and is completely within the original boundary). A new figure has been added to Appendix III-E.0 and an explanation provided in the text clarifying this. A new Drawing III-E.0-1, Title Page, Table of Contents and pages 1and 2 are provided. An introduction to a new Appendix III-E.5 (Supplemental Subsurface Investigation - Phase V is included and the new appendix is provided.*

34. In Section 2.3 (Regional aquifers, page 22, paragraph 2) the prevailing aquifers in Webb County are named as the Carrizo Wilcox, Queen City-Bigford, Laredo and Yegua-Jackson. The discussion on these aquifers (pages 22-30) and Table 2 (page 4) do not address the requirement to identify the areas of recharge to the aquifer within 5 miles of the site, per 30 TAC §330.63(e)(3)(I). For each of the regional aquifers, please identify on a map or by description, the areas of recharge within 5 miles of the site. Where no recharge area was identified, please state so specifically.

Response: *Table 2 on page 4 has been revised.*

35. The information provided in Section 2.3 (Regional aquifers) and in Table 2 satisfies some of the requirements in 30 TAC §330.63(e)(3) for only the Laredo and Yegua-Jackson Aquifers. For the Queen City-Bigford and Carrizo Aquifers, there was no documentation addressing the requirements of 30 TAC §330.63(e)(3)(C through G). Please submit the missing documentation.

    Response: *Table 2 on page 4 has been revised.*

    The Table of Contents for III-E.1 did not include Section1.3.8 (there were two sections entitled 1.3.7), this has been fixed on page 16 and a revised page is included, along with a Title Page and Table of Contents..

Attachment III-E – Appendix E-2 (*Comments are provided by Mr. Mamadou Balde, P.G.)*

Responses to comments number 36 through 64 have been collaboratively developed between CB&I and Raba Kistner, Inc. (RK).

36. The legend on the boring logs in Appendix B does not have a key for all the symbols used in the logs. Specifically, no key is given as to the meaning of the black and clear down arrows on some of the logs. Please include a key for each of the terms and symbols used on the logs.

    Response: *The Key to Terms and Symbols for boring logs provided in Appendix B has been updated to include all symbols used in the boring logs and includes descriptions of black and clear down arrows used on the boring logs and interpretive geologic cross sections. These symbols are defined as follows:*

    Black Arrows: *Static water level measured in piezometer on January 10, 2012.*

    Clear Arrows: *Water level measured in borehole during drilling or within 24-48 hours following completion of drilling activities.*

    Water level information presented on boring logs observed during and immediately following the drilling process represented by clear arrows is provided for informational purposes only and not intended to imply static or undisturbed water level conditions. In conjunction with these additions, the positions of the black arrows on the boring logs in Appendix B corresponding to piezometers were adjusted to reflect the recorded static water levels with respect to ground surface. The positions of these arrows on previous boring logs were plotted with respect to designated top-of-casing measurement stations for respective piezometers.

37. In the boring logs, Appendix B, there is a reference to "observed free water". This expression was used but not explained in the subsurface investigative report narrative. Please define "free water" in contrast to "wet soil" and "matrix saturated conditions" which are also used in Appendix III-E-2. Please describe the hydrogeologic significance of "free water" as pertaining to this site characterization.

    Response: *The term "observed free water" simply means that water was visibly observed in the recovered, disturbed soil samples – either auger-drilling cuttings [e.g., boring B-1] and/or sonic drilling core samples. The source of the water could not be* *determined because of sample disturbance and could have been influenced by drilling and sampling procedures. The use of the term is not intended to imply matrix saturated conditions or the collection of soil samples from within zone(s) of saturation. The observed presence of free water was noted on the logs for informational purposes only.*

38. Appendix B. It is stated in Section 4.2 (Water level measurements, page 14, paragraph 1) that "the presence of wet soil or matrix saturated conditions was only observed in about 7 of the 57 exploratory boring locations installed as part of the collective subsurface effort". It appears that wet or saturated soil is described at least in 12 borehole logs (B1, B2, B5, B6, B11, B14, B16, b18, B19, B101, B114, B120) without counting other logs where free water or moist soil were described. Please review the data and correct your statement as needed.

    Response: *As discussed in the preceding response to Comment #37, the term "free water" was not intended to indicate matrix saturated conditions. Based on further review of collective boring log information developed during all phases of subsurface investigation, wet soil intervals or discrete zones of matrix saturation were observed at a total of 10 of the 57 exploratory boring locations as follows:*

- *B-5 – (85-95 ft), Laminated sandstone layers (Stratum IV)*
- *B-6 – (26-31.5 ft), Sandy clay with sandstone lenses (Stratum III)*
- *B-8 – (46-56 ft), Thinly interbedded sandstone (Stratum IV)*
- *B-11 – (47-47.5 ft), Silt (Stratum IV)*
- *B-16 – (27-34 ft), Thinly interbedded siltstone; and (100-104 ft), Sandstone lenses (Stratum IV)*
- *B-18 – (7-13 ft), Sand with scattered gravel (Stratum I); and (18-26 ft), Sand layers (Stratum III)*
- *B-19 – (39-50 ft), Scattered sandstone lenses (Stratum IV)*
- *B-101 – (25 ft), Sand lens (Stratum III)*
- *B-114 – (10-12 ft), Sand with gravel (Stratum I)*
- *B-120 – (21.5-23 ft), Sand lens (Stratum III)*

Discrete zones of matrix saturation were observed at various depth intervals in association with sand or silt deposits, sand lenses, or sandstone/siltstone bedding units. The narrative in Section 4.2 in addition to respective boring logs in Appendix B, have been revised to reflect this information.

39. Appendix B. It is indicated in Section 4.2 (Water level measurements, page 15, paragraph 2) that except for B-6, B-13, B-18, B-19, B-101, B-120 and B-114, saturated matrix conditions and/or free water were not observed at depths less than 35-40 feet. It appears that saturated matrix conditions and/or free water at depth above 35 to 40 feet were also observed in B-7, B-8, B-10, B-14. Please review the data and make corrections as needed.

    Response: *As discussed in the preceding response to Comment #38, the term "free water" was not intended to indicate matrix saturated conditions. Wet soil intervals or discrete zones of matrix saturation were observed at a total of 10 of the 57 exploratory boring locations. Of this total, discrete matrix saturated intervals were observed at relatively shallow depths less than 35-40 feet (i.e., above Stratum IV) at 5 boring locations: B-6, B-18, B-101, B-114, and B-120. The narrative in Section 4.2 has been revised to reflect this information.*

40. In Section 2.2.1 (Soil borings, page 4, last paragraph) it is indicated that conventional hollow-stem auger and air rotary drilling methods were used during Phase 1 of the subsurface investigation (boreholes B1 and B2). RotoSonic is the drilling method listed in Appendix B for B1 and B2 boreholes. Please explain or reconcile the difference between the information given in this section and the information found in Appendix B.

    Response: *The boring logs for B1 and B2 provided in Appendix B have been revised to correctly reflect the use of conventional hollow-stem auger and air rotary drilling methods associated with Phase 1 of the subsurface investigation.*

41. The static water level on 1/10/2012 (reported as "depth to water" in Appendix B) is significantly different from the static water level on 11/09/2009 (Appendix E), for the same borehole; example:

Borehole B1:	9.02 feet (Appendix B)
	70.00 feet (Appendix E)
Borehole B2:	10.14 feet (Appendix B)
	38.50 feet (Appendix E)

Historically, it thus appears that the water level rose by several dozen feet. Table 5 shows a water level fall for Boreholes 1 and 2 and several other piezometers. Please explain the discrepancies in water level between Table 5 and Appendices B & E.

Response: *Table 5 provides a summary of water level measurements and corresponding elevations obtained throughout the duration of the subsurface investigation at established piezometer locations. With the exception of some initial measurements as indicated on the referenced table, water levels reported are considered to represent static or undisturbed conditions. Water level elevations reported on Table 5 were calculated using depth-to-water measurements relative to established top-of-casing (TOC) measurement stations at each piezometer location. Discrepancies between water level elevations reported in Table 5 and Appendix B (i.e., black arrows) are the result of a data plotting error on the respective boring logs. The black arrows plotted on boring logs in Appendix B have been adjusted to correctly reflect depth below ground surface as opposed to depth below the established TOC measurement station. As the result of these adjustments, the static water level elevations reported on Table 5 and on boring logs in Appendix B are now the same.*

Depth-to-water information provided on State of Texas Well Reports provided in Appendix E was recorded independently by licensed drilling contractors utilized to install piezometers in support of the subsurface investigation effort (i.e., Vortex Drilling, Inc., Boart Longyear Company, and Geoprojects International, Inc.). As water level information reported by the drilling contractors was generally collected immediately following the completion of the drilling process and prior to installation/development of piezometers, the water levels are not considered to represent undisturbed or static conditions. It should be noted that with respect to borings B-1 and B-2 in particular, water levels reported in Appendix E do not agree with measurements reported on Table 5 and Appendix 2 as measurements were obtained immediately following the removal of hollow-stem augers from the ground in November 2009. Owing to seepage of shallow subsurface water following the installation/development of piezometers at these *locations, reported static water levels starting in June 2010 are at significantly higher elevations, which are consistent with elevations reported at other piezometers installed within the proposed landfill footprint.*

Despite the fact that depth-to-water information reported on well reports in Appendix E are not considered to represent static water level conditions, information that is provided on the majority of well reports (not including B-1 or B-2) is consistent with static water levels, varying only by a few feet.

