Cheswick Lefever, LLC

4235 South Stream Blvd.
Suite 180
Charlotte, NC 28217
Phone: 704-731-2300
FAX: 980-288-6200

October 2, 2026

Pennsylvania Department of Environmental Protection
Sharon Svitek
Program Manager, Waste Management
Southwest Region
400 Waterfront Drive
Pittsburgh, Pennsylvania 15222-4745

Cap and Closure Construction Quality Assurance Report
Cheswick Generating Station Ash Disposal Facility
Indiana Township, Allegheny County, Pennsylvania
Solid Waste Permit No. 300720

Dear Ms. Svitek:

Attached is the "Cap and Closure Construction Quality Assurance Report" for the Cheswick Generating Station Ash Disposal Facility located in Indiana Township, Allegheny County, Pennsylvania. The report was prepared for Cheswick Lefever, LLC by GAI Consultants, Inc. This report contains Form 19R certifying closure of the facility.

This report is being submitted to you electronically. A copy of the report will be submitted to the Pennsylvania Department of Environmental Protection's OnBase system, with the reference number emailed to Ms. Sharon Svitek.

If there are questions regarding this report, contact Mr. Norman Divers at 704.731.2300.

Sincerely,



Norman Divers
Vice President, Environmental, Health & Safety
Charah Solutions, Inc

Attachment: 2026 Cheswick Ash Disposal Site Cap and Closure Construction Quality Assurance Report and Certification

cc: Mr. John R. Klamut, PE, GAI Consultants, Inc. (one electronic copy)
Mr. Kevin M. Bortz, PE, GAI Consultants, Inc. (one electronic copy)
Mr. Matthew Barch, PE, PADEP (one electronic copy)
Mr. Gary Deigan, Deigan & Associates, LLC (one electronic copy)
Mr. Richard Ravotti, Charah Solutions (one electronic copy)

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2026 Cheswick Ash Disposal Site Cap and Closure Construction Quality Assurance Report and Certification

Cheswick Lefever, LLC
Cheswick Generating Station Ash Disposal Facility
Indiana Township, Allegheny County, Pennsylvania

GAI Project Number: R220960.00
October 2026

Cheswick Lefever, LLC

Prepared by: GAI Consultants, Inc.
Pittsburgh Office
385 East Waterfront Drive
Homestead, Pennsylvania 15120-5005

Prepared for: Cheswick Lefever, LLC
151 Porter Street
Springdale, Pennsylvania 15144

2026 Cheswick Ash Disposal Site Cap and Closure Construction Certification Report

Cheswick Lefever, LLC
Cheswick Generating Station Ash Disposal Facility
Indiana Township, Allegheny County, Pennsylvania

GAI Project Number: R220960.00

October 2026

Prepared for:
Cheswick Lefever, LLC
151 Porter Street
Springdale, Pennsylvania 15144

Prepared by:
GAI Consultants, Inc.
Pittsburgh Office
385 East Waterfront Drive
Homestead, Pennsylvania 15120-5005

Report Authors:

Cory Simon White

Digitally signed by Cory Simon White
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Date: 2026.10.02 15:52:01-04'00'

Cory S. White, E.I.T.
Senior EIT 2

Paul John Martinchich

Digitally signed by Paul John Martinchich
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Date: 2026.10.02 16:00:18-04'00'

Paul J. Martinchich, P.E.
Senior Engineering Manager 1

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Reason: I have reviewed this document
Date: 2026.10.02 15:53:11-04'00'

Kevin M. Bortz, P.E.
Senior Engineering Manager 2

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Appendix A PADEP Permit Major Modification Letter, 1997

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Appendix C Final Cover Soil Conformance Laboratory Testing Results

Appendix D Seed Mixes

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1.0 Introduction

GAI Consultants, Inc. (GAI) has prepared this Construction Certification Report (Report) to provide record documentation of the 2025-2026 capping and closure construction activities at the Cheswick Generating Station Ash Disposal Facility (Landfill) for Cheswick Lefever, LLC (Owner). The Landfill is a captive Landfill facility operated by the Owner.

