

October 4, 2024

Ms. Megan Henson Executive Director MC-124 Texas Commission on Environmental Quality 12100 Park 35 Circle Austin, Texas 78753

Re: Response to Technical Notice of Deficiency Letter Pine Hill Farms Landfill TX, LP – Royal Oaks Landfill Jacksonville, Cherokee County, Texas Municipal Solid Waste Permit Number: 1614B Tracking No. 29855322; RN101927010/CN6001295530 Major Permit Amendment

Dear Ms. Henson:

On behalf of Pine Hill Farms Landfill TX, LP, please find enclosed one original and three copies of the replacement pages for the referenced permit amendment application. The attached replacement pages were developed to incorporate comments included in your letter dated August 9, 2024.

The enclosed table contains each comment identified by the TCEQ and a response to each below the comment.

Appendix IIIB and IIIL include additional revisions made for accuracy and consistency. Appendix IIIB, Section 4 was updated to revise an incorrect statement relating to the calculated DAF and the closure table presented on Page L-5 and postclosure table presented on Page L-12 in Appendix IIIL were updated to correct an error in calculation as well as updating forms 20721 and 20723 for consistency with the tables. Ms. Megan Henson October 4, 2024 Page 2

We appreciate your review of this permit application and look forward to your comments. In the meantime, if you have any questions, please do not hesitate to contact me by phone (903-539-7986) or email (asparks3@republicservices.com).

Sincerely, Austin Sparks

Environmental Manager

Copies submitted: 1 original and 3 copies (6 volumes per set)

cc: Duncan Norton, Lloyd Gosselink Rochelle & Townsend, P.C. Jason A Edwards, P.E., Weaver Consultants Group, LLC

Table of Deficiencies

| NOD ID | MRI ID | App. Part | Citation | Location | 1 st NOD Type | NOD Description |
|-----------|-----------|--------------|--------------|---|-----------------------------|--|
| | | | 330.57(d) | Entire Application | Inconsistent | a. Revise Table IIIA-2 on page IIIA-4 to correct "Geosynthetic Clay Liner (CCL)" into "Geosynthetic Clay Liner (GCL)." |
| | | | | | | b. Correct the inconsistency of the use of the acronym MSWR on pages IIID-1 (showing Municipal Solid Waste Rules) and IIIJ-A-1 (showing Municipal Solid Waste Regulations). |
| NT1 | 12 | General | | | | Response: |
| | | | | | | a. Table IIIA-2 has been revised to reflect a Geosynthetic Clay Liner (GCL). The entire application has been checked for consistency. |
| | | | | | | b. Page IIID-1 has been revised to reflect Municipal Solid Waste Regulations. The entire application has been checked for consistency. |
| | | | | | | Revise Drawing A.2 in Appendix IIIA to make the existing contour legible. |
| | | | | | | Response: |
| NT2 | 25 | General | 330.57(h)(1) | Entire Application (figures/drawing s) | Ambiguous | As discussed with the TCEQ review team, WCG has revised each drawing within the permit application that incorporates survey contours as background to include updated contour callouts. Each revised drawing is included within this response package. Note that drawings from previous agency submittals or historical drawings within the application were not updated. |

| NOD ID | MRI ID | App. Part | Citation | Location | 1 st NOD Type | NOD Description |
|-----------|-----------|--------------|--------------|--|-----------------------------|--|
| NT3 | 138 | Part II | 330.61(i)(1) | Part I/II, Section 8.1.1 and Appendix I/IID Traffic Study | Inconsistent | Revise Figure 2-2 Entrance Facility Plan, in Appendix I/IID, to show the existing fence indicated in the legend of the figure. In addition, indicate in the legend the dotted line in the figure. Response: Figure 2-2 – Entrance Facility is an informational figure incorporated into the November 30, 2023 submittal to the Texas Department of Transportation, which was approved by TXDOT in a January 9, 2024 email from Mr. Paul Schneider, TXDOT Tyler Area Engineer. A copy of the approval email is provided in Appendix I/IIB, page I/IIB-136. As this figure was previously submitted to TxDOT and the fencing is ancillary to traffic associated with the facility, this figure has not been updated. Also, refer to Part I/II, Appendix I/IIA – Facility Layout Maps, Drawing I/IIA.12, which shows both current and proposed future fencing at the facility. No changes have been made. |
| NT4 | 163 | Part II | 330.61(m)(2) | Parts I/II, Section 11.2 | Incomplete | Provide the US Army Corps of Engineers (USACE) determination letter and all additional correspondences regarding the jurisdictional determination for potential waters of the US (WOTUS) within the permit boundary and any authorization from the USACE pertaining to WOTUS. Response: The Nationwide Permit 39 (SWF-2021-00409) is currently under review by the USACE and will be provided upon approval. |

| NOD ID | MRI ID | App. Part | Citation | Location | 1 st NOD Type | NOD Description |
|-----------|-----------|--------------|---------------|--------------------------------|-----------------------------|--|
| | | | | Part I/II Figure | | Revise Form TCEQ-20885 (Part II Application Form) Part VI. Item 4 and Part VIII Item 6 to refer to Figures 7.1 & 7.2 and remove reference to Figures I/II 4.2 & 4.2 due to both figures not providing adequate information to be in compliance with 330.61(g). |
| NT5 | 170 | Part II | 330.61(g) | I/II-7.1 and I/II- | Inconsistent | Response: |
| | | | | 1.2 | | Form TCEQ-20885, Part IV, Item 4 has been revised to reference Figures I/II-7.1 and 7.2, as noted by the reviewer, and Part VIII, Item 6 has been revised to remove references to Figures I/II 4.2 and 4.3. |
| | | Part II | 330.61(c)(11) | Parts I/II, Figure I/II-4.3 | Inconsistent | Revise to refer to Appendix I/II A, Drawings I/IIA.12. Figure I/II-4.3 does not provide adequate information on the facility access features as required in 330.61(c)(11). |
| N16 | 181 | | | | | Response: |
| | | | | | | Note 5 was added to Figure I/II-4.3 to refer to the Access Control Plan in Appendix I/IIA, Drawing I/IIA.12. |
| | | Part II | | | | Revise to refer to Figures I/II-7.1 & 7.2. Figure I/II-4.2 does not provide adequate information to be in compliance with 330.61(c)(12). |
| NT7 | 182 | | 330.61(c)(12) | Parts I/II, Figure I/II-4.2 | Inconsistent | Response: |
| | | | | 1/11 7.2 | | Note 10 was added to Figure I/II-4.2 to discuss the land use within one mile of the permit boundary and to reference Section 7 for additional information. |

| NOD ID | MRI ID | App. Part | Citation | Location | 1 st NOD Type | NOD Description |
|-----------|-----------|--------------|------------------------|--|--|--|
| | | | | | | Revise Drawing I/IIA.12 to clearly show the fencing indicated in the drawing's legend. |
| NT8 | 190 | Part II | 330.61(d)(6) | Appendix I/IIA, Drawing I/IIA.12 | Ambiguous | Response: |
| | | | | | Drawing I/IIA.12 has been revised to better reflect the fencing shown in the legend. | |
| | | Part II | 330.61(d)(9)(B) | Appendix I/IIA, Drawing I/IIA.4 through Drawing I/IIA.8 | Inconsistent | Update the Legend in Figure I/IIA.6 to list the proposed final cover contours as seen in Figures I/IIA.7 and I/IIA.8. |
| NT9 | 194 | | | | | Response: |
| | | | | | | The legend in Figure I/IIA.6 was updated to add final cover contours, swales, and letdowns. |
| | | | | | | Provide discussion in Parts I/II Section 11.2 addressing erosion, stability, & migration potential of native wetland soils, muds, and deposits to be used to support the proposed landfill units. |
| | | | | | | Response: |
| NT10 | 217 | Part II | [330.553(b)(3)(A) | Parts I/II, Section 11.2 | Incomplete | The erosion, stability, and migration of potential native wetland soils, muds, and deposits for the site are addressed in the Nationwide Permit 39 for the proposed Project (SWF-2021-00405) presented in Appendix I/IIB and the Erosion Control Plan for All Phases of Landfill Operation presented in Appendix IIIF-F. |

| NOD ID | MRI ID | App. Part | Citation | Location | 1 st NOD Type | NOD Description |
|-----------|-----------|--------------|----------------------|-----------------------------|-----------------------------|---|
| | | | | | | Provide discussion in Parts I/II Section 11.2 addressing erosion, stability, & migration potential of dredged and fill materials to be used to support the proposed landfill's lateral expansion. |
| | | | | | | Response: |
| NT11 | 218 | Part II | 330.553(b)(3)(B) | Parts I/II, Section 11.2 | Incomplete | The erosion, stability, and migration potential of dredged and fill materials to be used to support the proposed landfill's lateral expansion are addressed in the Nationwide Permit 39 for the proposed Project (SWF-2021-00405) present in Appendix I/IIB and the Erosion Control Plan for All Phases of Landfill Operation presented in Appendix IIIF-F. |
| | | | | | | Provide discussion in Parts I/II Section 11.2 addressing the volume and chemical nature of the waste to be managed in the proposed landfill units. |
| NT12 | 210 | Dart II | 330.553(b)(3)(| Parts I/II, Section | Incomplete | Response: |
| N112 | 219 | | C) | 11.2 | ncompiete | The volume and chemical nature of the waste to be managed in the proposed landfill unit is addressed in the Site Life Calculations presented in Appendix IIIM and the Waste Acceptance Plan presented in Section 2.1.1 of Parts I/II, respectively. |

| NOD ID | MRI ID | App. Part | Citation | Location | 1 st NOD Type | NOD Description |
|-----------|-----------|--------------|----------------|-----------------------------|-----------------------------|---|
| | 220 | | | | | Provide discussion in Parts I/II Section 11.2 addressing the potential impacts on fish, wildlife, and other aquatic resources and their habitat from the release of solid waste. |
| NT13 | | Part II | 330.553(b)(3)(| Parts I/II, Section | Incomplete | Response: |
| | | | D) | 11.2 | incompress. | Potential impacts on fish, wildlife, and other Aquatic resources and their habitat from the release of solid waste are addressed in the Landfill Unit Design Information presented plan in Appendix IIIA. No release of solid waste is expected to occur. |
| | | | | | | Provide discussion in Parts I/II Section 11.2 on mitigation methods to be used due to the excavation of the wetlands. |
| | | | | | | Response: |
| NT14 | 222 | Part II | 330.553(b)(4) | Parts I/II, Section 11.2 | Incomplete | Mitigation methods to be used due to excavation of wetlands are addressed in the Nationwide Permit 39 proposed Project (SWF-2021-00405) present in Appendix I/IIB. Offsite compensatory mitigation credit for stream and wetland impacts are proposed for this project. No onsite mitigation is proposed. Section 11.2 in parts I/II has been updated to reflect this information. |
| | | | II 330.543(a) | Appendix 1/IIC | | Provide the Agreement with ONCOR indicated in Appendix I/IIF and referred to in I/II Section 2.8 and I/IIC Section 2. |
| NT15 | 230 | Part II | | Section 2 | Incomplete | Response: |
| | | | | | | The agreement with ONCOR is included in Appendix I/IIF with this submittal. |

| NOD ID | MRI ID | App. Part | Citation | Location | 1 st NOD Type | NOD Description |
|-------------------|----------------|----------------------|-----------|----------------------------|-----------------------------|--|
| | | | | | | Revise the second point in I/IIC Section 2 to reference 330.543(b)(2)(C) due to the lateral expansion. |
| NT16 234 I | Part II | 330.543(b)(2)(C) | Section 2 | Inconsistent | Response: | |
| | | | | | | The reference in Appendix I/IIC, Section 2, was revised to 330.543(b)(C). |
| | T17 289 | | 330.63(c) | Part III, Appendix IIIF | Inconsistent | a. Correct the inconsistencies in the Table of Contents in Appendix IIIF. Examples include, but are not limited to, the page number and title of Table 4-1 and captions of Figure 4.2, Drawings IIIF.5 and IIIF.6. |
| NT17 | | Part III | | | | b. Clarify if the surface water drainage system design is prepared consistent with the current TxDOT Bridge Division Hydraulic Design Manual (September 2019 version). It's noted that the July 2019 version of the TxDOT Bridge Division Hydraulic Design Manual is specified in Section 3 in Appendix IIIF. Explain if the drainage system design needs revisions to follow the September 2019 Manual and, if applicable, revise all relevant portions of the application as necessary. |
| | | | | | | Response: |
| | | | | | | a. The inconsistencies in the Table of Contents for Appendix IIIF have been corrected. |
| | | | | | | b. The Surface Water Drainage Plan has been developed consistent with the September 2019 TxDOT Bridge Division Hydraulic Manual. References to the July 2019 manual have been revised to reflect the September 2019 manual. No changes have been made. |

| NOD ID | MRI ID | App. Part | Citation | Location | 1 st NOD Type | NOD Description |
|-----------|-----------|--------------|------------|--|-----------------------------|--|
| T18 | 290 | Part III | 330.305(a) | Part III, Appendix IIIF, Section 4 | Incomplete | Discuss how surface erosion will be controlled at the discharge points with high discharge velocity (e.g., 8.12 fps) under the post-development conditions. If the required information is already included in the application, reference the location. Response: Turf reinforcement mat will be installed at the outfall of Discharge Point 3 to control velocities. Rip-rap will be extended from the end of the 42" culvert after pond P2 to the permit boundary to control velocities at Discharge Point 4. Drawings IIIF.4 and IIIF.14 have been updated to show the erosion control measures. |

| NOD ID | MRI ID | App. Part | Citation | Location | 1 st NOD Type | NOD Description |
|-----------|-----------|--|------------|---|-----------------------------|--|
| | | | | a. Revise Appendix IIIF to include sufficient information to demonstrate that the estimated soil loss for the final cover phase does not exceed permissible soil loss, which should be three tons/acre/year or less. Note that drainage analysis and erosion control are expected to follow TCEQ Regulatory Guidance RG-417 - Surface Water Drainage and Erosional Stability Guidelines for a Municipal Solid Waste Landfill (Rev. May 2018). b. Revise all relevant portions of the application | | |
| | | 95 Part III 330.305(d)(2) Part III, Appendix IIIF-D | | | | accordingly (including, but not limited to, Appendix IIIF-F). If the required information is already included in the application, revise Appendix IIIF to reference the location. |
| | | | | | | Response: |
| T19 | 295 | | Incomplete | a.As shown on page IIIF-D-4, the proposed erosion layer for the final cover phase provides less than 3 tons/ac/year at 95% ground cover in accordance with the TCEQ Regulatory Guidance RG-417 – Surface Water Drainage and Erosion Stability Guidelines. Section 2.2 states that the erosion layer will include a vegetation layer that provides for 95% ground coverage. No changes have been made. | | |
| | | | | b. Appendix IIIF-F provides a soil loss evaluation for the intermediate cover phase which provides less than 50 tons/ac/year in accordance with the TCEQ Regulatory Ordinance RG-417 – Surface Water Drainage and Erosion Stability Guidelines. Section 2.0 in Appendix IIIF-F was updated to add a reference to Appendix IIIF-D for soil loss calculations for the final cover phase. | | |

| NOD ID | MRI ID | App. Part | Citation | Location | 1 st NOD Type | NOD Description |
|-----------|-----------|--------------|-----------------|--|-----------------------------|--|
| | | | | | | Explain using the HEC-HMS model instead of the Rational Method for peak flow calculations for the sub- drainage areas of less than 200 acres. |
| | | | | | | Response: |
| T20 | 299 | Part III | 330.305(f)(1) | Part III, Appendix IIIF-A and IIIF-E | Incomplete | As noted in TCEQ's guidance document RG-417 (May 2018), programs developed by the USACE (e.g. HEC-HMS) are typically used when analyzing a drainage basin of the size and complexity of the landfill (this has an overall on and off-site drainage basin exceeding 360 acres). The rational method is used for smaller calculation (e.g., swale sizing, working face containment berm sizing). |
| T21 | 307 | Part III | 330.63(c)(1)(C) | Part III, Appendix IIIF, Section 4 | Inconsistent | Clarify and/or correct the discrepancy in drainage area in Espey 10-minute sample calculation (showing "S3") and Drawing IIIF-A-24 (showing "S10"). Response: Drawing IIIF-A-24 was updated to show the drainage area S3 to match the example calculation. |

| NOD ID | MRI ID | App. Part | Citation | Location | 1 st NOD Type | NOD Description |
|-----------|-----------|--------------|---------------------|------------------------------|-----------------------------|--|
| | | | 330.63(d)(4)(E) | Part III, Appendix IIIA-B | Inconsistent | a. Revise Drawing B.1 to show the proposed Oncor easement and correct cross-section index F (e.g., bottom index) in Drawings B.1 and B.2 for consistency. |
| | | Part III | | | | b. Revise Drawing B.5 to correct the inconsistencies in the permitted pre-subtitle D limit of waste and the newly permitted airspace limit of waste in the left top and bottom figures. |
| TOO | 254 | | | | | c. Correct Table of Contents in Appendix IIIA-B to be consistent with the captions of Drawings B.1 through B.3. |
| 122 | 354 | | | | | Response: |
| | | | | | | a. Drawing B.1 was updated to add a callout for the proposed ONCOR easement and revise the cross-section index. Drawing B.2 was also updated to revise the cross-section index. |
| | | | | | | b. The 1H:1V cross-section on Drawing B.5 was updated to reflect the correct permitted pre-subtitle D and newly permitted airspace limit of waste. |
| | | | | | | c. The table of contents was updated for Appendix IIIA-B to reflect the drawing titles correctly. |

| NOD ID | MRI ID | App. Part | Citation | Location | 1 st NOD Type | NOD Description |
|--------------|-----------|--------------|----------------|----------------------------|-----------------------------|---|
| | | Part III | 330.63(d)(4)(G | Part III, Appendix IIID | Ambiguous | a. In Section 4.3.3. verify that "backfilling of soil will be in accordance with Section 2.3.7," and revise to refer to where the relevant information on backfilling of soil is contained. |
| T23 3 | | | | | | b. In Section 4.4. Verify "The protective cover will be placed (using low ground pressure equipment as discussed under Section 2.3.6)" and revise to refer to where the relevant information is contained. |
| | 357 | | | | | c. On Page IIID-37. Correct "in Section 3.5.4" into "in Section 3.4.4." |
| | | | | | | Response: |
| | | | | | | a. Section 4.3.3. was revised to correctly reference section 2.3.6 for anchor trench backfill. |
| | | | | | | b. Section 4.4. was revised to correctly reference section 2.3.5 for protective cover. |
| | | | | | | c. Section 3.4.3. was revised to correctly reference section 3.4.4 for geotextile repairs. |
| | | | | Dart III | | Revise Section 6 in Appendix IIIC to correct the inconsistency in the leachate generation rate in Table 6-1 and Figure 6-1. |
| T24 | 362 | Part III | 330.331(c) | Appendix IIIC-A | Inconsistent | Response: |
| | | | | | | Figure 6-1 was revised to reflect the leachate generation rate correctly showing in Table 6-1. |

| NOD ID | MRI ID | App. Part | Citation | Location | 1 st NOD Type | NOD Description |
|-----------|-----------|--------------|----------------|------------------------------|-----------------------------|--|
| | | | | | | a. In Table 3-2, Leachate Sump Operating Plan. Define the "reasonable cycle times" at which the pumps are not able to maintain the leachate levels below the lip of the sump. Provide a timeframe by which a pump with a larger capacity will be installed. |
| | | | | | | b. Clarify and/or correct the inconsistencies in sump flow among Section 3.4, Table 4-1, and Appendix IIIC-B (page IIIC-B-49) in Appendix IIIC. Revise all relevant portions of the application as necessary (including, but not limited to, Appendix IIIC). |
| | | | | | | c. Revise Appendix IIIC-B to correct the inconsistencies in the phase names for sump drainage areas between Sheet IIIC-B-52 and HELP model analysis. |
| | | | | | | Response: |
| T25 | 376 | Part III | 330.333(A)-(G) | Part III, Appendix IIIC-B | Ambiguous | a. As noted in Table 3-2, a pump will have exceed reasonable cycle times if the pump has to operate close to 24 hours per day for a signification period of time. In this condition, a larger pump will need to be installed. |
| | | | | | | Additionally, the pump will be repaired or replaced within 5 business days from the discovery of the leachate/level pumping issues when practicable, as noted in Table 3-2. |
| | | | | | | b. Section 3.4 was revised to reflect the maximum estimated flow value correctly shown in Table 4-1 and Appendix IIIC-B. |
| | | | | | | c. The leachate sump design calculations were revised on pages III.C-B-48 and IIIC-B-51 to correct the cell naming. |

| NOD ID | MRI ID | App. Part | Citation | Location | 1 st NOD Type | NOD Description |
|-----------|-----------|--------------|---------------|------------------------------|-----------------------------|--|
| | | | | | | Discuss in Section 6 if (and how) revisions will be made to the dewatering system design when the seasonal groundwater table has increased. |
| | | | | | | Response: |
| T26 | 380 | Part III | 330.337(b)(2) | Part III, Appendix IIID-C | Incomplete | Section 6.2 appendix IIID-C has been revised to indicate that in the event groundwater impacts are projected based on groundwater readings in the northeast corner of the expansion area (currently shown as not having sideslope underliner) the permitted full-slope underliner design will be extended into his area and documented within the Soil Liner Evaluation Report prepared for the respective cell. Additionally, the ballast demonstration will be adjusted accordingly at the time it is prepared for submittal to the TCEQ. As the remainder of the expansion area incorporates full-slope sideslope underdrains, no additional revisions to the permitted designs are anticipated. |

| | | | | | | a. Clarify if the cross-section of LCS2 is missing in Drawing A.1, and, if applicable, revise to refer to the location of cross-section LCS2. |
|-----|-----|----------|----------------------|------------------------------|--------------|--|
| | | Part III | | | | b. Revise the inconsistencies in cross-section indices between Drawings A.3 through A.7 and Drawing A.1. Examples include, but are not limited to, L1, L2, and L4. |
| | | | | | | c. Clarify the location of the cutting plane for the cross-section of UD3 in Drawing A.9. |
| T27 | 399 | | rt III 330.339(a)(1) | Part III, Appendix IIIA-A | Inconsistent | d. Correct the inconsistencies in cross-section indices between Drawings A.10 through A.7 and Drawing A.2. Examples include, but are not limited to, FC1 and FC2. |
| | | | | | | e. Revise Drawing A.10 to correctly show the thickness of the erosion layer for the GCL option for the composite final cover-top slope (FC1). |
| | | | | | | f. Revise Drawing A.11 to show the top and side slope gradients. |
| | | | | | | Response: |
| | | | | | | a. LCS2 is not missing from Drawing A.1. LCS2 refers to LCS1 on Drawing A.8 that cuts vertically through the mid-section of the sump. |
| | | | | | | b. The section indices are intended to show the drawing number where the section is cut (left side) and the drawing number on which the section is drawn (right side). The naming of detail callouts L1 and L2 on Drawing A.1 were revised to match the naming on Drawing A.3. |
| | | | | | | c. A callout was added to Drawing A.1 to show the location of UD3. |

| NOD ID | MRI ID | App. Part | Citation | Location | 1 st NOD Type | NOD Description |
|-----------|-----------|--------------|-----------------|-------------------------------|-----------------------------|---|
| | | | | | | d. The detail callout indices have been reviewed for consistency. No revisions were made. |
| | | | | | | e. The thickness callouts on Drawing A.10 were updated to clarify the thickness of the final cover system layers. |
| | | | | | | f. Slope gradients were added to Drawing A.11 |
| T28 | 402 | Part III | 330.339(a)(2) | Appendix IIID, Section 8.1 | Ambiguous | Revise Section 3 in Appendix IIID to clarify if the LQCP is prepared consistent with the current TCEQ <u>Regulatory Guidance RG-534</u> - Guidance for Liner Construction and Testing for a Municipal Solid Waste Landfill (Rev. September 2017), and, if applicable, revise Appendix IIID to be consistent with TCEQ RG- 534. Revise all relevant portions of the application as necessary. |
| | | | | | | Response: |
| | | | | | | A statement was added to Section 1.1 of Appendix IIID stating that the LQCP has been developed consistent with the current TCEQ Regulatory Guidance RG-534 - Guidance for Liner Construction and Testing for a Municipal Solid Waste Landfill (Rev. September 2017). |
| | | | | Dart III | | Provide discussion of hydraulic connectivity between Queen City and Carrizo Aquifers. |
| T29 | 481 | Part III | 330.63(e)(3)(E) | Appendix IIIG, | Incomplete | Response: |
| | | | | Section 2.4 | | Part III, Appendix IIIG, Section 2.4 has been amended to indicate that the Queen City and Carrizo aquifers are not hydraulically connected. |

| NOD ID | MRI ID | App. Part | Citation | Location | 1 st NOD Type | NOD Description |
|-----------|-----------|--------------|-----------------|----------------------------|-----------------------------|--|
| | | | | | | a. Revise Section 1 in Appendix IIIE to verify no vertical expansion for the proposed major amendment. |
| | | | | | | b. Verify the second footnote and/or its contents in Table 4-1 in Appendix IIIE, and, if applicable, revise them. |
| | | | | | | Response: |
| T30 | 496 | Part III | 330.63(e)(5) | Part III, Appendix IIIE | Ambiguous | a. Section 1 has been revised to remove the vertical expansion text. |
| 130 | | | | | | b. Footnote 2 to Table 4-1 refers to the permeability requirements for protective cover soils, and the evaluation criteria for requiring chimney drains be installed through the protective cover soils. The table has been revised to remove the Footnote 2 reference for the Final Cover Infiltration Layer permeability, as this footnote is not relevant to the final cover system. |
| | - 0.1 | D | 330.63(e)(5)(B) | Part III, | Incorrect | Correct test method ASTM D 140 into ASTM D1140 for sieve analysis in Table 2-1 in Appendix IIIE. |
| 131 | 301 | 1 al t III | (iii) | Appendix IIIE-C | medirect | Response: |
| | | | | | | Table 2-1 was revised to show ASTM D1140. |

| NOD ID | MRI ID | App. Part | Citation | Location | 1 st NOD Type | NOD Description |
|-----------|-----------|--------------|-----------------|-----------------------------|-----------------------------|---|
| | | Part III | | Part III. | Incomplete | Add that TCEQ MSW PQLs will be used for laboratory reporting, as discussed in RG-47. Alternatively, demonstrate how the preferred reporting limits chosen are representative of the lower limit of quantitation to meet MSW's Permit Section's interlaboratory precision and accuracy performance objectives. |
| T32 | 543 | | 330.63(f)(6)(E) | Appendix IIIH, | | Response: |
| | | | | Section 3 | | Part III, Appendix IIIH, Section 5.2 (Practical Quantitation Limit) has been amended to indicate that analytical results will be report to the TCEQ MSW PQLs or to laboratory PQLs in accordance with Section 3.5 of TCEQ Regulatory Guidance RG-074. Part III, Appendix IIIH, Section 8 (References) were also amended to include additional TCEQ guidance references. |
| | | | | | | Provide a description of how the monitoring system will demonstrate the adequacy of corrective action. Corrective action is complete when the 95% upper confidence limit is below GWPS for 3 years. |
| Т33 | 548 | Part III | 330.63(f)(7)(D) | Part III, Appendix IIIH, | Incomplete | Response: |
| 155 | 5 10 | | | Section 6.2 | incomplete | Part III, Appendix IIIH, Section 6.4 (Corrective Action monitoring) has been amended to indicate the general criteria by which corrective action remedy may be considered complete in accordance with Title 30 TAC §330.415(f). |

| NOD ID | MRI ID | App. Part | Citation | Location | 1 st NOD Type | NOD Description |
|-----------|-----------|--------------|-------------------|--|-----------------------------|---|
| | | | | | | Provide discussion of procedures in the event that increasing trends in groundwater analytical data are identified. |
| | | | | | | Response: |
| T34 | 593 | Part III | 330.409(a) | Part III, Appendix IIIH, Section 6 | Incomplete | As discussed in Part III, Appendix IIIH, Section 6.1 (Statistical Methodologies), statistical analysis are to be conducted in accordance with the provisions of Title 30 TAC §330.405, §330.407, and §330.409, and EPA Statistical analysis of Groundwater Monitoring Data at RCRA Facilities Unified Guidance. The situation-specific applicability of specific statistical methods that may be appropriate to assess or characterize groundwater analytical data are varied and there are often nuances and caveats to particular use cases. For this reason, a general framework for statistical analyses is provided with references to applicable regulatory provisions and EPA and TCEQ guidance documents. |
| T35 | 685 | Part III | rt III 330.457(a) | Appendix IIIJ, Section 2 | Ambiguous | Clarify if the testing requirements (e.g., standard test methods, testing frequency) are prepared consistent with the current TCEQ guidance RG-534. Examples include, but are not limited to, Table 2-1 and Table 4- 1 in Appendix IIIJ-A. If applicable, revise all relevant portions of the application as necessary (including, but not limited to, Appendix IIIJ-A). Response : |
| | | | | | | A statement was added to Section 1.1 of Appendix IIIJ-A stating that the FCSQCP has been developed consistent with the current TCEQ Regulatory Guidance RG-534 – Guidance for Liner Construction and Testing for a Municipal Solid Waste Landfill (Rev. September 2017). |

| NOD ID | MRI ID | App. Part | Citation | Location | 1 st NOD Type | NOD Description |
|-----------|-----------|--------------|-------------------------|-------------------------------|-----------------------------|--|
| | | | | | | Verify that using the default model parameters for Shreveport, Louisiana, for the HELP model is suitable for the landfill location in Texas. |
| | | | | | | Response: |
| T36 | 692 | Part III | 330.457(d)(1) | Part III, Appendix IIIJ-B | Ambiguous | The model defaults for Shreveport, Louisiana, appropriately represents the Royal Oaks Landfill. The model parameters for Shreveport, Louisiana, provide similar characteristics (i.e., similar evapotranspiration, precipitation, and temperature averages) to the Royal Oaks Landfill and is the closest station to the site that the model provides. |
| | 726 | Part III | II 330.463(b)(1)(B) | Appendix IIIK, Section 2.1 | Inconsistent | Revise the reference to Table 3-5 in Appendix IIIC in the second paragraph on Page IIIK-3 |
| T37 | | | | | | Response: |
| _ | | | | | | The first bullet on Page IIIK-3 was revised to refer to Table 3-2 in Appendix IIIC. |
| | | | V 330.65(a) | Part IV | | Provide the waste acceptance plan stated to be in Appendix IVA and referenced in parts of Appendix IVD, or revise Appendix IVD to refer to the Waste Acceptance Plan in Part I/II Section 2.1.1. |
| NT38 | /58 | Part IV | | | Inconsistent | Response: |
| | | | | | | Appendix IVD was updated to reference the Special Waste Acceptance Plan (SWAP) provided in Appendix IVA. |

| NOD ID | MRI ID | App. Part | Citation | Location | 1 st NOD Type | NOD Description |
|-----------|-----------|--------------|------------|-------------------------|-----------------------------|--|
| NT39 | 1007 | Part IV | 330.205(b) | Part IV, Section 4.2 | Inconsistent | Revise the reference to the liquid waste bulking facility discussion location in Section 2.2.4 to state Appendix IVD; the first paragraph of pages IV-17 currently states it is in Appendix IVA. Response: Section 2.2.4 was updated to reference Appendix IVD for the liquid bulking facility. |

ROYAL OAKS LANDFILL CHEROKEE COUNTY, TEXAS TCEQ PERMIT NO. MSW-1614B

MAJOR PERMIT AMENDMENT APPLICATION

VOLUME 1 OF 7

Prepared for

Pine Hill Farms Landfill TX, LP

May 2024

Revised October 2024



Prepared by

Weaver Consultants Group, LLC

TBPE Registration No. F-3727 6420 Southwest Boulevard, Suite 206 Fort Worth, Texas 76109 817-735-9770

Project No. 0120-076-11-106

This document is intended for permitting purposes only.

ROYAL OAKS LANDFILL CHEROKEE COUNTY, TEXAS TCEQ PERMIT NO. MSW-1614B

MAJOR PERMIT AMENDMENT APPLICATION

TCEQ APPLICATION FORMS AND MAILING LABELS

Prepared for:

Pine Hill Farms Landfill TX, LP

May 2024 Revised July 2024

Revised October 2024



Prepared by:

Weaver Consultants Group, LLC TBPE Registration No. F-3727 6420 Southwest Boulevard, Suite 206 Fort Worth, Texas 76109 817-735-9770

WCG Project No. 0120-076-11-106

This document intended for permitting purposes only.

Applicant Signature Page

Site Operator (Permittee or Registrant Name) or Authorized Signatory

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

| Name: Austin Spa | arks | Title: | |
|------------------|--------|----------------|--|
| Email Address: | 2.1 | | |
| Signature: | At. fl | Date: _/0-4-24 | |

Authorization by Facility Owner for Operator to Submit Application (Land Owner)

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

| I am the owner of the facility that is the subject of this application, and authorize the operator, Pine Hill Farms Landfill TX, LP to submit this application |
|---|
| pursuant to 30 TAC 305.43(c). |
| Name: |
| Email Address: |
| Signature: Date: <u>3 OCT 2024</u> |
| Notary |
| SUBSCRIBED AND SWORN to before me by the said James Hubbard in his capacity as City On this 3 day of October, 2024 |
| My commission expires on the day of, |
| Drev Jun |
| Notary Public in and for |
| (notary's jurisdiction, including county and state) |
| Note: Application Must Bear Signature & Seal of Notary Public |
| BRETT BREWER NOTARY PUBLIC STATE OF TEXAS |

MY COMM. EXP. 12/08/25 NOTARY ID 1105998-0

Page 12 of 15

III. Waste Acceptance Plan - 30 TAC §330.61(b)

- 1. If this application is for a Type I or Type IAE MSW landfill facility, attach completed Form No. TCEQ-20873. Attachment No.: Volume 1
- 2. If this application is for a Type IV or Type IVAE MSW landfill facility, attach completed Form No. TCEQ-20890. Attachment No.:

IV. General Location Maps - 30 TAC §330.61(c)

Provide General Location Maps that accurately show the features listed below. Provide all General Location Maps in a single attachment and include the drawing number in the space provided. Include notes on each map, as needed, to describe information pertaining to the map.

- 1. The prevailing wind direction with a wind rose. Parts I/II, Figure I/II-4.2
- 2. All known water wells within 500 feet of the proposed permit boundary with the state well numbering system designation for Water Development Board "located wells."

Parts I/II, Figure I/II-4.3

3. All structures and inhabitable buildings within 500 feet of the proposed facility.

Parts I/II, Figure I/II-4.3

- (i) Schools, (ii) licensed day-care facilities, (iii) churches, (iv) hospitals, (v) cemeteries, (vi) ponds, (vii) lakes, and (viii) residential, (ix) commercial, and (x) recreational areas within one mile of the facility. Figures I/II-7.1 and I/II-7.2.
- 5. The location and surface type of all roads within one mile of the facility that will normally be used by the owner or operator for entering or leaving the facility. Parts I/II, Figure I/II-6.1
- 6. Latitudes and longitudes. Parts I/II, Figure I/II-6.1
- 7. Area streams. Parts I/II, Figure I/II-4.2
- 8. Airports within six miles of the facility. Parts I/II, Figure I/II-8.1
- 9. The property boundary of the facility. Parts I/II, Figure I/II-3.1
- 10. (i) Drainage, (ii) pipeline, and (iii) utility easements within or adjacent to the facility.

Parts I/II, Figures I/II-3.1 through I/II-3.3

- 11. (i) Facility access control features. Appendix I/IIA, Drawing I/II-A.12
- 12. (i) Archaeological sites, (ii) historical sites, and (iii) sites with exceptional aesthetic qualities adjacent to the facility. N/A None Present

V. Facility Layout Maps - 30 TAC §330.61(d)

Provide the Facility Layout Map(s) as a single attachment, and include drawing number(s) in the space provided. Include notes on each map, as needed, to describe information on the map. Refer to Parts I/IIA, Appendix I/IIA - Facility Layout Maps

Provide a map or set of maps of the facility layout showing:

- 1. The outline of the units; Appendix I/IIA, Figures I/II-A.1 and I/II-A.2
- 2. General locations of main interior facility roadways; Figures I/II-A.4 through I/II-A.8
- 3. Locations of monitor wells; Appendix I/IIA, Figures I/II-A.1 and I/II-A.9
- 4. Locations of buildings; Appendix I/IIA, Figures I/II-A.1 and I/II-A.9

- 6. Check the following facilities if they are within one mile of the facility boundary and indicate on map. Figures I/II-7.1, and I/II-7.2
 - (a) ✓ residences;
 - (b) 🗹 commercial establishments;
 - (c) cschools;
 - (d) *✓* licensed day-care facilities;
 - (e) 🗹 churches;
 - (f) 🗹 cemeteries;
 - (g) ponds or lakes; and
 - (h) \square recreational areas.

IX. Impact on Surrounding Area - 30 TAC §330.61(h)

Address the facility's impacts on cities, communities, groups of property owners, or individuals and describe mitigation of conditions as required. Attach additional pages as necessary. If a land use compatibility analysis report prepared by a qualified professional is provided, indicate the location within the application. Attachment No.:

1. Impacts to Surrounding Areas:

(a) Provide information regarding the likely impacts of the facility on cities, communities, groups of property owners, or individuals by analyzing the compatibility of land use, zoning in the vicinity, community growth patterns, and other factors associated with the public interest; and

Impacts to surrounding areas are minimal as the site is an existing landfill and has been in operation for over 40 years. The site also has traffic patterns that are well established.

(b) Describe any special design considerations and possible mitigation of potential impacts, as necessary.

As discussed above, impacts to surrounding areas will be minimal. The facility is bounded by high-canopy tree lines. The existing dense tree lines function as both windbreaks and site screening.

Published Zoning Map: If available, provide a published zoning map for the facility and within two miles of the facility for the county or counties in which the facility is or will be located.

See Attachment 6, Figures I/II-7.3

2. Special or Nonconforming Use Permit:

(a) Does the site require approval as a nonconforming use or a special permit from the local government having jurisdiction? Yes VNo

(b) If yes, provide a copy of such approval. Attachment No.:

ROYAL OAKS LANDFILL CHEROKEE COUNTY, TEXAS TCEQ PERMIT NO. MSW-1614B

MAJOR PERMIT AMENDMENT APPLICATION

PARTS I/II GENERAL APPLICATION REQUIREMENTS

Prepared for:

Pine Hill Farms Landfill TX, LP

May 2024 Revised July 2024

Revised October 2024



Prepared by:

Weaver Consultants Group, LLC TBPE Registration No. F-3727 6420 Southwest Boulevard, Suite 206 Fort Worth, Texas 76109 817-735-9770

WCG Project No. 0120-076-11-106

This document intended for permitting purposes only.





Weaver Consultants Group TBPE REGISTRATION NO. F-3727







<u>LEGEND</u>

| | PERMIT BOUNDARY |
|---------------------------|---|
| | PERMITTED LIMIT OF WASTE |
| | CELL BOUNDARY |
| · · | EXISTING EASEMENT |
| 0500 | SITE GRID |
| 610 | EXISTING CONTOUR (SEE NOTE 1) |
| | EXISTING SUBTITLE D COMPOSITE LINED AREA |
| ◆ ^{MW-10} | EXISTING GROUNDWATER MONITORING WELL |
| ⊙ ^{GP-1} | EXISTING GAS PROBE |
| \triangle | INDICATES REVISION (SEE LIST OF REVISIONS) |
| | |

1. EXISTING CONTOURS DEVELOPED BY FIRMATEK FROM AERIAL PHOTOGRAPHY FLOWN NOVEMBER 10, 2022. THE GRID SYSTEM IS BASED ON A SITE GRID SYSTEM. ELEVATIONS ARE BASED ON NAVD 88.

2. PERMIT BOUNDARY WAS REPRODUCED FROM LEGAL DESCRIPTION PROVIDED BY STANGER COMPANY, DATED APRIL 1995.



| | PREPARED FOR | | | | |
|-------|--------------|-----------------------|---------|----------|--|
| ILL | F | ARMS | LANDFIL | L TX, LP | |
| | | REVIS | IONS | | |
| ATE | | DESCRIPTION | | | |
| /2024 | | SEE LIST OF REVISIONS | | | |
| | | | | | |
| | | | | | |
| | | | | | |

MAJOR PERMIT AMENDMENT EXISTING SITE PLAN (TCEQ PERMIT NO. MSW-1614A)

ROYAL OAKS LANDFILL CHEROKEE COUNTY, TEXAS

WWW.WCGRP.COM

FIGURE I/II-3.1



| | PERMIT BOUNDARY |
|-------------------|---|
| | LIMIT OF WASTE |
| · · | EXISTING EASEMENT |
| 0500 | SITE GRID |
| 610 | EXISTING CONTOUR (SEE NOTE 1) |
| 624 | PROPOSED FINAL COVER CONTOUR |
| | DRAINAGE SWALE |
| | DRAINAGE LETDOWN |
| _ | CHANNEL CENTERLINE |
| e^{MW-10} | EXISTING GROUNDWATER MONITORING WELL |
| ⊛ ^{GP−1} | EXISTING GAS PROBE |
| Λ | INDICATES REVISION (SEE LIST OF REVISIONS) |
| | |

1. EXISTING CONTOURS DEVELOPED BY FIRMATEK FROM AERIAL PHOTOGRAPHY FLOWN NOVEMBER 10, 2022. THE GRID SYSTEM IS BASED ON A SITE GRID SYSTEM. ELEVATIONS ARE BASED ON NAVD 88.

2. PERMIT BOUNDARY WAS REPRODUCED FROM LEGAL DESCRIPTION PROVIDED BY STANGER SURVEYING COMPANY, DATED APRIL 1995.

3. THE PERMITTED FINAL COVER CONTOURS WERE REPRODUCED FROM A PERMIT MODIFICATION PREPARED BY WEAVER BOOS CONSULTANTS, LLC-SOUTHWEST



| PREPARED FOR IILL FARMS LANDFILL TX, L | MAJOR PERMIT AMENDMENT | |
|---|------------------------|------------------|
| REVISIONS | (TCEQ PERMI | T NO. MSW-1614A) |
| DATE DESCRIPTION | | |
| 9/2024 SEE LIST OF REVISIONS | CHEROKE | E COUNTY, TEXAS |
| | WWW.WCGRP.COM | FIGURE I/II-3.2 |
| | | |



| | PERMIT BOUNDARY |
|---------------------------|---|
| | LIMIT OF WASTE |
| 0500 | SITE GRID |
| 6 10 | EXISTING CONTOUR (SEE NOTE 1) |
| · · · | EXISTING EASEMENT |
| —630— — | AS-BUILT TOP OF LINER |
| X660 | APPROXIMATE TOP OF PRE-SUBTITLE D LINER (SEE NOTE 4) |
| | LEACHATE COLLECTION PIPE |
| | LEACHATE COLLECTION SUMP |
| ◆ ^{MW-10} | EXISTING GROUNDWATER MONITORING WELL |
| ⊛ ^{GP−1} | EXISTING GAS PROBE INDICATES REVISION (SEE LIST OF REVISIONS) |
| | |

EXISTING CONTOURS DEVELOPED BY FIRMATEK FROM AERIAL PHOTOGRAPHY FLOWN NOVEMBER 10, 2022. THE GRID SYSTEM IS BASED ON A SITE GRID SYSTEM. ELEVATIONS ARE BASED ON NAVD 88.