42. The borehole locations (state plane coordinates) shown on Table 1 and in Appendix B (Boring logs) are different for the same borehole. For example:

    Borehole B1: 17098253.56N, 772273.60E (Table 1)
    10006838.42 N, 1590429.65 E (Appendix B)

    Please explain the difference between Table 1 and Appendix B. For consistency, please use the same geographic reference and/or map projection parameters.

    Response: *To simplify the process of plotting fence diagrams and interpretive cross sections developed in conjunction with early stages of the subsurface investigation effort, a site-specific coordinate system was initially developed and utilized as presented on the boring logs presented in Appendix B. The use of the site-specific coordinate system has been discontinued and boring logs presented in Appendix B have been revised to accurately reflect positions using the State Plane (Texas South, Zone 5) coordinate system. Therefore, coordinates presented on revised boring logs now match those presented on Table 1.*

43. In Section 2.2.2 (Piezometers) it is stated (page 5, paragraph 1) that "Borings purposely left open to a maximum of 10 feet remained dry during 24-48 hour periods of observation". Please name those boreholes that remained dry after 24-48 hour. Since the "dry" status of shallow boreholes has been used in part to infer that no groundwater is present in the site's uppermost strata, please submit a complete list of the shallow boreholes that were observed to be dry.

    Response: *The reference to the dry status of shallow boreholes was not intended to imply that no groundwater is present in the site's uppermost strata. Bullet 2 in Section 4.0 specifically discusses the presence of shallow subsurface water. The regulatory uppermost aquifer (as defined in the Geology Report (Attachment III-E) is the contact zone between the Recent Pleistocene and Eocene-age Yegua-Jackson group sediments. Additionally, for design purposes, it has been assumed that groundwater is at the surface.*

    To clarify, intermediate water level measurements were generally obtained prior to the completion of the drilling process at borings installed primarily in association with Phase II of the subsurface investigation. It was observed at several locations that despite the presence/absence of free water, boreholes that were left open to depths of approximately 10 feet overnight during the drilling process did not produce measurable accumulations of shallow subsurface water. Similarly, in situations where shallow borings were left open for up to 24-48 hours (i.e., over the weekend), no measurable *accumulations of shallow subsurface water were observed in boreholes at the time the drilling process was resumed. These general observations were offered for informational purposes only, and were not intended to imply an absence of shallow subsurface water within the site's uppermost strata.*

As discussed with respect to previous responses, free water was observed in 10 of the 57 boring locations at various depths, although discrete intervals of matrix saturation were rarely observed. As discussed in Section 4 and presented on Table 5 and Figures 16 to 23, shallow subsurface water accumulations were observed to be present in all piezometers following installation and the passing of sufficient time for recovery to occur. The statements in Section 2.2.2 have been revised to reflect this clarification.

44. In Section 2.2.2 (Piezometers) it is stated (page 5, paragraph 1) that "shallow groundwater was first observed at about 17 to 20 feet in open boreholes, but consistently rose to depths of about 4 to 12 feet (…) after about 24 hours." It is further stated that "it is considered likely that the RotoSonic drilling introduced disturbance to the surrounding soil strata (…) enhancing localized effective porosity and influencing water levels in the borings and screened piezometers.

    According to Section 2.2.1 (Soil borings, page 4, paragraph 1), hollow-stem auger and air rotary drilling methods were used in boreholes B-1 and B-2, where the water level rose to 9 and 10 feet respectively. It therefore appears that the evidence that the RotoSonic drilling contributed to porosity enhancement and high water level in the borings may not be valid. Please provide explanation for the systematic high water level observed in all the borings at the site, or submit conclusive evidence that the high water resulted from the RotoSonic drilling technique, and is not due to primary or secondary porosity in the rock or soil of the water bearing strata.

    Response: *To clarify, more significant (measurable) water presence was generally observed at boring locations that were installed to depths greater than 17-20 feet and left open overnight or for longer periods in conjunction with the drilling process. Water levels reported throughout the site are most definitely associated with seepage or drainage within the geologic strata (i.e., water-bearing strata). The discussion provided in Section 2.2.1 was not intended to imply that rotosonic drilling methods caused (high) recorded water levels to be present, but merely that some degree of local porosity enhancement was likely affected during the drilling process as evidenced by apparently more rapid rates of seepage. The statements in Section 2.2.2 have been revised to reflect this clarification.*

    Regarding the drilling methods used at borings B-1 and B-2. Both borings were primarily drilled using hollow-stem auger drilling techniques and standard penetration test (SPT) split barrel drive samplers. Both can create disturbance around a bore-hole annulus – particularly in very dense, over-consolidated materials – because of the energy needed to advance the borehole.. Air coring was also used from 30 to 53 feet bgs in Boring B-1.

45. In Section 2.3 (Subsurface investigation, Phase III) it is stated (page 6, last paragraph) that "Similar to Phase II, borings were left open for periods of about 24 to 48 hours following the completion of sampling activities to allow for the collection of water level measurements". In Appendix B (Boring Logs…), it is shown that the drilling date is also the date that water level was measured for all the boreholes that were plugged and abandoned. Please explain the

discrepancy between the statement in Section 2.3 and the information listed on the borehole logs.

***Response**: Owing to differences in the drilling process between Phases 2 and 3 of the subsurface investigation effort, intermediate water levels were typically obtained immediately following completion of the Phase 3 borings and not following an overnight or 24-48 hour (weekend) observation period. Throughout the Phase 3 drilling program, the majority of borings that were not converted to piezometers were installed and plugged during a single day such that the water level measurements (open arrows) correctly plotted on boring logs in Appendix B reflect water level conditions just prior to borehole plugging. The statement made in Section 2.3.1 has been revised to reflect this clarification.*

46. In Section 3.5 (Discussions of soil conditions), reference is made (page 12, bullet 2) to the presence of "ephemeral fresh water lens" at a depth of 1 to 3 feet, and "scattered ephemeral saline water lenses" occurring throughout Stratum II and Stratum III soils. No water quality analysis results were referenced. Please reference the laboratory analysis that determined the "freshness" and "salinity" of the water.

    ***Response:** The statements made in Section 3.5 refer to the presence of an apparently fresh (or relatively less saline) water lens at a depth of 1-3 feet based on our direct observations of the plant root zone in test pit sidewalls. Plant roots were not observed to extend beyond this apparent fresh water interval and, in fact, were observed to bend sharply upwards at the apparent fresh/saline water zone contact. Free water observed in deeper (Eocene) soil intervals corresponding to Stratum II and Stratum III was considered to be relatively more saline based on plant root zone observations in addition to the taste of the water from both intervals. The statement made in Section 3.5 has been revised to reflect this clarification.*

    New Section III-E.5 to the permit application, <u>Supplemental Subsurface Investigation – Phase V</u> includes water quality analyses and indicates the subsurface water is indeed saline.

47. Section 4.2.2 (Water level measured in piezometers, page 15, last paragraph). Please clarify the meaning of the following statement: "Water level contour maps were initially generated utilizing all available piezometer data for each the following piezometer gauging events distributed throughout the full duration of the subsurface investigation program in order to evaluate seasonal fluctuations in groundwater level as indicated below."

    ***Response:** The referenced statement in Section 4.2.2 was intended as a segue to transition the discussion from the initial evaluation of combined water level contour plots to the subsequent evaluation of separated (i.e., shallow and deep piezometer) water level contour plots. Initially, combined maps comprising Figures 16 through 19 were generated using all available piezometer data for each of the gauging events. Subsequently, data obtained from piezometers screened between 10-60 feet (shallow) and between 60-113 feet (deep) were plotted separately and provided as Figures 20 through 23. The referenced statement also conveys that piezometer gauging events were distributed throughout the full duration of the subsurface investigation program to evaluate seasonal fluctuations in shallow subsurface water levels. The statement has* *installation of exploratory borings, which is based on observations of core samples, is somewhat variable across the site. On boring logs provided in Appendix B including B-15, the distinction between Stratum III (weathered) and Stratum IV (relatively unweathered) was made conservatively based on the absence of weathering characteristics over several feet to tens of feet of observed core sample. As a result of this assessment approach, the actual top of Stratum IV may be somewhat higher in elevation than reported at some of the boring locations. During installation of test pits, it was possible to more accurately identify zones of weathering in site strata owing to the much larger subsurface extent that was directly observable, both in the vertical and horizontal directions.*

As discussed in Section 2.4 and presented on Figure 13 and Tables 2 and 3, Stratum IV was not encountered in test pit TP- 1, but was identified in TP-2, which was installed to a total depth of 26 feet. Care was taken to identify and collect unweathered samples from the test pit to meet testing criteria set forth in §330.63(e)(5)(B). Specifically, approximately 1x1x1 ft blocks of unweathered strata were trimmed from various intervals near the base of TP-2 at depths ranging from 20 to 22 feet below ground surface. Based on our prior evaluation of core samples collected throughout the previous phases of the subsurface investigation, samples collected at this location are considered to be representative of Stratum IV throughout the site.

A typographical error was discovered on Table 3 with respect to the lithologic description of Stratum IV soils, which may in part have contributed to Comment #48. The description incorrectly states "...-absence of unweathered characteristics along clay partings." Table 3 has been revised to correctly state the absence of weathered characteristics along sand partings and fractures in the clay.

New Section III-E.5 to the permit application, Supplemental Subsurface Investigation – Phase V includes information regarding the collection and testing of additional samples collected much deeper in Stratum IV.

49. In Section 2.0 (Field exploration program) it is stated (page 1, last paragraph) that soil borings installed during Phases I & II are designated as B-1 through B-26. The summary of exploratory boring (Phase II) includes B-27 (page 3). Please verify that B-27 was installed during Phase II and correct your statement on page 1 as needed.