The Landfill is licensed to operate under Solid Waste Permit No. 300720 (Permit) as issued by the Pennsylvania Department of Environmental Protection (PADEP) to the permittee, Cheswick Lefever, LLC. The Landfill is in Indiana Township, Allegheny County, Pennsylvania (PA) and was used for the disposal of residual waste materials produced by the Cheswick Generating Station's bituminous coal-fired electric generating boilers and supporting sources.

In April 2022, ownership of the landfill was transferred from GenOn Holdings, LLC to Cheswick Lefever, LLC. As of October 2025, the landfill ceased receiving residual waste. The materials disposed at the Landfill consist of fly ash, bottom ash, gypsum, and other coal and non-coal waste-related materials.

Residual waste disposal activities at the Landfill have ceased, and the Owner has completed closure of the remaining areas of the Landfill requiring closure. The Owner has closed the Landfill under the PADEP Section 288.234 of the Residual Waste Management Regulations with the final cover system described herein.

This report captures the activities completed in the entirety of the closure/capping project.

The cap/final cover system consists of a vegetated final cover soil layer (24-inch-thick compacted soil layer consisting of two 12-inch compacted lifts).

At the commencement of the capping project, approximately 20 acres of active disposal area were proposed to be capped, with the remainder of the Landfill having been previously closed in accordance with the Landfill permit. A subgrade was developed for the capping project by grading the residual waste surface to meet slope and drainage requirements. Cover soil was then placed, graded, and compacted in 12-inch-thick lifts. Site soil borrow areas were used as the final cover soil.

GAI was responsible for providing closure construction guidance based on the facility's Residual Waste Permit documents, conducting the closure Construction Quality Assurance (CQA) program, and preparing the Construction Quality Assurance Report with Record Drawings. The general contractor for the site construction was Charah Solutions, Inc (Charah) of Louisville, Kentucky. Laboratory testing of the soils was conducted by Geotechnics, Inc. (Geotechnics) of East Pittsburgh, PA. Site layout and record surveying were provided by GAI.

1.1 Project Description

Landfill capping construction activities that were observed and documented by GAI included the following items:

- Erosion and sedimentation control measures;
- Prepared subgrade development;
- Final cover soil placement and compaction; and
- Seeding and mulching.

1.2 Project Specifications

Cover construction was controlled by the following documents:

- Solid Waste Permit No. 300720;
- United States Environmental Protection Agency's "Standards for the Disposal of Coal Combustion Residuals in Landfills and Surface Impoundments," published in the Federal Register on April 17, 2015, with an effective date of October 19, 2015 (40 CFR 257 Subpart D), and subsequent revisions (CCR Rule);
- *Construction Quality Assurance Plan (CQA Plan).* Incorporated into Solid Waste Permit No. 300720.
- *Erosion and Sediment Pollution Control Manual.* Pennsylvania Department of Environmental Protection, March 2012.

1.3 Cap and Cover System

As allowed in a major modification approval letter from PADEP to Scott K. Rogers of the Duquesne Light Company [February 12, 1997 (see Appendix A)], the final cover requirements of 25 Pa. Code §§288.234(a)(1) and (2) have been waived (item 26 of the letter). Placement of final cap and cover soil was therefore required to meet the details shown in the permit package drawings, in which final cover is shown as two feet of soil.

Closure of the Landfill, consisting of capping and covering the remaining areas to be closed, was therefore be based on the requirements of the CCR Rule, where 40 CFR §257.102(d)(3)(i)(A) states that "the permeability of the final cover system must be less than or equal to the permeability of any bottom liner system or natural subsoils present, or a permeability no greater than 1 x 10^{-5} centimeter per second (cm/sec), whichever is less," and specific PADEP permit requirements (such as soil texture, loss on ignition, classification, etc.). A GAI assessment from 2017 noted that the various subsoils documented to be under the Landfill are reported to have an estimated permeability that exceeds 1 x 10^{-5} cm/sec. The maximum recommended permeability of the final cover system is therefore set at 1 x 10^{-5} cm/sec.

The final cover system for closure of the Landfill was placed on areas that had previously been undergoing active disposal (approximately 20 acres). All other portions of the Landfill have previously been capped and certified as closed using PADEP Form 19R and are not considered in this Report.