2. PERMIT BOUNDARY WAS REPRODUCED FROM LEGAL DESCRIPTION PROVIDED BY STANGER SURVEYING COMPANY, DATED APRIL 1995. THE PERMITTED TOP OF WASTE CONTOURS WERE REPRODUCED FROM AS-BUILT INFORMATION FROM 1994 TO 2022.

4. TOP OF PRE-SUBTITLE D LINER ARE APPROXIMATE AND WAS REPRODUCED FROM CROSS-SECTIONS INCLUDED IN THE 1983 PERMIT APPLICATION PREPARED BY STOKES & ASSOCIATES.



| PREPARED FOR | | | | | | |
|--------------|-------------|-------|-------------|---------|-----|----|
| ILL | F | ARMS | LANDF | ILL | TX, | LP |
| | | REVIS | IONS | | | |
| ATE | DESCRIPTION | | | | | |
| /2024 | | ; | SEE LIST OF | REVISIO | NS | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

MAJOR PERMIT AMENDMENT PERMITTED EXCAVATON PLAN (TCEQ PERMIT NO. MSW-1614A)

ROYAL OAKS LANDFILL CHEROKEE COUNTY, TEXAS

WWW.WCGRP.COM

FIGURE 1/II - 3.3



| HILL FARMS LANDFILL TX, LP | MAJOR PERMIT AMENDMENT CITIZENS CONVENIENCE CENTER PLAI | | | |
|------------------------------|--|------------------|--|--|
| REVISIONS | 1 | | | |
| DATE DESCRIPTION | | | | |
| 9/2024 SEE LIST OF REVISIONS | - ROYAL OAKS LANDFILL | | | |
| | - CHEROKEE COUNTY, TEXAS | | | |
| | | | | |
| | - WWW.WCGRP.COM DRAWING 1/11- | DRAWING 1/11-3.4 | | |
| | | | | |



- 2. PERMIT BOUNDARY WAS REPRODUCED FROM LEGAL DESCRIPTION PROVIDED BY STANGER SURVEYING COMPANY, DATED APRIL 1995.
- 1. EXISTING CONTOURS DEVELOPED BY FIRMATEK FROM AERIAL PHOTOGRAPHY FLOWN NOVEMBER 10, 2022. THE GRID SYSTEM IS BASED ON A SITE GRID SYSTEM. ELEVATIONS ARE BASED ON NAVD 88.

- NOTES:

<u>LEGEND</u> - - LANDFILL PERMIT BOUNDARY - - LIMIT OF WASTE 690 EXISTING CONTOUR (SEE NOTE 1) INDICATES REVISION (SEE LIST OF REVISIONS) \triangle

10

SCALE IN FEET

20



| | | | / |
|---|---------------------|--------------|--------|
| | | PREPARED FOR | PREPAR |
| MAJOR PERMIT AMENDMENT GENERAL TOPOGRAPHIC MAF | RMS LANDFILL TX, LP | IILL FARMS | |
| | | REVISIONS | REVIS |
| | DOVAL | DESCRIPTION | DATE |
| RUTAL UARS LANDFILL | | | /2024 |
| CHEROREE COUNTY, TEXAS | CHERORE | | |
| www.wcgrp.com FIGURE I/II-4 | WWW.WCGRP.COM | | |
| | | | |


LIST OF REVISIONS: 1. ADDED NOTE 5.







LEGEND



PERMIT BOUNDARY AUTHORIZED LIMITS OF WASTE PROPOSED LIMITS OF WASTE

RESIDENTIAL BUILDING (SEE NOTE 2)

R

INDICATES REVISION (SEE LIST OF REVISIONS)

1. AERIAL PHOTOGRAPH OBTAINED FROM GOOGLE EARTH DATED 09-09-2021.

 ALL STRUCTURES WITHIN 500 FEET ARE SHOWN ON THIS FIGURE. EACH STRUCTURE IS ASSUMED TO BE HABITABLE. LAND USE WITHIN A 500 FOOT RADIUS OF THE SITE CONSISTS OF RESIDENTIAL, INDUSTRIAL AND AGRICULTURAL AREAS.

3. REFER TO APPENDIX IIIG FOR ADDITIONAL WATER WELL INFORMATION.

 A SEARCH TO IDENTIFY WATER WELLS WITHIN A 1-MILE RADIUS OF THE LANDFILL PERMIT BOUNDARY WAS COMPLETED BY ENVIRONMENTAL RISK INFORMATION SERVICES (ERIS) AND WCG IN SEPTEMBER 2023. NO WATER WELL WERE IDENTIFIED INSIDE OR WITHIN 500 FEET OF THE PERMIT BOUNDARY.

REFER TO DRAWING I/IIA.12 FOR THE ACCESS CONTROL PLAN.

| ILL FARMS LANDFILL TX, LP | MAJOR PERMIT AMENDMENT STRUCTURES, INHABITABLE BUILDINGS AND WATER WELLS. | |
|-----------------------------|---|-----------------|
| REVISIONS | WITHIN 500 FEET | |
| DATE DESCRIPTION | | |
| /2024 SEE LIST OF REVISIONS | CHEROKEE COUNTY, TEXAS | |
| | WWW.WCGRP.COM | FIGURE I/II-4.3 |





| | PERMIT BOUNDARY |
|-------------|---|
| | AUTHORIZED LIMITS OF WASTE |
| | PROPOSED LIMITS OF WASTE |
| — · — · — | EXISTING EASEMENT |
| 00 | SITE GRID |
| 610 | EXISTING CONTOUR (SEE NOTE 1) |
| | SECTOR BOUNDARY |
| | USACE SECTION 404 JURISDICTIONAL WATERS OF THE U.S. (SEE NOTE 3) |
| | SCRUB-SHRUB WETLAND (SEE NOTE 3) |
| \triangle | INDICATES REVISION (SEE LIST OF REVISIONS) |
| | |

 EXISTING CONTOURS DEVELOPED BY FIRMATEK FROM AERIAL PHOTOGRAPHY FLOWN NOVEMBER 10, 2022. THE GRID SYSTEM IS BASED ON A SITE GRID SYSTEM. ELEVATIONS ARE BASED ON NAVD 88.
PERMIT BOUNDARY WAS REPRODUCED FROM LEGAL DESCRIPTION PROVIDED BY STANGER COMPANY, DATED APRIL 1995.
WETLANDS AND STREAMS SHOWN ON FIGURE WERE REPRODUCED FROM FIGURE 2 INCLUDED IN REPORT TITLED "WILDFIRE HABITAT ASSESSMENT PROGRAM" PREPARED BY HYDREX ENVIRONMENTAL, INC., MARCH 2024.

| HILL FARMS LANDFILL TX, LP | | MAJOR PERMIT AMENDMENT WETLAND LOCATION MAP | |
|----------------------------|-----------------------|--|------------------|
| | REVISIONS | | |
| DATE | DESCRIPTION | ROYAL OAKS LANDFILL CHEROKEE COUNTY, TEXAS | |
| /2024 | SEE LIST OF REVISIONS | | |
| | | | |
| | | WWW.WCGRP.COM | FIGURE I/II-11.2 |
| | | | |

11 FLOODPLAINS AND WETLANDS STATEMENT

11.1 Floodplains Statement

As shown on Figure I/II-11.1, the proposed landfill permit boundary is located over 1 mile from the 100-year floodplain as defined by the Federal Emergency Management Agency (FEMA), Flood Insurance Rate Map (FIRM) for Cherokee County, Texas, and incorporated areas (Map Numbers 48073C0175D and 48073C0285D).

This section addresses §330.61(m).

Compliance with the floodplain location restriction is further discussed in Appendix I/IIC.

11.2 Wetlands Statement

The area within the existing permit boundary of the Royal Oaks Landfill was evaluated for compliance with wetlands provisions, including the determination and identification requirements in Title 30 TAC §330.61(m)(2) and (3) and the wetlands location restriction in §330.553(b).

A waters of the U.S. and wetlands determination/delineation was preformed by Hydrex Environmental, Inc. Excerpts from their March 2024 report is included in Appendix I/IIB which describes and identifies wetlands located within the facility boundary.

The proposed post-development condition of the landfill will require excavation of additional waters of the U.S. previously delineated as intermittent/RPW and scrubscrub wetland. Compensatory mitigation credits for stream and wetland impacts are proposed to be purchased under a Nationwide Permit 39. Therefore, no on-site mitigation is proposed. Coordination with the USACE for the proposed Project (SWF-2021-00405) in included in Appendix I/IIB.

ROYAL OAKS LANDFILL CHEROKEE COUNTY, TEXAS TCEQ PERMIT NO. MSW-1614B

MAJOR PERMIT AMENDMENT APPLICATION

APPENDIX I/IIA FACILITY LAYOUT MAPS

Prepared for:

Pine Hill Farms Landfill TX, LP

May 2024

Revised October 2024



Prepared by:

Weaver Consultants Group, LLC TBPE Registration No. F-3727 6420 Southwest Boulevard, Suite 206 Fort Worth, Texas 76109 817-735-9770

WCG Project No. 0120-76-11-106

This document intended for permitting purposes only.



| | Ň | | | **** | STATE OF 7 | 2255 *** |
|---|--|---|--|---------------|------------------------------|-----------------|
|) | 200 400 | | | | ASON E. EDV | VARDS |
| SC | ALE IN FEET | | | 13 | 99336 | E. |
| | LEGEND | | | 1 | CENSE | ENGLAS |
| | PERMIT BOUNI | DARY | | | Months | n ⁱⁿ |
| | PERMITTED LIN | IT OF WASTE | | | 10/02/20 | 104 |
| | NEWLY PERMIT | ITED AIRSPACE | LIMIT OF WA | STE | 10/02/20 | JZ4 |
| | - CELL BOUNDA | RY | | | | |
| · _ | | EMENT | | | | |
| _ · _ · _ | PROPOSED EA | SEMENT (SEE | NOTE 6) | | | |
| 0.0 | — CHANNEL CEN | TERLINE | | | | |
| 310- | - SITE GRID | | | | | |
| 510 < | | IUUR (SEE NU | JIE I) | | | |
| | EXISTING FENC | ITLE D COMP | OSITE LINED A | REA | | |
| MW- | | | | | | |
| ♥ ● ^{MW-} | 21 EXISTING GROU | JNDWATER MO JNDWATER MO IMISSIONED) | NITORING WELI | - | | |
| ₩₩- | D1 PROPOSED GR | OUNDWATER N | IONITORING WE | LL | | |
| ⊕ ^{ow_} | D7 PROPOSED OB | SERVATION WE | - | | | |
| ♥ ● GP- | | PROPOSED OBSERVATION WELL | | | | |
| ∍ GP− | P-10 EXISTING GAS PROBE (TO BE DECOMMISSIONED) | | | | | |
| ● ● GP- | GP-10A PROPOSED GAS PROBE | | | | | |
| ∧ | SITE DENOLUM | SITE BENCHMARK (SEE NOTE 3) | | | | |
| <u>.</u> 1\ | INDICATES REV | ISION | E 3) | | | |
| _ (SEE LIST OF REVISIONS) | | | | | | |
| G CONT RAPHY ON A S | TOURS DEVELOPED FLOWN NOVEMBER SITE GRID SYSTEM. | BY FIRMATEK 10, 2022. TI ELEVATIONS A | FROM AERIAL HE GRID SYSTI NRE BASED ON | EM IS NAVD | 88. | |
| BOUNE D BY | OARY WAS REPROD STANGER SURVEYIN | JCED FROM LE | EGAL DESCRIP DATED APRIL | TION 1995. | | |
| E BEN | CHMARK INFORMATI SITE BENCHMARI | on is listed K informatio i | BELOW. N | | | |
| NUMEN | IT NORTHING (SITE GRID) | EASTING (SITE GRID) | ELEVATION (FT-MSL) | | | |
| 1 | 9675.73 | 10107.79 | 685.63 | | | |
| VATION | I IS BASED ON NA | VD 88. | 1 | | | |
| CE OF GI/IIA | SITE DEVELOPMEN .4 THROUGH I/IIA.8 | T IS PROVIDED 3. |) ON | | | |
| DRIZED ACCESS TO THE EXISTING FILL AREA AND ENTRANCE IS CONTROLLED WITH PERIMETER FENCING (MINIMUM 4-FOOT -STRAND BARBED WIRE FENCE), GATED ENTRANCE AND NATURAL S (DENSE FOLIAGE, VEGETATION, AND WATERWAYS). REFER TO ; I/IA.14 FOR ACCESS CONTROL PLAN. : ONCOR EASEMENT AND POWERLINE TO BE RELOCATED. REFER ENDIX I/IIF FOR MORE INFORMATION. WLY PERMITTED AIRSPACE DOES NOT LIE WITHIN ANY BTLE D LINED AREAS. | | | | | | |
| ILL F | PREPARED FOR | TX, LP | MAJOR | PER SIT | MIT AMEND E PLAN | MENT |
| DATE | REVISIONS | | | | | |
| /2024 | SEE LIST OF REVISION | IS | RO CHER | YAL O OKEE | AKS LANDFILL COUNTY, TEXA | s |
| | | | | <u></u> | | 1/11/1 |
| | | ww | W.WCGRP.CO | M | DRAWING | 17 IIA. I |



| | | | _ |
|---|--|---------------|---|
| | <u>END</u> PERMIT BOUNDARY | | |
| | PERMITTED LIMIT OF WASTE | | |
| | NEWLY PERMITTED AIRSPACE LIMIT OF WASTE (SEE NOTE 7) | | |
| | CELL BOUNDARY | | |
| · · | EXISTING EASEMENT | M | |
| | PROPOSED EASEMENT | 0 200 400 | |
| 0500 | CHANNEL CENTERLINE SITE GRID | SCALE IN FEET | |
| 610 | EXISTING CONTOUR (SEE NOTE 1) | | |
| <u></u> | EXISTING SUBTITLE D COMPOSITE LINED AREA | | |
| ↔ ^{MW-10} | EXISTING GROUNDWATER MONITORING WELL | | |
| ♦ ^{MW-D1} | PROPOSED GROUNDWATER MONITORING WELL | | |
| ⊕ ^{0₩–D7} | PROPOSED OBSERVATION WELL | | |
| ⊙ ^{GP-1} | EXISTING GAS PROBE | | |
| ⊚ ^{GP-10A} | PROPOSED GAS PROBE | | |
| | PERIMETER ACCESS ROAD | | ļ |
| RS DEVELOPE WN NOVEME GRID SYSTE | 3H:1V SLOPE (TYPICAL) INDICATES REVISION (SEE LIST OF REVISIONS) 2D BY FIRMATEK FROM AERIAL 3ER 10, 2022. THE GRID SYSTEM IS 2M. ELEVATIONS ARE BASED ON NAVD 88. | | |
| Y WAS REPRON | ODUCED FROM LEGAL DESCRIPTION EYING COMPANY, DATED APRIL 1995. | | |
| ECTION PROV | VIDED IN DRAWING I/IIA.3 ADDITIONAL SECTION PENDIX IIIA-B - LANDFILL UNIT CROSS SECTIONS. | | |
| IIA.4 THROUG ANS. | 升 I/IIA.8 FOR DETAILED CELL | | |
| FFER ZONE Y VARIES; HO STING FILL A TO APPENDI | BETWEEN THE LIMITS OF WASTE AND THE OWEVER, THE BUFFER ZONE IS A MINIMUM OF REAS AND 125 FEET FOR THE NEWLY PERMITTED IX I/IIC FOR MORE INFORMATION REGARDING | | |
| JDING THE PI WASTE RESU MERCIAL, INS | RE-SUBTITLE D FILL AREA, WILL ACCEPT JLTING FROM, OR INCIDENTAL TO, MUNICIPAL, TITUTIONAL, RECREATIONAL AND INDUSTRIAL | | |

ACTIVITES, INCLUDING GARBAGE, PUTRESCIBLE WASTES, RUBBISH, ASHES, BRUSH, STREET CLEANINGS, DEAD ANIMALS, ABANDONED AUTOMOBILES, CONSTRUCTION-DEMOLITION WASTE, YARD WASTE, CLASS 2 NON-HAZARDOUS INDUSTRIAL SOLID WASTE, CLASS 3 NON-HAZARDOUS INDUSTRIAL SOLID WASTE, AND CERTAIN SPECIAL WASTES.

7. THE NEWLY PERMITTED AIRSPACE DOES NOT LIE WITHIN ANY PRE-SUBTLE D LINED AREAS.

CELL SUMMARY PRE-SUBTITLE D AREA MAX AREA (ACRES) AREA MAX CELL (ACRES) LENGTH (FT) WIDTH (FT) 3.67 BLOCK A 673 825 13.76 4.60 BLOCK B, CELL 1 187 381 1.44 3.39 3.53 4.22 4.55 4.64 5.50 5.20 5.87 8.79 13.90 PREPARED FOR

PINE HILL FARMS LANDFILL TX, LP

SEE LIST OF REVISIONS

MAJOR PERMIT AMENDMENT CELL DEVELOPMENT PLAN

ROYAL OAKS LANDFILL CHEROKEE COUNTY, TEXAS

WWW.WCGRP.COM

DRAWING 1/IIA.2





200

SCALE IN FEET

400

| | PERMIT BOUNDARY |
|---------------------------|---|
| | LIMIT OF WASTE |
| 500 | SITE GRID |
| 610 | EXISTING CONTOUR (SEE NOTE 1) |
| · | EXISTING EASEMENT |
| | PROPOSED EASEMENT |
| -700 | INTERMEDIATE COVER |
| • ··· | CHANNEL CENTERLINE |
| ◆ ^{MW-10} | EXISTING GROUNDWATER MONITORING WELL |
| ♦ ^{MW-D1} | PROPOSED GROUNDWATER MONITORING WELL |
| ⊕ ^{OW-D7} | PROPOSED OBSERVATION WELL |
| ⊛ ^{GP-1} | EXISTING GAS PROBE |
| | PROPOSED GAS PROBE |
| Λ | INDICATES REVISION (SEE LIST OF REVISIONS) |

- 8. REFER TO APPENDIX III I FOR LANDFILL GAS MANAGEMENT PLAN.
- 9. UNCONTAMINATED STORMWATER THAT HAS NOT COME INTO CONTACT WITH WASTE WILL BE COLLECTED IN SUMPS AND PERIODICALLY REMOVED FROM EXCAVATED AREAS BY PUMPING TO PERIMETER DRAINAGE CHANNELS OR USED IN SITE OPERATIONS (E.G., DUST CONTROL, COMPACTING, ETC.).
- 10. TEMPORARY CHUTES AND SWALES WILL BE PLACED OVER THE INTERMEDIATE COVER AREA TO MINIMIZE EROSION AND HELP ESTABLISH VEGETATION FOR INTERMEDIATE COVER AREAS THAT WILL NOT RECEIVE WASTE OR FINAL COVER WITHIN 180 DAYS AFTER PLACEMENT (REFER TO APPENDIX IIIF-F FOR MORE INFORMATION). MULCH, HYDROSEEDING OR SIMILAR METHODS WILL BE USED TO ESTABLISH VEGETATION OVER THE INTERMEDIATE COVER AREAS. SWALE AND LETDOWN SPACING WILL MEET THE REQUIREMENTS OF THE EROSION CONTROL PLAN INCLUDED IN APPENDIX IIIF-F.

| | PREPARED FOR | | | | |
|-------|-----------------------|---|-----------------|------------------------|--|
| ILL F | TARMS LANDFILL TX, LP | MAJOR PERMIT AMENDMENT SECTOR DEVELOPMENT PLAN I | | MAJOR PERMIT AMENDMENT | |
| | REVISIONS | | | | |
| ATE | DESCRIPTION | | | | |
| 2024 | SEE LIST OF REVISIONS | CHEROKEE COUNTY, TEXAS | | | |
| | | | | | |
| | | WWW.WCGRP.COM | DRAWING 1/11A.4 | | |



| Ż | JASON E. EDWARDS 99336 |
|--|---|
| 0 200 | 2 400 CENSE |
| SCALE IN | I FEET |
| LEG | |
| | 10/02/2024 |
| | PERMIT BOUNDARY |
| 500 | LIMIT OF WASTE |
| <u>1500 </u> | SITE GRID |
| 610 | EXISTING CONTOUR (SEE NOTE 1) |
| · · | EXISTING EASEMENT |
| · _ · _ · _ · _ | PROPOSED EASEMENT |
| _700 | INTERMEDIATE COVER |
| | CHANNEL CENTERLINE |
| ♥ ^{MW-10} | EXISTING GROUNDWATER MONITORING WELL |
| ♦ ^{MW−D1} | PROPOSED GROUNDWATER MONITORING WELL |
| ⊕ ^{OW−D7} | PROPOSED OBSERVATION WELL |
| ⊙ ^{GP-1} | EXISTING GAS PROBE |
| ⊚ ^{GP-10A} | PROPOSED GAS PROBE |
| <u></u> | INDICATES REVISION (SEE LIST OF REVISIONS) |

| | PREPARI | ED FOR | | | | |
|------|---------|-----------------------|-------------------------|-----------------|-----------------------|----------------|
| LL F | FARMS | LANDFILL TX, LP | MAJOR PERMIT AMENDMENT | | | |
| | REVIS | IONS | SECTOR DEVELOPMENT PLAN | | | |
| NTE | | DESCRIPTION | | | | |
| 2024 | | SEE LIST OF REVISIONS | CHEROKEE COUNTY, TEXAS | | CHEROKEE COUNTY TEXAS | F COUNTY TEXAS |
| | | | | | | |
| | | | WWW.WCGRP.COM | DRAWING 1/11A.5 | | |

8. REFER TO APPENDIX III I FOR LANDFILL GAS MANAGEMENT PLAN.

- 9. UNCONTAMINATED STORMWATER THAT HAS NOT COME INTO CONTACT WITH WASTE WILL BE COLLECTED IN SUMPS AND PERIODICALLY REMOVED FROM EXCAVATED AREAS BY PUMPING TO PERIMETER DRAINAGE CHANNELS OR USED IN SITE OPERATIONS (E.G., DUST CONTROL, COMPACTING, ETC.).
- 10. TEMPORARY CHUTES AND SWALES WILL BE PLACED OVER THE INTERMEDIATE COVER AREA TO MINIMIZE EROSION AND HELP ESTABLISH VEGETATION FOR INTERMEDIATE COVER AREAS THAT WILL NOT RECEIVE WASTE OR FINAL COVER WITHIN 180 DAYS AFTER PLACEMENT (REFER TO APPENDIX IIIF-F FOR MORE INFORMATION), MULCH, HYDROSEEDING OR SIMILAR METHODS WILL BE USED TO ESTABLISH VEGETATION OVER THE INTERMEDIATE COVER AREAS. SWALE AND LETDOWN SPACING WILL MEET THE REQUIREMENTS OF THE EROSION CONTROL PLAN INCLUDED IN APPENDIX IIIF-F.



| 0 200 | JASON E. EDWARDS 99336 |
|---------------------------|--|
| SCALE IN | I FEET |
| LEG | |
| 0500 | PERMIT BOUNDARY LIMIT OF WASTE SITE GRID |
| 610 | EXISTING CONTOUR (SEE NOTE 1) |
| · · | EXISTING EASEMENT |
| | PROPOSED EASEMENT INTERMEDIATE COVER |
| 700 | PROPOSED FINAL COVER CONTOUR |
| | DRAINAGE SWALE |
| VIE EEEE | DRAINAGE LETDOWN |
| | CHANNEL CENTERLINE |
| ◆ ^{MW-10} | EXISTING GROUNDWATER MONITORING WELL |
| ♦ ^{MW-D1} | PROPOSED GROUNDWATER MONITORING WELL |
| ⊕ ^{OW−D7} | PROPOSED OBSERVATION WELL |
| ⊛ ^{GP-1} | EXISTING GAS PROBE |
| ⊚ ^{GP-10A} | PROPOSED GAS PROBE |
| ۵ | INDICATES REVISION |

(SEE LIST OF REVISIONS)

| | PREPARED FOR | | | |
|-------|-----------------------|---|-----------------|------------------------|
| ILL F | ARMS LANDFILL TX, LP | MAJOR PERMIT AMENDMENT SECTOR DEVELOPMENT PLAN III ROYAL OAKS LANDFILL CHEROKEE COUNTY TEXAS | | MAJOR PERMIT AMENDMENT |
| | REVISIONS | | | |
| ATE | DESCRIPTION | | | |
| /2024 | SEE LIST OF REVISIONS | | | |
| | | | | |
| | | WWW.WCGRP.COM | DRAWING 1/11A.6 | |

8. REFER TO APPENDIX III I FOR LANDFILL GAS MANAGEMENT PLAN.

- 9. UNCONTAMINATED STORMWATER THAT HAS NOT COME INTO CONTACT WITH WASTE WILL BE COLLECTED IN SUMPS AND PERIODICALLY REMOVED FROM EXCAVATED AREAS BY PUMPING TO PERIMETER DRAINAGE CHANNELS OR USED IN SITE OPERATIONS (E.G., DUST CONTROL, COMPACTING, ETC.).
- 10. TEMPORARY CHUTES AND SWALES WILL BE PLACED OVER THE INTERMEDIATE COVER AREA TO MINIMIZE EROSION AND HELP ESTABLISH VEGETATION FOR INTERMEDIATE COVER AREAS THAT WILL NOT RECEIVE WASTE OR FINAL COVER WITHIN 180 DAYS AFTER PLACEMENT (REFER TO APPENDIX IIIF-F FOR MORE INFORMATION), MULCH, HYDROSEEDING OR SIMILAR METHODS WILL BE USED TO ESTABLISH VEGETATION OVER THE INTERMEDIATE COVER AREAS. SWALE AND LETDOWN SPACING WILL MEET THE REQUIREMENTS OF THE EROSION CONTROL PLAN INCLUDED IN APPENDIX IIIF-F.



| | TE OF TOTAL |
|---------------------------|--|
| 1 | |
| Á | |
| Ň | JASON E. EDWARDS |
| ļ | 7 8. 99336 |
| 0 200 | 400 400 |
| SCALE IN | I FEET |
| LEG | |
| | PERMIT BOLINDARY |
| | LIMIT OF WASTE |
| 0500 | SITE GRID |
| 6 10 | EXISTING CONTOUR (SEE NOTE 1) |
| - · · | EXISTING EASEMENT |
| _ · _ · _ · _ · _ · _ | PROPOSED EASEMENT |
| | |
| 700 | |
| | PROPOSED FINAL COVER CONTOUR |
| | |
| 88333777 | DRAINAGE LETDOWN |
| ◆ ^{MW-10} | EXISTING GROUNDWATER MONITORING WELL |
| ♦ ^{MW−D1} | PROPOSED GROUNDWATER MONITORING WELL |
| ⊕^{0W–D7} | PROPOSED OBSERVATION WELL |
| ⊙ ^{GP-1} | EXISTING GAS PROBE |
| ⊚ ^{GP-10A} | PROPOSED GAS PROBE |
| Λ | INDICATES REVISION (SEE LIST OF REVISIONS) |
| MATEK FROM | 8. REFER TO APPENDIX III I FOR LANDFILL GAS MANAGEMENT AERIAL PLAN. |
| MW-10 MW-D1 | DRAINAGE SWALE DRAINAGE LETDOWN EXISTING GROUNDWATER MONITORING WELL PROPOSED GROUNDWATER MONITORING WELL PROPOSED OBSERVATION WELL EXISTING GAS PROBE PROPOSED GAS PROBE INDICATES REVISION (SEE LIST OF REVISIONS) 8. REFER TO APPENDIX III I FOR LANDFILL GAS MANAGEMENT AERIAL RD |

| PREPARED FOR | | |
|----------------------------|---|-----------------|
| ILL FARMS LANDFILL TX, LP | MAJOR PERMIT AMENDMENT | |
| REVISIONS | SECTOR DEVELOPMENT PLAN IV | |
| ATE DESCRIPTION | ROYAL OAKS LANDFILL CHEROKEE COUNTY, TEXAS | |
| 2024 SEE LIST OF REVISIONS | | |
| | | |
| | WWW.WCGRP.COM | DRAWING I/IIA.7 |

- 9. UNCONTAMINATED STORMWATER THAT HAS NOT COME INTO CONTACT WITH WASTE WILL BE COLLECTED IN SUMPS AND PERIODICALLY REMOVED FROM EXCAVATED AREAS BY PUMPING TO PERIMETER DRAINAGE CHANNELS OR USED IN SITE OPERATIONS (E.G., DUST CONTROL, COMPACTING, ETC.).
- 10. TEMPORARY CHUTES AND SWALES WILL BE PLACED OVER THE INTERMEDIATE COVER AREA TO MINIMIZE EROSION AND HELP ESTABLISH VEGETATION FOR INTERMEDIATE COVER AREAS THAT WILL NOT RECEIVE WASTE OR FINAL COVER WITHIN 180 DAYS AFTER PLACEMENT (REFER TO APPENDIX IIIF-F FOR MORE INFORMATION), MULCH, HYDROSEEDING OR SIMILAR METHODS WILL BE USED TO ESTABLISH VEGETATION OVER THE INTERMEDIATE COVER AREAS. SWALE AND LETDOWN SPACING WILL MEET THE REQUIREMENTS OF THE EROSION CONTROL PLAN INCLUDED IN APPENDIX IIIF-F.





400

200

SCALE IN FEET

| <u>LEG</u> | END |
|---------------------------|---|
| | PERMIT BOUNDARY |
| | LIMIT OF WASTE |
|)500 | SITE GRID |
| 610 | EXISTING CONTOUR (SEE NOTE 1) |
| · · | EXISTING EASEMENT |
| · _ · _ · _ · _ | PROPOSED EASEMENT |
| _700 | INTERMEDIATE COVER |
| 680 | PROPOSED FINAL COVER CONTOUR |
| | DRAINAGE SWALE |
| newann | DRAINAGE LETDOWN |
| _ _ | CHANNEL CENTERLINE |
| ◆ ^{MW-10} | EXISTING GROUNDWATER MONITORING WELL |
| ♦ ^{MW−D1} | PROPOSED GROUNDWATER MONITORING WELL |
| ⊕^{0W–D7} | PROPOSED OBSERVATION WELL |
| ⊙ ^{GP-1} | EXISTING GAS PROBE |
| ⊙ ^{GP-10A} | PROPOSED GAS PROBE |
| $\underline{\land}$ | INDICATES REVISION (SEE LIST OF REVISIONS) |

| | E ENOC | | | |
|-------|---------|-----------------------|--|-----------------|
| | PREPARE | D FOR | MAJOR PERMIT AMENDMENT SECTOR DEVELOPMENT PLAN V ROYAL OAKS LANDFILL | |
| ILL F | ARMS | LANDFILL TX, LP | | |
| | REVISI | ONS | | |
| ATE | | DESCRIPTION | | |
| 2024 | ç | SEE LIST OF REVISIONS | | |
| | | | CHEROREE COORTH, TEXAS | |
| | | | WWW.WCGRP.COM | DRAWING 1/11A.8 |

8. REFER TO APPENDIX III I FOR LANDFILL GAS MANAGEMENT PLAN.

- UNCONTAMINATED STORMWATER THAT HAS NOT COME INTO 9. CONTACT WITH WASTE WILL BE COLLECTED IN SUMPS AND PERIODICALLY REMOVED FROM EXCAVATED AREAS BY PUMPING TO PERIMETER DRAINAGE CHANNELS OR USED IN SITE OPERATIONS (E.G., DUST CONTROL, COMPACTING, ETC.).
- 10. TEMPORARY CHUTES AND SWALES WILL BE PLACED OVER THE INTERMEDIATE COVER AREA TO MINIMIZE EROSION AND HELP ESTABLISH VEGETATION FOR INTERMEDIATE COVER AREAS THAT WILL NOT RECEIVE WASTE OR FINAL COVER WITHIN 180 DAYS AFTER PLACEMENT (REFER TO APPENDIX IIIF-F FOR MORE INFORMATION). MULCH, HYDROSEEDING OR SIMILAR METHODS WILL BE USED TO ESTABLISH VEGETATION OVER THE INTERMEDIATE COVER AREAS. SWALE AND LETDOWN SPACING WILL MEET THE REQUIREMENTS OF THE EROSION CONTROL PLAN INCLUDED IN APPENDIX IIIF-F.





400

200

SCALE IN FEET

| | PERMIT BOUNDARY |
|--------------------------|--|
| | LIMIT OF WASTE |
| 0500 | SITE GRID |
| 610 | EXISTING CONTOUR (SEE NOTE 1) |
| · · <u> </u> | EXISTING EASEMENT |
| 700 | PROPOSED EASEMENT EXISTING CONTOUR (SEE NOTE 1) PROPOSED FINAL COVER CONTOUR |
| | DRAINAGE SWALE |
| | DRAINAGE LETDOWN |
| | CHANNEL CENTERLINE |
| ♦ ^{MW-10} | EXISTING GROUNDWATER MONITORING WELL |
| ♦ ^{MW-D1} | PROPOSED GROUNDWATER MONITORING WELL |
| ⊕^{0W–D7} | PROPOSED OBSERVATION WELL |
| ⊛ ^{GP-1} | EXISTING GAS PROBE |
| ⊚ ^{GP-10A} | PROPOSED GAS PROBE |
| \wedge | INDICATES REVISION (SEE LIST OF REVISIONS) |

- EXISTING CONTOURS DEVELOPED BY FIRMATEK FROM AERIAL PHOTOGRAPHY FLOWN NOVEMBER 10, 2022. THE GRID SYSTEM IS BASED ON A SITE GRID SYSTEM. ELEVATIONS ARE BASED ON NAVD 88. REFER TO APPENDIX IIIF-SURFACE WATER DRAINAGE PLAN FOR DRAINAGE DESIGN INFORMATION.
- MAXIMUM FINAL COVER ELEVATION IS 776.5 FT-MSL. MAXIMUM TOP OF WASTE ELEVATION IS 773.0 FT-MSL.
- 4. TYPICAL SIDESLOPES ARE 4H:1V. TYPICAL TOPSLOPE IS 4%.
- 5. PERMIT BOUNDARY WAS REPRODUCED FROM LEGAL DESCRIPTION PROVIDED BY STANGER SURVEYING COMPANY, DATED APRIL 1995.

| | PREPARED FOR | MAJOR PERMIT AMENDMENT LANDFILL COMPLETION PLAN | |
|--------|-----------------------|--|-----------------|
| IILL F | ARMS LANDFILL TX, LP | | |
| | REVISIONS | | |
| DATE | DESCRIPTION | ROYAL OAKS LANDFILL CHEROKEE COUNTY, TEXAS | |
| 9/2024 | SEE LIST OF REVISIONS | | |
| | | | |
| | | WWW.WCGRP.COM | DRAWING 1/11A.9 |
| | | | |





200

SCALE IN FEET

400

| | PERMIT BOUNDARY |
|--------------------------|---|
| | LIMIT OF WASTE |
| | CELL BOUNDARY |
| 0500 | SITE GRID |
| 610 | EXISTING CONTOUR (SEE NOTE 1) |
| · · · | EXISTING EONTOGENT (SEE NOTE 1) PROPOSED EASEMENT |
| 624 | TOP OF LINER CONTOUR |
| X660 | APPROXIMATE TOP OF PRE-SUBTITLE D LINER (SEE NOTE 8) |
| | CHANNEL CENTERLINE |
| | LEACHATE COLLECTION PIPE |
| | LEACHATE COLLECTION SUMP |
| • | LEACHATE RISER PIPE |
| ♦ ^{MW-10} | EXISTING GROUNDWATER MONITORING WELL |
| ♦ ^{MW-D1} | PROPOSED GROUNDWATER MONITORING WELL |
| ⊕^{0W-D7} | PROPOSED OBSERVATION WELL |
| ⊙ ^{GP-1} | EXISTING GAS PROBE |
| ⊚ ^{GP-10A} | PROPOSED GAS PROBE |
| Λ | INDICATES REVISION (SEE LIST OF REVISIONS) |

1. EXISTING CONTOURS DEVELOPED BY FIRMATEK FROM AERIAL PHOTOGRAPHY FLOWN NOVEMBER 10, 2022. THE GRID SYSTEM IS BASED ON A SITE GRID SYSTEM. ELEVATIONS ARE BASED ON NAVD 88.

2. EXCAVATION SLOPES AND SLOPES OUTSIDE THE LIMIT OF WASTE (e.g., CHANNELS) ARE TYPICALLY 3H:1V.

3. REFER TO APPENDIX IIIC FOR LEACHATE STORAGE INFORMATION. 4. ELEVATION OF DEEPEST EXCAVATION AT THE LCS SUMP IS 504.0 FT-MSL.

5. SEQUENCE OF SITE DEVELOPMENT IS PROVIDED IN PARTS I/II, APPENDIX I/IIA DRAWINGS I/IIA.4 THROUGH I/IIA.8.

6. REFER TO APPENDIX IIIF FOR DRAINAGE DESIGN INFORMATION.

7. PERMIT BOUNDARY WAS REPRODUCED FROM LEGAL DESCRIPTION PROVIDED BY STANGER SURVEYING COMPANY, DATED APRIL 1995.

8. TOP OF PRE-SUBTITLE D LINER GRADES ARE APPROXIMATE AND WERE REPRODUCED FROM CROSS-SECTIONS INCLUDED IN THE 1983 PERMIT APPLICATION PREPARED BY STOKES & ASSOCIATES.

| | PREPARED FOR | MAJOR PERMIT AMENDMENT TOP OF LINER PLAN ROYAL OAKS LANDFILL CHEROKEE COUNTY, TEXAS | |
|-------|-----------------------|--|------------------|
| ILL F | ARMS LANDFILL TX, LP | | |
| | REVISIONS | | |
| DATE | DESCRIPTION | | |
| /2024 | SEE LIST OF REVISIONS | | |
| | | | |
| | | WWW.WCGRP.COM | DRAWING I/IIA.10 |



| PREPARED FOR | MAJOR PERMIT AMENDMENT EXISTING SITE ENTRANCE PLAN | |
|-----------------------------|--|--|
| REVISIONS | | |
| /2024 SEE LIST OF REVISIONS | ROYAL OAKS LANDFILL CHEROKEE COUNTY, TEXAS | |
| | www.wcgrp.com DRAWING I/IIA.11 | |





400

200

SCALE IN FEET

| | PERMIT BOUNDARY |
|--|---|
| | LIMIT OF WASTE |
| 0500 | SITE GRID |
| 610 | EXISTING CONTOUR (SEE NOTE 1) |
| · · · | EXISTING EASEMENT |
| | PROPOSED EASEMENT |
| 624 | PROPOSED FINAL COVER CONTOUR |
| | DRAINAGE SWALE |
| 10000000000000000000000000000000000000 | DRAINAGE LETDOWN |
| | CHANNEL CENTERLINE |
| | EXISTING ACCESS CONTROL FENCING |
| | PROPOSED ACCESS CONTROL FENCING (SEE NOTE 4) |
| | EXISTING TREES |
| ◆ ^{MW-10} | EXISTING GROUNDWATER MONITORING WELL |
| ♦ ^{MW-D1} | PROPOSED GROUNDWATER MONITORING WELL |
| ⊕^{0W–D7} | PROPOSED OBSERVATION WELL |
| ⊛ ^{GP-1} | EXISTING GAS PROBE |
| ⊚ ^{GP-10A} | PROPOSED GAS PROBE |
| \wedge | INDICATES REVISION (SEE LIST OF REVISIONS) |

 EXISTING CONTOURS DEVELOPED BY FIRMATEK FROM AERIAL PHOTOGRAPHY FLOWN NOVEMBER 10, 2022. THE GRID SYSTEM IS BASED ON A SITE GRID SYSTEM. ELEVATIONS ARE BASED ON NAVD 88. 2. PERMIT BOUNDARY WAS REPRODUCED FROM LEGAL DESCRIPTION PROVIDED BY STANGER SURVEYING COMPANY, DATED APRIL 1995.

3. ACCESS TO THE SITE WILL BE CONTROLLED BY PERIMETER FENCING (MINIMUM 4-FEET HIGH, 3-STRAND BARBED WIRE FENCES), A GATED (MINIMUM 4-FEET HIGH, 3-STRAND BARBED WIRE FENCES), A GATED ENTRANCE, AND NATURAL BARRIERS (e.g DENSE FOLIAGE, AND VEGETATION). ADDITIONALLY, IN AREAS OF NATURAL BARRIERS, THE ACCESS CONTROL PLAN IS PROVIDED TO PREVENT THE ENTRY OF LIVESTOCK, TO PREVENT THE PUBLIC FROM EXPOSURE TO POTENTIAL HEALTH AND SAFETY HAZARDS, AND TO DISCOURAGE UNAUTHORIZED ENTRY OR UNCONTROLLED DISPOSAL OF SOLID WASTE OR HAZARDOUS MATERIALS. "NO THERDARGENO", SICHOR WILL GE ADDED TO DISCOURAGE MATERIALS. "NO TRESPASSING" SIGNS WILL BE ADDED TO DISCOURAGE UNAUTHORIZED ENTRY OR UNCONTROLLED DISPOSAL OF SOLID WASTE OR HAZARDOUS MATERIALS.

4. THE PROPOSED PERIMETER FENCE WILL BE INSTALLED WITHIN SIX MONTHS AFTER TCEQ PERMIT NO. MSW-1614B IS ISSUED.

| ILL F | PREPARED FOR | MAJOR PERMIT AMENDMENT ACCESS CONTROL PLAN | |
|-------|-----------------------|---|------------------|
| | REVISIONS | | |
| DATE | DESCRIPTION | ROYAL OAKS LANDFILL | |
| /2024 | SEE LIST OF REVISIONS | | |
| | | CHEROKE | E COUNTI, TEXAS |
| | | WWW.WCGRP.COM | DRAWING 1/11A.12 |
| | | | · / |

ROYAL OAKS LANDFILL CHEROKEE COUNTY, TEXAS TCEQ PERMIT NO. MSW-1614B

MAJOR PERMIT AMENDMENT APPLICATION

VOLUME 2 OF 7

Prepared for

Pine Hill Farms Landfill TX, LP

May 2024

Revised October 2024



Prepared by

Weaver Consultants Group, LLC

TBPE Registration No. F-3727 6420 Southwest Boulevard, Suite 206 Fort Worth, Texas 76109 817-735-9770

Project No. 0120-076-11-106

This document is intended for permitting purposes only.