    Response: *Boring B-27 was installed during Phase 2 of the subsurface investigation. The statement in Section 2.0 has been revised.*

50. In Appendix B (Boring logs and key terms and symbols), only 56 of the total 57 boreholes were listed on the cover page of this "appendix". B-27 is not listed on the cover page. Please add B-27 to the list or explain why it should be excluded.

    Response: *The cover page for Appendix B has been revised to include boring B-27.*

51. In Appendix D (Piezometric construction diagram), only 18 of the total 19 piezometers were

installation of exploratory borings, which is based on observations of core samples, is somewhat variable across the site. On boring logs provided in Appendix B including B-15, the distinction between Stratum III (weathered) and Stratum IV (relatively unweathered) was made conservatively based on the absence of weathering characteristics over several feet to tens of feet of observed core sample. As a result of this assessment approach, the actual top of Stratum IV may be somewhat higher in elevation than reported at some of the boring locations. During installation of test pits, it was possible to more accurately identify zones of weathering in site strata owing to the much larger subsurface extent that was directly observable, both in the vertical and horizontal directions.

As discussed in Section 2.4 and presented on Figure 13 and Tables 2 and 3, Stratum IV was not encountered in test pit TP- 1, but was identified in TP-2, which was installed to a total depth of 26 feet. Care was taken to identify and collect unweathered samples from the test pit to meet testing criteria set forth in §330.63(e)(5)(B). Specifically, approximately 1x1x1 ft blocks of unweathered strata were trimmed from various intervals near the base of TP-2 at depths ranging from 20 to 22 feet below ground surface. Based on our prior evaluation of core samples collected throughout the previous phases of the subsurface investigation, samples collected at this location are considered to be representative of Stratum IV throughout the site.

A typographical error was discovered on Table 3 with respect to the lithologic description of Stratum IV soils, which may in part have contributed to Comment #48. The description incorrectly states "...-absence of unweathered characteristics along clay partings." Table 3 has been revised to correctly state the absence of weathered characteristics along sand partings and fractures in the clay.

New Section III-E.5 to the permit application, <u>Supplemental Subsurface Investigation – Phase V</u> includes information regarding the collection and testing of additional samples collected much deeper in Stratum IV.

49. In Section 2.0 (Field exploration program) it is stated (page 1, last paragraph) that soil borings installed during Phases I & II are designated as B-1 through B-26. The summary of exploratory boring (Phase II) includes B-27 (page 3). Please verify that B-27 was installed during Phase II and correct your statement on page 1 as needed.

    Response: *Boring B-27 was installed during Phase 2 of the subsurface investigation. The statement in Section 2.0 has been revised.*

50. In Appendix B (Boring logs and key terms and symbols), only 56 of the total 57 boreholes were listed on the cover page of this "appendix". B-27 is not listed on the cover page. Please add B-27 to the list or explain why it should be excluded.

    Response: *The cover page for Appendix B has been revised to include boring B-27.*

51. In Appendix D (Piezometric construction diagram), only 18 of the total 19 piezometers were

listed on the cover page of this "appendix". B-10 was not listed on the cover page. Please add B-10 to the list or explain why it should be excluded.

Response: The cover page for Appendix B has been revised to include boring B-27.

52. Please address the following regarding Figure 14 (Conceptual geologic section):

    a. Please add keys to the terms and symbols of Figure 14.

    b. The vertical scale on the legend does not match the cross section vertical scale. Please adjust the scale to the drawing or vice versa.

    c. The section is labeled as trending SW to NE across the site. All boreholes shown along the section (B-23, B-123, B-120, B-125, B-121, B-125) are located in the southern part of the South Block. Please generate and submit a more representative conceptual geologic section by using data across the site, from both the north and south blocks.

    Response: *It appears the whole point of the conceptual section may have been misunderstood and taken out of context of the language of Section 3.5 – particularly the bullet points on page 12 explaining the conceptual section and its relationship to the "interpretative geologic sections" in Figures 4 through 13.*

    The intent of SW-NE trending conceptual geologic section provided as Figure 14 is to illustrate general relationships between stratigraphic units (i.e., Strata I through IV as defined herein), independent of map scale, with respect to topographic "high" and "low" or floodplain areas throughout the site. The conceptual section is considered to be representative of geologic conditions that exist within both the north and south portions of the proposed landfill footprint. In order to address Comment #52 and better present the conceptual nature of information depicted, Figure 14 was revised as follows:

    - *A key to terms and symbols was added that is consistent with information provided on preceding interpretive cross sections;*
    - *Although the figure is conceptual and not to scale by design, its apparent scale was adjusted to better match that used for cross sections (i.e., 1 inch = 40 feet); and*
    - *References to borings B-23, B-123, B-120, B-125, B-121, and B-125 were removed as these were not intended to imply that the conceptual section applies only to the south block.*

53. Figure 14 (Conceptual geologic section) appears to indicate that groundwater is locally present only in the "upland" and "floodplain". This conflicts with the observation (Section 4.2.1, page 14, paragraph 1) of a static water level between 4 and 12 feet throughout the site, irrespective of boring depth (…). Please review the field data and submit a representative conceptual geologic section.

    Response: *It appears that the figure is being reviewed outside the context of the discussion in Section 3.5 that it is a "stylized rendering" trying to illustrate the typical* *location of shallow subsurface water in areas with well-developed soil cover (i.e., Strata I and II and particularly the contact zone between them). It was not meant to exclude the presence of shallow subsurface water in the upper portions of Stratum III, but was prepared simply to point out that shallow subsurface water is commonly associated with Strata I-II and the contact between them.*

As discussed in Section 3.5, the conceptual geologic section is a stylized rendering of subsurface conditions. As documented in boring logs provided in Appendix B, shallow subsurface water was encountered throughout the site at various depths. As discussed in Section 4.2.1 and presented on Table 5, water level measurements in piezometers collectively indicate that static water levels are relatively shallow throughout the site, generally corresponding to the contact between Recent Pleistocene and Eocene strata and/or zones of weathering within uppermost Eocene strata. To clarify information presented and address the apparent conflict, Figure 14 was revised with appropriate labels.

54. Section 2.3.2 (Borehole Geophysical Logging, page 7, paragraph 2). It is stated that the borehole geophysical logging was conducted to "augment existing site characterization data" and to "evaluate subtle lithological variations in the logged stratigraphy". Although both borehole and geophysical logs are submitted, it does not appear that we received documentation showing that you compared, contrasted or correlated the boring logs and borehole geophysical logs to either augment existing data or evaluate lithological variations. More specifically, it is not evident that the geophysical data was used in the site characterization. Please, submit documentation showing instances where the geophysical logs were used to designate boundaries between any of the 4 stratigraphic units underlying the site; or, include a statement indicating that the geophysical data was acquired but not used in the field exploration program.

Response: *Downhole geophysical logging data was collected for consideration by the project team and development of the separate Geology Report (Attachment III-E) and Regional Geology and Hydrogeology Report (Attachment III-E.1). The data was used for the following purposes:*

- *Confirmation of regional characteristics including depth to recognized aquifers – as indicated at the end of Section 2.3 on pages 7 and 8. Dr. Clark reviewed that information during preparation of Appendix III-E.1 - <u>Regional Geology and Hydrogeology</u>.*
- *Assistance in evaluating both the contact between the Yegua and Jackson and also any change in deposition associated with either at the site. The gamma radiation tool was particularly selected because the Jackson typically has a slight radioactive signature as compared to the Yegua. See discussion in first paragraph on page 18 of Dr. Clark's Appendix III-E.1 <u>Regional Geology and Hydrogeology</u>.*
- *Assistance in selecting borings and depth intervals potentially representing more permeable materials, i.e., sandy/silty units, so that piezometers could be installed in those materials for hydrogeologic testing.*

Section 2.3.2 of the SIR (III-E.2) accurately represents how the borehole geophysical logs were used. Borehole geophysical logs were <u>not</u> "used to designate boundaries between any of the 4 stratigraphic units underlying the site." The chosen suite of gamma, *spontaneous potential, EM conductivity, electrical resistivity, and caliper tools can assist in delineating sand versus clay and also soils with any radioactive emissions. The stratigraphic unit subdivisions under the site were based on geologic age and weathering characteristics. A statement to this effect has been added to Section 2.3.2.*

55. Section 2.3.2 (Borehole Geophysical Logging, pages 7 and 8, last paragraph). It is stated that "deep boring DB-1 was conducted to facilitate correlation of site-specific geophysical data to data generated by others (...surrounding oil field). Borehole geophysical logging of an adjacent water-supply well to depth of 1,166 feet was also conducted for similar correlation purposes". It does not appear that we received documentation showing that the additional geophysical data you referred to, above, was used in this study. Please, submit documentation showing instances where the geophysical logs for DB-1 and the deep water-supply well were used to help characterize the site; or, include a statement indicating that the geophysical data was acquired but not used in the field exploration program.

    Response: *Geophysical logging data for deep boring DB-1 and the adjacent water supply well were not utilized directly as part of the subsurface investigation effort, but was considered by the project team for development of the separate Regional Geology and Hydrogeology Report (Attachment III-E.1). Specifically, this information was considered with respect to other geophysical data available in published literature and utilized to better ascertain the location/position of the proposed landfill site with respect to regional geology and hydrogeology. A statement to this effect has been added to Section 2.3.2 for clarification purposes.*

56. Section 2.0 (Field Exploration Program, page 1, last paragraph). It is stated that the "geographic positions and elevations of all borings (...) were obtained using survey grade GPS technology..." and " the geographic survey data was tied to existing benchmarks established by a registered professional land surveyor (RPLS) who was not named or referenced. Per 30 TAC §330.59(d)(1)(C) and 30 TAC §330.421(d), please name/reference the RPLS who established the benchmarks, along with their registration number; indicate whether the benchmarks were surveyed conventionally or using GPS, and whether ties were made with the pre-existing geodetic network, as established by the national Geodetic Survey (NGS) for example.

