

SOUTH COAST AQMD
CLERK OF THE BOARD

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**BEFORE THE HEARING BOARD OF THE
SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT**

In The Matter Of

SOUTH COAST AIR QUALITY
MANAGEMENT DISTRICT,

Petitioner,

vs.

CHIQUITA CANYON, LLC a Delaware
Corporation,
[Facility ID No. 119219]

Respondent.

Case No. 6177-4

**DECLARATION OF NEAL BOLTON,
P.E.**

Health and Safety Code § 41700, and
District Rules 402, 431.1, 3002, 203, 1150

Hearing Date: April 16 and 17, 2025

Hearing Time: 9:30 A.M.

Place: Hearing Board
South Coast Air Quality
Management District,
21865 Copley Drive
Diamond Bar, CA 91765

I, Neal Bolton, declare as follows:

1. I am of sufficient age and am competent to testify in this proceeding. I make this declaration based upon personal knowledge and am competent to testify to the facts set forth herein.

Background and Experience

2. As discussed in detail in my prior declarations in Case No. 6177-4, I have owned and managed the landfill consulting company Blue Ridge Services Montana, Inc., since 1988 (then called Blue Ridge Services) ("Blue Ridge"). I am a registered civil engineer in California with more than 46 years of experience in heavy construction, landfill operations, and solid waste management. With respect to odor issues, I began working with Chiquita Canyon, LLC ("Chiquita") in 2020, related to a series of notices of violation issued to Chiquita by the South Coast Air Quality Management District ("South Coast AQMD"). Since then, I have continued to work with Chiquita on various components of landfill operations, including odor mitigation and leachate management.

3. I serve on the Reaction Committee as the subject matter expert on landfill design and operational best management practices.

4. This declaration is made for the status and modification hearing being held on April 16 and 17, 2025 on the Stipulated Order for Abatement in Case No. 6177-4 with the South Coast AQMD, most recently modified on November 13, 2024 (“Modified Stipulated Order”).

Landfill Inactivity

5. As described in a December 31, 2024 letter to South Coast AQMD, Chiquita closed the Chiquita Canyon Landfill (“Landfill”) to active waste disposal operations effective January 1, 2025. December 31, 2024 was the last day that Chiquita accepted incoming solid waste at the Landfill. Chiquita had been working with its regulators, including the Los Angeles Regional Water Quality Control Board (“RWQCB”) and Los Angeles County, for months to address and resolve tonnage limitations and capacity restraints impacting the Landfill’s ability to accept waste. Ultimately, they were unable to reach resolution, and Chiquita closed its active waste disposal operations. A true and correct copy of the letter that Chiquita submitted to South Coast AQMD on December 31, 2024 notifying it of the Landfill’s closure is attached hereto as **Exhibit A**.

6. While Chiquita has stopped accepting waste from the public, it continues to dispose of its own internally generated waste, including spent carbon media. Chiquita uses carbon media to treat characteristically hazardous leachate extracted from the Landfill. The Landfill has 24 granular activated carbon vessels which each hold approximately 4,000 pounds of carbon media. Once per day, the spent carbon media from two vessels is dewatered and tested. The spent carbon media is non-hazardous, but occasionally above land disposal restrictions (“LDR”) limits. If the spent carbon media tests above the LDR limits, it is shipped offsite to an approved disposal facility. If the spent carbon media meets the LDR limits, it is disposed of in Cell 8A. Chiquita opens a small working face at Cell 8A every two to three days for this disposal.

7. Chiquita is also working with its regulators, including the RWQCB, the Local Enforcement Agency, and CalRecycle, to address its required closure and post-closure activities.

8. Although Chiquita is no longer accepting waste from the community, it continues to manage the Landfill, including addressing the Elevated Temperature Landfill event that is affecting the northwest corner of the Landfill. Chiquita also continues to implement the Modified Stipulated Order.

Compliance with the November Modified Stipulated Order

9. The Modified Stipulated Order contains 92 conditions, many with multiple subparts, requiring Chiquita to take a wide range of actions designed to slow and stop the landfill reaction, and mitigate any impacts.

10. The chart attached hereto as **Attachment 1** lists conditions that I have been involved with at Chiquita, their requirements, and the current status of compliance.

Excavation and Geosynthetic Cover Updates

11. As reported in prior declarations, Chiquita commenced the West Slope Toe Drain Installation Project on August 8, 2024 to better mitigate leachate seepage in the long-term on the western slope of the Landfill. As part of the project, Chiquita installed a new toe drain and removed and replaced the temporary scrim liner that previously covered the area with the 30-mil geomembrane liner required by **Condition 31**. Chiquita completed excavation into waste for the West Slope Toe Drain Installation Project on December 19, 2024 and welded the geomembrane liner to the top of the anchor trench to completely seal it on December 20, 2024. As of March 7, 2025, the West Toe Drain Installation Project, including the North Slope Termination Project, has been completed pursuant to the West Slope Toe Drain Installation Project Workplan, which included removing the steel plates and any debris from the concrete stormwater channel and installing a secondary 30-mil geomembrane liner over the toe termination south of the project area.

12. In addition to the West Slope Toe Drain Installation Project, Chiquita also commenced an excavation project on the northern portion of the Landfill, the North Slope Termination Project, on November 11, 2024, and completed the excavation project on November 27, 2024. Chiquita conducted the North Slope Termination Project in accordance with the West Slope Toe Drain Installation Project Workplan. Between the West Slope Toe Drain Installation Project and the North Slope Termination Project, Chiquita completed the excavation of approximately 50,479 square feet (9,429 cubic yards) of soil and buried waste.

13. On December 27, 2024, Chiquita completed the installation of the geosynthetic cover pursuant to **Condition 31**. Chiquita installed a total of 44.6 acres of cover over the western portions of

Module 2B/3/4 Phase 2, Module 2B/3, and Module 4. Chiquita then installed approximately 1.3 acres of additional geosynthetic cover over the west toe drain disposal area – where material excavated from the West Toe Drain Installation Project was redeposited – in accordance with the West Toe Drain Installation Project Workplan. Chiquita completed the installation of the additional 1.3 acres of geosynthetic cover as of January 3, 2025.

14. For both the West Slope Toe Drain Installation Project and the North Slope Termination Project, in accordance with **Condition 85**, Chiquita submitted weekly reports to South Coast AQMD detailing the status of the projects.

Expert Reports

15. On January 7, 2025, pursuant to **Condition 12(g)(vii)**, Blue Ridge submitted a revised liquid generation model, which, like the original model submitted on June 25, 2024, provided updates regarding the rate of liquid generation in the Landfill and the total quantity of liquid existing within the Landfill waste mass. As reported therein, it is estimated that (1) of the original estimated 633,394,059 gallons of moisture, 94,785,906 gallons of liquid have been removed as of December 26, 2024; and (2) accounting for the moisture that will always remain entrained within the waste mass, Blue Ridge estimated that at least an additional 129,923,661 gallons of liquid will be liberated to exist as free liquid within the waste mass which may subsequently be removed by pumping or through the underlying leachate collection and removal system. A true and correct copy of the report submitted to South Coast AQMD on January 7, 2025 is attached hereto as **Exhibit B**.

16. Pursuant to **Condition 84**, Blue Ridge, on behalf of Chiquita, submitted an Evaluation of Windbreaks and Wind Flow Disruptors to South Coast AQMD on November 15, 2024. As required by the Modified Stipulated Order, the report evaluated (1) the viability and advantages and disadvantages of the different windbreaks and/or wind flow disruptors; and (2) the estimated duration and timeline of the steps necessary to implement and install each of the windbreaks and/or wind flow disruptors evaluated, including any regulatory approvals and any associated environmental analysis and public notification/outreach required, contractor procurement, contracts, bidding, contract execution, equipment procurement, and equipment installation. After evaluating the feasibility, viability, and

associated timelines of various barrier options, including, without limitation, a 20-foot-high solid wall and an additional 117 orchard fans, Blue Ridge determined that ownership, regulatory, and construction challenges made the evaluated options technically infeasible. A true and correct copy of the report submitted to South Coast AQMD on November 15, 2024 is attached hereto as **Exhibit C**.

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1 I declare under penalty of perjury under the laws of the State of Montana that the foregoing is true and
2 correct to my personal knowledge.

3 Executed on this 9th day of April 2025, in Victor, Montana.

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5 _____
6 Neal Bolton
7 President
8 Blue Ridge Services, Inc.
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**BEFORE THE HEARING BOARD OF THE
SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT**

In The Matter Of

SOUTH COAST AIR QUALITY
MANAGEMENT DISTRICT,

Petitioner,

vs.

CHIQUITA CANYON, LLC a Delaware
Corporation,
[Facility ID No. 119219]

Respondent.

Case No. 6177-4

**ATTACHMENT 1 TO DECLARATION
OF NEAL BOLTON, P.E.**

Health and Safety Code § 41700, and
District Rules 402, 431.1, 3002, 203, 1150

Hearing Date: April 16 and 17, 2025

Hearing Time: 9:30 A.M.

Place: Hearing Board
South Coast Air Quality
Management District,
21865 Copley Drive
Diamond Bar, CA 91765

STIPULATED ORDER COMPLIANCE CHART

Condition No.	Summary of Requirement(s)	Status
1	Conduct odor surveillance using a trained third-party contractor in communities surrounding the Chiquita Canyon Landfill.	Compliance ongoing.
1(f)	Modify landfill operations as needed based on odor surveillance results.	Compliance ongoing.
2	Maintain Odor Surveillance Logs and make them available for inspection.	Compliance ongoing.
2	Maintain written records of odor surveillance notifications received and any actions taken in response thereto.	Compliance ongoing.
12(g)(iv)	Submit an expert report on landfill best management practices and alternative methods to minimize the release of fugitive surface gas and minimize odors from fugitive surface gas.	Completed; submitted by November 6, 2023 and posted on Chiquita's Odor Mitigation website (https://chiquitacanyon.com/odor-mitigation/).
12(g)(vii)	Develop a model to estimate the rate of liquid generation in the Landfill and the total quantity of liquid existing within the landfill waste mass at any given	Completed; submitted by June 25, 2024 and posted on Chiquita's Odor Mitigation website.

Condition No.	Summary of Requirement(s)	Status
	time and prepare a report summarizing the model and results of modeling.	
12(g)(vii)	Update the liquid model and submit reports summarizing the updated model and results of modeling on a semi-annual basis.	Compliance ongoing; most recently submitted on January 7, 2025. A true and correct copy of this report is attached hereto as Exhibit B and posted on Chiquita's Odor Mitigation website.
24	Operate and maintain the Landfill to prevent standing leachate and the pooling or ponding of leachate exposed to the atmosphere throughout the facility.	Compliance ongoing.
25	Mitigate odors and the dispersion and exposure of leachate when encountering pressurized leachate. After the pressure equalizes, remove saturated soil or add sufficient dry soil to cover the impacted area.	Compliance ongoing.
26	Submit an expert report on the feasibility of temporary containment measures for the purposes of controlling leachate and possible discharges of pressurized leachate when drilling.	Completed; submitted on March 12, 2024 and posted on Chiquita's Odor Mitigation website.
27(b)	Conduct, document, and maintain records of leachate seep inspections twice each calendar day.	Compliance ongoing.
27(c)	On a weekly basis, compile and report the details of the inspection logs from that calendar week as well as any ongoing leachate seepage and pooling at the Landfill.	Compliance ongoing; submitted weekly each Tuesday and posted on Chiquita's Odor Mitigation website; see Section Q of Condition 8 reports, which are posted on Chiquita's Odor Mitigation website.
27(e)	Report any leachate leak or spill separately from leachate seeps within 48 hours of discovering the leak or spill.	Compliance ongoing; see reports posted on Chiquita's Odor Mitigation website.
27(f)	Develop and submit for review and approval Standard Operating Procedures ("SOP") for leachate tank operations in accordance with industry standards and best management practices, to prevent leachate tank overflow, failure, and spillage in the tank farm areas.	Completed; submitted by September 23, 2024; revised on October 14, 2024 (resubmitted on October 18, 2024). A true and correct copy of the SOPs are attached hereto as Exhibit D .
27(f)	Implement the SOPs within 7 days of South Coast AQMD approval.	Completed.

Condition No.	Summary of Requirement(s)	Status
27(f)	Conduct daily inspections of leachate tanks, tank connections, ports, valves, tank hoses, and any other equipment associated with leachate tank filling/emptying operations, to determine equipment condition material integrity.	Compliance ongoing.
27(g)	Do not overfill leachate collection/storage tanks or liquid treatment tanks.	Compliance ongoing.
29	Ensure proper landfill leachate and landfill condensate capacity to accumulate onsite and/or dispose of collected liquids/leachate at an appropriate facility or facilities. Comply with the Leachate Management Plan (“LMP”) approved by Environmental Protection Agency (“EPA”) and submitted to South Coast AQMD.	Compliance ongoing.
30	Visually inspect the landfill cover and geosynthetic cover(s) in and around the Reaction Area each operating day and promptly repair any cover issues identified.	Compliance ongoing.
30	Maintain a log demonstrating that any damage to the landfill cover or geosynthetic cover has been addressed.	Compliance ongoing; see Section L of Condition 8 reports, which are posted on Chiquita’s Odor Mitigation website.
31	Install a geosynthetic cover over portions of Module 2B/3/4 Phase 2, Module 2B/3, and Module 4.	Completed.
31	Submit the completed design for the cover, including associated landfill gas extraction infrastructure to be installed underneath the cover.	Completed; submitted on September 12, 2023 and posted on Chiquita’s Odor Mitigation website.
31	Notify South Coast AQMD on the progress of procuring and installing the geosynthetic cover.	Completed; submitted on October 31, 2023.
31	Include updates on the procurement and installation of the geosynthetic cover in the Condition 8 monthly reports.	Completed; see Section O of Condition 8 reports, which are posted on Chiquita’s Odor Mitigation website.
32, 32(a)	Submit an expert report determining odor and emission transport of odors from the Landfill and identifying effective techniques used to remedy	Completed; submitted on December 1, 2023 and posted on Chiquita’s Odor Mitigation website.

Condition No.	Summary of Requirement(s)	Status
	potential odor impacts on the nearby community.	
32(b), 32(c)	If the Reaction Committee recommends additional air modeling, provide a proposal for additional modeling. Revise the air modeling study proposal according to the comments received by email on March 28, 2024, and re-submit the revised proposal for approval.	Completed; submitted proposal on January 15, 2024; revisions submitted on May 8, 2024 and May 16, 2024. Each of these proposals are posted on Chiquita's Odor Mitigation website.
32(c)	Submit a final written report on the additional modeling.	Completed; submitted by September 2, 2024 and posted on Chiquita's Odor Mitigation website.
42	Pending approval of Chiquita's Rule 1150 Landfill Excavation Plan, comply with the enumerated list of requirements for all excavation, as defined in Rule 1150(a)(5).	Compliance ongoing.
43	Do not expose more of the working face than is operationally necessary on any working day and additionally during Unfavorable Wind Conditions, maintain the fresh trash-related odor mitigation measures outlined in the Stipulated Order for Abatement in Case No. 6177-1.	No longer applicable since there are no longer active operations.
45	Install, maintain in good working order, and operate 1,000 feet or more of Semi-Permanent Vapor Odor Control in the Reaction Area.	Compliance ongoing; installed by September 20, 2023.
46, 47	Operate and maintain in good working order a landfill perimeter odor control misting system on permanent fencing on the west and northwest of the property.	Compliance ongoing.
48	Notify South Coast AQMD of any substantial operational changes designed or anticipated to reduce odors, within seven days of implementing such changes.	Compliance ongoing.
51	Permit South Coast AQMD personnel to conduct all inspections deemed necessary by South Coast AQMD	Compliance ongoing.

Condition No.	Summary of Requirement(s)	Status
	Compliance staff, including collecting samples.	
51	Provide South Coast AQMD with any updates to the Health and Safety Plan within 1 business day of going into effect.	Compliance ongoing.
51(a)	To the extent Chiquita's Health and Safety Plan requires 5-gas monitors for regulatory staff to conduct an on-site inspection, maintain onsite at least two 5-gas monitors for regulatory personnel to use.	Compliance ongoing.
64	Follow the direction of the EPA to prepare an LMP in accordance with the Unilateral Administrative Order. Submit the final plan submitted to EPA to South Coast AQMD.	Completed; submitted on March 28, 2024.
64	Submit any updates to the final LMP to South Coast AQMD within 24 hours of submittal to EPA.	Compliance ongoing; most recently submitted on January 11, 2025. A true and correct copy of the most recently revised LMP is attached hereto as Exhibit E .
84	Submit an expert report evaluating the installation of windbreaks and/or wind flow disrupters along the western and northern borders of the facility, and/or ridgeline.	Completed; submitted by November 15, 2024. A true and correct copy of this report is attached hereto as Exhibit C and posted on Chiquita's Odor Mitigation website.
85	While conducting excavation work related to the west slope excavation project and the toe drain termination project, operate landfill perimeter odor control misters along the project areas, operate a Semi-Permanent Vapor Odor Control system along the project areas, and submit weekly reports on the excavation activities.	Completed. All reports are posted on Chiquita's Odor Mitigation website.

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**BEFORE THE HEARING BOARD OF THE
SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT**

In The Matter Of

SOUTH COAST AIR QUALITY
MANAGEMENT DISTRICT,

Petitioner,

vs.

CHIQUITA CANYON, LLC a Delaware
Corporation,
[Facility ID No. 119219]

Respondent.

Case No. 6177-4

**EXHIBIT A TO DECLARATION OF
NEAL BOLTON, P.E.**

Health and Safety Code § 41700, and
District Rules 402, 431.1, 3002, 203, 1150

Hearing Date: April 16 and 17, 2025

Hearing Time: 9:30 A.M.

Place: Hearing Board
South Coast Air Quality
Management District,
21865 Copley Drive
Diamond Bar, CA 91765



CHIQUITA CANYON

A Waste Connections Company

December 31, 2024

Via E-Mail

Wayne Nastri
Executive Officer
South Coast Air Quality Management District
wnastri@aqmd.gov

Re: Closure of Active Waste Disposal Operations

Dear Mr. Nastri:

This letter hereby provides notice pursuant to Chiquita Canyon, LLC's ("Chiquita") Conditional Use Permit ("CUP"), Solid Waste Facility Permit, and other relevant regulatory requirements that Chiquita is closing active waste disposal operations effective January 1, 2025. This means that December 31, 2024 will be the last day that Chiquita accepts incoming solid waste at the Chiquita Canyon Landfill ("Landfill"). Although the Landfill will no longer accept incoming waste, Chiquita will continue to manage the Landfill, including addressing the Elevated Temperature Landfill ("ETLF") event that is affecting the northwest corner of the Landfill, as well as closure and post-closure activities. Chiquita will continue collaborating with its regulators on the many ongoing reaction mitigation measures.

In addition to working with its regulators to address the ETLF event at the Landfill, Chiquita had been working diligently with its regulators over the past several months to address the regulatory constraints related to the active waste disposal operations that were preventing Chiquita from continuing to receive and manage solid waste from its many customers. The primary constraints were the tonnage limits that take effect January 1, 2025, and the final approval needed for Chiquita to access otherwise permitted and constructed airspace.

As required by the October 2022 Settlement Agreement with Los Angeles County (the "County"), Chiquita submitted a permit modification application over two years ago to modify its current CUP in line with the mutually agreed to terms of the Settlement Agreement. Since that time, Chiquita had remained in close contact with the County, submitting multiple iterations of the necessary environmental analyses in response to County comments and feedback. In recent months, Chiquita had proposed several options for addressing the tonnage limitations that would prevent Chiquita from maintaining an economically viable operation. Nevertheless, the County was unable to fully implement the Settlement Agreement or provide a viable alternative solution to address the severe tonnage restrictions that take effect on January 1, 2025.

Chiquita has also worked diligently with its other regulators, including the Los Angeles Regional Water Quality Control Board ("Water Board"), to correct many misconceptions about

December 31, 2024

Page 2 of 2

slope stability and whether the ETLF event occurring in an older portion of the Landfill should prohibit Chiquita from placing waste in areas that have already been permitted.

Chiquita had wished to maintain its crucial role in the community's solid waste management system, but has made the difficult decision to close its active waste disposal operations. Although Chiquita has available airspace, due to the current regulatory environment, maintaining ongoing operations at Chiquita is no longer economically viable. Chiquita remains committed to working with federal, state, regional, and local authorities to protect public health and to continue addressing the ETLF event, and will also continue working to maintain compliance with its permits, governing orders, and agreements.

Please contact me if you have any questions regarding this matter.

Regards,



Steve Cassulo
District Manager
Chiquita Canyon, LLC

cc: Jason Aspell, jaspell@aqmd.gov
Terrence Mann, tmann@aqmd.gov
Andrea Polidori, apolidori@aqmd.gov
Larry Israel, lisrael@aqmd.gov
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**BEFORE THE HEARING BOARD OF THE
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In The Matter Of

SOUTH COAST AIR QUALITY
MANAGEMENT DISTRICT,

Petitioner,

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CHIQUITA CANYON, LLC a Delaware
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[Facility ID No. 119219]

Respondent.

Case No. 6177-4

**EXHIBIT B TO DECLARATION OF
NEAL BOLTON, P.E.**

Health and Safety Code § 41700, and
District Rules 402, 431.1, 3002, 203, 1150

Hearing Date: April 16 and 17, 2025

Hearing Time: 9:30 A.M.

Place: Hearing Board
South Coast Air Quality
Management District,
21865 Copley Drive
Diamond Bar, CA 91765

Model of Liquid Generation and Total Quantity Report

Prepared For:



Blue Ridge Services Montana, Inc.
P.O. Box 1945
Hamilton, MT 59840
Telephone: (406) 370-8544



January 7, 2025 Update

www.blueridgeservices.com

Blue Ridge Services Montana, Inc.

P.O. Box 1945
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Telephone: (406) 370-8544

www.blueridgeservices.com



January 7, 2025

Steve Cassulo,

RE: Stipulated Order for Abatement, Case No. 6177-4, Conditions No. 12(g)(vii) and 12(g)(vii)(A)

In accordance with Condition No. 12(g)(vii) of the Stipulated Order for Abatement (Stipulated Order) with the South Coast Air Quality Management District in Case No. 6177-4, Blue Ridge Services Montana, Inc., prepared a **MODEL OF LIQUID GENERATION AND TOTAL QUANTITY REPORT** on June 25, 2024. Per Condition No. 12(g)(vii), that initial report required the following:

The development of a model to estimate the rate of liquid generation in the landfill, and total quantity of liquid existing within the landfill waste mass at any given time (including supporting assumptions, references, and calculations). By no later than June 25, 2024, Respondent shall submit to South Coast AQMD a report summarizing the model and results of modeling.

This updated report satisfies Condition No. 12(g)(vii)(A) which requires the following:
...an update to the leachate generation model and a report submitted to South Coast AQMD summarizing the updated model and results of modeling on a semi-annual basis beginning on January 7, 2025, and every six calendar months thereafter.

This report describes the updated model requested per the above-listed conditions.

Respectfully,

A handwritten signature in black ink, appearing to read 'Neal Bolton', with a stylized flourish at the end.

Neal Bolton, P.E.

President

Blue Ridge Services Montana, Inc.

neal@blueridgeservices.com

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ACRONYMS

Acronym	Meaning
CY	Cubic Yard
CCL	Chiquita Canyon Landfill
LCRS	Leachate Collection and Removal System
LFG	Landfill Gas
MSW	Municipal Solid Waste
PCY	Pounds per Cubic Yard
SCAQMD	South Coast Air Quality Management District

EXECUTIVE SUMMARY

This report satisfies Condition No. 12(g)(vii)(A) of the Stipulated Order, which requires an update to the initial report that was submitted on June 25, 2024, in accordance with Condition No. 12(g)(vii). Like the initial report, this updated report summarizes the results of a model that estimates the rate of liquid generation in the landfill and the quantity of liquid existing within the landfill waste mass. As with the initial report, this report provides supporting assumptions, references, and calculations used to update the model and present the results of our current liquids estimate.

Based on the most recent data, we changed our approach to include not only entrained moisture, but also to estimate the quantity of additional *absorbed* moisture and moisture that has been trapped above low permeability layers of intermediate cover soil where it creates saturated zones. Beginning in 2022, and through December 2024, approximately 95 million gallons of liquid were removed from the landfill. This is in addition to the normal baseline of approximately 5 million gallons of leachate per year that is removed from the landfill's Leachate Collection and Removal System (LCRS).

Our updated modeling indicates there may be at least 130 million gallons of liquid to be removed from the area impacted by the reaction. Our estimate is based on a summation of three sources of liquid located within the landfill:

1. Initial entrained moisture of inbound waste.
2. Moisture added to waste mass by infiltration.
3. Saturated zones.

These three sources of moisture within the landfill were assessed in the current model and are presented in this updated report.

Monthly leachate extraction levels increased dramatically in late 2022 and 2023, reaching approximately 6 million gallons per month in the last 5 months of 2024 (See Figure 1). As CCL continues adding pumps and improving related infrastructure, leachate volumes may continue to increase in 2025. Once the number of pumps stabilizes, the rate of extraction is also expected to stabilize, and eventually decline. However, this decline might be masked by certain operational practices, such as lowering pump elevations inside well bores as liquid elevations decrease.

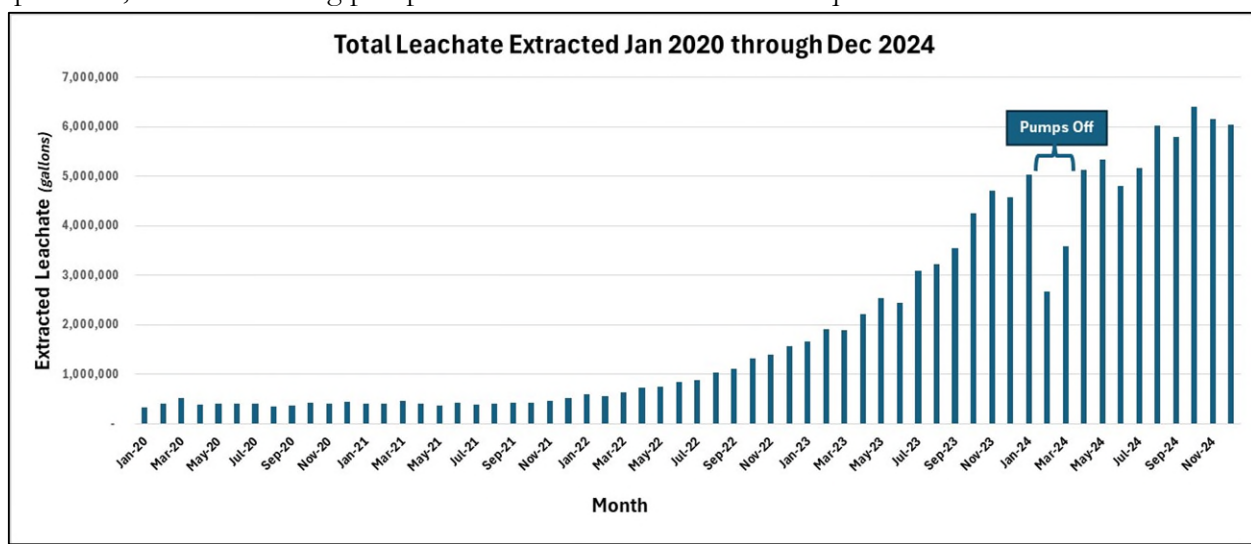


Figure 1 - Total leachate extracted monthly 2020-2024

INTRODUCTION

Per Condition No. 12(g)(vii) of the Stipulated Order, the SCAQMD required Chiquita Canyon, LLC (Chiquita) to develop a model that accomplishes 2 things:

1. Estimates the volume of liquid within the waste mass of Chiquita Canyon Landfill (CCL), and
2. Estimates the generation (i.e., liberation) rate of liquid from that waste mass.

