

NOVEMBER 15, 2022



MUNICIPALITY OF TOA ALTA OCTOBER 2022 MONTHLY REPORT
Civ. No. 3:21-01087-DRD

N. AYALA
TERRATEK ENGINEERING GROUP, PSC
P.O. Box 367445 San Juan, PR 00936

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I. DISTRIBUTION LIST

DOJ: david.l.gordon@usdoj.gov

EPA: spielmann.lee@epa.gov
plossl.carl@epa.gov

DNER: nildasanchez@drna.pr.gov
mariavrodriguez@drna.pr.gov

MTA: carlos@cwlllegal.com
dbattle@cstlawpr.com
jramirez@amrclaw.com
cagosto674@gmail.com

II. REPORT ORGANIZATION

As part of the USA-MTA Civ. No. 3:21-01087-DRD Stipulation and Preliminary Injunction Order, MTA shall prepare and submit monthly reports regarding the performance of its obligations under this Order until completion of the requirements of Paragraphs 3 through 10 of this Order. Each report shall cover the period ending on the last day of each month. Each report must be sent to DOJ, EPA, and DNER on or before the 15th day of the month following the reporting period. Each monthly report shall include:

- i. description of compliance with each requirement of this Order;
- ii. the volume, acreage and location of the Intermediate Cover that was applied;
- iii. the volume and disposition of leachate and leachate-contaminated stormwater collected;
- iv. results of any sampling analysis performed; and
- v. Notification of any noncompliance with this Order, including a statement describing the noncompliance and its underlying causes, and proposed measures and an implementation schedule to correct the noncompliance.

The monthly report is divided into four sections.

Section 1 presents a summary of the order requirements and the compliance status for each requirement. *Please note that Task ID's are not related to the order assigned paragraphs.*

Section 2 will include detail information or supporting documentation regarding the compliance status of each requirement in need of comprehensive description or status details.

Section 3 is a projection of next month activities.

Section 4 includes all the attachments included with the report.

III. Section 1: SUMMARY

Municipality of Toa Alta Civ. No. 3:21-01087-DRD		
Reporting Period:	October 1 to October 31, 2022	
Reporting Number:	02	
Reporting Official:	Nivia Ayala, PE/TerraTek	
Reporting Date:	11/15/2022	
Description of Compliance with each requirement of the Order		
ID	Requirement	Compliance Status
1	Daily Cover	Daily cover was completed prior to April 30, 2022.
2	Cessation of Waste Disposal	In-Compliance
3	Posting of Signs	In Compliance
4	Intermediate Cover	Intermediate cover was scheduled to start by October 1, 2022. However, MTA is still waiting for DNER funds to acquire specified cover material and contract an independent contractor to perform the required task. After DNER approves, or approves with modifications or conditions, any MTA revised permanent closure plan, and if the approved plan includes a schedule for completion of Intermediate Cover, that schedule shall control. Please see Additional comment for ID 4 item.
5	Maintenance of Cover	Monthly Maintenance for applied daily cover is performed for compliance assurance. Please see Attachment 1 for Inspection reports.
6	Slope Stability	Short Term Controls were completed by May 1. 2022. Diversion works to prevent stormwater runoff on the top deck for entering the North Slope Area and erosion controls. Maintenance is performed monthly. Safety Barrier fencing was still pending installation during the reporting period, even though it has an active Purchase Order the supplier was not able to deliver the materials during the reporting period. Please see additional comments for ID 6 Item.
7	Leachate Management	On October 20, 2022 MTA submitted an Initial Leachate Management Plan for the Toa Alta Municipal Solid Waste Landfill. The document was not a final Leachate Management Plan. However, it is a document that can start the discussion on how to practically achieve the maximum reduction of leachate generation before implementing the final closure of the facility. On our most recent discussion with EPA regarding this matter, we agreed on submitting an Initial Document to start the analysis of the different alternatives or a phase divided plan to get as close as possible to a 90 % reduction. A copy of the document is included as Attachment #2.
8	Stormwater Management	
8a	Short Term Controls	A monthly routine for pest control will be implemented for both North and South Ponds. Catch basins, ditches, swales and channels were inspected weekly, when necessary, cleaned of accumulated debris and eliminate any observed standing/stagnant water. When applicable, catch basins, ditches, swales, and channels were periodically mowed and cleaned.

		The diesel tank secondary containment was inspected weekly, when necessary, cleaned of accumulated debris and eliminate any observed standing/stagnant water. As a complimentary to source reduction a monthly larvicide program will start during next quarter. The larvicide program will be applied at the Sedimentation Ponds and other identified areas with standing water within the Toa Alta Municipal Landfill and its facilities.
8b	Survey of Leachate Seeps	Should be completed by December 1, 2022
8c	Stormwater Management Plan	Should be provided by January 1, 2023
8d	Discharges of Stormwater Not from Pond	N/A
8e	Discharge/Disposal of Pond Liquid	N/A
Additional Requirements		
	The volume, acreage, and location the Intermediate Cover that was applied.	N/A
	The volume and disposition of leachate contaminated stormwater collected.	None
	Results Of Any Sampling Analysis Performed	None
	Notification Of Noncompliance	Safety Barrier fencing was still pending installation during the reporting period, even though it has an active Purchase Order the supplier was not able to deliver the materials during the reporting period.

IV. SECTION 2: DETAIL INFORMATION OR SUPPORTING DOCUMENTATION OF EACH REQUIREMENT IN NEED OF COMPREHENSIVE DESCRIPTION OR STATUS DETAILS

A. COMPLETED REQUIREMENTS

Access:

Access is granted to the United States and the Commonwealth of Puerto Rico, and their employees, representatives and contractors, to conduct the necessary inspections and studies, including and the applicable records review to evaluate existing conditions, following the agreed terms in the Stipulation.

Daily Cover:

Daily Cover at the facility was completed on April 30, 2022. All areas of exposed waste were covered by Daily Cover.

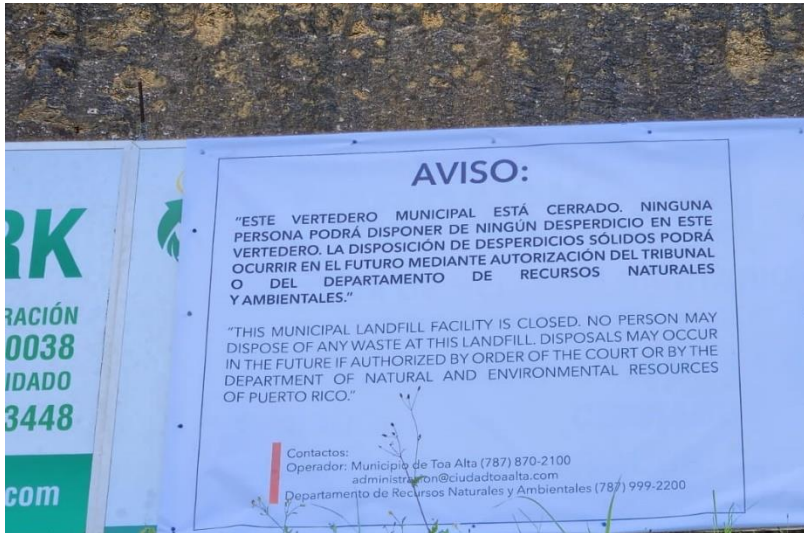


Cessation of Waste Disposal:

The cessation of waste disposal at the facility was completed by March 30, 2022. However, as agreed in the Stipulation, the temporary storage of construction and demolition (C&D) waste, bulk household waste (durable goods such as mattresses, furniture, and appliances), or yard waste (vegetation waste generated by land maintenance) for final disposal at a different landfill is active and been performed on a daily basis.

Posting of Signs:

A sign with a size of four feet by five feet was installed at the landfill entrance. See the attached picture.



B. ID 4: Intermediate Cover

As has been explained numerous times throughout the process, the Municipality needs the funding to perform several of the required tasks, commencing with the Intermediate Cover Task, as it is one of the more costly initial tasks to be performed. The following is a chronological order of the Municipality performed steps to negotiate and acquire the funds to perform this task:

Rural Development:

1. On May 18, 2020, the Municipality submitted a Notice of Intent to Rural Development requesting the award of funds under the Disaster Mitigation Assistance Grant for the landfill.
2. On September 4, 2020, the Municipality amended its request to include the landfill closure, post-closure activities and expansion.
3. On July 16, 2021, the Municipality received a Rural Development email confirming that all the required documents for the appropriate Disaster Mitigation Assistance Grant for the landfill was completed.
4. On August 22, 2022, the Municipality held a Public Hearing related to the grant funds requested.

5. USDA Rural Grant Program, MTA submitted a final Environmental Assessment to: Quiles, Danna - RD, San Juan, PR <danna.quiles@usda.gov>; Cabrera, Jose - RD, San Juan, PR <Jose.Cabrera@usda.gov>; Davila, Sandimary - RD, San Juan, PR <Sandimary.Davila@usda.gov>; Gonzalez, Melvin - RD, SAN JUAN, PR <Melvin.Gonzalez@usda.gov>. The document was submitted on September 30, 2022.
6. As of today, the Rural Development process is still on-going, but has not yet completed.

Department of Natural and Environmental Resources (DNER)

1. The DNER, during the EPA Public Hearing held on February 23, 2022, stated publicly and during the hearing that they would make available to the Municipality the required funds for the appropriate landfill closure.
2. As a result of DNER public comments, a meeting on March 24, 2022, between the Municipality, DNER and La Fortaleza was held to discuss the details related to the funds availability.
3. On March 31, 2022, the Municipality provided the required information by the DNER, including the schedule and cost estimate for said agency to prepare a Memorandum of Understanding (MOU) that would provide the necessary funds to the Municipality for the landfill's closure activities.
4. After continuous inquiries by the Municipality, the DNER on June 10, 2022, finally provided a draft MOU for the funds access. The Municipality issued its comments to the MOU on July 12, 2022.
5. A meeting is scheduled for November 2, 2022, with Puerto Rico Office of Management and Budget, the DNER and MTA to discuss the extent of the DOJ requirements and DNER Closure Plan request. The purpose of the meeting also includes the addition of a transfer station located at the Landfill existing site.
6. As of today, and after significant follow-up efforts with the DNER, they have not responded with the definitive version of the MOU and the availability of funds.

Currently, the Municipality is analyzing the different alternatives at their disposal in order to advance the execution of the required Intermediate Cover tasks.

C. ID 6: Safety Barrier Fencing

Presently, MTA is going over the contracting and finance process to contract the installation of the safety barrier. Materials are already on site. The shortage on the chain supply of these kind of construction materials have a delay of three (3) months. As MTA is required to follow purchasing and finances municipal processes,

D. ID7: Leachate Management Plan

A technical discussion with Mr. Carl Plossl from EPA and Dr. Tim Townsend regarding the possibility of reaching at least a 90% reduction in releases of leachate from the unlined portion of the Landfill was held on October 13, 2022. The discussion included the data and assumptions for the US HELP Model, the required process flow for an effective closure plan execution and the execution of an on-site pilot leachate generation rate assessment will be completed by December 9, 2022. The data generated will be valuable to address the performance of a leachate interception system for the North Slope of the MTA Landfill.

E. ID8a: Hurricane Fiona Debris Management

As part of the Public Assistance Debris Management Guide (FEMA-325) The Federal government may provide grants through the Public Assistance Program to reimburse the response and recovery efforts of an applicant (State and local governments, and certain private non-profit organizations) for residentially declared disasters. To receive supplemental disaster assistance under the Public Assistance Program, applicants must meet FEMA eligibility criteria.

Eligible debris work must be in the public interest, which is defined as work necessary to meet the following:

- Eliminate immediate threats to life, public health and safety;
- Eliminate immediate threats of significant damage to improved public or private property;
- Ensure economic recovery of the affected community to the benefit of the community-at-large; or
- Mitigate the risk to life and property by removing substantially damaged structures and associated appurtenances as needed to convert property acquired through a FEMA hazard mitigation program to uses compatible with open space, recreation, or wetlands management practices.

Debris monitoring procedures should be established and included in the debris management plan for the applicant's financial interest, especially if the applicant has contracted for any component of the debris removal operation. Monitoring debris removal operations achieves two objectives:

- Verifying that the work completed by the contractor is within the contract scope of work
- Providing the required documentation for Public Assistance grant reimbursement

Failure to document eligible work and costs may jeopardize Public Assistance grants. In Federally declared disasters, FEMA periodically validates the applicant’s monitoring efforts to ensure that eligible debris is being removed and processed efficiently.

To make sure MTA does not jeopardize the Public Assistance Grant from FEMA. MTA need to wait for FEMA to quantify the amount of debris removed and after that procedure the debris can be finally disposed at a permitted facility.

From: October 01, 2022 to October 31, 2022

Municipality of Toa Alta	
Department of Transportation and Municipal Publics Works	
Debris Log Toa Alta Municipal Landfill	
DATE	CUBIC YARDS
October 3, 2022	316
October 4, 2022	357
October 5, 2022	307
October 6, 2022	235
October 7, 2022	195
October 11, 2022	178
October 12, 2022	201
October 17, 2022	287
October 18, 2022	212
October 19, 2022	170
October 20, 2022	267
October 21, 2022	240
October 24, 2022	244
October 25, 2022	163
October 26, 2022	270
October 27, 2022	225
October 28, 2022	274
TOTAL	4141

Photos:





V. SECTION 3: PROJECTION OF NEXT MONTH ACTIVITIES

November 2, 2022

Meeting with the Puerto Rico Office of Management and Budget, the DNER and MTA to discuss the extent of the DOJ requirements and DNER Closure Plan request,

November 4, 2022:

Weekly Inspection

November 11, 2022:

Weekly Inspection

November 18, 2022

Weekly Inspection

November 25, 2022

Weekly Inspection

These dates are subject to change.

VI. Section 4: Attachments

Attachment 1: Weekly Inspections

Attachment 2: Initial Leachate Management Plan

ATTACHMENT 1
INSPECTIONS



Monday, October 24, 2022

Toa Alta Landfill Inspection Form

Nombre de la persona que hace la inspeccion Christian Villalta Calderón

Email cristhianvillalta@gmail.com

Fecha Monday, October 24, 2022

Hora 01:00 PM

Condicion del Clima Soleado

Esta la entrada limpia y libre de basura? Si

Foto Entrada



Hay Personal en la caseta de seguridad?

SI

Cuantos camiones han llegado en el dia?

10

Fecha de la ultima verificacion del sistema de manejo de lixiviados Celda Sur?

Monday, October 24, 2022

Horas de operacion de la planta electrica

8

Datos de eventos de lluvia

No hay datos disponibles

Estan las areas verdes limpias y se ha realizado mantenimiento?

NO

Incluir Foto



**Estan los diques limpios y sus
valvulas cerradas con candado?**

SI

Condicion de Cubierta Talud Norte

Excelentes condiciones

Incluir foto



Condicion Operacion Recibo de Escombros

Necesita Limpieza

Tomar foto



Equipos Operando

Ninguno al momento de la inspección

Condicion de medidas de control de erosion y sedimentacion

Buena

Se pueden notar brotes de lixiviado?

NO

Condicion de los caminos internos

Excelentes condiciones

Condicion de areas de desvio de materiales

Está llenA esta area de White Goods!

Tomar Foto de haber condiciones que necesiten mejoras



3. Christian Villalta Calderón

Updated at Oct 28, 2022

Submission Date

Oct 28, 2022

Last Update Date

Oct 28, 2022

Source App



Nombre de la persona que hace la inspeccion

Christian Villalta Calderón

Email

cristhianvillalta@gmail.com

Fecha

Oct 28, 2022



Hora

04:01 PM

Condicion del Clima

Nublado

Esta la entrada limpia y libre de basura?

Si

Foto Entrada



Hay Personal en la caseta de seguridad?

SI

Cuantos camiones han llegado en el dia?

12

Fecha de la ultima verificacion del sistema de manejo de lixiviados Celda Sur?

Oct 28, 2022



Horas de operacion de la planta electrica

8

Datos de eventos de lluvia

No hay registros de lluvia disponible. No se cuenta con pluviometro

Estan las areas verdes limpias y se ha realizado mantenimiento?

SI

Incluir Foto



Estan los diques limpios y sus valvulas cerradas con candado?

SI

Take Photo

Condicion de Cubierta Talud Norte

Excelentes condiciones

Incluir foto



Condicion Operacion Recibo de Escombros

Buena

Tomar foto



Equipos Operando

Una retroexcavadora, una vagoneta y un back hoe.

Condicion de medidas de control de erosion y sedimentacion

Buena

Tomar foto solo si faltan medidas o necesitan mantenimiento

Se pueden notar brotes de lixiviado?

NO

Añadir fotos deal area de brotes visibles

Añadir fotos deal area de brotes visibles

Condicion de los caminos internos

Excelentes condiciones

Condicion de areas de desvio de materiales

Está llenA esta area de White Goods!

Tomar Foto de haber condiciones que necesiten mejoras



Signature

Alfata

DateTime

Scroll to Top

Submission IP

172.58.155.159

Submission ID

5427969189515475556



Friday, November 4, 2022

Toa Alta Landfill Inspection Form

Nombre de la persona que hace la inspeccion Christian Villalta Calderón

Email cristhianvillalta@gmail.com

Fecha Friday, November 4, 2022

Hora 03:09 PM

Condicion del Clima Soleado

Esta la entrada limpia y libre de basura? Si

Foto Entrada



Hay Personal en la caseta de seguridad?

SI

Cuantos camiones han llegado en el dia?

10

Fecha de la ultima verificacion del sistema de manejo de lixiviados Celda Sur?

Friday, November 4, 2022

Horas de operacion de la planta electrica

8

Datos de eventos de lluvia

No hay datos disponibles de lluvia.

Estan las areas verdes limpias y se ha realizado mantenimiento?

SI

Incluir Foto



**Estan los diques limpios y sus
valvulas cerradas con candado?**

SI

Condicion de Cubierta Talud Norte

Excelentes condiciones

Incluir foto



Condicion Operacion Recibo de Escombros

Mucho material acumulado

Tomar foto



Equipos Operando

Retroexcavadora!!

Condicion de medidas de control de erosion y sedimentacion

Buena

Tomar foto solo si faltan medidas o necesitan mantenimiento



Se pueden notar brotes de lixiviado?

SI

**Añadir fotos deal area de brotes
visibles**



Condicion de los caminos internos

Excelentes condiciones

Condicion de areas de desvio de materiales

Está llena esta area de White Goods!