    Response: The existing conditions topographic survey for the landfill site was performed by Dallas Aerial Survey (2/15/2010) based on physical benchmarks established along the site perimeter by Mejia Engineering Company (Gilbert L. Cade, IIII RPLS) using conventional survey methods. A copy of the final exhibit provided by Dallas Aerial Survey was provided as a reference to evaluate the consistency of GPS data collected in conjunction with the subsurface investigation pertaining to the positions and ground surface elevations of exploratory borings and test pits. Comparison of GPS data provided in the Site Investigation Report to position and elevation data established independently by the RPLS is further discussed in the response to Comment #57.

    Data collected as part of the subsurface investigation effort was additionally post-processed and tied to the spatial reference framework established for the United States by the National Geodetic Survey (NGS). Specifically, the NGS operates the On-line Positioning User Service (OPUS) as a means to provide GPS users efficient access to their

National Spatial Reference System. In association with all phases of GPS field data collection, submitted data files were processed with respect to a minimum of three NGS continuously operating reference stations selected by OPUS. The establishment of the well-defined NGS reference framework facilitates necessary correction of GPS field measurements, which facilitates the final reporting of accurate spatial position data relative to the NGS reference framework.

57. Section 2.0 (Field Exploration Program, page 1, last paragraph). It is stated that the "geographic positions and elevations using GPS technology (...) are considered accurate to within 1 meter ground surface elevation". While GPS is capable of centimeter accuracy, the results of an error analysis has not been submitted to demonstrate any level of accuracy. If an error analysis or other survey quality checks were conducted, please submit the results; otherwise remove the statement asserting an accuracy level for the survey. An accuracy of 1 meter (3.3 feet), especially for elevations, does not appear to be adequate to determine underground water flow direction. Please demonstrate that the elevations of the piezometers are sufficiently accurate to reliably determine underground water flow direction.

Response: *An error analysis was performed to evaluate GPS position data to position and elevation data established independently by the RPLS as the result of the topographic survey effort for the landfill site. As part of this analysis, position data collected for exploratory borings, piezometers, and test pits in conjunction with various phases of the subsurface investigation program were compared directly to interpolated ground surface elevations obtained directly from the final 2-ft topographic contour map prepared by Dallas Aerial Survey (2/15/2010) based on physical benchmarks established along the site perimeter by Mejia Engineering Company (Gilbert L. Cade, IIII RPLS). As presented on Table 1, GPS position data associated with the subsurface investigation was collected during three events that occurred on October 19, 2010, May 3, 2010, and July 21, 2010. In conjunction with these field survey efforts, an attempt was made to also collect position data at one or more perimeter benchmarks established by the RPLS and/or previously surveyed boring/piezometer locations to evaluate the consistency of final (post-processed) GPS data.*

As part of this initial data analysis effort, it was discovered that geographic positions for 7 of the 57 total borings installed as part of the subsurface investigation effort were incorrectly reported on Table 1 and incorrectly plotted on various figures (i.e., borings B-101, B-102, B-106, B-115, B-124, and B-126). In reviewing collective field data, it was determined that the locations originally reported for these borings in the February 25, 2015 Site Investigation Report were "stakeout" or planned drilling locations. Owing to physical site conditions and other logistical challenges (e.g., dense vegetation, poor access conditions, etc.), the locations of referenced borings were adjusted following stakeout at the time that drilling was actually conducted. Final "as-drilled" locations were subsequently surveyed but inadvertently not used to generate previously submitted Table 1 and figures. The correct or as-drilled geographic coordinates for these borings were utilized to update information provided on Table 1, associated figures, and boring logs.

As the next step in the error analysis effort, vertical position data reported in the revised Table 1 was entered into a spreadsheet to facilitate comparison of reported ground *surface elevation data to interpolated ground surface elevations obtained directly from the final 2-ft topographic contour map prepared for the site based on RPLS ground control stations or benchmarks. Additionally, horizontal position data for these exploratory boring/piezometer and test pit locations was entered into the spreadsheet to evaluate consistency across various survey events in situations where previously surveyed locations were re-visited. Finally, position data for perimeter benchmarks independently established by the RPLS was compared to GPS data collected at these locations in conjunction with the respective field survey events for the subsurface investigation. The spreadsheet containing these comparisons is provided for TCEQ consideration as Attachment A to this response letter. Please note that geographic data reported previously to TCEQ is highlighted in tan on the table.*

As indicated on Attachment A, the difference in vertical position data reported as part of the Site Investigation Report and interpolated ground surface elevations established independently by the RPLS is favorable and ranges from a maximum vertical offset of 4.01 feet and a minimum of 0.0 feet, respectively. The majority of difference values are less than 1.0 foot. Utilizing absolute data values, the average vertical difference between reported GPS elevation data and RPLS ground surface elevations was calculated at 0.55 feet. As indicated on the lower part of the referenced attachment, vertical position data collected at select perimeter benchmark sites (i.e., BM2, BM4, and BM6) was also compared to elevation values reported by the RPLS in conjunction with their original survey conducted on April 9, 2010. Reported GPS horizontal position values differ from benchmark elevations by an average of 0.31 feet.

With respect to horizontal position accuracy, comparison of data from 5 boring locations that were re-visited during successive GPS data collection events indicates that values obtained from event to event are internally consistent and generally accurate to within 1 meter (~3.3 feet). The difference between horizontal position values ranged from 0.028 to 0.57 feet (easting) and 7.66 to 0.155 feet (northing), respectively. The average difference in reported horizontal position data was calculated at 0.29 feet (easting) and 2.0 feet (northing), respectively. Reported GPS horizontal position values differ from benchmark locations by an average of 0.06 feet (easting) and 0.59 feet (northing), respectively.

As demonstrated by this analysis, previously established and reported GPS horizontal and vertical position data is considered to be adequate for purposes of the subsurface investigation, particularly the determination of the primary groundwater flow direction. Collectively, when considered with respect to independently established benchmark locations and topographic survey points, GPS data developed as part of the subsurface investigation effort is accurate to within 1 meter ground surface resolution.

58. Table 1 lists the three-dimensional positions of the boreholes, test pits and staff gauges used in the field exploration program. It is stated (footnotes, Table 1) that these positions were obtained using the real time kinematic RTK method of GPS. RTK being a relative positioning technique, please explain how the final (absolute) coordinates listed in table 1 were computed.

Response: *A Leica System 1200 survey grade satellite based GPS was used for all phases of the field survey effort supporting the subsurface investigation. The Leica system incorporates satellites managed by the Department of Defense to allow for accurate geographic position measurement worldwide. Raw GPS data were collected using a Real Time Kinematic (RTK) rover interfaced with a Leica System 1200 base station. The units were equipped with Intuicom® radios to transmit and receive laterally coordinated position data between the two units. Use of the coupled RTK rover and stationary base station provided for real-time correction of raw GPS observables and generally afforded sub-meter position accuracy throughout the course of the survey as demonstrated by the error analysis discussed with respect to the Comment #57 response.*

As discussed in the Comment #56 response, all data collected as part of the subsurface investigation effort was additionally post-processed and tied to the spatial reference framework established for the United States by the NGS. Submitted data files were processed with respect to a minimum of three NGS continuously operating reference stations selected by OPUS. The well-defined NGS reference framework facilitated necessary correction of GPS field measurements and the reporting of final (absolute) coordinates listed in Table 1.

59. Table 1, Table 5, Table 6 and several other documents in the permit application reference ground elevations to NAD 83, which is a horizontal control datum. NGVD which has become obsolete, is referenced in Appendix III-D.0, Section 3.3. Please note that offsets or other distortions may occur if the survey points were not properly datum-referenced, or if different datum are mixed. Please discuss the procedures used to convert the ellipsoidal heights obtained from the GPS survey to demonstrate that the ground elevations of the boreholes, test pits and staff gauges described in this appendix was properly referenced.

    Response: *All GPS horizontal position survey data collected and reported in conjunction with the subsurface investigation was appropriately tied to the 1983 North American Datum (NAD 83). Vertical position data was tied to the North American Vertical Datum of 1988 (NAVD 88). NAVD 88 is the same as mean sea level. Tables 1, 5, and 6 that provide GPS survey data have been revised to reflect this information. References in other portions of the permit application to NGVD have been removed or corrected.*

60. It is stated that borehole B-109A and B-114A are adjacent duplications of B-109 and B-114 respectively. The elevation difference shown on Tables 1 & 2 between B-109/B-109A (1.07 foot) and B-114/B-114A (1.73 foot) is not supported by the topographic maps of the area, including the large scale map you supplied in an unnamed figure of Parts I & II of the permit application. The errors in GPS relative positions as obtained by RTK for neighboring points can be a survey quality issue. Thus the concerns about the overall accuracy of this survey, especially in regard to the elevations of the piezometers used to infer groundwater flow direction. Please explain the height discrepancy between B-109 and B-109A, and between B-114 and B114A, and submit a formal assessment of the survey accuracy.