Per subsequent Condition No. 12(g)(vii)(A), the initial report was to be updated and submitted semi-annually, beginning on January 7, 2025. This report is the first semi-annual report to be produced under this condition.

The model described herein integrates several variables that were updated based on new information and data received since the submittal of the first report on June 25, 2024. This updated information and data includes settlement, liquid levels, inbound waste tonnage, precipitation, and liquid volumes extracted from the landfill. We concur with the idea that this model should continue to be updated semi-annually, because any trends in either liquid volume or liberation rate could change.

DEFINITIONS

LEACHATE

Liquid exists within the landfill as moisture that is held (i.e., entrained) within municipal solid waste (MSW) material as free liquid that is present in static perched zones in the form of layers of saturated waste and as free liquid that may be in the process of flowing through the waste.

Some “free liquid” exists within the waste mass of CCL. Waste, soil, and other materials within the landfill also contain entrained moisture that, if liberated, may also become free liquid. In terms of scale, the vast majority of liquid in any landfill, including CCL, is entrained in the waste. Some of this liquid may be liberated to become free liquid, but some moisture always remains entrained in the waste mass. The free liquid is referred to as leachate.

When it comes to landfill leachate, and in the context of this model, we are assuming that leachate is any free liquid (or moisture) that has contacted waste.

Leachate may exist as it flows downward toward the liner where it is collected by the LCRS, or as it flows laterally toward a surface leachate seep. It may also exist as a saturated layer or “lens” within the waste mass.

This total liquid/moisture volume, along with liquid that is added in various ways, represents the total potential source of liquid generation. In this context, liquid generation refers to the rate at which free liquid is liberated within the waste mass. Liquid generation is discussed later in this document.

When discussing liquid and/or moisture volume within the landfill, there are two important terms one must understand, saturation and field capacity. These terms are often confused and may mistakenly be used interchangeably, but they represent two related, but different, conditions that are discussed below.

SATURATION

Saturation is when all the pore space within an object or material is filled with water. Suppose you placed a sponge into a bowl and then added water until the sponge was completely submerged. If you pressed on the submerged sponge – or patiently watched – you would observe air bubbles coming out of the sponge. After enough pressing and/or enough time, there would be no more bubbles, because all the pores within the sponge would be filled with water. At this point, the sponge would be saturated.

Items or materials within a landfill may become saturated if they are in an area where liquid has pooled or if excess water is unable to leave because it is in a confined area – it is compartmentalized. This concentration of liquid may occur on top of the landfill liner, a low-permeability layer of cover soil, an old access road, or another confining (i.e., limiting) layer within the landfill. Please note that this does not refer to a “lake” of liquid, but rather to a layer of waste that is at some point of saturation.

Full or partial saturation may also occur if liquid is added to an object or material faster than it can drain out. To illustrate, if you continue pouring water on the sponge and do not allow time for it to naturally drain, it will continue to be at some degree of saturation. In other words, it is unable to drain and reach its field capacity.

FIELD CAPACITY

We can think of field capacity as a point of equilibrium in terms of an item or material that has reached its maximum moisture holding capacity, though is not necessarily saturated. For example, if we removed a saturated sponge from a bowl and set it on a drying rack, water would drain from the sponge. After a while, no more water would drip from the sponge. However, if, at that point, we used an eye dropper to add a single drop of water to the sponge, a single drop of water would drop out the bottom. When the sponge has all the water it can hold and cannot retain even a single drop more, it is at field capacity. It may not be fully saturated, in that all pores are filled with water, but still the sponge has all the water it can hold.

A similar state of equilibrium may exist within a landfill. However, it should be considered an equilibrium at a specific point in time. Because waste material is continually decomposing, settling, and changing state (from solid to liquid or gas), the equilibrium that defines field capacity is constantly changing. In the process, the quantity of moisture entrained in the waste or liberated as free liquid is changing too. This equilibrium is also affected by free liquid that may be held or that is passing through the waste mass.

SATURATED ZONE

The well-drilling process has identified numerous saturated zones within the landfill. Some of these may be interconnected and others may be isolated. These are likely caused by the historic operational practice of not removing layers of daily and intermediate cover soil before placing subsequent layers of MSW. This practice occurred prior to Chiquita Canyon, LLC’s (Chiquita) acquisition of CCL. Those low-permeability layers of soil act as a quasi-liner, restricting the downward flow of leachate toward the landfill’s main LCRS. Leachate accumulates on those layers; the adjacent waste becomes saturated.

REACTION AREA

In this report, we refer to the “reaction area.” Please note there are 2 different reaction areas (See Figure 2) as defined below.

DATA-DRIVEN REACTION AREA BOUNDARY

This is the boundary that defines the limits of the ETLF reaction based on several criteria, including subsurface and wellhead temperature, leachate quantity, leachate characteristics, gas quantity, gas characteristics, and settlement. The data-driven reaction area boundary was defined by the Reaction Committee and is reviewed and revised (if needed) monthly based on the defining criteria.

AQMD REACTION AREA BOUNDARY

This is the boundary that the South Coast Air Quality Management District (SCAQMD) has defined as the perimeter of the reaction area. This was defined initially by the boundaries of Cells 1/2A, 2B/3, 4 and Module 2B/3/4 P2.

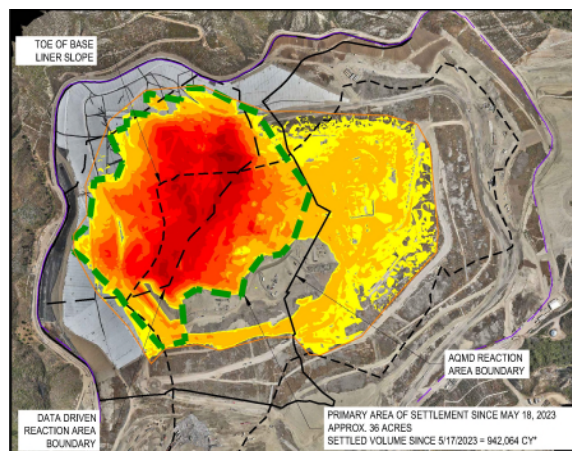


Figure 2: Reaction Area

APPROACH

We utilized the same general approach as was used in the initial model, with a few changes. We have attempted to quantify infiltration moisture that has been absorbed into the waste mass, along with liquid that may be creating a saturated zone above a low permeability layer within the landfill. Regarding that data, we modeled the quantity of liquid within the landfill by estimating the overall moisture content within the waste mass and extrapolating from there the volume of moisture that could be liberated, as free liquid, from the moisture stored within the landfill. Our estimate is based on a summation of three factors:

1. Initial entrained moisture of inbound waste.
2. Moisture stored in the waste mass from infiltration.
3. Saturated layers.

These three sources of moisture within the landfill are included in the current model and explained in this updated report.

In the initial report, we assumed a universal moisture content (MC) within the waste mass and estimated that 50% of that moisture could be liberated. In this updated report, we changed our approach to assume that the MC is not universal. Consequently, we could not apply an overall percentage of moisture available to be liberated. Instead, we estimated the ultimate (ending) MC of the waste mass – after decomposition – and then assumed that all liquid above that baseline is available to be liberated. We assume that the average ending MC, after decomposition, will be approximately 15%. That figure was assumed to apply to both categories of waste decomposition discussed below.

1. **Typical Decomposition** – Under what we consider to be typical conditions, moisture within the waste mass is liberated during the decomposition process to the point where the remaining

entrained liquid represents a MC of approximately 15%. Under the arid conditions at CCL, complete decomposition, and the ultimate liberation of moisture down to that average level of 15% within the waste mass, would occur over many decades. The LCRS and gas collections systems were designed for this relatively slow rate of decomposition.

2. **Reaction Decomposition** – Under ETLF conditions, moisture within the waste mass is liberated much faster. We estimated that the ending MC after reaction decomposition will also be 15%.

Please note that this integrated model and the associated modeling results are based upon multiple layered assumptions. These assumptions may change as new data is collected, or if any are shown to be inaccurate, and the results of this model may change significantly. For this reason, along with the ever-present need for more data to confirm assumptions and analyses, we will be updating this model and modeling results semi-annually.

VOLUME OF LIQUID

We began our analysis by stating our base assumption that liquid (or moisture) within the landfill can neither be created nor destroyed. We recognize that some chemical bonding of hydrogen and oxygen may occur to produce water (H_2O), but not on a scale that would significantly increase the volume of liquid or moisture within the waste mass.

We have also assumed any free liquid that has an uninterrupted path to the base of the landfill will be collected by the underlying LCRS. This is the desired process, and the *pass-through* leachate does not add to the inventory of liquid stored within the landfill.

Typically, liquid is liberated through the process of organic decomposition and does so at a predictable and relatively steady rate. Conversely, the ETLF reaction liberates liquid over a much shorter time.

As noted in the initial report, while various methods exist for measuring MC in soil, none can be accurately applied to the waste mass in a landfill so, our approach was to estimate the initial MC in the inbound waste stream. Then, we estimated the additional moisture that could be added by infiltration into the waste mass.

As noted above, we identified 3 potential sources of moisture within the waste mass that include:

1. Entrained Moisture in the inbound waste stream;
2. Absorbed Moisture from infiltration; and
3. Saturated Zones from infiltration.

Each of these sources is explained in detail on the following pages.

Through our experience and research, we determined that the most accurate method for estimating overall MC within CCL's waste mass is to apply industry-typical MC factors to various types of solid waste and then modify them based on site-specific assumptions. Those site-specific assumptions address entrained moisture, absorbed moisture, and liquid stored in saturated zones, mostly above low permeability layers of intermediate cover soil.

ENTRAINED MOISTURE

We first estimated the overall MC by applying industry-typical MC factors to the categories of solid waste that can be found in CCL's waste mass.

To estimate the total liquid volume within CCL's waste mass, we estimated the total volume of entrained moisture within the waste. Remember, entrained moisture within the waste can only become liquid (i.e., leachate) if it is liberated during the decomposition process.

We began our estimate of entrained moisture by analyzing CCL's most recent 15 years of inbound tonnage data and subdividing it by type of waste material. We then applied typical MC to those waste categories.

In addition to the moisture that is entrained in the waste mass, and present in saturated zones, some moisture is continually added to the landfill, mostly from infiltration of stormwater.

This added moisture should be considered when updating the model to show future leachate volumes. We can also make updated estimates of future liquid volumes as moisture is liberated to become free liquid (i.e., leachate).

To estimate the quantity of absorbed moisture, we performed a run of the HELP model. HELP is an acronym for, "Hydrologic Evaluation of Landfill Performance." The HELP model was developed by the U.S. Army Corps of Engineers for the EPA. It has been widely used to estimate leachate generation rates for various types of final cover designs for closed landfills.

Through this process, we estimated that, on average, every ton – and every cubic yard – of fill within CCL's waste mass contains approximately 46.37 gallons of entrained moisture. Within the area of settlement, we estimated that entrained moisture from the initial MC of the inbound waste initially represented 529,521,048 ¹gallons.

ADDED MOISTURE

We also considered additional moisture that was added due to infiltration through cover and into the waste mass during the wet season. Rainfall that does not run off or that is not stored in the topmost layer of daily or intermediate cover – and later released through evapotranspiration – will percolate into the landfill. Some of this percolated liquid will be stored (i.e., entrained) within the waste mass. This is the well-known sponge-effect of solid waste landfills and is based on the relatively high field capacity of Municipal Solid Waste (MSW).

We estimated that the waste mass in the area impacted by the reaction has stored an additional 8,610,685 gallons of liquid added due to infiltration.

SATURATED ZONES

Free liquid that is not absorbed within the waste mass will flow downward within the landfill until it reaches the base liner and is removed by the LCRS. However, the presence of saturated zones suggests that much of that free liquid may be stored on top of low permeability layers of intermediate cover soil (See Figure 3 on following page). Numerous saturated zones have been encountered during well-drilling operations – which seems to corroborate this assumption.

¹ Please note that to prevent confusion between various numbers, and to allow the reader to track values accurately, we have opted to show the entire number rather than following traditional protocol of rounding the number.

We estimate that the saturated zones represent approximately 95,262,326 gallons within the area impacted by the reaction.

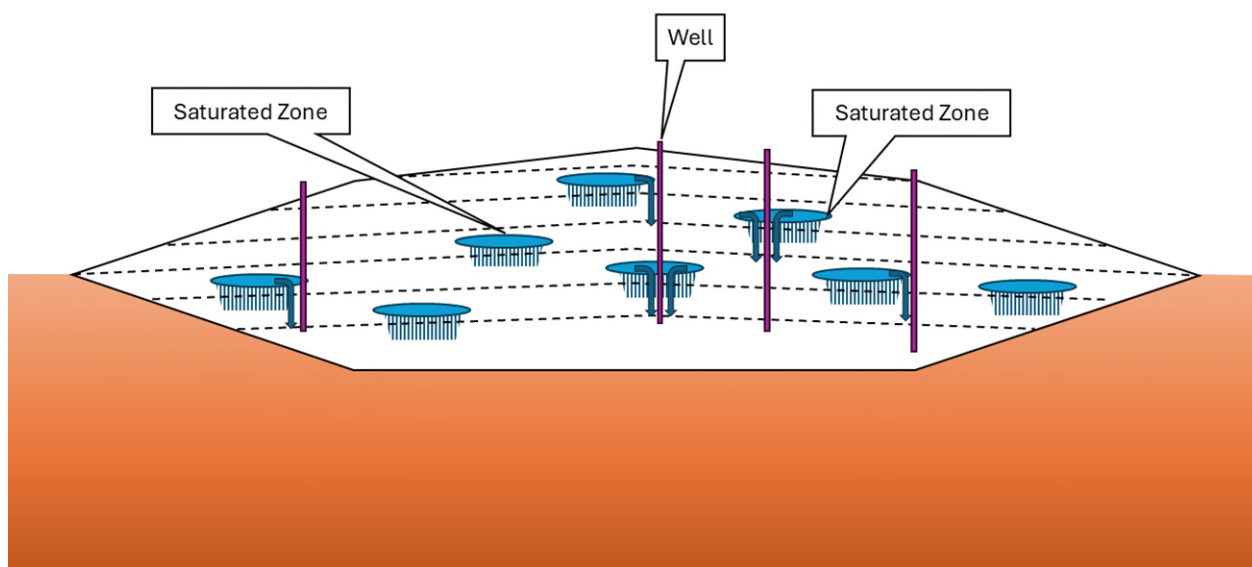


Figure 3: Saturated Zones

Much of the liquid in those saturated zones is being pumped out of the landfill by the series of pumps located across the landfill, and which are most densely spaced in and around the reaction area.

The liquid from saturated zones may be moving laterally above layers of intermediate cover soil, or it may be moving downward as it slowly seeps through a soil layer. It may also be migrating downward through a vertical well, until it reaches another low permeability layer. Finally, it may reach the bottom of the landfill where it can be extracted via the LCRS.

In some cases, the liquid, if under pressure due to being heated, affected by landfill gas (LFG) pressure, or if loaded by the weight of the overlying waste mass, may move upward through layers within the landfill, or within a vertical well. But most often, it will move downward or laterally. LFG, on the other hand, will move in any direction following the path of least resistance (See Figure 4).

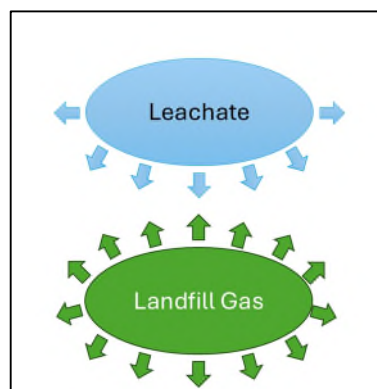


Figure 4 - Movement of Gas & Leachate

LANDFILL SETTLEMENT

Research and our experience indicate that a typical landfill may ultimately settle 20% of its initial depth, due to physical, chemical, biological, and mechanical factors – mostly related to decomposition of organic matter. At best, landfill settlement is a complex process.

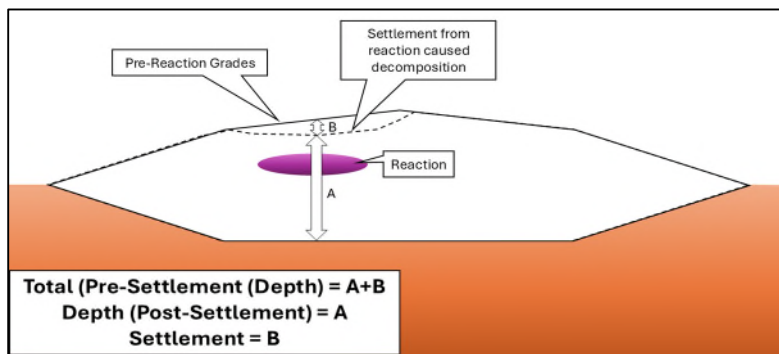


Figure 5 - Schematic of Settlement above Reaction Core

ETLF conditions can result in portions of a landfill settling very quickly (See Figure 5). We have revised our assumptions related to settlement since the initial report. They are:

1. Waste stream characterization data suggests that 55% of CCL's inbound waste mass is organic. This is the only portion that will undergo decomposition.
2. During operational activities, additional landfill airspace is filled with cover soil, further reducing the average percentage of organic material that can be decomposed.
3. Further, the organic portion of the waste mass is, under typical conditions, unlikely to fully decompose.
4. Under ETLF conditions, organics are decomposing very quickly and have been observed to be a wet sludge, described as "oatmeal" by the drillers, contractors, and operations staff. We are estimating that as the organics within the landfill transform to *oatmeal*, they undergo a 60% volume reduction. Accordingly, every cubic yard of organic material placed in the landfill would, after decomposition, occupy only 0.4cy under ETLF conditions within and adjacent to the reaction.

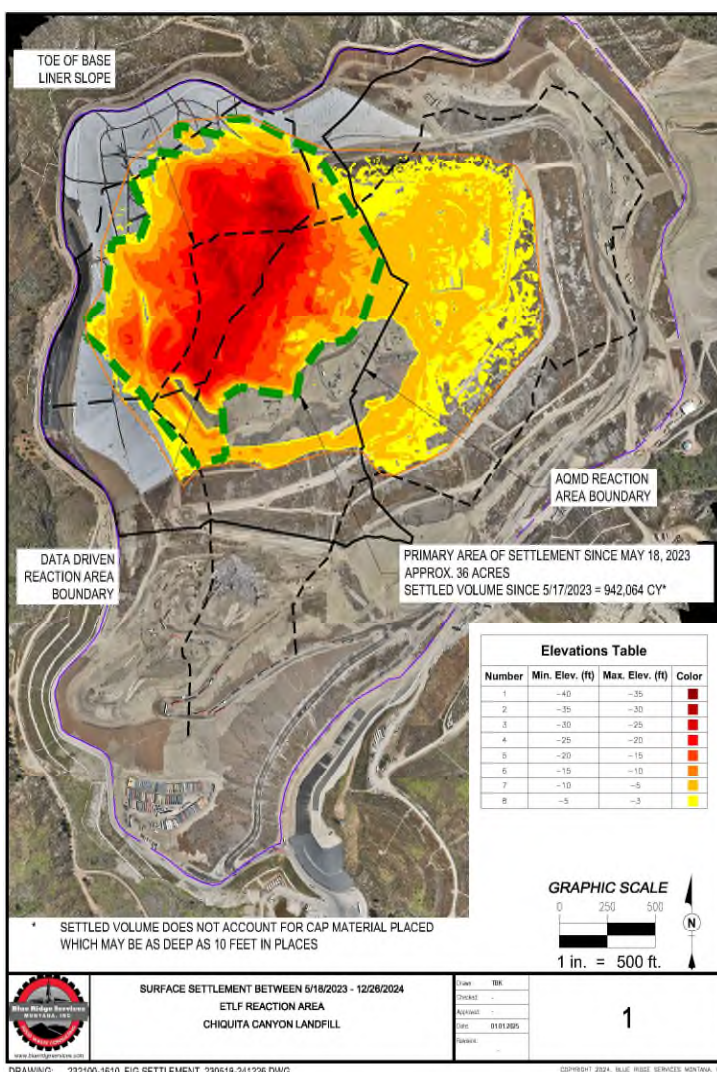


Figure 6: Settlement

5. Between May 18, 2023, and December 26, 2024, we calculated that the area impacted by the reaction had settled 942,064cy (See Figure 6 on the previous page). This is conservative

because it does not include the soil that was placed on settled areas to maintain positive drainage, repair soil stress cracks, etc. However, based on the 942,064cy of settlement we could measure (the effect), we calculated that approximately 3,806,319cy of material had been directly affected by the reaction (the cause). We estimated the approximate volume of landfill mass affected by the reaction, by the equation:

$$WMVi = \frac{\text{Settlement}}{ORG \times VR \times (cy\ waste \div (cy\ cover\ soil + cy\ waste))}$$

Where:

WMV = Initial Waste Mass Volume

ORG = Organic (decomposable) Portion of Waste Mass = 55%

VR = Volume Reduction under ETLF Conditions = 60%

CR = Cover Ratio Factor (waste volume: cover soil volume) = 3:1 = 0.75 waste

Settlement = Measured Settlement in and adjacent to Reaction Area = 942,064cy

$$3,806,319cy = \frac{942,064cy}{55\% \times 60\% \times (3 \div 4)}$$

This rapid decomposition has clearly liberated significant amounts of leachate and LFG. We also know that a significant quantity of liquid still exists as free liquid within the landfill waste mass.

VOLUME OF LIQUID SUMMARY

The HELP model is not specifically designed for estimating operational leachate volumes, nor did we base our estimates solely on the results of the HELP modeling. However, we believe it provided one more reference point in our effort to estimate liquid volumes within the landfill. Our estimate of absorbed moisture and liquid in saturated zones was in part based on the HELP modeling using operational conditions, including the presence of intermediate cover soil on the landfill surface.

During the operational phase, it is anticipated that greater quantities of liquid will enter the landfill through infiltration than would be expected after closure, when the final cover system has been placed.

Our modeling indicates that 3,806,319 cubic yards of material within the landfill reacted, resulting in 942,064 cubic yards of settlement. See the section on Settlement within this report for a more detailed explanation. We also estimated that approximately 2 times that volume has also been impacted by some level of heat, and the transfer of LFG and leachate from the reaction. This combined total area impacted by the reaction represents approximately 11,418,958 cubic yards of material. Within that volume of affected material, we suggest there are 633,394,059 gallons of liquid. Of that, we expect that perhaps 408,684,492 gallons will be retained after decomposition.

That means at least 224,709,567 gallons could potentially be liberated. This is in addition to the baseline leachate extraction that is typically handled through the LCRS which serves the entire landfill. Leachate removal records indicate that as of December 26, 2024, CCL has extracted 94,785,906 gallons of leachate above the historic baseline of approximately 5 million gallons per year, leaving at least 129,923,661 gallons of liquid that has been, or still may be, liberated.

As previously noted, we expect the removal of this liberated liquid may take several years. Based on current extraction rates, and planned increases in pumps and infrastructure, we believe 2025 will see the peak of liquid extraction.

LIQUID GENERATION RATE

The second part of this model calculates the estimated rate at which liquid is being generated (i.e., liberated) within the waste mass. As previously noted, some moisture is present in waste, soil, and other materials within the landfill. In some cases, that moisture may be retained in those materials until they reach their respective field capacity. When entrained moisture is liberated into a “free liquid” within the waste mass, it becomes *leachate*.

LEACHATE THROUGH THE LCRS

Pumping data from 2020 and 2021 establishes a good baseline for leachate generation. In the initial report, we assumed that historically, leachate extraction equaled liquid liberation. Accordingly, we assumed that because the LCRS was extracting an average of 416,825 gallons per month (See Figure 7), or approximately 5,001,901 gallons per year, that was also the amount of leachate the landfill was liberating. In this updated model, we have modified that assumption. We are now suggesting that infiltration into the landfill, and liberation from within the waste mass, exceeded what was being extracted by the LCRS. That excess leachate was being added to the entrained moisture within the waste mass and was also being stored in the form of saturated zones caused by the historic practice

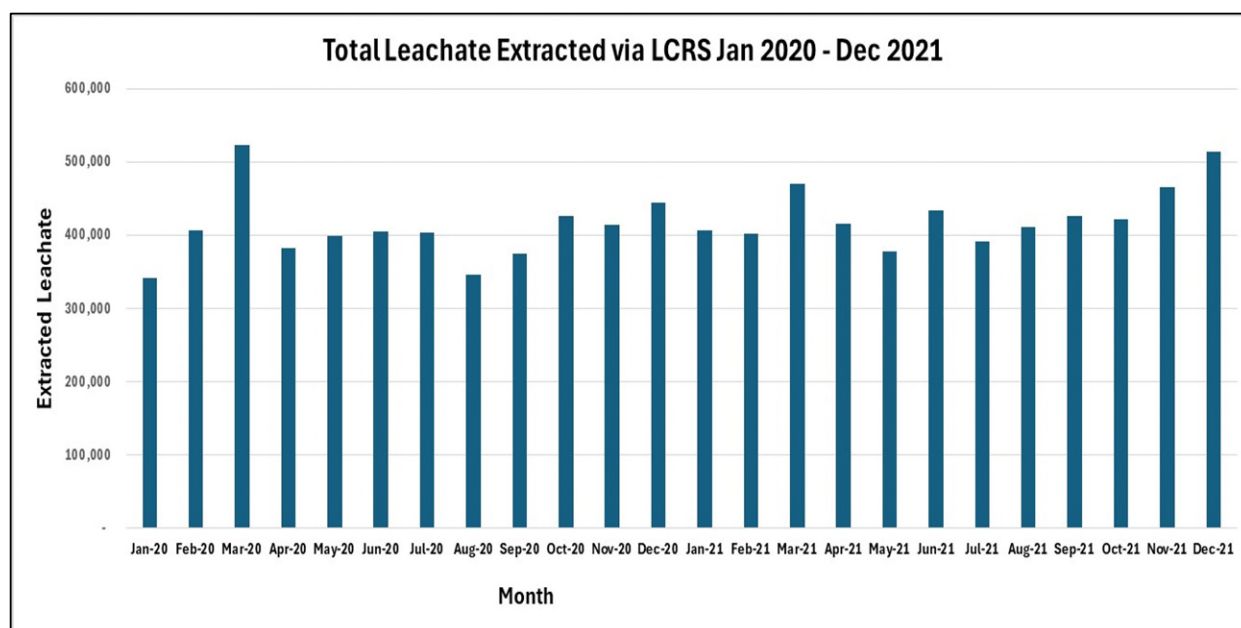


Figure 7 -- Total leachate extracted from LCRS 2020-2021

of not removing layers of cover soil to allow for uniform flow of leachate and LFG. This has been verified anecdotally by the presence of saturated zones.