ROYAL OAKS LANDFILL CHEROKEE COUNTY, TEXAS TCEQ PERMIT NO. MSW-1614B

MAJOR PERMIT AMENDMENT APPLICATION

PARTS I/IIC LOCATION RESTRICTION DEMONSTRATIONS

Prepared for:

Pine Hill Farms Landfill TX, LP

May 2024

Revised October 2024



Prepared by:

Weaver Consultants Group, LLC TBPE Registration No. F-3727 6420 Southwest Boulevard, Suite 206 Fort Worth, Texas 76109 817-735-9770

WCG Project No. 0120-076-11-106

This document intended for permitting purposes only.

2 EASEMENTS AND BUFFER ZONES

The easements and buffer zones location restrictions within Title 30 TAC §330.543 require that no solid waste disposal shall occur within 25 feet of the center line of any utility line or pipeline easement but no closer than the easement, unless otherwise authorized by the Executive Director. Also, all pipeline and utility easements shall be clearly marked with posts that extend at least six feet above ground level, spaced at intervals no greater than 300 feet. In addition, for vertical or lateral expansions, the owner or operator shall establish and maintain a 125-foot buffer zone for any newly permitted airspace.

The proposed buffer zones for the site are shown on Drawing I/IIC-1 and are discussed below.

- **Existing Permitted Limits of Waste.** As shown on Drawing I/IIC-1, a buffer zone of at least 50 feet is maintained between the permit boundary and the permitted limits of waste defined in TCEQ Permit No. MSW-1614A.
- Newly Permitted Limits of Waste. As shown on Drawing I/IIC-1, a buffer zone of at least 125 feet is maintained between the permit boundary and the proposed new waste disposal airspace (labeled as "newly permitted airspace limit of waste"), consistent with Title 30 TAC §330.543(b)(2)(BC).
- **Leachate Storage Tank Area.** A buffer zone of over 50 feet is maintained between the permit boundary and the leachate storage tank area.
- **Citizens Convenience Center.** A buffer zone of over 50 feet is maintained between the permit boundary and the existing Citizens Convenience Center.

An ONCOR electrical delivery company easement is currently located with the proposed waste footprint. An agreement has been reached with ONCOR to relocate this easement as shown on Figure I/IIC-1. Refer to Appendix I/IIF for the ONCOR agreement.

No solid waste disposal will occur within 25 feet of the centerline of any utility line or pipeline easement. In addition, all utility line and pipeline easements will be clearly marked in accordance with the Site Operating Plan.

Given the above, the site is in compliance with the easements and buffer zone location restrictions.

APPENDIX I/IIF

ONCOR AGREEMENT



6.3 Agreements and Forms Applicable: Entire Certified Service Area

Page 1 of 6

6.3.4 Discretionary Service Agreement

This Discretionary Service Agreement ("Agreement") is made and entered into this <u>lst</u> day of <u>October</u>. 2024 (the "Effective Date"), by **Oncor Electric Delivery Company**, LLC ("Company"), and **Pine Hill Farms Landfill TX**, LP, a Delaware limited partnership ("Customer"), each hereinafter sometimes referred to individually as "Party" or both referred to collectively as the "Parties". In consideration of the mutual covenants set forth herein, the Parties agree as follows:

1. Discretionary Services to be provided -- Company agrees to provide, and Customer agrees to pay for, the following discretionary services (the "Discretionary Services") in accordance with this Agreement.

The "Customer" has requested to relocate/modify the existing 138 kV Single circuit transmission line section between structures 20/8 to 21/2 on the Stryker Creek Switch – Elkton 138 kV Line for the purpose of constructing a proposed landfill expansion within Oncor's existing easement. The proposed relocation will be approximately 0.63 miles of new Double circuit 138 kV construction utilizing Steel Poles. The preliminary scope of work can be seen in <u>Exhibit A</u> attached to this Agreement and is subject to change based on the final design. This Agreement includes the estimated cost to engineer, design, survey, procure material, and install the proposed structures, conductors and hardware needed for the relocation. The existing transmission line is currently located within the boundaries of the proposed customer's development in Cherokee County, TX at approximate GPS coordinates of 32.00305065, -95.26234243.

2. Nature of Service and Company's Retail Delivery Service Tariff -- Any Discretionary Services covered by this Agreement will be provided by Company, and accepted by Customer, in accordance with applicable Public Utility Commission of Texas ("PUCT") Substantive Rules and Company's Tariff for Retail Delivery Service (including the Service Regulations contained therein), as it may from time to time be fixed and approved by the PUCT ("Company's Retail Delivery Tariff"). During the term of this Agreement, Company is entitled to discontinue service, interrupt service, or refuse service initiation requests under this Agreement in accordance with applicable PUCT Substantive Rules and Company's Retail Delivery Tariff. Company's Retail Delivery Tariff is part of this Agreement to the same extent as if fully set out herein. Unless otherwise expressly stated in this Agreement, the terms used herein have the meanings ascribed thereto in Company's Retail Delivery Tariff.

3. Discretionary Service Charges -- Charges for any Discretionary Services covered by this Agreement are determined in accordance with Company's Retail Delivery Tariff. Company and Customer agree to comply with PUCT or court orders concerning discretionary service charges.

4. Term and Termination -- This Agreement becomes effective <u>on execution by both parties</u> and continues in effect until completion of Discretionary Services. Termination of this Agreement does not relieve Company or Customer of any obligation accrued or accruing prior to termination.

5. No Other Obligations -- This Agreement does not obligate Company to provide, or entitle Customer to receive, any service not expressly provided for herein. Customer is responsible for making the arrangements necessary for it to receive any further services that it may desire from Company or any third party.

6.Governing Law and Regulatory Authority -- This Agreement was executed in the State of Texas and must in all respects be governed by, interpreted, construed, and enforced in accordance with the laws thereof. This Agreement is subject to all valid, applicable federal, state, and local laws, ordinances, and rules and regulations of duly constituted regulatory authorities having jurisdiction.

7. Amendment --This Agreement may be amended only upon mutual agreement of the Parties, which amendment will not be effective until reduced to writing and executed by the Parties. But changes to applicable PUCT Substantive Rules and Company's Retail Delivery Tariff are applicable to this Agreement upon their effective date and do not require an amendment of this Agreement.

8. Entirety of Agreement and Prior Agreements Superseded -- This Agreement, including all attached Exhibits, which are expressly made a part hereof for all purposes, constitutes the entire agreement and understanding between the Parties with regard to the Discretionary Services expressly provided for in this Agreement. The Parties are not bound by or liable for any statement, representation, promise, inducement, understanding, or undertaking of any kind or nature (whether written or oral) with regard to the subject matter hereof not set forth or provided for herein. This Agreement replaces all prior agreements and undertakings, oral or written, between the Parties with regard to the subject matter hereof, and all such agreements and undertakings are agreed by the Parties to no longer be of any force or effect. It is expressly acknowledged that the Parties may have other agreements covering other services not expressly provided for herein, which agreements are unaffected by this Agreement.

9. Notices -- Notices given under this Agreement are deemed to have been duly delivered if hand delivered or sent by United States certified mail, return receipt requested, postage prepaid, to:

Page 2 of 6

6.3 Agreements and Forms Applicable: Entire Certified Service Area

(a) If to Company:

Oncor Electric Delivery Company Attn: Matt Ponce 777 Main Street Suite 1434 Ft. Worth, Texas 7610

(b) If to Customer:

Pine Hill Farms Landfill TX, LP 13630 Fondren Road Houston, TX 77085 Attn: General Manager

With a copy to:

Pine Hill Farms Landfill TX, LP c/o Republic Services, Inc. 18500 N Allied Way Phoenix, AZ 85054 Attn: Chief Legal Officer

And a copy to:

Spotts Fain, PC 411 E Franklin St, Suite 600 Richmond, VA 23219 Attn: David A. Reed, Esg.

The above-listed names, titles, and addresses of either Party may be changed by written notification to the other.

10. Invoicing and Payment - Invoices for any Discretionary Services covered by this Agreement will be mailed by Company to the following address (or such other address directed in writing by Customer), unless Customer is capable of receiving electronic invoicing from Company, in which case Company is entitled to transmit electronic invoices to Customer.

> Pine Hill Farms Landfill TX, LP Attn: Austin Sparks P.O. Box 440 Jacksonville, TX 75766

If Company transmits electronic invoices to Customer, Customer must make payment to Company by electronic funds transfer. Electronic invoicing and payment by electronic funds transfer will be conducted in accordance with Company's standard procedures. Company must receive payment by the due date specified on the invoice. If payment is not received by the Company by the due date shown on the invoice, a late fee will be calculated and added to the unpaid balance until the entire invoice is paid. The late fee will be 5% of the unpaid balance per invoice period.

11. No Waiver -- The failure of a Party to this Agreement to insist, on any occasion, upon strict performance of any provision of this Agreement will not be considered to waive the obligations, rights, or duties imposed upon the Parties.

12. Taxes -- All present or future federal, state, municipal, or other lawful taxes (other than federal income taxes) applicable by reason of any service performed by Company, or any compensation paid to Company, hereunder must be paid by Customer.

13. Headings -- The descriptive headings of the various articles and sections of this Agreement have been inserted for convenience of reference only and are to be afforded no significance in the interpretation or construction of this Agreement.

14. Multiple Counterparts -- This Agreement may be executed in two or more counterparts, each of which is deemed an original but all constitute one and the same instrument.

15. Other Terms and Conditions - NOTWITHSTANDING ANYTHING ELSE CONTAINED IN THIS AGREEMENT TO THE CONTRARY, THE PARTIES HEREBY AGREE THAT: Pursuant to the conditions of this Agreement, the Company has agreed to relocate/reroute Company's transmission line at Customer's expense. Prior to the commencement of the Construction Phase (defined below), Customer will obtain from the City of Jacksonville ("City"), at no cost to Company, a

e 3 of 6

| 6.3 Agreements and Forms | |
|--|-------------------------------|
| Applicable: Entire Certified Service Area | Page 2 of 6 |
| right-of-way for the benefit of Company on a form of easement acceptable to Company, shall relocate the transmission line. | to which right-of-way Company |

15.1 Relocation of Existing Company Transmission Line. The relocation described in Section 1 above and shown on Exhibit A is further described as the relocation (the "Relocation") of Company's existing 138 kV Single circuit transmission line section (the "Existing Line") located at 440 Heath Lane, Jacksonville, Texas, within the boundaries of the Royal Oaks Landfill operated by Customer and owned by the City.

15.2 Relocation Costs.

(c)

(d)

The Relocation will be comprised of two separately funded phases designated as the Design Phase (a) and the Construction Phase. The "Design Phase" is the preparation of a scope of work and engineering plans for the Relocation and will include preparing all designs necessary to complete the Relocation. The "Construction Phase" is the ordering of all materials necessary to complete the Relocation and the actual undertaking of the Relocation.

The purpose of the Relocation is to enable Customer to construct a proposed landfill expansion within (b)the footprint of an existing transmission line easement, which easement is recorded in the Land Records of Cherokee County, Texas (the "LRCCT"), in Volume 354, Page 418 (the "Existing Easement"). The Existing Easement was granted to Texas Power & Light Company, to which Company represents it is the legal successor in interest. Prior to Company's commencement of the Construction Phase of the Relocation, Customer shall cause the City to grant a new easement for the relocated portion of the Existing Line, the location of which New Easement is approximately shown on Exhibit A hereto (the "New Easement"). Company shall cause the location of the New Easement to be surveyed during the Design Phase. Prior to the granting of the New Easement by City, Company shall provide the survey and legal description of the location of the New Easement to be attached to the New Easement as Exhibits A and B thereof. Within 60 days of the completion of the Construction Phase, Company will cause that portion of the Existing Easement on which the relocated portion of the Existing Line was located to be released of record in the LRCCT.

The costs for the Design Phase are estimated to be

performance of the Design Phase of this Agreement, Customer shall pay the Design Cost Estimate to Company upon full execution of this Agreement. Within 30 days of satisfactory completion of the Design Phase, Company shall provide Customer an accounting (the "Design Cost Accounting") of the actual costs for the tasks accomplished by Company during the Design Phase (the " Design Actual Costs"). The Design Actual Costs may be more or less than the Design Cost Estimate. If Customer does not elect to proceed to the Construction Phase of the Relocation, and the Design Cost Accounting indicates that the Design Cost Estimate exceeds the Design Actual Costs (a "Design Cost Overage"), Company shall refund the Design Cost Overage to Customer within 60 days of presenting the Design Cost Accounting to Customer. If Customer does not elect to proceed to the Construction Phase of the Relocation, and the Design Actual Costs exceed the Design Estimate (a "Design Cost Shortfall"), Customer shall pay the Design Cost Shortall to Company within 60 days of Customer's receipt of the Design Cost Accounting. If Customer elects to proceed to the Construction Phase, and the Design Cost Accounting indicates a Design Cost Overage, Company will apply the Design Cost Overage to reduce the Construction Cost Estimate. If Customer elects to proceed to the Construction Phase, and the Design Cost Accounting indicates a Design Cost Shortfall, the Design Cost Shortfall will be added to the Construction Cost Estimate (defined below).

The costs for the Construction Phase are estimated to be

(the "Construction Cost Estimate"), which amount shall be increased by the amount of any Design Cost Shortfall. Customer shall pay the Construction Cost Estimate to Company simultaneously with Customer's delivery of written notice to the Company that Customer elects to proceed to the Construction Phase. Within 30 days of satisfactory completion of the Construction Phase, Company shall provide Customer an accounting of the actual costs (the "Construction Actual Costs") for the tasks accomplished during the Construction Phase (the "Construction Cost Accounting"), which Construction Actual Costs may be more or less than the Construction Cost Estimate. If the Construction Cost Accounting indicates that the Construction Cost Estimate exceeds the Construction Actual Costs, Company shall refund any excess funds to Customer within 60 days of presenting the Construction Cost Accounting to Customer. If the Construction Cost Accounting indicates the Construction Actual Costs exceed the Construction Cost Estimate, Customer shall reimburse Company for the difference between the Construction Actual Costs and the Construction Cost Estimate within 60 days of Customer's receipt of the Construction Cost Accounting.

The Design Actual Costs and the Construction Actual Costs are referred to collectively herein as the (e) The Design Actual Costs and the Construction Actual Costs are referred to collectively herein as the "Total Costs". The term "Total Costs" shall include reasonable material costs, labor costs, taxes and tax treatment (including income, sales, or other), design, and construction contractor costs, transportation costs, overheads, purchasing and storage expenses, and surveying costs, as well as reasonable costs, including attorney's fees, if applicable, which may be incurred in the process of obtaining final unappealable PUCT approval for Relocation.

15.3 Completion Date. Customer acknowledges and agrees that certain work to be performed hereunder will require the Company to temporarily remove equipment from service in order to perform the Relocation. Such activities will require the Company to request a Planned Outage. Customer acknowledges that the Electric Reliability Council of Texas

6.3 Agreements and Forms

Applicable: Entire Certified Service Area

Page 4 of 6

("ERCOT") has sole authority for scheduling such Planned Outage. Further, Customer acknowledges that the approval or issuance of any such Planned Outage is subject to the authority of ERCOT to cancel or reschedule such Planned Outages and to the Company's regulatory obligations and service responsibilities as an electric utility.

Customer acknowledges that material lead times may be 52 weeks or longer, and Company's ability to complete the services shall be subject to such lead times. Company shall in good faith attempt to complete the services as soon as reasonably possible, but does not commit to a date certain for such completion.

15.4 Miscellaneous.

(a) The terms of this Agreement shall be binding on and inure to the benefit of the parties hereto and their successors and assigns. Notwithstanding the foregoing, Customer shall not assign this Agreement without Company's prior written consent.

(b) If any term or other provision of this Agreement is deemed invalid, illegal, or incapable of being enforced by any rule of law or public policy, all other conditions and provisions of this Agreement shall remain in full force and effect. Upon such determination, the parties shall negotiate in good faith to modify this Agreement so as to give effect to the original intent of the parties, as closely as possible and in an acceptable manner, to the end that the transactions contemplated hereby are fulfilled to the extent possible.

(c) A telecopy, electronic, or "PDF" signature of any Party shall be considered to have the same binding legal effect as an original signature.

(d) This Agreement was fully negotiated by the Parties with each having been afforded the right to legal counsel and shall be deemed to have been drafted by both Parties.

[Signatures appear on the page following.]

6.3 Agreements and Forms Applicable: Entire Certified Service Area

Page 5 of 6

IN WITNESS WHEREOF, the Parties have caused this Agreement to be signed by their respective duly authorized representatives, effective as of the Effective Date.

Oncor Electric Delivery Company LLC

---- DocuSigned by:

att Ponce D45247BC3452489...

Name: <u>Matthew Ponce</u>

Title: Senior Director of Transmission Engineering

Date: 9/30/2024

Pine Hill Farms Landfill TX, LP, a Delaware limited partnership

By: Allied Waste Landfill Holdings, Inc., a Delaware corporation, its General Partner

Yusser Brenes By:

Yasser Brennes, Area President



ROYAL OAKS LANDFILL CHEROKEE COUNTY, TEXAS TCEQ PERMIT NO. MSW-1614B

MAJOR PERMIT AMENDMENT APPLICATION

PART III – SITE DEVELOPMENT PLAN APPENDIX IIIA LANDFILL UNIT DESIGN INFORMATION

Prepared for

Pine Hill Farms Landfill TX, LP

May 2024

Revised October 2024



Prepared by

Weaver Consultants Group, LLC

TBPE Registration No. F-3727 6420 Southwest Boulevard, Suite 206 Fort Worth, Texas 76109 817-735-9770

WCG Project No. 0120-076-11-106

This document is intended for permitting purposes only.

3 EXISTING LINER SYSTEMS

Cells 1, 2, 3, 4, 5, 6, 7, 8, and 9 were constructed to Subtitle D standards under Permit No. MSW-1614A. The existing composite liner systems for the developed Subtitle D sectors are described in Table IIIA-2.

| Cells 1, 2, 3, 4, 5, 6, 7, 8, and 9 |
|--|
| 24-inch-thick Soil Protective Cover |
| Drainage Geocomposite Leachate Collection Layer |
| 60-mil HDPE Geomembrane Liner |
| Geosynthetic Clay Liner (C GCL) |

Table IIIA-2 Existing Liner System Components

The existing composite liner systems for Cells 1, 2, 3, 4, 5, 6, 7, 8, and 9 include a hydrostatic pressure relief system, as discussed in the LQCP (Appendix IIID).

The impact of differential settlement on the performance of the currently constructed leachate collection systems in the Subtitle D areas is analyzed in Appendix IIIE-B and summarized in Table IIIA-3.

The existing pre-Subtitle D liner areas include Block A, which is approximately 13.8 acres, and Block B, which is approximately 1.4 acres. Since 1970, the Texas State Board of Health MSW Regulations required that a natural or artificial barrier be in place, which most commonly was the placement of a 3-foot-thick compacted clay or in-situ clay liner ($k \le 1x10^{-7}$ cm/s). The Texas Department of Health (TDH) permit for the site was issued in June 1983 (Permit No. 1614). Detailed liner requirements were listed in this permit for either a 3-foot-thick low-permeability compacted clay or in-situ liner ($k \le 1x10^{-7}$ cm/s).

ROYAL OAKS LANDFILL CHEROKEE COUNTY, TEXAS TCEQ PERMIT NO. MSW-1614B

MAJOR PERMIT AMENDMENT APPLICATION

PART III – SITE DEVELOPMENT PLAN APPENDIX IIIA-A LINER AND FINAL COVER SYSTEM DETAILS

Prepared for

Pine Hill Farms Landfill TX, LP

May 2024

Revised October 2024



Prepared by

Weaver Consultants Group, LLC

TBPE Registration No. F-3727 6420 Southwest Boulevard, Suite 206 Fort Worth, Texas 76109 817-735-9770

WCG Project No. 0120-076-11-106

This document is intended for permitting purposes only.



| 0 200 SCALE IN LE | 400 FEET GEND PERMIT BOUNDARY LIMIT OF WASTE CELL BOUNDARY EXISTING EASEMENT | JASON E. EDWARDS 99336 VCENSED VAL 10/02/2024 | | |
|---|--|---|--|--|
| | PROPOSED EASEMEN | NT | | |
| 10500 ←610 ←516 ←630 ← − | SITE GRID EXISTING CONTOUR TOP OF LINER CON AS-BUILT TOP OF | (SEE NOTE 1) FOUR LINER | | |
| x660 | APPROXIMATE TOP LINER (SEE NOTE & CHANNEL CENTERLIN LEACHATE COLLECT LEACHATE COLLECTION LEACHATE RISER PIE | OF PRE-SUBTITLE D 3) IE ON PIPE DN SUMP PF | | |
| MW-10 | | | | |
| ∲ ↓ MW−D1 | EXISTING GROUNDWA | TER MONITORING WELL | | |
| . OW−D7 | PROPOSED GROUND | WATER MONITORING WELL | | |
| ⊕1 | PROPOSED OBSERVA | TION WELL | | |
| ⊙ GP-10A | EXISTING GAS PROB | E | | |
| PROPOSED GAS PROBE INDICATES REVISION (SEE LIST OF REVISIONS) | | | | |
| CONTOURS DEVELOPED BY FIRMATEK FROM AERIAL APHY FLOWN NOVEMBER 10, 2022. THE GRID SYSTEM IS N A SITE GRID SYSTEM. ELEVATIONS ARE BASED ON NAVD 88. ON SLOPES AND SLOPES OUTSIDE THE LIMIT OF WASTE (e.g., S) ARE TYPICALLY 3H:1V. O APPENDIX IIIC FOR LEACHATE STORAGE INFORMATION. N OF DEEPEST EXCAVATION AT THE LCS SUMP IS 504.0 FT-MSL. E OF SITE DEVELOPMENT IS PROVIDED IN PARTS I/II, (1/IA DRAWINGS I/IIA.4 THROUGH 1/IIA.7. O APPENDIX IIIF FOR DRAINAGE DESIGN INFORMATION. 80UNDARY WAS REPRODUCED FROM LEGAL DESCRIPTION 0 BY STANGER SURVEYING COMPANY, DATED APRIL 1995. PRE-SUBTITLE D LINER ARE APPROXIMATE AND WAS ICPED FROM CROSS-SECTIONS INCLUDED IN THE 1983 APPLICATION PREPARED BY STOKES & ASSOCIATES. | | | | |
| PREPAR HILL FARMS REVIS | LANDFILL TX, LP | MAJOR PERMIT AMENDMENT TOP OF LINER PLAN | | |
| DATE 9/2024 | DESCRIPTION SEE LIST OF REVISIONS | ROYAL OAKS LANDFILL CHEROKEE COUNTY, TEXAS | | |

WWW.WCGRP.COM

DRAWING A.1



| I | SATE OF TELL | | |
|--|---|--|--|
| | JASON E. EDWARDS | | |
| 200 | | | |
| SCALE IN F | TEET DNAL EN T | | |
| LEG | END MARKE | | |
| | PERMIT BOUNDARY 10/02/2024 | | |
| | LIMIT OF WASTE | | |
| | EXISTING EASEMENT | | |
| 10500 | | | |
| 610 | EXISTING CONTOUR (SEE NOTE 1) | | |
| | PROPOSED FINAL COVER CONTOUR | | |
| | DRAINAGE SWALE | | |
| 100222000 | DRAINAGE LETDOWN | | |
| | CHANNEL CENTERLINE | | |
| ◆ ^{MW-10} | EXISTING GROUNDWATER MONITORING WELL | | |
| ♦ ^{MW−D1} | PROPOSED GROUNDWATER MONITORING WELL | | |
| ⊕ ^{OW−D7} | PROPOSED OBSERVATION WELL | | |
| ⊛ ^{GP-1} | EXISTING GAS PROBE | | |
| ⊚ ^{GP-10A} | PROPOSED GAS PROBE | | |
| \triangle | INDICATES REVISION (SEE LIST OF REVISIONS) | | |
| <u>S:</u> | | | |
| (ISTING CONTO HOTOGRAPHY F ASED ON A SI | IURS DEVELOPED BY FIRMATEK FROM AERIAL FLOWN NOVEMBER 10, 2022. THE GRID SYSTEM IS TE GRID SYSTEM. ELEVATIONS ARE BASED ON NAVD 88. | | |
| EFER TO APPENDIX IIIF—SURFACE WATER DRAINAGE PLAN FOR RAINAGE DESIGN INFORMATION. | | | |

3. MAXIMUM FINAL COVER ELEVATION IS 776.5 FT-MSL. MAXIMUM TOP OF WASTE ELEVATION IS 773.0 FT-MSL.

4. TYPICAL SIDESLOPES ARE 4H:1V. TYPICAL TOPSLOPE IS 4%.

5. PERMIT BOUNDARY WAS REPRODUCED FROM LEGAL DESCRIPTION PROVIDED BY STANGER SURVEYING COMPANY, DATED APRIL 1995.

| PREPARED FOR | MAJOR PERMIT AMENDMENT LANDFILL COMPLETION PLAN ROYAL OAKS LANDFILL CHEROKEE COUNTY, TEXAS | |
|------------------------------|---|-------------|
| IILL FARMS LANDFILL TX, LP | | |
| REVISIONS | | |
| DATE DESCRIPTION | | |
| 9/2024 SEE LIST OF REVISIONS | | |
| | WWW.WCGRP.COM | DRAWING A.2 |
| | | |



| MAJOR PERMIT AMENDMENT COMPOSITE FINAL COVER DETAIL | MAJOR PE COMPOSITE F | FILL TX, LP | ED FOR | PREPARI | ILL |
|--|-------------------------|-------------|--------|---------|-----|
| | | REVISIONS | | | |
| | RIPTION | DESCRIPTION | | DATE | |
| | | | | | |
| CHEROKEE COUNTI, TEXAS | | | | | |
| - www.wcgrp.com DRAWING A.10 | WWW.WCGRP.COM | | | | |
| | | | | | |

(TYP) INDICATES REVISION (SEE LIST OF REVISIONS) \triangle

1. UPDATED THICKNESS CALLOUTS FOR CONSISTENCY.

LIST OF REVISIONS:

1' (TYP)

<u>–⁄1\</u> (TYP) (TYP)





| | 10/02/2024 | |
|-----------------------------|---|--------------|
| PREPARED FOR | MAJOR PERMIT AMENDMENT COMPOSITE FINAL COVER DETAILS | |
| ILL FARMS LANDFILL TX, LP | | |
| REVISIONS | | |
| DATE DESCRIPTION | ROYAL OAKS LANDFILL CHEROKEE COUNTY, TEXAS | |
| /2024 SEE LIST OF REVISIONS | | |
| | | |
| | WWW.WCGRP.COM | DRAWING A.11 |

JASON E. EDWAR

99336

ROYAL OAKS LANDFILL CHEROKEE COUNTY, TEXAS TCEQ PERMIT NO. MSW-1614B

MAJOR PERMIT AMENDMENT APPLICATION

PART III – SITE DEVELOPMENT PLAN APPENDIX IIIA-B LANDFILL UNIT CROSS SECTIONS

Prepared for

Pine Hill Farms Landfill TX, LP

May 2024

Revised October 2024



Prepared by

Weaver Consultants Group, LLC TBPE Registration No. F-3727 6420 Southwest Boulevard, Suite 206 Fort Worth, Texas 76109 817-735-9770

WCG Project No. 0120-076-11-106

This document is intended for permitting purposes only.

CONTENTS





| | ATE OF TELA |
|-----------------------------|---|
| | |
| Ň | JASON E. EDWARDS |
| L | 99336 |
| 200 | 400 |
| SCALE IN F | TEET TO TOWALL EN SAN |
| LEG | END 10/02/2024 |
| | PERMIT BOUNDARY |
| | PERMITTED LIMIT OF WASTE |
| | NEWLY PERMITTED AIRSPACE LIMIT OF WASTE |
| | CELL BOUNDARY |
| · · <u> </u> | EXISTING EASEMENT |
| _ · _ · _ · _ · _ | PROPOSED EASEMENT |
| 0500 | SITE GRID |
| 610 | EXISTING CONTOUR (SEE NOTE 1) |
| ● ^{B−3} (660.0) | PREVIOUSLY ADVANCED BOREHOLE LOCATION |
| ♦ MW-1 (661.0) | FORMER GROUNDWATER MONITOR WELL LOCATION |
| ₩ GP-8 (666.0) | FORMER GAS MONITOR PROBE LOCATION |
| ♦ MW-25 (663.2) | EXISTING GROUNDWATER MONITOR WELL LOCATION |
| GP-1 (686.0) | EXISTING GAS MONITOR PROBE LOCATION |
| PWCG-1A (618.3) | 2023 DEEP EXPANSION BOREHOLE WITH PIEZOMETER |
| ▼ PWCG-1B (620.2) | 2023 SHALLOW EXPANSION BOREHOLE WITH PIEZOMETER |
| WCG-10 (632.2) | 2023 EXPANSION BOREHOLE |
| \triangle | INDICATES REVISION (SEE LIST OF REVISIONS) |

1. EXISTING CONTOURS DEVELOPED BY FIRMATEK FROM AERIAL PHOTOGRAPHY FLOWN NOVEMBER 10, 2022. THE GRID SYSTEM IS BASED ON A SITE GRID SYSTEM. ELEVATIONS ARE BASED ON NAVD 88.

2. PERMIT BOUNDARY WAS REPRODUCED FROM LEGAL DESCRIPTION PROVIDED BY STANGER SURVEYING COMPANY, DATED APRIL 1995.

| PREPARED FOR | | MAJOR PERMIT AMENDMENT TYPICAL SECTION LOCATIONS | |
|---------------------------|-----------------------|---|-----------------|
| HLL FARMS LANDFILL TX, LP | | | |
| REVISIONS | | | |
| DATE | DESCRIPTION | ROYAL OAKS LANDFILL | |
| 9/2024 | SEE LIST OF REVISIONS | | |
| | | ONERORE | E GOOMII, TEXAS |
| | | WWW.WCGRP.COM | DRAWING B.1 |



<u>??</u>

| | ļ | | جوم کی در ۲۰۰۰ ۲۰۰۰ | ATE OF TELES |
|--|---|--|--|-------------------|
| | N | | 3 .* | ····· |
| | | | JAS | ON E. EDWARDS |
| | 200 | 400 | <u> ?</u> | 99336 |
|) | | | 1 | (Inclused |
| | ALL | | 100 | SADAIAL ENCA |
| | LEC | <u>JEND</u> | | Minter |
| | - | PERMIT BOUNDART | | |
| · | | LIMIT OF WASTE | | 10/02/2024 |
| | | CELL BOUNDART | | |
| | | DEADAGED FASEMENT | ЧT | |
| | | PRUPUSED EASEMEN | | |
| 0500 | | SITE GRID | | |
| -610 | | EXISTING CONTOUR | (SEE NOTE 1) | |
| 516 | | TOP OF LINER CONT | TOUR | |
| —630 |) | AS-BUILT TOP OF | LINER | |
| X660 |) | APPROXIMATE TOP LINER (SEE NOTE & | OF PRE-SUBTITLE D 3) | |
| | | CHANNEL CENTERLIN | ΙE | |
| | | LEACHATE COLLECT | ION PIPE | |
| | | LEACHATE COLLECTIO | ON SUMP | |
| | • | LEACHATE RISER PIF | PΕ | |
| | W-10 | EXISTING GROUNDWA | TER MONITORING WELL | |
| | W-01 | PROPOSED GROUND | WATER MONITORING WELI | L |
| ∲ 0 | W-D7 | PROPOSED OBSERVA | ATION WELL | |
| ⊛ ^G | P-1 | -1 EXISTING GAS PROBE | | |
| ⊙G | \odot GP ^{-10A} PROPOSED GAS PROBE | | | |
| 4 | | INDICATES REVISION | | |
| <u> </u> | • | (SEE LIST OF REVISI | ONS) | |
| 5: | | | | |
| STING OTOGRA | CONTO APHY F N A SIT | URS DEVELOPED BY LOWN NOVEMBER 10 TE GRID SYSTEM ELE | FIRMATEK FROM AERIAL , 2022. THE GRID SYSTI VATIONS ARE BASED ON | EM IS NAVD 88. |
| CAVATIO | ON SLO | PES AND SLOPES OU | JTSIDE THE LIMIT OF WA | ASTE (e.g., |
| ANNEL | S) ARE | TYPICALLY 3H:1V. | | |
| | | NDIX IIIC FOR LEACH | ATE STORAGE INFORMATI | ON. |
| | | EEPEST EXCAVATION | AI THE LUS SUMP IS J | 004.0 FI-MSL. |
| QUENU PENDIX | E UF 3 (I/IIA 0 APPF | JITE DEVELOPMENT IS DRAWINGS I/IIA.4 THF | PROVIDED IN PARIS 1/ ROUGH 1/11A.7. | ́/II, |
| RMIT E | | RY WAS REPRODUCE | FROM LEGAL DESCRIPT | N. TION |
| OVIDED | BY ST | ANGER SURVEYING C | OMPANY, DATED APRIL | 1995. |
| P OF PRE-SUBTITLE D LINER ARE APPROXIMATE AND WAS PRODUCED FROM CROSS-SECTIONS INCLUDED IN THE 1983 RMIT APPLICATION PREPARED BY STOKES & ASSOCIATES | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | PRFPARF | | I | |
| F | ADMS | | MAJOR PE | RMIT AMENDMENT |
| TOP OF LINER PLAN | | | F LINER PLAN | |
| DATE | REVISIO | DESCRIPTION | | |
| /2024 | s | SEE LIST OF REVISIONS | ROYAL CHEROKE | OAKS LANDFILL |
| | | | OHENONE | E COUNT, TEARS |
| | | | WWW.WCGRP.COM | DRAWING B.2 |


| | ž | JASON E. EDWARDS 99336 |
|--------------|--|--|
| | 0 200 | 400 CENSE |
| | SCALE IN F | TEET TO ANAL |
| | LEG | |
| | | PERMIT BOUNDARY 10/02/2024 |
| | | LIMIT OF WASTE |
| \leftarrow | <u>E 10500</u> | SITE GRID |
| ۲ | 610 | EXISTING CONTOUR (SEE NOTE 1) |
| | · · | EXISTING EASEMENT |
| | | PROPOSED EASEMENT |
| | 624 | PROPOSED FINAL COVER CONTOUR |
| | | DRAINAGE SWALE |
| | Contraction of the second | DRAINAGE LETDOWN |
| | | CHANNEL CENTERLINE |
| | ◆ ^{MW-10} | EXISTING GROUNDWATER MONITORING WELL |
| | ♦ ^{MW-D1} | PROPOSED GROUNDWATER MONITORING WELL |
| | ⊕ ^{OW−D7} | PROPOSED OBSERVATION WELL |
| | ⊙ ^{GP-1} | EXISTING GAS PROBE |
| | ⊚ ^{GP-10A} | PROPOSED GAS PROBE |
| | \triangle | INDICATES REVISION (SEE LIST OF REVISIONS) |
| N | OTES: | |
| 1. | EXISTING CONTO PHOTOGRAPHY F BASED ON A SI | URS DEVELOPED BY FIRMATEK FROM AERIAL FLOWN NOVEMBER 10, 2022. THE GRID SYSTEM IS TE GRID SYSTEM. ELEVATIONS ARE BASED ON NAVD 88. |
| 2 | . REFER TO APPE DRAINAGE DESIG | NDIX IIIF-SURFACE WATER DRAINAGE PLAN FOR IN INFORMATION. |
| 3. | . MAXIMUM FINAL MAXIMUM TOP C | COVER ELEVATION IS 776.5 FT-MSL. DF WASTE ELEVATION IS 773.0 FT-MSL. |
| 4. | . TYPICAL SIDESL | OPES ARE 4H:1V. TYPICAL TOPSLOPE IS 4%. |

| PREPARED FOR IILL FARMS LANDFILL TX, LP | | MAJOR PERMIT AMENDMENT LANDFILL COMPLETION PLAN | |
|--|-----------------------|--|---------------|
| REVISIONS | | | |
| DATE | DESCRIPTION | | |
| /2024 | SEE LIST OF REVISIONS | | CARS LANDFILL |
| | | CHEROREE COUNTI, TEXAS | |
| | | WWW.WCGRP.COM | DRAWING B.3 |
| | | | |





| | DRAFT JR FOR PERMITTING PURPOSES ONLY ISSUED FOR CONSTRUCTION | | | PINE HIL | |
|---|---|------|---------------------------------|----------|-------|
| | DATE: 05/2024 FILE: 0120-76-11 | 2002 | DRAWN BY: RAA DESIGN BY: SSM | NO. | DATE |
| | CAD: B.4-B.9-SECTIONS | | REVIEWED BY: JAE | 1 | 09/20 |
| 5 | VVeaver Lonsultants Group | | | | |
| | | | | | |

ROYAL OAKS LANDFILL CHEROKEE COUNTY, TEXAS TCEQ PERMIT NO. MSW-1614B

MAJOR PERMIT AMENDMENT APPLICATION

VOLUME 3 OF 7

Prepared for

Pine Hill Farms Landfill TX, LP

May 2024

Revised October 2024



10/02/2024

Weaver Consultants Group, LLC

TBPE Registration No. F-3727 6420 Southwest Boulevard, Suite 206 Fort Worth, Texas 76109 817-735-9770

Project No. 0120-076-11-106

This document is intended for permitting purposes only.

ROYAL OAKS LANDFILL CHEROKEE COUNTY, TEXAS TCEQ PERMIT NO. MSW-1614B

MAJOR PERMIT AMENDMENT APPLICATION

PART III – SITE DEVELOPMENT PLAN APPENDIX IIIB ALTERNATIVE LINER POINT OF COMPLIANCE DEMONSTRATION

Prepared for

Pine Hill Farms Landfill TX, LP

May 2024

Revised October 2024



Weaver Consultants Group, LLC

TBPE Registration No. F-3727 6420 Southwest Boulevard, Suite 206 Fort Worth, Texas 76109 817-735-9770

WCG Project No. 0120-076-11-106

This document is intended for permitting purposes only.



| 0 200 400 SCALE IN FEET LEGEND | NEVZAT TURAN 84059 10/02/2024 | | |
|--|--|--|--|
| PERMIT BOUNDA LIMIT OF WASTE CELL BOUNDAR CELL BOUNDAR EXISTING EASEM PROPOSED EAS D500 SITE GRID EXISTING CONTO 610 EXISTING CONTO 624 TOP OF LINER APPROXIMATE T LINER (SEE NO CHANNEL CENTE LEACHATE COLL LEACHATE COLL LEACHATE COLL EXISTING GROUN MW−D1 PROPOSED GROUN MW−D1 PROPOSED GROUN MW−D7 PROPOSED OBSI © GP−10A PROPOSED GAS 3H: 1V MUCATES REVIS | RY ENT EMENT UR (SEE NOTE 1) CONTOUR OP OF PRE-SUBTITLE D TE 8) RLINE ECTION PIPE ECTION SUMP PIPE DWATER MONITORING WELL JNDWATER MONITORING WELL ERVATION WELL ROBE PROBE | | |
| S: ISTING CONTOURS DEVELOPED BY FIRMATEK FROM AERIAL IOTOGRAPHY FLOWN NOVEMBER 10, 2022. THE GRID SYSTEM IS SED ON A SITE GRID SYSTEM. ELEVATIONS ARE BASED ON NAVD 88. ICAVATION SLOPES AND SLOPES OUTSIDE THE LIMIT OF WASTE (e.g., IANNELS) ARE TYPICALLY 3H:1V. FER TO APPENDIX IIIC FOR LEACHATE STORAGE INFORMATION. EVATION OF DEEPEST EXCAVATION AT THE LCS SUMP IS 504.0 FT-MSL. IQUENCE OF SITE DEVELOPMENT IS PROVIDED IN PARTS I/II, PPENDIX I/IIA DRAWINGS I/IIA.4 THROUGH I/IIA.8. IFER TO APPENDIX IIIF FOR DRAINAGE DESIGN INFORMATION. IFER TO APPENDIX IIIF SON DUCED FROM LEGAL DESCRIPTION ISOVIDED BY STANGER SURVEYING COMPANY, DATED APRIL 1995. IPP OF PRE-SUBTITLE D LINER ARE APPROXIMATE AND WAS IPRODUCED FROM CROSS-SECTIONS INCLUDED IN THE 1983 IFMIT APPLICATION PREPARED BY STOKES & ASSOCIATES. | | | |
| PREPARED FOR ILL FARMS LANDFILL TX, LP REVISIONS MAJOR PERMIT AMENDMENT TOP OF LINER PLAN ROYAL OAKS LANDFILL CHEROKEE COUNTY, TEXAS | | | |
| | | | |

WWW.WCGRP.COM

FIGURE 1-1



<u>?</u>? PL OF

| 0 200 SCALE IN | 400 FEET | NEVZAT TURAN 84059 | | |
|---|---|--|--|--|
| LEC | GEND | 10/02/2024 | | |
| | | 10/02/2024 | | |
| | LINIT OF WARTE | | | |
| | LIMIT OF WASTE | | | |
| | CELL BOUNDARY | | | |
| - · · | EXISTING EASEMENT | _ | | |
| | PROPOSED EASEMEN | NT | | |
| 10500 | SITE GRID | | | |
| 610 | EXISTING CONTOUR | (SEE NOTE 1) | | |
| 624 | TOP OF LINER CON | TOUR | | |
| | APPROXIMATE TOP | OF PRE-SUBTITLE D | | |
| X660 | LINER (SEE NOTE & | 3) | | |
| | CHANNEL CENTERLIN | IE | | |
| | LEACHATE COLLECT | ON PIPE | | |
| | LEACHATE COLLECTION | ON SUMP | | |
| • | LEACHATE RISER PIF | PE | | |
| -456 | GROUNDWATER POTE CONTOUR IN FT-MS | ENTIOMETRIC SURFACE L (SEE NOTE 9) | | |
| ₩W-10 | ◆ ^{MW-10} EXISTING GROUNDWATER MONITORING WELL | | | |
| ♦ ^{MW-D1} | ♦ MW-D1 PROPOSED GROUNDWATER MONITORING WELL | | | |
| ↔ OW-D7 PROPOSED OBSERVATION WELL | | | | |
| • GP−1 | ● ^{GP-1} EXISTING GAS PROBE | | | |
| GP-10A | GP-10A PROPOSED CAS PROPE | | | |
| INDICATES REVISION (SEE LIST OF REVISIONS) | | | | |
| CONTOURS D APHY FLOWN | EVELOPED BY FIRMAT NOVEMBER 10, 2022 D SYSTEM, ELEVATION | EK FROM AERIAL THE GRID SYSTEM IS IS ARE BASED ON NAVD 88. | | |
| ON SLOPES A S) ARE TYPIC | ND SLOPES OUTSIDE ALLY 3H:1V. | THE LIMIT OF WASTE (e.g., | | |
| O APPENDIX I | IIC FOR LEACHATE ST | ORAGE INFORMATION. | | |
| N OF DEEPES | T EXCAVATION AT THE | E LCS SUMP IS 504.0 FT-MSL. | | |
| E OF SITE DE X I/IIA DRAWIN | E OF SITE DEVELOPMENT IS PROVIDED IN PARTS I/II, (I/IIA DRAWINGS I/IIA.4 THROUGH I/IIA.8. | | | |
| O APPENDIX IIIF FOR DRAINAGE DESIGN INFORMATION. | | | | |
| BY STANGER SURVEYING COMPANY, DATED APRIL 1995. | | | | |
| PRE-SUBITILE D LINER ARE APPROXIMATE AND WAS CED FROM CROSS-SECTIONS INCLUDED IN THE 1983 PPLICATION PREPARED BY STOKES & ASSOCIATES. | | | | |
| ATER ELEVATIONS MEASURED BY WCG IN SEPTEMBER 2023 AND BY MEASUREMENT LOCATIONS IN FT-MSL. GROUNDWATER CONTOURS ATED BETWEEN MEASUREMENT LOCATIONS. ACTUAL GROUNDWATER NS MAY VARY FROM THOSE ILLUSTRATED IN THIS FIGURE. | | | | |
| | | | | |
| PREPARE | D FOR | | | |
| HILL FARMS | LANDFILL TX, LP | MAJOR PERMIT AMENDMENT SECTION LOCATION | | |
| REVISI | | | | |
| 9/2024 | SEE LIST OF REVISIONS | ROYAL OAKS LANDFILL | | |
| | | CHERUKEE COUNIT, IEXAS | | |

WWW.WCGRP.COM

FIGURE 3-1

4 POINT OF COMPLIANCE DEMONSTRATION RESULTS

The results of the POC demonstration are summarized in Table 4-1 and graphically illustrated on Figure 4-1. The demonstration results in a DAF well in excess of the minimum required value of 260 and is expected that only natural groundwater background levels will be detected on the POC. As shown on Figure 4-1, vertical dispersion in the approximately 100-foot deep aquifer and a shallow hydraulic gradient are the main contributors to the calculated DAF shown in Table 4-1no detect result. Based on the model simulation results, it is concluded that the "waste containment system design" included in this permit amendment application meets or exceeds the requirements of Title 30 TAC §330.331(a)(1).