    Response: *Although borings B-11/B-11A, B-109/B-109A, and B-114/B-114A are described as "twin" borings in Section 2.3, the follow-up A-series borings installed specifically to evaluate shallow groundwater conditions and set as piezometers were placed on the order of 71 to 114 feet away from the original exploratory borings. A* *comparison of reported survey elevations for these borings is provided below:*

Boring Set	*Distance to A-Series Boring*	*Reported Elevation Difference*
B-11/B-11A	*71 feet SW*	*0.01 feet*
B-109/B-109A	*85 feet SW*	*1.07 feet*
B-114/B-114A	*114 feet SW*	*1.73 feet*

Given the distance between borings and review of best available (site-specific) topographic survey data generated by the RPLS, the reported elevation differences (that fall within the 2-ft topographic contour interval) appear to be representative of actual site conditions, allowing for minor inherent GPS error as discussed in more detail in the response to Comment #57.

61. In Attachment III-E (Section 1.0, page 1), it is indicated that "the regulatory uppermost aquifer is shallow subsurface water, i.e., perched groundwater associated with the relatively continuous contact zone occurring at shallow depth between the Recent-Pleistocene soils and Eocene age Yegua-Jackson group sediments". In Appendix III-E-2, it is stated (Section 4.0, Groundwater data, page 13, 3rd bullet) that "groundwater appears to be associated with thicker silt or sand units and/or secondary structures (i.e., fractures and clay partings) observed in the predominantly clayey soils of the Yegua-Jackson group formation". The above two statements are in disagreement. It is not clear whether the uppermost aquifer was identified at the boundary between the Recent-Pleistocene (Stratum I) and the Eocene sediments (Yegua-Jackson Group), or within the silt and sand units of the Eocene Sediments. Please explain this apparent contradiction.

Response: *By specific intent, neither the Regional Geology/Hydrogeology Report (III-E.1), SIR (III-E.2), GDR (III-E.3), nor the Summary of Hydrogeologic Testing of Selected Piezometers (III-E.4), use the term "uppermost aquifer" or attempt to define it. However, the Groundwater Monitoring Plan, Attachment III-F, Section 3.0 beginning on page 4 does describe the "uppermost aquifer."*

> *"With respect to the usual regulatory definition, the "uppermost aquifer" is the shallow subsurface water, i.e., perched groundwater, occurring in the relatively continuous contact zone occurring at shallow depth between the Recent-Pleistocene and Yegua-Jackson. Very limited amounts of groundwater were also encountered in several of the isolated, discontinuous sand/silt units deeper in the section. Inferred flow direction for the shallow groundwater appears to mimic surface drainage patterns, i.e., to the south with gradients ranging from 0.02 to 0.03. The uppermost recognized regional aquifer at the facility is the Yegua-Jackson which is greater than 600-feet beneath the deepest excavation. Flow in the Yegua-Jackson appears to coincide with the regional dip of the Yegua-Jackson to the east at approximately fifty feet per mile."*

That information is entirely consistent with the discussions in the Geology Report, Attachment III-E. The referenced statement in Section 4.0 has been revised for clarification purposes.

62. The uppermost aquifer has been described differently in the appendices of this attachment as

perched above the Eocene sediments, lentoid within the Yegua-Jackson formation, mostly limited to fractures and partings etc. Please provide factual or hypothetical representation of the aquifer; description of the size, depth or spatial extent and please clarify whether the aquifer underlies all or parts of the landfill site; if it is not continuous throughout the area, outline its location(s) beneath the site. Please address these comments in accordance with 30 TAC §330.63(e)(5)(F).

Response: *As discussed in Attachment III-E, information developed as the result of the subsurface investigation indicates that the uppermost aquifer at the site is comprised of perched shallow subsurface water associated with the relatively continuous contact zone between the Recent Pleistocene soils and Eocene-age Yegua-Jackson group sediments. The term "uppermost aquifer" is only used in Attachments III-E and III-F and indicates it to be associated with the contact zone between the Recent Pleistocene soils and Eocene-age Yegua-Jackson group.*

Based on static water level data, shallow subsurface water flow appears to mimic surface drainage patterns to the south. Based on collective information developed as the result of the subsurface investigation effort, this uppermost aquifer is inferred to be present throughout the full extent of the landfill site.

Subsurface investigation data indicate that shallow subsurface water is also present to varying degrees within the deeper Eocene strata, which is regionally recognized as the Yegua-Jackson aquifer. Discrete zones of matrix saturation present within the Eocene strata in association with sand or silt deposits, sand lenses, or sandstone/siltstone bedding units. Although subsurface water within the deeper Eocene strata appear to be hydraulically connected to the uppermost aquifer, water level data from piezometers screened at deeper intervals within the aquifer below depths of about 60 feet exhibit increased pressure conditions as indicated by slightly higher static water level elevations than in nearby piezometers screened at shallower depths.

It should be noted that the requested information has been already provided to the extent possible absent complete excavation and examination of the site. With the exception of the "contact zone", shallow subsurface water and/or groundwater is associated primarily with thin sand/silt units and partings that are discontinuous and not laterally extensive. As noted in Section 5 of the GDR (III-E.3) on page 4:

> *"the subsurface soils encountered in this study are predominately cohesive (clayey) in nature. Fat clays (CH) and lean clays (CL) are predominant and were observed in about 95.5% of the samples obtained during drilling operations. Test pit observations were similar. The remaining 4.5% of samples included about 2.5% cemented soils and about 2% "granular" soils. The cemented soils included thin layers of siltstones, claystones, and clay shales. Thick layers of sandstones were observed in the relatively deep boring DB-1. The types of "granular" soils observed included silts (ML and MH), poorly graded sands (SP), clayey sands (SC), and silty sands (SM)."*

Attachment III-E – Appendix E-3 (*Comments are provided by Mr. Mamadou Balde, P.G.)*

63. The TOC includes a "List of Attachments" and a "List of Appendices", but these titles were not

consistently used within the appendix: (a) "List of Attachments" was substituted for "Attachments and Figures" and (b) "List of Appendices" was left out. To avoid confusion, please use within the body of the appendix the same title as shown on the TOC.

Response: *The TOC has been modified to match titles and information presented within the bodies of the respective appendices.*

64. 30 TAC §330.63(e)(5)(B) requires that permeability tests be performed on undisturbed samples. In Section 3.3 (Permeability tests) it is stated (page 3, paragraph 1) that permeability tests were "assigned to relatively undisturbed samples".

    Please explain the meaning of the qualifier "relatively", and explain how that meets the rule requirement.

    Response: *The soil samples collected from exploratory test pits TP-1 and TP-2 were collected by hand-excavation methods following the standard of care necessary to assure the preservation of in-situ structure, water content, density, and other properties to a level consistent with the intended purpose of permeability testing. Samples are considered to be "intact" per the definition set forth by the American Society for Testing and Materials (2014) in the Standard Terminology Relating to Soil, Rock, and Contained Fluids (ASTM D653-14). Samples are considered to be "undisturbed" pursuant to applicable §330.63(e)(5)(B) requirements. The statement in Section 3.3 has been revised to reflect this.*

Attachment III-F (*Comments are provided by Mr. Mamadou Balde, P.G.)*

65. In Section 2.0 (Point of compliance, page 2), Figure III-F-1.1 (Appendix III-F-1) is referenced as a topographic map submitted to comply with the requirements of 30 TAC §330.63(f)(1). This figure is a final (closure) contour map rather than a topographic map. Please submit a topographic map of the site that meets the requirements of 30 TAC §330.63(f)(1).

    Response: *The final closure map is a topographic map. However, we have revised the Drawing to include an existing contour topographic map. A new Title Page, Table of Contents for III-F.1 and revised drawing III-F.1-1 is provided.*

66. In Section 2.1 (Migration pathways) it is stated (page 3, paragraph 1) that onsite piezometers data used to establish potential surfaces are provided in Appendix III-E-1. The referenced information was found in Appendices III-E-2 and III-E-4. Please cite the correct Appendices.

    Response: *The reference in Section 2.1 has been corrected. Please note that Appendix III-E.4 is piezometer testing and not piezometer readings so it has not been included.*

67. The information given in Section 2.1 (Migration pathways) does not adequately address the requirements in 30 TAC §330.63(f)(3). Specifically, changes of groundwater flow expected to result from construction of the facility does not appear to be taken into consideration. Please submit all the information required under 30 TAC §330.63(f)(3).

    Response: Section 2.1 has been revised to include additional discussion on the most likely migration pathways.

68. The plan and engineering report of the proposed groundwater monitoring program (per 30 TAC §330.63(f)(4)) did not take into consideration site specific information such as aquifer

thickness, effect of site construction /operations on groundwater flow direction and rate, as required in 30 TAC §330.403(e)(1). Please ensure that the plan and engineering report is based on all the site characteristics listed in 30 TAC §330.403(e)(1), including proven or anticipated aquifer thickness, and the effects of site construction/operations on groundwater flow direction and rate. If that information was not collected or was deemed irrelevant in complying with 30 TAC §330.403(e)(1), please state so and explain.

Response: Additional information has been included in Section 3.0. Due to the number of additions, the entire Attachment III-F including a revised Title Page and Table of Contents are being transmitted

Attachment III-F – Appendix F-1 *(This comment is provided by Mr. Mamadou Balde, P.G.)*

69. Please add a title page and a table of contents to this appendix.

    Response: *Although we cannot find that this is required by the regulations, a Title Page and Table of Contents for the two drawings has been provided as indicated in response to comment number 65 and are attached.*

Attachment III-F – Appendix F-2 (*Comments are provided by Mr. Mamadou Balde, P.G.)*

70. The TOC does not have a listing of tables, and some of the tables in the appendix are not numbered or titled as required by 30 TAC §330.57(g)(3). Please ensure that all the tables included in this appendix are numbered, titled and page numbered.