Tomar Foto de haber condiciones que necesiten mejoras



ATTACHMENT 2

OCTOBER 20, 2022



INITIAL LEACHATE MANAGEMENT PLAN

TOA ALTA MUNICIPAL SOLID WASTE LANDFILL

PREPARED BY: NIVIA AYALA, PE
TERRATEK ENGINEERING GROUP, PSC
P.O. BOX 367445 SAN JUAN, PR 00936

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I. INTRODUCTION

As part of the USA-MTA Civ. No. 3:21-01087-DRD Stipulation and Preliminary Injunction Order, MTA shall prepare and submit for approval under Paragraph 11 a proposed Leachate Management Plan. The plan must describe engineered works and procedures that are designed to ensure at least a 90% reduction in releases of leachate from the unlined portion of the Landfill to the subsurface within two years after the Effective Date. (See Attachment #1 for a copy of the requirements) The plan must include engineered works and procedures, as necessary, to minimize the infiltration of leachate to the North Pond and South Pond. The plan must include a schedule, with milestones, for completion of all engineered works within 12 months after plan approval. To determine leachate release reductions, MTA shall use EPA's Hydrologic Evaluation of Landfill Performance ("HELP") Model. The Plan must include documentation and justification of all assumptions used.

II. OBJECTIVES

The objectives of this Leachate Management plan are:

- To control leachate generation within the landfill
- To prevent the contamination of ground and surface waters by leachate escape
- To minimize the infiltration of leachate to the North Pond and South Pond.
- Provide a schedule for completion of all engineered works and procedures using the Closure Plan Schedule as the main guidance.

III. SITE SETTING AND HISTORY

The Toa Alta Municipal Solid Waste Landfill is situated at State Road PR-165, km 8.4, Contorno Ward, Toa Alta. According to the historical records for the Site waste deposition began in at least early 1970s. The Site accepted waste from the neighboring municipalities of Bayamon, Comerio, Corozal and Naranjito. The Site consists of approximately 30.3 acres unlined cell and a 4.4 acre lined cell, referred as the South Cell. The complete site covers approximately 18 hectares (44.47

acres) and the total waste footprint was calculated as 12.26 hectares (30.3 acres). After February 25, 2021, the waste acceptance was limited to 12,500 cubic yards per month. Since April 1, 2022, the Landfill ceased disposing of waste. However, there is a temporary storage of construction and demolition (C&D) waste, bulk household waste (durable goods such as mattresses, furniture, and appliances), or yard waste (vegetation waste generated by land maintenance) in up to four roll-off containers at the Landfill prior to its shipment for final disposal at a different landfill.

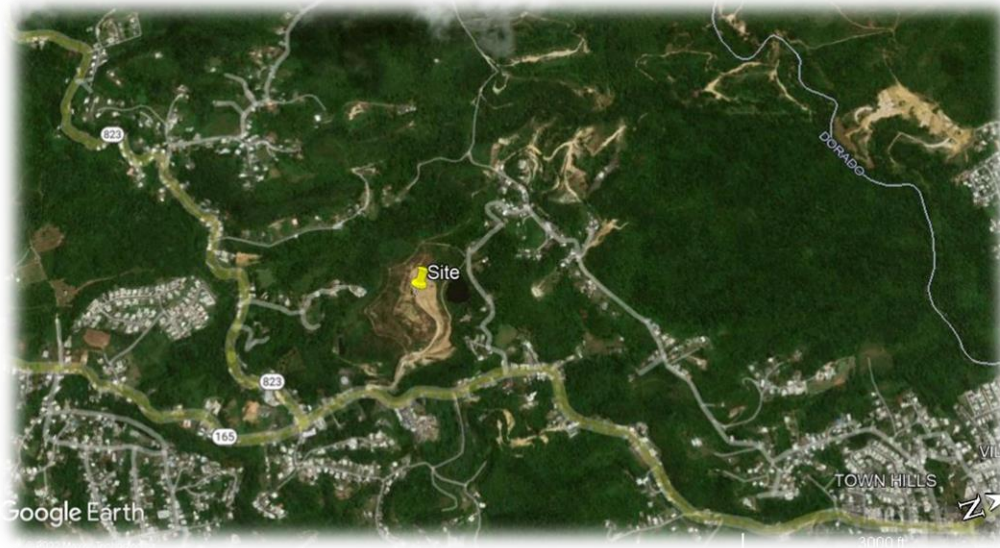


Figure 1 Site Location



Figure 2 Existing Conditions

IV. PERMIT REQUIREMENTS

The Toa Alta Municipal Solid Waste Landfill is regulated under the US Environmental Protection Agency Title 40 of the Code of Federal Regulations (CFR) part 258 and by The Department of Natural and Environmental Resources Regulation for Municipal Solid Waste System dated September 7, 2021. Currently, the Site is subject to Rule 138 for Closure and Post-Closure Criteria. Additionally, the Site is subject to the USA-MTA Civ. No. 3:21-01087-DRD Stipulation and Preliminary Injunction Order.

Every MSWLF is required to prepare a written closure plan that describes the steps necessary to close the unit in accordance with the closure requirements. This plan must include the following information:

- A description of the final cover design and its installation methods and procedures
- An estimate of the largest area of the landfill requiring a final cover
- An estimate of the maximum inventory of waste on site during the landfill's active life
- A schedule for completing all required closure activities

The Closure Plan will present the conditions for the environmental sound closure of this site master plan, should be prepared by the municipality and it should underline the steps and related costs necessary to undertake the closure tasks in order to:

- Minimize the environmental risk related to the existing landfill;
- Prevent illicit waste disposal;
- Investigation works of the sites needed in order to decide on the scope of the closure measures and to assign the budget needed for these measures;
- Risk analysis and identification of the closure measures, including monitoring and after-care plan;
- Closure costs analysis;
- Recover as much as possible the areas for alternative uses;
- Rehabilitate and design the lay-out of the areas for alternative utilizations.

The process flow of a Landfill Final Closure Plan should follow the following strategic path:

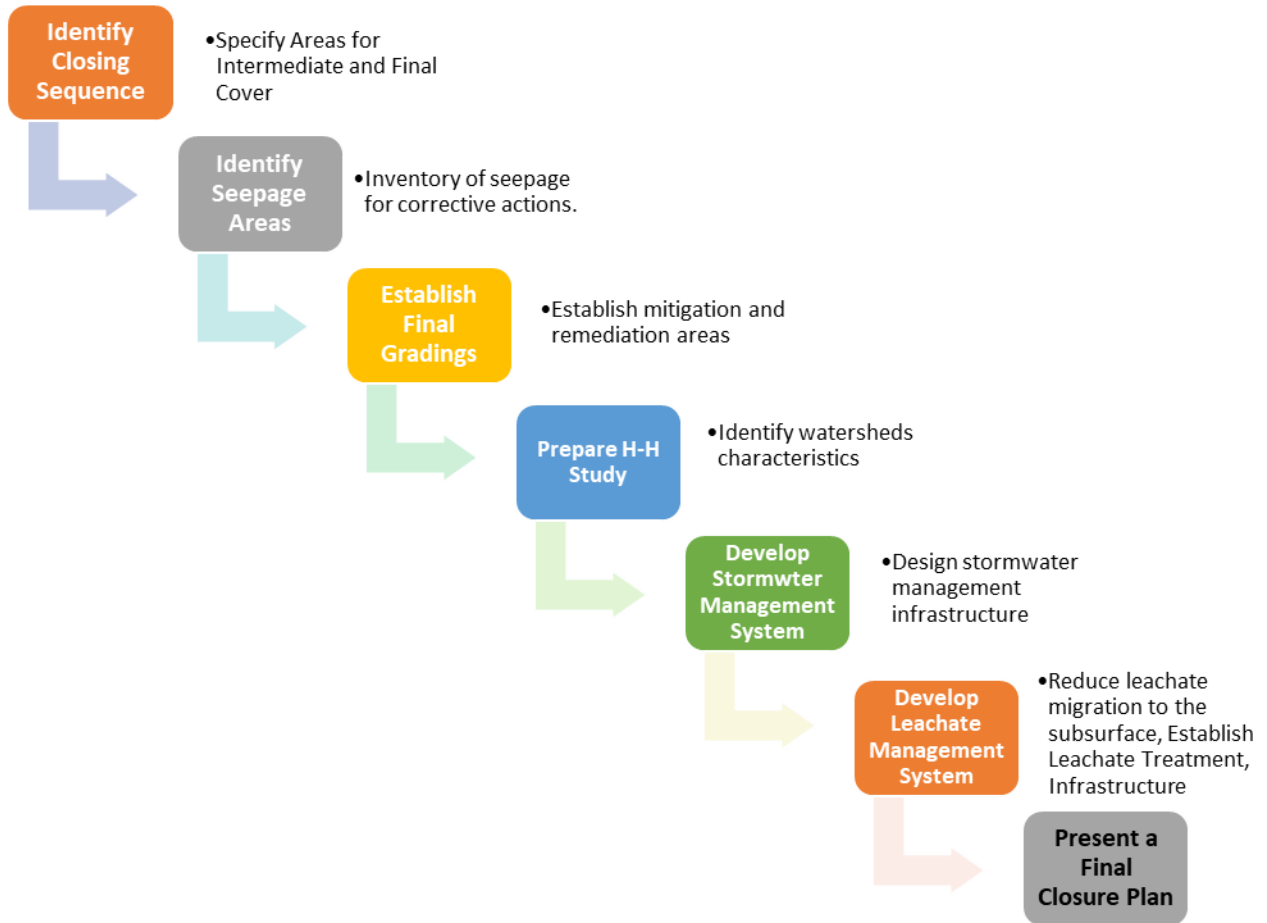


Figure 3 Closure Plan Process Flow

V. PROPOSED LEACHATE MANAGEMENT AND ASSESSMENT

A. Surface Water Management

Effective surface water management across the landfill is required to ensure that the production of leachate is minimized by preventing surface water from entering the waste. Stormwater residence time on the landfill needs to be minimized to limit the volume of leachate produced by infiltration

The landfill surface area will be restored to provide appropriate topography to prevent the accumulation of surface water and encourage surface water to run to the perimeter of the site.

A Stormwater Management Pond should be located, preferably to the South of the Site outside the landfill cell footprint. If there is no way to convey the stormwater away from the adjacent cell, an option is to line the stormwater pond and the adjacent landfill side-slope to keep water out of the landfill. It may also be necessary to operate a temporary automated pump station to remove water from the pond.

It is imperative to limit the run-on/run-in stormwater and consider a perimeter drainage swale to convey water around and away from the landfill. As the landfill extends directly above grade, the perimeter swale allows the surface water running off the side-slopes to maintain velocity while in the swale which should limit infiltration.

Water needs a gradient to runoff from the landfill. The recommendation is to work with a minimum of a 4 percent slope on the top deck to promote runoff of stormwater. The runoff should be directed to lined or protected down chutes on the side-slopes to limit concentrated water flow on unprotected side-slopes, which generally results in deep erosion streamlets that require repair. Swales will be constructed with as much slope as possible, and as many down-chutes as feasible should be constructed to shed water off the waste as quickly as possible into the perimeter swale and/or detention ponds. Additionally, landfill roads will be graded to promote runoff, including grading roads with a crown profile to direct water to roadside swales and other stormwater management features.

B. Intermediate Cover Material Selection and Application

Intermediate cover materials are a landfill defense against leachate generation from precipitation. Regardless of the soil used, rolling the cover soil with a smooth-drum roller dramatically decreases the amount of precipitation that infiltrates into the landfill through the cover.

C. Vegetative Cover Maintenance

Vegetative cover on the landfill's interim or final cover will provide additional uptake of moisture from the cover soils through evapotranspiration, and more importantly keep the soil on the slopes from eroding.

D. Leachate Interception System

To mitigate the leachate outbreaks, MTA proposes to install a leachate interceptor system consisting of a trench at the toe of the northern slope, with a pumping system to convey the leachate to storage tanks. See Attachment # 2 for a full system design.

To calculate the amount of leachate that can be intercepted with the system, we have agreed to construct a pilot project at the toe of northern slope within a trench of at least 10 ft long perforated pipe cover with gravel of 5 ft deep by 2 ft wide.

The following is a drawing of the proposed pilot trench.

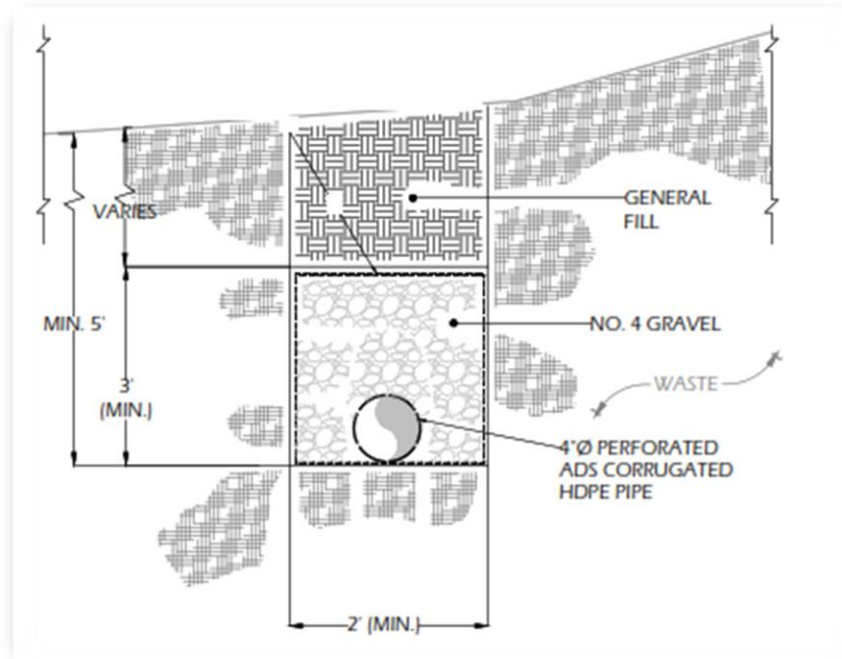


Figure 4 Proposed test Pilot Trench

The following drawing represents the details for the perforated pipe:

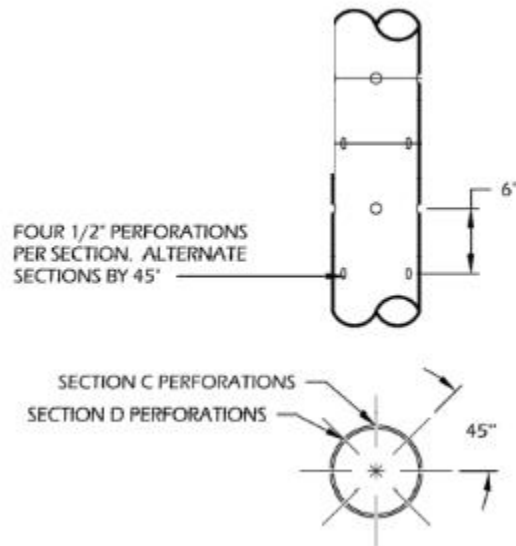


Figure 5 Perforeted Pipe Details

E. Leachate Generation Estimation

1. Baseline Analysis

The USA-MTA Civ. No. 3:21-01087-DRD Stipulation and Preliminary Injunction Order requested a plan that describes engineered works and procedures that are designed to ensure at least a 90% reduction in releases of leachate from the unlined portion of the Landfill to the subsurface. The first step to evaluate the proposed engineered works to achieve the 90% reduction was to establish the baseline with the existing topography of the Site and no intermediate cover.

Modeling of the infiltration through the cover system and waste layers was carried out using the Visual HELP program by Schlumberger Water Services, based upon the original Hydrologic Evaluation of Landfill Performance (HELP) model, developed for the USEPA by Schroeder et.al. 1994.

Existing Cover System

HELP model indicates that approximately 52537 cubic feet or 393000 gallons of leachate generated in 1 year.

With 12 in of Intermediate Cover System (1.0×10^{-5} cm/sec. cover soil on top of existing cover) HELP model indicates that approximately 19448 cubic feet or 145480 gallons of leachate generated in 1 year.

See Attachment #3 for HELP Data.

Based on the above-mentioned results it is possible to achieve a 63% reduction, only by applying intermediate cover to Site footprint.

It is our understanding that to achieve a 90% reduction, we will have to execute the Closure Plan for the Site.

However, we can also introduce the collection of leachates by using the Leachate Interception System already presented to EPA. The complete design of the project is located at Attachment #2. The test pilot will give us a good estimate of the amount of leachate that can be intercepted before gaining access to the surface water at the North Pond. This alternative would not reduce leachate generation but would seek to capture a significant fraction of leachate-impacted North Pond prior to discharge.

But we can calculate the Leachate Collection Line pipe capacity using the Manning's equation along with standard principles of pipe sizing design.

A 4-inch HDPE at a minimum 2% slope has the following capacity:

$$Q = (1.486/n) * A * R^{2/3} * S^{1/2}, \text{ where } n = 0.012 \text{ and } S = 0.02$$

$$Q = (1.486/0.012) * 0.0872 * 0.3011 * 0.1414 = 0.46 \text{ cfs}$$

F. Top Deck Capping

The Site Top Deck has an area of approximately 4 acres, by applying a Styrene Acrylic Liquid Stabilizer after proper grading, we can achieve a temporary impermeability effect prior to final capping of the Site. We can reduce approximately 19397 gallons of leachate generation in 1 year. **Adding a 13% reduction of leachate generation.**

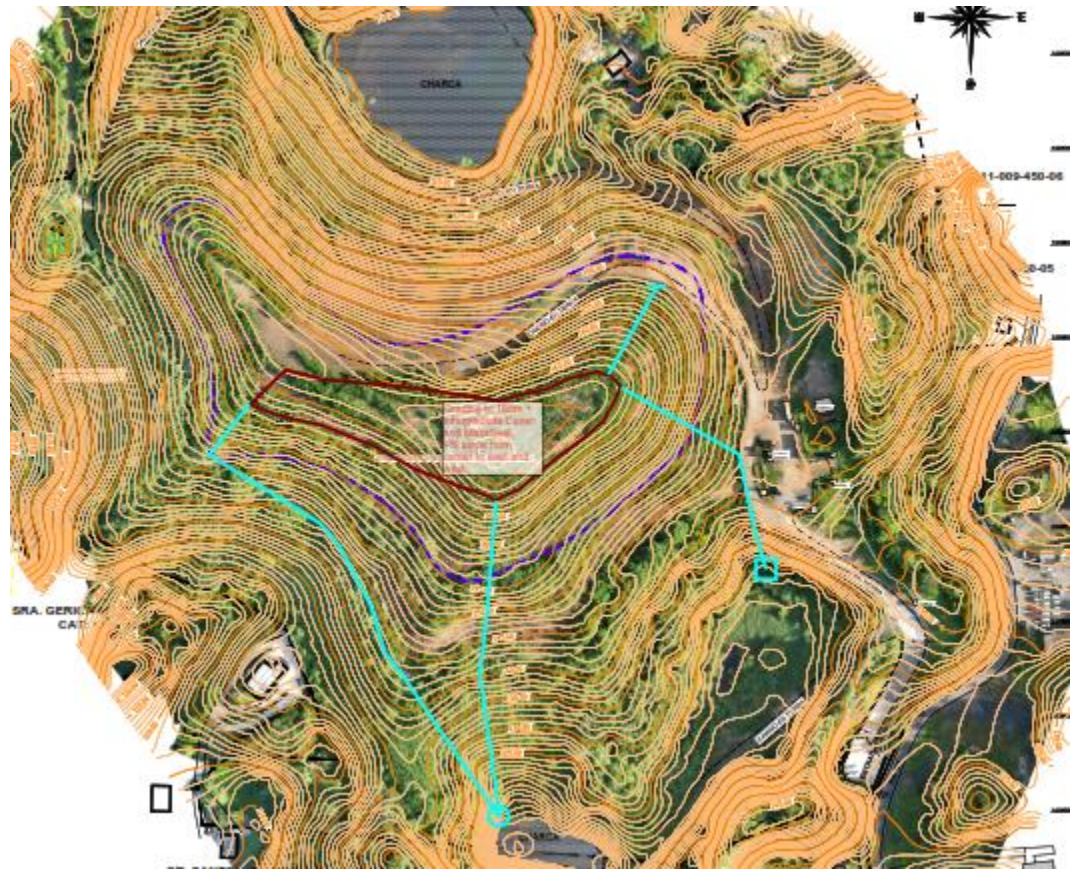


Figure 6 Top Deck and Stormwater Down Chutes

VI. CONCLUSION

Reducing 90% in releases of leachate from the unlined portion of the Landfill may only be achieved by executing the final closure of the facility. This document is not a final Leachate Management Plan. However, it is a document that can start the discussion on how to practically achieve the maximum reduction of leachate generation before implementing the final closure of the facility. On our most recent discussion with EPA regarding this

matter, we agreed on submitting an Initial Document to start the analysis of the different alternatives or a phase divided plan to get as close as possible to a 90 % reduction. We recommend an analysis of this document within the next four (4) weeks.