1.4 Purpose and Scope of Construction Quality Assurance Program

The purpose of the CQA program was to observe and document the final cover construction in conformance with the requirements of the Permit, CQA Plan, and CCR Rule. These requirements were satisfied by the general implementation of the CQA Plan through visual observations, material testing, and record documentation. The CQA Plan also included surveying requirements for the generation of record drawings of the various components. Record drawings are included in this report.

The scope of the CQA monitoring and documentation services provided by GAI included collecting and transporting samples for laboratory testing, evaluating field and laboratory test data, providing on-site personnel to observe and document construction activities, performing field testing of materials, consulting Cheswick Lefever, LLC on the contractor's compliance with the CQA Plan, and preparing the Construction Certification Report. Weekly progress meetings were held between the appropriate parties during construction.

1.5 Project Personnel

During construction, GAI and other support staff from various companies combined services to complete the capping construction. The supporting parties/personnel primarily consisted of the following:

a) GAI Consultants, Inc. (CQA Firm):

Kevin M. Bortz, P.E. - Certifying Engineer, Quality Assurance Officer, and Project Manager
John R. Klamut, P.E. - Project Advisor
Paul J. Martinchich, P.E. – Engineering Advisor
Cory S. White, E.I.T. - Project Engineer and Lead Quality Control Inspector (QCI)

b) Cheswick Lefever, LLC (Owner) and Charah (Operator/Contractor):

Norman Divers - Vice President of Environmental, Health and Safety
Sam Miller - Project Manager
Richard Ravotti – Environmental Engineer
Richard Booher – Field Superintendent

2.0 Prepared Subgrade

2.1 Overview

The Landfill's exposed coal combustion residuals (CCR) surface that was capped as part of this closure project was graded to promote positive drainage of the final cover. Survey points of the prepared subgrade surface were taken to verify slope and to later compare to final cover surface elevations for measurement of cover soil thickness. Refer to Record Drawings D2-004 and D2-005 for the Subgrade Plan and details, respectively.

2.2 Subgrade Grading

Subgrade grading began in February 2025 and was completed in sections until October 2025. Grading of the CCR subgrade began in the northeast area of the Landfill, creating a new bench and slope on the eastern face of the Landfill. Grading was performed with a dozer and the CCR subgrade was compacted with a minimum two passes of a smooth drum roller when at an acceptable grade. The subgrade was compacted to visual compaction (non-movement) in the presence of a QCI.

GAI provided recurrent CQA monitoring during subgrade grading. Subgrade grading was performed in accordance with Permit requirements.

3.0 Final Cover Soil

3.1 Overview

The final cover soil within the closure area was placed and compacted to a minimum in-place thickness of 24 inches. Refer to Record Drawings D2-005 and D2-010 for the Final Cover Plan and details. The final cover soil was obtained from designated borrow areas adjacent to the Landfill. Final cover soil placement began on March 12, 2025 and was completed on November 4, 2025. Final cover soil placement began in the northeast area of the closure area and continued until final cover soil placement was completed at the southwest corner of the closure area.

GAI provided recurrent CQA monitoring during final cover soil placement. Final cover soil placement was performed in accordance with Permit and CCR Rule requirements.

3.2 Final Cover Soil Conformance Laboratory Testing

The required final cover soil conformance tests for the closure area were performed prior to and throughout the 2025 construction seasons. Conformance tests were performed on samples of soil obtained from the borrow areas used for final cover and as final cover soil was being placed. The number of samples obtained for testing was in accordance with the Permit CQA Plan, dated September 1998. The soil conformance test results are summarized in Appendix C. All conformance test results met the requirements of the Permit CQA Plan.

3.3 Final Cover Soil Placement, Compaction and Grading

The final cover soil was spread by a dozer in two 12-inch lifts equivalent to a minimum of 24 inches thick after compaction. Final cover soil placement was periodically observed by GAI's QCI who observed visual compaction (non-movement) and took nuclear density gauge tests at a frequency of once per acre per lift to check the required minimum density of 95% compaction (See Appendix B for compaction results). Compacted soil was compared to the most applicable proctor. Density testing results and locations are included in Appendix B. The GAI QCI also observed that lift thicknesses were approximately 12 inches thick.

After placement and before seeding and mulching, the final cover soil surface was surveyed by GAI. GAI evaluated the survey results and provided additional auger inspections to verify that the final cover soil thickness and grades of the closure area met the requirements of a 24-inch-thick final cover soil layer.