    Response: *30 TAC §330.57(g)(3) only requires main sections of the application to be included in the Table of Contents. However, we have provided numbers and titles for the Tables and have included them in the Table of Contents (attached) as requested.*

71. In Section 5.0 (Groundwater monitoring system) it is stated (page 28, paragraph 1) that the description of the site geology, hydrogeology, groundwater flow (...) is provided in Attachment III-F. The referenced information was found in Attachment III-E, Appendices III-E-1 and III-E-2. Please cite the correct Appendices.

    Response: *The referenced statement has been revised on page 28.*

72. In Section 2.4 (Monitoring well purging) an extensive description of both the 3-well volumes and low-flow purging methods has been provided. However, the application does not indicate the primary purging method to be used. Please specify the default purging /sampling method that will be utilized for the monitoring wells, and describe the conditions that may lead to reverting to an alternate method, which also shall be named and described as needed.

    Response: *Section 2.4 (page 3) has been revised to indicate that the primary purging and sampling method will be by removing three well volumes.*

73. In Section 2.4 (Monitoring well purging, page 4, last paragraph) it is stated that "purging will be accomplished by portable or dedicated pumps (...). On page 5, paragraph 2, it is stated that purging and sampling will be conducted using dedicated low-flow pumps installed in each well. These two statements convey different information about the same subject. Please describe specifically the primary purging/sampling equipment and protocol. If there is a backup plan, please state so, and describe that plan as well.

    Response: *Section 2.4 has been edited for clarification. A revised Title Page, Table of Contents and pages 3-5, 17, 20, 26, 28 and 32 are provided.*

Attachment III-G *(Comments are provided by Mr. Mamadou Balde, P.G.)*

74. Two consecutive pages are numbered page 3. Please, ensure that the individual pages are numbered sequentially.

    Response: *The page numbering has been fixed. Attached are revised Pages 3 and 4.*

75. Section 2.1 (page 2, last paragraph). It is stated that "hydraulic conditions at the site will change somewhat (…)" but "no impacts to landfill gas monitoring are anticipated". Please explain the basis of this conclusion and how this meets 30 TAC 330.371(b)(1)(C) .

    Response: *The site is located in a semi-arid area with limited rainfall and a high evaporation rate. The relocation of surface ponds will remove local recharge in the vicinity of the landfill and decrease moisture conditions immediately beneath the site. This will result in a more efficient environment for monitoring potential landfill gas. Additional clarification has been added and a revised Page 3 is attached.*

76. Section 2 (Methane monitoring program, page 3b, paragraph 2 - Utility lines and pipelines). It is stated that several oil and gas gathering lines exist on the footprint of the landfill. It appears that the locations of these pipelines and pipeline easements have not yet been fully determined (page 3b). According to 30 TAC 330.371(b)(1)(E), the type and frequency of methane monitoring is based in part on the location of pipelines that cross the landfill. Please locate and depict on an appropriate drawing all pipelines and pipeline easements within the permit boundary and revise the gas monitoring plan accordingly.

    Response: *All pipelines on the landfill property are located within easements and are shown on Figure 1 in Appendix III-G.1 (III-G.1-1). The text in Section 2.1 (page 4) has been revised to clarify this.*

77. Please address the following in Section 5.7 (Backup plan):

    a. Include a statement that a permit modification will be submitted to replace damaged and inoperative gas monitoring probes /trench vents;

    Response: *Additional clarification language has been added to bullet 1 and 3 in Section 5.7.1 as requested. Revised pages 14 and 15 are attached.*

    b. Include a provision in 5.7.1 (Stationary perimeter probes) indicating that - should a monitoring event occur prior to replacement of a damaged probe - a portable gas detection device shall be used until the probe/trench vent is replaced (for example by putting a bar-hole next to the damaged probe);

    Response: *Due to the remoteness of the site, lack of nearby structures and extensive oil and gas production around the site, this measure seems unwarranted. However, additional language has been added to bullet 3 in Section 5.7.1 as requested. Revised page 15 is attached*

    c. Provide in 5.7.2 (Continuous monitoring devices) a schedule on how often a calibrated portable gas detection device will be used to monitor the stationary unit (e.g. weekly, monthly).

    Response: *A frequency has been added to bullet 2 in Section 5.7.2 as requested. A revised page 15 is attached.*

Attachment III-G – Appendix G-1 *(Comments are provided by Mr. Mamadou Balde, P.G.)*

78. Please add a title page and a table of contents to this appendix.

    Response: *Although we cannot find that this is required by the regulations, a Title Page* *and Table of Contents for the two drawings has been provided and are attached.*

79. Figure III-G-1.2 is mistitled. The figure shows a typical gas probe and utility vent details, but the caption reads “Linear and leachate collection detail”. Please title appropriately.

    Response: *The title on Figure III-G.1-2 has been revised and new figure is attached.*

Attachment III-H

80. Section 2.1 states “The erosion layer will be covered with vegetation consisting of native grasses, wood chips, or stone to provide erosion protection from wind and surface water.” Woodchip and stone are not vegetation. Please revise appropriately.

    Response: *The text in the last paragraph of Section 2.1 (page 4) has been revised for clarity.*

81. Section 3.1 states “Alternately, the entire landfill may be closed after the entire landfill has been filled to final capacity and the last section of waste fill has received final cover.” However, Attachment III-J indicates that the proposed largest area requiring closure is for one section of the landfill, approximately 88 acres. Please clarify or remove this statement.

    Response: *The sentence has been removed from page 6.*

82. Section 3.3 states “If the unit is lined with concrete, liquids that have been satisfactorily solidified will be removed and placed in the landfill. Any voids will be filled with compacted soil...” Please revise this statement to ensure proper cleaning of the concrete solidification unit prior to fill.

    Response: *The statement has been revised on page 7.*

83. Section 3.5 states “... any remaining liquids will be removed from the site and properly disposed <u>or used on site for dust control</u> ...” Leachate, contaminated water, and gas condensate are not suitable for dust control, in accordance with 30 TAC §§330.63(d)(1(B). Please remove the underlined option.

    Response: *The requested text has been removed from Section 3.5 (page 8).*

84. Section 3.5 also states “Closure of storage ponds will include removal and disposal of any exposed geosynthetics and placing and compacting backfill to eliminate the potential of ponding water. Above ground storage tanks, if used, will be emptied and either left in place or removed from the site.” Please revise this statement to ensure that the storage ponds will be inspected for leakage after the removal of geosynthetics liner, any contaminated soil caused by leakage will be properly managed, and above ground storage tanks will be properly decontaminated, in accordance with 30 TAC §330.459.

    Response: *Section 3.5 has been updated as requested. A revised Title Page, Table of Contents and pages1, 4, 6-8 are attached.*

Attachment III-I

85. Section 2.2 proposed for annual site inspections after the first five years of quarterly site inspection. 30 TAC §330.407(a) requires at least semiannual for groundwater detection monitoring, therefore, adjust the annual site inspections to semiannual site inspections. Please revise and adjust cost estimates as necessary.

    Response: *Bullet one on page 2 discusses inspections of the site (quarterly for the first five years and annually thereafter). Bullet 6 on page 3 discusses semi-annual* *groundwater monitoring as required by 30 TAC §330.407(a). No revisions needed.*

Attachment III-J

86. Construction costs for erosion, infiltration, and general fill layers do not appear to include costs for installation and compacting. Please clarify and make adjustments accordingly.

    Response: *The unit costs shown on page 2 of Attachment III-J include supply, placement and compacting as needed to construct the Final Cover System. A note has been added to reflect this. Additionally, we have updated the quantity of inspections to account for quarterly the first five years. A revised Title Page, Table of Contents for III-J and fly sheet for III-J.1, including revised cost estimates are provided. You will note a correction in the Table of Contents for Section 4.0.*

PART IV

87. Section 1.1 lists future unit for reusable item storage area for inert materials. However, Part III of the application indicates that non-inert materials (shingle and/or asphalt) will also be processed. If so, please include the non-inert materials to the list.

    Response: *The list has been updated to include non-inert materials and a revised Page 2 is attached.*

88. Section 4.0 states "Additionally, since the landfill may operate 24 hours per day or anytime during the day, all personnel will not be required to be on site during all operating hours or every operational day." Please clarify this statement by providing discussion on who will be available for which operation at the site.

    Response: *Section 4.0 has been revised to state what minimum personnel will be available at all times waste is being received. Revised pages 10 and 11 are attached.*

89. Section 4.0 also states "One or more employees have load rejection authority and shall be made aware of the necessity to ensure that no hazardous or otherwise unauthorized wastes are accepted. The staffing has been planned to allow for different shifts and illnesses and other personnel absences..." Since the statement says one "or" more, please explain how the load inspection and rejection will be conducted if the only available load inspector is absent. In accordance with 30 TAC §330.133(b), a trained staff person shall be at all facilities to monitor all incoming loads of waste. A trained staff person shall also be on duty during operating hours at each area where waste is being unloaded to direct and observe the unloading of solid waste.

    Response: *Section 4.0 has been revised to state that an employee with load rejection authority will be available at the landfill and liquid solidification area at all times that waste is being received. Revised pages 10 and 11 are attached*

90. Personnel and labors listed in the Facility Organization Chart on Page 10 are not the same as the ones listed in Table IV-3. Please revise as necessary.

    Response: *The organizational chart shown on Page 10 has been updated to reflect the same positions as in Table IV-3. A revised Page 10 is attached.*

91. Section 23.0 makes references to the 2004 Adopted Version rule citations, 30 TAC §305.70(j)(11) & (13) –, for a permit modification. Please use the current 2008 Adopted Version and make corrections accordingly.