ATTACHMENT 1

**UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF PUERTO RICO**

UNITED STATES OF AMERICA,

Plaintiff,

v.

MUNICIPALITY OF TOA ALTA, PUERTO RICO,

Defendant.

Civ. No. 3:21-01087-DRD

STIPULATION AND PRELIMINARY INJUNCTION ORDER

WHEREAS, on February 25, 2021, the United States filed a complaint in this action alleging that certain conditions at the Toa Alta Municipal Solid Waste Landfill constitute an imminent and substantial endangerment to human health and the environment under Section 7003 of the Resource Conservation and Recovery Act (“RCRA”), 42 U.S.C. § 6973.

WHEREAS, on July 15, 2021, the United States filed a motion requesting a preliminary injunction and a memorandum of law in support thereof.

WHEREAS, on July 30, 2021, the Municipality of Toa Alta (“MTA”) filed a motion and memorandum of law in opposition to the United States’ request for a preliminary injunction.

WHEREAS, on August 25, 2021, the United States filed an amended motion requesting a preliminary injunction and a memorandum of law in support thereof.

WHEREAS, on January 12, 2022, the Court dismissed the United States’ motion and MTA’s opposition without prejudice to the United States refiling its motion and MTA refiling its opposition at a later time.

WHEREAS, MTA does not admit that conditions at the Landfill constitute an imminent and substantial endangerment to human health and the environment under Section 7003 of RCRA.

WHEREAS, the intent of the United States is that once a revised permanent closure plan has been submitted by MTA and approved by DNER, it will be the responsibility of DNER to oversee the implementation of the engineered works and other elements of the approved closure plan by MTA.

WHEREAS, the Parties recognize, and the Court by approving this Stipulation finds, that

this Stipulation has been negotiated by the Parties in good faith, that implementation of this Stipulation will avoid unnecessary litigation between the Parties, and that this Stipulation is fair, reasonable, in the public interest, and consistent with RCRA.

NOW, THEREFORE, it is hereby ORDERED as follows:

1. Definitions

- a. "Commonwealth" means the Commonwealth of Puerto Rico.
- b. "Daily Cover" means the application of earthen material over solid waste and the compacting of such earthen material to a thickness of at least six inches.
- c. "Discharge Point" or "Outfall" means the location where non-contaminated stormwater is conveyed and discharged from the Landfill into a receiving water of the United States, either directly or through a separate storm sewer system.
- d. "DNER" means the Department of Natural and Environmental Resources of Puerto Rico.
- e. "Order" means this Stipulation and Preliminary Injunction Order.
- f. The "Effective Date" of this Order is the date that the Court's approval of this Order is entered on the Court's docket. The Order has no effect until it is approved and entered by the Court.
- g. "Intermediate Cover" means the placing and compacting of earthen material to a compacted thickness of at least 12 inches over Daily Cover.
- h. The "Landfill" means the Toa Alta Municipal Solid Waste Landfill and areas with any ancillary operations and facilities related to the Landfill under MTA's control.
- i. "Leachate" means a liquid that has passed through or emerged from solid waste and contains soluble, suspended, or miscible materials removed from such waste.
- j. "North Slope Area" means the area of the Landfill shown in Appendix A.
- k. "NPDES Permit" means National Pollutant Discharge Elimination System program permit issued under Section 402 of the Clean Water Act, 33 U.S.C. § 1342, and its implementing regulations.
- l. "Paragraph" means a paragraph of this Order.
- m. "Southeast Cell" means the approximately 4.4-acre portion of the Landfill under which there is a liner.

2. **Access.** Effective immediately, MTA shall provide the United States and the Commonwealth of Puerto Rico, and their employees, representatives and contractors, with immediate, unimpeded access to the Landfill to conduct inspections, land surveys, monitoring and sampling (including installation of monitoring and sampling equipment, the taking of borings and installation of wells), and review of records to evaluate environmental conditions (*i.e.*, air, soil, groundwater, surface runoff including leachate) at or related to the Landfill and associated operations, compliance with federal and Commonwealth law, and compliance with this Order. The United States will provide MTA at least 30 days advance notice regarding any physical interventions, including but not limited to borings and well installations, including a summary of methods and protocols to be used during such activities. For purposes of the preceding sentence, “physical interventions:” (i) includes borings and well installations made with powered equipment; and (ii) does not include routine liquid sampling, soil grab sampling, soil samples obtained with a hand auger, and samples of liquids being pumped by MTA from the Southeast Cell and liquids from the ponds being pumped or stored. The MTA has the right to be present during any records review, sampling, borings, and well installations, and to take split samples. As such, if EPA requires MTA to commence operating equipment that is not already in operation, in order to take routine samples from the Outfalls where such equipment discharges into (e.g., the Southeast Cell leachate pump or any pump operating at the North and South Ponds), then EPA shall inform MTA no later than during the day prior to the sampling event to allow for MTA participation. If the MTA is not present when EPA conducts sampling, EPA will notify MTA that such sampling has taken place and provide MTA with split samples provided MTA makes timely and reasonable arrangements to receive such samples.

3. **Daily Cover.** MTA shall by April 30, 2022, ensure that all areas of exposed waste are covered by Daily Cover.

4. **Cessation of Waste Disposal.** Subject to Paragraph 17, MTA shall cease disposing of any waste at the Landfill by April 1, 2022. For purposes of the preceding sentence, the temporary storage of construction and demolition (C&D) waste, bulk household waste (durable goods such as mattresses, furniture and appliances), or yard waste (vegetation waste generated by land maintenance) in up to four roll-off containers at the Landfill prior to its shipment for final disposal at a different landfill does not constitute “disposal.”

5. **Posting of Signs.** Within 15 days after the deadline for cessation of waste disposal under Paragraph 4, MTA shall install and thereafter maintain a four-foot by five-foot sign at the Landfill entrances, including the main and northwest entrances, stating in large lettering: “ESTE VERTEDERO MUNICIPAL ESTÁ CERRADO. NINGUNA PERSONA PODRÁ DISPONER DE NINGÚN DESPERDICIO EN ESTE VERTEDERO. LA DISPOSICIÓN DE DESPERDICIOS SÓLIDOS PODRÁ OCURRIR EN EL FUTURO MEDIANTE AUTORIZACIÓN DEL TRIBUNAL O DEL DEPARTAMENTO DE RECURSOS NATURALES Y AMBIENTALES.” and “THIS MUNICIPAL LANDFILL FACILITY IS CLOSED. NO PERSON MAY DISPOSE OF ANY WASTE AT THIS LANDFILL. DISPOSALS MAY OCCUR IN THE FUTURE IF AUTHORIZED BY ORDER OF THE COURT OR BY THE DEPARTMENT OF NATURAL AND ENVIRONMENTAL RESOURCES OF PUERTO RICO.” The sign must also set forth the address of EPA’s Toa Alta webpage, and points of contact for MTA, DNER, and the landfill operator. If MTA is authorized

to dispose of additional waste at the Landfill under one or more conditions described in a reservation under Paragraph 17, MTA may, after 15 days advance notice to EPA, make appropriate temporary modifications to the signs for the period in which additional waste placement is allowed.

6. Intermediate Cover.

a. MTA shall by October 1, 2022, commence to apply Intermediate Cover (including any necessary grading and regrading) at the Landfill. All installed Intermediate Cover must, through a combination of soil selection and compaction, be designed to achieve a saturated hydraulic conductivity no greater than 1.0×10^{-4} centimeters per second (cm/s). Except as provided in the next sentence, MTA shall apply Intermediate Cover at the rate of one acre per month period during the first year, and two acres per month thereafter until the entire Landfill has been covered. After DNER approves, or approves with modifications or conditions, any MTA revised permanent closure plan, and if the approved plan includes a schedule for completion of Intermediate Cover, that schedule shall control.

b. If MTA can demonstrate in a plan submitted for approval under Paragraph 11 that one or more areas of the Landfill already has sufficient soil cover and vegetation that, through a combination of thickness, low permeability and evapotranspiration, replicates or improves upon the expected stormwater infiltration rate of daily and intermediate cover, then MTA is not required to apply Intermediate Cover in such areas.

7. Maintenance of Cover. MTA shall monitor all Daily Cover and Intermediate Cover for integrity, including soil erosion, and for evidence of leachate seepage, at least once every two weeks, and within three days after each rainfall event that includes one inch or more of rainfall within a 24-hour period, but not more than once during any seven-day period. Following each monitoring event, MTA shall take corrective action within three days, to maintain a minimum of six inches of Daily Cover and a minimum of 12 inches of Intermediate Cover and to apply additional soil cover and implement other measures as needed to contain leachate seeps within the waste mass. MTA shall maintain on site for EPA inspection records of: (a) each rainfall event of one inch or more within a 24-hour period measured by a pluviometer at the Landfill; (b) each monitoring event; (c) all integrity or erosion problems observed; and (d) all corrective actions taken.

8. Slope Stability

a. **Short Term Controls.** MTA shall by May 1, 2022, complete construction of, and maintain, diversion works to prevent stormwater runoff on the top deck from entering the North Slope Area and erosion controls (*e.g.*, benches, berms, chutes, silt fences, velocity dissipation) for the diverted stormwater. The diversion works and erosion controls must be constructed in accordance with Appendix B and considering the existing stormwater runoff direction.

b. MTA shall by May 1, 2022, install safety barrier fencing and signage around the North Slope Area, and thereafter maintain such fencing and signage. The safety barrier and signage around the North Slope can be temporarily removed during any work to enhance slope stability.

c. MTA shall by May 1, 2022, update its health and safety program for the Landfill to include sufficient worker protective measures regarding work to be performed on all Landfill slopes and the North Pond and South Pond. The updated health and safety program must be certified by a responsible official of MTA authorized to provide such certifications. Thereafter, MTA shall take all reasonable steps to ensure that the health and safety program is implemented.

9. **Leachate Management**

a. **Leachate Management Plan.** MTA shall by October 1, 2022 submit for approval under Paragraph 11 a proposed Leachate Management Plan. The plan must describe engineered works and procedures that are designed to ensure at least a 90% reduction in releases of leachate from the unlined portion of the Landfill to the subsurface within two years after the Effective Date. The plan must include engineered works and procedures, as necessary, to minimize the infiltration of leachate to the North Pond and South Pond. The plan must include a schedule, with milestones, for completion of all engineered works within 12 months after plan approval. To determine leachate release reductions, MTA shall use EPA's Hydrologic Evaluation of Landfill Performance ("HELP") Model. The Plan must include documentation and justification of all assumptions used.

b. **Management of Leachate Collected from Landfill.** Commencing by October 1, 2022, all leachate and all other liquids that are subject to this Paragraph must be transported to a wastewater treatment plant lawfully permitted to receive the leachate and authorized to discharge under Section 402 of the Clean Water Act (*e.g.*, a Puerto Rico Aqueduct and Sewer Authority publicly-owned treatment works facility), or an on-site wastewater treatment process. No leachate or bulk liquids may be disposed of onto or into the waste mass at the Landfill, including a process known as "leachate recirculation." MTA's ability to comply with this paragraph 9.b depends on third parties, *i.e.*, haulers with capacity to haul and dispose of MTA's leachate and permitting authorities such as the Puerto Rico Aqueduct and Sewer Authority. MTA agrees to act in good faith to perform the necessary efforts to meet all applicable requirements and to obtain the necessary permits to comply with this paragraph.

10. **Stormwater Management**

a. **Short Term Controls.** MTA shall by May 1, 2022, commence: (a) to control mosquitoes (*e.g.* with larvicides) in standing water, and (b) to employ soil erosion control techniques such as sod, mulching and matting, temporary check dams, filter fences, berms, and straw bales.

b. **Survey of Leachate Seeps.** MTA shall by December 1, 2022, complete a physical survey to identify all leachate seeps that affect stormwater that flows off-site. MTA shall by January 1, 2023, submit the survey to EPA, including a report identifying which of the leachate seeps found has the potential to affect stormwater that flows off site.

c. **Stormwater Management Plan.** MTA shall by January 1, 2023, submit for approval under Paragraph 11 a proposed Stormwater Management Plan. The plan must describe engineered controls and procedures that are designed to minimize infiltration of stormwater into the waste mass, minimize contact between stormwater runoff and leachate (to minimize the quantity of leachate-contaminated stormwater) and provide for irrigation sufficient to support and sustain existing flora in, around, and downstream from the Landfill. The plan must include: (1) measures (*e.g.*, berms, chutes, channels, velocity dissipators) to rapidly convey stormwater from the Landfill surface to appropriate management areas (*e.g.*, detention ponds and Discharge Points); (2) measures to significantly reduce the contamination of stormwater with leachate including measures to address the leachate seeps identified in the report described in Paragraph 10.b; (3) controls to minimize erosion of soils on the landfill surface; (4) measures to minimize the infiltration of leachate and stormwater contaminated with leachate from the North Pond and South Pond into the groundwater; (5) measures, including the applications of larvicides, to control mosquitoes in standing water; (6) measures, including periodic sampling and analysis consistent with the parameters in Appendix C, to ensure that all discharges of stormwater into the environment do not exceed the Appendix C pollutant criteria; and (7) proposed locations for sampling. The plan shall include a schedule, with milestones, for completion of construction and commencement of operation of the stormwater measures within one and a half years after approval of the Stormwater Management Plan.

d. **Discharges of Stormwater Not from Ponds.** If during the first year after approval of the Stormwater Management Plan, any sampling result in accordance with Paragraph 10.c(6) shows an exceedance of any maximum level for a parameter in Table 1, MTA shall promptly implement additional measures to reduce contact of stormwater with leachate or the landfill mass. If during the second year after approval of the Stormwater Management Plan, the average of the latest and previous three quarterly sampling results shows an exceedance of any parameter in Table 1, MTA shall within 30 days submit a plan for approval under Paragraph 11 which describes additional measures to reduce contact of stormwater with leachate or the landfill mass. At any time after the Effective Date, MTA or its agents become aware, through incidental observations, cover inspections, or notification by EPA or by third parties, of visible leachate seeps, MTA shall promptly implement additional measures as necessary to prevent any offsite leachate discharge.

e. **Discharge/Disposal of Pond Liquid.** MTA shall prepare for review and approval by EPA a plan to characterize the liquid and sediment columns at the North Pond and South Pond, including activities for sampling and laboratory analysis of the liquid and sediment columns from each pond. MTA shall include in the plan a Quality Assurance Project Plan for monitoring and laboratory analysis of the liquid samples to determine the portions, if

any, of the liquid in each pond that is stormwater that has not mixed with leachate. If EPA agrees, in its sole discretion, that one or more portions of the liquid in each pond is stormwater that has not mixed with leachate, MTA may discharge the liquid in such portions to an existing separate storm sewer system or to a surface water in accordance with the applicable requirements of an NPDES permit issued to MTA. MTA has the responsibility to obtain coverage under the applicable NPDES Permit prior to any discharge into a separate storm sewer system and/or the NPDES permit if a direct discharge is proposed to a water of the United States. Any liquid in the ponds that has not been approved for discharge under an NPDES permit must be disposed of as leachate in accordance with Paragraph 9.b. If a direct stormwater discharge from the North Pond and/or the South Pond into a water of the United States is proposed, the MTA shall establish an underground pipeline(s) from the Landfill into the Discharge Point, which shall include flow velocity dissipation structures. MTA shall install and thereafter maintain a four-foot by five-foot sign at each Discharge Point, stating in large lettering: "PRECAUTION: PUNTO DE DESCARGA DE AGUAS DE ESCORRENTÍA PROVENIENTES DE LA CHARCA NORTE Y LA CHARCA SUR UBICADAS EN EL VERTEDERO MUNICIPAL DE TOA ALTA." and "CAUTION: DISCHARGE POINT OF STORMWATER FROM THE NORTH POND AND SOUTH POND LOCATED AT THE TOA ALTA MUNICIPAL LANDFILL."

11. **Approval of Plans.** MTA shall submit any plan whose approval is subject to this paragraph to EPA. After review of such plan, EPA shall: (a) approve the proposed plan; (b) request revisions to the proposed plan; or (c) disapprove the proposed plan. If EPA requires revisions, EPA will provide a reasonable deadline for the resubmission, and MTA shall submit the revised plan by the required deadline. If EPA approves the plan or revised plan, subject to Paragraph 12, MTA shall implement the work in accordance with the EPA-approved plan/revised plan and schedule. If, absent exigent circumstances, EPA does not approve the plan/revised plan within 90 days of proof of submittal, then either party may initiate dispute resolution by filing their proposed plan with the Court. The other party shall submit a response in accordance with local rules. MTA shall implement the work in accordance with the Court's resolution of the dispute. If any delay in approval or disapproval of a plan or any delay in Court resolution of a disputed plan will cause delays in completion of the requirements under a related, previously approved plan, MTA may submit a revised schedule for the related plan(s), which is subject to approval under this Paragraph. MTA must send DNER a copy of each approved plan within 15 days after EPA's approval of the plan.

