



**BUNNELL
LAMMONS
ENGINEERING**

July 19, 2021


South Carolina Department of Health and Environmental Control
Solid Waste Permitting and Monitoring Section
Division of Mining and Solid Waste Management
2600 Bull Street
Columbia, South Carolina 29201-1708

APPROVED

SOLID WASTE PERMITTING & MONITORING SECTION
DIVISION OF MINING & SOLID WASTE MANAGEMENT
S.C. DEPARTMENT OF HEALTH & ENVIRONMENTAL CONTROL

Attention: Mr. Justin Koon, Manager

Subject: **Revised Seep Mitigation Plan**
Greenpointe Class 2 Landfill
500 Hamlin Road
Easley, Anderson County, South Carolina
Permit No. LF2-00001
BLE Project Number J21-11728-14

BY: 
TITLE: Manager
DATE APPROVED: Jul 29, 2021
PERMIT NUMBER: LF2-00001

Dear Mr. Koon:

On behalf of Wasteco, Inc., Bunnell-Lammons Engineering, Inc. (BLE) has prepared a Seep Mitigation Plan (Plan) for the Greenpointe Class 2 Landfill in Anderson County, South Carolina. This plan replaces our original plan dated July 13, 2021. Our Plan is a response to item (1) in the letter prepared by you dated June 16, 2021 titled “Request for Additional Information” regarding the subject facility. A response for items (2)-(4) will be prepared by others and submitted to SCDHEC. Item (1) is provided below for reference:

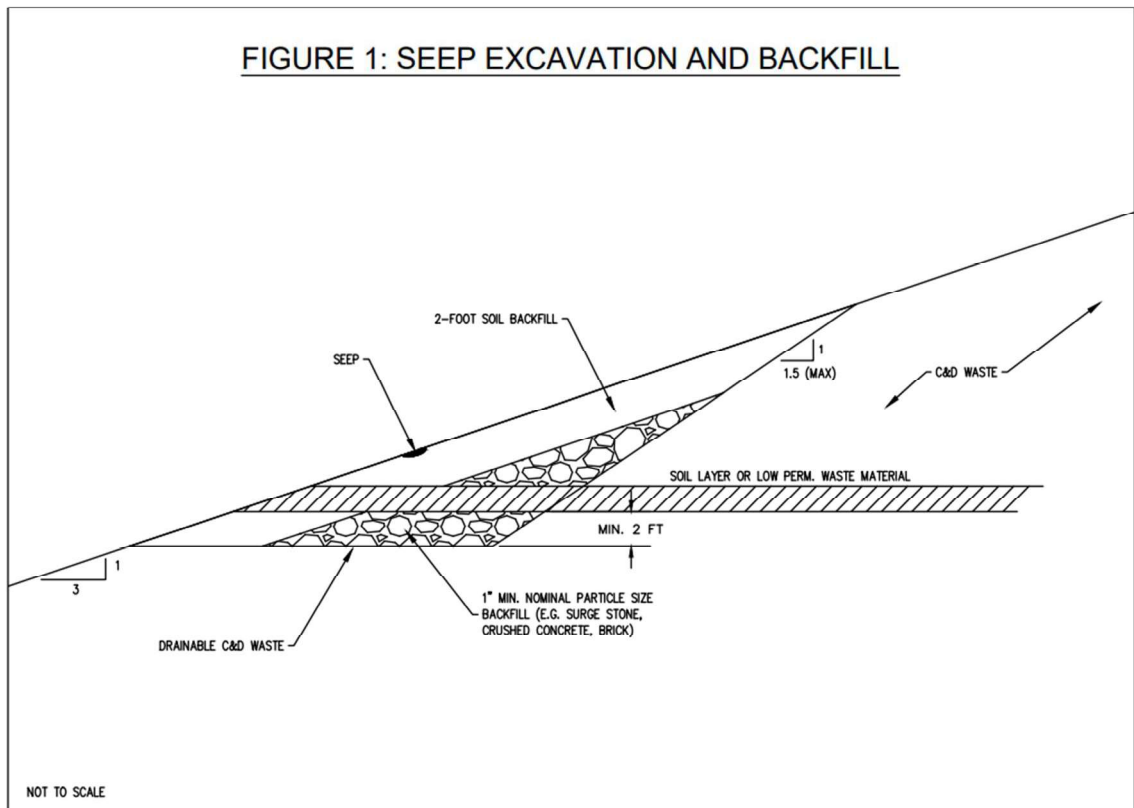
- 1) *Seep Mitigation Plan – This should detail the facility’s plan to look for seeps and then outline how they will be addressed and a timeframe to do so. In addition, the Plan should contain a proposed inspection sheet to be maintained by Greenpointe to document inspection dates, what was found, and if repairs were made at the facility. The Plan should be submitted for review by July 16, 2021.*