Additionally, beginning in 2022, we observed an increase in leachate removal from the landfill, in the form of leachate being pumped out from vertical wells. The leachate generation rate began to increase above the historic LCRS baseline (See Figure 8). In the following 12-18 months, leachate extraction quantities increase exponentially, except for 2 months (February and March 2024) when the pumps were shut down. By mid-2024 the rate of increase had slowed, though leachate volumes were still increasing. This slowing in leachate extraction was partly due to limitations in the number of pumps and infrastructure capacity to handle the extracted leachate.

Improvements to both are ongoing.

Leachate removal quantities peaked around 6 million gallons per month and over the last 5 months of 2024, and appear to have flattened. However, as additional pumps and infrastructure are installed, the volume may continue to increase into 2025.

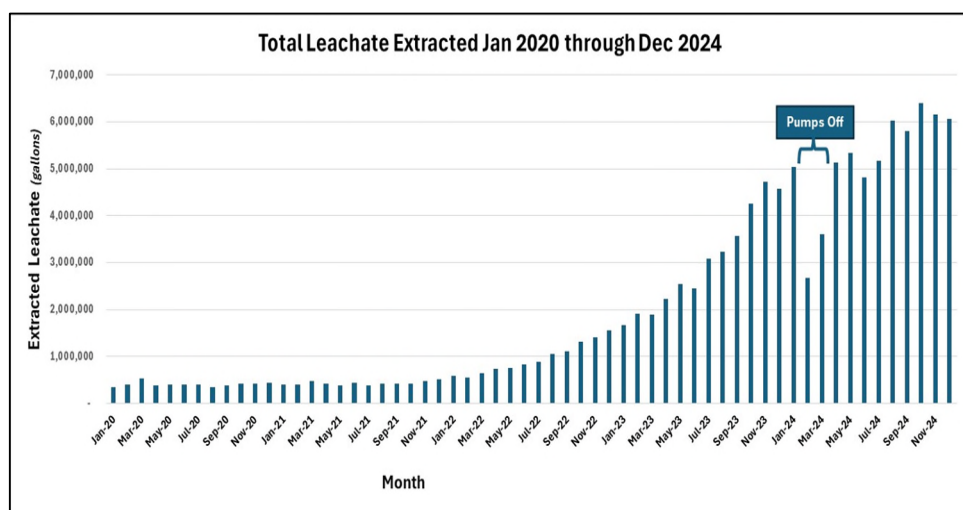


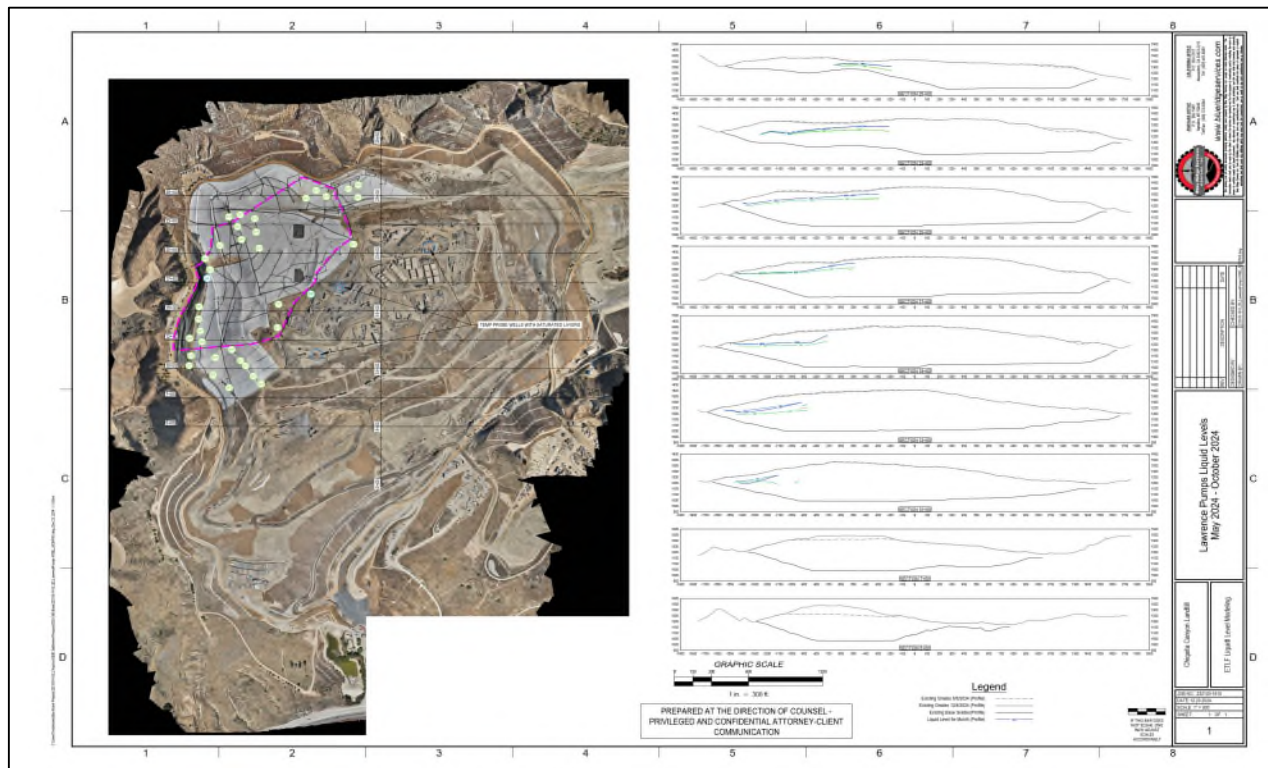
Figure 8 - Total leachate extracted 2020-2024

LIQUID ELEVATION LEVELS

Throughout 2024, CCL installed 157 pumps to extract leachate from wells and sumps. This does not represent the number of pumps that were operating at any given time since pumps are routinely taken out of operation for maintenance purposes. We initially attempted to quantify leachate levels by reviewing water level elevation data. However, even though we had substantial data from many wells, we were unable to reconcile liquid level data because the measurements were random and infrequent. For example, some wells were measured when pumps were installed, serviced, or replaced. Later, other wells were measured. Additionally, some pumps were inoperable for routine repair and maintenance during limited periods of time. Without broad liquid level data being recorded at specific *before* and *after* times, it was impossible to quantify liquid levels. Except for the wells with Lorentz Pumps, liquid levels are only taken when maintenance activities occur.

Model of Liquid Generation and Total Quantity Report – Chiquita Canyon Landfill

Unlike the other pumps, the Lorentz pumps provide continual, ongoing liquid level measurements. Using that data, we were able to identify liquid level trends. The Lorentz pump data clearly shows that liquid levels are generally dropping (See Figure 9).



On the following page (See Figure 10), we show a closer view of an excerpted portion of the cross-sections created from that Lorentz pump data. These clearly show that liquid levels are dropping month-to-month.

Model of Liquid Generation and Total Quantity Report – Chiquita Canyon Landfill

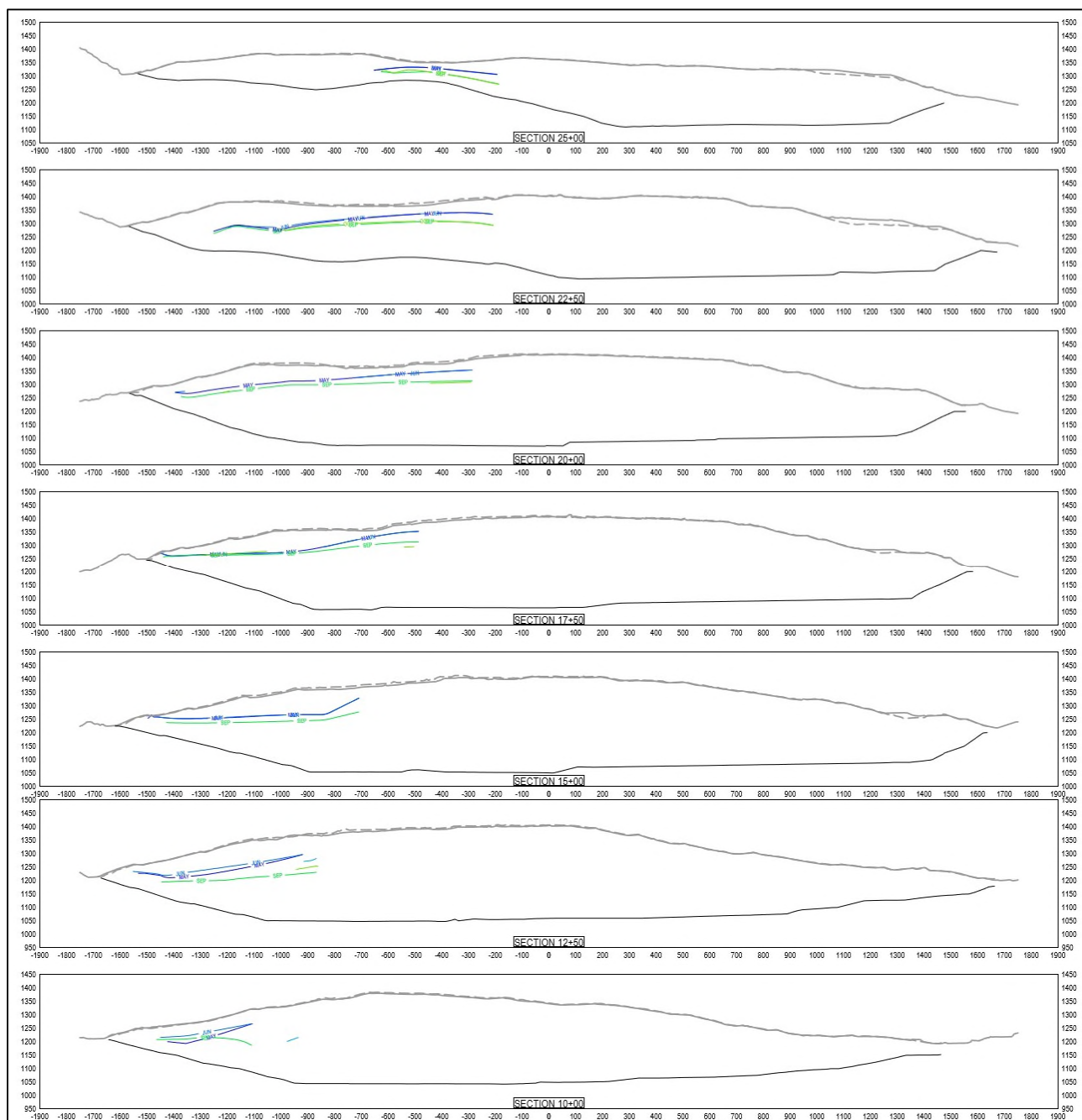


Figure 10 - Excerpt of Cross Sections showing Liquid Level

SUMMARY

The updated modeling for this report indicates that the waste mass at CCL has a MC of approximately 23.25%. Based on the extraction and leachate shipment data, we calculated that of the original estimated 633,394,059 gallons of moisture, 94,785,906 gallons of liquid had been removed as of December 26, 2024. Accounting for the moisture that will always remain entrained within the waste mass, we estimate that at least an additional 129,923,661 gallons of liquid will be liberated.

We see the lowering of liquid elevation levels shown in the Lorentz pump data (See Figure 10 on previous page) as a positive sign that current liquid extraction efforts are being successful and extraction rates will, at some point stabilize, and eventually decline.

The accuracy of the model, in terms of tracking the liquid generation rate, will improve as additional site data is obtained. Of specific value will be additional well logs, liquid levels, and spatial data within and adjacent to the reaction area.

The above-listed data should be monitored over time to determine whether these liquid generation rate variables (i.e., settlement, leachate volumes, etc.) have indeed peaked and continue to decline. We believe that biannual updates are sufficient to track and report those changes.

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**BEFORE THE HEARING BOARD OF THE
SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT**

In The Matter Of

SOUTH COAST AIR QUALITY
MANAGEMENT DISTRICT,

Petitioner,

vs.

CHIQUITA CANYON, LLC a Delaware
Corporation,
[Facility ID No. 119219]

Respondent.

Case No. 6177-4

**EXHIBIT C TO DECLARATION OF
NEAL BOLTON, P.E.**

Health and Safety Code § 41700, and
District Rules 402, 431.1, 3002, 203, 1150

Hearing Date: April 16 and 17, 2025

Hearing Time: 9:30 A.M.

Place: Hearing Board
South Coast Air Quality
Management District,
21865 Copley Drive
Diamond Bar, CA 91765

Evaluation of Windbreaks and Wind Flow Disruptors

Prepared For:



November 15, 2024



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November 15, 2024

South Coast Air Quality Management District

RE: Stipulated Order for Abatement, Case No. 6177-4, Condition No. 84 Report

In accordance with the Stipulated Order for Abatement initially issued on September 6, 2023, by the South Coast Air Quality Management District in Case No. 6177-4, as most recently modified on November 13, 2024 (SOFA), Blue Ridge Services Montana, Inc. has prepared this **EVALUATION OF WINDBREAKS AND/OR WIND FLOW DISRUPTORS**

The SOFA requires the following under Condition No. 84:

Respondent shall evaluate the installation of windbreaks and/or wind flow disruptors along the western and northern borders of the facility, and/or ridgeline, such that there are not any distinguishable gaps in the border and/or ridgeline which may result in an odor channeling affect into the Val Verde community, to enhance the dispersion of odors from the facility. By no later than November 15, 2024, Respondent shall submit a report detailing the findings of the evaluation to South Coast AQMD (attn: Baitong Chen, bchen@aqmd.gov; Nathaniel Dickel, ndickel@aqmd.gov; Christina Ojeda, cojeda@aqmd.gov). The report detailing the findings of the evaluation shall include the following:

a. The viability and advantages and disadvantages of the different windbreaks and/or wind flow disruptors.

b. The estimated duration and timeline of the steps necessary to implement and install each of the windbreaks and/or wind flow disruptors evaluated, including any regulatory approvals and any associated environmental analysis and public notification/outreach required, contractor procurement, contracts, bidding, contract execution, equipment procurement, and equipment installation.

If installation of windbreaks and/or wind flow disruptors is deemed technically feasible and viable, Respondent shall complete the installation of windbreaks and/or wind flow disruptors. In the November 15, 2024 report, the Reaction Committee shall determine technical feasibility and provide recommendations to the South Coast AQMD regarding viability. Viability shall be determined by South Coast AQMD. If deemed technically feasible and viable, installation shall take place within 180 days after receipt of written approval by South Coast AQMD or 180 days after required regulatory approvals have been procured, whichever is later.

This report utilizes the gas composition data submitted on June 3, 2024, in the Surface Emissions Report (Flux Chamber Study) to evaluate the effectiveness and potential use of barriers and airflow disruptors to mitigate odor complaints.

Respectfully,

Neal Bolton, President
Blue Ridge Services Montana, Inc.

neal@blueridgeservices.com

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ACRONYMS

Acronym	Meaning
AAEMS	Ambient Air & Emissions Monitoring Study with Updated Modeling
BRS	Blue Ridge Services Montana, Inc.
CCL	Chiquita Canyon Landfill
CEQA	California Environmental Quality Act
CFD	Computational Fluid Dynamics
CFM	Cubic Feet per Minute
CUPA	Certified Unified Program Agency
DP1/DP2	Data Probes within CFD model
DTSC	Department of Toxic Substances Control
EIR	Environmental Impact Report
ETLF	Elevated Temperature Landfill
GCCS	Gas Collection and Control System
H ₂ S	Hydrogen Sulfide
kg/m ³	Kilograms per Cubic Meter
LFG	Landfill Gas
MCAT	Multi-Agency Critical Action Team
m/s	Meters per Second
m ² /s	Square Meters per Second
m ³ /s	Cubic Meters per Second
Mph	Miles per Hour
NSTP	North Slope Termination Project
ODT	Odor Detection Threshold
ORF	Orchard Right Fans
Ppb	Parts per Billion
Ppmv	Parts per Million by Volume
RWQCB	Regional Water Quality Control Board
RMAC	Response Multi-Agency Coordination
SCAQMD	South Coast Air Quality Management District
SOFA	SCAQMD Stipulated Order for Abatement
SCS	SCS Engineering
WTP	West Toe Plan

BACKGROUND

The Chiquita Canyon Landfill (CCL or Landfill) is a municipal solid waste (MSW) landfill located in northern Los Angeles County. A closed portion of the Landfill is experiencing a subsurface reaction also known as an Elevated Temperature Landfill (ETLF) event. While most landfills may generate some odors associated with uncollected (fugitive) landfill gas (LFG) emissions and/or leachate, an ETLF event results in the production of much greater quantities of LFG and leachate, and thus

increases the potential for odors from these sources. In this report, we investigate the feasibility and viability of windbreaks and wind flow disruptors for the purpose of reducing detectable odors in communities located downwind of the Landfill. The options evaluated were:

- A solid wall
- Fences of varying porosity
- Vegetation barriers; and
- an air curtain (fans)

In accordance with Condition No. 12 of the SOFA, Chiquita Canyon, LLC (Chiquita) formed a committee of subject matter experts, the Reaction Committee, to aid in the investigation, impact assessment, and remediation of the ongoing ETLF event and resultant impacts. The Reaction Committee is conducting investigations and studies into the cause of the ETLF event, its potential impacts on air emissions, interim measures to limit odor transport, and corrective measures to reduce or abate the ETLF. The SOFA between SCAQMD and Chiquita contains a definition of the Reaction Area (the SCAQMD Reaction Area) wherein certain mitigation activities are to take place (the boundary of Cells ½A, 2B/3, 4 and Module 2B/3/4/P2). The Reaction Committee has established an interior boundary of the SCAQMD Reaction Area where ETLF conditions are being experienced at CCL and reviews data each month to determine whether to revise those boundaries (the Data-Driven Reaction Area).

Neal Bolton, P.E., President of Blue Ridge Services Montana, Inc. (BRS), is a national expert in landfill operations. He serves on the Reaction Committee as the subject matter expert in landfill design and operational best management practices pursuant to Condition No. 12(a)(i) of the SOFA. He has provided various consulting support to Chiquita since 2020, including being part of the consulting team that solved the working face odor issue in 2022. Additionally, he has broad operational experience within the heavy construction and solid waste industry that spans more than 46 years. During that time, Mr. Bolton has provided operational support for more than 500 landfills throughout North America and abroad.

Pursuant to SOFA Condition No. 84, this report identifies multiple barrier options that could potentially act as windbreaks or wind flow disruptors to enhance the dispersion of odors from the facility. These options were then evaluated for feasibility and viability regarding their advantages and disadvantages as well as the estimated timeline to implement each of them.

EXECUTIVE SUMMARY

Our evaluation of ridge-top barriers included numerous options, ranging from a simple 20-foot-high chain link fence to a solid wall, to an array of approximately 117 orchard fans spaced 75 feet apart along the northern and western ridge.

In our evaluation, we considered the feasibility, viability, and the associated timeline of each option. Obviously, different options will have different design and permitting requirements, but there are many common factors that apply to all the barrier options.

One universal factor is that more than 30% of the ridgelines where a windbreak or air flow disruptor would need to be placed are not currently owned by CCL. Another issue, common to all options, is that the Conditional Use Permit (CUP) specifically prohibits any work that would alter the primary or secondary ridgelines around the landfill. These are both issues that must be addressed before any environmental permitting, design, or construction can begin.

A third issue that is common to all options is accessibility. The north ridge is, in certain areas, extremely steep and narrow. This presents several serious challenges in terms of creating access to the ridge (for construction and ongoing maintenance), managing stormwater, preventing potential erosion, and maintaining safety for residents located at the toe of the north slope who could be at risk of falling rocks from any construction activities along the ridgeline.

A final issue common to all options is the amount of regulatory involvement and oversight at CCL. Currently, Chiquita's regulators include but are not limited to South Coast AQMD, the Water Board, EPA, CalEPA, the California Department of Toxic Substances Control (DTSC), and the Los Angeles County Fire Department acting at Chiquita's Certified Unified Program Agency (CUPA). The Response Multi-Agency Coordination (RMAC) Group, which was composed of federal, state, and local onsite coordinators, was also onsite at the Landfill but was disbanded on October 14, 2024, as the coordinated regulatory emergency response phase ended and transitioned to an enforcement phase. The Multi-Agency Critical Action Team (MCAT), also led by EPA, is now coordinating enforcement efforts at the Landfill. All these agencies have requirements that CCL must meet and that could impact the process and timeline for any options discussed below.

In sum, the ownership, regulatory, and construction challenges, in addition to the individual advantages and disadvantages discussed below, make the technical feasibility of all the options questionable or impracticable within any meaningful timeframe. These issues, which are common to all barrier options, were considered, along with additional specific challenges that may be unique to one or more options.

We also considered the characteristics of the landfill gas, as measured by the March 19-21, 2024, Flux Chamber Study. That study showed that the reaction area gas emissions were, at that time, very dense, compared to typical landfill gas. Dense gas is less susceptible to rising within regional air flows and will instead tend to move downhill, following the terrain. This is because as high-density gas is released its vertical and horizontal flows are nearly equal until at some point the mass of the gas causes it to slump down, pushing its horizontal limits outward along the terrain. Without the energy from the gas escaping from the ground at the release point, it can never regain its original height. This characteristic makes some of the options evaluated appear to be effective at first glance.

However, as the ETLF mitigation efforts continue, the unusually high concentration of CO₂ is shifting back toward normal concentrations, based on readings from the landfill gas extraction system. Consequently, the mixed gas is becoming less dense, making the odorous gases more susceptible to regional airflows.

This trend toward lower density LFG emissions, combined with continued increases in the volume of LFG collected and combusted, will dramatically reduce the quantity of LFG, and odors, being emitted. As this occurs, the odor barrier options evaluated in this report will become progressively less effective because, as the LFG density approaches that of ambient air, it will tend to rise up and over the barriers along with normal air movement.

Consequently, the effective life of any barrier option is limited. Based on the approximately 5-year permitting and implementation timeline estimated for any of the options, it is likely that by the time any barrier can be constructed, it will be neither effective nor necessary.

We strongly recommend that before proceeding with any barrier option, this analysis be re-evaluated taking into account updated current flux chamber data and the apparent trend that shows the changing characteristics of LFG emissions.

CHARACTERISTICS OF LANDFILL GAS EMISSIONS

We began our analysis by establishing a baseline for landfill gas emissions. This is core to our evaluation, because the characteristics of the landfill gas is the biggest factor in how the gas moves – and how its impacts can be mitigated. All the barrier options were evaluated utilizing the March 2024 Surface Emission Data, which showed that the gases being released at that time were predominately CO₂ (around 90%), making the mixed gas much denser than typical landfill gas surface emissions, including covered areas and the active face.

This effect was clearly identified in numerous air movement studies¹²³⁴ performed on active face odors at CCL where it was initially assumed that the odors were following the terrain and dropping down through the west saddles and then up Chiquito Canyon Road. The air movement studies, smoke studies, and associated Computational Fluid Dynamic (CFD) modeling clearly showed that the lighter density LFG from the working face was carried up and over the north ridge and then dropped down on the back side into Val Verde. As of the date of this report, the content of CO₂ detected in the landfill gas collection system has dropped 10% compared to readings in March 2024 and is expected to drop more as ongoing mitigation efforts reduce the ETLF. Though this drop is only in the gas collection system, and it is unknown what drop, if any, has occurred in the surface emissions, based on the placement of the geomembrane cap, it is very likely that the next flux chamber study (November 2024) will show a reduction in CO₂ emissions as well as a drop in overall quantity of gas being released into the atmosphere from the landfill surface.

¹ Air Movement Study Report – June 30, 2021. SCS Engineers

² Additional Study of Air Movement Report – October 26, 2021. BRS and SCS Engineers

³ Study of Potential Additional Odor Mitigation Strategies at Chiquita Canyon Landfill – April 15, 2022. BRS

⁴ Second Additional Study of Air Movement Report – July 29, 2022. SCS Engineers and BRS

Because of the likely lowering of density of the LFG, the addition of a windbreak or wind flow disruptor on the north ridge or west saddles will become increasingly less effective at stopping its movement. This is an important factor for the results of this study.

As the LFG becomes less dense, physical odor barriers will become less effective. This fact must be weighed against the time required to design, permit, and construct any windbreak or wind flow disruptor options.

Additionally, the GCCS is becoming more effective as shown in Figure 1 where the collection efficiency has increased from 54% to 78% since January 2024. Because of this continued increase in gas extraction and other effective reaction mitigation efforts the impact of an odor barrier declines with time.

TIMELINE

When it comes to minimizing odors affecting downwind communities, CCL recognizes that time is a critical part of the analysis. In that regard, CCL continues to make every effort to expedite a wide range of mitigation activities. The impacts of those efforts on the timing of odor reduction must be weighed against the impacts of whichever, if any, barrier option may be deemed feasible and viable.

Our timeline estimates are subdivided into three main categories: mitigation, reaction duration, and barrier implementation. Each is described in detail below.

Mitigation

Since the Elevated Temperature Landfill (ETLF) reaction was first identified, CCL has worked diligently on several fronts to mitigate the effects of the reaction, and the reaction itself. Those efforts include 5 key areas. Each is supported by surveys, research, and various related reports.

Gas extraction

The reaction area produces landfill gas and leachate at a higher-than-normal rate. CCL, its consultants, and contractors have been working to increase the effectiveness of the GCCS. This includes increasing the GCCS extraction well network to 439 wells, 236 of which are within the reaction area. It also includes increasing gas combustion capacity by installing additional LFG flares, along with

other combustion devices. As noted later in this report, the GCCS has increased its efficiency from 54% to 78% since January 2024. The EPA estimates that, “during its operational lifetime, an LFG energy project will capture an estimated 60 to 90 percent of the methane created by a landfill, depending on system design and effectiveness.”⁵ Based on an SCS Engineers estimate, CCL is currently extracting nearly 78% of the LFG being generated (See Figure 1).