12. If the schedules for construction and operation of the engineered works for leachate and stormwater management that are contained in the revised permanent closure plan approved by DNER differ from the schedules contained in the EPA-approved leachate management plan and stormwater management plan under Paragraphs 9 and 10 above, the schedules in the approved closure plan shall control.

13. **Good Engineering Practices.** MTA shall perform all work required by this Order in accordance with Good Engineering Practices under the direction and certification of a professional engineer experienced in landfill design and operation. Good Engineering Practices means proven and generally accepted engineering methods and procedures that provide for

appropriate, safe, cost-effective (*i.e.*, employing reasonable financial considerations consistent with the requirements of this Order), and well-documented solutions. Professional Engineer means an engineer either licensed by the Commonwealth or otherwise permitted to practice engineering in the Commonwealth. Any plan by MTA addressing grading or engineering works must be approved and certified by an engineer licensed by the Commonwealth of Puerto Rico. The Leachate Management Plan under Paragraph 9 must be prepared, certified, and stamped by a Professional Engineer experienced in using EPA's HELP model and in leachate management techniques. The Stormwater Plan under Paragraph 10 must be prepared, certified, and stamped by a Professional Engineer experienced in stormwater management system design and construction, after consultation with a professional hydrologist.

14. Reporting

a. MTA shall prepare and submit monthly reports regarding the performance of its obligations under this Order until completion of the requirements of Paragraphs 3 through 10 of this Order. Each report shall cover the period ending on the last day of each month. Each report must be sent to DOJ, EPA, and DNER on or before the 15th day of the month following the reporting period. Each monthly report shall include:

- i. description of compliance with each requirement of this Order;
- ii. the volume, acreage and location of the Intermediate Cover that was applied;
- iii. the volume and disposition of leachate and leachate-contaminated stormwater collected;
- iv. results of any sampling analysis performed; and
- v. notification of any noncompliance with this Order, including a statement describing the noncompliance and its underlying causes, and proposed measures and an implementation schedule to correct the noncompliance.

b. MTA shall correct any noncompliance with this Order that it detects or that it is notified of by the United States within 15 days after detection or notification, provided, however, that any failure to apply daily cover or to maintain short term slope stability controls must be corrected within one day. The United States may submit to the Court any Monthly Report that documents any noncompliance with this Order.

15. Community Involvement.

a. EPA and DNER may publish copies of the Leachate Management Plan, Stormwater Management Plan, and Reports submitted by MTA under Paragraphs 9, 10, and 14 on their respective websites.

b. If EPA or DNER schedules any public meeting or community meeting regarding the Landfill, MTA shall, upon request by EPA or DNER, ensure that a knowledgeable official attends the meeting, and is available to answer questions.

16. **Notices.** Whenever a plan, notice, report or other deliverable is required to be sent under this Order it shall be sent via email in PDF format as follows:

As to DOJ:	David Gordon Senior Counsel david.l.gordon@usdoj.gov
As to EPA:	Lee Spielmann Assistant Regional Counsel spielmann.lee@epa.gov
	Carl Plossl Environmental Engineer & Enforcement Officer plossl.carl@epa.gov
As DNER:	Nilda del Mar Sanchez DNER Counsel nildasanchez@drna.pr.gov
	María V. Rodriguez DNER (Land Pollution Area) mariavrodriguez@drna.pr.gov
As to MTA:	Carlos López Freytes CWL Legal Services, P.S.C. carlos@cwlllegal.com
	Diana Batlle-Barasorda Casillas Santiago Torres, LLC dbatlle@cstlawpr.com
	Jose L. Ramirez-Coll Antonelli Montalvo & Ramirez-Coll jramirez@amrclaw.com

17. **Reservations**

a. Nothing in this Order prevents MTA from filing applications for applicable permits and authorizations from the relevant federal government and Commonwealth agencies related to the Landfill.

b. Nothing in this Order prevents MTA from seeking approval from EPA of a change in the schedule for completion of Intermediate Cover or the engineered works for leachate management or stormwater management, after MTA submits a revised permanent closure plan to DNER and before the plan is approved by DNER, if the schedule change sought by MTA is consistent with the submitted closure plan.

c. Nothing in this Order affects any obligations by MTA to comply with obligations arising from the complaint filed by DNER on September 1, 2021, in case number 21 189-OA, as amended (“DNER Complaint”). This Order does not affect any right of MTA to assert in the DNER administrative proceeding that any relief sought in that proceeding is precluded by this Order and any authority of DNER to oppose any such assertions by MTA.

d. This Order does not affect any waste disposal at the Landfill that may be allowed or required as part of a revised permanent closure plan for the Landfill that is prepared in accordance with Commonwealth regulations and that is approved by DNER before any such disposal.

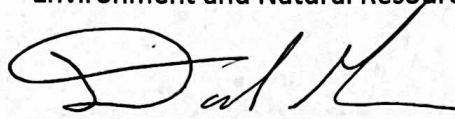
e. The United States reserves its claims of imminent and substantial endangerment regarding releases of leachate from the Southeast Cell and MTA reserves all defenses and claims, including but not limited to counterclaims and third-party claims, regarding such claims by the United States.

f. Nothing in this Stipulation and Order limits the United States from asserting in this action or in a separate action that any conditions at the Landfill present an imminent and substantial endangerment subject to Section 7003 of RCRA. Nothing in this Stipulation and Order limits any right of the MTA to assert in this action or in a separate action any defense, including but not limited to lack of jurisdiction, against any claim asserted under Section 7003 of RCRA by the United States.

**FOR THE UNITED STATES ON BEHALF OF THE U.S.
ENVIRONMENTAL PROTECTION AGENCY:**

TODD KIM
Assistant Attorney General
U.S. Department of Justice
Environment and Natural Resources Division

8/8/22
Dated



DAVID L. GORDON
Senior Counsel
U.S. Department of Justice
Environment and Natural Resources Division
Environmental Enforcement Section
Washington, D.C. 20044-7611

W. STEPHEN MULDROW
United States Attorney
District of Puerto Rico

CARMEN MARQUEZ
Assistant United States Attorney
United States Attorney's Office
District of Puerto Rico
Torre Chardon Suite 1201
350 Carlos Chardon Avenue
San Juan, PR 00918

OF COUNSEL:

LEE A. SPIELMANN
Assistant Regional Counsel
U.S. Environmental Protection Agency, Region 2
290 Broadway
New York, New York 10007-1866

U.S. v. Municipality of Toa Alta, 2:21-01087, Stipulation and Preliminary Injunction Order

FOR THE MUNICIPALITY OF TOA ALTA, PUERTO RICO:



Dated

CLEMENTE AGOSTO
Mayor
Municipality of Toa Alta, Puerto Rico

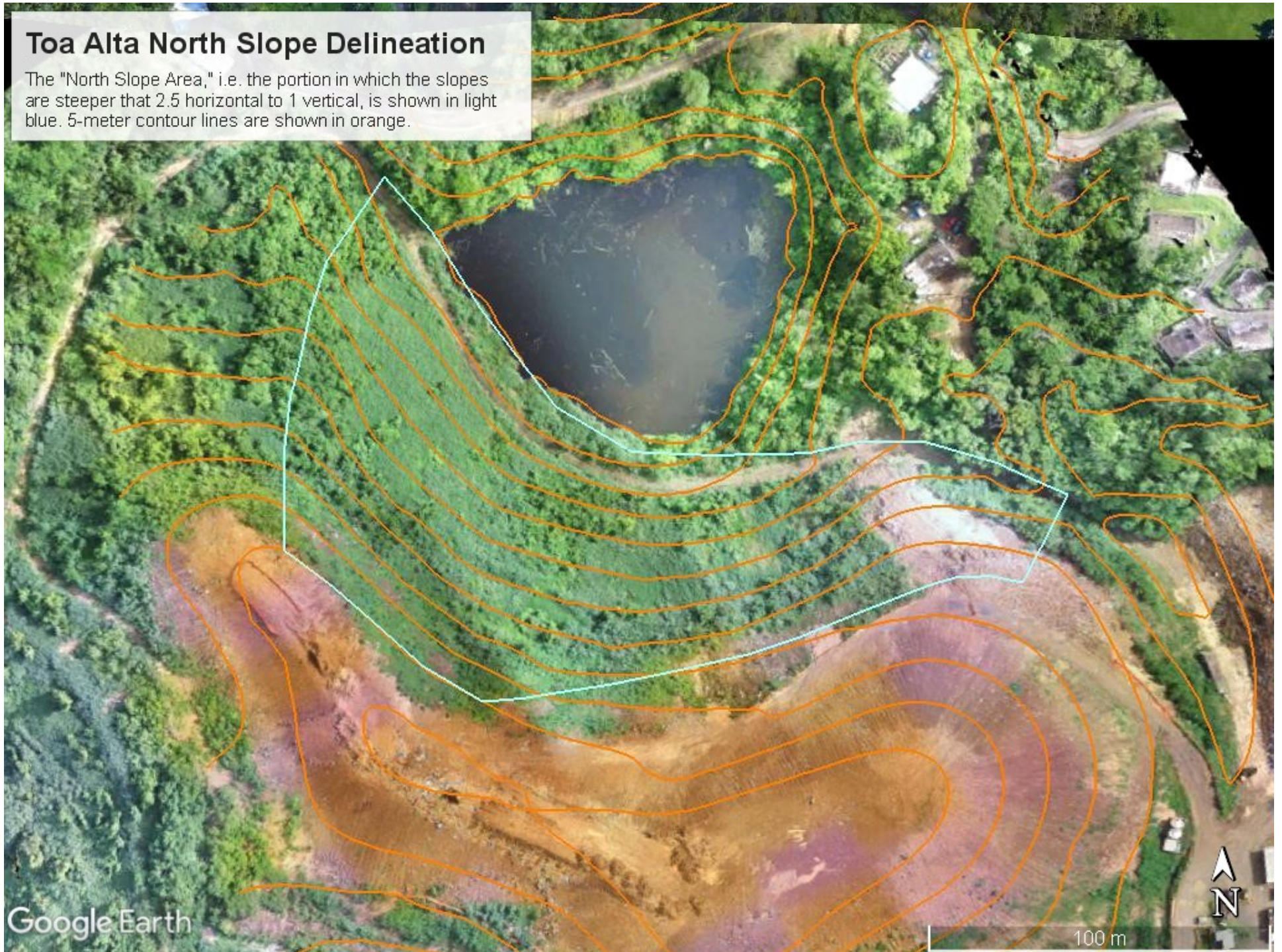
IT IS SO ORDERED:

Dated

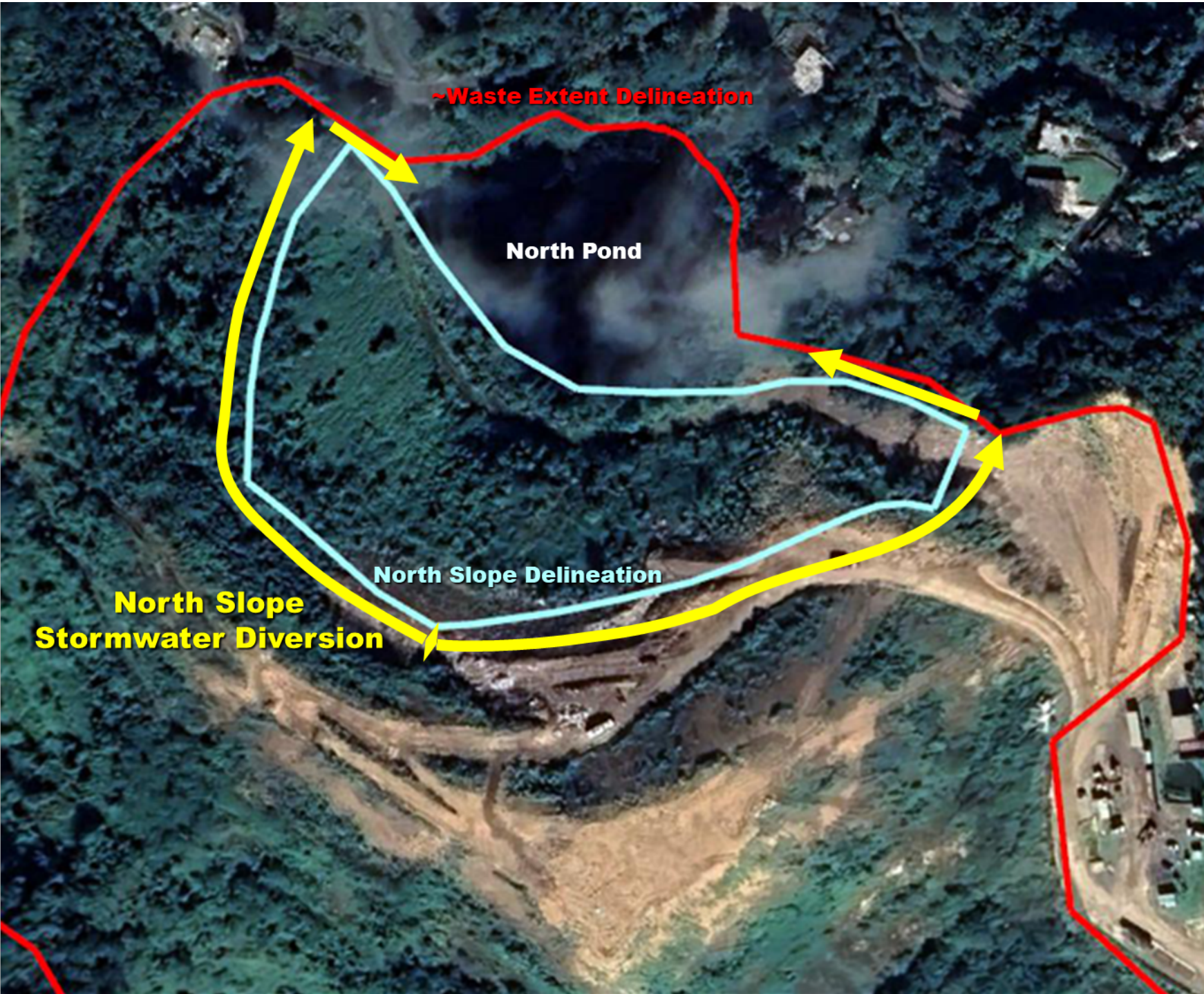
HON. DANIEL R. DOMINGUEZ
UNITED STATES DISTRICT JUDGE

Toa Alta North Slope Delineation

The "North Slope Area," i.e. the portion in which the slopes are steeper than 2.5 horizontal to 1 vertical, is shown in light blue. 5-meter contour lines are shown in orange.



APPENDIX B: SHORT TERM STORMWATER CONTROLS FOR NORTH SLOPE AREA



APPENDIX C Sampling Parameters

MTA shall commence quarterly sampling and laboratory analysis of the parameters in Table 1 within 30 days after EPA approval of the Stormwater Management Plan and continue sampling and laboratory analysis of these parameters for three years, provided however, that for any parameter in Table 1 where the analytical results are below the maximum level for four consecutive quarterly sampling events, MTA may choose to cease sampling for such parameter.

TABLE 1		
Pollutant Name	Maximum Level	Units
BOD ₅	37	mg/L
TSS	27	mg/L
Ammonia (as N)	4.9	mg/L
α-Terpineol	0.016	mg/L
Benzoic acid	0.071	mg/L
p-Cresol	0.014	mg/L
Phenol	0.015	mg/L
Zinc	0.11	mg/L
pH	6 - 9	mg/L
Enterococci	35	cfu/100-mL
Aniline	0.015	mg/L
Naphthalene	0.022	mg/L
Pyridine	0.025	mg/L
Arsenic	0.54	mg/L
Chromium	0.46	mg/L

Discharge Limits (mg/L = milligrams/liter, cfu/100mL = colony-forming units/100 milliliters)

All sample collection, preservation, and analysis for the discharge of pollutants shall be carried out in accordance with 40 C.F.R. Part 136. A licensed chemist authorized to practice the profession in the Commonwealth of Puerto Rico shall certify all chemical analyses. All bacteriological tests shall be certified by a microbiologist or licensed medical technologist authorized to practice the profession in the Commonwealth of Puerto Rico. If any of the sampling results show exceedances in certain parameters included in Table 1, the MTA shall be allowed to perform background testing and analysis to demonstrate whether the exceedances are related to the existing environmental condition in the area.