Seep Mitigation Plan

Bunnell-Lammons Engineering serves as the hydrogeologic, environmental, and geotechnical consultant for the Greenpointe Class 2 Landfill. We understand periodic inspections by the SCDHEC personnel have noted isolated seeps emanating from the waste slopes at the landfill. On June 24, 2021, BLE senior geotechnical engineer, Mr. Tyler Moody, P.E. performed a site walkover at the landfill and noted two (2) isolated seeps on the western landfill slope in the middle to upper third of the slope height. Previous seeps at the toe of the southern waste slope were no longer visible.

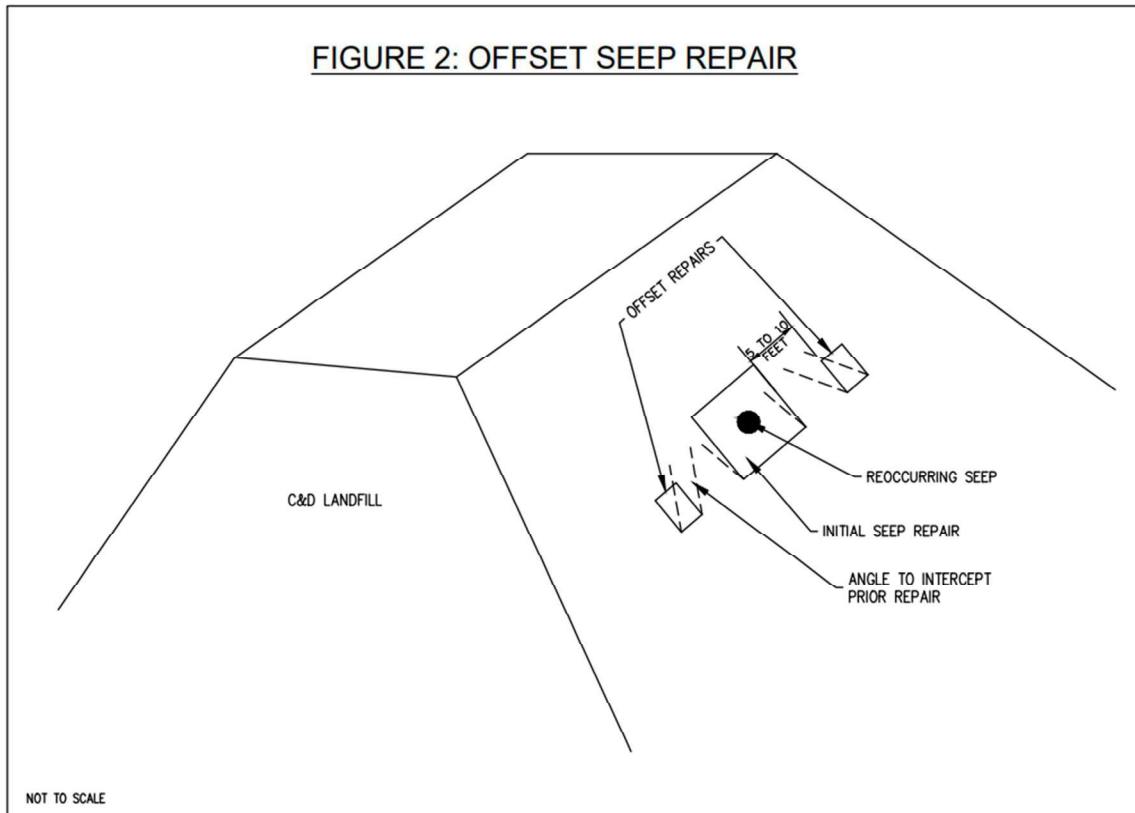
Liquid seeps are typically experienced at a vertical discontinuity in waste mounds, which can be due to a layer of lower permeability waste or a layer of intermediate cover soil. Seeps located above the toe of waste are more likely to be perched on a layer of intermediate cover soil. On-site soil generally consists of red-brown elastic silt, sandy silt and silty sand which generally have a lower permeability than C&D wastes. Intermediate waste slope grading plans are being prepared by others to improve storm water runoff which should result in less infiltration over the landfill topdeck and thereby less liquid to create seeps. The following plan provides a process of locating, controlling and mitigating seeps.