At CCL, SCS Engineers has estimated that the GCCS will ultimately capture up to 85% of LFG generated by the decomposing waste mass, including what is released from the reaction area. In conjunction with increasing the GCCS, CCL has also worked to reduce LFG emissions from the reaction area by installing more than 40 acres of geomembrane cap. After full implementation of the geomembrane cap, including the western and northern slope, the effectiveness of the GCCS is expected to reach these higher levels of efficiency.

Geomembrane Cap over Reaction Area

In 2024, CCL installed approximately 42 acres of Geomembrane cap on top of the reaction area. This cap contains LFG emissions from the reaction area within the landfill, where it can be effectively extracted by the GCCS. These two components work together holistically to drastically reduce emissions from the reaction area. Surface emissions, now contained by the cap, were the primary source of nuisance odors leaving the landfill and impacting downwind communities. The effectiveness

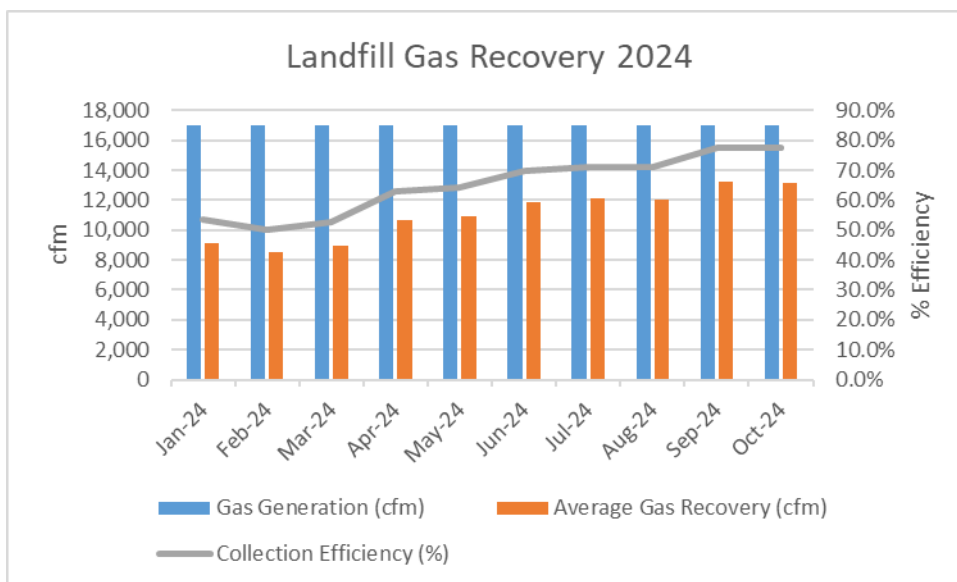


Figure 1 - LFG Recovery Rate Jan-Oct 2024

⁵ Landfill Gas Energy Development Handbook – EPA Landfill Methane Outreach Program (page 21)
https://www.epa.gov/system/files/documents/2024-01/pdlb_full.pdf.

of these two components is expected to increase significantly with the completion of the West Toe Plan (WTP) and the North Slope Termination Project (NSTP), described below.

West Toe Plan

Construction of the WTP began August 8, 2024. This project was designed to prevent leachate seeps along the west slope of the landfill *and* to contain surface emissions of LFG. When completed, the geomembrane cap will extend down to the toe of the west slope and be tied into the landfill's base (geomembrane) liner. This will create absolute containment along the west edge. As soon as the WTP is completed, vacuum can be increased in the western gas wells to more effectively extract LFG from this portion of the landfill, including western portions of the reaction area. Similarly, after completion of the WTP, CCL will begin to tie-in the north slope of the geomembrane cap, to the base liner.

North Slope Termination Project

The access road along the north toe of the landfill served as critical access during construction of the WTP. Once the WTP is complete, CCL will begin work on the NSTP. This is also a critical component of the reaction area emissions containment effort. Currently, the toe of the geomembrane cap is secured only by sandbags placed along the edge of the geomembrane. This provides an imperfect seal for LFG emissions from the reaction area. The partially secured toe along the north slope has been a major source of reaction area odor. Like with the WTP, once the NSTP is completed, vacuum can be increased in the northern gas wells to more effectively extract LFG from this portion of the landfill, including northern portions of the reaction area.

Leachate Controls

A minimal portion of odors may originate from surface leachate that appears in the form of leachate seeps or leachate spills/leaks. Based on our industry experience, it is likely that leachate odors contribute minimally to nuisance odors, compared to surface emissions of LFG. However, this will be examined in greater detail in the March 31, 2025, Study and Analysis of Landfill Operational Events report required under SOFA Condition 83.

In the meantime, it is very encouraging to see that the number and size of leachate seeps has decreased significantly since CCL began tracking leachate seeps in early 2024 as shown in Figure 2.

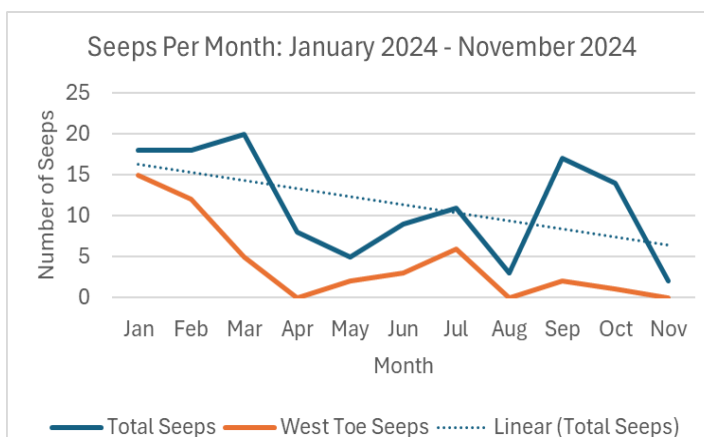


Figure 2: Leachate Seep Events

These reductions can be attributed to several factors, including twice daily leachate seep inspections and, to a slight degree, because we have been in the dry season for several months. However, we attribute most of the leachate reduction to the success of the CCL's dewatering effort to remove leachate within and adjacent to the reaction area.

Ongoing monitoring of liquid levels within the landfill shows a consistent and continuing decrease. This will be addressed in more detail in the January 15, 2025, update of Leachate Generation Model report required under SOFA Condition 12(g)(vii)(A).

Reaction Duration

The Reaction Committee continues to believe that the current ETLF reaction will eventually subside. Although the exact length of time the ETLF will continue is difficult to estimate, industry and government estimates range from 3-10 years. The Reaction Committee believes that the ongoing efforts will significantly decrease the odors from the reaction in the short and longer term regardless of the duration.

Currently, there are no viable options for halting the ETLF. Consequently, mitigation – as previously described – is the most effective remedy for nuisance odors that may impact downwind communities.

Recent data on temperature and leachate levels within the landfill provide a positive indicator that the ETLF reaction appears to be slowing. More information regarding liquid levels will be provided in the January 7th report required by Condition 83.

Barrier Implementation

This section of the report provides information on the relevant timelines associated with design, permitting, and installation of the barrier options evaluated in this report. Please note that these timelines are estimated based on our experience working with similar construction projects and within California's regulatory environment. These estimated timelines should be evaluated with the understanding that there are many unknown factors that cannot be accurately addressed until a specific barrier is proposed. As noted above, the number of agencies currently involved in CCL oversight is not typical, making these estimates even more difficult and the timeline potentially longer.

Property Ownership

One of the most important factors required for implementation of any barrier option is related to property ownership. Currently, more than 1/3 of the proposed barrier alignment is not owned by CCL. Thus, any work in those portions of the project would require that CCL purchase that outstanding land, or obtain appropriate leases, easements, or other instruments that would allow the work to be done.

It has been our experience that site investigation, design, and related permitting cannot be done until ownership, leases, or easements are in place. We estimate securing the needed property access could take a minimum of 12 months, even if the current landowners are willing to participate. We are basing this estimate on time to conduct due diligence regarding site investigations, title research and insurance, appraisal, negotiations, and escrow.

Site Investigation

Once the obstacle of ownership has been overcome, various levels of site investigation can occur. These would include surveying and subsequent overlay of the conceptual design of the selected barrier options, both necessary to the underlying information required to conduct geotechnical investigations that would include geotechnical drilling, soil sampling, and various laboratory (soils) tests. We estimate that initial site investigations could take 3-4 months, assuming this activity aligns with the dry season.

Design

Once initial site investigations have been completed, preliminary design of the selected barrier option(s) can begin. This will include structural engineering for foundation, wind-loading, and seismic forces. The design must also address stormwater control systems, erosion prevention and control, access roads, and work area layout. Allowance must be also given to ongoing maintenance to the selected barrier(s).

Designing the various barrier options could take 2-6 months.

Permitting

Once a design has been completed, the process of obtaining all necessary permits can begin. At a minimum, we estimate that the following permits may be required.

Conditional Use Permit

Because the existing Conditional Use Permit (CUP) prohibits modification of the primary and secondary ridges around the landfill, a modification or waiver would be required before installation of any barrier could occur. We estimate this could take 12-18 months to complete, depending on public comments, regulatory revisions, and other factors outside CCL's control.

Per the Conditional Use Permit (CUP) no options are viable without modification to the CUP per the following findings and conditions:

Finding 9: The Project Site is located within the Castaic Area Community Standards District ("CSD"). The CSD contains restrictions on development within 50 feet of primary significant ridgelines and within 25 feet of secondary significant ridgelines. No grading or development is proposed within the protected areas of any significant ridgelines.

Finding 36: The Board finds that the Project is consistent with the development standards of the CSD in which the Project is located. The CSD restricts development within 50 feet of primary significant ridgelines and within 25 feet of secondary significant ridgelines. The primary significant ridgelines on the Project Site are located along or close to the northern and western property lines. Two short sections of secondary ridgelines are located in the southwest part of the Project Site. No grading or development is proposed within the protected areas of any significant ridgelines.

Condition 53: Notwithstanding anything to the contrary in this grant, no approval shall be granted to the permittee that will modify the authorized Limits of Fill or that will lower or significantly modify any of the ridgelines surrounding the Landfill.

Condition 61(H): No portion of the expanded Landfill may extend above the plane or outside of the surface area of the fill design, as shown on the approved site plan, attached as Exhibit "A." The existing viewshed from Chiquito Canyon Road shall be protected for the life of the project. The dip in the natural ridgeline along the western boundary shall be maintained or enhanced. Any structure placed on the Landfill site, including, but not limited to, temporary storage areas, any materials recovery facility, composting facility, or any other ancillary facilities that may be visible from Chiquito Canyon Road, shall be designed to be harmonious with the natural topography and viewshed and shall be reviewed by the CAC. The Landfill operator and the CAC shall work together to prepare a tree planting and maintenance plan for the entire western boundary of the site. The objectives of the plan are to screen Landfill operations, enhance the viewshed, and establish the minimum number and type of trees to do this, and to provide adequate access to monitoring wells. Trees may be planted on slopes on either side of the ridgeline, provided the above objectives are met and such planting is practical.

Environmental Impact Report

The California Environmental Quality Act (CEQA) may require an Environmental Impact Report (EIR) for implementation of some, or all, of the barrier options. We believe an EIR, if required, could be done after the property ownership issue has been satisfied, and concurrent with (or perhaps as part of) the CUP modification. If required, an EIR could take a minimum of 12-18 months.

Solid Waste Facility Permit and Joint Technical Document

Under the Federal Clean Water Act (CWA), Modification of the Solid Waste Facility (SWF) permit may be required. CCL's Joint Technical Document (JTD), which is updated every 5 years, may also need to be updated if it is determined that the barrier system represents a major modification to the landfill. Because it would include acquisition of additional land, we suspect it would be considered a major modification to the operation. Finalization of the SWF permit and revisions to the JTD cannot occur until the CUP and EIR have been completed. We estimate this step may add 3-6 months to the process.

National Pollutant Discharge Elimination System Permit

Under the Federal Clean Water Act (CWA), a National Pollutant Discharge Elimination System (NPDES) permit, along with a Stormwater Pollution Prevention Plan (SWPPP) will be required. We estimate this could be completed in 2-3 months and could be performed concurrently with the SWF permit and the JTD update.

California State Water Resources Control Board

Because of the extent of grading required, and the obvious challenges related to existing erosion, we believe stormwater control will require significant effort. Every barrier option will require a stormwater control plan, which will require approval by the California State Water Resources Control Board, administered locally by the Regional Water Quality Control Board (RWQCB or Water Board).

Permitting the various barrier options may take from 3-6 months and could likely be done concurrently with the SWF permit and JTD update.

AQMD and Title 5 Permit for Orchard Fans

One of the barrier options includes placement of approximately 117 orchard fans. These are currently available only as diesel-powered units. It may be possible to find a vendor who manufactures, or can make, an electric-powered unit, but at this time we are assuming diesel to be the only option. In that scenario, AQMD and Title 5 permits would be required due to engine emissions of the fans. Based on past experience, we have estimated this could take 9-12 months.

Construction

Depending on which barrier option is selected, we estimate the overall construction process could take 6-18 months to complete.

Contractor Selection

CCL will select a contractor based on the type of barrier to be constructed. We estimate this could take approximately 1-3 months.

Mobilization

Depending on the type of barrier to be constructed, mobilization of materials and equipment could take 1-12 months.

Installation

As previously noted, while each barrier option has its own unique construction challenges, there are some things that will be common to all options. From a construction perspective, this includes constructing vehicle access to the top of the ridge, and establishing a working platform (*i.e.*, bench) along the ridge. The width of such access will depend on the type of barrier to be constructed and the accessibility requirements for ongoing maintenance. We estimate that establishing grading and infrastructure for safe access to the ridge(s) could take 6-9 months to complete, assuming the start date corresponded to the beginning of the local construction season. It is unlikely that this work could occur during the wet season. At worst case, the wet season could cause an extension of 4-5 months to this phase.

As discussed in the previous sections, the timeline for implementing any of these barrier options will vary depending on several factors. In that context, we have provided a general schedule based on what we believe would be an average timeline (See **Error! Reference source not found.**). Please note that this timeline is estimated and may change based on which option is selected, and on other critical factors outside of CCL's control.

QA/QC & Approvals

After completion of construction, regulatory approval may take an additional 2-4 months.

Schedule Overview

To summarize this “Timeline” portion of the report, we have provided a conceptual timeline of the mitigation efforts, reaction duration, and barrier options (See Figure 3). We expect this will provide a good perspective not only of how these considerations are interrelated, but also of the overall effectiveness and viability of any feasible barrier.

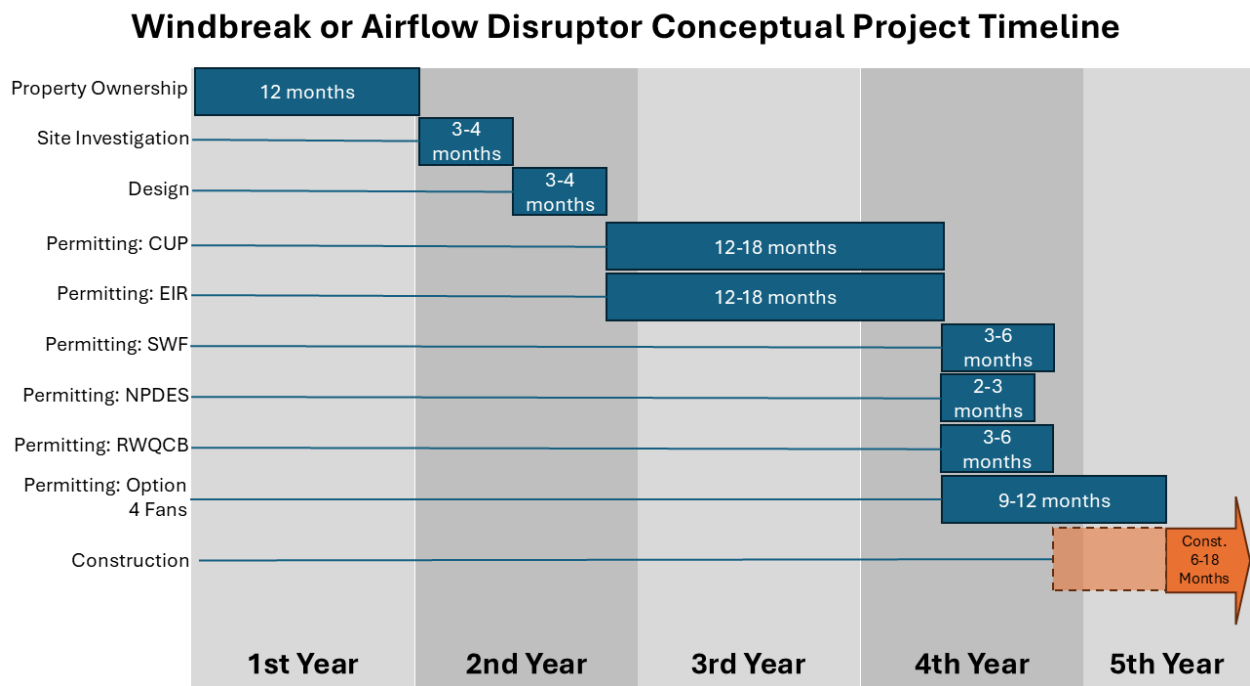


Figure 3: Conceptual Timeline

VIABILITY EVALUATION

Assessments of the viability of windbreaks and wind flow disruptors, their intended purpose and their potential impact on diffusion and/or deflecting LFG from CCL away from the nearby communities were performed on a variety of barrier types. These assessments identified numerous advantages and disadvantages using several criteria.

Barrier Types

Natural

Vegetation barriers consisting of either deciduous or conifer-based plants, trees, or bushes.

Artificial

Human made structures such as walls, fences, screens, and air curtains utilizing fans or other mechanical means to cause high velocity air flows.

Flow Diversion

Changing the airflow pathway to redirect odors away from communities, particularly Val Verde.

Flow Disruption

Increase localized turbulence to diffuse gases within the airflow thus increasing oxygenation and dilution of concentrations to below the average ODT.

The criteria used to evaluate the viability of windbreak and wind flow disruptor options were intended to identify advantages and disadvantages of each option. Those criteria are:

- Real-World Usage
- Odor Reduction Potential
- Constructability
- Maintenance
- Environmental Impacts

A more detailed explanation of the evaluation criteria are as follows:

Real-World Usage

Analysis of real-world usage examines how structures like those being evaluated are in actual use for the purpose of odor mitigation. Though many barrier type structures are utilized in industry and agriculture for purposes of dust mitigation, noise control, and pollution control, there were no examples found that are being used specifically to prevent odors from migrating from one location to another. Solid barriers tend to be used for noise abatement and screens or fencing of medium to low porosity for dust control. Green walls/barriers, consisting of vertical layers of moss or thick barriers of leafy vegetation, are better suited for the removal of particulate matter from the air, including odors and for controlling drifting snow.

Odor Reduction Potential

Analysis of Odor Reduction Potentials examines whether an option will divert airflow away from nearby communities or dilute LFG below ODT. To evaluate this, a 2-dimensional CFD model of a cross section of the site with a southerly wind was used (See Figure). This section was aligned so that it crossed through the reaction area, across the north ridge and into the Val Verde community.

In the CFD model, two data probes (DP1 and DP2) were used to measure the duration of time that each location was at or above the average ODT for H₂S during a 2-hour timeframe (7200 seconds). The probe locations were downwind from the north ridge/barrier location. The first was 760 feet (0.15 miles) north in the Jackson Street area and the second was 2,890 feet (0.6 miles) north in the Cromwell Avenue area.

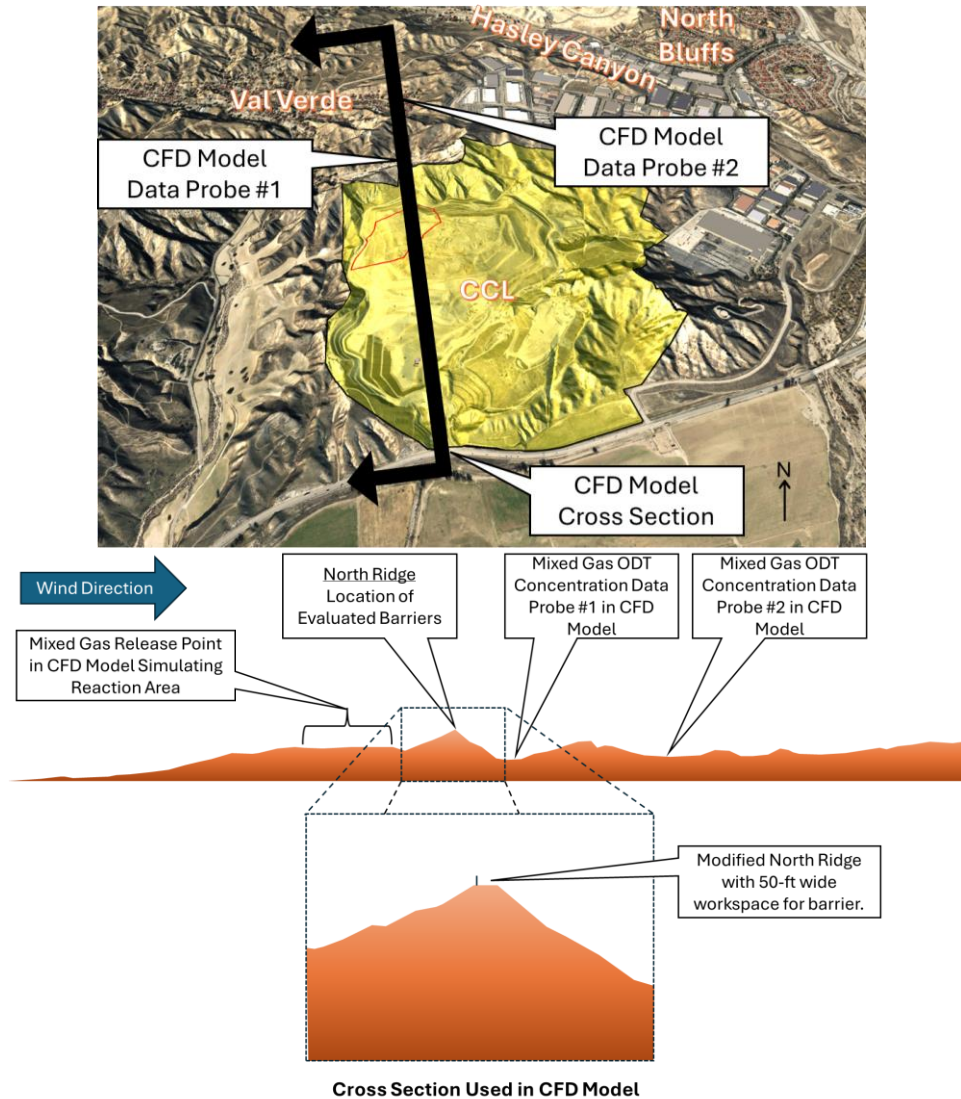


Figure 4 - Cross-section of Gas Flow model

Monitoring Study (AAEMS) Updated Modeling submitted on September 2, 2024.

GCCS Data Set Properties

- The density, diffusion coefficient, kinematic viscosity, and flow rate of the mixed gas used derived from the GCCS Data Set in the AAEMS.
 - **Density:** 1.7349 kg/m³
 - **Average Diffusion Coefficient** = 1.6393e⁻⁵
 - **Average Kinematic Viscosity** = 8.7744e⁻⁶ m²/s
 - **Flow Rate:** Original - 5.33e⁻⁶ m/sec

Wind Curve

To evaluate the general effectiveness of the different barrier types with the 2-dimensional CFD modeling, a compressed wind curve was used with the same velocities used in the AAEMS but compressed to span a two-hour window (See Figure5).

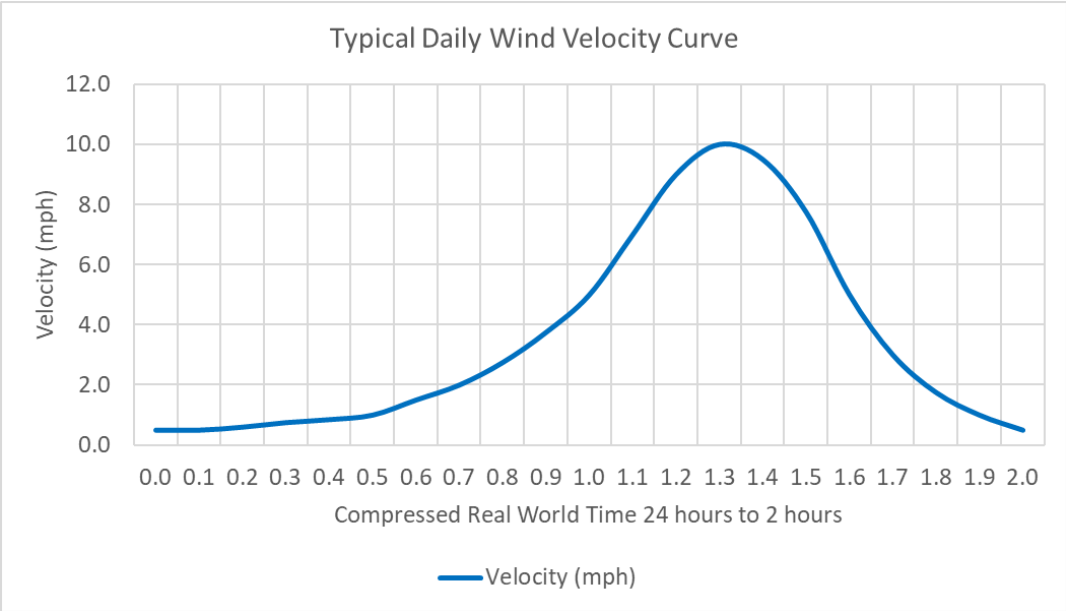


Figure 5 - Compressed Wind Velocity Curve

Using the conditions detailed above, a baseline model was run with no barrier and only the existing terrain. The average time that the two data probes (DP1 and DP2) were at or above the ODT in the baseline model was 811 seconds, or 11% of the total model time with DP1 at 781 seconds and DP2 at 840 seconds (See Figure 6). The different windbreaks and wind flow disruptors were then placed in the model. For each option, the time that the data probes were at or above the ODT was then compared to the baseline values. These values were then used to determine the potential effectiveness of a particular barrier in reducing odors experienced by the community.