ATTACHMENT 2

TOA ALTA ECOPARK LANDFILL

TOA ALTA, PUERTO RICO

PROPOSED LEACHATE INTERCEPTOR AND FORCEMAIN DESIGN

PROJECT NO.: 214801

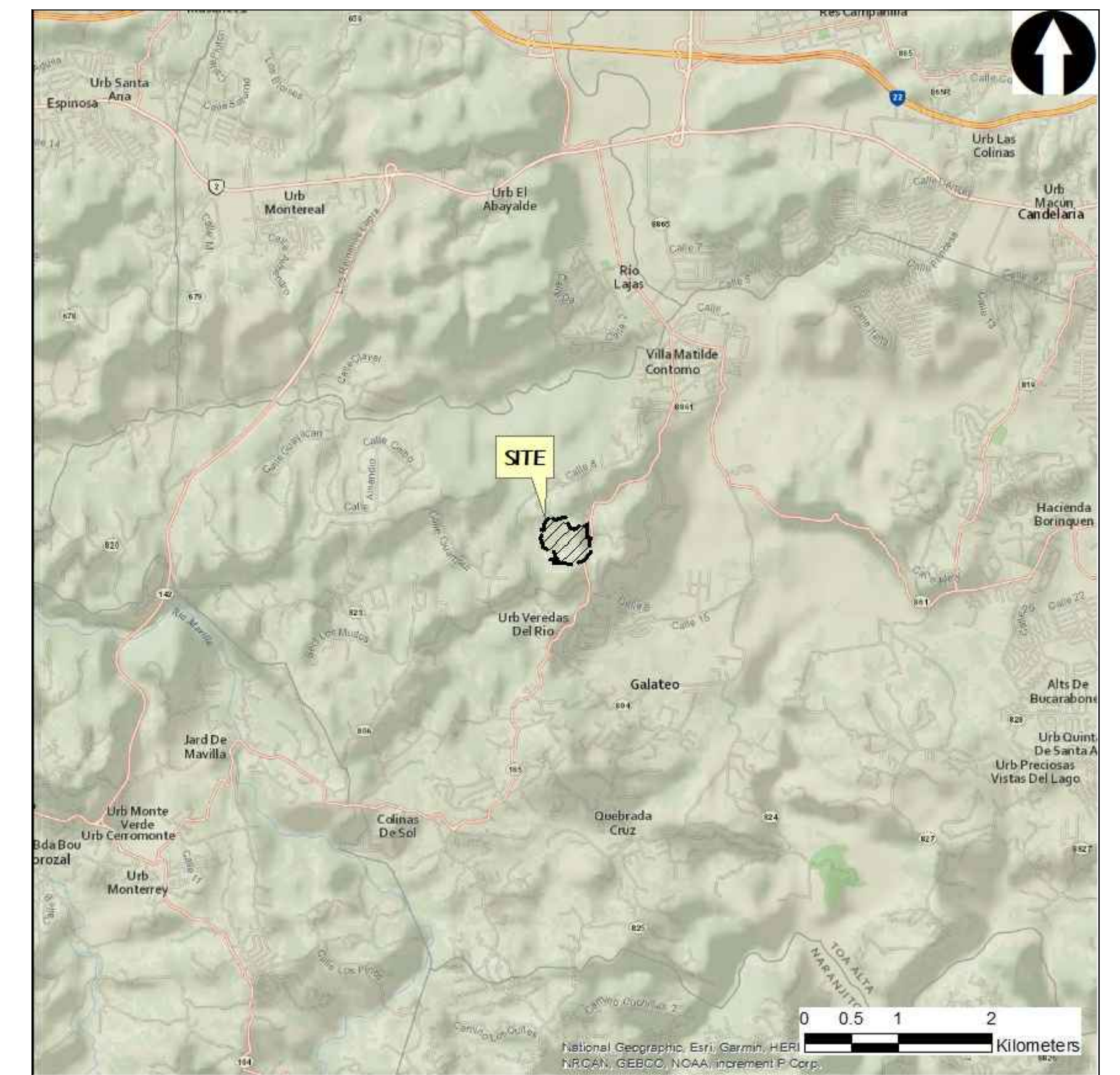
DECEMBER 2021



LOCATION MAP

DRAWING LIST

1. COVER SHEET
2. EXISTING SITE CONDITIONS
3. PROPOSED LEACHATE INTERCEPTOR AND FORCEMAIN
4. PROFILES
5. DETAILS



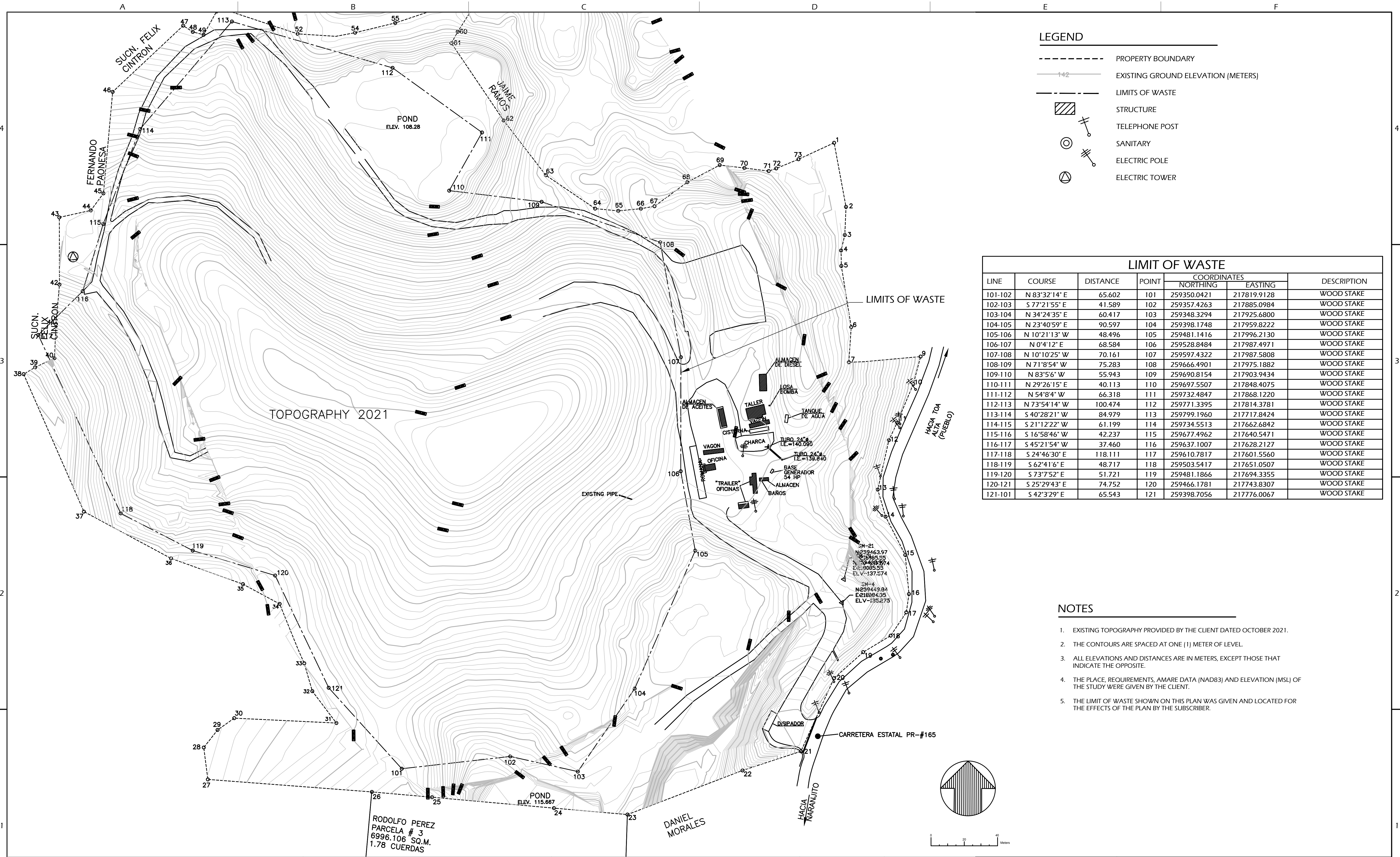
VICINITY MAP

RESPONSIBLE OFFICIAL:
 LUIS A. HERNANDEZ BORRES, PRESIDENT
 PUERTO RICO ECO PARK INC
 P.O. BOX 582
 VEGA BAJA, PR 00693-0582
 787-345-6300 | 787-855-5769

OFFICIAL NAME AND PROPERTY LOCATION:
 TOA ALTA ECOPARK LANDFILL
 9PCP+CCJ, TOA ALTA, 00953, PUERTO RICO

C:\Project\Toa Alta 2021\214801\F001.dwg, 8/19/2014 2:44 PM, SAMUEL SIN

PREPARED FOR: TOA ALTA ECOPARK TOA ALTA, 00953, PUERTO RICO					PREPARED BY:  45 ROSWELL STREET ROSWELL, GEORGIA 30075 PHONE: (678) 739-2400 • FAX: (770) 552-5550			SITE: TOA ALTA LANDFILL TOA ALTA, PUERTO RICO		TITLE: COVER		
DESIGN BY: S.SIN DATE BY: DECEMBER 2021					DRAWN BY: S.SIN PROJECT NO.: 214801F001			CHECKED BY: J.R. BLANTON FILE: 214801F001				
REV. 0 DATE 12/28/21 DESCRIPTION FINAL ISSUE TO CLIENT DRN SS JRB					REVIEWED BY: J.R. BLANTON SHEET NO.: 1 OF 5			APPROVED BY: J.R. BLANTON REV.: 0				



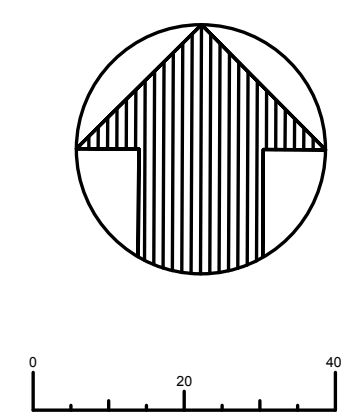
LEGEND

- PROPERTY BOUNDARY
- 142 --- EXISTING GROUND ELEVATION (METERS)
- - - LIMITS OF WASTE
- [Hatched Box] STRUCTURE
- [Cross Symbol] TELEPHONE POST
- [Circle with Cross] SANITARY
- [Cross with Line] ELECTRIC POLE
- [Circle with Triangle] ELECTRIC TOWER

LIMIT OF WASTE

LINE	COURSE	DISTANCE	POINT	COORDINATES		DESCRIPTION
				NORTHING	EASTING	
101-102	N 83°32'14" E	65.602	101	259350.0421	217819.9128	WOOD STAKE
102-103	S 77°21'55" E	41.589	102	259357.4263	217885.0984	WOOD STAKE
103-104	N 34°24'35" E	60.417	103	259348.3294	217925.6800	WOOD STAKE
104-105	N 23°40'59" E	90.597	104	259398.1748	217959.8222	WOOD STAKE
105-106	N 10°21'13" W	48.496	105	259481.1416	217996.2130	WOOD STAKE
106-107	N 0°4'12" E	68.584	106	259528.8484	217987.4971	WOOD STAKE
107-108	N 10°10'25" W	70.161	107	259597.4322	217987.5808	WOOD STAKE
108-109	N 71°8'54" W	75.283	108	259666.4901	217975.1882	WOOD STAKE
109-110	N 83°5'6" W	55.943	109	259690.8154	217903.9434	WOOD STAKE
110-111	N 29°26'15" E	40.113	110	259697.5507	217848.4075	WOOD STAKE
111-112	N 54°8'4" W	66.318	111	259732.4847	217868.1220	WOOD STAKE
112-113	N 73°54'14" W	100.474	112	259771.3395	217814.3781	WOOD STAKE
113-114	S 40°28'21" W	84.979	113	259799.1960	217717.8424	WOOD STAKE
114-115	S 21°12'22" W	61.199	114	259734.5513	217662.6842	WOOD STAKE
115-116	S 16°58'46" W	42.237	115	259677.4962	217640.5471	WOOD STAKE
116-117	S 45°21'54" W	37.460	116	259637.1007	217628.2127	WOOD STAKE
117-118	S 24°46'30" E	118.111	117	259610.7817	217601.5560	WOOD STAKE
118-119	S 62°41'6" E	48.717	118	259503.5417	217651.0507	WOOD STAKE
119-120	S 73°7'52" E	51.721	119	259481.1866	217694.3355	WOOD STAKE
120-121	S 25°29'43" E	74.752	120	259466.1781	217743.8307	WOOD STAKE
121-101	S 42°3'29" E	65.543	121	259398.7056	217776.0067	WOOD STAKE

- NOTES**
- EXISTING TOPOGRAPHY PROVIDED BY THE CLIENT DATED OCTOBER 2021.
 - THE CONTOURS ARE SPACED AT ONE (1) METER OF LEVEL.
 - ALL ELEVATIONS AND DISTANCES ARE IN METERS, EXCEPT THOSE THAT INDICATE THE OPPOSITE.
 - THE PLACE, REQUIREMENTS, AMARE DATA (NAD83) AND ELEVATION (MSL) OF THE STUDY WERE GIVEN BY THE CLIENT.
 - THE LIMIT OF WASTE SHOWN ON THIS PLAN WAS GIVEN AND LOCATED FOR THE EFFECTS OF THE PLAN BY THE SUBSCRIBER.

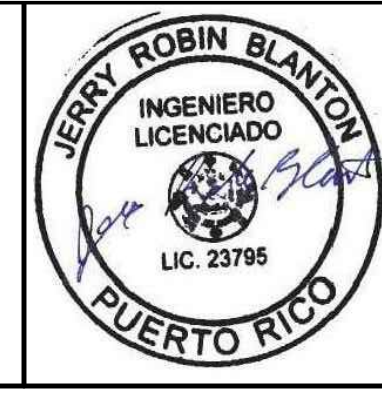


REV.	DATE	DESCRIPTION	DRN	APP
0	12/28/21	FINAL ISSUE TO CLIENT	SS	JRB

PREPARED FOR:
TOA ALTA ECOPARK
 TOA ALTA, 00953, PUERTO RICO

PREPARED BY:

 45 ROSWELL STREET
 ROSWELL, GEORGIA 30075
 PHONE: (678) 739-2400 • FAX: (770) 552-5550



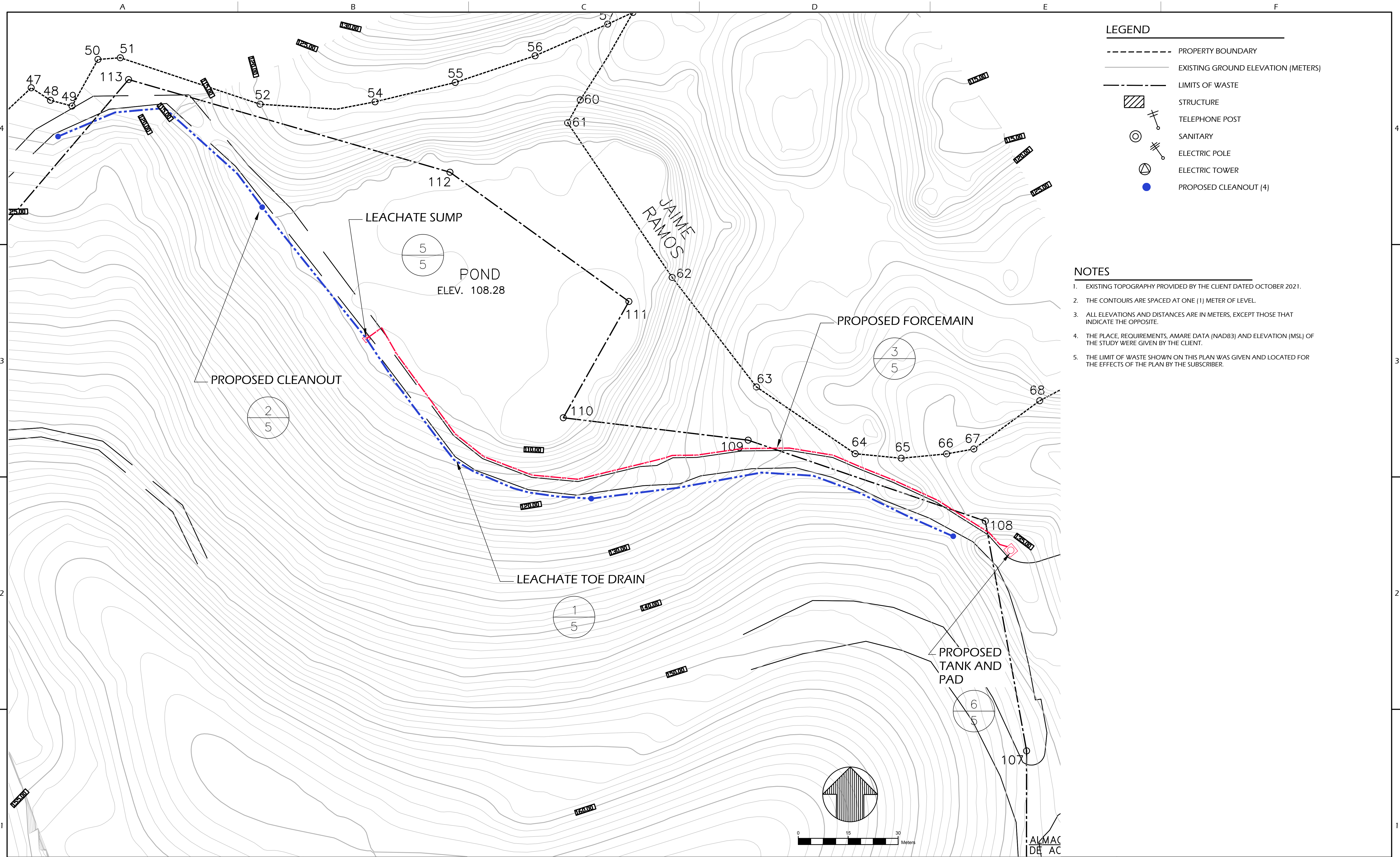
SITE:
 TOA ALTA LANDFILL
 TOA ALTA, PUERTO RICO

PROJECT:
 PROPOSED LEACHATE INTERCEPTOR
 AND FORCEMAIN DESIGN

TITLE:
 EXISTING SITE CONDITIONS

DESIGN BY:	S.SIN	DATE BY:	DECEMBER 2021
DRAWN BY:	S.SIN	PROJECT NO.:	-
CHECKED BY:	J.R. BLANTON	FILE:	214801F001
REVIEWED BY:	J.R. BLANTON	SHEET NO.:	2 OF 5
APPROVED BY:	J.R. BLANTON	REV.:	0

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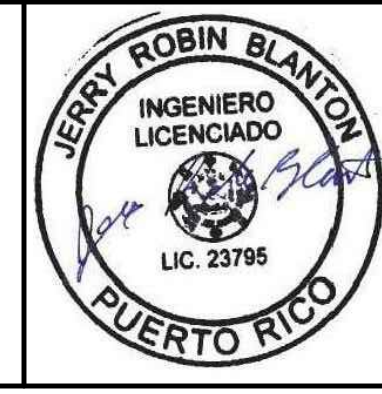
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REV.	DATE	DESCRIPTION	DRN	APP
0	12/28/21	FINAL ISSUE TO CLIENT	SS	JRB

PREPARED FOR:
TOA ALTA ECOPARK
 TOA ALTA, 00953, PUERTO RICO

PREPARED BY:

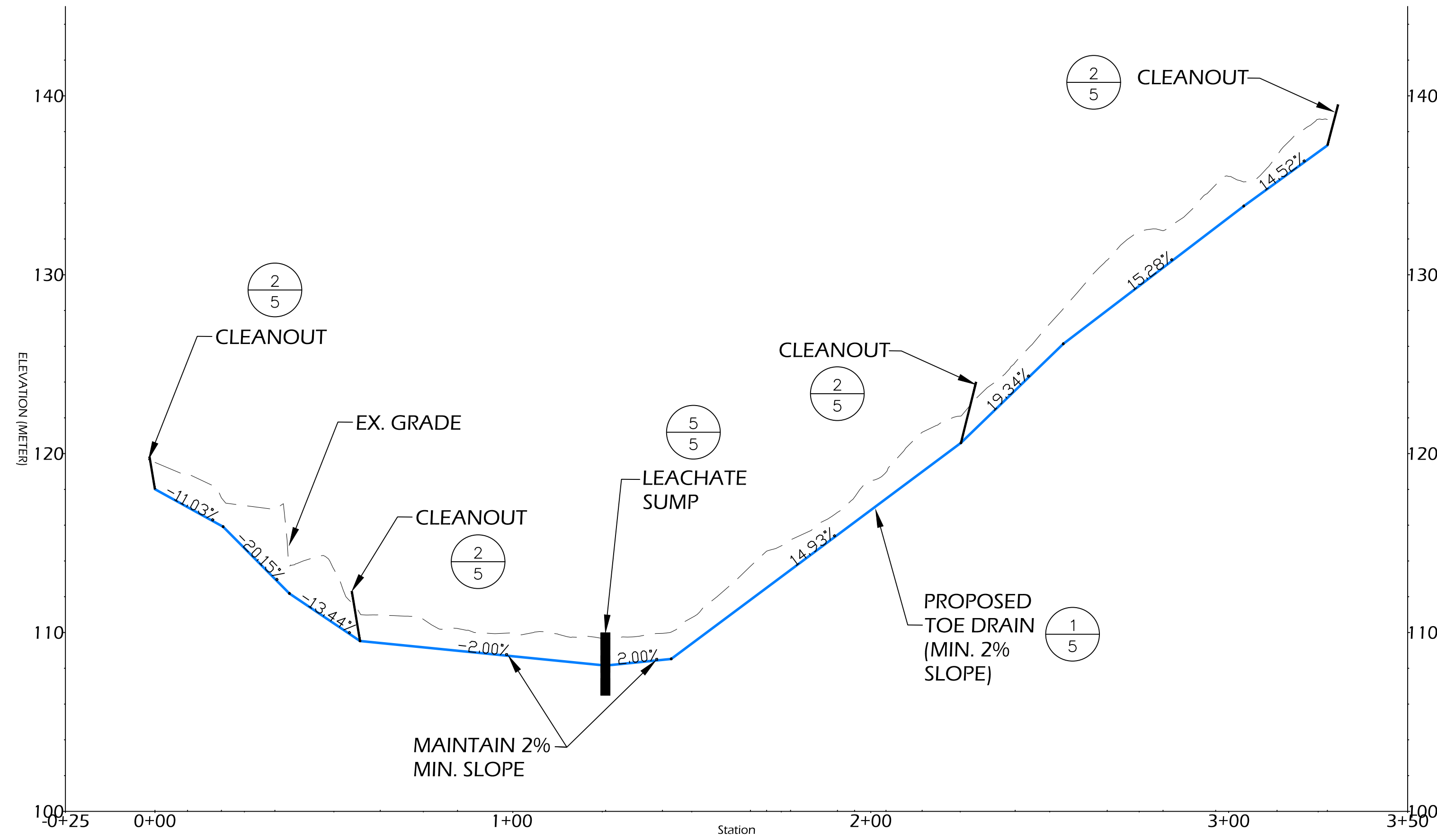
 45 ROSWELL STREET
 ROSWELL, GEORGIA 30075
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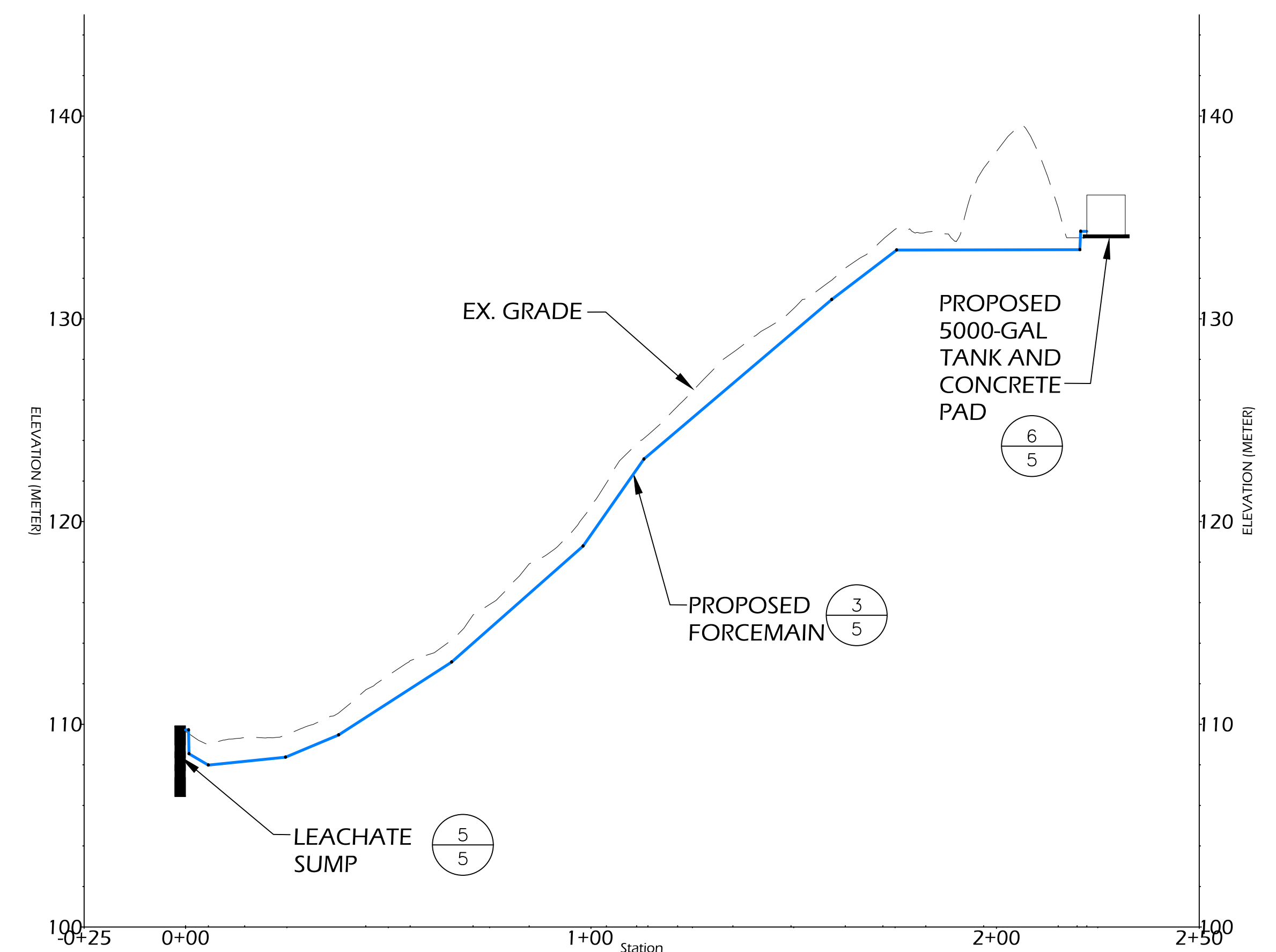
SITE:
 TOA ALTA LANDFILL
 TOA ALTA, PUERTO RICO

PROJECT:
 PROPOSED LEACHATE INTERCEPTOR
 AND FORCEMAIN DESIGN

TITLE: PROPOSED LEACHATE INTERCEPTOR AND FORCEMAIN			
DESIGN BY:	S.SIN	DATE BY:	DECEMBER 2021
DRAWN BY:	S.SIN	PROJECT NO.:	-
CHECKED BY:	J.R. BLANTON	FILE:	214801F001
REVIEWED BY:	J.R. BLANTON	SHEET NO.:	3 OF 5
APPROVED BY:	J.R. BLANTON	REV.:	0



1 PROFILE
3 LEACHATE TOE DRAIN



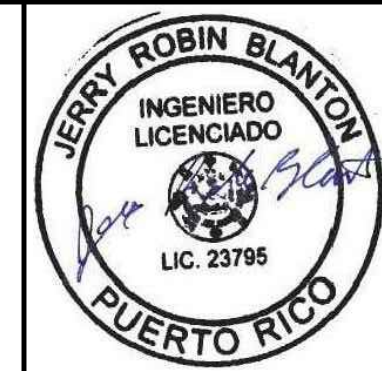
2 PROFILE
3 LEACHATE FORCEMAIN

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REV.	DATE	DESCRIPTION	DRN	APP
0	12/28/21	FINAL ISSUE TO CLIENT	SS	JRB

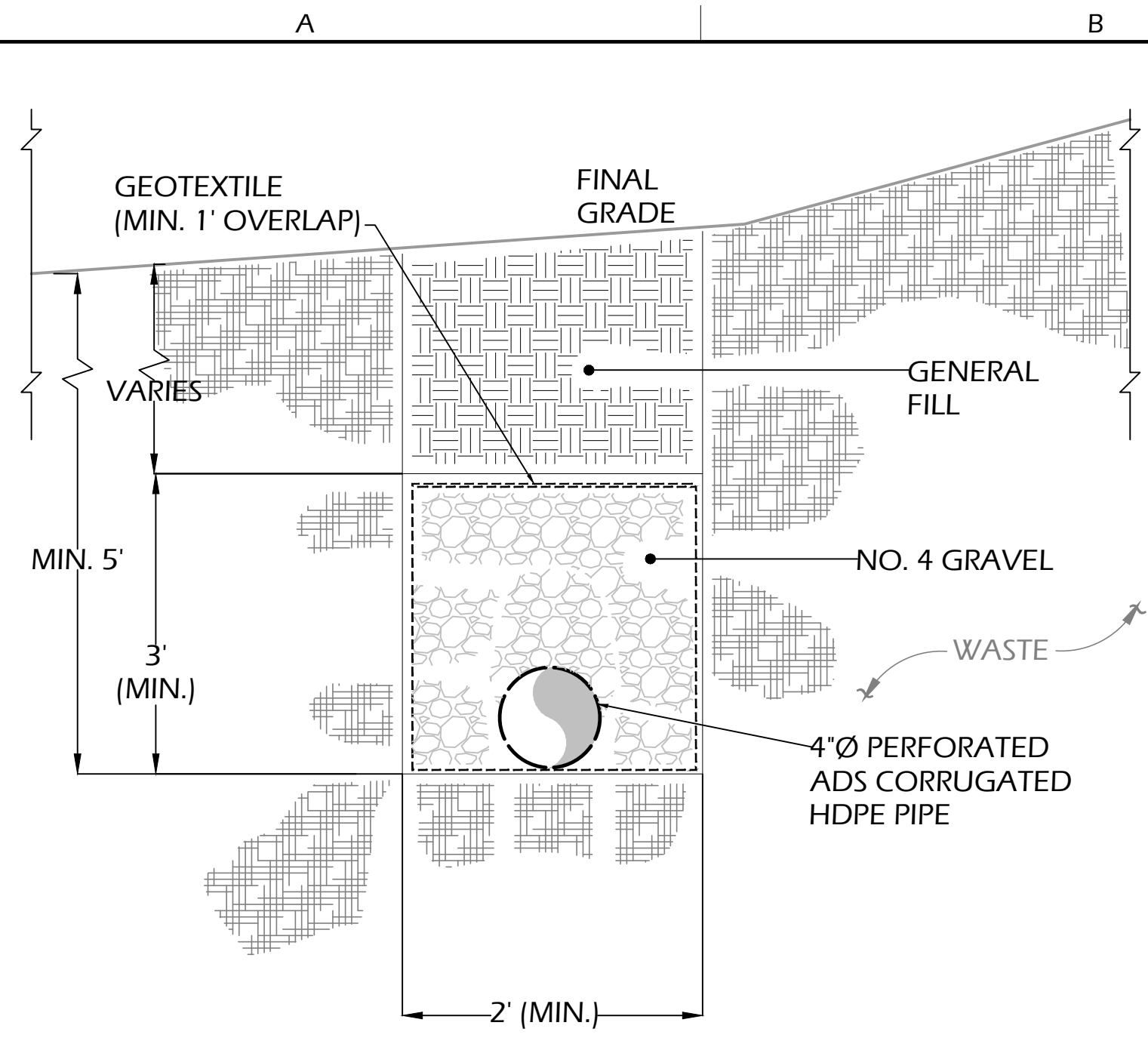
PREPARED FOR:
TOA ALTA ECOPARK
TOA ALTA, 00953, PUERTO RICO

PREPARED BY:
OASIS
CONSULTING SERVICES
45 ROSWELL STREET
ROSWELL, GEORGIA 30075
PHONE: (678) 739-2400 • FAX: (770) 552-5550

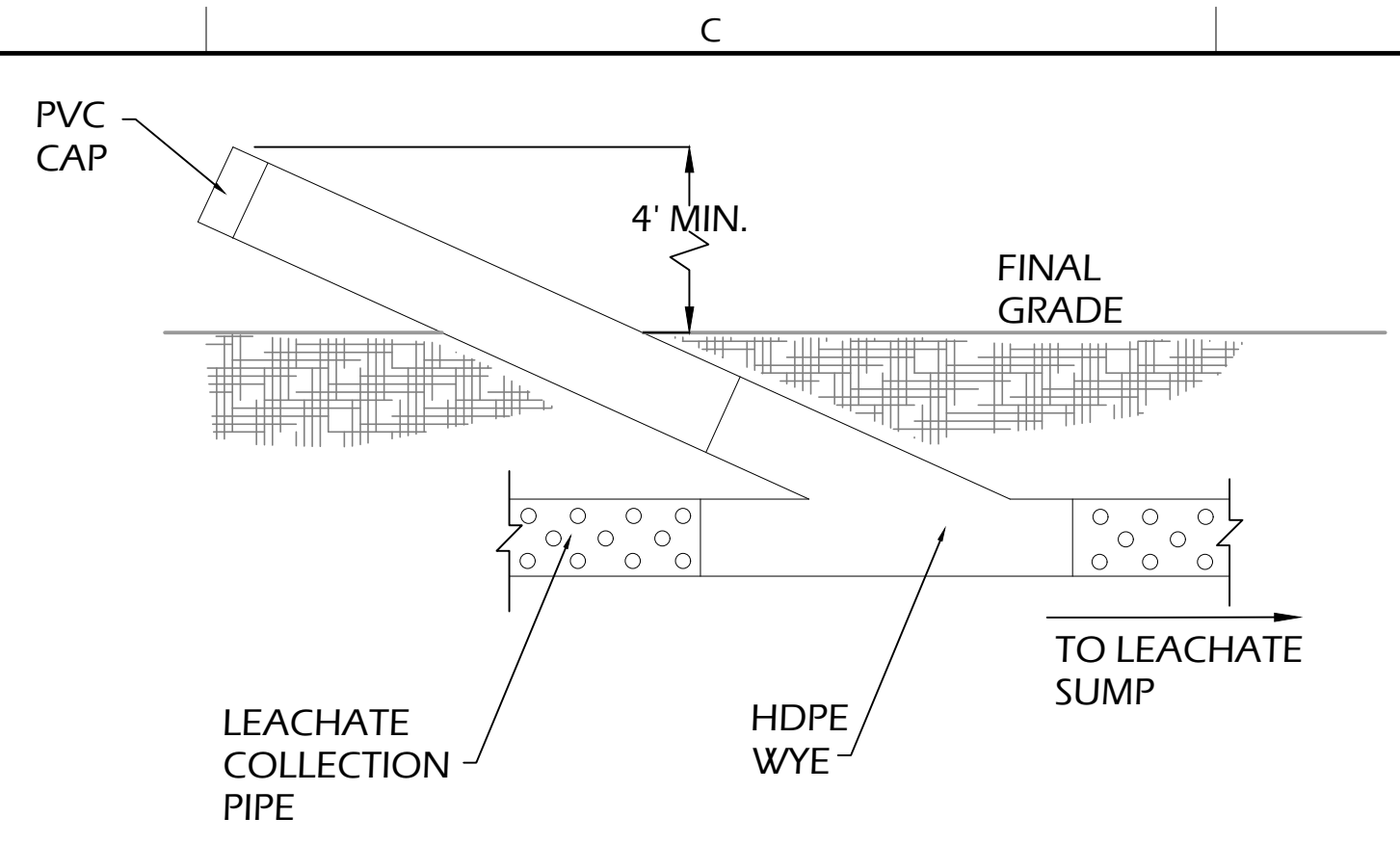


SITE:
TOA ALTA LANDFILL
TOA ALTA, PUERTO RICO
PROJECT:
PROPOSED LEACHATE INTERCEPTOR
AND FORCEMAIN DESIGN

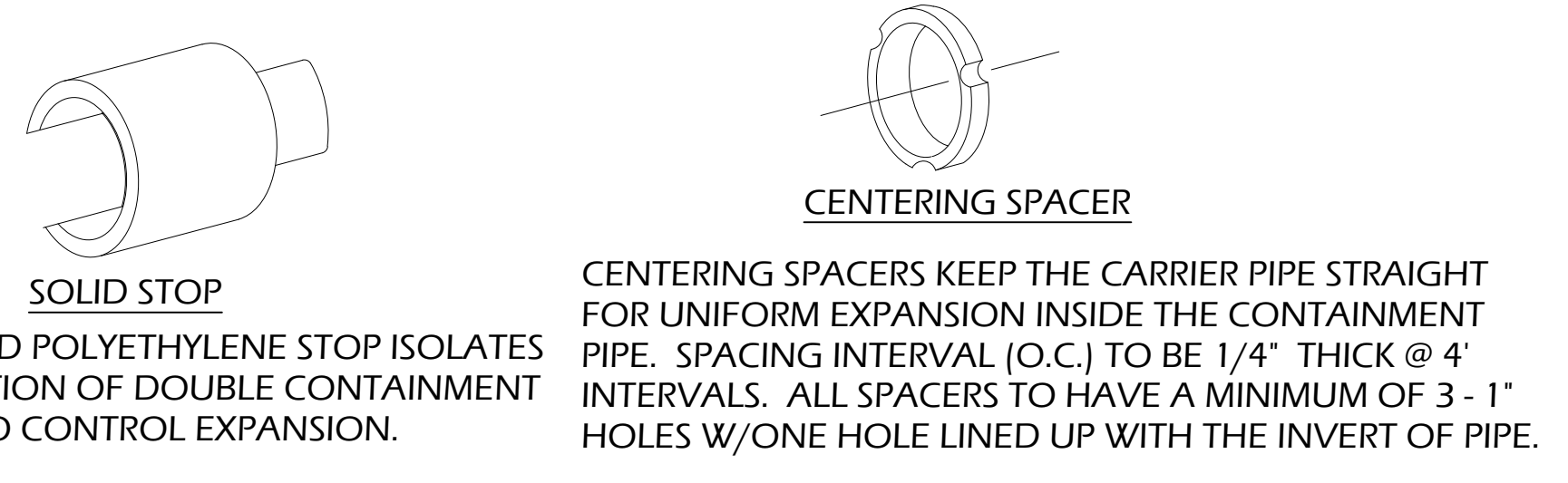
TITLE: PROFILES			
DESIGN BY:	S.SIN	DATE BY:	DECEMBER 2021
DRAWN BY:	S.SIN	PROJECT NO.:	-
CHECKED BY:	J.R. BLANTON	FILE:	214801F001
REVIEWED BY:	J.R. BLANTON	SHEET NO.:	4 OF 5
APPROVED BY:	J.R. BLANTON	REV.:	0