1. Landfill personnel shall traverse the landfill slopes no less than once every seven (7) calendar days and within 48 hours of a 1" or greater rain event to observe for areas of seepage. A log is to be kept at the landfill office to document the weekly site walk, observations, and action taken. An example log is included with this Plan. Weather permitting, seeps identified by either landfill or SCDHEC personnel are to be repaired within one (1) week.
2. When encountered, the seeps should be excavated up and down the slope beginning 1-3 feet below the lowermost seepage point, forming a trough above and behind the seep to penetrate lower permeability waste or cover soil which could be creating the lower permeability zone. The excavation should extend a minimum of 2 feet below the apparent lower permeability zone and should cover the entire ground surface where seepage was observed, plus 2 feet in each direction. Figure 1 below presents an excavation and backfill schematic to be used as a guide to excavation and backfilling.



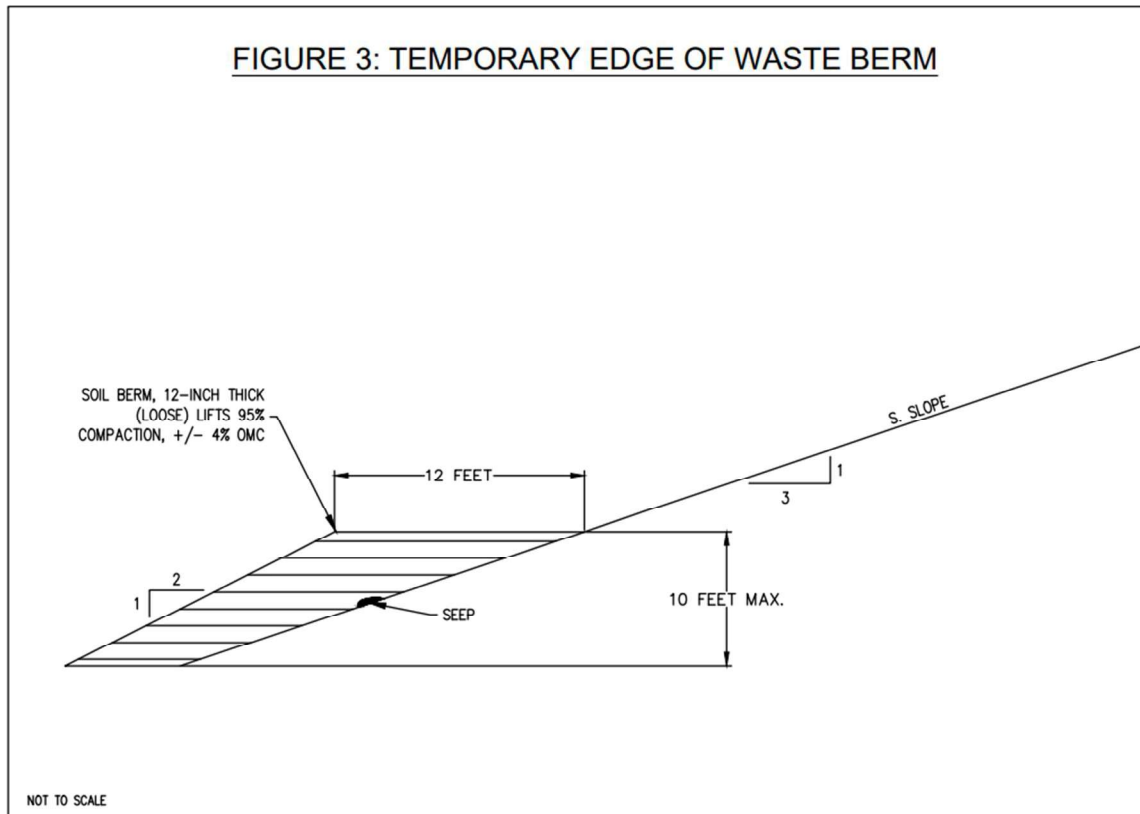
*****Excavations made at 1.5H:1V slope should not be more than 8 feet deep. Excavations up to 12 feet deep may be made at a 2H:1V slope or flatter.*****