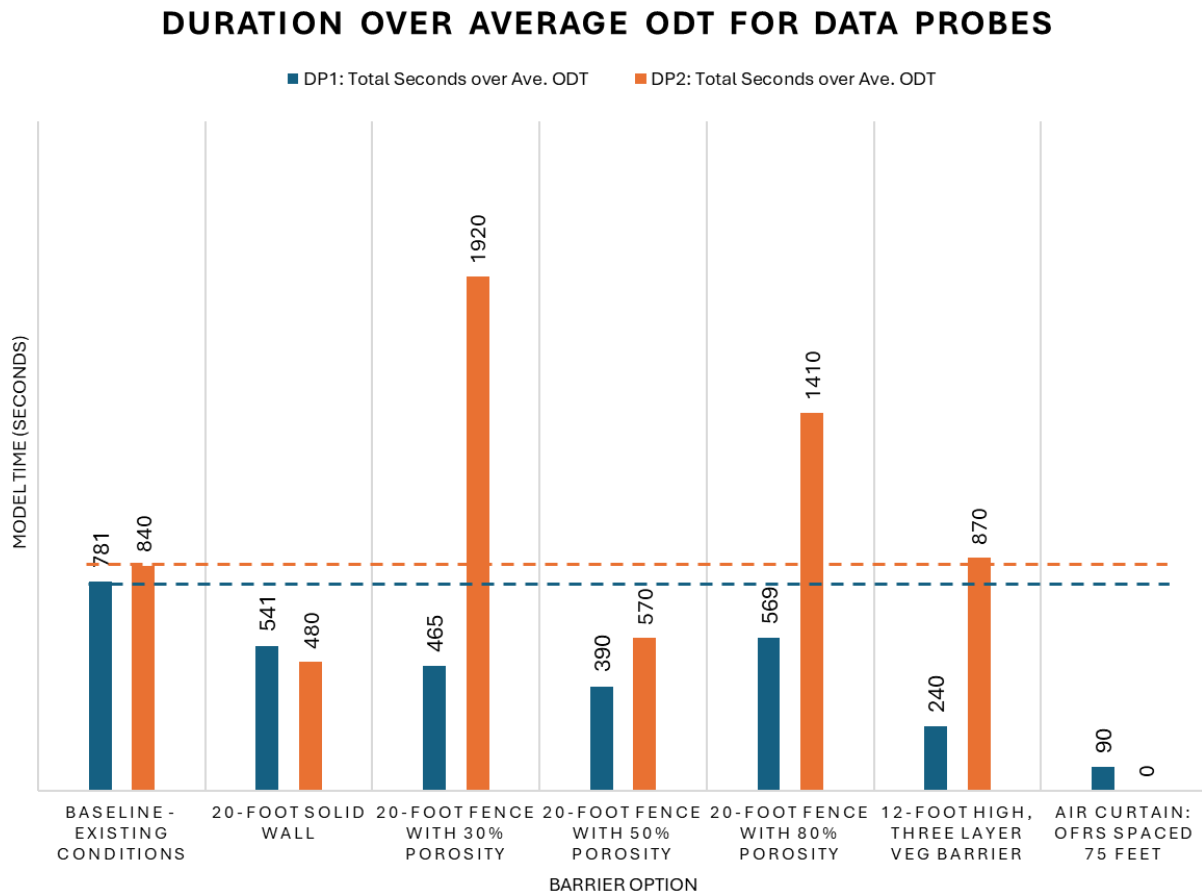


Figure 6 - Duration over average ODT for data probes

The overall results of the percentage change in measured duration of average ODT for each option are shown here (See Figure 7) with a negative value meaning less time was measured making that option more viable. Any increase in time at either data probe location results in that option being deemed non-viable.

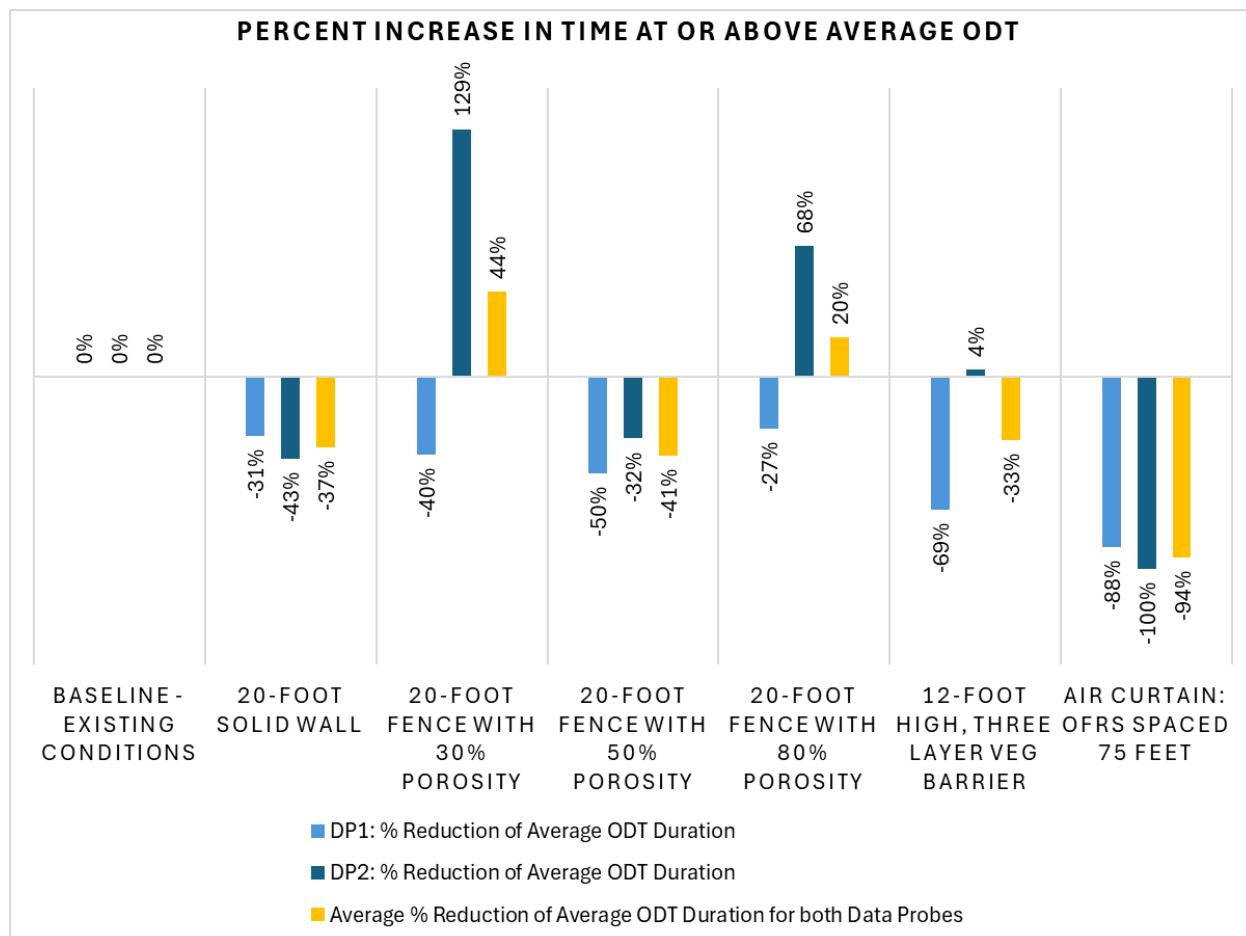


Figure 7 - Change in duration of average ODT

Constructability

Permitting and Property Ownership

For all options, no construction can begin until all permitting is approved. The minimum permitting and property ownership required are:

- Modification of the CUP.
- EIR with public comments.
- Acquisition or easement approval for areas along boundary outside of CCL ownership.

The detailed assessment of the permitting timeline was covered in earlier sections of this study.

Design

Each option will require some level of design prior to construction. The details and duration of the design were evaluated for each option. Considerations for the designs are:

- Wind loading/Seismic Requirements
 - Any barrier or fan system will require significant footings to ensure it can withstand peak winds and seismic events. This will require a design effort that will include geotechnical analysis of the terrain that may require boring samples along the projected barrier path. Some options would require significant civil and structural engineering.
- Geotechnical analysis
 - Some, if not all, of the design options may require geotechnical analysis along the projected path of the barriers. This will likely include borings and analysis summarized in a report. Final design of a barrier option will not be able to be completed until that geotechnical study is submitted.
- Stormwater Management
 - The site currently has areas of extensive scouring and erosion along the north ridgeline. To ensure that any structure remains stable a stormwater management plan will be required, along with extensive grading and stormwater controls.
- Acoustic Impacts
 - Some structures may generate an acoustic signature when exposed to the wind that could be perceived as a significant nuisance. This would have to be identified and mitigated prior to finalizing design and construction of the selected option.

Construction

- Construction access
 - The top of the ridge may have to be graded to a width of up to 75 feet depending on equipment requirements. The air curtain option would likely require the widest working area, followed by the solid wall barrier option. Additionally, significant grading will be required to provide vehicle access to the entire perimeter area. As previously noted, many areas are currently too steep for vehicle access.
 - It should be noted that any regrading of the west or north ridgeline is prohibited in the current CUP.
- Materials Availability
 - Some materials may require longer acquisition times due to the length of the barrier and the quantity of materials needed.
- Safety

- The north side of the north ridge is very steep, with houses at the immediate toe of the north slope. The risk of rockfall will have to be mitigated during all phases of construction for several options.
- Timeframe
 - Complexity of the construction process and its impact on the timeframe to complete the barrier is a factor being considered. Because of the inaccessible nature of the terrain, new roadways will need to be constructed and even with those, equipment type and size will be severely limited thus extending the construction time.

Maintenance

All options will require some form of maintenance program. The solid wall option would require the least maintenance of the options analyzed, while an air curtain would require the most. Even standard chain link fencing will require regular inspection, repairs, and removal of litter and other debris to maintain the effectiveness of the barrier.

Environmental Impacts

Environmental Impact Report

Given the extent of the area required for construction of barrier options and the necessity to level much of the alignment area to allow for construction, it is expected that numerous permits will be required. For the solid wall option to be effective, for example, it would have to extend to the ground with no gaps, creating an unnatural barrier for wildlife in the region. Because of the land acquisition requirements, the extensive work required, and various environmental concerns, we expect a supplemental or full EIR will be required for any option.

Aesthetics

The construction of a barrier, even a vegetative barrier, will impact the viewshed of residents, as well as non-residents who are traveling along highway 126 and Chiquito Canyon Road. We have not evaluated the regulatory requirements in terms of aesthetics but suspect there could be significant pushbacks regarding any option. Any barrier would require a change to the CUP due to its impact on the viewshed of the ridgeline.

EVALUATED OPTIONS

All options were based on a minimum perimeter covering the western saddles and north ridge (See Figure). This measures slightly over 8,800 feet in length and would meet the goal of attempting to reduce or eliminate odors in the adjacent community of Val Verde.



Figure 8 - Barrier alignment

All options, except one, were based on a 20-foot-high barrier. The 20 feet height was chosen because it is the highest typical height for noise barrier walls and is an achievable height for fencing. Higher structures may be more effective but would require additional design, site preparation, and construction time due to the higher wind loading and foundation placement. Lower barrier heights will be less effective given the scale of area and wind flow trying to be influenced by their placement.

The only barrier that was not evaluated at 20 feet was the vegetative barrier. In review of existing visual and noise barriers that utilize vegetation in arid climates like at CCL, such as along Interstate Highway 10 near Palm Springs, CA, the height varied from around 6 feet to 15 feet, with an average height of around 12 feet (See Figure 9). This matched the variations in height of the shrub brush in the areas around CCL. It should be noted that in any vegetation barrier there will be areas with higher

and lower porosity and even portions where there is no barrier due to plants dying, causing an inconsistent flow of air through the barrier.



Figure 9 - Vegetation Barrier along I-10 near Palm Springs, CA

The options considered were:

- Option 1: Solid wall (0% porosity)
- Option 2A: Screened fence with 30% porosity
- Option 2B: Screened fence with 50% porosity
- Option 2C: Screened fence with 80% porosity
- Option 3: Vegetation Barriers
- Option 4: Air Curtain – Fans

The detailed evaluations of each are as follows:

Option 1: Solid Wall

The 20-foot-high solid wall option was evaluated via comparison to existing highway sound barrier walls (See Figure 10). This would classify as a flow diversion, artificial type barrier.

Real World Usage

Solid walls are used in a variety of real-world situations, though no examples could be found where they were



Figure 10 - Example of Solid Wall

specifically placed to mitigate odors. Typically, solid structures are used to reduce noise levels or provide visual barriers to improve the aesthetics of certain locations. The closest examples that meet the need of this study are highway sound barriers. Sound barriers are an apt model because they can be built to 20 feet high, are constructed with structural integrity and longevity in mind, and have a known design and construction methodology.

Walls can be constructed using a variety of materials ranging from masonry to metal or concrete slabs. Regardless of the material, the foundation for a solid wall barrier would need to be engineered to meet wind loading and seismic factors.

Odor Reduction Potential

The duration of time in the 2-dimensional CFD model that the two data probes were at or above the average ODT for H₂S was 37% less than the baseline (511 seconds versus 811 seconds for the baseline).

Constructability

Permitting and Ownership

As with all options, the fact that over 1/3 of the barrier would be outside of CCL property boundaries imposes a critical, and potentially insurmountable, obstacle to its construction. Easements or acquisition would be necessary with an unknown timeframe for their completion.

Along with property access, various permitting required will dictate when construction can begin. For a solid wall that will require leveling of terrain along the potential pathway, at a minimum the following permits would be necessary:

- Construction
- Stormwater
- Grading
- Modification of CUP
- Modification of Solid Waste Facility Permit

Design

A solid wall would require significant design given the wind loading and foundation requirements. This would necessitate a geotechnical survey including boring and/or seismic refraction to ensure that any structure placed would hold up to not only wind loading from all directions but also any California and Los Angeles County seismic design standards.

For all options, stormwater management design and construction will be required to preserve the integrity of foundations, stormwater control systems, and to ensure that all other improvements remain intact for the design life of the structure. This will likely include a concrete, or other permanent material, lined ditch that can direct flows down drains to existing drainages.

Aesthetic/Acoustic Impact will have to be considered in any design though for a solid wall the aesthetic will be more critical given it will be visible for miles and especially by residential areas near the landfill.

Construction

The construction of a solid wall will take a significant effort given the necessity to create a level working space along its pathway. In some areas of the north ridge this may lower the height of the ridge by as much as 30 feet making the top of the wall lower than the current ridgeline.

The width of this construction area will be dependent on the type of equipment needed to build the walls. The lightest segments would likely be metal sheeting or prefabricated panels. Regardless of the type, all materials will be limited as to what vehicles can transport to the construction site. It is unknown if adequate access can be constructed to allow typical road capable equipment along the full length of the wall. Some areas may only be accessible by offroad rated equipment such as articulated dump trucks, bull dozers, and excavators. This limitation is likely to require longer construction times.

Any design will have to consider the availability of materials and whether special fabrication will be necessary. If so, the procurement time will impact the construction schedule.

Safety is also a critical issue with any design, particularly ones such as a solid wall that will require a significant widening of the ridge top. Portions of the ridge, especially the north face of the north ridgeline are steep, at places exceeding a 1H:1V slope. The potential for rockfall, debris, and vehicle rollovers threatening the homes at the base of the slope is a serious concern. Safety infrastructures such as catch nets, edge berms, and others will be required to minimize any risk to construction workers and homeowners near the construction area.

Maintenance

A solid wall would require the least amount of maintenance of all the options.

Environmental Impact

The greatest environmental impacts of a solid wall would be 1) the construction itself, 2) the impact on the viewshed, and 3) its potential to negatively impact the migratory routes of ground moving wildlife. To mitigate the wall's effect on migratory routes, culverts or openings would need to be included in its design, which would necessarily allow LFG to pass through and cause unknown, potentially negative impacts on airflow. Only a proper EIR would reveal the extent to which an 8,800-foot solid wall would impact the local environment.

Option 2A: Screened Fence – 30% Porosity

A fence with 30% porosity is equivalent to a chain-link fence with privacy slats placed in all openings. This would classify as a flow diffusion, artificial barrier (See Figure 1).



Figure 11 - Screened fence - Porosity varies

It should be noted that the porosity of fencing is based on the barrier being perpendicular to the direction of wind flow (See Figure 2). If the fence is angled, it can decrease the porosity by several percentage points, increasing the wind load on the fence and changing its impact on the mixed gas passing through and over it. This effect applies to all the options with a specified porosity.

Real World Usage

There are no examples of fences with varying porosity used specifically to mitigate odors. The primary usage of porous fences in the solid waste industry is to control litter as catch fences on the downwind side and to reduce air flow velocity on the upwind side. Drift fences are also used for this purpose to reduce wind speed to control where snow will form drifts. The other real-world usage is in dust mitigation at large coal storage facilities.

The common usage of porous fences in numerous industries is a positive factor but there are no examples of their use in mitigating odors.

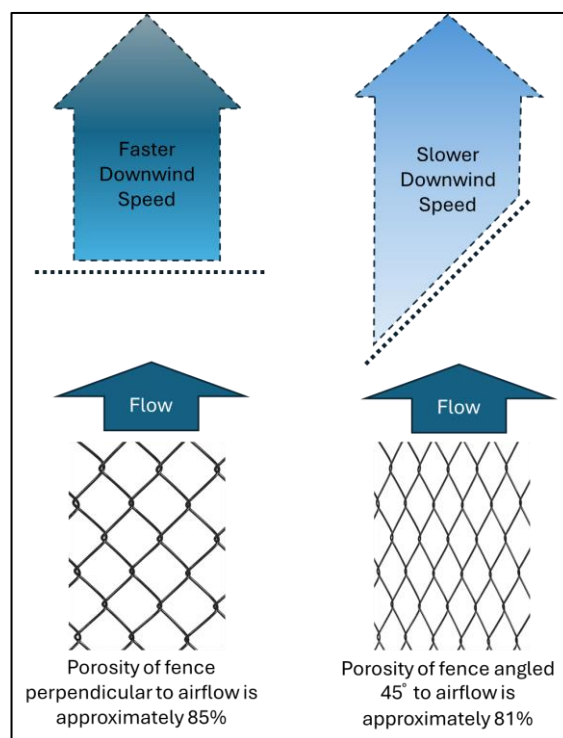


Figure 12 - Porosity varies with wind alignment

Odor Reduction Potential

CFD modeling showed that the 30% porosity fencing resulted in an increase of the duration that the data probes had levels at or above the average ODT for H2S. In fact, the amount of time within the model that the probes were above the average ODT was 44% more than the baseline. Because this option exacerbated ODT in the nearby community it is not viable.

Constructability

Permitting and Ownership

The permitting and ownership issues detailed in Option 1 apply to this option.

Design

The primary design consideration for this and any porous fence option would be that of wind loading. Even with the porosity, all porous fence designs will require wind loading and post foundation designs based on the fence being fully plugged with litter or vegetation. This will require a more robust post and foundation design.

Construction

Of all the options evaluated, the porous fence, specifically chain link, is the easiest to construct, though it will still have logistical challenges. First, it will still require a leveling of the workspace to at least 30 feet wide. Second, the fence will require access roads to accommodate large construction equipment and to provide long-term access for maintenance.

Materials for this option are common and availability is not likely an issue.

Safety considerations while construction occurs are the same as detailed in Option 1.

Maintenance

The maintenance required for any porous fence option will be higher than the solid wall option. Regular patrols to ensure the fence is not cluttered with litter and/or vegetation will be critical to its effectiveness. Any decrease in porosity can result in additional stress on the fence and potential negative impact on odorous gases collecting in the community downwind from CCL.

Environmental Impact

The disturbance area and impact on wildlife for all porous fences will be similar unless passageways are included in their construction, which may reduce their effectiveness. It is unlikely that an EIR will be required, but an EIS will likely be required, pushing the design and construction time out at least a year.

Option 2B: Screened Fence – 50% Porosity

A fence with 50% porosity is equivalent to a typical drift fence (See Figure 13) or a chain-link fence with privacy slats placed in every other row. This would classify as a flow diffusion, artificial type barrier.



Figure 13 - Drift fence with 50% porosity

Real World Usage

The real-world usage is the same as option 2A.

Odor Reduction Potential

CFD modeling showed 50% porosity fencing potentially reduced the duration that the data probes had levels at or above the average ODT for H₂S by 41% (-50% for DP1 and -32% for DP2). Though this option does appear to be effective in modeling, it is not viable because the modeling was

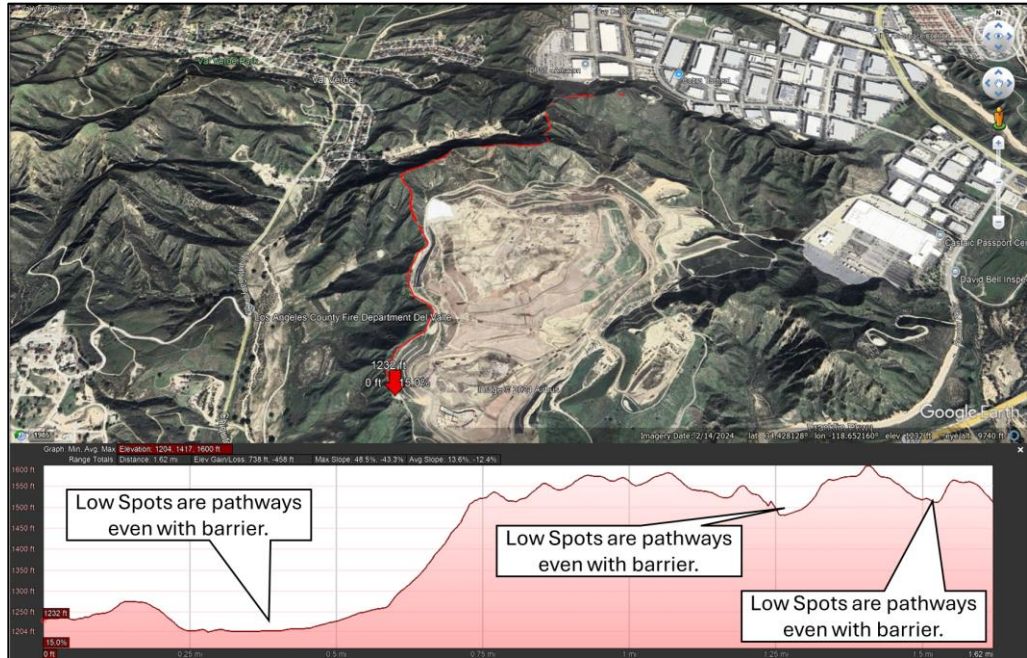


Figure 14 - Ridgeline Profile

based on a cross section whereas, in reality, the barrier's top elevation would vary greatly as it followed the natural path of the terrain. This means that, as wind shifts directions, the gas will naturally take the path of least resistance and simply overtop the barrier in lower elevation areas (See Figure 4 and Figure 5).

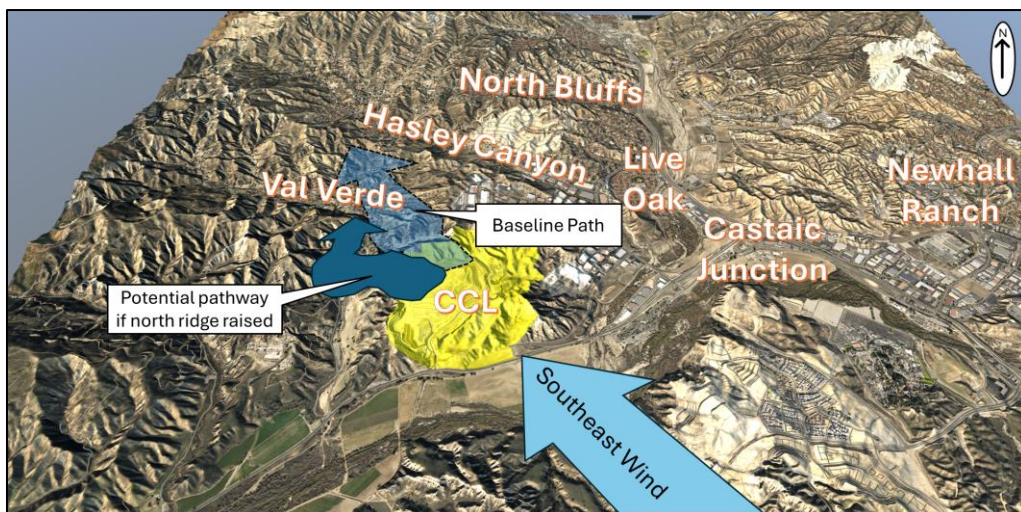


Figure 15 - Sample pathway based on ridgeline profile

Constructability

Permitting and Ownership

The permitting and ownership issues detailed in Option 1 apply to this option.

Design

The primary design consideration for this and any porous fence option would be that of wind loading. Even with the porosity, all porous fence designs will require wind loading and post foundation designs based on the fence being fully plugged with litter or vegetation. This will require a more robust post and foundation design.

Construction

Of all the options evaluated, the porous fence, specifically chain link, is the easiest to construct, though it will still have logistical challenges. First, it will require a leveling of the workspace to a width of at least 30 feet. Second, the fence will require access roads to accommodate large construction equipment and to provide long-term access for maintenance.

Materials for this option are common and availability is not likely an issue.

Safety considerations while construction occurs are the same as detailed in Option 1.

Maintenance

The maintenance required for any porous fence option will be higher than the solid wall option. Regular patrols to ensure the fence is not cluttered with litter and/or vegetation will be critical to its effectiveness. Any decrease in porosity can result in additional stress on the fence and potential negative impact on odorous gases collecting in the community downwind from CCL.

Environmental Impact

The disturbance area and impact on wildlife for all porous fences will be similar. Given that an EIR is required, the design and construction time will be pushed out by at least 18 months.

Option 2C: Screened Fence – 80% Porosity

This option assumes a 20-foot-high fence with 80% porosity, which is equivalent to a chain-link fence with heavy gauge wire and openings less than 1.5 inch in size (See Figure). A typical chain-link fence with narrow gauge wire has a porosity of approximately 85%. This would classify as a flow diffusion, artificial barrier.



Figure 16 - Fence with 80% porosity

Real World Usage

The real-world usage is the same as option 2A.

Odor Reduction Potential

Our 2-dimensional CFD modeling showed that the 80% porosity fence resulted in an increase of the duration that the data probes had levels at or above the average ODT for H₂S. The amount of time within the model that the probes were above the average ODT was 20% more than the baseline with DP2 being over 68% more time above the average ODT. Because this option exacerbated ODT in the nearby community it is not viable.

Constructability

Permitting and Ownership

The permitting and ownership issues detailed in Option 1 apply to this option.

Design

Design considerations are the same as Options 2A and 2B.

Construction

Construction and material considerations are the same as Options 2A and 2B.

The safety considerations while construction occurs are the same as detailed in Option 1.