Table 4-1Summary of MODFLOW Simulation Results

| Model | Calculated DAF | Minimum | Design Compliant |
|-----------|----------------------|--------------|---------------------|
| Section | | Required DAF | with §330.331(a)(1) |
| Section A | 7.2x10 ¹⁰ | 260 | Yes |

Tables 4-2 and 4-3 have been developed to further illustrate how the DAF is used to determine the constituent level at the POC. As summarized on Tables 4-2 and 4-3, the concentration at the POC (combined total of background concentration and constituent concentration at the POC) is less than the MCL listed in §330.331(a)(1).

As shown in Tables 4-1 through 4-3, the waste containment system produces DAFs that are well above the required minimum value.

ROYAL OAKS LANDFILL CHEROKEE COUNTY TCEQ PERMIT NO. MSW-1614B

MAJOR PERMIT AMENDMENT APPLICATION

PART III – SITE DEVELOPMENT PLAN APPENDIX IIIC LEACHATE AND CONTAMINATED WATER MANAGEMENT PLAN

Prepared for

Pine Hill Farms Landfill TX, LP

May 2024

Revised October 2024

AT TURA 10/02/2024

Prepared by

Weaver Consultants Group, LLC TBPE Registration No. F-3727 6420 Southwest Blvd., Suite 206 Fort Worth, Texas 76109

817-735-9770

WCG Project No. 0120-076-11-106

This document is intended for permitting purposes only.

noted in Part IV – SOP, Section 4.23, the leachate levels for each sump will be recorded in the Site Operating Record once per week. If the pressure transducers are not functioning, the pumps will be operated manually (once per day) until the automatic system is repaired. Details of the leachate sump are provided in Appendix IIIA-A – Liner and Final Cover System Details.

The specified pump for each cell as specified in Table 4-1 will have the capacity to remove leachate to maintain less than 12 inches of head on the liner. The maximum estimated flow to be pumped from the largest undeveloped cell (Cell 12 with a contributing area of 32.5 acres) is approximately 18,111.418,100.7 gpd (refer to Appendix IIIC-B). If the specified leachate sump pumps are not able to empty the sump and maintain less than 12 inches of head on the liner at reasonable cycle times, then a pump with more capacity will be used (refer to Section 4.1 for more information).



221111 NEVZAT TURAN 84059 CENSE? Milling and 10/02/2024

| | PERMIT BOUNDARY |
|---------------------------|---|
| | PERMITTED LIMIT OF WASTE |
| | PROPOSED LIMIT OF WASTE |
| | CELL BOUNDARY |
| · · · | EXISTING EASEMENT |
| | PROPOSED EASEMENT |
| 0500 | SITE GRID |
| 610 | EXISTING CONTOUR (SEE NOTE 1) |
| —516 —— | TOP OF LINER CONTOUR |
| X660 | APPROXIMATE TOP OF PRE-SUBTITLE D |
| | CHANNEL CENTERLINE |
| | LEACHATE COLLECTION PIPE |
| | LEACHATE COLLECTION SUMP |
| 0 | LEACHATE CLEANOUT RISER |
| ◆ ^{MW-10} | EXISTING GROUNDWATER MONITORING WELL |
| ♦ ^{MW-D1} | PROPOSED GROUNDWATER MONITORING WELL |
| ⊕^{0W–D7} | PROPOSED OBSERVATION WELL |
| ⊛ ^{GP−1} | EXISTING GAS PROBE |
| ⊚ ^{GP-10A} | PROPOSED GAS PROBE |
| \triangle | INDICATES REVISION (SEE LIST OF REVISIONS) |
| | |

1. EXISTING CONTOURS DEVELOPED BY FIRMATEK FROM AERIAL PHOTOGRAPHY FLOWN NOVEMBER 10, 2022. THE GRID SYSTEM IS BASED ON A SITE GRID SYSTEM. ELEVATIONS ARE BASED ON NAVD 88.

| PREPARED FOR | | MAJOR PERMIT AMENDMENT LEACHATE COLLECTION SYSTEM PLAN | | | | |
|----------------------------|-----------------------|---|------------|--|--|--|
| IILL FARMS LANDFILL TX, LP | | | | | | |
| REVISIONS | | | | | | |
| DATE DESCRIPTION | | | | | | |
| /2024 | SEE LIST OF REVISIONS | CHEROKEE COUNTY, TEXAS | | | | |
| | | | | | | |
| | | WWW.WCGRP.COM | FIGURE 3-1 | | | |





| | PERMIT BOUNDARY |
|--------|---|
| | PERMITTED LIMIT OF WASTE |
| | PROPOSED LIMIT OF WASTE |
| | CELL BOUNDARY |
| _ · | EXISTING EASEMENT |
| | PROPOSED EASEMENT |
| 00 | SITE GRID |
| 0 | EXISTING CONTOUR (SEE NOTE 1) |
| 6 | TOP OF LINER CONTOUR |
| 50 | APPROXIMATE TOP OF PRE-SUBTITLE D LINER (SEE NOTE 3) |
| | CHANNEL CENTERLINE |
| | LEACHATE COLLECTION PIPE |
| | LEACHATE COLLECTION SUMP |
| • | LEACHATE CLEANOUT RISER |
| MW-10 | EXISTING GROUNDWATER MONITORING WELL |
| MW-D1 | PROPOSED GROUNDWATER MONITORING WELL |
| OW-D7 | PROPOSED OBSERVATION WELL |
| GP-1 | EXISTING GAS PROBE |
| GP-10A | PROPOSED GAS PROBE |
| | EXISTING FORCEMAIN |
| | PROPOSED FORCEMAIN |
| 7 | INDICATES REVISION (SEE LIST OF REVISIONS) |
| | |

1. EXISTING CONTOURS DEVELOPED BY FIRMATEK FROM AERIAL PHOTOGRAPHY FLOWN NOVEMBER 10, 2022. THE GRID SYSTEM IS BASED ON A SITE GRID SYSTEM. ELEVATIONS ARE BASED ON NAVD 88.

| PREPARED FOR | MAJOR PERMIT AMENDMENT FORCEMAIN AND STORAGE TANK PLAI | |
|-----------------------------|---|-----------------|
| IILL FARMS LANDFILL TX, LP | | |
| REVISIONS | | |
| DATE DESCRIPTION | | |
| /2024 SEE LIST OF REVISIONS | CHEROKE | E COUNTY, TEXAS |
| | WWW.WCGRP.COM | FIGURE 4-1 |



APPENDIX IIIC-B

LEACHATE COLLECTION SYSTEM DESIGN CALCULATIONS

Includes pages IIIC-B-1 through IIIC-B-64

NEVZAT TURAN 84059 10/02/2024

SOLUTION:

A. Average flow rate into sump

A.1 Determine the per acre flow rate for specific leachate collection sumps.

The following tables summarize the fill conditions that are likely to be present within each cell and have the greatest contribution of leachate into the LCS and sump system. The average flow rates (lateral drainage in the LCS layer) are shown for each condition.

Leachate sump drainage areas are shown on Sheet IIIC-B-52 Sump Drainage Areas.

Developed Area (Cells 1 through 4 and Cell 9)

From the HELP model results in Appendix IIIC-A.1:

For the developed area, the largest area draining to the sump is 14.8 acres (sump located in Cell 1). For each fill condition, the highest leachate generation rate from the HELP runs for developed area was used to be conservative.

| Condition | Average | Average |
|---------------------|----------|---------|
| | cfy/ac | gpd/ac |
| Interim, 50' Waste | 15,978.5 | 327.4 |
| Interim, 100' Waste | 38,549.8 | 790.0 |
| Interim, 155' Waste | 25,384.5 | 520.2 |
| Closed, 155' Waste | 12,002.0 | 246.0 |

¹This leachate value is the sum of the leachate recirculated and the leachate collected for each condition, if applicable.

Undeveloped Area (Cell 12)

From the HELP model results in Appendix IIIC-A:

For Cell 10 12, the largest area draining to the sump is 32.5 acres (sump located in Cell 10 12). The Cell 10 12 sump also recives leachate from developed Cells 5 through 8. For each fill condition, the highest leachate generation rate from the HELP runs for the undeveloped areas were used to be conservative.

| Condition | Average ¹ cfy/ac | Average gpd/ac |
|---------------------|--------------------------------|-------------------|
| Active, 10' Waste | 6,779.5 | 138.9 |
| Interim, 50' Waste | 17,754.8 | 363.9 |
| Interim, 100' Waste | 38,081.1 | 780.4 |
| Interim, 200' Waste | 27,177.0 | 556.9 |
| Closed, 200' Waste | 14,614.1 | 299.5 |

¹The leachate value is the sum of the leachate recirculated and the leachate collected for each condition, if applicable.

Undeveloped Area (Cells 10 and 11)

From the HELP model results in Appendix IIIC-A:

For Cells 11 10 and 12 11, the area draining to the sump is 14.7 acres (sump located in Cell 10 11). For each fill condition, the highest leachate generation rate from the HELP runs for the undeveloped area was used to be conservative.

| Condition | Average ¹ | Average |
|---------------------|----------------------|---------|
| Active, 10' Waste | 6.779.5 | 138.9 |
| Interim, 50' Waste | 17,754.8 | 363.9 |
| Interim, 100' Waste | 38,081.1 | 780.4 |
| Interim, 200' Waste | 27,177.0 | 556.9 |
| Closed, 200' Waste | 14,614.1 | 299.5 |

¹The leachate value is the sum of the leachate recirculated and the leachate collected for each condition, if applicable.

Compute the number of days storage provided for the following:

STORAGE (Detention Time) = $\frac{V_{\text{TOT}}}{V_{\text{Daily Inflow}}}$

1. Active

| | V _{Daily Inflow} (cu ft/day) V _{TOT} (cu ft) | | Storage (days) | |
|-----------------------------|--|-------|----------------|--|
| Dev. Area | 2,869.1 | 1,592 | 0.6 | |
| Undev. Area (Cell 12) | 5,736.3 | 2,604 | 0.5 | |
| Undev. Area (Cells 10 & 11) | 2,741.1 | 2,604 | 0.9 | |

2. Inactive with Intermediate Cover

| | $V_{\text{Daily Inflow}}$ (cu ft/day) | V _{TOT} (cu ft) | Storage (days) |
|-----------------------------|---------------------------------------|--------------------------|----------------|
| Dev. Area | 2,940.8 | 1,592 | 0.5 |
| Undev. Area (Cell 12) | 6,913.9 | 2,604 | 0.4 |
| Undev. Area (Cells 10 & 11) | 3,127.2 | 2,604 | 0.8 |

3. Closed

| | $V_{\text{Daily Inflow}}$ (cu ft/day) | V _{TOT} (cu ft) | Storage (days) |
|-----------------------------|---------------------------------------|--------------------------|----------------|
| Dev. Area | 1,390.4 | 1,592 | 1.1 |
| Undev. Area (Cell 12) | 3,717.9 | 2,604 | 0.7 |
| Undev. Area (Cells 10 & 11) | 1,681.6 | 2,604 | 1.5 |

C. Estimated rate of leachate removal.

| Submersible pump capacity - Cell 1 = | 20 | gpm |
|---|----|-----|
| Submersible pump capacity - Cell 10 <u>12</u> = | 20 | gpm |
| Submersible pump capacity - Cells $\frac{11}{10}$ and $\frac{12}{11}$ = | 20 | gpm |

| | Production Average Pump T | | np Time |
|------------------------------|---------------------------|-----------|----------|
| | (gpd) | (min/day) | (hr/day) |
| Dev. Area | | | |
| -Active | 7,511.3 | 375.6 | 6.3 |
| -Inactive with Interm. Cover | 7,699.1 | 385.0 | 6.4 |
| -Closed | 3,640.2 | 182.0 | 3.0 |
| Undev. Area (Cell 12) | | | |
| -Active | 7,699.1 | 385.0 | 6.4 |
| -Inactive with Interm. Cover | 18,100.7 | 905.0 | 15.1 |
| -Closed | 8,187.1 | 409.4 | 6.8 |
| Undev. Area (Cells 10 & 11) | | | |
| -Active | 7,176.1 | 358.8 | 6.0 |
| -Inactive with Interm. Cover | 8,187.1 | 409.4 | 6.8 |
| -Closed | 4,402.5 | 220.1 | 3.7 |

Average pump time is less than 24 hours per day, therefore the design is acceptable. A pump with less capacity may also be used if it can be determined that the actual leachate generation is less than the design flow.



COPYRIGHT O 2024 WEAVER CONSULTANTS GROUP. ALL RIGHTS RESERVED.

| TE OF TELES | |
|-----------------------|---|
| NEVZAT TURAN 84059 | |
| Million (CENSES) | |
| 10/02/2024 | • |

LEGEND

200

SCALE IN FEET

400

| | PERMIT BOUNDARY |
|---------------------------|---|
| | LIMIT OF WASTE |
| | CELL BOUNDARY |
| · | EXISTING EASEMENT |
| | PROPOSED EASEMENT |
| 00 | SITE GRID |
| 610 | EXISTING CONTOUR (SEE NOTE 1) |
| 516 —— | TOP OF LINER CONTOUR |
| 630— — | AS-BUILT TOP OF LINER |
| 660 | APPROXIMATE TOP OF PRE-SUBTITLE D LINER (SEE NOTE 8) |
| | CHANNEL CENTERLINE |
| | LEACHATE COLLECTION PIPE |
| • | LEACHATE COLLECTION SUMP |
| 0 | LEACHATE RISER PIPE |
| | SUMP DRAINAGE AREA |
| ◆ ^{MW-10} | EXISTING GROUNDWATER MONITORING WELL |
| ♦ ^{MW-D1} | PROPOSED GROUNDWATER MONITORING WELL |
| ⊕^{0W–D7} | PROPOSED OBSERVATION WELL |
| ⊙ ^{GP-1} | EXISTING GAS PROBE |
| ⊙ ^{GP-10A} | PROPOSED GAS PROBE |
| | INDICATES REVISION (SEE LIST OF REVISIONS) |

1. EXISTING CONTOURS DEVELOPED BY FIRMATEK FROM AERIAL PHOTOGRAPHY FLOWN NOVEMBER 10, 2022.

2. TOP OF PRE-SUBTITLE D LINER ARE APPROXIMATE AND WAS REPRODUCED FROM CROSS-SECTIONS INCLUDED IN THE 1983 PERMIT APPLICATION PREPARED BY STOKES & ASSOCIATES.

SUMP DRAINAGE AREAS

| PHASE | AREA (ACRES) |
|----------------|-----------------|
| CELL 1 | 14.8 |
| CELL 10 AND 11 | 14.7 |
| CELL 12 | 32.5 |

| | PREPARE | ED FOR | | | |
|-----------|---------|-----------------------|---|-----------------|--|
| ILL F | ARMS | LANDFILL TX, LP | MAJOR PERMIT AMENDMENT | | |
| REVISIONS | | IONS | SUMP DRAINAGE AREAS | | |
| ATE | | DESCRIPTION | ROYAL OAKS LANDFILL CHEROKEE COUNTY, TEXAS | | |
| /2024 | : | SEE LIST OF REVISIONS | | | |
| | | | | | |
| | | | WWW.WCGRP.COM | SHEET IIIC-B-52 | |

ROYAL OAKS LANDFILL CHEROKEE COUNTY, TEXAS TCEQ PERMIT NO. MSW-1614B

MAJOR PERMIT AMENDMENT APPLICATION

VOLUME 4 OF 7

Prepared for

Pine Hill Farms Landfill TX, LP

May 2024

Revised October 2024 Prepared by Meaver Consultants Group, LLC TBPE Registration No. F-3727 6420 Southwest Boulevard, Suite 206 Fort Worth, Texas 76109 817-735-9770

Project No. 0120-076-11-106

This document is intended for permitting purposes only.

ROYAL OAKS LANDFILL CHEROKEE COUNTY, TEXAS TCEQ PERMIT NO. MSW-1614B

MAJOR PERMIT AMENDMENT APPLICATION

PART III – SITE DEVELOPMENT PLAN APPENDIX IIID LINER QUALITY CONTROL PLAN

Prepared for

Pine Hill Farms Landfill TX, LP

May 2024

Revised October 2024



Prepared by

Weaver Consultants Group, LLC TBPE Registration No. F-3727 6420 Southwest Boulevard, Suite 206 Fort Worth, TX 76109 817-735-9770

WCG Project No. 0120-076-11-106

This document intended for permitting purposes only.

1.1 Purpose

This Liner Quality Control Plan (LQCP) has been prepared to provide the Operator, Design Engineer, Construction Quality Assurance Professional of Record, and the Contractor the means to govern the construction quality and to satisfy the environmental protection requirements under current Texas Commission on Environmental Quality (TCEQ) Municipal Solid Waste Rules Regulations (MSWR). More specifically, the LQCP

This appendix addresses §330.63(d)(4)(G), §330.337, §330.339, and §330.341.

addresses the soil and geosynthetic components of the liner system. The LQCP has been developed consistent with TCEQ Regulatory Guidance RG-534 – Guidance for Liner Construction and Testing for a Municipal Solid Waste Landfill (Rev. September 2017). The provisions of this LQCP were developed based on the latest technical guidelines of the TCEQ, including quality control of construction, testing frequencies and procedures, and quality assurance of sampling and testing procedures.

This LQCP is divided into the following parts:

- Section 1 Introduction
- Section 2 Construction Quality Assurance for Earthwork and Drainage Aggregates
- Section 3 Construction Quality Assurance for Geosynthetics
- Section 4 Construction Quality Assurance for Geosynthetic Clay Liner
- Section 5 Construction Quality Assurance for Piping
- Section 6 Liners Constructed Below the Highest Groundwater Level
- Section 7 Geotechnical Strength Testing Requirements
- Section 8 Documentation

1.2 Definitions

Whenever the terms listed below are used, the intent and meaning will be interpreted as indicated.

Geotextile Placement. During geotextile placement, the CQA monitor must:

- Observe the geotextile as it is deployed and record all defects and disposition of the defects (panel rejected, patch installed, etc.). Repairs are to be made in accordance with the specifications outlined in Section 3.54.4.
- Observe that equipment used does not damage the geotextile by handling, equipment transit, leakage of hydrocarbons, or other means.
- Observe that people working on the geotextile do not smoke, wear shoes that could damage the geotextile, or engage in activities that could damage the geotextile.
- Observe that the geotextile is securely anchored in an anchor trench.
- Observe that the geotextiles are anchored to prevent movement by the wind.
- Observe that the panels are overlapped a minimum of six inches.
- Examine the geotextile after installation to ensure that no potentially harmful foreign objects are present.
- Observe that seams (where required) are continuously sewn or thermal bonded in accordance with the manufacturer's recommendations and the project specifications outlined in this LQCP.

The CQA monitor must inform both the contractor and POR if the above conditions are not met.

3.4.4 Repairs

Repair procedures include:

- Patching used to repair large holes, tears, and large defects.
- Removal used to replace areas with large defects where the preceding method is not appropriate.

Holes, tears, and defects must be repaired in the following manner. Soil or other material which may have penetrated the defect must be removed completely prior to repair. If located on a slope, the defect must be patched using the same type of geotextile and continuously seamed into place. Should any tear, hole, or defect exceed 30 percent of the width of the roll, the roll will be cut off and the defect removed or the roll removed and replaced. If the defect is not located on a slope, the patch must be made using the same type of material seamed into place with a minimum of 24 inches overlap in all directions. Seams will be either thermal bonded or sewn in accordance with the manufacturer's recommendations.

- Defects are patched and overlapped properly.
- On sideslopes, the GCL is anchored at the top and then unrolled.
- Observe that no debris is trapped beneath or within the GCL.
- Observe that broken needle pieces do not exist within needle-punched GCL.
- Observe that wind speed is less than 40 miles per hour unless a lower wind speed is recommended by the manufacturer. At a minimum, a hand-held anemometer will be used, and readings will be taken at least once a day during GCL deployment to verify that the wind speed is less than 40 miles per hour.

The POR will observe the GCL for premature hydration visually and by walking over the GCL to locate soft spots. GCL that has prematurely hydrated according to the specifications will be removed and replaced with new GCL. These observations will be documented in the GCLER.

4.3.3 GCL Anchor Trench

The GCL anchor trench will be left open to allow installation of FML. Temporary anchoring will be provided until the placement of FML by using sandbags as discussed in Section 4.3.2. Slightly rounded corners will be provided in anchor trenches where the GCL enters the trench to avoid sharp bends in the GCL. No loose soil (e.g., excessive water content) will be allowed to underlie the anchored components of the liner system. Backfilling of soil will be in accordance with Section 2.3.76.

4.3.4 Patching

Torn or otherwise damaged GCL (with no loss of bentonite from the GCL) must be patched with the same type of GCL. The GCL patch must extend at least 12 inches beyond the damaged area and must be bonded to the main GCL to avoid shifting during backfilling. If the GCL damage includes loss of bentonite, the patch must consist of full GCL extending at least 12 inches beyond the damaged area. Lapping procedures must be the same as specified for original laps of GCL panels.

4.4 GCL Protection

Protection of GCL will be verified from production to deployment using the procedures discussed in this section. The manufacturer will provide inspection reports demonstrating that needle-punched nonwoven geotextile was inspected using metal detectors for the presence of broken needles and were found to be needle free. GCL must be rolled by the manufacturer in a fashion to prevent collapse during transit. Rolls will be labeled and bagged in a packaging that is resistant to water.

Visual inspection of each GCL roll will be made during unloading to identify any packaging that has been damaged. Rolls with damaged packaging will be marked and set aside for further inspection. The packaging will be repaired, for acceptable GCL rolls, prior to being placed in storage. If necessary, the party responsible for unloading the GCL will contact the manufacturer prior to shipment to ascertain the suitability of the proposed unloading methods and equipment.

The GCL-installing contractor will be responsible for the storage of GCL material. A dedicated storage area will be selected at the job site or at an alternate off-site area per owner's direction. The selected area will be level, dry, and well drained. Rolls will be stored in a manner that prevents sliding or rolling from the stacks. Rolls should be stacked no higher than three rolls to protect the integrity of roll cores and ensure safe material handling. Stored GCL materials will be covered with a plastic sheet or tarpaulin until it is installed. The integrity and legibility of the labels will be preserved during storage.

Construction equipment (other than low contact pressure rubber-tired vehicles such as ATVs or golf carts) on the GCL will not be allowed. The CQA monitor will verify that small equipment such as generators is placed on scrap FML material (rub sheets). The protective cover will be placed (using low ground pressure equipment as discussed under Section 2.3.65) as soon as possible after installation of FML and drainage layer. Refer to Section 3.6 for equipment operating requirements over geosynthetic materials.

The CQA monitor will verify that GCL (or overlying geosynthetics) are not displaced or damaged while overlying materials are being placed.

4.5 Reporting

The POR will submit to the TCEQ a GCLER for approval of the GCL. Section 8 describes the documentation requirements.

Groundwater potentiometric surface contour maps prepared from the 2023 WCG water level data are presented on Figures IIIG-D-2A through IIIG-D-2E (for site-specific aquifers A and B) and IIIG-D-3A through IIIG-D-3E (for site-specific aquifer C and D) in Appendix IIIG-D (all within the Appendix G – Geology Report). Additionally, a Highest Measured Groundwater Map has been prepared and is included as Appendix IIID-A of this LQCP.

As each new cell is designed, the highest measured water levels will be adjusted upward for possible higher well level data and the highest measured groundwater potentiometric contours for that cell will be used for design of ballast (based on measured groundwater levels after construction of the perimeter surface drainage features). In the unlikely event future groundwater readings demonstrate that groundwater may impact the sideslope liner system on the northeast slope of the expansion area (currently shown as not receiving underdrain) the underdrain system will be extended into this area concurrent with the underdrain designs for the remainder of the expansion area sideslopes (i.e., full slope underdrain design). Record of the installation of the additional underdrain will be documented and submitted with the Soil Liner Evaluation Report (SLER) prepared for the respective disposal cell. Extending the currently designed underdrain system into this sideslope area will not require a permit modification as it incorporates the permitted designs. Any temporary hydrostatic relief system design different than the one presented in Appendix IIID-C will be submitted under the provisions of §305.70(j) to the TCEQ for approval as a modification to the LQCP. Ballasting plans will be adjusted accordingly and documented within the site operating record.

6.3 Temporary Dewatering System

The site will have a temporary underdrain dewatering system installed for the undeveloped areas, specifically including Cells 10, 11 and 12 as shown on Figure 1 (Appendix IIID-C). As described in the attached demonstration, the temporary underdrain installation will be limited to the future cell sideslopes as shown on Figure IIID-C-2. The underdrain system has been designed to collect groundwater from Aquifers B and C, as described in detail in Appendix IIIG – Geology Report. As discussed in Appendix IIIG, Aquifer A is generally at an elevation above the future cells, or are cut off by previous landfill construction, and Aquifer D is at a depth well below the excavation grades of the future cells. Based on this information, installation of temporary underdrains in the cell floor was deemed unnecessary.

The dewatering system will be comprised of a double-sided geocomposite groundwater collection layer, collection trenches and a collection sump (in cells 10 and 11) which will intercept and divert waters potentially contacting the bottom liner system. Groundwater seepage will drain into the geocomposite and will then discharge into the drainage trenches and perforated 4-inch-diameter high density polyethylene (HDPE) piping installed at the toe of the excavated sideslope, then drain within the trenches and piping to the respective collection sumps. Water from

APPENDIX IIID-A

HIGHEST MEASURED GROUNDWATER INFORMATION

Includes Drawing IIID-A-1





| prepared for HILL FARMS LANDFILL TX, LP | MAJOR PERMIT AMENDMENT HIGHEST MEASURED | | |
|--|---|-----------------|--|
| REVISIONS | GROUNDWATER MAP | | |
| DATE DESCRIPTION | | | |
| 9/2024 SEE LIST OF REVISIONS | ROYAL OAKS LANDFILL CHEROKEE COUNTY, TEXAS | | |
| | - WWW.WCGRP.COM | FIGURE IIID-A-1 | |
| | | | |

APPENDIX IIID-B

EXAMPLE BALLAST THICKNESS CALCULATIONS

Includes pages IIID-B-1 through IIID-B-8



10/02/2024



LIST OF REVISIONS: 1. UPDATED EXISTING CONTOUR CALLOUTS.

| DRAFT FOR PERMITTING PURPOSES ONLY ISSUED FOR CONSTRUCTION | | | PINE | E HI |
|--|-----------------------------|---------------------|------|------|
| DATE: | 05/2024 | DRAWN BY: RAA | | |
| FILE: | 0120-76-11 | DESIGN BY: DEP | NO. | DA |
| CAD: | IIID-B-8-BALLAST POINTS.DWG | REVIEWED BY: DEP/BY | 1 | 09/: |
| | Weaver Consult | ants Groun | | |
| | | | | |
| TBPE REGISTRATION NO. F-3727 | | | | |

| 0 | 100 200 SCALE IN FEET | DAVID E. POE 81734 |
|--------------------|--|-------------------------|
| | LEGEND | _/ "" |
| | LANDFILL PERMIT BOUNDARY | 10/02/2024 |
| | - LIMIT OF WASTE | |
| 610- | EXISTING CONTOUR (SEE NOTE | 1) |
| 520 | | |
| · · _ | | |
| ·_· | PROPOSED EASEMENT | |
| 630- | PROPOSED TOP OF LINER CONT | TOUR |
| ↔ MW-25 (663.2) | EXISTING GROUNDWATER MONITO | RING WELL LOCATION |
| A (628.0) | PROPOSED EXPANSION BOREHOL | E & PIEZOMETER LOCATION |
| WCG-10 (624.0) | PROPOSED EXPANSION BOREHOL | E LOCATION |
| | LIMITS OF SIDESLOPE UNDERDRA | NN |
| | UNDERDRAIN SUMP | |
| | | |
| 650 | HIGHEST MEASURED GROUNDWAT POTENTIOMETRIC SURFACE IN FT | ER MSL |
| _ 1 | BALLAST EVALUATION POINT | |
| • 639.3 - | | BALLAST |
| \triangle | INDICATES REVISION (SEE LIST OF REVISIONS) | |
| NOTES: | | |

- 1. EXISTING CONTOURS AND PHOTO DEVELOPED BY COOPER AERIAL SURVEYS, CO. FROM AERIAL PHOTOGRAPHY FLOWN NOVEMBER 20, 2021.
- 2. VERTICAL LIMITS OF UNDERDRAIN ESTABLISHED BASED ON HIGHEST MEASURED GROUNDWATER LEVEL. TOP OF SIDESLOPE LOCATION MAY VARY BASED ON FIELD OBSERVATIONS BY POR OF SEEPAGE FROM SIDESLOPE EXPOSED DURING EXCAVATIONS. LIMITS OF TOE DRAIN MAY ALSO BE EXTENDED INTO THE NORTHEAST CORNER OF CELL 12 IN THE EVENT SEEPAGE IS OBSERVED IN THE SIDESLOPE EXCAVATIONS.
- 3. IN AREAS THAT TOP OF SIDESLOPE IS BELOW ELEV. 585 FT-MSL, THE UNDERDRAIN WILL BE INSTALLED TO THE TOP OF SLOPE. UNDERDRAIN GEOCOMPOSITE WILL NOT BE INSTALLED INTO THE ANCHOR TRENCH AT THE TOP OF SIDESLOPE BUT INSTEAD WILL TERMINATE A MINIMUM 1 FOOT (3 FEET ALONG SIDESLOPE) BELOW TOP OF SIDESLOPE TO PREVENT MIGRATION OF LANDFILL GAS INTO ANCHOR TRENCH.
- 4. GEOCOMPOSITE UNDERDRAIN WILL BE INSTALLED CONSISTENT WITH THE REQUIREMENTS OF APPENDIX IIID-LINER QUALITY CONTROL PLAN.
- 5. SIDESLOPE TOE DRAIN IN AREAS WITHOUT GEOCOMPOSITE WILL NOT BE PERFORATED.

| PREPARED FOR | | MAJOR PERMIT AMENDMENT BALLAST EVALUATION PLAN | | |
|---------------------------|-----------------------|---|----------------|--|
| ILL FARMS LANDFILL TX, LP | | | | |
| REVISIONS | | | | |
| DATE | DESCRIPTION | | | |
| /2024 | SEE LIST OF REVISIONS | CHEROKEE COUNTY, TEXAS | | |
| | | | | |
| | | WWW.WCGRP.COM | SHEET IIID-B-8 | |

APPENDIX IIID-C

TEMPORARY DEWATERING SYSTEM DESIGN

Includes pages IIID-C-1 through IIID-C-41



10/02/2024



| | | ATE OF TELL |
|--------------------|---|---------------------|
| | نغ نغ | |
| | | * DAVID E. POE |
| 0 | 100 200 | 81734 |
| SCA | LE IN FEET | CENSER OF |
| | LEGEND | NOVAL LA |
| | LANDFILL PERMIT BOUNDARY | |
| | LIMIT OF WASTE | 10/02/2024 |
| 540 | EXISTING CONTOUR | |
| | EXCAVATION GRADES | |
| · · | PROPOSED 100' ONCOR ROW | |
| 630 | PROPOSED TOP OF LINER CONTOU | R |
| ♦ MW-25 (663.2) | EXISTING GROUNDWATER MONITORING | G WELL LOCATION |
| PWCG-1 (628.0) | PROPOSED EXPANSION BOREHOLE & | PIEZOMETER LOCATION |
| WCG-10 (624.0) | PROPOSED EXPANSION BOREHOLE L | OCATION |
| | LIMITS OF SIDESLOPE UNDERDRAIN | |
| | UNDERDRAIN SUMP | |
| | UNDERDRAIN PIPING | |
| | AQUIFER D GROUNDWATER POTENTIC SURFACE CONTOUR IN FT-MSL | DMETRIC |
| | AQUIFER C GROUNDWATER POTENTIC SURFACE CONTOUR IN FT-MSL | DMETRIC |
| | AQUIFER B GROUNDWATER POTENTIC CONTOUR IN FT-MSL | DMETRIC SURFACE |
| | AQUIFER C APPROXIMATE OUTCROP | BOUNDARY |
| | AQUIFER B APPROXIMATE OUTCROP | BOUNDARY |
| \bigwedge | INDICATES REVISION (SEE LIST OF REVISIONS) | |

NOTES:

- 1. EXISTING CONTOURS AND PHOTO DEVELOPED BY COOPER AERIAL SURVEYS, CO. FROM AERIAL PHOTOGRAPHY FLOWN NOVEMBER 20, 2022.
- 2. VERTICAL LIMITS OF UNDERDRAIN ESTABLISHED BASED ON HIGHEST MEASURED GROUNDWATER LEVEL. TOP OF SIDESLOPE LOCATION MAY VARY BASED ON FIELD OBSERVATIONS BY POR OF SEEPAGE FROM SIDESLOPE EXPOSED DURING EXCAVATIONS. LIMITS OF TOE DRAIN MAY ALSO BE EXTENDED INTO THE NORTHEAST CORNER OF CELL 12 IN THE EVENT SEEPAGE IS OBSERVED IN THE SIDESLOPE EXCAVATIONS.
- 3. UNDERDRAIN GEOCOMPOSITE WILL NOT BE INSTALLED INTO THE ANCHOR TRENCH AT THE TOP OF SIDESLOPE BUT INSTEAD WILL TERMINATE A MINIMUM 1 FOOT (3 FEET ALONG SIDESLOPE) BELOW TOP OF SIDESLOPE TO PREVENT MIGRATION OF LANDFILL GAS INTO ANCHOR TRENCH.
- 4. GEOCOMPOSITE UNDERDRAIN WILL BE INSTALLED CONSISTENT WITH THE REQUIREMENTS OF APPENDIX IIID-LINER QUALITY CONTROL PLAN.
 5. SIDESLOPE TOE DRAIN IN AREAS WITHOUT GEOCOMPOSITE WILL NOT BE
- PERFORATED.

| PREPARED FOR IILL FARMS LANDFILL TX, LP | | MAJOR PERMIT AMENDMENT UNDERDRAIN PLAN | | |
|--|-----------------------|---|----------|--|
| REVISIONS | | | | |
| DATE | DESCRIPTION | ROYAL OAKS LANDFILL | | |
| /2024 | SEE LIST OF REVISIONS | | | |
| | | CHEROREE COORTH, TEARS | | |
| | | WWW.WCGRP.COM | FIGURE 1 | |
| | | | | |





10/02/2024

| LEG | GEND | 10/02/20 |
|-------------------------|---|-------------|
| | PERMIT BOUNDARY | |
| | PERMITTED LIMITS OF WASTE | |
| | PROPOSED LIMITS OF WASTE | |
| · · · | EXISTING EASEMENT | |
| | PROPOSED EASEMENT | |
| 630 | EXISTING CONTOUR (SEE NOTE 1) | |
| N 9500 | STATE PLANE COORDINATE | |
| | PROPOSED LATERAL EXPANSION AREA | |
| • PWCG-1A (457.74) | 2023 AQUIFER D EXPANSION PIEZOMETER N GROUNDWATER ELEVATION POSTED IN FT-M | MITH ISL |
| ♥₩CG-1B (579.98) | 2023 AQUIFER C EXPANSION PIEZOMETER N GROUNDWATER ELEVATION POSTED IN FT-N | WITH ISL |
| — 456 — — | AQUIFER D GROUNDWATER POTENTIOMETRIC SURFACE CONTOUR IN FT-MSL | |
| — 581 — | AQUIFER C GROUNDWATER POTENTIOMETRIC SURFACE CONTOUR IN FT-MSL | |
| -620 | AQUIFER B GROUNDWATER POTENTIOMETRIC CONTOUR IN FT-MSL | SURFACE |
| | AQUIFER C APPROXIMATE OUTCROP BOUND | ARY |
| · | AQUIFER B APPROXIMATE OUTCROP BOUND INDICATES REVISION | ARY |
| | USEE LIST OF REVISIONS! | |

200

SCALE IN FEET

400

NOTES:

1. EXISTING CONTOURS AND ELEVATIONS PROVIDED BY COOPER AERIAL SURVEYS, CO. FROM AERIAL PHOTOGRAPHY FLOWN ON 11-10-2022. THE GRID SYSTEM IS TIED TO THE TEXAS STATE PLANE COORDINATE SYSTEM NORTH CENTRAL ZONE NAD 1983.

2. PIEZOMETER LOCATION COORDINATES OBTAINED FROM AUGUST 2023 AS-BUILT SURVEY BY WEAVER CONSULTANTS GROUP.

3. GROUNDWATER ELEVATIONS GAUGED BY WCG IN SEPTEMBER 2023 AND POSTED IN FT-MSL BY EACH LOCATION.

| | | MAJOR PERMIT AMENDMENT | | |
|----------------------------|-------------|---|----------|--|
| HILL FARMS LANDFILL IX, LP | | UNDERDRAIN SYSTEM LAYOUT | | |
| REVISIÓNS | | | | |
| ATE | DESCRIPTION | GROUNDWAIER CONTOUR MA | | |
| 2024 SEE LIST OF REVISIONS | | ROYAL OAKS LANDFILL CHEROKEE COUNTY, TEXAS | | |
| | | | | |
| | | WWW.WCGRP.COM | FIGURE 2 | |

ROYAL OAKS LANDFILL CHEROKEE COUNTY, TEXAS TCEQ PERMIT NO. MSW-1614B

MAJOR PERMIT AMENDMENT APPLICATION

PART III – SITE DEVELOPMENT PLAN

APPENDIX IIIE GEOTECHNICAL REPORT

Prepared for

Pine Hill Farms Landfill TX, LP

May 2024

Revised October 2024



Prepared by

10/02/2024

Weaver Consultants Group, LLC TBPE Registration No. F-3727 6420 Southwest Boulevard, Suite 206 Fort Worth, TX 76109 817-735-9770

WCG Project No. 0120-076-11-106

This document intended for permitting purposes only.

1 INTRODUCTION

The purpose of this report is to present the geotechnical analysis and design for the proposed major permit amendment for the vertical and lateral expansion of the Royal Oaks Landfill located in Cherokee County. This report is based on the geotechnical testing information obtained during field and laboratory investigations conducted in 2023, as well as the information compiled from earlier geological studies at the landfill as

This appendix addresses §330.63(e)(5)(A) and (B).

compiled from the subsurface investigations from previous permits.

This report contains a compilation of geotechnical testing and design information, including:

- Presentation of the geotechnical (field and laboratory) and geological information compiled during the 2023 and previous permit applications and incorporated into his amendment.
- Slope stability analyses performed based on the geotechnical testing results and subsurface conditions, including groundwater, for landfill excavations, landfill completion, and sequence of development (interim condition) plans; and
- Settlement and heave analyses, which are also based on the landfill excavation and completion plans.

The stability analyses and settlement and strain analyses considered both developed and undeveloped portions of the landfill, with the primary focus of the analyses being the unconstructed expansion area cells 10 through 12. The analyses also includes evaluation of the leachate piping system incorporated into the bottom liner (in future cells), and the effects of foundation settlement on the design piping slopes and grades (see Appendix IIIE-B).

This report also provides geotechnical recommendations for construction of the landfill components, including bottom liner and final cover systems with soil and geosynthetic materials. The construction quality control and material and construction specifications for the groundwater protection components of the landfill are provided in Appendix IIID–Liner Quality Control Plan (LQCP).

Q:\ALLIED\ROYAL OAKS\EXPANSION 2023\PART III\APPENDIX IIIE.DOC

| Test | Test Method |
|--|---|
| Sieve Analysis (Passing No. 200) | ASTM D 1140 |
| Atterberg Limits (Liquid & Plastic Limit) | ASTM D4318 |
| Moisture Content | ASTM D2216 |
| Unconfined Compression | ASTM D 2166 & Pocket Penetrometer |
| Triaxial Compression Test | ASTM D4767 |
| | Vertical - ASTM D5084 Method F |
| Coefficient of Permeability (Hydraulic Conductivity) | Horizontal – ASTM D4044 and D8084 Method F |
| Consolidation | ASTM D2435 |
| Hand Penetrometer Testing | ASTM D2573 |
| Standard Proctor | ASTM D698 |

Table 2-1Geotechnical Test Methods

2.2 Classification Tests

Classification tests consisting of Atterberg limits, percent passing the #200 sieve, moist unit weight, and moisture content were performed on selected soil samples recovered from boreholes. Classification tests were used to characterize the soils according to the Unified Soil Classification System (USCS) and to evaluate physical properties of the soils. The test results for the strata identified at the site are presented in Section 3 of this appendix and summarized in the table included in Appendix IIIE-C.