3.4 Seeding and Mulching

Seeding and mulching of the final cover soil and borrow areas began on October 6, 2025, and was paused on November 28, 2025. Seeding and mulching resumed in May 2026 and was completed in September 2026. A hydraulic seeder and straw blower were used for the seeding/mulching operations around the borrow areas and closure area. The seed mixture was provided by Ferguson Waterworks. Seeding and mulching were applied by Charah. Prior to application, the seed mixture was submitted by Charah and reviewed by GAI for compliance with the Permit; it is included in Appendix D.

GAI provided recurrent CQA monitoring during seeding and mulching. Both were applied in accordance with Permit requirements.

3.5 Final Cover Soil Certification

GAI provided recurrent CQA monitoring during final cover soil placement, seeding, and mulching. The final cover soil surface was approved by GAI's QCI prior to seeding and mulching. Form 19R – Certification of Facility Construction Activity certifying that the final cover soil was constructed in accordance with the Permit included in this Certification Report.

4.0 Drainage Features

The final closure grading provided corridors for off-site drainage to be diverted around the Landfill or to perimeter stormwater manhole risers. To prevent erosion due to runoff in these corridors, certain flow paths were lined with RollMax™ Vmax® SC250® for erosion control. Refer to Record Drawings D2-004 and D2-005, Details 2 and 7.

An 18-inch corrugated High Density Polyethylene culvert was installed in the northeast corner of the site to direct surface drainage to an existing fabric-formed concrete diversion channel. Refer to Record Drawings D2-004 and D2-010.

Surface runoff from the closed Landfill was directed to seven stormwater manhole risers around the plateau area of the Landfill. Manhole riser structures were extended to the surface and a storm grate installed at the top to allow inflow of surface water runoff from the final cover. The extension was achieved through a perforated extension of the stormwater riser system through the final soil cover, as

shown on Drawing D2-005, Detail 3 and in Photograph 4. Refer to Drawings D2-005 Detail 3 and D2-006.

Six existing leachate conveyance (CCR contact water) perforated risers were capped and sealed in the final cover soil portion of the cap to prevent non-contact stormwater from being conveyed into the leachate system. This was achieved through extension and capping of the leachate riser system, as shown on Drawings D2-005 Detail 4 and D2-006 and in Photograph 7.

Product cut sheets for materials used are included in Appendix D.

5.0 Conclusion

GAI provided CQA services to Cheswick Lefever, LLC for construction observation and documentation of field and laboratory testing of the soils installed in the closure area. As a part of the scope of work for this project, GAI provided CQA services on the following components:

- Prepared subgrade;
- Final cover soil;
- Borrow Area Development;
- Surface Water Riser Structures;
- Leachate Riser Structures;
- Perimeter Drainage Control;
- Culvert; and
- Seeding and Mulching.

During construction of each component, GAI documented the conformance of construction materials and installation methods with the requirements of the Landfill Permit. GAI performed or monitored the required testing using the methods and frequencies outlined in the Permit CQA Plan. GAI also identified and documented any non-conforming materials, site conditions, or test results. Any non-conforming materials or work were reported for subsequent retesting or replacement as required. GAI also prepared and utilized survey information and site investigation to verify conformance of the overall thickness of the final soil cover to the requirements of the Permit and the CCR Rule.

In conclusion, based on GAI's observations during construction and the test results presented in this Certification Report, it is GAI's opinion that Landfill Closure activities in the area observed was constructed in conformance with the Permit and CCR Rule. Final Landfill conditions are shown on the Record Drawings.

6.0 Closure and Certification

6.1 Closure Statement

The information and data provided in this report, including material test results and field revisions, are applicable to the closure area monitored by GAI and represent our understanding of significant aspects of the construction work completed. Areas previously certified as closed were not observed and certifications contained herein do not represent those areas. No attempt should be made to apply the information contained in this Certification Report to other situations and sites, nor should the information contained in this report be modified or revised without prior consultation with GAI.

6.2 Certification Form

Form 19R - Certification of Facility Construction Activity is included on the next page, certifying that closure of the area considered as part of this report was constructed in accordance with approved Solid Waste Permit No. 300720.