Maintenance

The maintenance requirements are the same as options 2A and 2B.

Environmental Impact

The disturbance area and impact on wildlife for all porous fences will be similar. As with all other options, an EIR will be required.

Option 3: Vegetation Barrier

The option of a vegetation barrier was evaluated because studies have shown that such barriers can effectively reduce pollution particulate matter next to highways (See Figure 7). However, these studies examined their effectiveness at reducing vehicle generated pollution. There are no studies supporting the concept that vegetation barriers may be effective in removing the VOCs from the ELTF reaction. A vegetation barrier would classify as a flow diffusion, natural type barrier.



Figure 17 - Vegetative barrier

Real World Usage

The use of vegetative barriers to reduce pollutants is not uncommon, and numerous studies have shown that they can be partially effective in reducing particulate pollution typically from vehicle exhaust along busy highways. For the odorous gases currently being emitted from the reaction area at CCL, there are no real-world examples of vegetative barriers being utilized to reduce odors from fugitive LFG.

Odor Reduction Potential

CFD modeling was based on actual vegetation barriers in the region along highways and on an assessment of the vegetation around CCL. Using those references, a barrier of 50% porosity that was 12 feet high and 20 feet thick was used in the model. The porosity was based on shelter belts, used to control snow drifts in flat terrain, which are typically created so they have an average porosity between 40% and 60%. The height and thickness were based on the types of vegetation that can grow in the arid conditions that define the ecosystem around CCL.

The modeling showed that the vegetation barrier was comparable overall with Option 1 and 2B with an average decrease in total duration of time over the ODT at -33%. This decrease was based on the average of both data probes. Yet, the individual data probe times revealed that the duration for DP2, the probe farther away and representative of the community of Val Verde, had an increase in time of 4%. DP1, located immediately on the backside of the north ridge, had a decrease of 69%. This makes sense given that shelter belts are purposefully built to slow the wind and control the drifting location creating an area of protection from high winds nearest the barrier. Even though the average duration of ODT for both probes was reduced from the baseline, the fact that the probe further downwind showed an increase in time over the ODT results in this option being non-viable.

Constructability

Permitting and Ownership

The permitting and ownership issues detailed in Option 1 apply to this option.

Design

Design would primarily focus on vegetation type and layout, access for planting and maintenance, and a significant watering system to ensure that vegetation remains alive and functioning as intended.

Construction

Construction and material considerations are a factor given the necessity to acquire and plant enough vegetation to cover the 8,800-foot barrier path. This may require sourcing out of state or waiting on seasonal availability for the proper vegetation types. The watering system materials would likely be more readily available.

Safety considerations while construction occur are the same as detailed in Option 1.

Maintenance

The maintenance requirements would be mainly tied to watering and ensuring the barrier is not exposed to fire or other factors that could damage it.

Environmental Impact

Because the vegetation barrier is composed of natural materials, environmental impacts of the barrier would be seen only during construction and water line maintenance.

Option 4: Air Curtain

An air curtain would involve the use of fans or blowers to create an air curtain of highly turbulent air that would dilute the mixed gas emitted from the reaction area. This would classify as a flow diffusion, artificial type barrier. If orchard fans were used and spaced at the 75-foot minimum distance determined in prior modeling, a minimum of 117 fans would be required. This option is classified as an artificial air diffusion type of barrier (See Figure 8).



Figure 18 - Diesel-powered Orchard fans

Real World Usage

The use of fans for specific purposes of mitigating odors has been proven effective. Specifically, to address active face odors at CCL, fans placed around the working face have successfully diffused odorous gases enough to render them undetectable downwind. However, there are no examples of this option being used at the scale proposed in Condition 84.

Odor Reduction Potential

Our 2-dimensional CFD modeling of this option was achieved by taking the known performance of the current Orchard Right Fans (ORF) and spacing them the maximum distance of 75-feet per the standard operating procedure for placement around the working face. The model showed that the air curtain option was the only one that achieved nearly total elimination of odors at the data probe

locations, with a 94% reduction in the duration of model time where the probes had the average ODT of H₂S or higher.

Constructability

Permitting and Ownership

The permitting and ownership issues detailed in Option 1 apply to this option along with additional air emissions permitting.

Design

Designing this option will likely require a year, notwithstanding any special permitting. Because of the number of fans needed, 117 total to cover the 8,800 feet of barrier, it is not practical to use traditional diesel powered ORFs. The permitting time alone for diesel-powered ORFs would be months if not over a year, and the maintenance demand for diesel-powered ORFs makes them non-viable.

For a project of this scope, fans would need to be electrically powered, which is an extremely difficult proposition considering there are no examples of electrically powered fans of the size of ORFs. This would mean modifying existing fans or designing and building project-specific fans. Also, electrical fans would require the design of an entire infrastructure of cables and control systems that does not currently exist. The design time to achieve this would likely be a year, possibly longer.

Construction

Construction and material considerations are a serious factor given the necessity to design and build custom electrically powered fans for this option. This would also require special foundations for each fan along with access to provide regular maintenance.

Safety considerations while construction occurs are the same as detailed in Option 1, with an added concern of constructing security fencing around all fans. Given that the ridgeline is currently used as a hiking and bike trail, to mitigate the risk of injury, the entire barrier would have to be isolated to ensure no unauthorized people gain access.

Maintenance

The maintenance requirements would be extensive given the necessity to run the fans almost continuously.

Environmental Impact

The environmental impact of option 4 is extreme. In addition to the fans being a serious threat to birds and decimating any that pass by, the loud droning noise of 117 fans would be a serious nuisance if not an outright health hazard to surrounding homes. It would also be a visual blemish on the skyline for any of the surrounding communities.

OPTION TECHNICAL FEASIBILITY AND VIABILITY SUMMARY

In the following table (See Table 1) we have summarized the feasibility and viability of each option.

Option	Technical Feasibility- Advantages	Technical Feasibility- Disadvantages	Viable
1: Solid Wall	Potential average reduction in odor duration by 37%	Timing due to ownership and regulatory obstacles. Difficulty in construction. Lowering of ridgeline to create working space for equipment. Visual impact on communities. Environmental impacts on wildlife.	No
2A: Fence – 30% Porosity	Minimum grade impact on ridgeline for construction.	Timing due to ownership and regulatory obstacles. Increased odor duration significantly (129% for data probe #2). Potential impact on wildlife. Required maintenance to prevent blockage by litter and vegetation.	No
2B: Fence – 50% Porosity	Minimum grade impact on ridgeline for construction. Potential average reduction in odor duration by 41%.	Varying terrain with numerous low spots negates the positive impact of the barrier. Potential impact on wildlife. Required maintenance to prevent blockage by litter and vegetation. Construction duration depends on fence type and materials utilized.	No
2C: Fence – 80% Porosity	Minimum grade impact on ridgeline for construction.	Timing due to ownership and regulatory obstacles. Increased odor duration significantly (68% for data probe #2). Potential impact on wildlife. Required maintenance to prevent blockage by litter and vegetation.	No
3: Vegetation Barrier	Lower impact on viewshed of communities.	Timing due to ownership and regulatory obstacles. Increased odor duration at DP2 which was at the distance of higher population density of community. Difficulty in acquisition, planting, and watering to cover entire barrier length.	No
4: Air Curtain - Fans	Fully effective in reducing duration of average ODT at both data probes.	Timing due to ownership and regulatory obstacles. Technically impractical given number of fans required (117), requirement of custom design and construction of fans, and severe impact on environment including birds and community due to noise and viewshed pollution.	No

Table 1 - Summary of Feasibility and Viability

REACTION COMMITTEE RECOMMENDATIONS

Based on the evaluations of the different options and the extensive permitting and property ownership issues, no barriers can be identified as being viable. Even though option 2B did show potential, its impact is questionable given the changing nature of the mixed gas from the reaction area, which, as it gets less dense, will negate any benefit a barrier may have. The Reaction Committee and other experts from different regulatory agencies agree that the ETLF reaction will likely subside over the course of 3-10 years with reductions in odors occurring throughout that timeframe. Consequently, depending on the time required to design, permit, and construct any of the options considered, which is estimated to be at least 3 years given the ownership and regulatory/ permitting issues, attempting to implement a windbreak or wind flow disruptor to mitigate odors from fugitive LFG would likely result in no improvements beyond what is expected under the current plans and actions taken.

It is the recommendation of the Committee that resources and effort continue to be placed towards controlling gas emissions in the reaction area and slowing the reaction process through ongoing efforts to dewater and extract gases along with placement of a permanent cap.

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**BEFORE THE HEARING BOARD OF THE
SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT**

In The Matter Of

SOUTH COAST AIR QUALITY
MANAGEMENT DISTRICT,

Petitioner,

vs.

CHIQUITA CANYON, LLC a Delaware
Corporation,
[Facility ID No. 119219]

Respondent.

Case No. 6177-4

**EXHIBIT D TO DECLARATION OF
NEAL BOLTON, P.E.**

Health and Safety Code § 41700, and
District Rules 402, 431.1, 3002, 203, 1150

Hearing Date: April 16 and 17, 2025

Hearing Time: 9:30 A.M.

Place: Hearing Board
South Coast Air Quality
Management District,
21865 Copley Drive
Diamond Bar, CA 91765

Chiquita Canyon Landfill — Tank Inspection SOP

Chiquita Canyon Landfill Standard Operating Procedure for Tank Inspections		
Prepared for: Chiquita Canyon Landfill (CCL)		Task Description: This SOP applies during the inspection of leachate tanks.
Date: 10/14/24	Revision: 0	
Process Description:		This process includes the attached leachate tank inspection form in any circumstance that requires a tank to be inspected.
Necessary Supplies:		None
Additional References:		CCL must also comply with the applicable leachate tank operations requirements in CCL's <i>Leachate Unit Management Plan</i> , <i>ETLF Operations HASP</i> , <i>Leachate Management Plan</i> , and <i>Data Management Plan</i> . This SOP may be modified by one or more of these plans.

Tank Inspection	
Step:	Action, Notes, or Pictures:
1	CCL personnel must perform an inspection of each leachate tank as required by the specific tank requirement.
2	CCL personnel must complete the tank inspection form located in iAuditor, titled, "4050 – Waste Storage Area Daily Inspection Form". See attached iAuditor template.

Chiquita Canyon Landfill Standard Operating Procedure for Leachate Transfers by Truck		
Prepared for: Chiquita Canyon Landfill (CCL)		Task Description: This SOP applies when transferring leachate at CCL by truck.
Date: 10/14/24	Revision: 0	

Process Description:	The process of transferring leachate from tanks in other areas of the landfill into designated tanks in the tank farm using a vacuum truck.
Necessary Supplies:	Vacuum trucks (“bottle truck”, “70 bbl”, “110 bbl”, 130 bbl, or similar ¹)
Additional References:	CCL must also comply with the applicable leachate tank operations requirements in CCL’s <i>Leachate Unit Management Plan</i> , <i>ETLF Operations HASP</i> , <i>Leachate Management Plan</i> , and <i>Data Management Plan</i> . This SOP may be modified by one or more of these plans.

Tank Filling by Truck Transfer	
Task Step:	Actions, Notes, or Pictures:
1	Authorized personnel will receive a list from CCL staff of tank(s) that are available to fill, including how many loads are authorized into each tank. Authorized persons normally transfer full loads; however, partial loads are sometimes transferred. Loads are counted the same, regardless of whether the load was full or partial.
2	Visually inspect tank to confirm there is no visible physical damage prior to transfer.
3	Authorized personnel record the transfers by filling out the Leachate Transfer Log. See attached template.

¹ Each bottle truck holds the following approximate volumes: 70 bbl (2,500 – 3,000 gals); 110 bbl (4,000 gals); and 130 bbl (5,000 gals).

Chiquita Canyon Landfill — Leachate Transfers by Truck SOP

4	If applicable, monitor sight glass on front of tank to ensure filling does not surpass tank capacity. See photo below. During and after transfer, visually inspect the tank and area to make sure there were no spills. If a spill is identified, it must be reported immediately to CCL staff. 
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Chiquita Canyon Landfill Standard Operating Procedure for Leachate Transfers by Pump		
Prepared for: Chiquita Canyon Landfill (CCL)		Task Description: This SOP applies when transferring leachate at CCL by pump.
Date: 10/14/24	Revision: 0	

Process Description:	The process of transferring leachate into a tank or into a truck that is not equipped with vacuum by using a pump.
Necessary Supplies:	Diesel pump and flow meter
Additional References:	CCL must also comply with the applicable leachate tank operations requirements in CCL's <i>Leachate Unit Management Plan</i> , <i>ETLF Operations HASP</i> , <i>Leachate Management Plan</i> , and <i>Data Management Plan</i> . This SOP may be modified by one or more of these plans.

Filling into a Tank by Pump	
Task Step:	Actions, Notes, or Pictures:
1	Authorized personnel will receive a list from CCL staff of tank(s) that are available to fill, including how many loads are authorized into each tank.
2	Visually inspect tank to confirm there is no visible physical damage and that pipes and fittings are in good working order prior to filling.
3	Determine the expected fill time: As an example, assume a given tank can have 17,000 gallons transferred into it. To determine the length of time needed to pump 17,000 gallons into the tank, 17,000 gallons is divided by the flow rate, as shown on the flow meter. Example math: To fill 17,000 gal at 75 gpm: $17,000 \text{ gal} / 75 \text{ gpm} = 226 \text{ minutes}$ To fill one tank at 150 gpm: $17,000 \text{ gal} / 150 \text{ gpm} = 113 \text{ minutes}$

Chiquita Canyon Landfill — Leachate Transfers by Pump SOP

To fill two tanks at a time, the expected filling times would be 452 and 226 minutes, respectively.

This liquid transfer is documented by the authorized person on the Leachate Transfer Log. See attached template.

The following photos shows an example of a flow meter.



Chiquita Canyon Landfill — Leachate Transfers by Pump SOP

4	During and after transfer, visually inspect the tank and area to make sure there were no spills. If a spill is identified it must be reported immediately to CCL staff.
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Filling into a Truck by Pump	
Task Step:	Actions, Notes, or Pictures:
1	A truck will enter a tank area for loading. CCL personnel will verify which tank volume the truck is authorized to be loaded with, and then direct the driver to the appropriate loading position.
2	CCL personnel will visually inspect the CCL leachate tank to confirm there is no visible physical damage and that pipes and fittings are in good working order prior to filling into the truck.
3	Determine the expected fill volume: In consultation with the truck driver, an expected volume will be calculated based on the truck's empty "scale in" weight and max weight rating once filled (the difference is therefore the amount of liquid that can be loaded onboard).
4	Use the flow meter to pump the expected fill volume onto the truck. The following photos show an example flow meter. 

Chiquita Canyon Landfill — Leachate Transfers by Pump SOP

	
5	During and after transfer, visually inspect the tank and area to make sure there were no spills. If a spill is identified it must be reported immediately to CCL staff.



Company Name: _____

Time:

[illegible]

4050 - Waste Storage Area Daily Inspection Form

Amanda Froman

Incomplete

Score	0 / 15 (0%)	Flagged items	0	Actions	0
Site conducted		Unanswered			
Conducted on					
Prepared by		Amanda Froman			
Location					
Waste Storage Area Inspected					

Waste Accumulation Areas

0 / 14 (0%)

Container Lids and bungs are securely closed unless adding or removing waste.

Containers are in good condition and free of leaks, heavy rust, dents, and creases.

All containers have appropriate "Hazardous", "Non-Hazardous", or "Pending Analysis" labels.

All containers are clearly identified as to their purpose and/or contents with accumulation start dates.

Incompatible wastes are stored separately.

Containers are clean and free of spillage/residue.

Frac tank connections are capped or blank-flanged.

Frac tank drainage valve is closed or locked.

Frac tank secondary containment is not damaged or stained.

Adequate aisle space is maintained for container inspection and evacuation.

Emergency spill kit and equipment are stocked and readily available.

"Empty" containers are marked and stored properly.

Drum control logs are actively being maintained.

Security - Fencing, gates, and/or lighting are functional.

Certification

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**BEFORE THE HEARING BOARD OF THE
SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT**

In The Matter Of

SOUTH COAST AIR QUALITY
MANAGEMENT DISTRICT,

Petitioner,

vs.

CHIQUITA CANYON, LLC a Delaware
Corporation,
[Facility ID No. 119219]

Respondent.

Case No. 6177-4

**EXHIBIT E TO DECLARATION OF
NEAL BOLTON, P.E.**

Health and Safety Code § 41700, and
District Rules 402, 431.1, 3002, 203, 1150

Hearing Date: April 16 and 17, 2025

Hearing Time: 9:30 A.M.

Place: Hearing Board
South Coast Air Quality
Management District,
21865 Copley Drive
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LEACHATE MANAGEMENT PLAN



CHIQUITA CANYON
A Waste Connections Company

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DEFINITIONS

Pressurized Leachate Release: Flow of fugitive landfill gas and leachate produced during drilling.

Total Produced: Leachate that has been physically pumped out of the well heads within the waste mass.

Total Treated: Leachate that has been through a process designed to change the physical or chemical composition to render such waste non-hazardous, or less hazardous, or to render it safer to transport, store, or dispose of.

Total Disposed: Leachate that has been physically transferred into a truck and shipped off-site from Chiquita Canyon Landfill to an approved disposal facility.

Onsite Inventory: Leachate that has been pumped out of the waste mass and is awaiting treatment and or disposal.

LIST OF ACRONYMS AND ABBREVIATIONS

ARAR	Applicable or Relevant and Appropriate Requirements
BMP	Best Management Practice
CCL	Chiquita Canyon Landfill
CCR	California Code of Regulations
CFR	Code of Federal Regulations
CUPA	Certified Unified Program Agency
DAF	Dissolved Air Flotation
DOT	Department of Transportation
DTSC	Department of Toxic Substances Control
ECT2	Emerging Compounds Treatment Technologies
EPA	U.S. Environmental Protection Agency
ETLF	Elevated Temperature Landfill
GAC	Granular Activated Carbon
GCCS	Gas Collection and Control System
HAZMAT	Hazardous Materials Management
HDPE	High-Density Polyethylene
HWCP	Hazardous Waste Contingency Plan
HWMP	Hazardous Waste Management Plan
LEA	Local Enforcement Agency
LCRS	Leachate Collection and Removal System
LDR	Land Disposal Restriction
MAQS	Montrose Air Quality Services
NA	North America
OES	Office of Emergency Services
PLR	Pressurized Leachate Release
PPE	Personal Protective Equipment
QA	Quality Assurance
QAPP	Quality Assurance Project Plan
QC	Quality Control
RCRA	Resource Conservation and Recovery Act
RQ	Reportable Quantity
RWQCB	Regional Water Quality Control Board
SAP	Sampling and Analysis Plan
SCAQMD	South Coast Air Quality Management District
SOFA	Stipulated Order for Abatement
STLC	Soluble Threshold Limit Concentration
SVOC	Semi-Volatile Organic Compound
TAC	Toxic Air Contaminants
TCLP	Toxicity Characteristic Leaching Procedure
TDS	Total Dissolved Solids
TOC	Total Organic Compound
TRG	The Response Group
TSD	Treatment, Storage, and Disposal
TSS	Total Suspended Solids
TTLC	Total Threshold Limit Concentration
UHC	Underlying Hazardous Constituent

UN	United Nations
UAO	Unilateral Administrative Order
VOC	Volatile Organic Compound
WSD	Waste Stream Determination

1 INTRODUCTION

1.1 Overview

The Chiquita Canyon Landfill (Landfill) operated by Chiquita Canyon, LLC (CCL) has been experiencing a subsurface reaction in an inactive portion of the Landfill, also known as an Elevated Temperature Landfill (ETLF) event.

The reaction has escalated landfill gas condensate and leachate production and modified the chemical composition of these liquid waste streams. Weekly leachate production has increased from 100,000 gallons in January 2022 to over 1,000,000 gallons in December 2024. Based on analytical testing, some of the condensate and leachate exhibit characteristics of ignitability and toxicity under the Code of Federal Regulations (CFR) (40 CFR 261.21 and 40 CFR 261.24, respectively) and California Code of Regulations (CCR) (22 CCR 66261.21 and 22 CCR 66261.24, respectively).

This Leachate Management Plan (Plan) fulfills the requirements of Paragraph 22(c)(1) of the February 21, 2024 Unilateral Administrative Order (UAO) issued by the United States Environmental Protection Agency (EPA).

CCL is actively working to install additional well pumps to remove the leachate in the waste mass which will aid in controlling the reaction event. The increased leachate production and hazardous characteristics have required the setup of a temporary onsite accumulation area and treatment units until additional suitable offsite disposal outlets have been established.

CCL is actively working to ensure it has proper capacity to accumulate and treat leachate onsite and/or dispose of collected liquids/leachate at appropriate offsite facilities. CCL currently reports this information to South Coast Air Quality Management District (SCAQMD) in accordance with Stipulated Order for Abatement (SOFA), Case No. 6177-4, Condition 29.¹

1.2 Purpose and Scope of the Plan

This Plan outlines comprehensive procedures and protocols for the effective management of leachate at the Landfill. To this end, the Plan:

- Describes the procedures for identifying leachate seeps and repairing, or any necessary repairs or improvements to the leachate collection system.
- Describes the process for collecting, storing, treating leachate from the Landfill.
- Describes the process to characterize leachate and all waste streams that are potentially hazardous.
- Provides the procedures for transporting waste streams to the appropriate waste receiving and disposal facilities.
- Describes the process for obtaining any required permit(s) from the appropriate local, state, or federal agency for onsite leachate management activities.

1.3 Incorporation of Additional Plans

CCL has also developed a Leachate Contingency Plan which is incorporated by reference into this Plan. The Leachate Contingency Plan is provided as **Appendix A.1**.

CCL has also developed a Data Management Plan, submitted to EPA on July 17, 2024. In the event of a conflict between this Plan and the Data Management Plan, with respect to data management, the Data Management Plan will govern and is provided as **Appendix A.2**.

¹ CCL's reference to SOFA Conditions in this Plan are subject to change based on SCAQMD modifications.

2 LEACHATE COLLECTION SYSTEM, ONSITE STORAGE AND SEEP IDENTIFICATION

CCL has developed a proactive approach to identifying the onsite storage and tracking of the leachate. This section provides an overview of current circumstances, but is subject to change due to evolving conditions, needs, and controlling leachate seeps or leachate releases associated with Pressurized Leachate Releases (PLRs).

2.1 Overview of the Leachate Collection System

CCL operates and maintains the Landfill to prevent standing leachate and the pooling or ponding of leachate exposed to the atmosphere throughout the facility. See SOFA Condition 24. CCL's leachate collection and removal system (LCRS) consists of a series of pipes constructed over a composite liner, which incorporates a high-density polyethylene (HDPE) geomembrane and a low hydraulic conductivity layer. The liner system is designed to contain leachate accumulated in the landfill and direct it to the LCRS. The liner system also minimizes the potential for migration of landfill gas and increases the effectiveness of the landfill gas collection and control system (GCCS). The leachate collection system as of March 2024 is set forth in **Appendix A.3** and accurately depicts the current leachate collection system.

The landfill GCCS prevents methane surface exceedances and minimizes fugitive emissions of landfill gas. Horizontal landfill gas collection trenches and/or vertical landfill gas extraction wells are connected to a central header system that conveys landfill gas to the flare facility, which actively controls and destroys landfill gas. CCL operates and maintains the land GCCS, and condensate/leachate collection system with materials capable of handling gases and/or liquids at the temperatures recorded at landfill gas wells and/or the leachate temperatures measured. See SOFA Condition No. 27(a).

CCL is also working to modify its Title V permit to increase the landfill's liquid storage capacity with regard to its Landfill Gas Condensate and Leachate Collection/Storage System (Permit No. G66132, A/N 613131). See SOFA Condition 57. The permit currently includes authorization for five condensate tanks and four leachate tanks varying in capacity. In addition, CCL is working to obtain authorization for the Landfill Gas Condensate and Leachate Treatment System, which includes treating hazardous liquid waste. See SOFA Condition 59.

2.2 Seep Identification and Management

The following section discusses procedures for identifying, responding to, and mitigating leachate seeps, and planned improvements to the leachate collection system.

2.2.1 Procedures for Identification of Leachate Seeps

CCL performs inspections for exposed leachate seepage or pooling in accordance with the SOFA. SOFA Condition 27(b)(i) requires CCL to conduct leachate inspections twice per calendar day. After a two-week period with no observed exposed leachate seepage or pooling, CCL may reduce the inspection frequency to once every other day during the operating week. If inspections show exposed leachate seepage or pooling, then the inspection frequency must return to twice daily inspections. These inspections are recorded and submitted to SCAQMD on a weekly basis. CCL also submits the inspection records to SCAQMD in a monthly report required under Condition 8 of the SOFA. These inspections also allow CCL to identify any necessary repairs to the leachate collection system. CCL also measures and records the leachate temperature in accordance with Condition 27(a) of the SOFA. Condition 27(a) requires CCL to measure and record the leachate temperature within all 6-inch leachate pipes that feed into onsite frac tanks, and at the piping leading into the tanks at all tank farms.

CCL works proactively to discover leachate seeps as early detection of leachate seeps is an important part of the mitigation process. Early indicators of leachate seeps include visible wet spots on the slopes that may appear as

single wet spots, or a horizontal line of wet soil. Identification of these early indicators allows for the detection of leachate seeps before visible liquid leachate appears on the surface.

Detection of PLRs is generally less difficult. Workers who are drilling or servicing wells in or near the reaction area have been trained to recognize pre-indicators that a PLR may occur. These pre-indicators may include temperatures that exceed a pre-established threshold at the wellhead or in drilling spoils, wells located within the limits of the reaction area, or wells that have previously exhibited a PLR.

Additional thresholds may be established based on future data or experience with the reaction area and/or PLRs.

In the event CCL detects a leachate seep or PLR, actions will be taken to prevent pooling, ponding, or other leachate exposure to the atmosphere, as discussed below.

2.2.2 Responding to Leachate Seeps or Other Releases

In the event of a leachate seep or other release, CCL is implementing the best management practices (BMPs) detailed in **Appendix A.4**. Immediately upon detection of a leachate seep or release, CCL conducts initial safety and environmental assessments and characterizes the incident (e.g., whether the incident involves a seep or PLR), to determine the scope of mitigative action required. If pooling or ponding of leachate is occurring, the leachate must be immediately collected and contained in a sealed tanker truck or leachate tank that minimize emissions, or repairs must be promptly performed to redirect leachate into the leachate collection system. Notification, if required based on the specific circumstances, is also provided to emergency response services and the appropriate regulatory agencies. Additionally, SOFA Condition 25 provides CCL requirements for responding to pressurized leachate releases, including mitigation of odors and the dispersion and exposure of leachate into the atmosphere, equalization of pressure or diminished flow, and the removal of soil saturated with leachate, or addition of dry soil cover, to mitigate the potential for odors from the saturated soil.