2.2.1 Material Strength Tests

Material strength tests were performed to provide generalized strength parameters that were used to evaluate the soils at the site. Additionally, triaxial testing was performed to assist developing strength profiles for selected strata. The triaxial testing was performed for consolidated undrained conditions. Note that strength testing of the sand stratum was not possible as undisturbed samples could not be collected. Strength values for the sands as required for stability modeling were developed from review of field logs and WCG experience with similar formations.

2.2.2 Hydraulic Conductivity Tests

Laboratory hydraulic conductivity tests were performed to evaluate the hydrogeological properties of the soils at the site. Additional discussion regarding the hydraulic conductivity testing is presented in Appendix IIIG–Geology Report and has not been reproduced for this appendix.

| Table 4-1 |
|--|
| Typical Soil Requirements for Landfill Construction ³ |

| | | | | Test | Paramete | ers | |
|--|---|---|--------|------------|------------|--|----------------------|
| Landfill Component | Soil Description | Classification | LL | PI | % – 200 | Coefficient of Permeability cm/s | Material Source |
| Soil Liner | clayey sand, sandy clay, or clay | SC, CL, CH | 30 min | 15 min | 30 min | 1x10 ⁻⁷ max | On site ¹ |
| Final Cover Infiltration Layer | clayey sand, sandy clay, or clay | SC, CL, CH | 30 min | 15 min | 30 min | 1x10 ⁻⁵ max ² | On site |
| Liner Protective Cover | sand, sandy silt or clay, clayey or silty sand, silt and clay | SP-SM, SP, SP-SC, SW, SM or SM-SC, ML, CL, CH | (2) | (2) | (2) | 1x10 ⁻⁴ min | On site ² |
| Final Cover Erosion Layer | clayey sand, sandy clay, or clay | SC, CL, SM | Sui | table to s | upport pla | nt growth | On-site |
| Operational Cover ² (Daily Cover and Intermediate Cover) | sand, sandy silt or clay, clayey or silty sand, silt and clay | SP-SM, SP, SP-SC, SW, SM or SM-SC, ML, CL, CH | | | | | On-site |
| Earth Fill Perimeter Berm and Subgrade Preparation | sand, sandy silt or clay, clayey or silty sand, silt and clay | SP-SM, SP, SP-SC, SW, SM or SM-SC, ML, CL, CH | | | | | On-site |

¹ If on-site materials meeting the required properties do not exist, an off-site material source can be used for liner soil.

² If on-site material does not meet the hydraulic conductivity criteria, leachate collection chimney drains will be extended through the protective cover at selected locations and will be exposed adequately for transmission of leachate to the collection system.

³ Granular material requirements and gradation provided in Appendix IIID-LQCP.

APPENDIX IIIE-A

SLOPE STABILITY ANALYSIS



10/02/2024





| | | 10/02/2024 |
|---------------------|--------------------------------------|------------|
| | LIMIT OF WASTE | 10/02/2021 |
| | | |
| - · <u> </u> | EXISTING EASEMENT | |
| | PROPOSED EASEMENT | |
| 0500 | SITE GRID | |
| 610 | EXISTING CONTOUR (SEE NOTE 1) | |
| —516 —— | TOP OF LINER CONTOUR | |
| —630— — | AS-BUILT TOP OF LINER | |
| X660 | APPROXIMATE TOP OF PRE-SUBTITLE D | |
| | CHANNEL CENTERLINE | |
| | LEACHATE COLLECTION PIPE | |
| | LEACHATE COLLECTION SUMP | |
| • | LEACHATE RISER PIPE | |
| ↔ ^{MW-10} | EXISTING GROUNDWATER MONITORING WELL | |
| ♦ ^{MW-D1} | PROPOSED GROUNDWATER MONITORING WEL | L |
| ♦ ^{OW–D7} | PROPOSED OBSERVATION WELL | |
| ⊛ ^{GP-1} | EXISTING GAS PROBE | |
| ⊙ ^{GP-10A} | PROPOSED GAS PROBE | |
| | | |
| | SECTION LOCATION | |
| \sim | | |

1. EXISTING CONTOURS DEVELOPED BY FIRMATEK FROM AERIAL PHOTOGRAPHY FLOWN NOVEMBER 10, 2022. THE GRID SYSTEM IS BASED ON A SITE GRID SYSTEM. ELEVATIONS ARE BASED ON NAVD 88. 2. EXCAVATION SLOPES AND SLOPES OUTSIDE THE LIMIT OF WASTE (e.g., CHANNELS) ARE TYPICALLY 3H:1V.

3. PERMIT BOUNDARY WAS REPRODUCED FROM LEGAL DESCRIPTION PROVIDED BY STANGER SURVEYING COMPANY, DATED APRIL 1995. 4. INTERIM SLOPE SECTION (D-D) DEVELOPED FROM DRAWING I/IIA.6.

| PREPARED FOR | | | | |
|---------------------------|-----------------------|---|----------------|--|
| ILL FARMS LANDFILL TX, LP | | SLOPE_STABILITY_ANALYSIS | | |
| REVISIONS | | SECTION LOCATIONS 1 | | |
| DATE | DESCRIPTION | ROYAL OAKS LANDFILL CHEROKEE COUNTY, TEXAS | | |
| /2024 | SEE LIST OF REVISIONS | | | |
| | | | | |
| | | WWW.WCGRP.COM | SHEET IIIE-A-7 | |
| | | | | |


 \mathfrak{N}

| 200 | 0 400 | DAVID E. POE |
|-------------|---|--|
| SCALE IN | I FEET | 81734 |
| | END PERMIT BOUNDARY LIMIT OF WASTE EXISTING EASEMENT PROPOSED EASEMENT SITE GRID EXISTING CONTOUR (SEE NC PROPOSED FINAL COVER CC DRAINAGE LETDOWN CHANNEL CENTERLINE EXISTING GROUNDWATER MO PROPOSED OBSERVATION WE EXISTING GAS PROBE PROPOSED GAS PROBE SECTION LOCATION INDICATES REVISION (SEE LIST OF REVISIONS) | DTE 1) DNTOUR INITORING WELL MONITORING WELL ELL |
| IES: | DNTOURS DEVELOPED BY FIR | MATEK FROM |
| EXISTING C | TOGRAPHY FLOWN NOVEMBER | R 10, 2022. |
| AERIAL PHC | INAL COVER ELEVATION IS 75 | 39.0 FT-MSL. |
| MAXIMUM T | OP OF WASTE ELEVATION IS | 757.0 FT-MSL. |
| TYPICAL SII | DESLOPES ARE 4H:1V. TYPICA | AL TOPSLOPE IS 5%. |
| PERMIT BOI | JNDARY WAS REPRODUCED F | ROM LEGAL DESCRIPTION |
| PROVIDED I | BY LANDES & ASSOCIATES, IN | NC. DATED MARCH 2011. |

| PREPARED FOR | |
|-----------------------|--------------------------|
| RMS LANDFILL TX, LP | SLOPE STABILITY ANALYSIS |
| REVISIONS | SECTION LOCATIONS 2 |
| DESCRIPTION | |
| SEE LIST OF REVISIONS | CHEROKEE COUNTY, TEXAS |
| | |

WWW.WCGRP.COM

SHEET IIIE-A-8

APPENDIX IIIE-B-1

FOUNDATION/BOTTOM LINER SETTLEMENT ANALYSIS

Includes pages IIIE-B-1-1 through IIIE-B-1-38



10/02/2024



| Z | | TATE OF TOTAL | |
|-----------------------|---|---|--|
| ų | | DAVID E. POE | |
| 200 | 400 | 81734 | |
| SCALE IN F | FEET | Notice of the second second | |
| LEG | <u>SEND</u> | NAL WALL | |
| | PERMIT BOUNDARY | -/ regimer | |
| | LIMIT OF WASTE | 10/02/2024 | |
| | CELL BOUNDARY | 10/02/2024 | |
| · · · | EXISTING EASEMENT | | |
| _ · _ · _ · _ · _ · _ | PROPOSED EASEMEN | NT | |
| 0500 | SITE GRID | | |
| =610 | EXISTING CONTOUR | (SEE NOTE 1) | |
| —516 —— | TOP OF LINER CON | TOUR | |
| —630— — | AS-BUILT TOP OF | LINER | |
| X660 | APPROXIMATE TOP | OF PRE-SUBTITLE D | |
| | CHANNEL CENTERLIN | NE | |
| | LEACHATE COLLECT | ION PIPE | |
| • | LEACHATE COLLECTION | | |
| 0 | LEACHATE RISER PIF | PE | |
| BH1 | BOREHOLE DESIGNAT | 'ION (FOR WCG ANALYSIS) | |
| (PWCG-1A) | BORING DESIGNATION | N (FOR DRILLING GEOLOGICAL INVESTIGATION) | |
| | TRANSLATED BORING | PROFILE LOCATIONS (SEE NOTE 4) | |
| \triangle | INDICATES REVISION (SEE LIST OF REVISIONS) | | |
| | | | |
| STING CONTO | URS DEVELOPED BY | FIRMATEK FROM AERIAL | |
| SED ON A SIT | E GRID SYSTEM. ELE | EVATIONS ARE BASED ON NAVD 88. | |
| CAVATION SLO | PES AND SLOPES OU | JTSIDE THE LIMIT OF WASTE (e.g., | |
| RMIT BOUNDA | RY WAS REPRODUCED | D FROM LEGAL DESCRIPTION | |
| ANSLATED BOF | RING PROFILES DEVEL | LOPED FROM ADJACENT BORING | |
| R USE IN SET | TLE 3 MODEL. | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| PREPARE | D FOR | MAJOR PERMIT AMENDMENT | |
| ILL FARMS | LANDFILL TX, LP | SETTLE3 SETTLEMENT ANALYSIS | |
| REVISIO | DNS | TRANSLATED BORING LOCATIONS | |
| /2024 S | DESCRIPTION EELIST OF REVISIONS | ROYAL OAKS LANDFILL | |
| | | UNERUKEE COUNIT, IEXAS | |

| WWW.WCGRP.COM | SHEET IIIE-B-1-8 |
|---------------|------------------|
|---------------|------------------|



| | PREPARE | D FOR | | |
|-------|-------------|-----------------------|-------|-------|
| LL FA | RMS | LANDFILL T | (, LP | |
| | REVIS | IONS | | FIN |
| ATE | DESCRIPTION | | | |
| 2024 | : | SEE LIST OF REVISIONS | | |
| | | | | |
| | | | | ww |
| | | | | ** ** |
| | | | | |

MAJOR PERMIT AMENDMENT SETTLE3 SETTLEMENT ANALYSIS INAL COVER ANALYSIS POINT PLAN

SHEET IIIE-B-1-9



| | N N |
|-------------------------|---|
| 0 : | |
| SCALE | IN FEET |
| <u>LE(</u> | GEND |
| | PERMIT BOUNDARY |
| | LIMIT OF WASTE |
| | CELL BOUNDARY |
| _ · · | EXISTING EASEMENT |
| · _ · _ · _ · _ · _ · _ | PROPOSED EASEMENT |
| 10500 | EXISTING CONTOUR (SEE NOTE 1) SITE GRID |
| 610 | EXISTING CONTOUR (SEE NOTE 1) |
| 516 | TOP OF LINER CONTOUR |
| —630— — | AS-BUILT TOP OF LINER |
| X660 | APPROXIMATE TOP OF PRE-SUBTITLE D LINER (SEE NOTE 8) |
| | CHANNEL CENTERLINE |
| < | LEACHATE COLLECTION PIPE |
| | LEACHATE COLLECTION SUMP |
| • | LEACHATE RISER PIPE |
| ● L-1 | LOAD ANALYSIS POINT |
| \triangle | INDICATES REVISION (SEE LIST OF REVISIONS) |

1. EXISTING CONTOURS DEVELOPED BY FIRMATEK FROM AERIAL PHOTOGRAPHY FLOWN NOVEMBER 10, 2022. 2. EXCAVATION SLOPES AND SLOPES OUTSIDE THE LIMIT OF WASTE (e.g., CHANNELS) ARE TYPICALLY 3H:1V.



10/02/2024

| PREPARED FOR | |
|----------------------------|-------|
| ILL FARMS LANDFILL T | (, LP |
| REVISIONS | FI |
| ATE DESCRIPTION | |
| 2024 SEE LIST OF REVISIONS | |
| | |
| | |
| | W W |

MAJOR PERMIT AMENDMENT SETTLE3 SETTLEMENT ANALYSIS INAL COVER ANALYSIS POINT PLAN ROYAL OAKS LANDFILL CHEROKEE COUNTY, TEXAS

WW.WCGRP.COM SHEET IIIE-B-1-9A



| PREPARED FOR | | MAJOR PERMIT AMENDMENT | | | |
|--------------|------|------------------------|---------------------|-----------------------------|-------------------|
| IILL FA | ARMS | LANDFILL TX, | LP | SETTLE3 SETTLEMENT ANALYSIS | |
| REVISIONS | | BOITOM LINER | STRAIN CALCULATIONS | | |
| DATE | | DESCRIPTION | | DOVAL | |
| 9/2024 | 2 | SEE LIST OF REVISIONS | | CHEROKEE COUNTY, TEXAS | |
| | | | | WWW.WCGRP.COM | SHEET IIIE-B-1-12 |

APPENDIX IIIE-B-2

FINAL COVER SETTLEMENT ANALYSIS

Includes pages IIIE-B-2-1 through IIIE-B-2-12





| PREPARED FOR | MAJOR PERMIT AMENDMENT SETTLE3 SETTLEMENT FINAL COVER ANALYSIS POINT PLAN ROYAL OAKS LANDFILL CHEROKEE COUNTY, TEXAS | |
|----------------------------|--|-------------------|
| ILL FARMS LANDFILL TX, LP | | |
| REVISIONS | | |
| ATE DESCRIPTION | | |
| 2024 SEE LIST OF REVISIONS | | |
| | WWW.WCGRP.COM | SHEET IIIE-B-2-12 |

APPENDIX IIIE-B-3

FOUNDATION HEAVE ANALYSIS

Includes pages IIIE-B-3-1 through IIIE-B-3-4







| | | 10/02/2024 |
|-------------------|---|-----------------------|
| | PERMIT BOUNDARY | 10/02/2024 |
| | LIMIT OF WASTE | |
| | CELL BOUNDARY | |
| · | EXISTING EASEMENT | |
| | PROPOSED EASEMENT | |
| 0500 | SITE GRID | |
| -610 | EXISTING CONTOUR (SEE NOTE 1) | |
| —516 —— | TOP OF LINER CONTOUR | |
| —630— — | AS-BUILT TOP OF LINER | |
| X660 | APPROXIMATE TOP OF PRE-SUBTITLE D LINER (SEE NOTE 8) | |
| | CHANNEL CENTERLINE | |
| | LEACHATE COLLECTION PIPE | |
| | LEACHATE COLLECTION SUMP | |
| • | LEACHATE RISER PIPE | |
|) ^{HP-1} | HEAVE ANALYSIS POINT | |
| (PWCG-1A) | BORING DESIGNATION (FOR DRILLING GEOL | OGICAL INVESTIGATION) |
| \triangle | INDICATES REVISION (SEE LIST OF REVISIONS) | |

1. EXISTING CONTOURS DEVELOPED BY FIRMATEK FROM AERIAL PHOTOGRAPHY FLOWN NOVEMBER 10, 2022. 2. EXCAVATION SLOPES AND SLOPES OUTSIDE THE LIMIT OF WASTE (e.g., CHANNELS) ARE TYPICALLY 3H:1V. 3. PERMIT BOUNDARY WAS REPRODUCED FROM LEGAL DESCRIPTION PROVIDED BY STANGER SURVEYING COMPANY, DATED APRIL 1995.

| PREPARED FOR | MAJOR PERMIT AMENDMENT SETTLE3 SETTLEMENT ANALYSIS | |
|-----------------------------|---|------------------|
| IILL FARMS LANDFILL TX, LP | | |
| REVISIONS | HEAVE ANALYSIS POINT | |
| DATE DESCRIPTION | ROYAL OAKS LANDFILL CHEROKEE COUNTY, TEXAS | |
| /2024 SEE LIST OF REVISIONS | | |
| | WWW.WCGRP.COM | SHEET IIIE-B-3-4 |

ROYAL OAKS LANDFILL CHEROKEE COUNTY, TEXAS TCEQ PERMIT NO. MSW-1614B

MAJOR PERMIT AMENDMENT APPLICATION

VOLUME 5 OF 7

Prepared for

Pine Hill Farms Landfill TX, LP

May 2024

Revised October 2024



Prepared by

Weaver Consultants Group, LLC

TBPE Registration No. F-3727 6420 Southwest Boulevard, Suite 206 Fort Worth, Texas 76109 817-735-9770

Project No. 0120-076-11-106

This document is intended for permitting purposes only.

ROYAL OAKS LANDFILL CHEROKEE COUNTY, TEXAS TCEQ PERMIT NO. MSW-1614B

MAJOR PERMIT AMENDMENT APPLICATION

PART III – SITE DEVELOPMENT PLAN APPENDIX IIIF SURFACE WATER DRAINAGE PLAN

Prepared for

Pine Hill Farms Landfill TX, LP

May 2024

Revised October 2024



Prepared by

Weaver Consultants Group, LLC TBPE Registration No. F-3727 6420 Southwest Boulevard, Suite 206 Fort Worth, Texas 76109 817-735-9770

WCG Project No. 0120-076-11-106

This document is intended for permitting purposes only.

DRAWINGS

- IIIF.1 Drainage Structure Plan
- IIIF.2 Post-Project Drainage Areas
- IIIF.3 Offsite Drainage Area Map
- IIIF.4 Perimeter DrainageChannel Plan
- IIIF.5 Channels 1 and 2 Plan and Profile Perimeter Channel Profile
- IIIF.6 Channels 1 and 2 SectionsPerimeter Channel Profile
- IIIF.7 Drainage Details
- IIIF.8 Drainage Details
- IIIF.9 Drainage Details
- IIIF.10 Drainage Details
- IIIF.11 Drainage Details
- IIIF.12 Drainage Details
- IIIF.13 Pond P1 Plan
- IIIF.14 Pond P2 Plan
- IIIF.15 Pond P3 Plan



APPENDIX IIIF-A

Post-Development Condition Hydrologic Calculations

APPENDIX IIIF-B

Perimeter Channel, Detention Pond, and Culvert Design

APPENDIX IIIF-C

Final Cover Erosion Control Structure Design

APPENDIX IIIF-D

Erosion Layer Evaluation

APPENDIX IIIF-E

Permitted Landfill Condition Hydrologic Calculations

APPENDIX IIIF-F

Erosion Control Plan for All Phases of Landfill Operation

TABLES AND FIGURES

Tables

4-1 Flow Rates, Drainage Areas, Hydrograph Time to Peak Values, Runoff
Volumes, and Velocities for the 10025-Year Design Storm Event
IIIF-1516

Figures

- 4.1 Site Location Map
- 4.2 West Fork Trinity River Drainage Basin Regional Watershed Map
- 4.3 Offsite Drainage Area Map
- 4.4 Site Drainage Patterns
- 4.5 Site Drainage Patterns Runon/Runoff
- 4.6 Flood Insurance Rate Map (FIRM)



3.1 Methodology

Drainage calculations for the final cover system erosion control structures and perimeter drainage system are based on the peak flow rates resulting from the 25-year frequency rainfall event for the area. The United States Army Corps of Engineers (USACE) HEC-HMS computer program was used to compute peak flow rates produced from the design storm. The hydraulic methods employed in this study are consistent with those presented in the TCEQ *Guidelines for Preparing a Surface Water Drainage Report for Municipal Solid Waste Facility (RG-417, May 2018)* and TxDOT *Bridge Division Hydraulic Manual*, JulySeptember 2019.

Water surface profiles were determined for the perimeter channels using the Channel Analysis Program (HYDROCALC HYDRAULICS Version 2.0.1 for Windows, Dodson & Associates, 1996-2010) that is based on Manning's formula for uniform flow. The perimeter channels are designed to collect and route runoff from the 25-year frequency storm event to the detention ponds.

3.2 Hydrologic Analysis

3.2.1 Description of Computer Program

HEC-HMS was developed by the USACE Hydrologic Engineering Center to simulate the surface runoff response of a watershed. The HEC-HMS model represents a watershed as a network of hydrologic and hydraulic components. The modeling process results in the computation of stream-flow hydrographs at desired locations in the watershed. The hydrologic analysis for the post-development condition is presented in Appendix IIIF-A. The hydrologic analysis for the permitted landfill completion condition is included in Appendix IIIF-E.

3.2.2 Watershed Subareas and Schematization

The landfill areas that contribute flow to each detention pond were delineated into subareas to derive peak flow rates for the design of the perimeter channel and final cover drainage letdowns. Hydrographs are developed for each subarea and appropriately combined and routed through the swales and perimeter channels.

DRAWINGS

- IIIF.1 Drainage Structure Plan
- IIIF.2 Post-Project Drainage Map
- IIIF.3 –Offsite Drainage Area Map
- **IIIF.4 Perimeter Drainage Plan**
- IIIF.5 Channels 1 and 2 Plan and Perimeter Channel Profile
- IIIF.6 Channels 1 and 2 SectionsPerimeter Channel Profile
- **IIIF.7 Drainage Details**
- IIIF.8 Drainage Details
- **IIIF.9 Drainage Details**
- IIIF.10 Drainage Details
- IIIF.11 Drainage Details
- **IIIF.12 Drainage Details**
- IIIF.13 Pond P1 Plan
- IIIF.14 Pond P2 Plan
- **IIIF.15 Pond P3 Plan**





| | PERMIT BOUNDARY |
|------------|---|
| | LIMIT OF WASTE |
| 0500 | SITE GRID |
| 610 | EXISTING CONTOUR (SEE NOTE 1) |
| 624 | PROPOSED FINAL COVER CONTOUR |
| | DRAINAGE SWALE |
| ARCE STATE | DRAINAGE LETDOWN |
| | CHANNEL CENTERLINE |
| \wedge | INDICATES REVISION (SEE LIST OF REVISIONS) |
| | |

1. EXISTING CONTOURS DEVELOPED BY FIRMATEK FROM AERIAL PHOTOGRAPHY FLOWN NOVEMBER 10, 2022. REFER TO APPENDIX IIIF-SURFACE WATER DRAINAGE PLAN FOR DRAINAGE DESIGN INFORMATION.

3. MAXIMUM FINAL COVER ELEVATION IS 776.5 FT-MSL. MAXIMUM TOP OF WASTE ELEVATION IS 773.0 FT-MSL.

4. TYPICAL SIDESLOPES ARE 4H:1V. TYPICAL TOPSLOPE IS 4%. 5. PERMIT BOUNDARY WAS REPRODUCED FROM LEGAL DESCRIPTION PROVIDED BY STANGER SURVEYING COMPANY, DATED APRIL 1995.



SEE LIST OF REVISIONS

MAJOR PERMIT AMENDMENT DRAINAGE STRUCTURE PLAN

ROYAL OAKS LANDFILL CHEROKEE COUNTY, TEXAS

WWW.WCGRP.COM

DRAWING IIIF.1



COPYRIGHT © 2024 WEAVER CONSULTANTS GROUP. ALL RIGHTS RESERVED.





400

200

SCALE IN FEET

| | PERMIT BOUNDARY |
|-------------|---|
| | LIMIT OF WASTE |
| 0500 | SITE GRID |
| 6 10 | EXISTING CONTOUR (SEE NOTE 1) |
| 624 | PROPOSED FINAL COVER CONTOUR |
| | DRAINAGE SWALE |
| 102222500 | DRAINAGE LETDOWN |
| | CHANNEL CENTERLINE |
| | DRAINAGE AREA BOUNDARY |
| DA4 | DRAINAGE AREA DESIGNATION |
| Δ | INDICATES REVISION (SEE LIST OF REVISIONS) |

1. EXISTING CONTOURS DEVELOPED BY FIRMATEK FROM AERIAL PHOTOGRAPHY FLOWN NOVEMBER 10, 2022. 2. MAXIMUM FINAL COVER ELEVATION IS 776.5 FT-MSL. MAXIMUM TOP OF WASTE ELEVATION IS 773.0 FT-MSL. 3. TYPICAL SIDESLOPES ARE 4H:1V. TYPICAL TOPSLOPE IS 4%. 4. PERMIT BOUNDARY WAS REPRODUCED FROM LEGAL DESCRIPTION PROVIDED BY STANGER SURVEYING COMPANY, DATED APRIL 1995.

| INAGE A NO. | AREA (ACRES) | DRAINAGE AREA NO. | AREA (ACRES) |
|--|--|--|---|
| A1 A2 A3 A4 A5 51 52 53 54 55 56 66 57 58 89 | 14.07 6.99 14.33 13.99 20.05 7.59 6.92 7.93 0.94 3.32 2.63 4.07 3.44 1.19 | CH1 CH2 CH3 CH4 CH5 CH6 P1 P2 P3 01 02 03 04 05 06 | 7.55 3.09 2.98 1.14 2.79 5.77 2.01 4.23 5.52 166.84 15.24 14.76 9.00 1.93 10 93 |
| 10 | 1.77 | | |

| PREPARED FOR | | MAJOR PERMIT AMENDMENT POST PROJECT DRAINAGE AREAS | | |
|---------------------------|-----------------------|---|----------------|--|
| ILL FARMS LANDFILL TX, LP | | | | |
| REVISIONS | | | | |
| DATE | DESCRIPTION | | | |
| /2024 | SEE LIST OF REVISIONS | CHEROKEE COUNTY, TEXAS | | |
| | | | | |
| | | WWW.WCGRP.COM | DRAWING IIIF.2 | |





<u>LEGEND</u>

400

200

SCALE IN FEET

| PERMIT BOUNDARY |
|---|
| LIMIT OF WASTE |
| SITE GRID |
| EXISTING CONTOUR (SEE NOTE 1) |
| PROPOSED FINAL COVER CONTOUR |
| DRAINAGE SWALE |
| DRAINAGE LETDOWN |
| CHANNEL CENTERLINE |
| GABIONS |
| TURF REINFORCEMENT MAT |
| RIP-RAP |
| INDICATES REVISION (SEE LIST OF REVISIONS) |
| |

1. EXISTING CONTOURS DEVELOPED BY FIRMATEK FROM AERIAL PHOTOGRAPHY FLOWN NOVEMBER 10, 2022. 2. REFER TO APPENDIX IIIF-SURFACE WATER DRAINAGE PLAN FOR DRAINAGE DESIGN INFORMATION.

3. MAXIMUM FINAL COVER ELEVATION IS 776.5 FT-MSL. MAXIMUM TOP OF WASTE ELEVATION IS 773.0 FT-MSL.

4. TYPICAL SIDESLOPES ARE 4H:1V. TYPICAL TOPSLOPE IS 4%.

5. PERMIT BOUNDARY WAS REPRODUCED FROM LEGAL DESCRIPTION PROVIDED BY STANGER SURVEYING COMPANY, DATED APRIL 1995.

LIST OF REVISIONS:

- 1. UPDATED EXISTING CONTOUR CALLOUTS.
- 2. EXTENDED RIPRAP DOWNSTREAM OF POND OUTFALL TO PERMIT BOUNDARY.
- 3. ADDED TURF REINFORCEMENT MAT.
- 4. ADDED RIPRAP TO LEGEND.

| IILL | prepari | ED FOR | TX, LP | MAJOR PERMIT AMENDMENT PERIMETER CHANNEL PLAN | | |
|------|---------|-------------|--------|--|----------------|--|
| | REVIS | IONS | | | | |
| DATE | | DESCRIPTION | | | | |
| | | | | CHEROKEE COUNTY, TEXAS | | |
| | | | | | | |
| | | | | WWW.WCGRP.COM | DRAWING IIIF.4 | |
| | | | | • | | |



22 Ы Ξ

| OND DOTTON | E 7 4 O |
|-----------------------------|---------|
| YUND BUTTOM | 554.0 |
| OP OF EMBANKMENT | 550.0 |
| SPILLWAY ELEVATION | 544.00 |
| 25–YEAR PEAK STAGE | 591.9 |
| 25-YEAR STORAGE VOLUME | 10 |
| OW WATER OUTLET | (1) |
| OUTLET UPSTREAM ELEVATION | 534 |
| OUTLET DOWNSTREAM ELEVATION | 531 |

| PREPARED FOR | | MAJOR PERMIT AMENDMENT POND P1 PLAN | |
|----------------------------|-----------------------|---|-----------------|
| IILL FARMS LANDFILL TX, LP | | | |
| | REVISIONS | | |
| DATE | DESCRIPTION | ROYAL OAKS LANDFILL CHEROKEE COUNTY, TEXAS | |
| /2024 | SEE LIST OF REVISIONS | | |
| | | | |
| | | WWW.WCGRP.COM | DRAWING IIIF.13 |
| | | | |





50

SCALE IN FEET

<u>LEGEND</u>

100

| | PERMIT BOUNDARY |
|---------------------|---|
| | LIMIT OF WASTE |
| 0500 | SITE GRID |
| ~ 610 | EXISTING CONTOUR (SEE NOTE 1) |
| 624 | PROPOSED FINAL COVER CONTOUR |
| | DRAINAGE SWALE |
| | DRAINAGE LETDOWN |
| | CHANNEL CENTERLINE |
| $\underline{\land}$ | INDICATES REVISION (SEE LIST OF REVISIONS) |
| | |

1. EXISTING CONTOURS DEVELOPED BY FIRMATEK FROM AERIAL PHOTOGRAPHY FLOWN NOVEMBER 10, 2022. REFER TO APPENDIX IIIF-SURFACE WATER DRAINAGE PLAN FOR DRAINAGE DESIGN INFORMATION.

DETENTION POND DESIGN SUMMARY

| 540.00 FT-MSL 550.00 FT-MSL 548.00 FT-MSL 547.2 FT-MSL 5.9 AC-FT |
|--|
| (1)42" RCP 540.00 FT-MSL 539.71 FT-MSL |
| |

| PREPARED FOR | MAJOR PERMIT AMENDMENT POND P2 PLAN | |
|-----------------------------|---|-----------------|
| REVISIONS | | |
| DESCRIPTION | | |
| /2024 SEE LIST OF REVISIONS | - ROYAL OAKS LANDFILL - CHEROKEE COUNTY, TEXAS | |
| | WWW.WCGRP.COM | DRAWING IIIF.14 |



APPENDIX IIIF-A

POST-DEVELOPMENT CONDITION HYDROLOGIC CALCULATIONS

Includes pages IIIF-A-1 through IIIF-A-102





| | PREPARED FOR | |
|-----|-----------------------|---|
| L F | FARMS LANDFILL TX, LP | |
| | REVISIONS | |
| Έ | DESCRIPTION |] |
| 024 | SEE LIST OF REVISIONS | 1 |
| | | |
| | | |

MAJOR PERMIT AMENDMENT KINEMATIC WAVE PATTERNS

DRAWING IIIF-A-18



| PREPARED FOR | | | 14 | | | |
|--------------|-------|-----------------------|----|---------|--|--|
| IILL F | FARMS | LANDFILL TX, | LP | M EF | | |
| | REVIS | IONS | | | | |
| DATE | | DESCRIPTION | | | | |
| /2024 | | SEE LIST OF REVISIONS | | | | |
| | | | | | | |
| | | | | www.wo | | |
| | | | | | | |

PSEY"10-MINUTE" METHOD

DRAWING IIIF-A-24





| | LIMIT OF WASTE |
|-------------------------|---|
| 10500 | SITE GRID |
| 610 | EXISTING CONTOUR (SEE NOTE 1) |
| | PROPOSED FINAL COVER CONTOUR |
| | DRAINAGE SWALE |
| | DRAINAGE LETDOWN |
| | CHANNEL CENTERLINE |
| | DRAINAGE AREA BOUNDARY |
| DA4 | DRAINAGE AREA DESIGNATION |
| $\overline{\mathbb{A}}$ | INDICATES REVISION (SEE LIST OF REVISIONS) |

1. EXISTING CONTOURS DEVELOPED BY FIRMATEK FROM AERIAL PHOTOGRAPHY FLOWN NOVEMBER 10, 2022. 2. MAXIMUM FINAL COVER ELEVATION IS 776.5 FT-MSL. MAXIMUM TOP OF WASTE ELEVATION IS 773.0 FT-MSL. 3. TYPICAL SIDESLOPES ARE 4H:1V. TYPICAL TOPSLOPE IS 4%. 4. PERMIT BOUNDARY WAS REPRODUCED FROM LEGAL DESCRIPTION PROVIDED BY STANGER SURVEYING COMPANY, DATED APRIL 1995.

| INAGE A NO. | AREA (ACRES) | DRAINAGE AREA NO. | AREA (ACRES) |
|--|--|--|---|
| A1 A2 A3 A4 A5 S1 S2 S3 S4 S5 S6 S5 S5 S5 S5 S5 S5 S5 S5 S5 S5 S5 S5 S5 | 14.07 6.99 14.33 13.99 20.05 7.59 6.92 7.93 0.94 3.32 2.63 4.07 3.44 1.19 | CH1 CH2 CH3 CH4 CH5 CH6 P1 P2 P3 O1 02 03 04 05 06 | 7.55 3.09 2.98 1.14 2.79 5.77 2.01 4.23 5.52 166.84 15.24 14.76 9.00 1.93 10.93 |
| 10 | 1.// | | |

| PREPARED FOR | | | |
|--------------|-----------------------|---|-------------------|
| ILL F | ARMS LANDFILL TX, LP | MAJOR PERMIT AMENDMENT POST PROJECT DRAINAGE AREAS | |
| REVISIONS | | TOST TROVEOT DRAMADE AREAS | |
| DATE | DESCRIPTION | ROYAL OAKS LANDFILL CHEROKEE COUNTY, TEXAS | |
| /2024 | SEE LIST OF REVISIONS | | |
| | | | |
| | | WWW.WCGRP.COM | DRAWING IIIF-A-30 |





<u>LEGEND</u>

| • | PERMIT BOUNDARY |
|------------|---|
| | LIMIT OF WASTE |
| 0500 | SITE GRID |
| 610 | EXISTING CONTOUR (SEE NOTE 1) |
| 624 | PROPOSED FINAL COVER CONTOUR |
| | DRAINAGE SWALE |
| ARCE STATE | DRAINAGE LETDOWN |
| | CHANNEL CENTERLINE |
| Λ | INDICATES REVISION (SEE LIST OF REVISIONS) |
| | |

 EXISTING CONTOURS DEVELOPED BY FIRMATEK FROM AERIAL PHOTOGRAPHY FLOWN NOVEMBER 10, 2022.
MAXIMUM FINAL COVER ELEVATION IS 776.5 FT-MSL. MAXIMUM TOP OF WASTE ELEVATION IS 773.0 FT-MSL.
TYPICAL SIDESLOPES ARE 4H:1V. TYPICAL TOPSLOPE IS 4%.
PERMIT BOUNDARY WAS REPRODUCED FROM LEGAL DESCRIPTION PROVIDED BY STANGER SURVEYING COMPANY, DATED APRIL 1995.



| | PREPARE | D FOR | | |
|------|---------|---------------------|--------|----|
| LL F | ARMS | LANDFILL | TX, LP | |
| | REVIS | IONS | | |
| ATE | | DESCRIPTION | | |
| 2024 | : | SEE LIST OF REVISIO | ONS | |
| | | | | |
| | | | | ww |

MAJOR PERMIT AMENDMENT POST-PROJECT VELOCITY CALCULATIONS LOCATIONS

> ROYAL OAKS LANDFILL CHEROKEE COUNTY, TEXAS

www.wcgrp.com DRAWIN(

DRAWING IIIF-A-100

APPENDIX IIIF-B

PERIMETER CHANNEL, DETENTION POND, AND CULVERT DESIGN

Includes pages IIIF-B-1 through IIIF-B-18





| | PERMIT BOUNDARY |
|-------------|---|
| | LIMIT OF WASTE |
| 0500 | SITE GRID |
| 610 | EXISTING CONTOUR (SEE NOTE 1) |
| 624 | PROPOSED FINAL COVER CONTOUR |
| | DRAINAGE SWALE |
| | DRAINAGE LETDOWN |
| | CHANNEL CENTERLINE |
| \triangle | INDICATES REVISION (SEE LIST OF REVISIONS) |
| | |

- 1. EXISTING CONTOURS DEVELOPED BY FIRMATEK FROM AERIAL PHOTOGRAPHY FLOWN NOVEMBER 10, 2022.
- 2. MAXIMUM FINAL COVER ELEVATION IS 776.5 FT-MSL. MAXIMUM TOP OF WASTE ELEVATION IS 773.5 FT-MSL.
- 3. TYPICAL SIDESLOPES ARE 4H:1V. TYPICAL TOPSLOPE IS 4%.
- 4. PERMIT BOUNDARY WAS REPRODUCED FROM LEGAL DESCRIPTION PROVIDED BY STANGER SURVEYING COMPANY, DATED APRIL 1995.



| | PREPARED FOR | | DMIT AMENDMENT |
|-------------------------|-----------------------|-------------------|-------------------|
| L FARMS LANDFILL TX, LP | | CULVERT LOCATIONS | |
| | REVISIONS | | |
| Ë | DESCRIPTION | DOVAL | |
| 024 | SEE LIST OF REVISIONS | | |
| | | CHEROKE | E COUNTI; TEXAS |
| | | WWW.WCGRP.COM | DRAWING IIIF-B-15 |
| | | | |

APPENDIX IIIF-C

FINAL COVER EROSION CONTROL STRUCTURE DESIGN

Includes pages IIIF-C-1 through IIIF-C-23





| DRAINAGE LETDOWN DRAINAGE AREA DESIGNATION | AREA (ACRES) |
|--|-----------------|
| DA1 | 14.07 |
| DA2 | 6.99 |
| DA3 | 14.33 |
| DA4 | 13.99 |
| DA5 | 20.05 |



| | PREPARED FOR | | |
|----------------------------|-----------------------|------------------------|------------------|
| IILL FARMS LANDFILL TX, LP | | LETDOWN DRAINAGE AREAS | |
| | REVISIONS | | |
| DATE | DESCRIPTION | DOVAL | |
| 9/2024 | SEE LIST OF REVISIONS | | |
| | | CHEROKE | E COUNTI, TEXAS |
| | | WWW.WCGRP.COM | DRAWING IIIF-C-9 |

APPENDIX IIIF-D

EROSION LAYER EVALUATION

Includes pages IIIF-D-1 through IIIF-D-33





| | PERMIT BOUNDARY |
|----------|---|
| | LIMIT OF WASTE |
| 0500 | SITE GRID |
| 610 | EXISTING CONTOUR (SEE NOTE 1) |
| 624 | PROPOSED FINAL COVER CONTOUR |
| | DRAINAGE SWALE |
| 88888000 | DRAINAGE LETDOWN |
| | CHANNEL CENTERLINE |
| Δ | INDICATES REVISION (SEE LIST OF REVISIONS) |
| | |

FROM AERIAL PHOTOGRAPHY FLOWN NOVEMBER 10, 2022. 2. TYPICAL SIDESLOPES ARE (25%). TYPICAL TOPSLOPE IS 4:1 (4%).



| | PREPARED FOR | |
|---|-----------------------|-------|
| | FARMS LANDFILL TX, LP | ILL F |
| | REVISIONS | |
| | DESCRIPTION | ATE |
| | SEE LIST OF REVISIONS | /2024 |
| | | |
| v | | |
| | | |
| | | |

MAJOR PERMIT AMENDMENT EROSION LAYER EVALUATION TYPICAL SLOPE LENGTHS

ROYAL OAKS LANDFILL CHEROKEE COUNTY, TEXAS

WWW.WCGRP.COM

DRAWING IIIF-D-7

APPENDIX IIIF-E

PERMITTED LANDFILL CONDITION HYDROLOGIC CALCULATIONS

Includes pages IIIF-E-1 through IIIF-E-126





| | PERMIT BOUNDARY |
|--------------|---|
| | LIMIT OF WASTE |
| 0500 | SITE GRID |
| * 610 | EXISTING CONTOUR (SEE NOTE 1) |
| 624 | PERMITTED FINAL COVER CONTOUR |
| | DRAINAGE SWALE |
| ARE BOARD | DRAINAGE LETDOWN |
| | CHANNEL CENTERLINE |
| Δ | INDICATES REVISION (SEE LIST OF REVISIONS) |
| | |

1. EXISTING CONTOURS DEVELOPED BY FIRMATEK FROM AERIAL PHOTOGRAPHY FLOWN NOVEMBER 10, 2022.



| | PREPARED FOR | |
|-------|-----------------------|--|
| ILL | FARMS LANDFILL TX, LP | |
| | REVISIONS | |
| DATE | DESCRIPTION | |
| /2024 | SEE LIST OF REVISIONS | |
| | | |
| | | |
| | | |
| | | |

MAJOR PERMIT AMENDMENT UPDATED PERMITTED VELOCITY CALCULATIONS LOCATIONS

ROYAL OAKS LANDFILL CHEROKEE COUNTY, TEXAS

WWW.WCGRP.COM

DRAWING IIIF-E-77

APPENDIX IIIF-F

EROSION CONTROL PLAN FOR ALL PHASES OF LANDFILL OPERATION

Includes pages IIIF-F-1 through IIIF-F-15


• Above grade slopes that have either reached their permitted elevation, or will subsequently remain inactive for longer than 180 days. For example, after an above grade slope has reached the permitted elevation and intermediate cover has been placed, the structural erosion control features (e.g., drainage swales, letdown structures, and/or sedimentation ponds) will be in-place 180 days after intermediate cover has been placed.

Slopes which drain to ongoing waste placement areas, pre-excavated areas, areas that have received only daily cover, and areas under construction which have not received waste are not considered external side slopes.

The ECP for daily cover areas and top dome surfaces and external side slopes that drain directly to the site perimeter stormwater management system, have received intermediate cover, and either reached their permitted configuration or will remain inactive for longer than 180 days are addressed in the following sections. Erosion control measures for final cover areas are addressed in the currently TCEQ-approved Site Development Plan (SDP).

Inspection, maintenance, and recordkeeping requirements are included in the Site Operating Plan (SOP) and discussed in Section 2.4. The word "temporary" is used throughout the ECP to describe any erosion control feature that is not a permanent erosion control feature that is included in the approved Site Development Plan. Additionally, "temporary" is defined as the time between construction of intermediate cover and the construction of final cover. Temporary erosion controls are those controls which are installed or constructed within 180 days from when the intermediate cover is constructed and in place until permanent controls are constructed for the final cover.