FORM 19R - CERTIFICATION OF FACILITY CONSTRUCTION ACTIVITY

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2540-PM-BM0377 6/2005

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT

Date Prepared/Revised 10/2/2026
DEP USE ONLY
Date Received

FORM 19R
CERTIFICATION OF FACILITY CONSTRUCTION ACTIVITY

This form must be fully and accurately completed. All required information must be typed or legibly printed in the spaces provided. If additional space is necessary, identify each attached sheet as Form 19R, reference the item number and identify the date prepared. The "date prepared/revised" on any attached sheets needs to match the "date prepared/revised" on this page.

General References: Sections 288.202, 289.202

SECTION A. SITE IDENTIFIER

Applicant/permittee: Cheswick Lefever, LLC

Site Name: Cheswick Ash Disposal Facility

Facility ID (as issued by DEP): Permit No 300720

SECTION B. P.E. CERTIFICATION

I, Kevin M. Bortz (Engineer's Name - Print or Type), being a Registered Professional Engineer in accordance with the Pennsylvania Professional Engineer's Registration Law do hereby certify that to the best of my knowledge, information and belief that the following construction activity for:

FACILITY NAME: **Cheswick Ash Disposal Site Closure**

FACILITY LOCATION: **Indiana, Pennsylvania** (Municipality) Allegheny (County)

is constructed, and prepared in accordance with the documents, statements, designs, and plans submitted as part of Application No. **300720** as approved by the Department of Environmental Protection.

SECTION C. CONSTRUCTION ACTIVITY

RESIDUAL WASTE LANDFILL

- ☐ 1. Ground water monitoring system*
- ☐ 2. Subbase
- ☐ 3. Placement of attenuating soil at natural attenuation facilities (Class 3 only)
- ☐ 4. Secondary liner (Class 1 only)
- ☐ 5. Leachate detection zone (Class 1 only)
- ☐ 6. Primary liner
- ☐ 7. Protective cover and the collection system within the protective cover
- ☐ 8. Leachate treatment/conveyance facilities
- ☐ 9. Sedimentation ponds/erosion and sedimentation control structures
- ☒ 10. Closure
- ☐ 11. Gas management system
- ☐ 12. Roadways
- ☐ 13. Radioactive monitoring system
- ☐ 14. Other Explain _____

RESIDUAL WASTE DISPOSAL IMPOUNDMENT

- ☐ 1. Ground water monitoring system*
- ☐ 2. Subbase
- ☐ 3. Leachate detection zone
- ☐ 4. Secondary liner (Class 1 only)
- ☐ 5. Protective cover and the collection system within the protective cover
- ☐ 6. Primary liner
- ☐ 7. Leachate treatment/conveyance facilities
- ☐ 8. Sedimentation ponds/erosion and sedimentation control structures
- ☐ 9. Closure
- ☐ 10. Roadways
- ☐ 11. Radioactive monitoring system
- ☐ 12. Other Explain _____

* P.G. Certification Recommended. See Page 2.

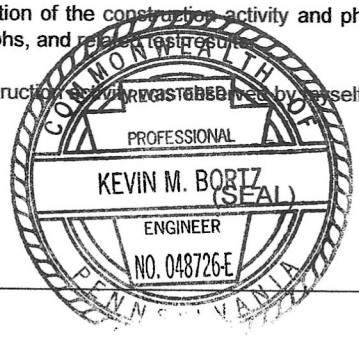
PROCESSING FACILITY

Description of Construction Activity:

- ☒ 1. Soil cap and vegetation for closure of the area in the associated figure.
- ☐ 2. _____

A description of the construction activity and phase or sequence of construction involved is included, along with appropriate as-built drawings, plans, photographs, and related test results.

The construction activity was supervised by myself or a person under my direct supervision, in a manner consistent with the approved permit.