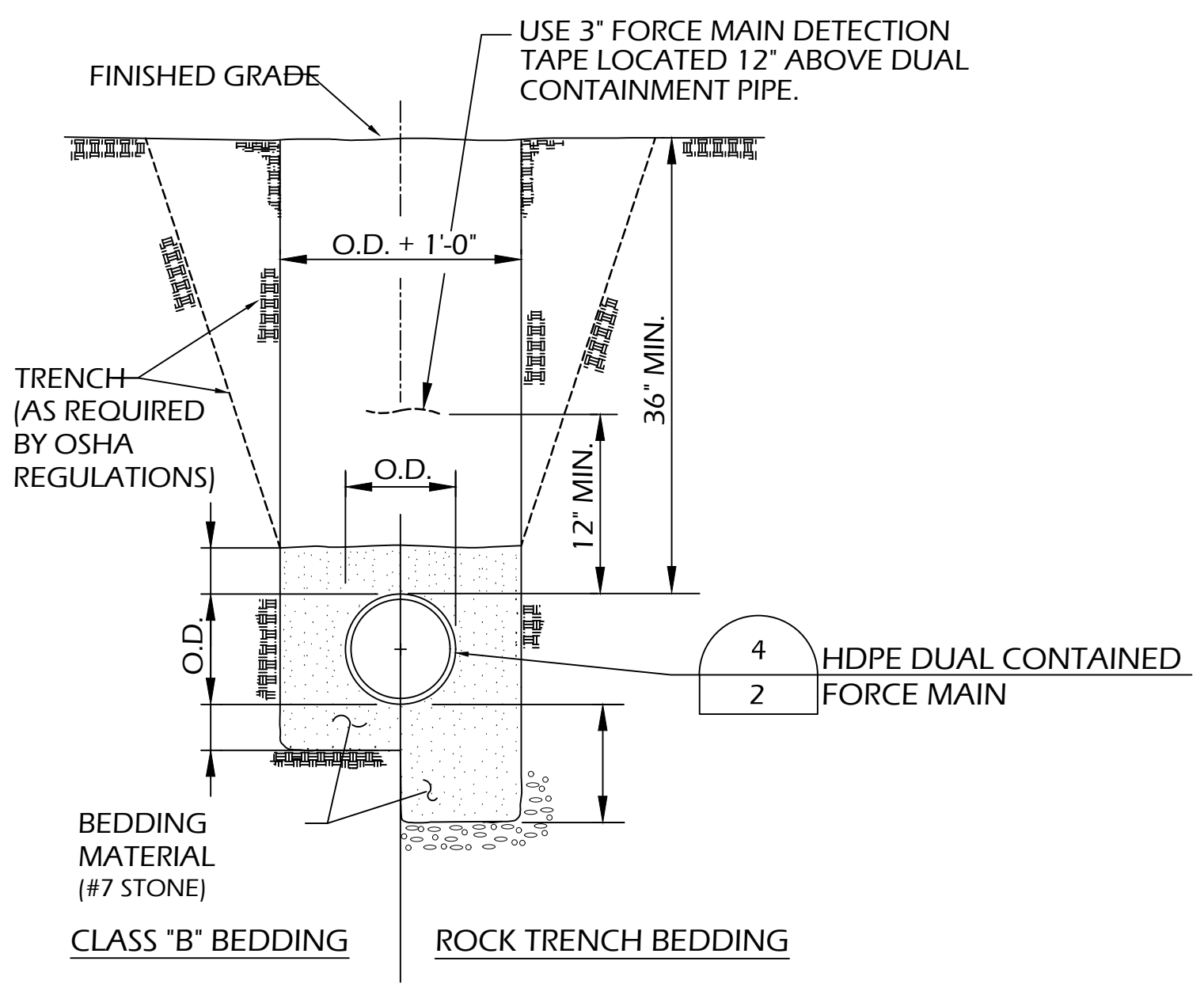
1
3 DETAIL (TYPICAL)
LEACHATE TOE DRAIN



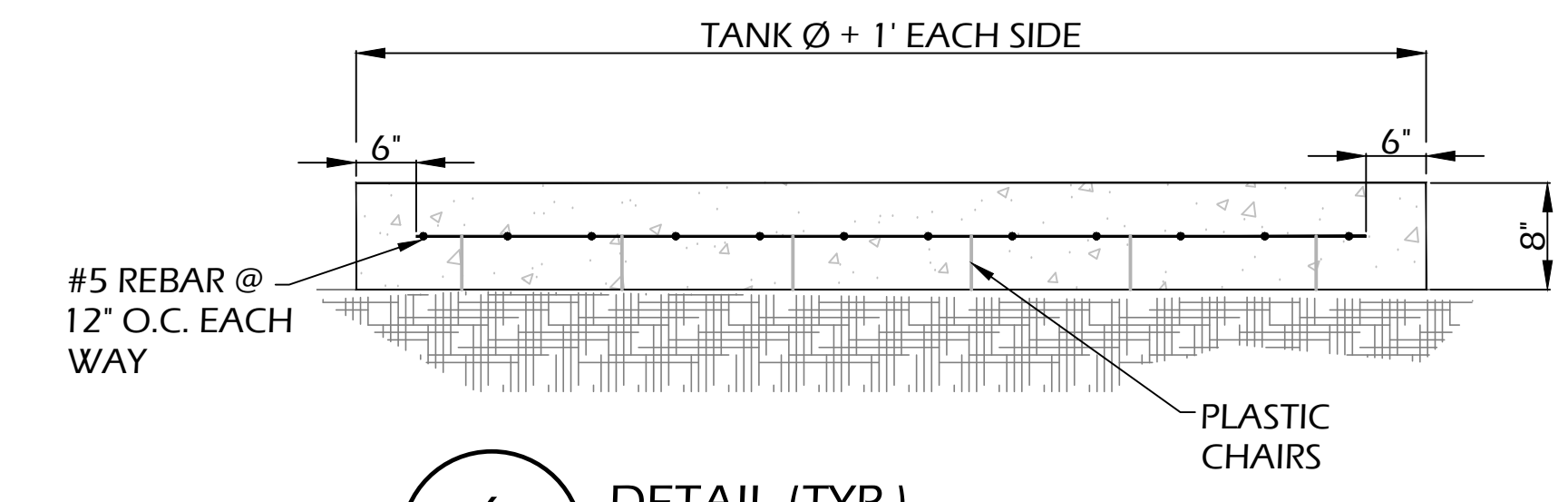
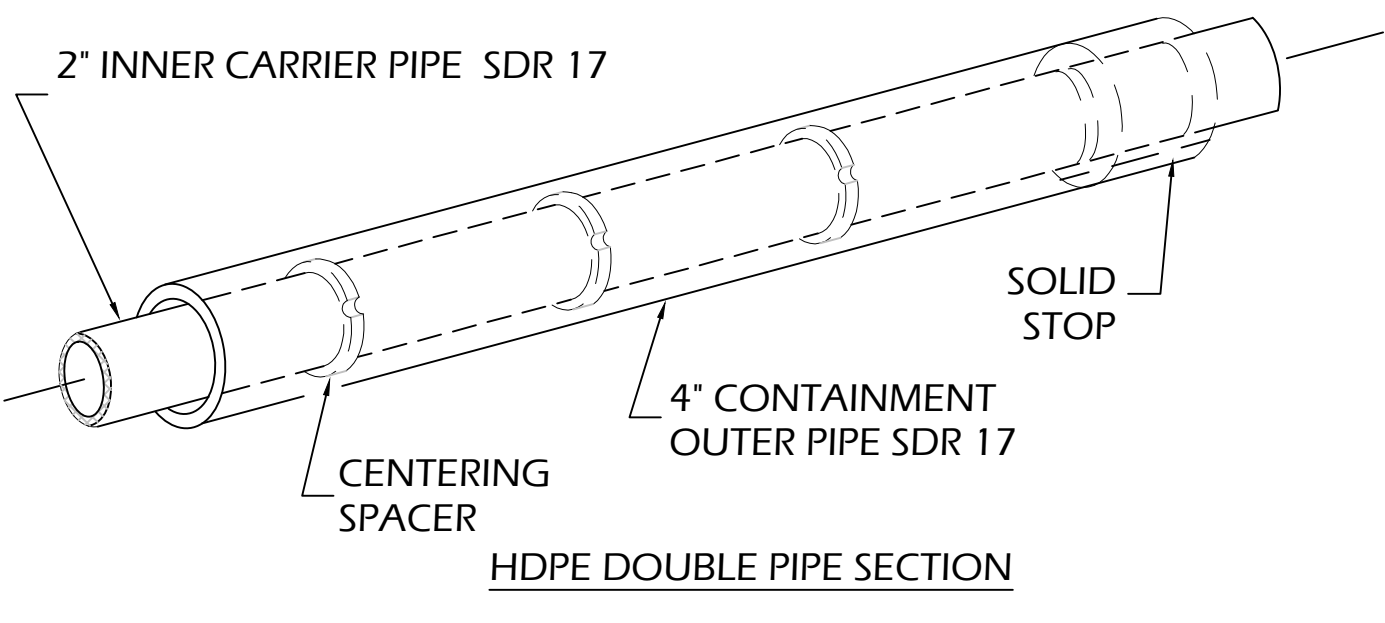
2
3 DETAIL (TYPICAL)
CLEANOUT



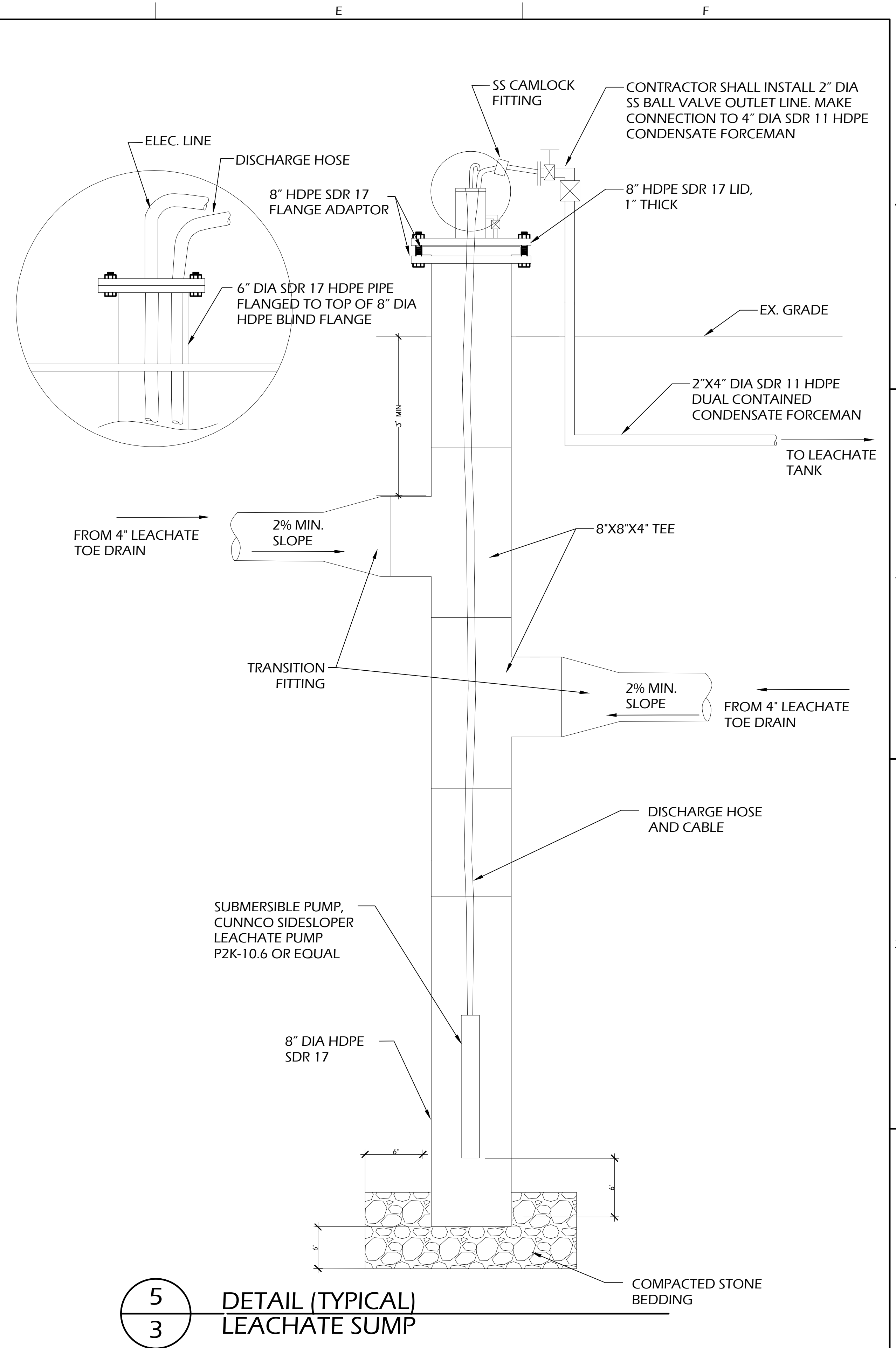
4
3 DETAIL (TYP.)
HDPE DUAL CONTAINED
FORCE MAIN



3
3 DETAIL (TYP.)
DUAL CONTAINED FORCE MAIN TRENCH



6
3 DETAIL (TYP.)
TANK CONCRETE PAD



5
3 DETAIL (TYPICAL)
LEACHATE SUMP

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REV.	DATE	DESCRIPTION	DRN	APP
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PREPARED FOR:
TOA ALTA ECOPARK
TOA ALTA, 00953, PUERTO RICO

PREPARED BY:
OASIS
CONSULTING SERVICES
45 ROSWELL STREET
ROSWELL, GEORGIA 30075
PHONE: (678) 739-2400 • FAX: (770) 552-5550



SITE:
TOA ALTA LANDFILL
TOA ALTA, PUERTO RICO

PROJECT:
PROPOSED LEACHATE INTERCEPTOR
AND FORCE MAIN DESIGN

DETAILS			
DESIGN BY:	S.SIN	DATE BY:	DECEMBER 2021
DRAWN BY:	S.SIN	PROJECT NO.:	-
CHECKED BY:	J.R. BLANTON	FILE:	214801F001
REVIEWED BY:	J.R. BLANTON	SHEET NO.:	5 OF 5
APPROVED BY:	J.R. BLANTON	REV.:	0

ATTACHMENT 3

1. Profile. EX 1yr

Model Settings



[HELP] Case Settings

Parameter	Value	Units
Runoff Method	Model calculated	(-)
Initial Moisture Settings	Model calculated	(-)

[HELP] Surface Water Settings

Parameter	Value	Units
Runoff Area	100	(%%)
Vegetation Class	Good stand of grass	(-)

Profile Structure

Layer	Top (ft)	Bottom (ft)	Thickness (ft)
 Silty Loam	546.9885	545.9885	1.0000
Municipal Waste (312 kg/cub.m)9	545.9930	520.9930	25.0000
Silty Loam8	520.9935	520.4935	0.5000
Municipal Waste (312 kg/cub.m)6	520.4935	495.4935	25.0000
Silty Loam7	495.4950	494.9950	0.5000
Municipal Waste (312 kg/cub.m)8	494.9950	469.9950	25.0000
Silty Loam3	469.9955	469.4955	0.5000
Municipal Waste (312 kg/cub.m)7	469.4955	444.4955	25.0000
Silty Loam2	444.4960	443.9960	0.5000
Municipal Waste (312 kg/cub.m)5	443.9960	418.9960	25.0000
Silty Loam6	418.9965	418.4965	0.5000
Municipal Waste (312 kg/cub.m)4	418.4965	393.4965	25.0000
Silty Loam5	393.4970	392.9970	0.5000
Municipal Waste (312 kg/cub.m)1	392.9970	372.9970	20.0000
Silty Loam1	372.9975	372.4975	0.5000
Municipal Waste (312 kg/cub.m)2	372.4980	352.4980	20.0000
Silty Loam4	352.4990	351.9990	0.5000
Municipal Waste (312 kg/cub.m)3	351.9990	331.9990	20.0000
 Silty Clay	332.0000	330.0000	2.0000

1.1. Layer. Silty Loam

Top Slope Length: 400.0000
 Bottom Slope Length: 400.0000
 Top Slope: 30.0000
 Bottom Slope : 2.5000

[HELP] Vertical Perc. Layer Parameters

Parameter	Value	Units
total porosity	0.501	(vol/vol)
field capacity	0.284	(vol/vol)
wilting point	0.135	(vol/vol)
sat.hydr.conductivity	1.9E-4	(cm/sec)
subsurface inflow	0	(mm/year)

1.2. Layer. Municipal Waste (312 kg/cub.m)9

Top Slope Length: 400.0000
Bottom Slope Length: 400.0000
Top Slope: 2.5000
Bottom Slope : 2.5000

[HELP] Vertical Perc. Layer Parameters

Parameter	Value	Units
total porosity	0.671	(vol/vol)
field capacity	0.292	(vol/vol)
wilting point	0.077	(vol/vol)
sat.hydr.conductivity	0.001	(cm/sec)
subsurface inflow	0	(mm/year)

1.3. Layer. Silty Loam8

Top Slope Length: 400.0000
Bottom Slope Length: 400.0000
Top Slope: 2.5000
Bottom Slope : 2.5000

[HELP] Vertical Perc. Layer Parameters

Parameter	Value	Units
total porosity	0.501	(vol/vol)
field capacity	0.284	(vol/vol)
wilting point	0.135	(vol/vol)
sat.hydr.conductivity	1.9E-4	(cm/sec)
subsurface inflow	0	(mm/year)

1.4. Layer. Municipal Waste (312 kg/cub.m)6

Top Slope Length: 400.0000
Bottom Slope Length: 400.0000
Top Slope: 2.5000
Bottom Slope : 2.5000

[HELP] Vertical Perc. Layer Parameters

Parameter	Value	Units
total porosity	0.671	(vol/vol)
field capacity	0.292	(vol/vol)
wilting point	0.077	(vol/vol)
sat.hydr.conductivity	0.001	(cm/sec)
subsurface inflow	0	(mm/year)

1.5. Layer. Silty Loam7

Top Slope Length: 400.0000
Bottom Slope Length: 400.0000
Top Slope: 2.5000
Bottom Slope : 2.5000

[HELP] Vertical Perc. Layer Parameters

Parameter	Value	Units
total porosity	0.501	(vol/vol)
field capacity	0.284	(vol/vol)
wilting point	0.135	(vol/vol)
sat.hydr.conductivity	1.9E-4	(cm/sec)
subsurface inflow	0	(mm/year)

1.6. Layer. Municipal Waste (312 kg/cub.m)8

Top Slope Length: 400.0000
Bottom Slope Length: 400.0000
Top Slope: 2.5000
Bottom Slope : 2.5000

[HELP] Vertical Perc. Layer Parameters

Parameter	Value	Units
total porosity	0.671	(vol/vol)
field capacity	0.292	(vol/vol)
wilting point	0.077	(vol/vol)
sat.hydr.conductivity	0.001	(cm/sec)
subsurface inflow	0	(mm/year)