CCL management staff notifies the appropriate regulatory agencies, which may include the SCAQMD, Regional Water Quality Control Board (RWQCB), CalRecycle, California Department of Toxic Substances Control (DTSC), EPA, and/or the Local Enforcement Agency (LEA). All notifications are made through appropriate levels of management.

2.3 Improvements to Landfill Systems

CCL is evaluating improvements or modifications to the leachate collection and/or de-watering system continually and as needed based on the subsurface reaction.

Upgrades are planned for the existing leachate de-watering system in accordance with Condition 18 of the SOFA. The design plan includes installation of leachate collection force main piping (comprised of 8-inch, 6-inch, and 4-inch HDPE piping with associated tees and valves). The HDPE piping is rated to withstand temperatures based on current temperatures measured during the regular leachate temperature monitoring described above. The proposed upgrades will also add piping to all existing and proposed vertical extraction wells. Further, CCL continues to install new cleanouts² with many additional cleanouts planned for installation, which will allow for improved maintenance of the system. The upgraded dewatering system will allow for removal of excess liquid/leachate, thereby increasing the volume of leachate collected and helping to prevent seeps and discharges from occurring.

² "Cleanouts" are defined as fittings installed in the liquid conveyance lines that allow the lines to be cleaned utilizing jetting/suction so that the lines can be maintained. These cleanouts are strategically placed to allow cleanout of any critical portions of the liquid conveyance lines.

The above improvements are being made in conjunction with the installation of a geosynthetic cover that will cover more than 40-acres of the reaction area. The cover will mitigate any methane surface exceedances and fugitive landfill gas emissions in the shorter-term. If there are leachate seeps, the cover will also prevent commingling of stormwater and leachate.

As part of longer-term mitigation measures, CCL is continuing to expand its landfill gas system, including the planned installation of over 200 new vertical gas extraction wells and associated piping to achieve a minimum density of three vertical extraction wells per acre on average within the initial Reaction Area and even dispersion, achieving a well density of at least two vertical extraction wells per acre.³ CCL submits weekly reports to SCAQMD and the LEA detailing the week's well drilling installation activities. This information is also submitted in the monthly report to SCAQMD required under Condition 8 of the SOFA. Since these upgrades are expected to result in increased gas collection, CCL has also requested that the SCAQMD modify CCL's Title V air permit to include a new landfill gas blower, additional flare capacity, and the additional vertical extraction wells.

CCL conducts daily inspections of the leachate tanks and documents such inspections in the operating record of the facility in accordance with 22 CCR 66264.195. CCL is working toward compliance with all applicable federal and state hazardous waste regulations, including acquiring compliant tanks and operation of leachate tanks in compliance with subpart J. CCL has retained a qualified engineer that is in the process of certifying the tank farms.

A detailed workplan, dated March 13, 2024, outlining the above improvements to address the subsurface reaction is provided in **Appendix A.5**.

2.4 Standard Operating Procedures for Onsite Leachate Storage

Collection wells are dual phase Landfill extraction wells constructed in the existing waste mass to collect both Landfill gas through the LFG collection system and leachate through the pumps located with the collection wells. Generation points are designated collection wells where the leachate is pumped out of the well heads from the waste mass. The leachate is then piped or transferred to the he accumulation areas which are designated locations where the leachate waste is temporarily stored in tanks before it is sampled or treated before off-site disposal. At present, leachate and condensate is accumulated at eight distinct areas across the Landfill, as shown in **Appendix A.6**. Those areas include #1 Top Deck Manifold;⁴ #2 East Perimeter (~4 frac tanks); #3 Ameresco Condensate Tanks; #4 Leachate Collection Manifold (~1 frac tank); #6 North Perimeter (~8 frac tanks); #8 Primary Canyon;⁵ #7 Tank Farm (~106 frac tanks); #9 Tank Farm (~124 frac tanks); and Staging area (~8 frac tanks).⁶ The number of tanks is subject to change in connection with onsite operations and in coordination with regulators. **Appendix A.7** provides a surface level map of the collection wells and associated groups within the waste mass.

CCL is maintaining documentation to identify tanks in each tank group and their locations. That document is not a static document and is updated and revised as needed. A copy of that document (version December 18, 2024) is appended hereto as **Appendix A.8** for illustrative purposes only.

³ 133 wells have been installed as of January 7, 2025.

⁴#1 Top Deck Manifold has been disconnected from the landfill gas collection system since approximately January 2024 and removed from production.

⁵#8 Primary Canyon accumulates landfill gas condensate that is unaffected by the reaction area. However, a waste determination was previously made for #8 Primary Canyon in accordance with **Section 4.0** of this Plan and the Sampling and Analysis Plan and associated Quality Assurance Project Plan.

⁶ The Staging Area is a collection of tanks separated and waiting to be placed in a Tank Farm.

In accordance with the SOFA, leachate storage tanks and the landfill GCCS are subject to numerous conditions. For example, Condition 63 of the SOFA required CCL to submit a schematic of the current leachate treatment and storage system, including connections, flow lines, tank groups, vent lines to flares, lines to and between leachate tanks, and tanks that are connected and not connected to vacuum vent lines. This document was submitted to the SCAQMD on April 22, 2024, and is included as **Appendix A.9**.

Condition 69 of the SOFA currently requires CCL to conduct quarterly inspections and monitoring of above ground piping and piping connections starting July 19, 2024, which includes piping/connections associated with the leachate vapors. This also includes a physical condition assessment as well as monitoring for leaks of total organic compounds (TOCs) in accordance with the leak testing requirements of SCAQMD Rule 1150.1, including corrective action and re-monitoring as required by the rule. Quarterly inspection and monitoring events provide an additional mechanism to ensure that leachate vapors are being properly managed to avoid leaks to the atmosphere.

Any additional leachate storage tanks that are brought into service shall be equipped with vapor controls (i.e., connections to the GCCS) no later than 10 working days following commissioning of the tanks. The response to the subsurface reaction involves utilization of all available off-site disposal options, including (1) onsite treatment of leachate followed by disposal at non-hazardous disposal facilities; and (2) disposal at hazardous waste treatment and disposal facilities. The onsite leachate treatment is designed to achieve a non-hazardous waste classification. As the leachate exits the waste mass through the collection piping, it is first routed to tanks that briefly hold the liquids (under vacuum) to properly manage the flows. The leachate is then pumped through the manifolds, piping, and hoses into the treatment units. There are currently two enclosed Granular Activated Carbon (GAC) systems in place. The treatment units use sand filtration and bag filtration to remove solids from the leachate before the leachate is passed through a series of GAC vessels.

Leachate that is characteristically hazardous is treated at #7 Tank Farm, extracted through four groupings of collection wells: Group A, Group B, North Perimeter, and East Perimeter. The leachate in Group C is not characteristically hazardous. Group A and Group B is piped to #7 Tank Farm, and Group C is piped to both #7 Tank Farm and #9 Tank Farm. The groupings of collection wells are piped into a network of individual and interconnected (manifolded) frac tanks. Frac tanks containing treated landfill liquids are staged at #7 and #9 Tank Farms for off-site transport and disposal.

At present, leachate or liquid condensate produced at #2 East Perimeter, #3 Ameresco Condensate Tanks, #4 Leachate Collection Manifold, and #6 North Perimeter is transported via vacuum truck to designated tanks at either Tank Farm #7 or Tank Farm #9 for storage. The #3 Ameresco Condensate Tanks are currently only accumulating small volumes of knock-out condensate from landfill flaring operations. Transfer forms as shown in **Appendix A.10** are completed by the vacuum truck drivers which are submitted at the end of the day to track the onsite inventory. CCL is meticulously tracking the management of liquid waste from the point of generation through off-site transport and disposal, ensuring the various waste streams are not commingled. CCL currently measures, records, and reports the leachate temperatures within the 6-inch leachate pipes feeding into the onsite frac tanks, and at the piping leading into the tanks at all tank farms in monthly reports in accordance with SOFA Condition 27(a). CCL is also continuing to evaluate and implement measures to comply with tank standards such as secondary containment and air emission controls (as applicable), to the maximum extent possible. Tank Farm #7 and #9 both include a berm that surrounds the tank farm area and is gradually sloped to allow for any rainfall or potential discharge to accumulate in a lined containment area. The containment area is pumped out during any rain event.

As required by the SOFA, transmitters have been installed on all tanks to measure the hydrostatic level of liquids in tanks. All frac tank lids and hatches are kept closed and inspected on a daily frequency. Inspection records are managed electronically, and corrective actions are tracked.

CCL installed appropriately ranged differential pressure gauges on each leachate storage tank. CCL monitors and records daily the differential pressure of each leachate tank, tank identification number, date and time of the reading, and the personnel that conducted the reading.⁷ CCL completed this installation, monitoring, and recording in accordance with SOFA Condition 68 and reports to SCAQMD on a monthly basis.

Tanks located in #7 and #9 Tank Farms are connected under vacuum, meaning any potential emissions from the tanks are captured and routed to the landfill gas collection system flares. As of the date of this submittal, all of the roughly 251 frac tanks storing leachate are under vacuum.⁸ The number of tanks can and will vary as needed due to operational demand, cleanings, or repairs.

Vacuum is applied to the vent lines from the leachate accumulation tanks via gas wellheads in the GCCS to maintain vacuum in the tanks and to transport leachate vapors into the GCCS to be destroyed by the landfill gas flares or thermal oxidizer. Based on progress to date, all of the leachate tanks are currently under vacuum and connected to the GCCS. Any new or replacement tanks CCL acquires will be put under vacuum as soon as possible.

To ensure that vacuum is maintained in the leachate tanks, in accordance with Condition 68 of the SOFA, CCL installed pressure gauges on each leachate storage tank by July 10, 2024, and is currently taking/recording daily differential pressure readings to confirm that the tanks are under vacuum. Condition 72 of the SOFA required daily pressure readings to be obtained with hand-held meters, beginning April 29, until the pressure gauges were installed. This information is reported to SCAQMD in the monthly report required pursuant to Condition 8 of the SOFA.

In accordance with Condition 72 of the SOFA, CCL installed flow meters within the main gas piping headers for associated leachate tank farms to accurately measure and record the flow rate (in standard cubic feet per minute) and total daily volume of vented leachate tank vapors being sent to the flare facility for combustion by July 19, 2024. The vapor flow data provides further data to allow CCL to monitor the volume of leachate vapors being extracted and managed by the GCCS and provide an additional confirmation that adequate vacuum is being applied.

If there are any tanks or groups of tanks that are not under vacuum, CCL will make adjustments to the GCCS components to increase the vacuum levels to the tanks. If after a week, vacuum is still not being demonstrated in certain tanks/tank groups, CCL will make additional improvements to the piping network and/or connections to the GCCS within 30 days. Ongoing vacuum monitoring consistent with SOFA procedures will allow CCL to continually confirm vacuum levels, for any existing or new tanks, and conduct corrective action when needed to ensure that leachate vapors will be properly controlled by the GCCS.

2.4.1 Subpart BB and Subpart CC Determination

CCL contracted Montrose Air Quality Services, LLC (MAQS) to evaluate applicability of Subpart BB of 40 CFR Part 265 and Article 28 of CCR Title 22, Division 4.5, Chapter 15, starting at § 66265.1050 (commonly, and collectively here, referred to as RCRA Subpart BB or “Subpart BB”), on equipment that contains or comes into contact with hazardous waste containing organic concentrations of at least 10% by weight. A site assessment was conducted on August 1, 2024, followed by a review of relevant regulations and analytical results. The analysis of untreated leachate or leachate condensate originating from the Landfill revealed a 4.7% Total Organic Compound content as the highest from all sample data points available. This concentration is below the 10% by weight threshold for

⁷ All data referenced in this plan is recorded and managed in accordance with the Data Management Plan (July 2024).

⁸ There are 251 frac tanks onsite total, however, 8 frac tanks are not setup for operation and 6 are undergoing repair.

applicability under Subpart BB. Based on these findings, MAQS determined that the equipment handling the characteristically hazardous leachate at the Landfill is exempt from Subpart BB requirements. If the characteristically hazardous leachate stream has materially changed, a re-evaluation of the stream will be conducted.

CCL also contracted MAQS to evaluate applicability of Subpart CC of 40 CFR Part 265 and CCR Title 22, § 66265.1080 to tanks, surface impoundments, or containers that are subject to 40 CFR Part 265, Subparts I, J, or K of, as well as Large Quantity Generators of hazardous wastes. Such tanks, surface impoundments, or containers can be excluded from the Subpart CC emissions standards if no detectable organic emissions are found. The Subpart CC evaluation is ongoing.

2.5 Leachate Production Tracking

CCL currently maintains an online tracking tool known as the Leachate Dashboard. The Dashboard is currently saved in The Response Group (TRG) - Microsoft Teams Channel for the Landfill Response Support, 7.0 Leachate Disposal Unit. The current reporting period is Tuesday – Monday on a weekly basis.⁹ The data ultimately originates from the field team dispersed around the Landfill. The CCL onsite Controller compiles the data and uploads it into the dashboard. Leachate production values are assessed for quality assurance (QA)/quality control (QC) by having ongoing conversations with the field team to ensure the data reported in the dashboard correlates with their operations. Leachate disposal is assessed for QA/QC via manifest reconciliation.

CCL reports to SCAQMD (1) the number of tanks in each leachate tank group; (2) total number of leachate tanks treated; (3) weekly and year-to-date total quantity of liquid collected; (4) weekly and year-to-date total quantity of liquid treated; and (5) estimated weekly and year-to-date total quantity of seeping, pooling, or ponding leachate collected on a weekly basis in accordance with SOFA Condition 53.

CCL is currently working with a third-party contractor for the creation and development of the leachate production tracking which is tentatively planned for release in the first quarter of 2025.

2.5.1 Liquids Dashboard Summary

The Liquids Dashboard contains the Year-to-Date (January 2024 – present) total inventory in gallons of leachate that CCL has produced, treated, disposed, and inventoried onsite for the monthly basis. The Dashboard also contains the number of frac tanks and their status as well as the number of active pumps.

2.5.2 Liquids Dashboard – Monthly

The Monthly Liquids Dashboard data is updated daily. The Dashboard displays the gallons tracker per production location and total per day disposed of at each off-site location. This information is reported as two days behind the current date to allow for CCL to gather the applicable information.

⁹ CCL reserves the right to adjust the reporting period depending on holiday impacts.

3 ONSITE LEACHATE TREATMENT SYSTEM

CCL is currently treating leachate onsite in order to open up more off-site disposal outlets and is working diligently to identify additional options.¹⁰ Leachate that is characteristically hazardous is treated onsite using a GAC system at #7 Tank Farm and #9 Tank Farm for specific hazardous leachate waste streams. Both systems are the same and use sand and sock filters. Currently, there is one vendor, Emerging Compounds Treatment Technologies (ECT2), operating the GAC treatment units on behalf of CCL. CCL currently records the quantities of leachate collected and leachate treated onsite on a weekly basis, which is reported to the SCAQMD on a monthly basis. CCL is continuously evaluating effective treatment options.¹¹

3.1 Overview of the Granular Activated Carbon Treatment

Leachate produced from Group A, Group B, East Perimeter, and North Perimeter is treated using a GAC system at #7 Tank Farm and #9 Tank Farm. The GAC system can remove certain chemicals, particularly organic contaminants, from water, as well as chemicals that produce odors. The GAC adsorbs the contaminants due to its porous qualities. The adsorption occurs on the internal surface of activated carbon. During adsorption, liquids pass through the porous structure of the activated carbon, diffusing the compounds to be removed to the surface of the adsorbent media, and are retained on or within the media due to attractive forces.

The systems have been designed on the basis that each individual primary treatment train can operate at its respective maximum capacity of 75 to 90 gallons per minute per train. The systems are designed to enhance the removal of volatile organic compounds (VOC) and semi-volatile organic compounds (SVOC). ECT2 operates 1 train with 6 vessels at a time at each tank farm while the other 6 vessels are undergoing GAC changeout and off gassing to allow for 100% uptime on treatment. The ECT2 GAC Operations and Maintenance Manual is provided as **Appendix A.11**. The Process Flow Diagrams associated with each tank farm are included as **Appendix A.12** for Tank Farm #7 and **Appendix A.13** for Tank Farm #9.

3.2 Spent Carbon

Carbon is changed out of the GAC system when it is no longer deemed effective via analytical results. Presently, carbon is exchanged roughly every day or every other day. GAC solids are physically removed from the treatment units and placed in a dewatering box. Each change out produces two to three dewatering bins of media. It takes approximately 7 days of dewatering in order for the material to be ready for disposal. The solids are then sampled and results are analyzed to determine waste characterization and proper disposal.

3.3 Treated Leachate

Treated leachate is currently stored in designated frac tanks within Tank Farm #7 or #9. Once the leachate has been treated, it is sampled to confirm it is below the regulatory thresholds for hazardous waste and meets the disposal criteria of the various receiving facilities. The treated leachate is then pumped into designated tanks for off-site disposal. Analytical reports are provided daily to the receiving facilities to confirm the treated leachate meets acceptance criteria. Leachate that initially fails to meet off-site acceptance criteria is either retreated in the GAC system or shipped off-site for proper disposal according to the waste characterization. The Liquids Dashboard contains the Year-to-Date (January 2024 – Current) total inventory in gallons of leachate that CCL has treated on a monthly basis.

¹⁰ CCL is currently treating leachate under the immediate response exemption of RCRA and applicable state hazardous waste regulations and is working with local regulatory authorities to obtain Conditional Authorization for its onsite treatment under the California hazardous waste tiered permitting system.

¹¹ CCL was previously seeking approval to test a dissolved air flotation (DAF) system after the GAC system in Tank Farm #9 to remove total dissolved solids (TDS) from the treated leachate stream. Based on testing and analytical results, the DAF is not planned to be used for treatment.

4 WASTE CHARACTERIZATION

4.1 Waste Streams

Waste streams related to the ETLF event requiring characterization and potential off-site disposal include leachate, condensate, tank bottoms, DAF solids, spent carbon media, personal protective equipment (PPE), and spill debris, as described below.

- **Leachate:** As previously noted, leachate is the liquid generated from water percolating through a solid waste disposal site. Because landfill gas condensate and leachate currently both flow into the landfill gas system due to the subsurface reaction and increased liquid levels, there is no way to separate the two types of liquids. Thus, for purposes of this response, landfill leachate and landfill gas condensate will generally be addressed and referred to collectively as leachate unless otherwise specifically noted.
- **Condensate:** For purposes of this Plan, condensate generally refers to knock-out condensate produced in connection with landfill flaring operations and not, for the reasons discussed above, landfill gas condensate.¹²
- **Tank Bottoms:** The residual materials deposited (settled) at the bottom of accumulation tanks.
- **Dissolved Air Flotation (DAF):** Treatment designed to remove TDS from the treated leachate stream. The solids would be physically removed from the treatment tanks and placed in a dewatering box.¹³
- **Spent Granular Activated Carbon:** Activated carbon that has reached its sorption capacity.
- **PPE:** Equipment or materials used in waste characterization and management, including nitrile gloves, respirator cartridges, bailers, and miscellaneous sampling equipment.
- **Spill Debris:** Materials used in spill response, mainly absorbents (e.g., Oil Dri® and absorbent pillows).

4.2 Waste Characterization and Profiling

A Sampling and Analysis Plan (SAP) was developed to provide a mechanism for collecting waste characterization data in support of the decision-making process regarding the management and disposal of waste materials. The SAP: (1) provides the technical approach (i.e., sampling design) and rationale for waste characterization, including sampling locations, frequency of sampling, and the analytical testing regimen; (2) describes the field procedures and methods for implementing the sampling design (i.e., the field sampling plan); and (3) discusses the relevant regulatory frameworks and thresholds defining hazardous waste.

CCL is using knowledge of the waste itself from historical acceptance at the Landfill and/or the process to select the analytical parameters. The Waste Stream Determinations (WSD) are made at the point of generation, before any mixing or other alteration of the waste occurs. The analytical and waste characterization will determine the appropriate management and final disposition of the waste. CCL currently takes at least one representative monthly sample of leachate from the Reaction Area and at least one representative monthly sample of leachate from the bottom tanks where leachate from the entire Landfill collect. CCL analyzes these samples per U.S. EPA Method 624.1 for the presence of VOCs and toxic air contaminants (TACs) and posts the analytical results on its website and submits the results to SCAQMD in accordance with SOFA Condition 38. In the event CCL demonstrates that generated leachate is sufficiently collected with no remaining seepage or potential discharges, then sampling and analysis will reduce to a quarterly schedule.

The objectives of the waste sampling prescribed by the SAP are as follows.

¹²Condensate accumulated in tanks in the #3 tank area was shipped off-site to the Aragonite Incineration Facility in Tooele County, Utah, as hazardous or potentially hazardous waste in March 2024. Since then, the tanks in the # 3 tank area have been cleaned out and are only accumulating knock-out flare condensate.

¹³There is no intention for the DAF to be used for treatment, and therefore once all existing DAF waste is removed, this will no longer be a waste stream.

1. Characterize the various liquid and solid waste streams for the purpose of waste profiling and disposal. Each WSD will follow the Resource Conservation Recovery Act (RCRA) regulations at 40 CFR 262.11 and California Hazardous Waste Determination rules found in 22 CCR Section 66262.11 for waste determinations. CCL will recharacterize a particular waste stream when the process or operation that produces the waste changes or the waste is sent to a different hazardous waste treatment and disposal facility for the first time or requires annual recertification at the disposal facility. CCL will conduct sampling using TCLP when recharacterizing a particular waste stream when the process or operation that produces the waste changes. Waste characterization shall involve testing to determine whether any wastes are California-only hazardous wastes pursuant to California's testing procedures, including the Soluble Threshold Limit Concentration (STLC) and Total Threshold Limit Concentration (TTLC).
2. Verify the efficacy of liquid waste (i.e., leachate and condensate) treatment. Treatment is deemed effective when the results from waste sampling fall below the regulatory thresholds for hazardous waste. The liquid waste is further assessed to ensure that it meets the acceptance and disposal criteria of the various receiving facilities. If necessary, treatment will continue until it results in the waste meeting off-site disposal facility acceptance criteria, including applicable RCRA Universal Treatment Standards under the Land Disposal Restrictions (LDR) requirement as applicable. Liquids following treatment that are deemed hazardous due to their chemical properties (i.e., exhibit toxicity characteristic) are subject to further treatment. Wastes that do not exhibit toxicity characteristics but classify as ignitable based on flash point are stored, treated, or disposed of according to the waste determination.

A Quality Assurance Project Plan (QAPP), dated March 27, 2024 and updated November 15, 2024, has also been developed to serve as a framework ensuring the quality and integrity of data collected through implementation of the SAP. The QAPP defines data quality objectives and outlines criteria for data quality, including precision, accuracy, representativeness, comparability, and completeness. Collectively, the SAP and the QAPP set forth the process and parameters to characterize the various waste streams described above and have been conditionally approved by the U.S. Environmental Protection Agency (EPA).

4.3 Analytical Testing Regimen

As set forth in the SAP and QAPP, a comprehensive waste characterization approach (i.e., the analytical testing regimen) was developed based on: (1) the nature of the Landfill waste matrix and corresponding characteristic chemical composition of the leachate and gas stream; (2) the effects of ETLF; (3) the criteria for identifying and listing hazardous waste promulgated under 40 CFR 261.20 – 261.24 and 22 CCR 66261.20 – 66261.24; and (4) the disposal criteria (requirements) of the receiving facilities.

A subset of VOCs, SVOCs, and metals customary to municipal solid waste leachate and indicators of ETLFs are included in 40 CFR 261.24 and 22 CCR 66261.24 as part of the toxicity characteristic determination. The receiving facilities require testing for these parameters to ensure compliance with regulatory requirements for toxicity. Additionally, the receiving facilities require testing for flashpoint and pH to evaluate waste for characteristics of ignitability (40 CFR 261.21 and 22 CCR 66261.21) and corrosivity (40 CFR 261.22 and 22 CCR 66261.22), respectively. Based on this information, waste characterization will involve testing of VOCs by Method 8260, SVOCs by Method 8270, mercury by Method 7470, the remaining California Title 22 metals by Method 6010, flashpoint by Method 1010, and pH by Method 9040B, as specified in the SAP and QAPP. Initial waste determinations and new hazardous waste determinations due to a change in the character of the waste shall be conducted via the TCLP method. Waste characterization shall involve testing to determine whether any wastes are California-only hazardous wastes pursuant to California's testing procedures, including the STLC and TTLC. Disposal facilities may also require additional testing as needed to comply with their permit conditions and waste acceptance plan.

4.4 Frequency of Testing

Liquid waste streams are initially sampled at a daily frequency at the frac tanks and solid waste streams are sampled periodically as needed from the roll-off containers, such as during a tank cleaning or GAC filter replacement. The scope of the analytical testing program and frequency of sampling may be reduced over time with consent from the receiving facilities or increased/reduced in response to changing conditions related to the ETLF. Waste determinations will be performed for various waste streams in accordance with the SAP and QAPP and may be reevaluated for each waste stream or point of generation as appropriate and on a case-by-case basis. On a weekly basis at least, sampling shall occur at the point of origination from the waste group sampling port for the characteristically non-hazardous waste groups for new hazardous waste determinations. The current WSDs are included as **Appendix A.14**.

5 OFF-SITE DISPOSAL AND TRANSPORTATION

The response to the reaction involves utilization of all available off-site transportation options to remove leachate from the site, including (1) onsite treatment of leachate followed by off-site shipment to non-hazardous facilities; and (2) off-site transport to hazardous waste treatment and disposal facilities.

CCL is meticulously tracking the management of liquid waste from the point of generation through off-site transport and disposal, ensuring the various waste streams are not commingled.

Due to the difficulty in locating any potential off-site storage options, CCL has asked the agencies to assist by providing a list of locations for CCL to contact and coordinate. CCL submitted a Freedom of Information Act (FOIA) request as directed and has contacted the additional facilities identified by EPA.

5.1 Receiving Facilities Database

CCL maintains a disposal facility tracking spreadsheet with over 650 potential facilities and storage locations which have been contacted. The spreadsheet also lists if samples and analytical data have been provided to disposal outlets for acceptance criteria. The spreadsheet is currently saved in TRG - Microsoft Teams Channel for the Landfill Response Support, 7.0 Leachate Disposal Unit. A summary of off-site treatment and disposal facilities, as of December 31, 2024, is provided in **Appendix A.15**. Note that facilities and the total daily maximum acceptance capacity is constantly changing.