Engineer's Signature: _____

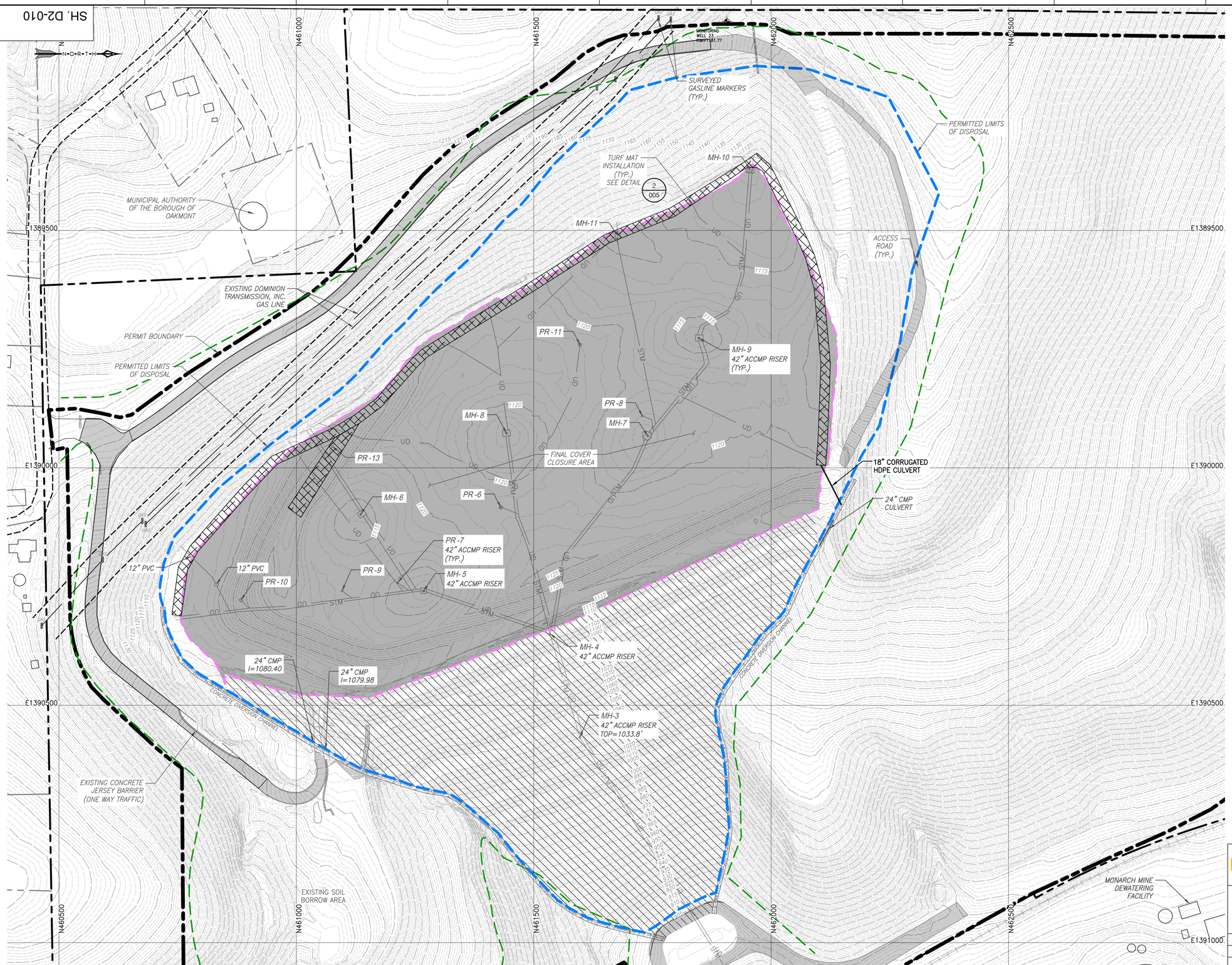
Name of Firm: GAI Consultants, Inc.

Address: 385 East Waterfront Drive, Homestead, PA, 15120

Telephone Number (412) 399.5416

Date: 10/2/2026

SH. D2-010



LEGEND

- PERMIT BOUNDARY
- 1080 — SURVEYED MAJOR CONTOUR
- 1082 — SURVEYED MINOR CONTOUR
- PROPERTY BOUNDARY
- EXISTING ADJOINING PROPERY
- EXISTING ACCESS EASEMENT
- PREVIOUSLY CLOSED AREA
- FINAL COVER CLOSURE AREA
- PERMITTED LIMITS OF WASTE DISPOSAL
- STM — EXISTING STORM DRAIN PIPING
- UD — EXISTING UNDERDRAIN PIPING
- EXISTING CONCRETE CHANNEL/DOWNCHUTE
- PR-8 ○ MH-7 — EXISTING PERFORATED RISER MANHOLE
- EXISTING ACCESS ROAD
- EXISTING GAS LINE
- GAS LINE RIGHT-OF-WAY
- GAS — SURVEYED GASLINE MARKER
- TREE LINE
- EXISTING CULVERT
- EXISTING JERSEY BARRIER
- EXISTING RAILROAD TRACKS
- PERMITTED LIMIT OF CLEARING AND GRUBBING
- TURF MAT