1.7. Layer. Silty Loam3

Top Slope Length: 400.0000
Bottom Slope Length: 400.0000
Top Slope: 2.5000
Bottom Slope : 2.5000

[HELP] Vertical Perc. Layer Parameters

Parameter	Value	Units
total porosity	0.501	(vol/vol)
field capacity	0.284	(vol/vol)
wilting point	0.135	(vol/vol)
sat.hydr.conductivity	1.9E-4	(cm/sec)
subsurface inflow	0	(mm/year)

1.8. Layer. Municipal Waste (312 kg/cub.m)7

Top Slope Length: 400.0000
Bottom Slope Length: 400.0000
Top Slope: 2.5000
Bottom Slope : 2.5000

[HELP] Vertical Perc. Layer Parameters

Parameter	Value	Units
total porosity	0.671	(vol/vol)
field capacity	0.292	(vol/vol)
wilting point	0.077	(vol/vol)
sat.hydr.conductivity	0.001	(cm/sec)
subsurface inflow	0	(mm/year)

1.9. Layer. Silty Loam2

Top Slope Length: 400.0000
Bottom Slope Length: 400.0000
Top Slope: 2.5000
Bottom Slope : 2.5000

[HELP] Vertical Perc. Layer Parameters

Parameter	Value	Units
total porosity	0.501	(vol/vol)
field capacity	0.284	(vol/vol)
wilting point	0.135	(vol/vol)
sat.hydr.conductivity	1.9E-4	(cm/sec)
subsurface inflow	0	(mm/year)

1.10. Layer. Municipal Waste (312 kg/cub.m)5

Top Slope Length: 400.0000
Bottom Slope Length: 400.0000
Top Slope: 2.5000
Bottom Slope : 2.5000

[HELP] Vertical Perc. Layer Parameters

Parameter	Value	Units
total porosity	0.671	(vol/vol)
field capacity	0.292	(vol/vol)
wilting point	0.077	(vol/vol)
sat.hydr.conductivity	0.001	(cm/sec)
subsurface inflow	0	(mm/year)

1.11. Layer. Silty Loam6

Top Slope Length: 400.0000
Bottom Slope Length: 400.0000
Top Slope: 2.5000
Bottom Slope : 2.5000

[HELP] Vertical Perc. Layer Parameters

Parameter	Value	Units
total porosity	0.501	(vol/vol)
field capacity	0.284	(vol/vol)
wilting point	0.135	(vol/vol)
sat.hydr.conductivity	1.9E-4	(cm/sec)
subsurface inflow	0	(mm/year)

1.12. Layer. Municipal Waste (312 kg/cub.m)4

Top Slope Length: 400.0000
Bottom Slope Length: 400.0000
Top Slope: 2.5000
Bottom Slope : 2.5000

[HELP] Vertical Perc. Layer Parameters

Parameter	Value	Units
total porosity	0.671	(vol/vol)
field capacity	0.292	(vol/vol)
wilting point	0.077	(vol/vol)
sat.hydr.conductivity	0.001	(cm/sec)
subsurface inflow	0	(mm/year)

1.13. Layer. Silty Loam5

Top Slope Length: 400.0000
Bottom Slope Length: 400.0000
Top Slope: 2.5000
Bottom Slope : 2.5000

[HELP] Vertical Perc. Layer Parameters

Parameter	Value	Units
total porosity	0.501	(vol/vol)
field capacity	0.284	(vol/vol)
wilting point	0.135	(vol/vol)
sat.hydr.conductivity	1.9E-4	(cm/sec)
subsurface inflow	0	(mm/year)

1.14. Layer. Municipal Waste (312 kg/cub.m)1

Top Slope Length: 400.0000
Bottom Slope Length: 400.0000
Top Slope: 2.5000
Bottom Slope : 2.5000

[HELP] Vertical Perc. Layer Parameters

Parameter	Value	Units
total porosity	0.671	(vol/vol)
field capacity	0.292	(vol/vol)
wilting point	0.077	(vol/vol)
sat.hydr.conductivity	0.001	(cm/sec)
subsurface inflow	0	(mm/year)

1.15. Layer. Silty Loam1

Top Slope Length: 400.0000
Bottom Slope Length: 400.0000
Top Slope: 2.5000
Bottom Slope : 2.5000

[HELP] Vertical Perc. Layer Parameters

Parameter	Value	Units
total porosity	0.501	(vol/vol)
field capacity	0.284	(vol/vol)
wilting point	0.135	(vol/vol)
sat.hydr.conductivity	1.9E-4	(cm/sec)
subsurface inflow	0	(mm/year)

1.16. Layer. Municipal Waste (312 kg/cub.m)2

Top Slope Length: 400.0000
Bottom Slope Length: 400.0000
Top Slope: 2.5000
Bottom Slope : 2.5000

[HELP] Vertical Perc. Layer Parameters

Parameter	Value	Units
total porosity	0.671	(vol/vol)
field capacity	0.292	(vol/vol)
wilting point	0.077	(vol/vol)
sat.hydr.conductivity	0.001	(cm/sec)
subsurface inflow	0	(mm/year)

1.17. Layer. Silty Loam4

Top Slope Length: 400.0000
Bottom Slope Length: 400.0000
Top Slope: 2.5000
Bottom Slope : 2.5000

[HELP] Vertical Perc. Layer Parameters

Parameter	Value	Units
total porosity	0.501	(vol/vol)
field capacity	0.284	(vol/vol)
wilting point	0.135	(vol/vol)
sat.hydr.conductivity	1.9E-4	(cm/sec)
subsurface inflow	0	(mm/year)

1.18. Layer. Municipal Waste (312 kg/cub.m)3

Top Slope Length: 400.0000
Bottom Slope Length: 400.0000
Top Slope: 2.5000
Bottom Slope : 2.5000

[HELP] Vertical Perc. Layer Parameters

Parameter	Value	Units
total porosity	0.671	(vol/vol)
field capacity	0.292	(vol/vol)
wilting point	0.077	(vol/vol)
sat.hydr.conductivity	0.001	(cm/sec)
subsurface inflow	0	(mm/year)

1.19. Layer. Silty Clay

Top Slope Length: 400.0000
Bottom Slope Length: 0.0000
Top Slope: 2.5000
Bottom Slope : 2.5000

[HELP] Barrier Soil Liner Parameters

Parameter	Value	Units
total porosity	0.479	(vol/vol)
field capacity	0.371	(vol/vol)
wilting point	0.251	(vol/vol)
sat.hydr.conductivity	2.5E-5	(cm/sec)
subsurface inflow	0	(mm/year)

2. Profile. IC 1yr

Model Settings







[HELP] Case Settings

Parameter	Value	Units
Runoff Method	Model calculated	(-)
Initial Moisture Settings	Model calculated	(-)

[HELP] Surface Water Settings

Parameter	Value	Units
Runoff Area	100	(%%)
Vegetation Class	Good stand of grass	(-)

Profile Structure

Layer	Top (ft)	Bottom (ft)	Thickness (ft)
 Silty Loam9	547.4885	546.4885	1.0000
 Silty Loam	546.4885	545.9885	0.5000
 Municipal Waste (312 kg/cub.m)9	545.9930	520.9930	25.0000
 Silty Loam8	520.9935	520.4935	0.5000
 Municipal Waste (312 kg/cub.m)6	520.4935	495.4935	25.0000
 Silty Loam7	495.4950	494.9950	0.5000

Municipal Waste (312 kg/cub.m)8	494.9950	469.9950	25.0000
Silty Loam3	469.9955	469.4955	0.5000
Municipal Waste (312 kg/cub.m)7	469.4955	444.4955	25.0000
Silty Loam2	444.4960	443.9960	0.5000
Municipal Waste (312 kg/cub.m)5	443.9960	418.9960	25.0000
Silty Loam6	418.9965	418.4965	0.5000
Municipal Waste (312 kg/cub.m)4	418.4965	393.4965	25.0000
Silty Loam5	393.4970	392.9970	0.5000
Municipal Waste (312 kg/cub.m)1	392.9970	372.9970	20.0000
Silty Loam1	372.9975	372.4975	0.5000
Municipal Waste (312 kg/cub.m)2	372.4980	352.4980	20.0000
Silty Loam4	352.4990	351.9990	0.5000
Municipal Waste (312 kg/cub.m)3	351.9990	331.9990	20.0000
Silty Clay	332.0000	330.0000	2.0000

2.1. Layer. Silty Loam9

Top Slope Length: 400.0000
Bottom Slope Length: 400.0000
Top Slope: 30.0000
Bottom Slope : 2.5000

[HELP] Vertical Perc. Layer Parameters

Parameter	Value	Units
total porosity	0.501	(vol/vol)
field capacity	0.284	(vol/vol)
wilting point	0.135	(vol/vol)
sat.hydr.conductivity	1.0E-5	(cm/sec)
subsurface inflow	0	(mm/year)

2.2. Layer. Silty Loam

Top Slope Length: 400.0000
Bottom Slope Length: 400.0000
Top Slope: 2.5000
Bottom Slope : 2.5000

[HELP] Vertical Perc. Layer Parameters

Parameter	Value	Units
total porosity	0.501	(vol/vol)
field capacity	0.284	(vol/vol)
wilting point	0.135	(vol/vol)
sat.hydr.conductivity	1.9E-4	(cm/sec)
subsurface inflow	0	(mm/year)

2.3. Layer. Municipal Waste (312 kg/cub.m)9

Top Slope Length: 400.0000
Bottom Slope Length: 400.0000
Top Slope: 2.5000
Bottom Slope : 2.5000

[HELP] Vertical Perc. Layer Parameters

Parameter	Value	Units
total porosity	0.671	(vol/vol)
field capacity	0.292	(vol/vol)

wilting point	0.077	(vol/vol)
sat.hydr.conductivity	0.001	(cm/sec)
subsurface inflow	0	(mm/year)

2.4. Layer. Silty Loam8

Top Slope Length: 400.0000
Bottom Slope Length: 400.0000
Top Slope: 2.5000
Bottom Slope : 2.5000

[HELP] Vertical Perc. Layer Parameters

Parameter	Value	Units
total porosity	0.501	(vol/vol)
field capacity	0.284	(vol/vol)
wilting point	0.135	(vol/vol)
sat.hydr.conductivity	1.9E-4	(cm/sec)
subsurface inflow	0	(mm/year)

2.5. Layer. Municipal Waste (312 kg/cub.m)6

Top Slope Length: 400.0000
Bottom Slope Length: 400.0000
Top Slope: 2.5000
Bottom Slope : 2.5000

[HELP] Vertical Perc. Layer Parameters

Parameter	Value	Units
total porosity	0.671	(vol/vol)
field capacity	0.292	(vol/vol)
wilting point	0.077	(vol/vol)
sat.hydr.conductivity	0.001	(cm/sec)
subsurface inflow	0	(mm/year)

2.6. Layer. Silty Loam7

Top Slope Length: 400.0000
Bottom Slope Length: 400.0000
Top Slope: 2.5000
Bottom Slope : 2.5000

[HELP] Vertical Perc. Layer Parameters

Parameter	Value	Units
total porosity	0.501	(vol/vol)
field capacity	0.284	(vol/vol)
wilting point	0.135	(vol/vol)
sat.hydr.conductivity	1.9E-4	(cm/sec)
subsurface inflow	0	(mm/year)

2.7. Layer. Municipal Waste (312 kg/cub.m)8

Top Slope Length: 400.0000
Bottom Slope Length: 400.0000
Top Slope: 2.5000
Bottom Slope : 2.5000

[HELP] Vertical Perc. Layer Parameters

Parameter	Value	Units
total porosity	0.671	(vol/vol)
field capacity	0.292	(vol/vol)
wilting point	0.077	(vol/vol)

sat.hydr.conductivity	0.001	(cm/sec)
subsurface inflow	0	(mm/year)

2.8. Layer. Silty Loam3

Top Slope Length: 400.0000
Bottom Slope Length: 400.0000
Top Slope: 2.5000
Bottom Slope : 2.5000

[HELP] Vertical Perc. Layer Parameters

Parameter	Value	Units
total porosity	0.501	(vol/vol)
field capacity	0.284	(vol/vol)
wilting point	0.135	(vol/vol)
sat.hydr.conductivity	1.9E-4	(cm/sec)
subsurface inflow	0	(mm/year)

2.9. Layer. Municipal Waste (312 kg/cub.m)7

Top Slope Length: 400.0000
Bottom Slope Length: 400.0000
Top Slope: 2.5000
Bottom Slope : 2.5000

[HELP] Vertical Perc. Layer Parameters

Parameter	Value	Units
total porosity	0.671	(vol/vol)
field capacity	0.292	(vol/vol)
wilting point	0.077	(vol/vol)
sat.hydr.conductivity	0.001	(cm/sec)
subsurface inflow	0	(mm/year)

2.10. Layer. Silty Loam2

Top Slope Length: 400.0000
Bottom Slope Length: 400.0000
Top Slope: 2.5000
Bottom Slope : 2.5000

[HELP] Vertical Perc. Layer Parameters

Parameter	Value	Units
total porosity	0.501	(vol/vol)
field capacity	0.284	(vol/vol)
wilting point	0.135	(vol/vol)
sat.hydr.conductivity	1.9E-4	(cm/sec)
subsurface inflow	0	(mm/year)

2.11. Layer. Municipal Waste (312 kg/cub.m)5

Top Slope Length: 400.0000
Bottom Slope Length: 400.0000
Top Slope: 2.5000
Bottom Slope : 2.5000

[HELP] Vertical Perc. Layer Parameters

Parameter	Value	Units
total porosity	0.671	(vol/vol)
field capacity	0.292	(vol/vol)
wilting point	0.077	(vol/vol)
sat.hydr.conductivity	0.001	(cm/sec)

subsurface inflow	0	(mm/year)
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2.12. Layer. Silty Loam6

Top Slope Length: 400.0000
Bottom Slope Length: 400.0000
Top Slope: 2.5000
Bottom Slope : 2.5000

[HELP] Vertical Perc. Layer Parameters

Parameter	Value	Units
total porosity	0.501	(vol/vol)
field capacity	0.284	(vol/vol)
wilting point	0.135	(vol/vol)
sat.hydr.conductivity	1.9E-4	(cm/sec)
subsurface inflow	0	(mm/year)

2.13. Layer. Municipal Waste (312 kg/cub.m)4

Top Slope Length: 400.0000
Bottom Slope Length: 400.0000
Top Slope: 2.5000
Bottom Slope : 2.5000

[HELP] Vertical Perc. Layer Parameters

Parameter	Value	Units
total porosity	0.671	(vol/vol)
field capacity	0.292	(vol/vol)
wilting point	0.077	(vol/vol)
sat.hydr.conductivity	0.001	(cm/sec)
subsurface inflow	0	(mm/year)

2.14. Layer. Silty Loam5

Top Slope Length: 400.0000
Bottom Slope Length: 400.0000
Top Slope: 2.5000
Bottom Slope : 2.5000

[HELP] Vertical Perc. Layer Parameters

Parameter	Value	Units
total porosity	0.501	(vol/vol)
field capacity	0.284	(vol/vol)
wilting point	0.135	(vol/vol)
sat.hydr.conductivity	1.9E-4	(cm/sec)
subsurface inflow	0	(mm/year)

2.15. Layer. Municipal Waste (312 kg/cub.m)1

Top Slope Length: 400.0000
Bottom Slope Length: 400.0000
Top Slope: 2.5000
Bottom Slope : 2.5000

[HELP] Vertical Perc. Layer Parameters

Parameter	Value	Units
total porosity	0.671	(vol/vol)
field capacity	0.292	(vol/vol)
wilting point	0.077	(vol/vol)
sat.hydr.conductivity	0.001	(cm/sec)
subsurface inflow	0	(mm/year)

2.16. Layer. Silty Loam1

Top Slope Length: 400.0000
Bottom Slope Length: 400.0000
Top Slope: 2.5000
Bottom Slope : 2.5000

[HELP] Vertical Perc. Layer Parameters

Parameter	Value	Units
total porosity	0.501	(vol/vol)
field capacity	0.284	(vol/vol)
wilting point	0.135	(vol/vol)
sat.hydr.conductivity	1.9E-4	(cm/sec)
subsurface inflow	0	(mm/year)

2.17. Layer. Municipal Waste (312 kg/cub.m)2

Top Slope Length: 400.0000
Bottom Slope Length: 400.0000
Top Slope: 2.5000
Bottom Slope : 2.5000

[HELP] Vertical Perc. Layer Parameters

Parameter	Value	Units
total porosity	0.671	(vol/vol)
field capacity	0.292	(vol/vol)
wilting point	0.077	(vol/vol)
sat.hydr.conductivity	0.001	(cm/sec)
subsurface inflow	0	(mm/year)

2.18. Layer. Silty Loam4

Top Slope Length: 400.0000
Bottom Slope Length: 400.0000
Top Slope: 2.5000
Bottom Slope : 2.5000

[HELP] Vertical Perc. Layer Parameters

Parameter	Value	Units
total porosity	0.501	(vol/vol)
field capacity	0.284	(vol/vol)
wilting point	0.135	(vol/vol)
sat.hydr.conductivity	1.9E-4	(cm/sec)
subsurface inflow	0	(mm/year)

2.19. Layer. Municipal Waste (312 kg/cub.m)3

Top Slope Length: 400.0000
Bottom Slope Length: 400.0000
Top Slope: 2.5000
Bottom Slope : 2.5000

[HELP] Vertical Perc. Layer Parameters

Parameter	Value	Units
total porosity	0.671	(vol/vol)
field capacity	0.292	(vol/vol)
wilting point	0.077	(vol/vol)
sat.hydr.conductivity	0.001	(cm/sec)
subsurface inflow	0	(mm/year)

2.20. Layer. Silty Clay

Top Slope Length: 400.0000
 Bottom Slope Length: 0.0000
 Top Slope: 2.5000
 Bottom Slope : 2.5000

[HELP] Barrier Soil Liner Parameters

Parameter	Value	Units
total porosity	0.479	(vol/vol)
field capacity	0.371	(vol/vol)
wilting point	0.251	(vol/vol)
sat.hydr.conductivity	2.5E-5	(cm/sec)
subsurface inflow	0	(mm/year)

1. Profile. EX 1yr

Annual Totals volume (ft3)

	Year-1	Total
Precipitation (ft3)	3.5803E+06	3.5803E+06
Runoff (ft3)	0.0000E+00	0.0000E+00
Percolation or leakance through Layer 19 (ft3)	5.2537E+04	5.2537E+04

2. Profile. IC 1yr

Annual Totals volume (ft3)

	Year-1	Total
Precipitation (ft3)	3.5803E+06	3.5803E+06
Runoff (ft3)	5.5214E-12	5.5214E-12
Percolation or leakance through Layer 20 (ft3)	1.9448E+04	1.9448E+04