2.0 Erosion Control Plan for Top Dome Surfaces and External Side Slopes with Intermediate Cover

Erosion control for above grade top dome surfaces and external embankment side slopes that drain directly to the site perimeter stormwater management system, have received intermediate cover, and either reached their permitted configuration or will remain inactive for longer than 180 days will be managed using a system of nonstructural and structural erosion and sediment controls to meet rule requirements for the intermediate cover phase of landfill construction. Refer to Appendix IIIF-D for an evaluation of the final cover erosion layer.

The structural controls will consist of a combination of vegetation, temporary addon swales, and letdown structures. These structural controls will be configured in a manner that will result in a net soil loss of 50 tons/acre/year or less from the external slope area. As shown on Sheet IIIF-F-10, stormwater runoff will be collected in swales and conveyed to drainage letdown structures down the 25 percent slopes to the perimeter drainage system. The primary goal will be to

MAJOR PERMIT AMENDMENT APPLICATION

VOLUME 6 OF 7

Prepared for

Pine Hill Farms Landfill TX, LP

May 2024

Revised October 2024



Prepared by

Weaver Consultants Group, LLC TBPE Registration No. F-3727 6420 Southwest Boulevard, Suite 206 Fort Worth, Texas 76109

817-735-9770

Project No. 0120-076-11-106

This document is intended for permitting purposes only.

MAJOR PERMIT AMENDMENT APPLICATION

PART III – SITE DEVELOPMENT PLAN

APPENDIX IIIG GEOLOGY REPORT

Prepared for

Pine Hill Farms Landfill TX, LP

May 2024

Revised October 2024

10/02/2024

Weaver Consultants Group, LLC TBPE Registration No. F-3727 6420 Southwest Blvd., Suite 206 Fort Worth, Texas 76109 817-735-9770

WCG Project No. 0120-076-11-106

This document intended for permitting purposes only.

2.3 Geologic Processes

2.3.1 Fault and Seismic Data

Seismic impact zone and fault investigations are discussed in the location restrictions in Parts I/II, Appendix I/IIC. As discussed in these sections, no geologic processes, including active faults or seismic impact zones, are located within one mile of the Site.

2.3.2 Erosional Processes

Erosional processes in the landfill area are limited to those produced by the Royal Oaks drainage system which include rill and channel erosion and sheet flow. Erosion from natural drainage processes is minimal in the vicinity of the Site. No adverse effects from natural erosional processes are anticipated and no mass wasting has been observed.

2.3.3 Wetlands Identification

Details regarding jurisdictional wetland areas are provided in the location restriction demonstrations in Appendix I/IIC.

2.4 Regional Aquifers

Regional aquifers beneath the landfill include the Eocene-age Queen City and Carrizo aquifers. These aquifers are not hydraulically connected and are separated by approximately 180 feet of low permeability Reklaw Formation sediments which function as an aquiclude regionally. The Sparta Sand Aquifer is present at higher elevations and outcrops in minimal areas in the northwestern and southeastern portions of the landfill permit boundary. The low permeability sediments of the Weches Formation underlies the Sparta Sand (where present) and which functions as an aquiclude hydraulically separating the overlying Sparta Sand and underlying Queen City aquifers regionally (TWDB, 2020).

2.4.1 Sparta Sand Aquifer

The TWDB classifies the Sparta Sand as a minor Texas aquifer (Ashworth and Hopkins, 1995) composed predominately of crossbedded sand and sandstone with interbedded with clay (Preston et al, 1991 and TWDB., 1972).

The Sparta Sand Formation ranges in thickness from less than 200 feet in south Texas to over 700 feet in down-dip areas of northeast Texas (Harden, et al., 2004). According to the TWDB and regional water well logs, the Sparta Sand Formation is less than 20 feet thick in the vicinity of Royal Oaks Landfill.

APPENDIX IIIG-C

SITE GEOLOGIC DATA





APPENDIX IIIG-D

SITE HYDROGEOLOGIC DATA



10/02/2024



| | | | ATE | Eta | |
|--------------------------------------|--|--|--|-------------------------|--|
| | | | | | |
| | | | | EVANO | |
| | | | AARON A | | |
| | | Î | 11 | 143 | |
| | | | CEL CEL | VSE | |
| (| 0 2 | 00 400 · | Thank | itican | |
| | SCALE | IN FEET | 10/02 | /2024 | |
| | LEG | <u>end</u> | | | |
| | - | PERMIT BOUNDA | RY | | |
| | | PERMITTED LIMIT | S OF WASTE | | |
| | | PROPOSED LIMIT | S OF WASTE | | |
| · · | | EXISTING EASEM | ENT | | |
| | 70 | | MENI | | |
| | 50 | EXISTING CONTO | OR (SEE NOTE T) | | |
| | N 9500 | SITE GRID COOF | RDINATE | | |
| 77. | | PROPOSED LATE | RAL EXPANSION AREA | | |
| ◆ (6 | ₩–1 61.0) | FORMER GROUN HIGHEST MEASU POSTED IN FT-I | DWATER MONITOR WELL RED GROUNDWATER ELE MSL | WITH VATION | |
| ♦ | ₩-25 663.2) | EXISTING GROUN HIGHEST MEASU POSTED IN FT-1 | IDWATER PIEZOMETER W RED GROUNDWATER ELE MSL | ITH VATION | |
| ▼ ^{PW} | /CG-1B 520.2) | 2023 AQUIFER C EXPANSION PIEZOMETER WITH HIGHEST MEASURED GROUNDWATER ELEVATION POSTED IN FT-MSL | | | |
| ▲ P₩ (€ | /CG-1A 518.3) | 2023 AQUIFER D PIEZOMETER WITH HIGHEST MEASURED GROUNDWATER ELEVATION POSTED IN FT-MSL | | | |
| -65 | 50— | HIGHEST MEASURED GROUNDWATER | | | |
| , | ^ | INDICATES REVIS | SION | | |
| Z | 1 | (SEE LIST OF R | EVISIONS) | | |
| <u>:</u> STING | TING CONTOURS DEVELOPED BY FIRMATEK FROM AERIAL | | | | |
| OTOGRA | APHY FLOW | N NOVEMBER 10, | 2022. THE GRID SYSTE | EM IS NAVD 88 | |
| STING | GROUNDWA | TER MONITOR WE | LL LOCATION COORDINA | | |
| | GUST 2023 | AS-BUILT SURVI | LY BY WEAVER CONSUL | TANTS GROUP. | |
| GROUND | ATER ELEV DWATER MO | ATION DATA OBT | AINED FROM THE FACILI ASE PROVIDED BY HYDR | TY'S SUBTITLE REX IN | |
| ESTIGA | TION REPC | COM PREVIOUS SU RTS, AND FROM | BSURFACE EXPLORATION GAUGING CONDUCTED B | N AND Y WEAVER | |
| NSULTA | ANTS GROU | P IN 2023 AND 2 | 2024. | | |
| HEST I CG-1A IN CON | IEST MEASURED GROUNDWATER ELEVATIONS IN DEEP PIEZOMETERS G–1A, PWCG–7A, PWCG–7B, PWCG–9A, AND PWCG–9B HAVE NOT N CONTOURED DUE TO SIGNIFICANT DIFFERENCE IN GROUNDWATER | | | | |
| H AS | COMPARE | U IU ADJACENT | SHALLOWER MONITORING | FUINTS. | |
| HEST I E HIGHI ASUREN ACTU/ | HEST MEASURED GROUNDWATER SURFACE CONTOURS CREATED USING HIGHEST MEASURED GROUNDWATER ELEVATION RECORDED AT EACH SUREMENT POINT AND DO NOT REPRESENT A SINGLE GAUGING EVENT ACTUAL CROUNDWATER FLOW | | | | |
| HEST | | | | | |
| | , PWCG-74 | A, PWCG-7B, PWC | G-9A, AND PWCG-9B H | HAVE NOT NDWATER | |
| PTH AS | 6 COMPARE | D TO ADJACENT | SHALLOWER MONITORING | POINTS. | |
| | | | | | |
| | | | | | |
| ни | FARMS IAN | IDFILL TY IP | MAJOR PE | RMIT AMENDMENT | |
| . IIILL | | IVIILL IA, LE | HIGHES | ST MEASURED | |
| DATE | | | ER CONTOUR MAP | | |
| 9/2024 | SEE LI | ST OF REVISIONS | ROYAL OAKS LANDFILL | | |
| | | | | | |
| | | | WWW.WCGRP.COM | | |



| PREPARED FOR HILL FARMS LANDFILL TX, LP | | MAJOR PERMIT AMENDMENT AUGUST 2023 | |
|--|-------------|---------------------------------------|----------------------------------|
| REVISIONS | | AQUIFERS A AND B | |
| DATE | DESCRIPTION | GROUNDWA | IER CONTOUR MAP |
| /2024 SEE LIST OF REVISIONS | | ROYAL CHEROKEI | OAKS LANDFILL E COUNTY, TEXAS |
| | | WWW.WCGRP.COM | FIGURE IIIG-D-2A |



| PREPARED FOR | MAJOR PERMIT AMENDMENT SEPTEMBER 2023 | | |
|-----------------------------|--|----------------------------------|--|
| HILL FARMS LANDFILL TX, LP | | | |
| REVISIONS | T AQUIFE | AQUIFERS A AND B | |
| DATE DESCRIPTION | GROUNDWATER CONTOUR MAP | | |
| /2024 SEE LIST OF REVISIONS | ROYAL CHEROKE | OAKS LANDFILL E COUNTY, TEXAS | |
| | WWW.WCGRP.COM | FIGURE IIIG-D-2B | |



| PREPARED FOR | | MAJOR PERMIT AMENDMENT OCTOBER 2023 AQUIFERS A AND B | |
|--|--|--|------------------|
| REVISIONS | | | |
| DATE DESCRIPTION //2024 SEE LIST OF REVISIONS | | GROUNDWATER CONTOUR MAP ROYAL OAKS LANDFILL | |
| | | CHEROKE | E COUNTY, TEXAS |
| | | WWW.WCGRP.COM | FIGURE IIIG-D-2C |



| PREPARED FOR HILL FARMS LANDFILL TX, LP | MAJOR PERMIT AMENDMENT NOVEMBER 2023 | | |
|--|---|----------------------------------|--|
| REVISIONS | 1 AQUIFE | AQUIFERS A AND B | |
| DATE DESCRIPTION | GROUNDWATER CONTOUR MAR | | |
| /2024 SEE LIST OF REVISIONS | ROYAL CHEROKE | OAKS LANDFILL E COUNTY, TEXAS | |
| | WWW.WCGRP.COM | FIGURE IIIG-D-2D | |



| PREPARED FOR | MAJOR PERMIT AMENDMENT | |
|-----------------------------|------------------------|------------------|
| HILL FARMS LANDFILL TX, LP | DECEMBER 2023 | |
| REVISIONS | AQUIFERS A AND B | |
| DATE DESCRIPTION | GROUNDWATER CONTOUR MA | |
| /2024 SEE LIST OF REVISIONS | ROYAL OAKS LANDFILL | |
| | CHEROKE | E COUNTY, TEXAS |
| | WWW.WCGRP.COM | FIGURE IIIG-D-2E |



| prepared for HILL FARMS LANDFILL TX. LP | MAJOR PERMIT AMENDMENT | |
|--|---|--|
| REVISIONS | AQUIFERS A AND B | |
| /2024 SEE LIST OF REVISIONS | ROYAL OAKS LANDFILL CHEROKEE COUNTY, TEXAS | |
| | www.wcgrp.com FIGURE IIIG-D-2F | |



| PREPARED FOR HILL FARMS LANDFILL TX, LP | | MAJOR PERMIT AMENDMENT | |
|--|--|-------------------------|-----------------|
| | | FEBRUARY 2024 | |
| REVISIONS | | AQUIFERS A AND B | |
| DATE DESCRIPTION | | GROUNDWATER CONTOUR MAP | |
| /2024 SEE LIST OF REVISIONS | | ROYAL OAKS LANDFILL | |
| | | CHEROKE | E COUNTY, TEXAS |
| | | WWW.WCGRP.COM | FIGURE MIG-D-2G |
| | | | |



| prepared for | MAJOR PERMIT AMENDMENT | |
|-----------------------------|-------------------------|----------------------------------|
| HILL FARMS LANDFILL TX, LP | MARCH 2024 | |
| REVISIONS | AQUIFERS A AND B | |
| DATE DESCRIPTION | GROUNDWATER CONTOUR MAP | |
| /2024 SEE LIST OF REVISIONS | ROYAL CHEROKE | OAKS LANDFILL E COUNTY, TEXAS |
| | WWW.WCGRP.COM | FIGURE IIIG-D-2H |



| CHEROKEE COUNTY, TEXAS | | |
|------------------------|------------------|--|
| WWW.WCGRP.COM | FIGURE IIIG-D-3A | |



| ROUNDWATER POTENT | OMETRIC SUR | FACE COM | VIOURS ARE | INTERPOLATE |
|-------------------|--------------|----------|------------|-------------|
| TWEEN MEASUREMEN | T LOCATIONS; | ACTUAL | CONDITIONS | MAY VARY. |

| PREPARED FOR HILL FARMS LANDFILL TX, LP | MAJOR PERMIT AMENDMENT SEPTEMBER 2023 | |
|--|--|----------------------------------|
| REVISIONS | AQUIFERS C AND D | |
| DATE DESCRIPTION | GROUNDWA | TER CONTOUR MAP |
| /2024 SEE LIST OF REVISIONS | ROYAL CHEROKE | OAKS LANDFILL E COUNTY, TEXAS |
| | WWW.WCGRP.COM | FIGURE IIIG-D-3B |



| PREPARED FOR HILL FARMS LANDFILL TX, LP | MAJOR PERMIT AMENDMENT OCTOBER 2023 AQUIFERS C AND D | |
|--|--|--|
| REVISIONS | | |
| ATE DESCRIPTION | GROUNDWATER CONTOUR MAP | |
| 2024 SEE LIST OF REVISIONS | ROYAL OAKS LANDFILL CHEROKEE COUNTY, TEXAS | |
| | WWW.WCGRP.COM FIGURE IIIG-D-3C | |



| | - | |
|-----------------------------|---|------------------|
| PREPARED FOR | MAJOR PERMIT AMENDMENT | |
| HILL FARMS LANDFILL TX, LP | NOVEMBER 2023 | |
| REVISIONS | AQUIFERS C AND D | |
| DATE DESCRIPTION | GROUNDWA | TER CONTOUR MAP |
| /2024 SEE LIST OF REVISIONS | ROYAL OAKS LANDFILL CHEROKEE COUNTY, TEXAS | |
| | WWW.WCGRP.COM | FIGURE IIIG-D-3D |



| PREPARED FOR | MAJOR PERMIT AMENDMENT | |
|-----------------------------|---|------------------|
| HILL FARMS LANDFILL TX, LP | DECEMBER 2023 | |
| REVISIONS | AQUIFERS C AND D | |
| DATE DESCRIPTION | GROUNDWATER CONTOUR MAP | |
| /2024 SEE LIST OF REVISIONS | ROYAL OAKS LANDFILL CHEROKEE COUNTY, TEXAS | |
| | WWW.WCGRP.COM | FIGURE IIIG-D-3E |



| | PREPARED FOR | MAJOR PERMIT AMENDMENT | |
|-------|-----------------------|-------------------------|------------------|
| HILL | FARMS LANDFILL TX, LP | JANUARY 2024 | |
| | REVISIONS | AQUIFERS C AND D | |
| DATE | DESCRIPTION | GROUNDWATER CONTOUR MAP | |
| /2024 | SEE LIST OF REVISIONS | ROYAL OAKS LANDFILL | |
| | | ONERGRE | |
| | | WWW.WCGRP.COM | FIGURE IIIG-D-3F |



| HILL | FARMS LANDFILL TX, LP | MAJOR PERMIT AMENDMENT FEBRUARY 2024 | |
|-------|-----------------------|---|------------------|
| DATE | REVISIONS | AQUIFERS C AND D | |
| /2024 | SEE LIST OF REVISIONS | ROYAL OAKS LANDFILL CHEROKEE COUNTY, TEXAS | |
| | | WWW.WCGRP.COM | FIGURE IIIG-D-3G |



| ARMS LANDFILL TX, LP | MARCH 2024 | | |
|-----------------------|------------------------|-----------------|--|
| REVISIONS | AQUIFE | ERS C AND D | |
| DESCRIPTION | GROUNDWA | TER CONTOUR MAP | |
| SEE LIST OF REVISIONS | ROYAL OAKS LANDFILL | | |
| | CHEROKEE COUNTY, TEXAS | | |
| | WWW WCGPP COM | | |

MAJOR PERMIT AMENDMENT APPLICATION

VOLUME 7 OF 7

Prepared for

Pine Hill Farms Landfill TX, LP

May 2024

Revised October 2024

SON E. EDWAF

10/02/2024

Prepared by

Weaver Consultants Group, LLC TBPE Registration No. F-3727 6420 Southwest Boulevard, Suite 206 Fort Worth, Texas 76109 817-735-9770

Project No. 0120-076-11-106

This document is intended for permitting purposes only.

MAJOR PERMIT AMENDMENT APPLICATION

PART III – SITE DEVELOPMENT PLAN

APPENDIX IIIH GROUNDWATER SAMPLING AND ANALYSIS PLAN

Prepared for

Pine Hill Farms Landfill TX, LP

May 2024

Revised October 2024

Prepared by 10/02/2024

Weaver Consultants Group, LLC **TBPE Registration No. F-3727**

6420 Southwest Blvd., Suite 206 Fort Worth, Texas 76109 817-735-9770

WCG Project No. 0120-076-11-106

This document intended for permitting purposes only.

| 47 VOC Constituents (Continued) ¹ |
|---|
| Methylene Chloride (Dichloromethane) |
| Methyl Ethyl Ketone (2-Butanone or MEK) |
| Methyl Iodide (Iodomethane) |
| 4-Methyl-2-Pentanone (Methyl Isobutyl Ketone or MIBK) |
| Styrene |
| 1,1,1,2-Tetrachloroethane |
| 1,1,2,2-Tetrachloroethane |
| Tetrachloroethylene (Tetracholorethane) |
| Toluene |
| 1,1,1 Trichloroethane (Methylchloroform) |
| 1,1,2-Trichloroethane |
| Trichloroethylene (Trichloroethene, TCE) |
| Trichloroflourmethane (CFC-11) |
| 1,2,3-Trichloropropane |
| Vinyl Acetate |
| Vinyl Chloride |
| Xylenes |

Table 5-1 (Continued)Detection Monitoring Constituents

¹ Analyses will be performed using the TCEQ – recommended EPA test methods or alternative methods with equivalent or better performance.

5.2 Practical Quantitation Limit

The laboratory reporting limits will meet the requirements of Title 30 TAC §330.405(f)(5). Analytical results will be reported to the lowest concentration levels that can be reliably quantified (practical quantitation limits [PQL]). In accordance with Section 3.5 of TCEQ Regulatory Guidance RG-74, The laboratory analytical results will be reported to the TCEQ MSW benchmark PQLs (established in a TCEQ letter to MSW landfill owners and operators, dated May 25, 2010) or to laboratory PQLs. The following describes the laboratory PQL required requirements:

- The PQL will be at or below the Ground Water Protection Standard (GWPS) concentration established for each analyte in accordance with Title 30 TAC §330.409(h), unless approved otherwise by the executive director.
- The PQL will be determined as the concentration that corresponds to the following precision and accuracy criteria:

| Constituents/Chemicals of Concern | Precision (percent RSD) | Accuracy (percent recovery) |
|--------------------------------------|----------------------------|--------------------------------|
| Metals | 10 | 70-130 |
| Volatiles | 20 | 50-150 |
| Semi-Volatiles | 30 | 50-150 |

6 STATISTICAL METHODOLOGY – GROUNDWATER DATA ANALYSES

6.1 Statistical Methodology

Statistical analyses of groundwater analytical data will be performed in accordance with Title 30 TAC §330.405, §330.407, and §330.409, and EPA Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities – Unified Guidance (March, 2009), and in general accordance with the statistical procedures recommended in Section 4 of TCEQ Regulatory Guidance RG-074 (TCEQ, May 2018). Statistical comparisons will be performed using Sanitas[™], a commercial software program developed by Sanitas Technologies, Inc. or other equivalent statistical program. Flow charts depicting statistical analyses protocols for control charts, prediction limits, and 95 percent confidence intervals are included in Appendix IIIH-F. It is not possible to predict all future potential circumstances. Therefore, alternate statistical methods may be used as deemed appropriate for the data distribution of the constituents being evaluated, providing that they conform to the requirements and guidelines set forth in Title 30 TAC §330.407 and §330.409, and EPA Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities – Unified Guidance (March, 2009).

6.2 Exceedances, Resampling, ASDs, and Assessment Monitoring

Detection monitoring for the constituents listed in Table 5-1 of Section 5.1 and referenced in Title 30 TAC §330.419(a) will be conducted in accordance with Sections 5.3 and 5.5. An Initial Statistical Exceedance (ISE) of any constituent will be based on a detected concentration that exceeds the constituent's statistical limit. If an ISE of any constituent is indicated at any detection monitor well, a notice will be made to the TCEQ (and any other pollution control agency with jurisdiction that has requested to be notified) within 14 days.

6.2.1 Verification Resampling

Verification re-sampling is an integral part of the statistical methodology that is required to verify if an actual SSI has occurred. In the event that an ISE is indicated for any constituent listed in Table 5-1 (Section 5.1), verification resampling will be completed to either confirm or disconfirm the ISE. The verification resampling results will be submitted to TCEQ within the appropriate regulatory timeframe. If the ISE is verified through resampling then the verified exceedance constitutes a Statistically Significant Increase (SSI) and the facility will either:

The facility will submit an annual assessment monitoring report within 60 days after the facility's second semiannual groundwater sampling event that includes the following information determined since the previously submitted report:

• a statement whether a statistically significant level above a groundwater protection standard established in subsection (h) or (i) of §330.409 has occurred in any well during the previous calendar year period and the status of any statistically significant level events.

6.4 Corrective Action Monitoring

Detection of assessment monitoring constituents at statistically significant levels, as defined in Title 30 TAC §330.409, could result in corrective action monitoring. Groundwater monitoring for the purpose of corrective action assessment and remediation will be conducted in accordance with Title 30 TAC §330.411 through §330.415, and in consultation with TCEQ. At a minimum, the assessment will address the following:

- a characterization of the contaminated groundwater, including concentrations of assessment constituents as defined in 30 TAC §330.409;
- the concentration limit for each constituent found in the groundwater;
- detailed plans and an engineering report describing the corrective action to be taken;
- a description of how the groundwater monitoring program will demonstrate the adequacy of the corrective action; and
- a schedule for submittal of the above information provided the owner or operator obtains written authorization from the executive director prior to submittal of the complete permit application.

If the concentrations of all 40 CFR Part 258, Appendix II constituents are shown to be below groundwater protection standard concentrations, using the statistical procedures in §330.405, for a period of three consecutive years, the owner or operator will notify the Executive Director in writing and return to detection monitoring if approved. The Executive Director may also specify an alternative timeframe during which the owner or operator shall demonstrate that concentrations of 40 Code of Federal Regulations Part 258, Appendix II constituents have not exceeded the groundwater protection standards in accordance with Title 30 TAC §330.415(f)(2).

- Martin, W.F., Lippirr, J.M., and Protherd, T.G. 1987. Hazardous Waste Handbook for Health and Safety, Butterworth Publishers, Stoneham, Massachusetts, pp. 28-30.
- Sanitas Technologies, Inc., 2009, Sanitas[®] Users Manual, Version 9, Shawnee, Kansas.
- Texas Commission on Environmental Quality (TCEQ), MSW Permits Section, "Guidelines for Groundwater Monitoring Report Submittals", December 22, 2014.
- Texas Commission on Environmental Quality (TCEQ), MSW Permits Section, "Progression of the Inter-Laboratory MSW-Practical Quantitation Limit (PQL) Study", May 25, 2010.
- Texas Commission on Environmental Quality (TCEQ), "Texas Administrative Code, Title 30, Chapter 330, Municipal Solid Waste", March 27, 2006 (effective date).
- Texas Commission on Environmental Quality (TCEQ), Waste Permits Division, Guidelines for Preparing a Groundwater Sampling and Analysis Plan, TCEQ Regulatory Guidance RG-074, May 2018.
- The Carel Corporation, 2008, Update to Comply with Subchapter Permit Modification, Royal Oaks Landfill, MSW Permit Number 1614A.
- The Carel Corporation, 2009, Groundwater Monitor Well Installation Report, Royal Oaks Landfill, MSW Permit Number 1614A.
- The Carel Corporation, 2009-2012, Semiannual Groundwater Monitoring Reports, Royal Oaks Landfill, MSW Permit Number 1614A.
- The Carel Corporation, 2012, Total Metals Background Database Evaluation, Royal Oaks Landfill, MSW Permit Number 1614A.
- Texas Commission on Environmental Quality (TCEQ), "Texas Administrative Code, Title 30, Chapter 330, Municipal Solid Waste", March 27, 2006 (effective date).
- U.S. Environmental Protection Agency, 1986. RCRA Groundwater Monitoring Technical Enforcement Guidance Document. OSWER – 99550.1, Office of Waste Programs Enforcement, Office of Solid Waste and Emergency Response, Washington, D.C.
- U.S. Environmental Protection Agency, 2009. Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities: Unified Guidance.
- U.S. Environmental Protection Agency, 1991. Handbook Ground water, Volume II: Methodology. EPA/625/6-90/0166.
- U.S. Environmental Protection Agency, November 1986. Test Methods for Evaluating Solid Waste – Physical/Chemical Methods, Third Edition (revised), SW-846. Office of Solid Waste and Emergency Response, Washington, D.C.
- U.S. Environmental Protection Agency, November 1993. Solid Waste Disposal Facility Criteria Technical Manual. EPA/530-R-93-017, NTIC #PB94-100-450, Office of Solid Waste and Emergency Response, Washington, D.C.
- Weaver Boos Consultants, 2003, Installation of Groundwater Monitoring Wells MW-16, MW-17, and MW-19, Royal Oaks Landfill, MSW Permit Number 1614A.

APPENDIX IIIH-A

GROUNDWATER MONITORING SYSTEM





| PREI | pared for IS LANDFILL TX, LP | MAJOR PE EXISTING | ERMIT AMENDMENT G GROUNDWATER |
|-----------|---------------------------------|----------------------|----------------------------------|
| REVISIONS | | MONITORING | SYSTEM NETWORK |
| DATE | DESCRIPTION |] | |
| /2024 | SEE LIST OF REVISIONS | ROYAL OAKS LANDFILL | |
| | | CHEROKE | E COUNTT, TEXAS |
| | | WWW.WCGRP.COM | FIGURE IIIH-A-1 |
| | | | |



| LEG | - FND | | | |
|---|---|--|--|--|
| | PERMIT BOUNDARY | | | |
| | PERMITTED LIMITS OF WASTE | | | |
| | PROPOSED LIMITS OF WASTE | | | |
| · · · | EXISTING EASEMENT | | | |
| A | PROPOSED EASEMENT | | | |
| 630 | EXISTING CONTOUR (SEE NOTE 1) | | | |
| N 9500 | SITE GRID COORDINATE | | | |
| <u> </u> | CELL BOUNDARY | | | |
| ONS) | CHANNEL CENTERLINE | | | |
| | PROPOSED LATERAL EXPANSION AREA | | | |
| ₩ – A8 (MW – 8) (666.55) | EXISTING AQUIFER A GROUNDWATER MONITOR WELL PROPOSED NEW DESIGNATION WITH FORMER MONITOR WELL NAME AND GROUNDWATER ELEVATION POSTED IN PARENTHESIS | | | |
| ₩₩-824 (₩₩-24) (608.27) | EXISTING AQUIFER B GROUNDWATER MONITOR WELL PROPOSED NEW DESIGNATION WITH FORMER MONITOR WELL NAME AND GROUNDWATER ELEVATION POSTED IN PARENTHESIS | | | |
| ● MW-20 (609.45) | EXISTING AQUIFER B GROUNDWATER MONITOR WELL TO BE REMOVED FROM SYSTEM WITH GROUNDWATER ELEVATION POSTED IN PARENTHESIS | | | |
| 660 | AQUIFER A GROUNDWATER POTENTIOMETRIC SURFACE CONTOUR IN FT-MSL | | | |
| <u> 620 </u> | AQUIFER B GROUNDWATER POTENTIOMETRIC SURFACE CONTOUR IN FT-MSL | | | |
| | AQUIFER A APPROXIMATE OUTCROP BOUNDARY | | | |
| | AQUIFER B APPROXIMATE OUTCROP BOUNDARY | | | |
| | AQUIFER A FINAL POINT OF COMPLIANCE | | | |
| | AQUIFER B INTERIM POINT OF COMPLIANCE | | | |
| | AQUIFER B FINAL POINT OF COMPLIANCE | | | |
| 592' | AQUIFER A INTERWELL SPACING ALONG EXISTING POINT OF COMPLIANCE IN LINEAR FEET | | | |
| 563' | AQUIFER B INTERWELL SPACING ALONG EXISTING POINT OF COMPLIANCE IN LINEAR FEET | | | |
| CONTOURS DEVELOPED BY F | TRMATEK FROM AERIAL 2022. THE GRID SYSTEM IS | | | |
| N A SITE GRID SYSTEM. ELEV | ATIONS ARE BASED ON NAVD 88. | | | |
| GROUNDWATER MONITOR WEI 2023 AS-BUILT SURVEY BY | L LOCATION COORDINATES OBTAINED FROM WEAVER CONSULTANTS GROUP. | | | |
| OUTCROP BOUNDARIES APPR IC LOGS AND WELL SCREENI | OXIMATED FROM SUBSURFACE INVESTIGATION | | | |
| /ATER POTENTIOMETRIC SURF ANTS GROUP IN SEPTEMBER I IN FT-MSL. | ACE ELEVATIONS MEASURED BY WEAVER 2023 AND POSTED AT EACH MEASUREMENT | | | |
| ATER POTENTIOMETRIC SURFACE CONTOURS ARE INTERPOLATED BETWEEN MENT LOCATIONS; ACTUAL CONDITIONS MAY VARY. | | | | |
| WELL MW-20 AND MW-21 LOCATIONS AND INTERWELL SPACING ACCEPTED WITH APPROVAL OF THE 2008 SUBCHAPTER J PERMIT MODIFICATION BY THE ORPORATION. | | | | |
| AQUIFER B POINT OF COMPLI EMOVED AS LANDFILL IS DEV IH-A-4 OF THE FACILITY'S (| ANCE AND MONITOR WELLS MW-20 AND MW-21 ELOPED IN ACCORDANCE WITH SECTION 2.0 AND GWSAP. | | | |
| PREPARED FOR | MAJOR PERMIT AMENDMENT | | | |
| E HILL FARMS LANDFILL TX, I | PROPOSED AQUIFER A AND B | | | |

| | REVISIONS | GROUNDWATER MONITORING | |
|----|-----------------------|---|----------------|
| | DESCRIPTION | SYSTEM NETWORK | |
| 24 | SEE LIST OF REVISIONS | ROYAL OAKS LANDFILL CHEROKEE COUNTY, TEXAS | |
| | | | |
| | | | |
| | | WWW.WCORF.COM | FIGURE HIH-A-Z |



| LEGEND | | | |
|--|--|--|--|
| | IIT BOUNDARY | | |
| | IITTED LIMITS OF WASTE | | |
| PROF | POSED LIMITS OF WASTE | | |
| · · EXIS | ING EASEMENT | | |
| ATT PROP | POSED EASEMENT | | |
| 630 EXIS | TING CONTOUR (SEE NOTE | : 1) | |
| N 9500 SITE | GRID COORDINATE | | |
| CEL | BOUNDARY | | |
| | INEL CENTERLINE | | |
| PRO | POSED LATERAL EXPANSIO | N AREA | |
| ₩₩-C1 PRO (PWCG-9B) (TO (581.44) FOR ELEV | POSED AQUIFER C GROUNI BE CONVERTED FROM EXI IER PIEZOMETER NAME AN ATION POSTED IN PARENT | DWATER MONITOR WELL STING PIEZOMETER) WITH ND GROUNDWATER THESIS | |
| OW-C2 (PWCG-1B) WELL (579.98) WTH ELEV | POSED AQUIFER C GROUNI (TO BE CONVERTED FRO FORMER PIEZOMETER NA ATION POSTED IN PARENT | DWATER OBSERVATION M EXISTING PIEZOMETER) ME AND GROUNDWATER THESIS | |
| | POSED NEW AQUIFER C GA (TO BE INSTALLED) | ROUNDWATER MONITOR | |
| MW-D3 (PWCG-2) (456.41) PROI (TO FORM ELEV | POSED AQUIFER D GROUNI BE CONVERTED FROM EXIS IER PIEZOMETER NAME AN ATION POSTED IN PARENT | OWATER MONITOR WELL STING PIEZOMETER) WITH ND GROUNDWATER THESIS | |
| (PWCG-5) (457.47) WELL WITH ELEV | POSED AQUIFER D GROUNI (TO BE CONVERTED FRO FORMER PIEZOMETER NA ATION POSTED IN PARENT | DWATER OBSERVATION M EXISTING PIEZOMETER) ME AND GROUNDWATER THESIS | |
| HW-D4 PRO | POSED NEW AQUIFER D GF (TO BE INSTALLED) | ROUNDWATER MONITOR | |
| A PWCG-3 EXIS (456.91) WITH PAR | EXISTING AQUIFER D PIEZOMETER TO BE REMOVED WITH GROUNDWATER ELEVATION POSTED IN PARENTHESIS | | |
| | | | |
| | FER D GROUNDWATER PO ACE CONTOUR IN FT-MSI | - TENTIOMETRIC - | |
| AQU | FER C APPROXIMATE OUT | CROP BOUNDARY | |
| | FER C PROPOSED POINT | OF COMPLIANCE | |
| AQU | FER D PROPOSED POINT | OF COMPLIANCE | |
| 592' AQUI POIN | FER C INTERWELL SPACING T OF COMPLIANCE IN LINE | G ALONG PROPOSED FAR FEET | |
| 563' AQUI POIN | FER D INTERWELL SPACIN T OF COMPLIANCE IN LINE | G ALONG PROPOSED AR FEET | |
| CONTOURS DEVELOPED BY FIRMA PHY FLOWN NOVEMBER 10, 202 A SITE GRID SYSTEM, ELEVATIO | TEK FROM AERIAL 2. THE GRID SYSTEM IS NS ARE BASED ON NAVD | 88. | |
| ROUNDWATER PIEZOMETER LOCA | TION COORDINATES OBTA | INED FROM AUGUST | |
| UTCROP BOUNDARIES APPROXIN CLOGS AND WELL SCREENING D | ATED FROM SUBSURFACE | INVESTIGATION | |
| TER POTENTIOMETRIC SURFACE ELEVATIONS MEASURED BY WEAVER NTS GROUP IN SEPTEMBER 2023 AND POSTED AT EACH MEASUREMENT IN FT-MSL. | | | |
| TER POTENTIOMETRIC SURFACE CONTOURS ARE INTERPOLATED BETWEEN ENT LOCATIONS; ACTUAL CONDITIONS MAY VARY. | | | |
| MONITOR WELLS WILL BE INSTALLED, OR CONVERTED FROM EXISTING RS, AS LANDFILL IS DEVELOPED IN ACCORDANCE WITH SECTION 2.0, FIGURE AND FIGURE IIIH-A-5 OF THE FACILITY'S GWSAP. | | | |
| PREPARED FOR | MAJOR PE | RMIT AMENDMENT | |
| HILL FARMS LANDFILL TX, LP PROPOSED AQUIFER C AND D | | | |
| REVISIONS DATE DESCRIPTION | GROUNDWATER MONITORING | | |
| 0/2024 SEE LIST OF REVISIONS | | SYSTEM_NETWORK ROYAL_OAKS_LANDFILL | |
| | CHEROKE | E COUNTY, TEXAS | |
| | WWW.WCGRP.COM | FIGURE IIIH-A-3 | |

MAJOR PERMIT AMENDMENT APPLICATION

PART III – SITE DEVELOPMENT PLAN APPENDIX III I LANDFILL GAS MANAGEMENT PLAN

Prepared for

Pine Hill Farms Landfill TX, LP

May 2024

Revised October 2024



Prepared by

Weaver Consultants Group, LLC

TBPE Registration No. F-3727 6420 Southwest Boulevard, Suite 206 Fort Worth, Texas 76109 817-735-9770

WCG Project No. 0120-076-11-106

This document is intended for permitting purposes only.

APPENDIX III I-A

PERIMETER LANDFILL GAS MONITORING SYSTEM LANDFILL GAS PROBE/VENT DETAILS



Includes Figures III I-A-1 and III I-A-2




<u>LEGEND</u>

| | PERMIT BOUNDARY | |
|--------------------|---|--|
| | PERMITTED LIMIT OF WASTE | |
| · — — – | PROPOSED LIMIT OF WASTE | |
| 500 | SITE GRID | |
| 610 | EXISTING CONTOUR (SEE NOTE 1) | |
| ⊛ ^{GP-1} | EXISTING GAS PROBE | |
| \oplus^{TV-1} | EXISTING TRENCH VENT | |
| ⊚ ^{GP-18} | PROPOSED GAS PROBE | |
| ⊚ ^{GP-10} | EXISTING GAS PROBE (TO BE ABANDONED) | |
| \triangle | INDICATES REVISION (SEE LIST OF REVISIONS) | |
| | | |

1. EXISTING CONTOURS DEVELOPED BY FIRMATEK FROM AERIAL PHOTOGRAPHY FLOWN NOVEMBER 10, 2022.

 LOCATION OF THE PROPOSED GAS PROBES ARE APPROXIMATE. ACTUAL LOCATION WILL BE DETERMINED BASED ON FIELD CONDITIONS AT THE TIME OF INSTALLATION.

| IILL F | PREPARED FOR | MAJOR PERMIT AMENDMENT PERIMETER LANDFILL GAS | |
|-----------------------------|--------------|--|------------------|
| REVISIONS | | MUNITURING SYSTEM | |
| DATE | DESCRIPTION | | |
| /2024 SEE LIST OF REVISIONS | | CHEROKE | E COUNTY, TEXAS |
| | | WWW.WCGRP.COM | FIGURE III I-A-1 |
| | | | |

APPENDIX III I-F

LANDFILL GAS COLLECTION AND CONTROL SYSTEM PLAN



Includes Figures III I-F-1 through III I-F-6





- WELLS, COLLECTION PIPING, SUMPS, VALVES, AND ASSOCIATED LFG SYSTEM COMPONENTS ARE APPROXIMATE. ACTUAL NUMBERS, LOCATIONS, AND PIPING CONFIGURATION TO BE DETERMINED BASED ON THE FIELD CONDITIONS AT

| ILL FARMS LANDFILL TX, LP | MAJOR PERMIT AMENDMENT GCCS COMPLETION PLAN | |
|-----------------------------|--|------------------|
| REVISIONS | | |
| DATE DESCRIPTION | | |
| /2024 SEE LIST OF REVISIONS | RUTAL UAKS LANDFILL | |
| | CHEROKE | E COUNTI, TEXAS |
| | WWW.WCGRP.COM | FIGURE III I-F-1 |
| | | |



| EXISTING | LFG | COLLECTION | PIPING |
|--------------|------|------------|------------|
| E/domito | LI 0 | OCLECTION | 1 11 11 10 |

| INDICA | INDICATES | | REVISION | |
|--------|-----------|----|-----------|--|
| (SEE | TZLI | OF | REVISIONS | |

| PREPARED FOR HILL FARMS LANDFILL TX, LP | | MAJOR PE EXISTING | RMIT AMENDMENT GCCS LAYOUT |
|--|-----------------------|----------------------|-------------------------------|
| REVISIONS | | | |
| DATE | DESCRIPTION | DOVAL | |
| 9/2024 | SEE LIST OF REVISIONS | RUTAL UAKS LANDFILL | |
| | | CHERORE | E COUNTI, TEXAS |
| | | WWW.WCGRP.COM | FIGURE III I-F-2 |

ROYAL OAKS LANDFILL CHEROKEE COUNTY, TEXAS TCEQ PERMIT NO. MSW-1614B

MAJOR PERMIT AMENDMENT APPLICATION

PART III – SITE DEVELOPMENT PLAN APPENDIX IIIJ CLOSURE PLAN

Prepared for

Pine Hill Farms Landfill TX, LP

May 2024

Revised October 2024



Prepared by

Weaver Consultants Group, LLC TBPE Registration No. F-3727 6420 Southwest Blvd., Suite 206 Fort Worth, Texas 76109 817-735-9970

WCG Project No. 0120-076-11-106

This document is intended for permitting purposes only.



| LIMIT OF WASTE SITE GRID EXISTING CONTOUR (SEE NOTE 1) 624 PROPOSED FINAL COVER CONTOUR DRAINAGE SWALE DRAINAGE LETDOWN CHANNEL CENTERLINE INDICATES REVISION (SEE LIST OF REVISIONS) | | PERMIT BOUNDARY |
|---|--------------|---|
| 0500 SITE GRID 610 EXISTING CONTOUR (SEE NOTE 1) 624 PROPOSED FINAL COVER CONTOUR DRAINAGE SWALE DRAINAGE LETDOWN CHANNEL CENTERLINE INDICATES REVISION M (SEE LIST OF REVISIONS) | | LIMIT OF WASTE |
| 610 EXISTING CONTOUR (SEE NOTE 1) 624 PROPOSED FINAL COVER CONTOUR DRAINAGE SWALE DRAINAGE LETDOWN CHANNEL CENTERLINE INDICATES REVISION 1 (SEE LIST OF REVISIONS) | 0500 | SITE GRID |
| 624 PROPOSED FINAL COVER CONTOUN DRAINAGE SWALE DRAINAGE LETDOWN CHANNEL CENTERLINE INDICATES REVISION 1 (SEE LIST OF REVISIONS) | ~ 610 | EXISTING CONTOUR (SEE NOTE 1) |
| DRAINAGE SWALE DRAINAGE LETDOWN CHANNEL CENTERLINE INDICATES REVISION (SEE LIST OF REVISIONS) | 624 | PROPOSED FINAL COVER CONTOUR |
| CHANNEL CENTERLINE INDICATES REVISION (SEE LIST OF REVISIONS) | | DRAINAGE SWALE |
| CHANNEL CENTERLINE INDICATES REVISION (SEE LIST OF REVISIONS) | RASSESSION | DRAINAGE LETDOWN |
| | Â | CHANNEL CENTERLINE INDICATES REVISION (SEE LIST OF REVISIONS) |

1. EXISTING CONTOURS DEVELOPED BY FIRMATEK FROM AERIAL PHOTOGRAPHY FLOWN NOVEMBER 10, 2022. THE GRID SYSTEM IS BASED ON A SITE GRID SYSTEM. ELEVATIONS ARE BASED ON NAD 88. 2. PERMIT BOUNDARY WAS REPRODUCED FROM LEGAL DESCRIPTION PROVIDED BY STANGER SURVEYING COMPANY, DATED APRIL 1995.