5.2 Off-Site Transport and Disposal – Non-Hazardous Waste Facilities

Pending any waste determinations for leachate in accordance with the SAP and QAPP, leachate is not sent off-site to non-hazardous treatment and disposal facilities until sampling results confirm that the leachate is below the applicable regulatory thresholds for relevant constituents, including constituents for waste characterization (i.e., benzene).¹⁴

After treatment is complete and pending waste determinations for leachate, CCL conducts post-treatment confirmatory sampling of each tank (or multiple tanks if manifolded and treated together). Once laboratory reports and results are received, CCL evaluates results against the applicable regulatory thresholds. If the sampling results indicate constituents in leachate are below regulatory levels, CCL provides those sampling results to the non-hazardous off-site facility for confirmation that the waste can be accepted at the facility. Once the facility receives the analytical reports and provides its approval to accept the leachate, CCL directs available trucks for loading to the particular tanks that have been approved for off-site transport and instructs the drivers as to where to transport the leachate from those tanks. CCL has dedicated personnel (including overnight staff) to coordinate the loading and shipment process.¹⁵

For tanks other than those discussed above or in instances where post-treatment sampling shows that target constituents (e.g., benzene) are not treated to levels below their respective regulatory thresholds, the tank is generally retreated with the GAC treatment solution and post-treatment confirmatory sampling is again performed for that tank. CCL then follows the same procedures discussed above following receipt of the laboratory report, including evaluation of the results against the applicable regulatory thresholds, provision of the analytical reports to the off-site facilities, awaiting confirmation by the off-site facilities that the leachate can be accepted, and directing available trucks to the specific tanks that have been approved for off-site transport.

¹⁴ Additional sampling is also sometimes done for test loads at new potential facilities to evaluate suitability.

¹⁵ Currently, the majority of leachate is being treated onsite with two enclosed GAC systems apart from #7 Tank Farm Group C and #4 LC Manifold, which at this time is producing the lowest volumes of leachate daily and has shown the lowest constituent levels overall. As a general matter, for tanks in which treatment is not taking place, CCL samples the tanks and then follows the procedures outlined herein following receipt of the initial laboratory report.

5.3 Off-site Transport and Disposal – Hazardous Waste Facilities

For tanks that are shipped off-site as hazardous waste (e.g., leachate is not treated prior to off-site shipment), CCL has contracted with Clean Harbors, Inc. to transport landfill liquid that has been identified as hazardous or potentially hazardous to several of Clean Harbors' facilities to ensure proper disposal of those waste streams. Landfill liquid that has been identified for transport to a Clean Harbors facility is manifested on a hazardous waste manifest in accordance with 22 CCR 66262.20. A one-time LDR notification is also provided to each hazardous waste facility in accordance with 22 CCR 66268.7.

CCL is actively assessing the use of additional facilities to manage hazardous or potentially hazardous leachate or condensate. CCL will also follow the same procedures as set forth in the UAO to obtain EPA's determination of acceptability and provide notice to the relevant state environmental officials for any newly identified facilities.

Other waste streams, described in **Section 4.1**, will be disposed of appropriately. If any spent carbon media or PPE is characterized as hazardous waste, then that waste will be managed as hazardous.

5.4 Off-Site Rule

Pursuant to Paragraph 28.a of the UAO issued by EPA, hazardous substances, pollutants, and contaminants may only be shipped to an off-site facility in compliance with the "Off-Site Rule" (OSR) under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) at 42 U.S.C. § 9621(d)(3) and 40 CFR 300.440. CCL is deemed in compliance with the Off-Site Rule if it obtains a prior determination from EPA that a proposed receiving facility is acceptable under the criteria at 40 CFR 300.440.

In the event CCL needs emergency off-site disposal capacity and is unable to find additional off-site disposal at a facility on the EPA OSR approved facilities list, CCL may seek an emergency exemption from the OSR, 40 CFR 300.440(b), following EPA's "Site-Specific Procedures for Seeking an Emergency Exemption from Off-Site Rule Requirements," as modified, amended, or superseded by EPA from time to time.

In accordance with Paragraph 28.a of the UAO and the OSR, on February 24, 2024, CCL obtained EPA's determination that the Clean Harbors Aragonite Incineration Facility in Tooele County, Utah is acceptable to receive off-site shipments of hazardous or potentially hazardous landfill liquid. CCL can ship approximately one truckload of leachate (approximately 5,000 gallons total) off-site to the Aragonite facility each day, on an as-needed basis.

On February 27, 2024, EPA provided a determination of acceptability for the Clean Harbors Kimball Incineration Facility located in Kimball, Nebraska. CCL can ship approximately four truckloads of hazardous or potentially hazardous landfill liquid (approximately 20,000 gallons total) off-site to the Kimball facility each day, on an as-needed basis.

CCL also obtained EPA's determination of acceptability for the Clean Harbors Deer Park Incineration Facility in La Porte, Texas on February 29, 2024. CCL can ship landfill liquid via rail to the Deer Park facility. CCL has arranged for a local rail car to be available for bulk transportation to the Deer Park facility on an as-needed basis for up to three shipments of hazardous or potentially hazardous landfill liquid per week, consisting of one rail car tanker per shipment. Each rail car tanker has a capacity of approximately 20,000 gallons.

Pursuant to Paragraph 28.b of the UAO, CCL provided written notice to the appropriate Utah, Nebraska, and Texas environmental officials and to EPA of shipments of hazardous or potentially hazardous landfill liquid to the above facilities. Copies of the notice to Utah dated February 26, 2024, Nebraska dated February 27, 2024, and Texas dated February 29, 2024, are attached hereto, respectively, as **Appendices A.16, A.17, and A.18**.

On July 3, 2024, EPA approved the acceptance of waste from CCL under the site-specific emergency exemption procedure to the OSR at the Durham Regional Landfill located in Florence, Arizona, the Clean Harbors Industrial Service Oil Company, Inc. (Clean Harbors ISO) located in Los Angeles, California, and the East Valley Remediation Facility¹⁶ located in Mecca, California. On September 3, 2024, EPA confirmed its approval of the acceptance of waste from CCL under the site-specific emergency exemption procedure to the OSR at the Avalon Environmental Services facility located in Gardena, California. EPA has continued to approve requested extensions of the emergency exemptions for these facilities through the present, and Clean Harbors ISO is now on the EPA's OSR approved facilities list. CCL also sends nonhazardous liquids to the ReWorld facility located in Bayport, Texas and the US Ecology facility located in Beatty, Nevada, both of which are on the OSR list. CCL also continues to seek additional facilities for offsite shipment, and is currently working to ship test loads to two Crystal Clean facilities, one in Bakersfield, California and one in Wyoming, Michigan.

CCL acknowledges that the application of the site-specific emergency exemption to the OSR is subject to the conditions, including dates of expiration, set forth by the On-Scene Coordinators and that approval of an emergency exemption from the OSR does not affect the types or amounts of waste that a facility may receive under its various permits. CCL will ensure that a receiving facility is permitted to receive all waste streams proposed to be disposed of by CCL.

5.5 Waste Shipment Preparation

To initiate shipments of hazardous and non-hazardous waste, CCL personnel (or its contractors) must prepare and provide the following documentation:

- Provide a complete and accurate waste inventory for the waste to be transported off-site.
- Provide waste profile and corresponding analytical report for each type of waste transported off-site.
- If the waste profile has been previously provided, ensure it has been updated as required by the receiving disposal facility.

When a shipment is needed and the above-listed information has been provided to the CCL Compliance Manager, a shipment will be initiated as follows:

- When authorized by the designated representative, the CCL Compliance Manager will contact the disposal contractor and arrange for transportation of the waste off-site.
- The hazardous waste disposal contractor may choose to be onsite the day before the shipment to review paperwork and inspect containers.
- Compliance with pre-transportation requirements at 22 CCR 66262.30 - 66262.33 will be assessed.

All shipments of hazardous or potentially hazardous waste to permitted hazardous waste treatment and disposal facilities will be properly manifested on hazardous waste manifests in accordance with 22 CCR 66262.20 and the hazardous waste manifest requirements at 40 CFR 262.20. CCL measures and records the quantity of leachate sent off-site for disposal and treatment. These records are maintained by CCL and submitted to SCAQMD under SOFA Condition 27(d). These records generally include the associated company name and physical address of the off-site facilities that receive the leachate generated by the landfill.

5.5.1 U.S. Department of Transportation

Prior to transporting or offering hazardous waste for transportation off-site, each shipment is labeled in accordance with applicable Department of Transportation (DOT) regulations (49 CFR 172 Subpart E) as follows:

¹⁶ The East Valley Remediation Facility is approved for disposal of characteristically non-hazardous leachate only. EPA is actively working with the facility regarding acceptance of treated non-hazardous leachate.

- “HAZARDOUS WASTE-State and Federal Law Prohibit Improper Disposal. If found, contact the nearest police or public safety authority, the U.S. Environmental Protection Agency or the California Department of Toxic Substances Control.”
- DOT proper shipping name
- United Nations (UN) or North America (NA) number (49 CFR 172.101)
- Generator’s name and address
- Generator’s EPA ID number
- EPA/State waste code(s)
- Date
- Manifest tracking number

Additionally, each hazardous waste shipment will be labeled in accordance with 49 CFR 172 Subpart D, as follows:

- Weight
- Sequence of manifest pages (e.g., 1 of 3)
- DOT shipping label

Each package of hazardous waste for shipment will be labeled according to the DOT hazard classification for that waste, as follows:

- Hazardous waste that meets the definition of more than one DOT hazard classification must be labeled in accordance with all DOT hazard classifications (e.g., Flammable, Toxic).

5.6 Land Disposal Restrictions

The LDRs are a set of regulations at 40 CFR Part 268 and Title 22 of the CCR, Division 4.5, Article 18, that place certain restrictions on hazardous waste sent to land disposal. These regulations generally require treatment of hazardous wastes prior to land disposal.

The LDR requirements apply to all persons who generate hazardous wastes, as well as owners and operators of hazardous waste treatment, storage, and disposal (TSD) facilities. Depending on constituent concentrations in the waste, some wastes will require treatment to meet LDR treatment standards and some may meet them without further treatment. In addition, the Universal Treatment Standards must be met for Underlying Hazardous Constituents (UHC) that are identified. A UHC evaluation will also be performed for each waste stream identified herein.

When applicable, LDR Notification Forms must accompany the manifest as part of the shipping papers. As discussed above, a one-time LDR notification is provided to each hazardous waste facility CCL is shipping waste to in accordance with 22 CCR 66268.7, and signed by personnel designated by the CCL Compliance Manager.

All LDR paperwork and associated documentation will be retained by CCL as required under applicable regulations.

5.6.1 Process for Making Wastewater vs. Nonwastewater Determinations

Only leachate generated at Group A, Group B, East Perimeter, and North Perimeter has been identified as potentially hazardous. CCL has made the determination that leachate – from Group A, Group B, East Perimeter, and North Perimeter generation points, both before and after treatment – is “nonwastewater” using numerous representative grab samples, consistent with EPA’s *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*” (EPA Publication SW-846), rather than by testing each and every tank of leachate.

For the leachate prior to treatment, CCL obtained one grab sample from each of the relevant tank groups on 7 days, for a total of 21 samples, and had these samples tested for total organic carbon (TOC). The TOC results from

these samples ranged from 19,000 mg/L to 44,000 mg/L (not counting 2 samples for which the laboratory apparently made an error in reporting), which translates to a range of 1.9% to 4.4%. Because all these results are above 1% TOC, they clearly demonstrate that the pre-treatment leachate from these tank groups are nonwastewaters. See 40 CFR 268.2(f) (defining wastewaters as “wastes that contain less than 1% by weight TOC and less than 1% by weight total suspended solids (TSS)”); 40 CFR 268.2(d) (defining nonwastewater as “wastes that do not meet the criteria for wastewaters”); see also 22 CCR 66260.10.

For leachate after treatment, CCL obtained a total of 46 grab samples of the effluent of the GAC treatment units over 6 sampling days, and again had them tested for TOC. All of the 46 TOC results except one were above 10,000 mg/L (1%) TOC, with values up to 31,000 mg/L (3.1%) TOC. These results clearly demonstrate that the post-treatment leachate is generally nonwastewater.

5.6.2 Implications of Any Post-Treatment Leachate Testing as Wastewaters

To the extent that any post-treatment leachate might contain both <1% TOC and <1% TSS, it would clearly qualify as a “wastewater” for LDR purposes, consistent with the LDR definition of wastewater set forth at 40 CFR 268.2(f) of the federal regulations and 22 CCR 66260.10 of the California regulations. In addition, if such “wastewater” post-treatment leachate was still characteristically hazardous, it would be subject to the LDR treatment standards for wastewater.

However, the post-treatment leachate has consistently tested non-hazardous. Under the RCRA regulations, if the (non-hazardous) post-treatment leachate was a wastewater, it would not be subject to any LDR treatment standards (either for wastewaters or for non-wastewaters). The reason is that the change from “non-wastewater” (prior to treatment) to “wastewater” (after treatment) is considered a “change in treatability group” and thus a new point of generation for LDR purposes. See, e.g., 55 Fed. Reg. 22,520, 22,661 (June 1, 1990) (explaining that the LDR rules generally divide the universe of hazardous wastes into wastewater and non-wastewater “treatability groups”); *id.* at 22,544 (“each new treatability group is a new point of generation for a characteristic waste”). EPA has made clear that if the new treatability group is not hazardous at its point of generation, the LDR treatment standards no longer apply:

A change in treatability group for a characteristic treatment residual is a new point of generation for LDR purposes. If the [residual] has undergone a change in treatability group and is no longer characteristic, then it is not a RCRA hazardous waste, and the generator would not need to comply with the LDR requirements in Part 268.¹⁷

In light of the above, if any (non-hazardous) post-treatment leachate did meet the LDR definition of wastewater, it could be placed into a land-based unit without meeting any LDR treatment standards. If CCL nevertheless continued to manage it as if were a nonwastewater (e.g., if CCL failed to recognize that treatment had changed it into a wastewater), CCL would actually be managing the leachate in a more protective manner than required under the regulations. Specifically, in such a case, CCL would continue to require that the post-treatment leachate meet the LDR treatment standards for nonwastewaters before being placed into a land-based unit, even though no LDR standards would actually apply under the regulations (because of the change in treatability group from

¹⁷ See EPA, RCRA Hotline Report (June 2004) (RCRA Online #14718); see also 58 Fed. Reg. 29,860, 29,871 (May 24, 1993) (“for characteristic wastes, each change of treatability group in a treatment train mark[s] a new point of generation for determining if a characteristic waste [i]s prohibited from land disposal”); Letter from James R. Berlow, Director, Hazardous Waste Minimization and Management Division, EPA, to Barton Day, Bryan Cave, LLP (March 21, 1996) (RCRA Online #14207) (“because the sludge generated in your situation would be a different treatability group from the wastewater from which it is generated, it would be considered to be a newly-generated waste that should be evaluated at its point of generation to determine if it is prohibited from land disposal”; thus, “[t]he sludge would be prohibited from land disposal (and hence subject to meeting treatment standards before land disposal) only if it is a hazardous waste at the point it is generated”).

nonwastewater to wastewater, together with the fact that the wastewater would not be hazardous at its point of generation, as discussed above). CCL stresses that this would rarely, if ever, happen, because the current posttreatment leachate has almost always tested above 1% TOC and thus qualifies as a nonwastewater for LDR purposes.

5.6.3 Wastewater or Nonwastewater Calculations

The laboratory reported TOC and TSS results in units of mg/L. For TOC, the results were essentially always well above 10,000 mg/L, or 10 g/L (since 1 g equals 1000 mg), with the one exception noted above for 1 of 46 post-treatment samples. For purposes of converting these results to % by weight, CCL assumed that the leachate (which is greater than 90% water) had the same density as water, namely 1 kg/L. Thus, 10 g/L TOC (well below all but one actual measurement) could be converted to 10 g/kg, or 10 g/1000 g (since 1 kg equals 1000 g). A concentration of 10 g/1000 g equates to 1% by weight (since 100% by weight would be 1000 g/1000 g, 10% would be 100 g/1000 g, and 1% would be 10 g/1000 g).

While the actual density of the leachate could be slightly higher or lower than the density of water, any difference would not change the conclusion that the leachate exceeds 1% TOC by weight and thus qualifies as nonwastewater. The difference would be small, given that the leachate is more than 90% water. Indeed, CCL recently tested a single sample of leachate and measured a specific gravity (density) of 1.032 kg/L. Moreover, even if the density of leachate was 1.5 kg/L (which seems implausibly high, since that is the approximate density of Portland cement), the lowest measured TOC level in untreated leachate – 19,000 mg/L or 19 g/L – would translate to 19 g/1500 g or 1.27% - still above the threshold for nonwastewaters. The same would be true for virtually all of the post-treatment leachate.

5.6.4 Post GAC TSS

As an initial matter, we note that the TSS level in the leachate was not relevant to our determination that the leachate pre-treatment and post-treatment qualifies as nonwastewater, given the TOC test results for these materials. As noted above, under the LDR regulations, wastewaters are defined as “wastes that contain less than 1% by weight TOC and less than 1% by weight TSS.” See 40 CFR 268.2(f); see also 22 CCR 66260.10. Since the TOC levels measured were above 1%, the leachates could not qualify as wastewaters, regardless of the TSS content. Instead, they were nonwastewaters. See 40 CFR 268.2(d) (defining nonwastewater as “wastes that do not meet the criteria for wastewaters”); see also 22 CCR 66260.10.

Notwithstanding the above, Chiquita has performed limited TSS testing on leachate before and after treatment. For example, the 21 samples of pre-treatment leachate from Group A, Group B, East Perimeter, and North Perimeter were also tested to determine their TSS concentration. All of the results were well below 1% TSS, with concentrations ranging from 330 mg/L to 4600 mg/L TSS (0.033% to 0.46%). Based on process knowledge, the TSS concentration after GAC treatment would be expected to remain <1%. Indeed, even though the samples of post-treatment leachate were not tested for TSS levels (because it was unnecessary to do so), some previous samples of the GAC effluent were tested for TSS levels, and the results were well below the 1% by weight threshold (generally below 1000 mg/L or 0.1%).

5.6.5 Sampling Ports

Chiquita aggregates characteristically hazardous wastes in holding tanks prior to centralized treatment. This is done to simplify and improve control over handling of the waste—by reducing complexity, CCL has better control. EPA has long recognized that such aggregation prior to centralized treatment is not impermissible dilution. 55 Fed. Reg. 22520, 22666 (June 1, 1990). CCL conducts sampling prior to treatment directly from the holding tanks. Additionally, CCL takes monthly samples directly from the point of generation.

The treatment process entails pumping from those holding tanks into various filters and then the GAC vessels. Treated liquids (GAC effluent) are then discharged into designated non-hazardous “Treated Water” tanks that do not receive hazardous liquids. These treated water tanks are then sampled to determine treatment efficacy and disposal options. Composite samples are performed on Treated Water tanks that are filled simultaneously (i.e., 2 or 3 tanks are filled at the same moments from the same GAC effluent via a manifold).¹⁸

¹⁸ Composites are used due to lab capacities.

6 PERMITTING

CCL is actively working with multiple regulatory agencies to get appropriate permits or authorization for the continued operation of the treatment including the SCAQMD for air permits, LA Fire through the Certified Unified Program Agency (CUPA) for hazardous waste treatment permits / authorizations, and LA County planning for Land Use approval. The systems and process unit may change as the regulatory agencies work with CCL to meet regulatory requirements.

As explained in a letter submitted to DTSC on CCL's behalf dated February 14, 2024, onsite storage and treatment is being conducted pursuant to the immediate response exemption. See 22 CCR 66264.1(g)(8)(A), 66265.1(e)(11)(A), and 662670.1(c)(3)(A).

On February 16, 2024, CCL also submitted an emergency permit application to DTSC addressing onsite treatment. That emergency permit application was denied by DTSC. CCL is engaged in ongoing discussions with EPA, DTSC, and LA Fire (CUPA) regarding appropriate next steps. Based on these discussions, CCL submitted information to the CUPA regarding the possibility of conducting onsite treatment pursuant to the Conditional Authorization tier of California's tiered hazardous waste permitting program.

CCL is also working to modify its Title V permit to incorporate upgrades and modifications to landfill systems as described herein. Permit No. G43917, A/N 578102 sets forth requirements and conditions to operate CCL's Landfill Gas Collection System, which consists of vertical gas collection wells, a header connecting to the flare facility, horizontal gas collection trenches, and soil vapor extraction wells. Permit No. G66132, A/N 613131 sets forth requirements and conditions to modify, construct, and operate CCL's Landfill Gas Condensate and Leachate Collection/Storage System. The permit includes authorization for five condensate tanks and four leachate tanks varying in capacity.

In October 2023, CCL previously applied to the SCAQMD to modify its Landfill Gas Condensate and Leachate Collection/Storage System permit to include additional clarifier and frac tanks to increase the landfill's liquid storage capacity. However, given the evolving situation at the Landfill and the need for additional tanks and other equipment to accommodate the increase in leachate production, CCL sought further modification of its Title V permit. CCL also submitted an application to include treating hazardous liquid waste in its Landfill Gas Condensate and Leachate Treatment System. The SOFA requires CCL to submit various permit modifications to remain in compliance with applicable permit requirements and Conditions of the SOFA. CCL will continue to update the Title V permit as necessary to reflect the ultimate configuration of the treatment process.

In October 2023, an application was also submitted to SCAQMD on behalf of CCL for a new landfill gas blower and flare system. Based on discussions with SCAQMD, CCL submitted a permit application to modify its flare system to incorporate the combustion of vapor from the tie in of the landfill gas condensate and leachate treatment system as described in Section 2.4. CCL also submitted an application to permit its portable thermal oxidizer.

A permit modification application has also been submitted to the SCAQMD for the Landfill Gas Collection System permit to increase the number of permitted wells in the well field. CCL submitted an application to modify this permit to include the tie in of the landfill gas condensate and leachate treatment system vapor vent lines.

CCL and its consultant, SCS Engineers, continue to have bi-weekly virtual conferences with SCAQMD technical staff to discuss improvements to the leachate and/or landfill gas systems and identify any associated permit modifications that may be required. Additionally, members of the Reaction Committee meet monthly and those discussions include permit modifications that may be required. CCL is also working with the CUPA on a long-term approach for hazardous waste treatment, storage, and disposal activities under the California tiered permitting system's conditional authorization.

CCL is currently preparing to seek Conditional Authorization which allows onsite treatment of non-Resource Conservation and Recovery Act (RCRA) and certain RCRA-exempt wastes under the California Health and Safety Code (HSC) Division 20, Chapter 6.5, Article 9.

6.1 Reporting Requirements

6.1.1 Weekly Reporting

CCL shall provide a weekly verbal report to the Leachate Disposal Unit (LDU) or as otherwise directed by EPA analyzing how CCL's leachate disposal and treatment has performed against the following benchmarks for the preceding period:

1. Whether inventory on any day of the week was 2.6m gallons or more.
 - a. If so, was average inventory for the week 2.6m gallons or more?
 - b. If so, why?
 - c. If so, is CCL concerned about excess inventory? If not, what are mitigating factors CCL is considering?
 - d. If so, has the excess of inventory been addressed?
 - e. If so, what action(s) has/is CCL taking to manage the inventory?
2. Whether excess storage capacity on any day of the week was less than 1.5m gallons.
 - a. If so, was average excess storage capacity for the week less than 1.5m gallons?
 - b. If so, why?
 - c. If so, is CCL concerned about a lack of storage capacity? If not, what are mitigating factors CCL is considering?
 - d. If so, has the lack of excess storage capacity been addressed?
 - e. If so, what action(s) has/is CCL taking to increase available storage?
3. Whether disposal capacity fell below 400,000 gallons on any day of the week.
 - a. If so, why?
 - b. If so, is CCL concerned about a lack of disposal capacity? If not, what are mitigating factors CCL is considering?
 - c. If so, has the lack of disposal capacity been addressed?
 - d. If so, what action(s) has/is CCL taking to increase disposal capacity?
4. Whether extraction on any day of the week was less than 200,000 gallons.
 - a. If so, was average extraction for the week less than 200,000 gallons?
 - b. If so, why?
 - c. If so, is CCL concerned about a lack of extraction? If not, what are mitigating factors CCL is considering?
 - d. If so, has the lack of extraction been addressed?
 - e. If so, what action(s) has/is CCL taking to increase extraction?
5. Discussion of the relative amount of leachate shipped for that week as compared to the amount extracted for the week.
 - a. If the shipments were less than 85% of the extraction, why? Were there particular barriers to shipment?
 - b. If so, is CCL concerned about a lack of shipment? If not, what are mitigating factors CCL is considering?
 - c. If so, has the lack of shipment been addressed?
 - d. If so, what action(s) has/is CCL taking to increase shipment?

The reporting is intended to help the EPA and the LDU better understand whether variability in the metrics are anomalies or indicate trends that are of concern, and whether CCL is taking measures to address any concerns.

6.2 Tank Locations

Under the proposed Conditional Authorization, CCL is planning to construct a tank system at the Landfill. Currently, site preparations include determining how much dirt may be needed to create a level area before constructing the secondary containment and gas system infrastructure relocation.

CCL has taken steps to assess tank system safety and stability and other design elements for one potential location, and is working with the regulators to identify other potential acceptable locations for further assessment. CCL continues to coordinate with the CUPA and pertinent agencies to achieve Conditional Authorization.

CCL continues to undertake the necessary steps to meet applicable tank system requirements (e.g., assessing potential applicability of RCRA air emissions standards). CCL has finalized the RCRA Subpart BB applicability determination and is evaluating the applicability of Subpart CC.

6.3 Compliance with RCRA

CCL has been complying with 40 CFR Part 264/265 Subpart C Standards for Preparedness and Prevention since April 2024. Specifically, CCL purchased and provided the applicable emergency equipment including internal (radios) and external communication devices (phones), fire extinguishers, spill control and decontamination equipment at Tank Farm # 7 and Tank Farm #9 per 22 CCR 66262.252. The emergency equipment is tested and maintained as needed to ensure proper operation per 22 CCR 66262.253. Inspections are completed weekly and maintained electronically. The facility is maintained and operated to minimize possibility of release, fire, or explosion per 66262.251 and has grounded and bonded all of the frac tanks.

CCL developed a Hazardous Waste Management Plan (HWMP) required by HSC 25135 which provides guidance for the proper management of hazardous waste. All contractors and employees, and any other entity operating at CCL are required to abide by this HWMP. CCL maintains a written training plan per 66262.17(a)(7)(D) which is included in the CCL HWMP. CCL also developed a Hazardous Waste Contingency Plan (HWCP) which includes a Quick Reference Guide. The HWCP outlines the measures and actions planned by CCL in the event of an emergency (e.g., fire, explosion, chemical release, etc.) from the ETLF that may pose a threat to human health or the environment. CCL will amend and modify the HWMP and HWCP as needed and as site conditions change with the conditional authorization permit.