    Response: *The rule citations in Section 23.0 have been corrected as requested. A revised Page 45 is attached.*

92. Section 24.0 proposed to use treated liquids removed from grit trap waste water and water based drilling fluid (with a TPH less than 1,500 ppm) removed from the solidification basin to apply on waste to add moisture to help in compacting. The proposed liquids seem to be contaminated water and may not be introduced into the landfill. We suggest replacing the proposed liquids with leachate and gas condensate derived from the landfill which can be recirculated into the landfill, in accordance with 30 TAC §330.177. Please revise this section and other sections containing similar proposal (e.g., Section 1.3 in Attachment IV-B) as suggested.

    Response: *Section 24.0 and Section 1.3 in Attachment IV-B have been revised to remove the statements regarding the use of liquids other than leachate and gas condensate in waste compaction. A revised page 47 in Part IV and Page 1 in Attachment IV-B are provided.*

93. Section 25.1 states "The additional soil cover (<u>greater than 6 inches</u>) may be stripped off and used for daily cover ..." This statement implies that more than 6 inches and up to 12 inches of intermediate cover may be stripped off. The entire layer of the intermediate cover and stripped soil may be contaminated with waste. In accordance with 30 TAC §330.165(a), daily cover must be soil not previously mixed with waste. Please reevaluate this statement and revise appropriately to ensure the soil stripping will not be greater than 6 inches.

    Response: *Clarifying language has been added to Section 25.1. Revised Pages 48 and 49 are attached.*

94. Section 25.4 indicates that monthly or after significant rainfall events, the landfill manager will inspect intermediate and final cover for erosion. Please specify the "significant rainfall events" and include daily cover for the erosion inspection.

    Response: *Section 25.4 has been revised as requested. A revise Page 50 is attached.*

95. Section 26.0 states "... the ponded water has come in contact with waste, leachate, or waste contaminated soil, the water will be treated as leachate ..." In accordance with 30 TAC §330.3(36), leachate, gas condensate, or water that has come into contact with waste is contaminated water. The stated ponded water is considered contaminated water and not leachate. Please revise accordingly.

    Response: *Section 26.0 has been revised as requested. A revised Page 51 is attached.*

96. Section 27.2 indicates that nonhazardous liquids from municipal/commercial sources, Railroad Commission Wastes, and wastes from industrial sources providing the material is classified as Class 1 (nonhazardous), Class 2, or Class 3 may be accepted as special waste without prior written authorization. In accordance with 30 TAC §330.171(c), only sludge, grease trap waste, grit trap waste, or liquid waste from municipal sources may be accepted as special waste without prior written authorization. A similar indication is also mentioned in Section 1.2 of Appendix IV-B. Please remove liquid from commercial sources, Railroad Commission Waste, and waste from industrial sources from the list of special waste that will be accepted without prior written authorization. In addition, Section 1.2 of Appendix IV-B states "Specific wastes requiring prior approval are listed under Subsection 27.2 of the SOP." However, Subsection 27.2 is the list of Special Waste Not Requiring Prior Approval. Please revise accordingly.

    Response: *The sections have been revised as requested. A revised page 54 and IV-B-2 are attached.*

97. Section 30.0 indicates that leachate may be applied to waste at the working face or daily cover areas. In accordance with 30 TAC §330.165(a), runoff from areas that have intact daily cover is not considered as having come into contact with the working face or leachate.

Applying leachate on daily cover will contaminate the daily cover. Please include a statement to ensure that runoff water that has come into contact with daily cover that has been contaminated with leachate will be properly managed as contaminated water.

Response: *Section 30.0 has been revised as requested. A revised Page 59 and 60 are attached.*

Other clarifications and typographical errors have been fixed and those revised sheets are provided in addition to those changed based on your comments. Due to the number of changes and format issues, Attachments IV-A (IV-A-1 to IV-A-9) and IV-B (IV-B-1 to IV-B-2) are being re-sent in their entirety. Also included are a revised Title Page, Table of Contents and pages 2, 10, 11, 20, 24, 29, 34, 43, 45, 47-52, 54, 56 and 59-60.

During preparation of the Master Table of Contents, a few omissions were noted in Appendix III-D.7 – Liner Quality Control Plan. A revised Title Page, Table of Contents and pages 8, 30 and 35 are provided.

The information provided in this response has also been sent to the Laredo Public Library and uploaded to the web site at www.pescaditoerc.com..

We trust this information addresses your current concerns; however, should you need additional information, please let me know.

Sincerely,
CB&I Environmental and Infrastructure, Inc.
TBPE Firm F-5650

Michael W. Oden, P.E.
Project Manager

STATE OF TEXAS
MICHAEL W. ODEN
67165
REGISTERED
PROFESSIONAL ENGINEER

Attachments
A – Error Analysis Table for comment #57
B - Part 1 Form Signature Page
C – Original Replacement pages
D – Redline/Strikeout version of changed pages
E – Three copies of changed pages (TCEQ only)

CC: Mr. Carlos Y. Benavides III
Mr. William W. Thompson
Mr. Geoffrey S. Connor
Mr. Richard Klar (without attachments)

Attachment A
to September 21 Response Letter

Positioning Error Analysis Table
(in response to comment #57)

POSITIONING ERROR ANALYSIS TABLE

Pescadito Environmental Resource Center

Type I MSW Management Facility

Rancho Viejo Waste Management, LLC

MSW Permit No. 2374

SOIL BORINGS

Soil Boring Designation	Survey Date	Ground Surface Elevation as Reported in TCEQ Submittal from RKEI Leica (feet, MSL (NAD 83))	Additional Ground Surface Elevation from RKEI Leica (feet)	Interpolated Ground Surface from R.P.L.S. Contour Map (feet)	Ground Surface Elevation Difference (feet) between R.P.L.S. to RKEI Survey Data	RKEI Leica State Plane (TX-South) Easting (feet)	RKEI Leica State Plane (TX-South) Northing (feet)	Difference Between Horizontal Position Data in RKEI Survey Data Easting (feet)	Difference Between Horizontal Position Data in RKEI Survey Data Northing (feet)
B-1	10/19/2010	553.81	----	554.0	0.190	772273.60	17098253.56	0.00	0.00
	5/3/2011	----	553.82	----	0.010	772273.70	17098253.40	0.10	-0.16
	7/21/2011	----	553.99	----	0.180	772273.09	17098261.22	-0.51	7.66
B-2	10/19/2010	545.89	----	545.5	-0.390	772239.16	17094057.78	----	----
B-3	10/19/2010	559.91	----	560.5	0.586	769617.37	17099781.90	----	----
B-4	10/19/2010	563.64	----	563.5	-0.101	771861.32	17099452.87	----	----
B-5	10/19/2010	559.67	----	559.7	0.004	773055.27	17099262.05	----	----
B-6	10/19/2010	559.02	----	559.0	0.000	769305.50	17098158.84	0.00	0.00
	5/3/2011	----	559.02	----	0.000	769305.47	17098158.55	-0.03	-0.29
B-7	10/19/2010	554.77	----	554.8	-0.002	770959.56	17098228.21	----	----
B-8	10/19/2010	561.89	----	561.9	-0.002	773742.49	17098264.15	----	----
B-9	5/3/2011	550.18	----	549.3	-0.934	769191.25	17097041.97	----	----
B-10	10/19/2010	547.73	----	547.8	0.100	770748.95	17097018.28	0.00	0.00
	5/3/2011	----	547.73	----	0.000	770748.57	17097017.89	-0.38	-0.39
B-11	10/19/2010	549.53	----	549.7	0.171	772244.14	17097105.67	----	----
B-11A	7/21/2011	549.52	550.78	----	1.260	772253.72	17097112.80	----	----
B-12	10/19/2010	555.41	----	555.8	0.391	773509.58	17097017.09	----	----
B-13	10/19/2010	544.45	----	544.5	0.000	768832.69	17095546.84	0.00	0.00
	5/3/2011	----	544.45	-----	0.000	768832.12	17095547.09	-0.57	0.25
B-14	10/19/2010	543.80	----	544.5	0.701	770674.68	17095543.42	----	----
B-15	10/19/2010	548.17	----	548.4	0.203	772232.26	17095546.87	----	----
B-16	10/19/2010	550.48	----	550.9	0.423	773251.96	17095529.37	----	----
B-17	10/19/2010	544.79	----	545.5	0.714	769851.03	17094448.94	----	----
B-18	10/19/2010	542.50	----	542.1	-0.400	768574.38	17093341.02	----	----
B-19	10/19/2010	539.19	----	539.9	0.710	770374.96	17093781.59	----	----
B-20	10/19/2010	541.39	----	542.1	0.713	770990.76	17092564.74	----	----

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ATTACHMENT A

POSITIONING ERROR ANALYSIS TABLE
Pescadito Environmental Resource Center
Type I MSW Management Facility
Rancho Viejo Waste Management, LLC
MSW Permit No. 2374