3. REFER TO APPENDIX IIF-SURFACE WATER DRAINAGE PLAN FOR DRAINAGE DESIGN INFORMATION.

5. TYPICAL SIDESLOPES ARE 4H:1V (25%). TYPICAL TOPSLOPE IS 4%.



10/02/2024

MAJOR PERMIT AMENDMENT COMPLETION PLAN

| | REVISIONS | |
|------|-----------------------|--|
| | DESCRIPTION | |
| | SEE LIST OF REVISIONS | |
| | | |
| | | |
| ~~~~ | | |

ROYAL OAKS LANDFILL CHEROKEE COUNTY, TEXAS

/W.WCGRP.COM

DRAWING IIIJ-1

ROYAL OAKS LANDFILL CHEROKEE COUNTY, TEXAS TCEQ PERMIT NO. MSW-1614B

MAJOR PERMIT AMENDMENT APPLICATION

PART III – SITE DEVELOPMENT PLAN APPENDIX IIIJ-A FINAL COVER SYSTEM QUALITY CONTROL PLAN

Prepared for

Pine Hill Farms Landfill TX, LP

May 2024

Revised October 2024



Prepared by

Weaver Consultants Group, LLC TBPE Registration No. F-3727 6420 Southwest Boulevard, Suite 206 Fort Worth, TX 76109 817-735-9770

WCG Project No. 0120-076-11-106

This document is intended for permitting purposes only.

1 INTRODUCTION

1.1 Purpose

This Final Cover System Quality Control Plan (FCSQCP) has been prepared to provide the Owner, Operator, Design Engineer, Construction Quality Assurance Professional of Record, and the Contractor the means to govern the construction quality and to satisfy the environmental protection requirements under current Texas Commission on Environmental Quality (TCEQ) Municipal Solid Waste Regulations (MSWR). More specifically, the FCSQCP addresses the soil and geosynthetic components of the final cover system. The FCSQCP has been developed consistent with TCEQ Regulatory Guidance RG-534 – Guidance for Liner Construction and Testing for a Municipal Solid Waste Landfill (Rev. September 2017.)

This FCSQCP is divided into the following parts:

- Section 1 Introduction
- Section 2 Construction Quality Assurance for Soil Infiltration Layer
- Section 3 Construction Quality Assurance for Geosynthetic Clay Liner
- Section 4 Construction Quality Assurance for Geosynthetics
- Section 5 Construction Quality Assurance for Erosion Layer
- Section 6 Geotechnical Strength Testing Requirements
- Section 7 Documentation

1.2 Definitions

Whenever the terms listed below are used, the intent and meaning will be interpreted as indicated.

ASTM

American Society for Testing and Materials.

Atterberg Limits

A series of six "limits of consistency" of fine-grained soils defined by Swedish soil scientist Albert Atterberg, two of which are frequently used today to establish a soil's physical boundaries dealing with its plasticity characteristics. These soil

APPENDIX IIIJ-A-A FINAL COVER DRAINAGE LAYER DESIGN

Includes pages IIIJ-A-A-1 through IIIJ-A-A-52







| | PERMIT BOUNDARY |
|---------------|---|
| | LIMIT OF WASTE |
| 0500 | SITE GRID |
| 6 10 | EXISTING CONTOUR (SEE NOTE 1) |
| 624 | PROPOSED FINAL COVER CONTOUR |
| | DRAINAGE SWALE |
| RECEIVEN | DRAINAGE LETDOWN |
| | CHANNEL CENTERLINE |
| \rightarrow | PERFORATED DRAINAGE PIPE |
| \triangle | INDICATES REVISION (SEE LIST OF REVISIONS) |
| | |

FLOWN NOVEMBER 10, 2022. THE GRID SYSTEM IS BASED ON A SITE GRID

4. DRAINAGE PIPE WILL BE PLACED WITH A 0.5% FLOW LINE SLOPE PARALLEL TO THE SWALES ON THE TOPSLOPES AND SIDESLOPES OF THE FILL. THE PIPE WILL BE PLACED WITH A 0.5% FLOW SLOPE AT THE TOE OF THE FINAL COVER (NO MORE THAN 500 FEET ON THE FLAT AREAS) AND DAYLIGHTED IN DRAINAGE LETDOWNS AND AS NECESSARY AT THE TOE OF FINAL COVER TO THE PERIMETER DRAINAGE STRUCTURES WITH A SOLID PIPE TEE CONNECTION.

| PREPARED FOR | | |
|-----------------------------|-------------------------|---|
| ILL FARMS LANDFILL TX, LP | MAJOR PI FINAL COVER | LRMII AMENDMENI DRAINAGE PIPE LAYOUT |
| REVISIONS | | |
| DATE DESCRIPTION | DOVAL | |
| /2024 SEE LIST OF REVISIONS | CHEROKEE COUNTY. TEXAS | |
| | | - |
| | WWW.WCGRP.COM | SHEET IIIJ-A-A-14 |

ROYAL OAKS LANDFILL CHEROKEE COUNTY, TEXAS TCEQ PERMIT NO. MSW-1614B

MAJOR PERMIT AMENDMENT APPLICATION

PART III – SITE DEVELOPMENT PLAN APPENDIX IIIK POSTCLOSURE CARE PLAN

Prepared for

Pine Hill Farms Landfill TX, LP

May 2024

Revised October 2024



Prepared by

Weaver Consultants Group, LLC

TBPE Registration No. F-3727 6420 Southwest Blvd., Suite 206 Fort Worth, Texas 76109 817-735-9970

WCG Project No. 0120-076-11-106

This document is intended for permitting purposes only.

to the integrity of the closed landfill. Any necessary corrections will be made to ensure the integrity of the final cover system.

- Maintain and operate the leachate collection system in accordance with Title • 30 TAC §330.331 and §330.333 and the EPA's Design Criteria (i.e., less than 1 foot of leachate over the liner, or approved equivalent design). Leachate collection sump levels will be measured on a quarterly basis. Site personnel will verify that the leachate level is maintained within the sump as discussed in Appendix IIIC, Table 3-52. The leachate collection system will be operated consistent with Appendix IIIC – Leachate and Contaminated Water Management Plan, which includes procedures for the operation of the leachate collection sump, storage tanks, and the disposal of leachate. Pine Hill Farms Landfill TX, LP may submit a demonstration to the TCEQ that leachate does not pose a threat to human health and the environment. If the demonstration is approved by the TCEQ, Pine Hill Farms Landfill TX, LP will be allowed to discontinue the maintenance and operation of the leachate collection system. Refer to Section 3.4 of Appendix IIII for the procedures to decommission the leachate storage tank and piping.
- Maintain the groundwater monitoring system in accordance with Subchapter J of Title 30 TAC and monitor groundwater in accordance with an approved Groundwater Sampling and Analysis Plan (refer to Appendix IIIH for the minimum monitoring frequency requirements). However, Pine Hill Farms Landfill TX, LP may request TCEQ approval of (1) an alternative monitoring frequency, and/or (2) an alternative list of parameters to be monitored.
- Maintain and operate the perimeter landfill gas monitoring system in accordance with Subchapter I of Title 30 TAC. In accordance with Title 30 TAC §330.371(b)(2), the minimum monitoring frequency will be quarterly. However, Pine Hill Farms Landfill TX, LP may request TCEQ approval of an alternate monitoring frequency.
- Maintain and operate the landfill gas collection and/or control system in accordance with applicable regulations.

2.2 Decreasing Postclosure Period

The length of the postclosure care maintenance period may be decreased by the TCEQ if Pine Hill Farms Landfill TX, LP submits a documented certification signed by an independent licensed professional engineer and if the documented certification is approved by the TCEQ. The certification will include all applicable documentation demonstrating that the reduced period is sufficient to protect human health and the environment. Applicable documentation may include data from monitoring of groundwater, surface water, leachate levels, and landfill gas.

ROYAL OAKS LANDFILL CHEROKEE COUNTY, TEXAS TCEQ PERMIT NO. MSW-1614B

MAJOR PERMIT AMENDMENT APPLICATION

PART III – SITE DEVELOPMENT PLAN APPENDIX IIIL CLOSURE AND POSTCLOSURE CARE COST ESTIMATES

Prepared for

Pine Hill Farms Landfill TX, LP

May 2024

Revised October 2024



Prepared by

Weaver Consultants Group, LLC TBPE Registration No. F-3727 6420 Southwest Boulevard, Suite 206 Fort Worth, TX 76109 817-735-9770

WCG Project No. 0120-076-11-106

This document intended for permitting purposes only.



| 0 | 200 | 400 |
|---|---------------|-----|
| | SCALE IN FEET | |

<u>LEGEND</u>

| | PERMIT BOUNDARY |
|---------------------|---|
| | PERMITTED LIMIT OF WASTE |
| | PROPOSED LIMIT OF WASTE |
| · · | EXISTING EASEMENT |
|) | SITE GRID |
| 10 | EXISTING CONTOUR (SEE NOTE 1) |
| MW-10 | EXISTING GROUNDWATER MONITORING WELL |
| GP-1 | EXISTING GAS PROBE |
| ∃ ^{TV−1} | EXISTING TRENCH VENT |
| €W−1 | EXISTING LFG EXTRACTION WELL |
| SF-1 | EXISTING SOLAR FLARE |
| | EXISTING LFG COLLECTION PIPING |
| \square | ACTIVE AREA REQUIRING CLOSURE |
| $\widehat{\Lambda}$ | INDICATES REVISION (SEE LIST OF REVISIONS) |

1. EXISTING CONTOURS DEVELOPED BY FIRMATEK FROM AERIAL PHOTOGRAPHY FLOWN NOVEMBER 10, 2022.



| | PREPARED FOR | | | | |
|---------|-----------------------|--|-----------------|--|--|
| HILL F | ARMS LANDFILL TX, LP | LARGEST AREA TO REQUIRE FINAL COVER | | | |
| | REVISIONS | | | | |
| DATE | DESCRIPTION | DOVAL | | | |
| 09/2024 | SEE LIST OF REVISIONS | CHEROKE | E COUNTY, TEXAS | | |
| | | WWW.WCGRP.COM | FIGURE IIIL.1 | | |
| | | | | | |

TABLE 1 **ROYAL OAKS LANDFILL - CLOSURE COST**

| Area Requiring Final Cover | 54.5 | ac | | | |
|----------------------------|-------|----|-------------------------------|-----|----|
| Composite Topslope Area | 8.9 | ac | Infilltration Layer Thickness | 1.5 | ft |
| Composite Sideslope Area | 45.6 | ac | Erosion Layer Thickness | 1.0 | ft |
| Pre Subtitle D Area | 15.2 | ac | | | _ |
| Permit Boundary Area | 144.3 | ac | | | |

| | | | | | | | F | Proposed |
|------------|--|-----------|-------------------|----|----------------------|--------------------------|------|---------------|
| Descriptio | Description | | Unit ¹ | Un | it Cost ² | | Tota | l Cost (2024) |
| 1.0 ENG | SINEERING | | | | | | | |
| 1.1 | Topographic Survey | 1 | LS | \$ | 5,180 | | \$ | 5,180 |
| 1.2 | Boundary Survey for Affidavit | 144.3 | AC | \$ | 67 | | \$ | 9,717 |
| 1.3 | Site Evaluation | 144.3 | AC | \$ | 730 | | \$ | 105,394 |
| 1.4 | Development of Plans | 54.5 | AC | \$ | 616 | | \$ | 33,595 |
| | Subtotal | | | | | | \$ | 153,886 |
| 1.5a | Contract Administration | | 5% | | | | \$ | 7,694 |
| 1.5b | Admin. Cost for Certification of Final Cover | | 5% | | | | \$ | 7,694 |
| | and Affidavit to the Public | | | | | | | |
| 1.6 | Closure Inspection | 54.5 | AC | \$ | 1,886 | | \$ | 102,761 |
| 1.7 | Permits | 1 | LS | \$ | 7,252 | | \$ | 7,252 |
| 1.8 | Groundwater Consultant | N/A | | | | | | |
| ENGINE | ERING TOTAL | | | | | \$ <u>272,035</u> | \$ | 279,287 |
| | | | | | | | | |
| 2.0 CON | ISTRUCTION | | | | | | | |
| 2.1 | Final Cover System | | | | | | | |
| | 2.1.1 Infiltration Layer | 131,890 | CY | \$ | 6.01 | | \$ | 792,659 |
| | 2.1.2 Erosion Layer | 87,927 | CY | \$ | 3.89 | | \$ | 342,035 |
| | 2.1.3 Flexible Membrane Cover | 2,374,020 | SF | \$ | 0.48 | | \$ | 1,139,530 |
| | 2.1.4 Geocomposite | 2,374,020 | SF | \$ | 0.67 | | \$ | 1,590,593 |
| | 2.1.5 Installation of Gas Vents | 55 | VENT | \$ | 8,138 | | \$ | 447,578 |
| 2.2 | Revegetation | 54.5 | AC | \$ | 1,031 | | \$ | 56,180 |
| 2.3 | Site Grading and Drainage | 54.5 | AC | \$ | 1,715 | | \$ | 93,445 |
| 2.4 | Citizens Convenience Center | 1.0 | LS | \$ | 5,180 | | \$ | 5,180 |
| CONST | RUCTION TOTAL | | | | | | \$ | 4,467,199 |
| ENGINE | ERING AND CONSTRUCTION SUBTOTAL | | | | | \$ 4,739,23 4 | \$ | 4,746,486 |
| | | | | | | | | |
| CONTIN | GENCY | | 10% | | | \$ <u>473,923</u> | \$ | 474,649 |
| CONTR | | | 2.0% | | | ¢ 04795 | ¢ | 04 020 |
| CONTRA | | | 2.0% | | | φ 34,785 | φ | 34,330 |
| THIRD F | THIRD PARTY ADMINISTRATION AND PROJECT MANAGEMEN | | 2.5% | | | \$ <u>118,481</u> | \$ | 118,662 |
| | | | | | | | | |
| TOTAL | CLOSURE COST | | | | | \$ <u>5,426,423</u> | \$ | 5,434,727 |

TOTAL CLOSURE COST

¹N/A = not applicable, LS = lump sum, AC = acres, CY = cubic yards, SF = square feet.

² Unit Costs are in 2024 dollars. Unit costs are based on current market conditions, typical engineering costs, and industry

standards related to construction and reflect input from Republic Services and Weaver Consultants Group, LLC.



TABLE 2 ROYAL OAKS LANDFILL - POSTCLOSURE CARE COST

| Permitted Waste Footprint Area with leachate collection system Groundwater Monitoring Wells Gas Probes Area to be administratively closed | 83.1 ac 70.1 ac 27 wells 19 probes 144.3 ac | | Solid Waste Fill Area83.1Post Closure Care Period30Gas Montoring Events4GW Monitoring Events2Leachate Generation3650 | | | | | ac yrs /yr /yr gal/ac | | |
|---|---|----------|--|-----|---------------------|----|------------|-----------------------------------|--------|------------------------|
| Description | | Quantity | Unit ¹ | Uni | t Cost ² | Δ | nnual Cost | | l T | Proposed Total Cost |
| 1.0 ENGINEERING | | Quantity | • | • | | | | | | 0101 0001 |
| 1.1 Postclosure Care Plan | | N/A | | | | | | | | |
| 1.2 Site Inspection and Recordkeepi | ng (annual) | 144.3 | ACRE | \$ | 10.36 | \$ | 1,495 | | \$ | 44,848 |
| 1.3 Correctional Plans and Specifica | tions (annual) | 83.1 | ACRE | \$ | 14.14 | \$ | 1,175 | | \$ | 35,251 |
| 1.4 Site Monitoring | x y | | | | | | | | | , |
| 1.4.1 Groundwater Monitoring | (semiannual) | 27 | WELLS | \$ | 1,373 | \$ | 37,063 | | \$ | 1,111,887 |
| 1.4.2 Gas Monitoring (quarterly | $\tilde{()}$ | 4 | EVENTS | \$ | 1,200 | \$ | 4,800 | | \$ | 144,000 |
| ENGINEERING SUBTOTAL | | | | | | | \$ 44,533 | | \$ | 1,335,986 |
| | | | | | | | | | | |
| 2.0 CONSTRUCTION / MAINTENANCE | | 83.1 | AC | \$ | 363 | \$ | 30,132 | | \$ | 903,962 |
| | | | | | | | | | | |
| 3.0 LEACHATE DISPOSAL/MAINTENAM | NCE | 255,865 | GAL | \$ | 0.026 | \$ | 6,652 | | \$ | 199,575 |
| | | | | | | | | | | |
| 4.0 LFG SYSTEM MAINTENANCE | | 1 | LS (see below) | | | \$ | 51,343 | | \$ | 1,540,297 |
| | | | | | | | | | | |
| SUBTOTAL | | | | | | | \$ 132,660 | | \$ | 3,979,820 |
| | | | | | | | | | | |
| 5.0 CONTINGENCY | | 1 | 10% | | | | \$ 13,266 | \$ 398,000 | \$ | 397,980 |
| | | | | | | | | | | |
| SUBTOTAL | | | | | | | \$ 145,926 | \$ <u>4,377,820</u> | \$ | 4,377,800 |
| | | | | | | | | | | |
| 6.0 THIRD PARTY ADMINISTRATION A | ND PROJECT MANAGEMENT | 1 | 2.5% | | | | \$ 3,648 | | \$ | 109,445 |
| TOTAL POSTCLOSURE CARE COST | | | | | | | \$ 149,574 | \$ 4,487, 265 | \$ | 4,487,245 |
| 1 | | | | | | | | | | |

 $^{1}N/A$ = not applicable, AC = acres, GAL = gallons.

² Unit Costs are in 2024 dollars. Unit costs are based on current market conditions, typical engineering costs, and industry standards related to construction and reflect input from Republic Services and Weaver Consultants Group, LLC.





30-Year LFG O&M Cost Estimate

Estimated O&M Cost Data

APPENDIX IIIL-A

CLOSURE COST ESTIMATE FORM FOR MUNICIPAL SOLID WASTE TYPE I LANDFILL (FORM 20721)



Texas Commission on Environmental Quality



Closure Cost Estimate Form for Municipal Solid Waste Type I Landfills

This form is for use by applicants or site operators to provide cost estimates for closure of MSW Type I landfills to meet the requirements in 30 Texas Administrative Code (TAC) Chapter 330, Section 330.63(j) and 30 TAC Chapter 330 Subchapter L. The costs to be provided herein are cost estimates for hiring a third party to close the largest waste fill area that could potentially be open in the year to follow and those areas that have not received final cover. If you need assistance in completing this form, please contact the MSW Permits Section in the Waste Permits Division at (512) 239-2335.

Facility Name: Royal Oaks Landfill

MSW Permit No.: 1614B

Site Operator/Permittee Name and Mailing Address: Pine Hill Farms TX, LP, 440 Heath Lane Jacksonville, TX 75766

Total Closure Cost Estimate (20234 Dollar Amount): \$5,237,094 \$5,434,727

I. Professional Engineer's Statement, Seal, and Signature

I am a licensed professional engineer in the State of Texas. To the best of my knowledge, this Closure Cost Estimate has been completed in substantial conformance with the facility Closure Plan and, in my professional opinion, is in compliance with Title 30 of the Texas Administrative Code, Chapter 330.

Name: Jason Edwards

Title: Senior Engineer

Date: 0510/2024

Company Name: Weaver Consultants Group, LLC

Firm Registration Number: F-3727

Professional Engineer's Seal



Professional Engineer's Signature

Facility Name: Royal Oaks Landfill Permit No: 1614B

II. Annual Review of Permit Conditions, Cost Estimates, Inflation Factor, and Financial Assurance

The permittee/site operator acknowledges that he/she will:

- (1) Review the facility's permit conditions on an annual basis and verify that the current active and inactive waste fill areas of the landfill match the areas on which closure cost estimates are based.
- (2) Request in writing via a permit modification application for an increase in the closure cost estimate and the amount of financial assurance provided if changes to the closure plan or the landfill conditions increase the maximum cost of closure at any time during the remaining active life of the landfill.
- (3) Request in writing via a permit modification application for a reduction in the cost estimate and the amount of financial assurance provided if the cost estimate exceeds the maximum cost of closure at any time during the remaining active life of the landfill. The permit modification application will include a description of the situation and a detailed justification for the reduction of the closure cost estimate and the amount of financial assurance.
- (4) Establish financial assurance for closure of the unit in an amount no less than the current closure cost estimate in accordance with 30 TAC Chapter 37, Subchapter R.
- (5) Adjust the current cost estimate for inflation within 60 days prior to the anniversary date of the first establishment of the financial assurance mechanism.
- (6) Provide annual inflation adjustments to the closure costs and financial assurance during the active life of the facility, until the facility is officially placed under the post closure care period and all requirements of the final closure plan have been approved in writing by the TCEQ executive director. The adjustment will be made using an inflation factor derived from the most recent annual Implicit Price Deflator for Gross National Product published by the United States Department of Commerce in its Survey of Current Business, as specified in paragraphs (1) and (2) of 30 TAC §37.131. The inflation factor is the result of dividing the latest published annual Deflator by the Deflator for the previous year.
- (7) Provide continuous financial assurance coverage for closure until the facility is officially placed under the post-closure care period.

Facility Name: Royal Oaks Landfill

Revision No.: 1 Date: 0510/2024

Permit No: 1614B

III. Description of the Closure Cost Estimates Worksheet

The following descriptions of the items on the closure cost estimates worksheet provide guidance for identifying the minimum work or cost elements and estimating the unit or lump sum cost of each item as applicable. Enter additional detail for each item in the field following the item as necessary and as site-specific condition warrants. The cost items are grouped under closure costs for engineering, construction, and storage and processing units. Include attachments to detail any additional work and associated costs necessary to close the site that is not already included as a line item on the worksheet. Reference the attachments and list the work or cost items in the fields under "Additional Engineering Cost Items Not Listed on the Worksheet," "Additional Construction Cost Items Not Listed on the Worksheet," as applicable. Provide the total cost of the additional work or cost items in each cost category on the worksheet line that precedes the cost subtotal for each cost group.

1. Engineering Costs

The engineering tasks have been subdivided into seven items and are described below. Other related costs may be added as site-specific issues warrant.

1.1. Topographic Survey

A topographic survey will be required to verify the existing elevation and slopes of the landfill to ensure conformance with the final cover system, drainage system, and final grading designs.

Enter additional topographic survey work or cost element details as site-

specific conditions warrant: **\$5,000 \$5,180**

1.2. Boundary Survey

The metes and bounds description is required for filing of the affidavit of closure and deed recording of any area of the site which has received waste. Other activities to be included here are publication of the public notice of closing activities.

Enter additional boundary survey work or cost element details as site-specific

conditions warrant: \$9,380 \$9,717

1.3. Site Evaluation

The evaluation includes a site inspection to identify waste disposal areas, analyze drainage and erosion protection needs, and to determine other site operational features that are not in compliance with the permit. The site evaluation also includes verifying the need for new or relocation of existing groundwater monitoring wells and landfill gas monitoring probes, analysis of groundwater samples, and review of site operating record. The third party consultant who performed the site evaluation will prepare and submit an engineering report to the executive director to document the status of the site. The report will identify all areas of work and the associated implementation

Facility Name: Royal Oaks Landfill

Permit No: 1614B

Revision No.: 1

Date: 0510/2024

costs necessary to safely close the landfill operations with recommendations on how to fulfill these needs.

Enter additional site evaluation work or cost element details as site-specific

conditions warrant: **\$101,732 \$105,394**

1.4. Development of Plans

The final closure, plan the final cover system design and specifications, grading and drainage plans, specification for revegetation, design of any other improvements to bring the site into compliance with the permit, the closure schedule, and coordination with the TCEQ and provision of closure notice to the public.

Enter additional development of plans work or cost element details as site-

specific conditions warrant: \$32,428 \$33,595

1.5. Contract Administration (bidding and award)

The third-party consultant will advertise the project, receive the bids, evaluate the bids, award the closure construction contract and administer the contract during construction.

Enter additional contract administration work or cost element details as site-

specific conditions warrant: \$7,427 \$15,388

1.6. Closure Inspection and Testing

The professional of record will observe closure construction, perform cover thickness and permeability verification, and prepare an evaluation report upon completion of closure.

Enter additional closure inspection or testing work or cost element details as

site-specific conditions warrant: \$99,190 \$102,761

1.7. TPDES and other Permits

The third-party consultant will prepare plans, specifications, and other documents necessary for compliance with applicable federal and state laws and requirements, including the Clean Water Act, for the proper closure of the site.

Enter additional TPES or other permits work or cost element details as site-

specific conditions warrant: \$7,000 \$7,252

1.8. Additional Engineering Cost Items Not Listed on the Worksheet

List the Attachment(s) detailing any additional engineering cost items necessary to close the site that is not already included as a line item on the worksheet:

Also, reference these Attachments in the "Units" column on this line of the worksheet. Provide the total cost of all additional engineering cost items in the "Cost" column.

Facility Name: Royal Oaks Landfill

Permit No: 1614B

Revision No.: 1 Date: 0510/2024

Groundwater Monitoring Well Consultant: NA

The existing groundwater monitoring system is adequate. There should be no cost associated with this item.

1.9. Engineering Costs Subtotal: \$262,582 \$279,287

1.9.1. Enter the sum of engineering costs in Items 1.1 through 1.8.

2. Construction Costs

Closure construction costs include those for construction of the final cover system, site grading, and drainage improvements. Other costs may be added as site-specific issues warrant.

2.1. Mobilization

2.1.1. Mobilization of Personnel and Equipment

The cost of mobilizing personnel and construction heavy equipment must be included as part of the construction costs.

Enter additional work or cost element details for mobilization of

personnel and equipment as site-specific conditions warrant:

Included in overall cost of construction work.

2.2. Final Cover System

The owner or operator must install a final cover system that is designed to minimize infiltration and erosion. The final cover system is subdivided into the sideslope cover and cap cover with their associated components to facilitate cost calculations. If an alternative final cover is proposed, the closure cost estimate will still be based on a design that utilizes the conventional composite cover system.

Enter additional final cover system work or cost element details as site-

specific conditions warrant: \$3,784,077 \$3,920,997

2.2.1. Side Slope Cover

Enter information for Items 2.2.1a through 2.2.1h.

2.2.2. Top Slope Cover

Enter information for Items 2.2.2a through 2.2.2h.

2.2.3. Cells for Class 1 Nonhazardous Industrial Waste

2.3. Site Grading

Site grading includes the final grading of the site, including the landfill cap and sideslopes.

Enter additional site grading work or cost element details as site-specific

conditions warrant: **\$90,198 \$93,445**

Facility Name: Royal Oaks Landfill

Permit No: 1614B

Revision No.: 1 Date: 0510/2024

2.4. Site Fencing and Security

Site fencing and security must be included for the area which has received waste and have no existing approved fencing.

Enter additional site fencing and security work or cost element details as site-

specific conditions warrant: The site has adequate existing fencing.

2.5. Landfill Gas Monitoring and Control Systems

Enter information for Items 2.5.1 through 2.5.6.

Final installation of the landfill gas monitoring and control systems must include the installation costs of pipes and appurtenances. In the event of a forced closure, the systems may not have been completed, thus, the estimated costs to complete the landfill gas monitoring and control system must be provided.

Enter additional landfill gas monitoring and control systems work or cost

element details as site-specific conditions warrant: \$432,025 \$447,578

2.6. Groundwater Monitoring System

2.6.1. Monitor Well Installation

Upon closure of the site, it may be necessary to relocate the compliance boundary. This requires the installation of new monitor wells.

Enter additional groundwater monitoring system work or cost

element details as site-specific conditions warrant:

The existing groundwater monitoring system is adequate.

2.6.2. Piezometer and Monitor Well Plugging and Abandonment

Piezometer or monitor well abandonment is the cost of abandoning (plugging) piezometers or monitor wells that are no longer needed. Determine the number of piezometers or monitor wells to be abandoned and include the total cost.

Enter additional plugging and abandonment work or cost element

details as site-specific conditions warrant:

No plugging of piezometers or monitoring wells is required.

2.7. Leachate Management

2.7.1. Completion of Existing Leachate Collection System

In the event of a forced closure, there may be circumstances where the leachate collection system has not been completed. In this event, the leachate collection system must be closed with a permanent outfalls and permanent cleanouts installed.

Facility Name: Royal Oaks Landfill

Permit No: 1614B

Revision No.: 1

Date: 0510/2024

Enter additional leachate management work or cost element details as site-specific conditions warrant: **The existing leachate management system is adequate.**

2.8. Stormwater Management

2.8.1. Stormwater Drainage Management System

To reduce the potential long-term impacts of the landfill on surface water quality, drainage features must be incorporated into the final cover design to direct runoff, minimize erosion, control sediments, and avoid ponding of stormwater. The drainage system construction costs must be included.

Enter additional stormwater drainage management work or cost

element details as site-specific conditions warrant:

Included in overall cost of final cover system construction.

2.9. Additional Construction Cost Items Not Listed on Worksheet

List the Attachments detailing any additional construction cost items necessary to close the site that is not already included as a line item on the worksheet: Also, reference these Attachments in the "Units" column on this line of the worksheet. Provide the total cost of all additional construction cost items in the "Cost" column.

2.9.1. Cost to decommission citizens convenience center: \$5,180000

2.10. Construction Costs Subtotal: \$4,304,190 \$4,467,199

2.10.1. Enter the sum of construction costs in Items 2.1 through 2.9.

3. Storage and Processing Unit Closure Costs

For landfills that incorporate storage and/or processing operations that are not separately authorized, all waste and processed and unprocessed materials associated with storage and/or processing units must be removed during the closure process.

3.1. Waste Disposal

The cost of disposal of waste at an authorized facility. *Enter additional waste disposal work or cost element information as necessary.*

Included in Item 2.9.1.

3.2. Material Removal and Disinfection

The cost of removal, including transportation, of any remaining processed and unprocessed materials to an authorized off-site location. *Enter additional material removal and disinfection work or cost element information as necessary.*

Included in Item 2.9.1.

Facility Name: Royal Oaks Landfill

Permit No: 1614B

Revision No.: 1 Date: 0510/2024

3.3. Demolition and Disposal

The cost of dismantling and/or disinfection of storage and/or processing units and disposal, as applicable. *Enter additional demolition and disposal work or cost element information as necessary.*

Included in Item 2.9.1.

3.4. Additional Storage and Processing Unit Closure Cost Items Not Listed in Worksheet

List the Attachments detailing any additional storage and processing unit closure cost items necessary to close the site that is not already included as a line item on the worksheet. Also, reference these Attachments in the "Units" column on this line of the worksheet. Provide the total cost of all additional storage and processing unit closure cost items in the "Cost" column.

3.5. Storage and Processing Unit Closure Costs Subtotal: Not Applicable

4. Sum of Cost Subtotals: \$4,566,525 \$4,746,486

4.1. Enter the sum of engineering, construction, and storage and processing unit closure cost subtotals from lines 1.9.1, 2.10.1, and 3.5.1.

5. Contingency: \$456,653 \$474,649

5.1. Add an amount equal to at least 10 percent of the sum of cost subtotals to cover unanticipated events during implementation of closure activities.

6. Contract Performance Bond: \$91,331 \$94,930

6.1. Add an amount equal to at least 2 percent of the sum of cost subtotals for purchase of a surety bond to guarantee satisfactory completion of the closure activities.

7. Third Party Administration and Project Management Costs: \$114,163 \$118,662

7.1. Add an amount equal to at least 2.5 percent of the sum of cost subtotals to cover the cost for a third party hired by TCEQ to administer the closure activities.

8. Total Closure Cost: \$5,237,094 \$5,434,727

8.1. Enter the sum of the amounts on lines 4.1, 5.1, 6.1, and 7.1.

Facility Name: Royal Oaks Landfill Permit No: 1614B

IV. Closure Cost Estimates Worksheet

A. Landfill Data

Total Permitted Waste Disposal Area: 83.1 acres

Largest Area Requiring Final Cover in the year to follow: 54.5 acres

Total Filled Area with Constructed Final Cover: 0 acres

Total Area Certified Closed: 0 acres

Number of Monitor Wells to be Installed for Closure: 0

Number of Gas Probes to be Installed for Closure: 0

Total Acreage Needing LFG Collection and Control System: 70.1 acres

The unit or lump sum cost for each item is based on the work items and cost

elements described in Section III of this Closure Cost Estimate document:

Yes 🛛 No 🗌 Partially 🗌

(if "No" or "Partially" is checked, please include attachments describing the additional work items and detailing the unit, quantities, and costs for the additional items)

B. Facility Drawings and Financial Assurance Documentation

- Facility drawings
 - Attach facility drawings showing the closure areas to which the closure cost estimates apply.
- Financial assurance documentation
 - For an existing facility, attach a copy of the documentation required to demonstrate financial assurance as specified in 30 TAC Chapter 37, Subchapter R.
 - For a new facility, a copy of the required documentation shall be submitted 60 days prior to the initial receipt of waste.

C. Attachments

 Additional Engineering, Construction, and Storage and Processing Units Cost Items Details

Facility Name: Royal Oaks Landfill

Permit No: 1614B

D. Closure Cost Estimates Worksheet

If any item listed in this worksheet is not applicable to the subject facility, enter "NA" (Not Applicable) in the affected field.

Table 1. Closure Cost Estimates Worksheet.

| Item No. | Item Description | Units ¹ | Quantity | Unit Cost | Cost | Source of Unit Cost Estimate ² | | | | |
|----------------------|---|--------------------|---|---------------------------|-------------------------------------|--|--|--|--|--|
| 1. Engineering Costs | | | | | | | | | | |
| 1.1 | Topographic Survey | Lump Sum | 1 | \$5,180 000 | \$5,180 000 | Third Party Estimate | | | | |
| 1.2 | Boundary Survey | Acres | 144.3 | \$67 65 | \$9,717 380 | Third Party Estimate | | | | |
| 1.3 | Site Evaluation | Acres | 144.3 | \$730 705 | \$105,394 101,732 | Third Party Estimate | | | | |
| 1.4 | Development of Plans | Acres | 54.4 | \$616 595 | \$33,595 32,428 | Third Party Estimate | | | | |
| 1.5 | Contract Administration (bidding and award) | 5% | 5% | NA | \$15,388 7,427 | Third Party Estimate | | | | |
| 1.6 | Closure Inspection and Testing | Acres | 54.5 4 | \$1,886 820 | \$102,761 99,190 | Third Party Estimate | | | | |
| 1.7 | TPDES and other Permits | Lump Sum | 1 | \$7,252 000 | \$7, <mark>252</mark> 000 | Third Party Estimate | | | | |
| 1.8 | Groundwater Monitoring Well Consultant | NA | NA | NA | NA | NA | | | | |
| 1.9 Engi | neering Costs Subtotal | | | | | | | | | |
| 1.9.1 | Engineering Costs Subtotal | NA | NA | NA | \$279,287 262,582 | NA | | | | |
| | 2. (| Construction | on Costs | | | | | | | |
| 2.1 Mobi | lization | | | | | 1 | | | | |
| 2.1.1 | Mobilization of Personnel and Equipment | Lump Sum | NA | NA | NA | NA | | | | |
| 2.2 Final | Cover System Final Cov | er System i | s the same | for topslo | pe and sideslo | ope area. | | | | |
| 2.2.1 Side | e Slope Cover | | | | | | | | | |
| 2.2.1a | Infiltration Layer – Compacted Clay | Cubic Yards | 131, <mark>890</mark> 648 | \$6.01 5.80 | \$792,659 764,962 | Estimate from Recent Construction Experiences | | | | |
| 2.2.1b | Infiltration Layer – Geosynthetic Clay Liner | Square Feet | NA | NA | NA | NA | | | | |
| 2.2.1c | Flexible Membrane Cover – HDPE | Square Feet | NA | NA | NA | NA | | | | |
| 2.2.1d | Flexible Membrane Cover – LLDPE | Square Feet | 2,374,020 2,369,664 | \$0.48 6 | \$1,139,530 1,092,049 | Estimate from Recent Construction Experiences | | | | |

Date: 0510/2024

Facility Name: Royal Oaks Landfill

Permit No: 1614B

Revision No.:

Date:

0510/2024

1

| Item No. | Item Description | Units ¹ | Quantity | Unit Cost | Cost | Source of Unit Cost Estimate ² |
|---------------|--|--------------------|-----------------------------------|-----------------------------------|-------------------------------------|--|
| 2.2.1e | Drainage Layer – Aggregate | Cubic Yards | NA | NA | NA | NA |
| 2.2.1f | Drainage Layer – Drainage Geocomposite Material | Square Feet | 2,374,020 2,369,664 | \$0.67 5 | \$1,590,593 1,543,113 | Estimate from Recent Construction Experiences |
| 2.2.1g | Erosion Layer | Cubic Yards | 87,927 87,765 | \$3. <mark>8975</mark> | \$342,035 329,725 | Estimate from Recent Construction Experiences |
| 2.2.1h | Vegetation | Acres | 54.54 | \$1,031 995 | \$56,180 54,228 | Estimate from Recent Construction Experiences |
| 2.2.2 Top S | lope Cover Final Cover System is | the same fo | r topslope ar | nd sideslop | e area. | |
| 2.2.2a | Infiltration Layer – Compacted Clay | Cubic Yards | NA | NA | NA | NA |
| 2.2.2b | Infiltration Layer – Geosynthetic Clay Liner | Square Feet | NA | NA | NA | NA |
| 2.2.2c | Flexible Membrane Cover – HDPE | Square Feet | NA | NA | NA | NA |
| 2.2.2d | Flexible Membrane Cover – LLDPE | Square Feet | NA | NA | NA | NA |
| 2.2.2e | Drainage Layer – Aggregate | Cubic Yards | NA | NA | NA | NA |
| 2.2.2f | Drainage Layer – Drainage Geocomposite Material | Square Feet | NA | NA | NA | NA |
| 2.2.2g | Erosion Layer | Cubic Yards | NA | NA | NA | NA |
| 2.2.2h | Vegetation | Acres | NA | NA | NA | NA |
| 2.2.3 Cells 1 | for Class 1 Nonhazardous Industrial V | Vaste | | | | |
| 2.2.3a | Dike Construction | specify | NA | NA | NA | NA |
| 2.3 Site Gr | ading | | | | | |
| 2.3.1 | Site Grading | Acres | 54.5 4 | \$1,715 1,655 | \$93,445 90,198 | Estimate from Recent Construction Experiences |
| 2.4 Site Fe | ncing and Security | | | | | |
| 2.4.1 | Site Fencing and Security | specify | NA | NA | NA | NA |
| 2.5 Landfil | I Gas Monitoring and Control Syst | tem | | | | • |
| 2.5.1 | Gas Control Wells | specify | NA | NA | NA | NA |
| 2.5.2 | Gas Header Piping | specify | NA | NA | NA | NA |
| 2.5.3 | Gas Lateral Piping | specify | NA | NA | NA | NA |
| 2.5.4 | Flare Station | Lump Sum | NA | NA | NA | NA |
| 2.5.5 | Condensate Sumps | specify | NA | NA | NA | NA |

Facility Name: Royal Oaks Landfill

Permit No: 1614B

Date: 0508/2024

Revision No.:

| Item No. | Item Description | Units ¹ | Quantity | Unit Cost | Cost | Source of Unit Cost Estimate ² |
|------------|---|------------------------------|--------------|-----------------------------|-------------------------------------|--|
| 2.5.6 | Completion of LFG Monitoring System | Wells | 55 | \$8,138 7,855 | \$447,578 432,025 | Estimate from Recent Construction Experiences |
| 2.6 Groun | dwater Monitoring System | | | | | |
| 2.6.1 | Groundwater Monitoring Well Installation | Each | NA | NA | NA | NA |
| 2.6.2 | Piezometer and Monitor Well Plugging and Abandonment | Each | NA | NA | NA | NA |
| 2.7 Leacha | ate Management | | | | | |
| 2.7.1 | Completion of Leachate Management System | specify | NA | NA | NA | NA |
| 2.8 Storm | water Management | | | | | |
| 2.8.1 | Stormwater Drainage Management System | specify | NA | NA | NA | NA |
| 2.9 Other | Cost Items | | | | | |
| 2.9.1 | Additional Construction Cost Items (describe in attachments) Citizens Convenience Center | LS | 1 | \$5,180 000 | \$5, <mark>180000</mark> | Estimate from Recent Construction Experiences |
| 2.10 Cons | truction Costs Subtotal | | | | | |
| 2.10.1 | Construction Costs Subtotal | NA | NA | NA | \$4,467,199 4,311,299 | NA |
| | 3. Storage an | d Processing | g Unit Closu | re Costs | | |
| 3.1 | Waste Disposal | ☐ Tons ☐ Cubic Yards | NA | NA | NA | NA |
| 3.2 | Material Removal and Disinfection | specify | NA | NA | NA | NA |
| 3.3 | Demolition and Disposal Units Moved to Item 2.9.1 | NA | NA | NA | NA | NA |
| 3.4 | Additional Storage and Processing Unit Closure Cost Items (describe in attachments) | identify attach- ments | NA | NA | NA | NA |
| 3.5 Storag | e and Processing Unit Closure | Costs Subto | tal | | | |
| 3.5.1 | Storage and Processing Unit Closure Costs Subtotal | NA | NA | NA | \$5,000 N/A | NA |
| 4. Sum | of Engineering, Construction | on, and Sto | orage and | Processi | ng Unit Closu | re Costs |
| 4.1 | Sum of Engineering, Construction, and Storage and Processing Unit Closure Cost Subtotals | NA | NA | NA | \$4,746,486 4,573,882 | NA |

1

Facility Name: Royal Oaks Landfill

Permit No: 1614B

Revision No.:

Date: 0510/2024

1

| Item No. | Item Description | Units ¹ | Quantity | Unit Cost | Cost | Source of Unit Cost Estimate ² | | |
|----------------|--|--------------------|-------------|--------------|-------------------------------------|---|--|--|
| 5. Contingency | | | | | | | | |
| 5.1 | Contingency (10% of Sum of Engineering, Construction, and Storage and Processing Unit Closure Cost Subtotals) | NA | NA | NA | \$474,649 457,388 | NA | | |
| | 6. Cont | ract Perfor | mance Bo | ond | | | | |
| 6.1 | Contract Performance Bond (2% of Sum of Engineering, Construction, and Storage and Processing Unit Closure Cost Subtotals) | NA | NA | NA | \$94,930 91,478 | NA | | |
| | 7. Third Party Adminis | tration and | l Project N | 1anagem | ent Costs | | | |
| 7.1 | Third Party Administration and Project Management Costs (2.5% of Sum of Engineering, Construction, and Storage and Processing Unit Closure Cost Subtotals) | NA | NA | NA | \$118,662 114,347 | NA | | |
| | 8. 1 | Fotal Closu | re Costs | | · | | | |
| 8.1 | Total Closure Costs (sum of amounts in Sections 4, 5, 6, and 7) | NA | NA | NA | \$5,434,727 5,237,094 | NA | | |

¹ For items marked "specify," the responsible professional engineer will enter appropriate unit of measurement

² Sources of Unit Costs for Cost Estimates table may include:

⁽¹⁾ Published Cost Estimator Manuals (e.g., RS Means);

⁽²⁾ Third Party Quotes (e.g., Environmental Field Services Contractors);

⁽³⁾ Verifiable Data based on Actual Operations; or

⁽⁴⁾ Other sources of cost acceptable to the executive director of the TCEQ.