3. The excavation is to be filled with durable, mineral-based backfill with a minimum nominal particle size of 1-inch, i.e. minimum D₅₀ of 1 inch. Examples of suitable backfill include, but are not limited to: quarry aggregate such as railroad ballast, crushed concrete, and crushed masonry.
4. The final 2 feet of backfill should consist of compacted, on-site clayey or silty soil placed in 12-inch thick lifts.
5. The area should be re-observed no later than three (3) days after completing the repair for reoccurrence of seepage. Should seepage reappear, offset excavations should be performed on each side of the initial repair but between 5 and 10 feet from the prior location. Figure 2 below presents a schematic of an offset repair.



6. Excavations for seep repairs should always terminate in waste and should not extend into the landfill base grade soil.
7. For mitigation of seeps located within 8 vertical feet of the toe of the temporary waste slope, currently located on the southern landfill slope, a soil berm will be constructed using on-site clayey soil. The berm is to have a maximum height of 10 feet with an outside slope of 2H:1V or flatter. Laterally, the berm should extend a minimum 20 feet past the seep location in each direction. The berm soil should be spread and compacted in horizontal lifts, placed in 12-inch thick loose lifts and compacted to a minimum 95% of the standard Proctor maximum dry density within 4 % of the optimum moisture content (ASTM D698). The minimum top

width should be sufficient to support earthwork equipment, i.e. on the order of 12 feet. The soil berm may be removed immediately prior to placement of future waste over the berm footprint.





Revised Seep Mitigation Plan
Greenpointe Class 2 Landfill; Anderson County, SC


July 19, 2021
BLE Project Number 121-11728-14

CLOSING

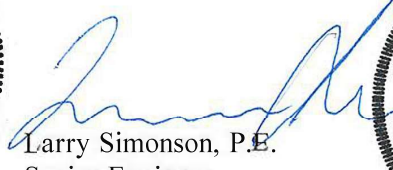
BLE has prepared this Seep Mitigation Plan in response to the comment letter by SCDHEC dated June 16, 2021. If you have any questions, please do not hesitate to contact us at (864) 288-1265.

Sincerely,

BUNNELL-LAMMONS ENGINEERING, INC.


Tyler W. Moody, P.E.
Senior Engineer
SC License No. 32035

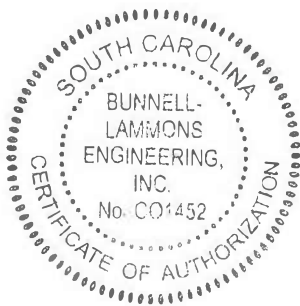



Larry Simonson, P.E.
Senior Engineer
SC License No. 33629



Attachment: Weekly Seep and Waste Slope Inspection Log

cc: Mr. Ryan Ohmer, P.E. (Alliance Consulting Engineers)
Ms. Emily Palamara (Alliance Consulting Engineers)
Mr. Ty Hawkins, CHMM (BLE)



Greenpointe Class 2 Landfill
2021 Seep and Waste Slope Inspection Log

Week No.	Date	Observation by	Action	Signature
1	-	-	-	-
2	-	-	-	-
3	-	-	-	-
4	-	-	-	-
5	-	-	-	-
6	-	-	-	-
7	-	-	-	-
8	-	-	-	-
9	-	-	-	-
10	-	-	-	-
11	-	-	-	-
12	-	-	-	-
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Greenpointe Class 2 Landfill
2021 Seep and Waste Slope Inspection Log

Week No.	Date	Observation by	Action	Signature
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