SOIL BORINGS

Soil Boring Designation	Survey Date	Ground Surface Elevation as Reported in TCEQ Submittal from RKEI Leica (feet, MSL (NAD 83))	Additional Ground Surface Elevation from RKEI Leica (feet)	Interpolated Ground Surface from R.P.L.S. Contour Map (feet)	Ground Surface Elevation Difference (feet) between R.P.L.S. to RKEI Survey Data	RKEI Leica State Plane (TX-South) Easting (feet)	RKEI Leica State Plane (TX-South) Northing (feet)	Difference Between Horizontal Position Data in RKEI Survey Data Easting (feet)	Difference Between Horizontal Position Data in RKEI Survey Data Northing (feet)
B-21	10/19/2010	544.86	----	544.9	-0.004	772513.69	17092582.70	----	----
B-22	10/19/2010	540.73	----	541.7	1.001	770284.30	17092386.59	----	----
B-23	10/19/2010	536.98	----	536.4	-0.584	768704.40	17091612.45	----	----
B-24	10/19/2010	538.10	----	538.1	0.000	770548.25	17090922.87	----	----
B-25	10/19/2010	532.65	----	532.7	-0.003	768963.93	17090102.58	----	----
B-26	10/19/2010	537.85	----	537.9	0.000	771762.56	17089884.96	----	----
B-27	10/19/2010	535.77	----	535.6	-0.170	770277.21	17089445.54	----	----
B-101	7/21/2011	----	552.49	556.5	4.010	770645.39	17098804.00	----	----
B-102	7/21/2011	----	556.27	555.8	-0.470	772418.12	17098978.96	----	----
B-103	5/3/2011	553.76	----	553.8	0.001	770080.87	17098459.53	----	----
B-104	5/3/2011	552.11	----	551.4	-0.707	771203.64	17097744.07	----	----
B-105	5/3/2011	557.66	----	557.1	-0.555	773253.69	17097884.31	----	----
B-106	7/21/2011	----	549.00	548.7	-0.300	770210.77	17097322.93	----	----
B-107	5/3/2011	549.53	----	548.1	-1.433	769550.16	17096254.79	----	----
B-108	5/3/2011	546.95	----	545.6	-1.349	770630.04	17096284.51	----	----
B-109	5/3/2011	547.60	----	547.4	-0.200	771534.22	17095874.54	----	----
B-109A	7/21/2011	546.53	----	546.0	-0.540	771528.37	17095879.27	----	----
B-110	5/3/2011	553.75	----	552.9	-0.849	772947.96	17096646.60	----	----
B-111	5/3/2011	544.06	----	544.1	0.035	769782.25	17095160.03	----	----
B-112	5/3/2011	543.09	----	541.9	-1.193	768814.61	17094097.85	----	----
B-113	5/3/2011	545.03	----	544.2	-0.826	771418.25	17094770.05	----	----
B-114	5/3/2011	541.87	----	541.1	-0.772	768883.67	17093582.47	----	----
B-114A	7/21/2011	540.14	----	541.5	1.360	768847.93	17093581.97	----	----
B-115	7/21/2011	----	541.46	541.8	0.340	770667.66	17093106.68	----	----
B-116	5/3/2011	545.60	----	544.6	-0.997	771580.26	17093363.35	----	----
B-117	5/3/2011	543.68	----	542.7	-1.004	768608.60	17092646.59	----	----

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POSITIONING ERROR ANALYSIS TABLE

Pescadito Environmental Resource Center
Type I MSW Management Facility
Rancho Viejo Waste Management, LLC
MSW Permit No. 2374

SOIL BORINGS

Soil Boring Designation	Survey Date	Ground Surface Elevation as Reported in TCEQ Submittal from RKEI Leica (feet, MSL (NAD 83))	Additional Ground Surface Elevation from RKEI Leica (feet)	Interpolated Ground Surface from R.P.L.S. Contour Map (feet)	Ground Surface Elevation Difference (feet) between R.P.L.S. to RKEI Survey Data	RKEI Leica State Plane (TX-South) Easting (feet)	RKEI Leica State Plane (TX-South) Northing (feet)	Difference Between Horizontal Position Data in RKEI Survey Data Easting (feet)	Difference Between Horizontal Position Data in RKEI Survey Data Northing (feet)	
B-118	5/3/2011	538.87	540.80	538.7	-0.170	768710.47	17092039.35	0.00	0.00	
	7/21/2011	----	538.87	538.7	-0.17	768710.64	17092036.10	0.16	-3.25	
B-119	5/3/2011	541.99	----	541.1	-0.892	770637.64	17092055.23	----	----	
B-120	5/3/2011	539.92	----	538.9	-1.019	770428.60	17091524.93	----	----	
B-121	5/3/2011	544.09	----	543.3	-0.795	771810.79	17091890.87	----	----	
B-122	5/3/2011	543.02	----	542.3	-0.723	771850.19	17091018.37	----	----	
B-123	5/3/2011	535.13	----	534.3	-0.881	769533.57	17091241.54	----	----	
B-124	7/21/2011	----	536.90	536.2	-0.700	770051.61	17090782.39	----	----	
B-125	5/3/2011	542.22	----	541.2	-1.022	771215.27	17091270.66	----	----	
B-126	7/21/2011	----	538.03	539.7	1.670	771233.38	17090513.67	----	----	
DB-1	12/29/2011	550.60	----	550.6	0.000	770467.22	17097776.98	----	----	
				Average	**0.55**	**feet**		**0.29**	**2.00**	**feet**
				Maximum	**4.01**	**feet**		**0.57**	**7.66**	**feet**
				Minimum	**0.00**	**feet**		**0.028**	**0.155**	**feet**

RABA KISTNER ENVIRONMENTAL

ATTACHMENT A

POSITIONING ERROR ANALYSIS TABLE

Pescadito Environmental Resource Center
Type I MSW Management Facility
Rancho Viejo Waste Management, LLC
MSW Permit No. 2374

BENCHMARKS

R.P.L.S.[5] Benchmark Designation	Survey Date	R.P.L.S.[5] Elevation	Ground Surface Elevation from RKEI Leica (feet)	Interpolated Ground Surface from Surveyor Contour Map (feet)	Ground Surface Elevation Difference (feet) between Surveyor to RKEI	RKEI Leica State Plane (TX-South) Easting (feet)	RKEI Leica State Plane (TX-South) Northing (feet)	Difference Between RKEI Survey Dates Easting (feet)	Difference Between RKEI Survey Dates Northing (feet)
BM2	4/9/2010[5]	551.11	----	----	----	773855.95	17094668.81	0.00	0.00
	10/19/2010		551.42	----	0.31000	773855.87	17094668.00	-0.08	-0.81
	5/3/2011	----	551.44	----	0.33000	773855.96	17094669.33	0.01	0.52
BM4	4/9/2010[5]	534.75	----		----	768378.48	17090700.79	0.00	0.00
	10/19/2010		535.04	----	0.29000	768378.39	17090701.97	-0.09	1.18
	5/3/2011	----	535.03	----	0.28000	768378.43	17090701.31	-0.05	0.52
BM6	4/9/2010[5]	564.67	----	----	----	769044.16	17098720.52	0.00	0.00
	10/19/2010		565.02	----	0.35000	769044.04	17098720.50	-0.12	-0.02
	5/3/2011	----	564.37	----	-0.30000	769044.13	17098720.99	-0.03	0.47

	Elevation Difference		Easting	Northing	
Average	**0.31**	**feet**	**0.06**	**0.59**	**feet**
Maximum	**0.35**	**feet**	**0.12**	**1.18**	**feet**
Minimum	**0.28**	**feet**	**0.01**	**0.02**	**feet**

NOTES:

1. A Leica System 1200 survey grade satellite based global positioning system (GPS) was used for the survey which incorporates satellites managed by the Department of Defense to allow for accurate geographic position measurement worldwide. Raw GPS data were collected using the Leica System 1200 Real Tine Kinematic (RTK) rover interfaced with a Leica System 1200 base station. Use of the coupled RTK rover and the stationary base station provided for real time correction of raw GPS observables and generally afforded sub-meter position accuracy.
2. Geographic coordinates are additionally presented in State Plane TX-South Zone 5 in feet.
3. Reference datum is North American Datum (NAD) 83 (horizontal) and NAVD88 = North American Vertical Datum.
4. GPS data were collected by Richard Sample, Jason Smith and Clint Laffere (**RKEI** Geoscience Professionals)
5. Benchmark coordinates taken from Boundary and Improvement Survey, April 9, 2010, Mejia Engineering Company, Gilbert L. Cade III, Registered Professional Land Surveyor (R.P.L.S.) #5060.
6. Data originally submitted to Texas Commission on Environmental Quality on February 25, 2015.

RABA KISTNER ENVIRONMENTAL

ATTACHMENT A

Attachment B
to September 21 Response Letter

Part 1 Form – Signature Page

Signature Page

I, Carlos Y. Benavides, III, Manager,
(Site Operator (Permittee/Registrant)'s Authorized Signatory) (Title)

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.

Signature: C Y Benavides III Date: Sept 19, 2015

~~TO BE COMPLETED BY THE OPERATOR IF THE APPLICATION IS SIGNED BY AN AUTHORIZED REPRESENTATIVE FOR THE OPERATOR~~

~~I, __________, hereby designate __________~~
~~(Print or Type Operator Name) (Print or Type Representative Name)~~

~~as my representative and hereby authorize said representative to sign any application, submit additional information as may be requested by the Commission; and/or appear for me at any hearing or before the Texas Commission on Environmental Quality in conjunction with this request for a Texas Water Code or Texas Solid Waste Disposal Act permit. I further understand that I am responsible for the contents of this application, for oral statements given by my authorized representative in support of the application, and for compliance with the terms and conditions of any permit which might be issued based upon this application.~~

~~Printed or Typed Name of Operator or Principal Executive Officer~~

~~Signature~~

SUBSCRIBED AND SWORN to before me by the said Carlos Y. Benavides III

On this 19th day of September, 2015

My commission expires on the 23rd day of October, 2018

D. Wendolyn Chevez
Notary Public in and for

Webb County, Texas
(Note: Application Must Bear Signature & Seal of Notary Public)

DIANA WENDOLYN CHEVEZ
Notary Public
STATE OF TEXAS
My Comm. Exp. 10-23-2018