APPENDIX IIIL-B

POST-CLOSURE COST ESTIMATE FORM FOR MUNICIPAL SOLID WASTE TYPE I LANDFILL (FORM 20723)





Texas Commission on Environmental Quality Post-Closure Care Cost Estimate Form for Municipal Solid Waste Type I Landfills

This form is for use by applicants or site operators to provide post-closure care cost estimates for post-closure care of MSW Type I landfills to meet the requirements in 30 Texas Administrative Code (TAC) Chapter 330, Section 330.63(j) and 30 TAC Chapter 330 Subchapter L. The costs to be provided herein are cost estimates for hiring a third party to conduct post-closure care of the largest waste fill area that has been certified closed in writing by the TCEQ executive director.

If you need assistance in completing this form, please contact the MSW Permits Section in the Waste Permits Division at (512) 239-2335.

I. General Information

Facility Name: Royal Oaks Landfill

MSW Permit No.: 1614B

Date: 0510/2024

Revision Number: 1

Site Operator/Permittee Name and Mailing Address: **Pine Hill Farms TX, LP, 440 Heath** Lane Jacksonville, **TX 75766**

Total Post-Closure Care Cost Estimate (20243 Dollar Amount): \$4,487,2454,252,433

II. Professional Engineer's Statement, Seal, and Signature

I am a licensed professional engineer in the State of Texas. To the best of my knowledge, this Post- Closure Care Cost Estimate has been completed in substantial conformance with the facility Post-Closure Care Plan and, in my professional opinion, is in compliance with Title 30 of the Texas Administrative Code, Chapter 330.

Name: Jason Edwards Title: Senior Engineer

Date: 0510/2024

Company Name: Weaver Consultants Group, LLC Firm Registration Number: F-3727

Professional Engineer's Seal



Facility Name: Royal Oaks Landfill Permit No: 1614B

III. Annual Review of Permit Conditions, Cost Estimates, Adjustments for Inflation, and Financial Assurance

The site operator/permittee acknowledges that he/she will:

- 1. Revise and increase the post-closure care cost estimate and the amount of financial assurance provided whenever changes in the post-closure care plan or the landfill conditions increase the maximum cost of post-closure care at any time during the remaining active life of the landfill and until the facility is officially released from the post-closure care period in writing by the executive director.
- Request a reduction in the post-closure care cost estimate and the amount of financial assurance as a permit modification whenever the post-closure care cost estimate exceeds the maximum cost of post-closure care remaining over the post-closure period. The permit modification will include a detailed justification for the reduction of the post-closure care cost estimate and the amount of financial assurance.
- Establish financial assurance for post-closure care of the unit in an amount no less than the current post-closure care cost estimate in accordance with 30 TAC Chapter 37
- 4. Adjust the current post-closure care cost estimate for inflation within 60 days prior to the anniversary date of the first establishment of the financial assurance mechanism.
- 5. Provide annual inflation adjustments to the post-closure care costs and financial assurance during the active life of the facility and during the post closure care period. The adjustment will be made using an inflation factor derived from the most recent annual Implicit Price Deflator for Gross National Product published by the United States Department of Commerce in its Survey of Current Business, as specified in 30 TAC Chapter 37. The inflation factor is the result of dividing the latest published annual Deflator by the Deflator for the previous year.
- 6. Provide continuous financial assurance coverage for post-closure care until the facility is officially released in writing by the executive director from the post-closure care period in accordance with all requirements of the post-closure care plan.

Post-Closure Care Cost Estimate for MSW Type I Landfills

Facility Name: Royal Oaks Landfill Permit No: 1614B

IV. Description of Worksheet Items of the Post-Closure Care Cost Estimates

The following descriptions of the worksheet items provide guidance for identifying the minimum work or cost elements for estimating the unit or lump sum cost of each item as applicable. Enter additional detail for each item in the field following the item as necessary and as site-specific conditions warrant. The cost items are grouped under post-closure care costs for engineering, construction, and leachate management. Include attachments to detail any additional work and associated costs necessary for the post-closure care of the unit or facility that is not already included as a line item on the worksheet. Reference the attachments and list the work or cost items in the fields under "Additional Engineering Cost Items Not Listed on the Worksheet," "Additional Construction Cost Items Not Listed on the Worksheet," as applicable. Provide the total cost of additional work or cost items in each cost category on the worksheet line that precedes the cost subtotal for each cost group.

1. Engineering Costs

1.1. Site Inspection and Recordkeeping

Regularly scheduled and event-driven site inspection must be performed to identify areas experiencing settlement, subsidence, erosion, or other drainage related problems, and note the conditions of the environmental control and monitoring systems, including leachate collection, groundwater monitoring, and landfill gas monitoring systems. *Enter additional site inspection and recordkeeping work or cost element detail as site-specific conditions warrant.*

\$1,4951,443

Site inspections will identify any potential areas experiencing settlement and erosion over the entire area to be administratively closed. The inspection will also document the condition of the LCS, LFG, groundwater monitoring system, and other landfill systems.

1.2. Correctional Plans and Specifications

The cost for an engineering consultant to prepare corrective measure construction plans and specifications to correct problems identified during site inspections. *Enter additional work or cost element details for correctional plans and specifications as site-specific conditions warrant.*

\$1,1751,134

Includes preparation of plans and specifications to correct problems identified during inspections in area of waste in-place.

1.3. Site Monitoring

The cost of performing semiannual groundwater (including costs for sampling and analyzing parameters, and assessment and reporting) and quarterly landfill gas monitoring (including costs for sampling and reporting) and the monitoring of other site-specific systems at the landfill during the post-

Post-Closure Care Cost Estimate for MSW Type I Landfills

Facility Name: Royal Oaks Landfill Permit No: 1614B

Revision No.: 1 Date: 0510/2024

closure period. *Enter additional site monitoring work or cost element details as site-specific conditions warrant.*

\$41,86335,775

Includes cost for semi-annual groundwater monitoring and quarterly gas probe monitoring.

1.4. Additional Engineering Cost Items Not Listed on the Worksheet

List the Attachments detailing additional post-closure care engineering cost items not already included as a line item on the worksheet. (Also, reference these Attachments in the "Units" column of this line of the worksheet. Provide the total cost of all additional engineering cost items in the "Cost" column).

NA

Post-Closure Care Cost Estimate for MSW Type I Landfills

Facility Name: Royal Oaks Landfill Permit No: 1614B

2. Construction Costs

2.1. Cap and Sideslopes Repairs and Revegetation

The cost of repair of the cap and cap drainage control structures due to erosion or structural integrity failures and maintaining final cover vegetation to minimize erosion. *Enter additional cap and sideslopes repair and revegetation work or cost element details as site-specific conditions warrant.*

Included in Item 2.0 on Table IIIL-5.

2.2. Mowing and Vegetation Control

The cost of controlling vegetation growth on the final cover and other areas of the landfill. *Enter additional mowing and vegetation control work or cost element details as site-specific conditions warrant.*

Included in Item 2.0 on Table IIIL-5.

2.3. Groundwater Monitoring System Maintenance

The cost of repairs/replacement and routine maintenance. *Enter additional groundwater monitoring system maintenance work or cost element details as site-specific conditions warrant.*

Included in Item 2.0 on Table IIIL-5.

2.4. LFG Monitoring Probes Maintenance

The cost of repairs/replacement and routine maintenance. Enter additional LFG monitoring probes maintenance work or cost element details as site-specific conditions warrant.

\$51,343

2.5. LFG Collection System Maintenance

The cost of repairs and routine maintenance. *Enter additional LFG collection* system maintenance work or cost element details as site-specific conditions warrant.

Included in Item 4.0 on Table IIIL-5.

2.6. Perimeter Fence and Gates Maintenance

The cost of maintaining perimeter fence and gates to restrict unauthorized access to the closed landfill. *Enter additional perimeter fence and gates maintenance work or cost element details as site-specific conditions warrant.*

Included in Item 2.0 on Table IIIL-5.

2.7. Access and Rights of Way Maintenance

The cost of maintaining the access roads and other rights of way to the closed landfill to conduct inspections, environmental sampling, routing
Facility Name: Royal Oaks Landfill Permit No: 1614B

Revision No.: 1 Date: 0510/2024

maintenance and other post-closure activities. *Enter additional access and rights of way maintenance work or cost element details as site-specific conditions warrant.*

Included in Item 2.0 on Table IIIL-5.

2.8. Drainage System Cleanout and Repairs

The cost to include costs for maintaining and repairing ditches, conveyance structures, and ponds/basins. *Enter additional drainage system cleanout and repairs work or cost element details as site-specific conditions warrant.*

Included in Item 2.0 on Table IIIL-5.

2.9. Additional Construction and Maintenance Cost Items Not Listed on the Worksheet

List the Attachments detailing any additional construction and maintenance cost items necessary for post-closure care that are not already covered on the worksheet. (Also, reference these Attachments in the "Units" column on this line of the worksheet. Provide the total cost of all additional construction and maintenance cost items in the "Cost" column.)

Included in Item 2.0 on Table IIIL-5.

3. Leachate Management Costs

3.1. Leachate Collection and Removal System Operation and Maintenance

The cost of operation, routine maintenance and repairs. *Enter additional work or cost element details for leachate collection and removal system operation and maintenance as site-specific conditions warrant.*

The existing leachate management system is adequate.

3.2. Leachate Disposal

The cost of leachate disposal off-site. *Enter additional work or cost element details for leachate disposal as site-specific conditions warrant.*

\$6,6526,397

3.3. Additional leachate management cost items not listed on the worksheet.

List the Attachments detailing any additional leachate management cost items necessary for post-closure care that are not already covered on the worksheet. (Also, reference these Attachments in the "Units" column on this line of the worksheet. Provide the total cost of all additional leachate management cost items in the "Cost" column.)

NA

Facility Name: Royal Oaks Landfill Permit No: 1614B

Revision No.: 1 Date: 0510/2024

4. Sum of Cost Subtotals

Enter the sum of engineering, construction, and storage and leachate management post-closure care cost subtotals from lines 1.5.1, 2.10.1, and 3.5.1.

\$132,660125,717

5. Contingency

The cost added to cover unanticipated events during implementation of post-closure activities. (Enter additional work or cost element information as necessary)

\$13,26612,600

6. Third Party Administration and Project Management Costs

The cost for the third party hired by TCEQ to administer the post-closure activities. (Enter additional work or cost element information as necessary)

\$3,6483,458

V. Post-Closure Care Cost Estimates Worksheet

Post-Closure Care Period – 30 years

Total Permitted Acreage: 144.3 acres

Total Permitted Waste Footprint: 83.1 acres

Number of Groundwater Monitoring Wells: 27

Number of GW Monitoring Events: 2/year

Number of Gas Probes: 19

Number of LFG Monitoring Events: 4/year

The unit or lump sum cost for each item is based on the work items and cost elements described in Section III of this Post-Closure Cost Estimate document:

Yes No Partially

If "No" or "Partially" is checked, please attach a written description of work items and cost elements which form the bases of unit or lump sum cost for the affected items.

(NOTE: If any item listed in this worksheet is not applicable to the subject facility, enter Not Applicable (N/A) in the affected fields)

Attachments

Additional Engineering, Construction, and Leachate Management Cost Items Details.

Facility Name: Royal Oaks Landfill Permit No: 1614B

| Revision | No.: | | 1 |
|----------|------|-------------------|-------|
| Date: | (|)5 10, | /2024 |

Table 1: Post-Closure Care Cost Estimates

| Item No. | Item Description | Units | Annual Qty. | Unit Cost | Annual Cost | Source of Unit Cost Estimate ⁱ |
|--------------------------------|--|---------------------------------|----------------|--|-------------------------------|--|
| | 1.0 | Enginee | ring Costs | | | |
| 1.1 | Site Inspection and Recordkeeping ⁱⁱ | Acre | 144.3 | \$10. <mark>36</mark> 00 | \$1, <mark>495</mark> 443 | WCG routinely provides this type of service. |
| 1.2 | Correctional Plans and Specifications | Acre | 83.1 | \$14.14 13.65 | \$1,175 1,134 | WCG routinely provides this type of service. |
| 1.3 Site Monitoring | | | | | | |
| 1.3.1 Gro | undwater Monitoring System | | 1 | | | |
| 1.3.1(a) | Sampling and Analysis of GW Monitoring Wells (Quantity = 2 x Number of wells) | Wells | 27 | \$1,373 1,325 | \$37,063 35,775 | WCG routinely provides this type of service. |
| 1.3.1(b) | Piezometers/Well Abandonment | Each | NA | | | |
| 1.3.2 LFG | Monitoring System | | | · | | |
| 1.3.2(a) | LFG Quarterly Monitoring (Quarterly) | Each | 4 | \$1,200 135 | \$4,800 540 | WCG routinely provides this type of service. |
| 1.3.2(b) | LFG Probe Plugging and Abandonment | Each | NA | | | |
| 1.4 Addi | tional Engineering Cost Ite | ems (Deta | ail in Attac | chments) | | |
| 1.4.1 | Additional Engineering Cost Items (describe in attachments) | Identif y attach ments | NA | NA | NA | NA |
| 1.5 Engineering Costs Subtotal | | | | | | |

Facility Name: Royal Oaks Landfill Permit No: 1614B

| Item No. | Item Description | Units | Annual Qty. | Unit Cost | Annual Cost | Source of Unit Cost Estimate ⁱ |
|-------------------------|--|---------------------------------|-------------------------|-------------------------|---|--|
| 1.5.1 | Engineering Costs Subtotal | NA | NA | NA | \$ <mark>44,533</mark> 38,892 | NA |
| | 2.0 Construc | tion and | Maintenar | ice Costs | | |
| 2.1 | Cap and Sideslopes Repairs and Revegetation | Acres | 83.1 | \$363 350 | \$30,132 29,085 | Ongoing postclosure maintenance projects. |
| 2.2 | Mowing and Vegetation Management | Acres | Included i | n 2.1 | | |
| 2.3 | Groundwater Monitoring System Maintenance | specify | Included i | n monitori | ng. | |
| 2.4 | LFG Monitoring Probes Maintenance | specify | Included in monitoring. | | | |
| 2.5 | LFG Collection System Maintenance | specify | 1 | NA | \$51,343 | Ongoing postclosure maintenance projects. |
| 2.6 | Perimeter Fence and Gates Maintenance | specify | NA | | | |
| 2.7 | Access Roads Maintenance | specify | NA | | | |
| 2.8 | Drainage System Cleanout/Repairs | specify | NA | | | |
| 2.9 Addi | tional Construction and Ma | intenanc | e Cost Ite | ms (Deta | ils in Attach | ments) |
| 2.9.1 | Additional Construction and Maintenance Cost Items (details in attachments) | Identif Y attach ments | NA | NA | NA | NA |
| 2.10 Con | struction and Maintenance | e Costs S | ubtotal | | | |
| 2.10.1 | Construction and Maintenance Costs Subtotal | NA | NA | NA | \$30,132 80,428 | NA |
| 3.0 Leachate Management | | | | | | |
| 3.1 | Leachate Management System Operation and Maintenance | NA | NA | NA | NA | NA |

Facility Name: Royal Oaks Landfill Permit No: 1614B

Revision No.: 1 Date: 0510/2024

| Item No. | Item Description | Units | Annual Qty. | Unit Cost | Annual Cost | Source of Unit Cost Estimate ⁱ |
|----------------------------|---|------------|-------------------------------|-------------------------|--|---|
| 3.2 | Leachate Disposal | Gals | 255,865 151,110 | \$0.026 5 | \$6, <mark>652397</mark> | NA |
| 3.3 Addi | tional Leachate Manageme | ent Cost I | tems (Det | ails in Att | tachments) | |
| 3.4 | Decommission Leachate Storage Tanks/Pipes | LS | NA | NA | NA | NA |
| 3.5 Leac | hate Management Costs Su | ubtotal | | | | |
| 3.5.1 | Leachate Management Costs Subtotal | NA | NA | NA | \$6, <mark>652397</mark> | NA |
| 4. | 0 Sum of Engineering, Con | struction | , and Lead | hate Man | agement Co | osts |
| 4.1 | Sum of Engineering, Construction, and Leachate Management Cost Subtotals | NA | NA | NA | \$132,660 125,717 | NA |
| | 5 | 5.0 Contii | ngency | | • | |
| 5.1 | Contingency (10% of Sum of Engineering, Construction, and Leachate Management Cost Subtotals) | NA | NA | NA | \$ <mark>13,266 12,600</mark> | NA |
| | 6.0 Third Party Adminis | tration a | nd Project | Managen | nent Costs | |
| 6.1 | Third Party Administration and Project Management Costs (2.5% of Sum of Engineering, Construction, and Leachate Management Cost Subtotals) | NA | NA | NA | \$3, <mark>648</mark> 4 58 | NA |
| 7. Total Post-Closure Cost | | | | | | |
| 7.1 | Total Annual Post-Closure Cost (Sum of amounts in Sections 4, 5, and 6) | NA | NA | NA | \$149,574 141,775 | NA |
| 7.2 | 30 Year Post-Closure Costs (Total Annual Post- Closure Cost x 30) | NA | NA | NA | \$4,487,245 4,252,433 | NA |

Facility Name: Royal Oaks Landfill Permit No: 1614B

Revision No.: 1 Date: 0510/2024

ⁱ Sources of Unit Cost Estimates may include:

⁽¹⁾ Published Cost Estimator Manuals (e.g., RS Means);

⁽²⁾ Third Party Quotes (e.g., Environmental Field Services Contractors); or

⁽³⁾ Verifiable Data based on Actual Operations

ⁱⁱ Example Description for Item No. 1.1 – "Includes costs for site inspection performed at least annually for identification of areas experiencing settlement or subsidence, erosion or other drainage-related problems, inspection of the leachate collection system, gas monitoring system and LFG monitoring system."

ROYAL OAKS LANDFILL CHEROKEE COUNTY, TEXAS TCEQ PERMIT NO. MSW-1614B

MAJOR PERMIT AMENDMENT

PART III – SITE DEVELOPMENT PLAN APPENDIX IIIM SITE LIFE CALCULATIONS

Prepared for

Pine Hill Farms Landfill TX, LP

May 2024

Revised October 2024



Prepared by

Weaver Consultants Group, LLC

TPBE Registration No. F-3727 6420 Southwest Blvd., Suite 206 Fort Worth, TX 76109 817-735-9770

WCG Project No. 0120-076-11-106

This document is intended for permitting purposes only.



| | PERMIT BOUNDARY |
|-----------|---|
| | PERMITTED LIMIT OF WASTE |
| | PROPOSED LIMIT OF WASTE |
| 0500 | SITE GRID |
| 610 | EXISTING CONTOUR (SEE NOTE 1) |
| _440 | FUTURE BOTTOM OF WASTE CONTOUR |
| -650 | TOP OF INTERMEDIATE COVER CONTOUR |
| +97 | DEPTH OF REMAINING FILL |
| Λ | INDICATES REVISION (SEE LIST OF REVISIONS) |

1. EXISTING CONTOURS DEVELOPED BY FIRMATEK FROM AERIAL PHOTOGRAPHY FLOWN NOVEMBER 10, 2022.



| ILL FARMS LANDFILL TX, LP | MAJ F |
|----------------------------|----------|
| REVISIONS | |
| DATE DESCRIPTION | |
| 2024 SEE LIST OF REVISIONS | |
| | |
| | |
| | WWW.WCOK |

JOR PERMIT AMNDMENT REMAINING CAPACITY

ROYAL OAKS LANDFILL CHEROKEE COUNTY, TEXAS

RP.COM

SHEET IIIM-5



| PERMIT BOUNDARY |
|---|
| PERMITTED LIMIT OF WASTE |
| PROPOSED LIMIT OF WASTE |
| SITE GRID |
| EXISTING CONTOUR (SEE NOTE 1) |
| BOTTOM OF WASTE CONTOUR |
| TOP OF INTERMEDIATE COVER CONTOUR |
| DEPTH OF REMAINING FILL |
| INDICATES REVISION (SEE LIST OF REVISIONS) |
| |

1. EXISTING CONTOURS DEVELOPED BY FIRMATEK FROM AERIAL PHOTOGRAPHY FLOWN NOVEMBER 10, 2022.

2. TOP OF PRE-SUBTITLE D LINER AREAS ARE APPROXIMATE AND WERE REPRODUCED FROM CROSS-SECTIONS INCLUDED IN THE 1983 PERMIT APPLICATION PREPARED BY STOKES & ASSOCIATES.



| ILL | FARMS LANDFILL TX, LP | | | | |
|-------|-----------------------|--|--|--|--|
| | REVISIONS | | | | |
| DATE | DESCRIPTION | | | | |
| /2024 | SEE LIST OF REVISIONS | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

MAJOR PERMIT AMNDMENT AVERAGE WASTE DEPTH

ROYAL OAKS LANDFILL CHEROKEE COUNTY, TEXAS

WWW.WCGRP.COM

SHEET IIIM-7

ROYAL OAKS LANDFILL CHEROKEE COUNTY, TEXAS TCEQ PERMIT NO. MSW-1614B

MAJOR PERMIT AMENDMENT APPLICATION

PART IV – SITE OPERATING PLAN

Prepared for

Pine Hill Farms Landfill TX, LP

May 2024

Revised October 2024 JASON E. EDWARDS 99336 99336 VCENSED AAI 10/02/2024

TPBE Registration No. F-3727 6420 Southwest Blvd., Suite 206 Fort Worth, Texas 76109 817-735-9770

WCG Project No. 0120-076-11-106

This document is intended for permitting purposes only.

The MSW unloading and working face area is discussed below. The RACM unloading and disposal area is discussed in Section 4.20.5 (maximum size 50 feet by 50 feet). The maximum size of the Citizens Convenience Center is 150 feet by 150 feet. The liquid waste bulking facility is discussed in Appendix IVAD (maximum size 100 feet by 240 feet).

Control(s) will also be used to confine the working face to as small an area as practical consistent with the rate of incoming waste and safe and efficient working face operations. The maximum size of the working face will be limited to the area listed below for a range of waste accepted at the facility.

| Incoming Waste ² Accepted | Maximum Working Face Size ^{3, 4, 5, 6} (width by length) | |
|--------------------------------------|--|--|
| 0 – 40 Tons/Day | 30 feet by 30 feet (or 900 sf) | |
| 40 – 1,500 Tons/Day | 150 feet by 175 feet (or 26,250 sf) | |
| 1,500 – 3,000 Tons/Day | 250 feet by 325 feet (or 81,250 sf) | |
| 3,000 – 6,000 Tons/Day | 375 feet by 450 feet (or 168,750 sf) | |
| 6,000 – 10,000 Tons/Day | 525 feet by 600 feet (or 315,000 sf) | |

Maximum Working Face Size¹

¹ Typically only 1-working face will be utilized. However, a second working face may be used in some cases (e.g., during a time when the active face is transitioned to a new cell). The typical maximum number of working faces to be used at the site is two. Additional working faces may be used if required to accommodate site operations. If more than two working faces will be used, the landfill will notify the region office prior to opening a third working face.

² For the maximum working face size, the incoming waste tonnage accepted will be determined by the sum of waste acceptance listed on the previous four TCEQ quarterly summary reports. If daily waste inflow increases, the maximum working face size may be increased to accommodate existing waste inflow rates.

³ The working face maximum size listed above is based on the maximum area needed to spread and compact waste in uniform lifts. The working face does not include areas used to move waste from a tipper area to the working face.

⁴ During the placement of the first lift of MSW in a newly constructed cell, the maximum working face size listed above does not apply provided that odors, vectors, and windblown litter are controlled consistent with standard operating conditions.

⁵ The maximum working face size listed above does not apply to areas that have less than a six-foot thick waste column left before the final permitted grades are achieved provided that odors, vectors, and windblown waste are controlled consistent with standard operating conditions.

⁶ The width and length shown above is for guidance purposes only. The maximum working face size will be governed by the area listed above.

The working face includes areas where waste has been deposited for disposal but has not been covered with soil. The working face includes areas that are covered with daily cover and the area where waste is deposited on the working face. As discussed in Part III, Appendix IIIC (Leachate and Contaminated Water Management Plan) the working face area is surrounded by a contaminated water containment berm and stormwater diversion berm. The area within the containment and diversion berms includes the following:

- Working Face Area (as defined above)
- Contaminated Water Storage Area (as noted in Part III Appendix IIIC this area is designed to contain stormwater that has contacted the working face)

ROYAL OAKS LANDFILL CHEROKEE COUNTY, TEXAS TCEQ PERMIT NO. MSW-1614B

MAJOR PERMIT AMENDMENT APPLICATION

PART IV – SITE OPERATING PLAN APPENDIX IVD LIQUID WASTE BULKING FACILITY OPERATING PLAN

Prepared for

Pine Hill Farms Landfill TX, LP

May 2024

Revised October 2024



Prepared by

Weaver Consultants Group, LLC

TBPE Registration No. F-3727 6420 Southwest Blvd., Suite 206 Fort Worth, Texas 76109 817-735-9770

WCG Project No. 0120-076-11-106-06

This document is intended for permitting purposes only.

- CFR Code of Federal Regulations
- EPA U.S. Environmental Protection Agency
- MSW Municipal Solid Waste
- OSHA Occupational Health and Safety Administration
- PCBs polychlorinated biphenyls
- SDP Site Development Plan
- SOP Site Operating Plan
- SWP Special Waste Profile
- SPCC Spill Prevention Control and Countermeasure Plan
- SWPPP Storm Water Pollution Prevention Plan
- TAC Texas Administrative Code
- TCEQ Texas Commission on Environmental Quality
- SWAP Special Waste Acceptance Plan

1 INTRODUCTION (TITLE 30 TAC §330.201)

This Liquid Waste Bulking Facility Operating Plan has been prepared for the liquid waste bulking facility at the Royal Oaks Landfill and contains the information required by Title 30 Texas Administrative Code (TAC) §330.201. The proposed liquid waste bulking facility will be located on the north portion of the waste footprint (Cell 9) as shown on Drawing 1 of Appendix IVD-A. Prior to closure of the site the liquid waste bulking facility will be relocated to its final location south of the footprint (refer to Drawing 2 of Appendix IVD-A). The proposed and final liquid waste bulking facilities will generally consist of a bulking agent storage area and a solidification area containing four separate mixing basins. The mixing basins will be constructed of metal (proposed bulking facility) or concrete (final bulking facility) with secondary containment for the liquid waste bulking facilities, respectively. Secondary containment of the 25-year, 24-hour storm event, and a 2-foot perimeter stormwater berm as an additional containment measure. Refer to Part IV, Section 4.2.4 for the maximum liquid waste bulking facility size.

As the proposed liquid waste bulking facility will be located in the footprint of the site, relocation of the facility will be required from time to time as the site develops. Relocation of the liquid waste bulking facility will be covered via a permit modification.

This operating plan includes provisions for facility management and facility operating personnel to meet the general and facility-specific requirements included in Subchapter E – Operational Standards for Municipal Solid Waste (MSW) Storage and Processing Units for the day-to-day operation of the facility. This operating plan will be retained onsite throughout the active life of the facility and until after certification of closure.

Since this liquid waste bulking facility is located within the Royal Oaks Landfill permit boundary, some requirements of Subchapter E are addressed in Part IV – SOP. Consistent with Title 30 TAC §330.201, this liquid waste bulking facility operating plan references the applicable section in the landfill SOP to minimize duplication and/or competing requirements. For example, the facility operating hours, sign requirements, and access road requirements listed in Sections 8.4, 8.5, and 8.7 of this plan all reference the landfill SOP. In addition, the waste acceptance procedures listed in Section 3 also reference the waste acceptance information listed in the landfill SOP and the facility Special Waste Acceptance Plan (SWAP) included in Appendix IVAIVC. The bulking facility will be operated within

3 WASTE ACCEPTANCE AND ANALYSIS (TITLE 30 TAC §330.203 AND §330.205)

3.1 Properties and Characteristics of Waste (§330.203(a))

Typical liquid waste streams that will be accepted at the facility include, but are not limited to, sludges; septic tank pumpings (septic wastes); grease and grit trap wastes; Class 2 and 3 nonhazardous industrial wastes; Railroad Commission waste; wastes that are not classified as bulk liquids but do not pass the paint filter test; and other nonhazardous bulk liquids. These liquids will be transported to the facility by private or public haulers in vacuum trucks, tank trucks, and sealed containers. The liquids will originate from restaurants and food processing plants, car and truck washes, oil and gas related industrial operations, and other commercial and industrial facilities.

As discussed in Section 4.20 of Part IV – SOP, special waste and industrial waste will be pre-characterized prior to acceptance of the waste material following the guidelines in Part IV – SOP, Section 4.20 and the SWAP included in Appendix IVCA.

As required by the SOP and SWAP included in Appendix IVCA, incoming liquid waste will be documented on a Special Waste Profile (SWP) Sheet or other required manifest. An example of a SWP is included in Appendix IVD-B. The precharacterization by the generator will include analytical testing and/or process information as necessary to make the determination that the waste is nonhazardous. No waste material will be accepted at the site that is not precharacterized or does not have the proper manifest(s). Regulated hazardous wastes that require authorization under Title 30 TAC Chapter 335 will not be accepted at the site.

General expected characteristics of the grease trap waste stream to be handled are:

| Fats, oils and greases: | 6 - 8% |
|-------------------------|----------------------|
| Solids: | 20 – 25% |
| Water: | 65 – 75% |
| pH: | 4.5 – 5.5 |
| BOD ₅ /COD: | 10,000 – 60,000 mg/l |

Grit trap solids are dirt and sand, with occasional small amounts of large solids (e.g., gravel and rocks). The grit trap liquid fraction will likely contain some oil, normally in small quantities. This is petroleum oils from crankcase drippings, road oils, grease

and oil washed from engines, and other similar sources. This liquid will normally have a low BOD₅ (Biological Oxygen Demand). Additionally some retail/commercial and industrial facilities have grit traps to collect sediment from floor washing activities.

Septic waste and portable toilet waste is typically composed of approximately 2 to 5 percent total solids with the remainder being water. BOD_5 and COD (Chemical Oxygen Demand) levels may be in the 3000-9000 mg/l range. Non-hazardous grease may be about 500 mg/l and the pH is in the range of 4.0 to 8.0.

The parameters listed above provide typical characteristics for the respective liquid waste. Parameters for the above waste streams are not limiting parameters that will impact or influence the design or operation of this liquid waste bulking facility. Liquid wastes that exhibit characteristics outside of the typical characteristic ranges may be accepted at the facility provided that they are reviewed and approved by site personnel prior to receipt. Wastes will be reviewed by the site's Special Waste Analyst and the Operations Manager or his designee to verify that the waste is not incompatible. In addition, Republic will utilize the experience gained at this facility and others in verifying that wastes are not incompatible. In general, there are no incompatibilities with the diverse waste streams listed above. However, if a new or unique waste stream is introduced, the site may perform bench scale compatibility tests (e.g., pH, flammability, acid and base reaction, pit compatibility, etc.) on incoming wastes to verify that the wastes are not incompatible with other wastes or bulking agents. Bulking agents listed in Section 3.3 may be considered for use for solidifying any liquid wastes. Bulking agents are not limiting parameters that impact or influence the design or operation of this liquid waste bulking facility.

Documentation of the waste characterization process will be maintained at the facility in the Site Operating Record, as discussed in the SOP and SWAP. Sampling and analysis completed will be done according to EPA-approved methods. Liquid wastes processed at the liquid waste bulking facility will be disposed of at the working face after the material is solidified. No other discharge of waste material will come from this facility.

3.2 Volume and Rate of Transfer (§330.203(b) and §330.205(a) and (b))

The solidification capacity, storage capacity, and maximum storage time for the proposed solidification basins is summarized in the following table.

Sawdust

Woodworking machines produce large quantities of sawdust. The particulate matter that is removed from the air exhaust systems for these machines can be used to solidify grease trap waste. Other types of sawdust material (e.g., dust from industrial processes) with larger particles may be placed on the waste to temporarily control odors.

Wood Chips

Wood chips are produced through the grinding and chipping of wood material such as trees, stumps, and clean wood products. It has been effective in solidifying liquids and may be placed on top of the waste to control odors.

Auto Shredder Fluff

Auto shredder fluff (ASF) consists of the residual light fraction of shredder residue and may contain fibrous textiles, polyurethane foams, plastics, rubber, and a wide variety of light metal content. Prior to acceptance at the site, this material will be characterized following the procedures listed in the SWAP (refer to Appendix IVCA). In addition, Royal Oaks Landfill will require the ASF generator to submit waste profile information quarterly to document that the ASF contains less than 50 ppm of PCBs. Only ASF that has been classified by the generator as being non-hazardous may be accepted for disposal at the facility.

Rice Hulls

Rice hulls are produced as a by-product of rice production. It is an organic material that consists of the outer shell of grains of rice during the growing season. It contains absorbent properties that are effective for solidifying liquids.

APPENDIX IVD-A

LIQUID WASTE BULKING FACILITY DRAWINGS





| | • | PERMIT BOUNDARY |
|---|---------------------------|---|
| → → CELL BOUNDARY → → EXISTING EASEMENT → → PROPOSED EASEMENT >>>>>>>>>>>>>>>>>>>>>>>>>>>>>> | | LIMIT OF WASTE |
| EXISTING EASEMENT PROPOSED EASEMENT PROPOSED EASEMENT SITE GRID EXISTING CONTOUR (SEE NOTE 1) MW-10 EXISTING GROUNDWATER MONITORING WELL G ^{GP-1} EXISTING GAS PROBE INDICATES REVISION (SEE LIST OF REVISIONS) | | CELL BOUNDARY |
| → → → → PROPOSED EASEMENT → SITE GRID → 610 EXISTING CONTOUR (SEE NOTE 1) → ^{MW-10} EXISTING GROUNDWATER MONITORING WELL → GP-1 EXISTING GAS PROBE → INDICATES REVISION (SEE LIST OF REVISIONS) | · · <u> </u> | EXISTING EASEMENT |
| 0500 SITE GRID 610 EXISTING CONTOUR (SEE NOTE 1) | | PROPOSED EASEMENT |
| 610 EXISTING CONTOUR (SEE NOTE 1) ^{MW−10} EXISTING GROUNDWATER MONITORING WELL ^{GP−1} EXISTING GAS PROBE <u>INDICATES REVISION</u> (SEE LIST OF REVISIONS) | 0500 | SITE GRID |
| ◆^{MW-10} EXISTING GROUNDWATER MONITORING WELL ●^{GP-1} EXISTING GAS PROBE ▲ INDICATES REVISION (SEE LIST OF REVISIONS) | 610 | EXISTING CONTOUR (SEE NOTE 1) |
| \odot GP-1 EXISTING GAS PROBE INDICATES REVISION (SEE LIST OF REVISIONS) | ◆ ^{MW-10} | EXISTING GROUNDWATER MONITORING WELL |
| INDICATES REVISION (SEE LIST OF REVISIONS) | ⊙ ^{GP-1} | EXISTING GAS PROBE |
| | \triangle | INDICATES REVISION (SEE LIST OF REVISIONS) |

FROM AERIAL PHOTOGRAPHY FLOWN NOVEMBER 10, 2022. 2. PERMIT BOUNDARY WAS REPRODUCED FROM LEGAL DESCRIPTION PROVIDED BY STANGER SURVEYING COMPANY, DATED APRIL 1995.



| MAJOR F | ARMS LANDFILL TX, LP | HILL F |
|---------------|-----------------------|--------|
| | REVISIONS | |
| | DESCRIPTION | DATE |
| | SEE LIST OF REVISIONS | 9/2024 |
| CHERO | | |
| | | |
| WWW.WCORF.COM | | |

PERMIT AMENDMENT SITE PLAN

YAL OAKS LANDFILL OKEE COUNTY, TEXAS

DRAWING



| • | PERMIT BOUNDARY | | | |
|---------------------|---|--|--|--|
| | LIMIT OF WASTE | | | |
| 0500 | SITE GRID | | | |
| 610 | EXISTING CONTOUR (SEE NOTE 1) | | | |
| · · _ · | EXISTING EASEMENT | | | |
| _ · _ · _ · _ · _ | PROPOSED EASEMENT | | | |
| —700—— | PROPOSED FINAL COVER CONTOUR | | | |
| | DRAINAGE SWALE | | | |
| | DRAINAGE LETDOWN | | | |
| | CHANNEL CENTERLINE | | | |
| ♦ ^{MW-10} | EXISTING GROUNDWATER MONITORING WELL | | | |
| ♦ ^{MW-D1} | PROPOSED GROUNDWATER MONITORING WELL | | | |
| ⊛ ^{GP-1} | EXISTING GAS PROBE | | | |
| ⊚ ^{GP-10A} | PROPOSED GAS PROBE | | | |
| \triangle | INDICATES REVISION (SEE LIST OF REVISIONS) | | | |

EXISTING CONTOURS DEVELOPED BY FIRMATEK FROM AERIAL PHOTOGRAPHY FLOWN NOVEMBER 10, 2022. THE GRID SYSTEM IS BASED ON A SITE GRID SYSTEM. ELEVATIONS ARE BASED ON NAVD 88.

2. PERMIT BOUNDARY WAS REPRODUCED FROM LEGAL DESCRIPTION PROVIDED BY STANGER SURVEYING COMPANY, DATED APRIL 1995.



| ILL | F | ARMS | LAN | DFILL | TX, | LP |
|-----------|---|------|----------|------------|-----|----|
| REVISIONS | | | | | | |
| ATE | | | DES | SCRIPTION | | |
| /2024 | | : | SEE LIST | OF REVISIO | ONS | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

MAJOR PERMIT AMENDMENT LANDFILL COMPLETION PLAN

ROYAL OAKS LANDFILL CHEROKEE COUNTY, TEXAS

WWW.WCGRP.COM

DRAWING 2



<u>??</u>



| ILL | FARMS LANDFILL TX, LP | | | | |
|-----------|-----------------------|--|--|--|--|
| REVISIONS | | | | | |
| DATE | DESCRIPTION | | | | |
| /2024 | SEE LIST OF REVISIONS | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |





<u>LEGEND</u>

60

30

SCALE IN FEET

| | LIMIT OF WASTE |
|--------------------|---|
| | PROPOSED FINAL COVER CONTOUR |
| | DRAINAGE SWALE |
| 0500 | SITE GRID |
| 610 | EXISTING CONTOUR (SEE NOTE 1) |
| ♦ ^{MW-13} | EXISTING GROUNDWATER MONITORING WELL |
| ⊙ ^{GP-8A} | EXISTING GAS PROBE |
| | ALL WEATHER ROAD AND PAD |
| Λ | INDICATES REVISION (SEE LIST OF REVISIONS) |

1. EXISTING CONTOURS DEVELOPED BY FIRMATEK FROM AERIAL PHOTOGRAPHY FLOWN NOVEMBER 10, 2022.

2. THE SOLIDIFICATION BASINS WILL HAVE PERIMETER RAILS THAT MEET ALL OSHA REQUIREMENTS. A TRACK GUIDE WILL BE INSTALLED ON ONE SIDE OF THE SOLIDIFICATION BASINS TO ALLOW MIXING EQUIPMENT TO MOVE SAFELY ALONG THE SOLIDIFICATION BASINS. IN ADDITION, PIPE WHEEL STOPS OR CURBING WILL BE INSTALLED ON THE UNLOADING SIDE OF THE BASINS TO PREVENT VEHICLES AND EQUIPMENT FROM ENTERING THE BASINS.

 ACCESS TO THE LIQUID WASTE OPERATION AREA WILL BE PROVIDED BY THE ALL WEATHER ROAD MANUEVERING AREA.

4. A SECONDARY CONTAINMENT AREA WILL BE ESTABLISHED WITHIN THE MANUEVERING PAD AREA TO CAPTURE ANY SPILLAGE FROM THE TRANSPORT TRUCKS IF AN ACCIDENT OCCURS. LIQUID WASTE COLLECTED IN THE SECONDARY CONTAINMENT AREA WILL BE PUMPED INTO THE MIXING BASINS WHERE IT WILL BE PROCESSED FOR DISPOSAL.

5. SOLIDIFICATION BASINS ARE SHOWN FOR INFORMATIONAL PURPOSES ONLY. THE NUMBER OF BASINS AND THE SEQUENCE OF CONSTRUCTION MAY VARY. HOWEVER, THE LOCATION OF THE BASINS WILL BE CONSISTENT WITH THE CONFIGURATION

6. SOLIDIFICATION BASIN LIDS WILL BE USED OVER THE SOLIDIFICATION BASINS TO REDUCE AIRBORNE PARTICLES AND ODORS.

7. THE CONTAINMENT AREA WILL SLOPE TOWARD THE SOLIDIFICATION BASINS. THE REMAINDER OF THE ROAD AND PAD AREA WILL SLOPE AWAY FROM THE SOLIDIFICATION BASINS TO THE SEDIMENT TRAP. STORMWATER ON THE PAD AREA WILL CONTROLLED THROUGH THE SEDIMENT TRAP.

8. STORAGE MAY CONSIST OF A SILO AND/OR CONCRETE BUNKERS THAT MINIMIZE THE STORED BULKING AGENT'S EXPOSURE TO WIND. TYPICAL LOCATION IS SHOWN. IN ADDITION, BULKING AGENTS MAY ALSO BE STORED IN SOLIDIFICATION BASINS THAT ARE NOT BEING USED FOR SOLIDIFICATION.

| PREPARED FOR | | | | | |
|---------------------------|-----------------------|---|-----------|--|--|
| ILL FARMS LANDFILL TX, LP | | MAJOR PERMIT AMENDMENT FINAL LIQUID WASTE BULKING FACILITY PLAN | | | |
| REVISIONS | | | | | |
| DATE | DESCRIPTION | | | | |
| /2024 | SEE LIST OF REVISIONS | | | | |
| | | | | | |
| | | WWW.WCGRP.COM | DRAWING 5 | | |