REFERENCE

1. FINAL COVER SURFACE ELEVATIONS FROM GAI FIELD SURVEYS DATED 12/01/2025, AND 12/02/2025. PLAN NORTH IS BASED UPON PENNSYLVANIA STATE PLANE NAD83 AND VERTICAL DATUM IS BASED UPON NAVD88.
2. PROPERTY BOUNDARY SURVEY BY GAI CONSULTANTS INC. DATED 11-8-2024, IS TITLED CHESWICK LANDFILL PROPERTY.
3. TOPOGRAPHY OF AREAS OUTSIDE THE ACTIVE WASTE DISPOSAL AREA WERE REFERENCED FROM THE END OF 2017 ANNUAL TOPOGRAPHIC SURVEY. THE FOLLOWING ITEMS ARE NOTED:
   - A. THE EXISTING PERMITTED LIMIT OF DISPOSAL WAS REFERENCED FROM DUQUESNE LIGHT COMPANY PERMIT DRAWING 12079-B10, DATED 3/1/79. LOCATIONS SHOWN ARE APPROXIMATE.
   - B. DOMINION TRANSMISSION, INC. (DTI) GAS LINES LN-30 AND TL-469 HAVE AN ASSUMED RIGHT-OF-WAY WIDTH ON THE OUTSIDE OF EACH GAS LINE OF 25 FEET.
   - C. RAILROAD ALIGNMENT WAS OBTAINED FROM AERIAL IMAGERY.

NOTES:

1. ONLY AREAS IDENTIFIED AS "FINAL COVER CLOSURE" ARE BEING CERTIFIED AS CLOSED ON THIS DRAWING. AREAS NOTED AS PREVIOUSLY CLOSED HAVE BEEN CERTIFIED CLOSED UNDER FORM 19R PRIOR TO THIS SUBMISSION.
2. A MINIMUM OF TWO FEET OF FINAL SOIL COVER WAS PLACED ON THE CCR FINAL SURFACE TO COMPLETE CLOSURE OF THE LANDFILL.
3. ROAD LOCATIONS ON THE NORTH SIDE OF THE LANDFILL MAY HAVE BEEN ADJUSTED DURING CLOSURE CONSTRUCTION.

SCALE: 1" = 100'

100 0 100 200

gai consultants

Cheswick Lefever, LLC

CHESWICK GENERATION STATION

CHESWICK ASH DISPOSAL SITE
FINAL COVER SURFACE AT CLOSURE

DRAWN: 12/22/2025	KAPEL	DRAWING NUMBER
CHECKED	CWHITE	
APPROVED	KBORTZ	SHEET: D2-010
SIZE: D 22X34		REV:
DISCIPLINE: CIVIL	SCALE: AS SHOWN	FILE: R220960-00-002-C-D2-010

NO.	DATE	REVISION	BY	CHK.	APP.
1	10-02-2026	DETAILS ADDED	BW	CSW	KMB

© 2025 GAI Consultants, Inc.

GAI FILE PATH: Z:\2022\R220960.00 - CHESWICK-FINAL CLOSURE PL\CAD\ACAD\PRODUCTION DWGS\R220960-00-002-C-D2-010.DWG PLOTTED BY: BRANDON WILEY DATE: 09/28/2026 PLOT FILE: GAI.STB

PHOTOGRAPHS

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Photograph 1. Soil from the north borrow area being hauled to the closure area.



Photograph 2. Final Cover Soil Compaction with a Smooth Drum Roller



Photograph 3. Grading of final cover soil via dozer



Photograph 4. Installation of stormater riser manhole .



Photograph 5. Nuclear density testing of compacted final cover soil.



Photograph 6. Silt sock around stormwater riser manhole



Photograph 7. Cap welded on to the top of a leachate pipe riser.



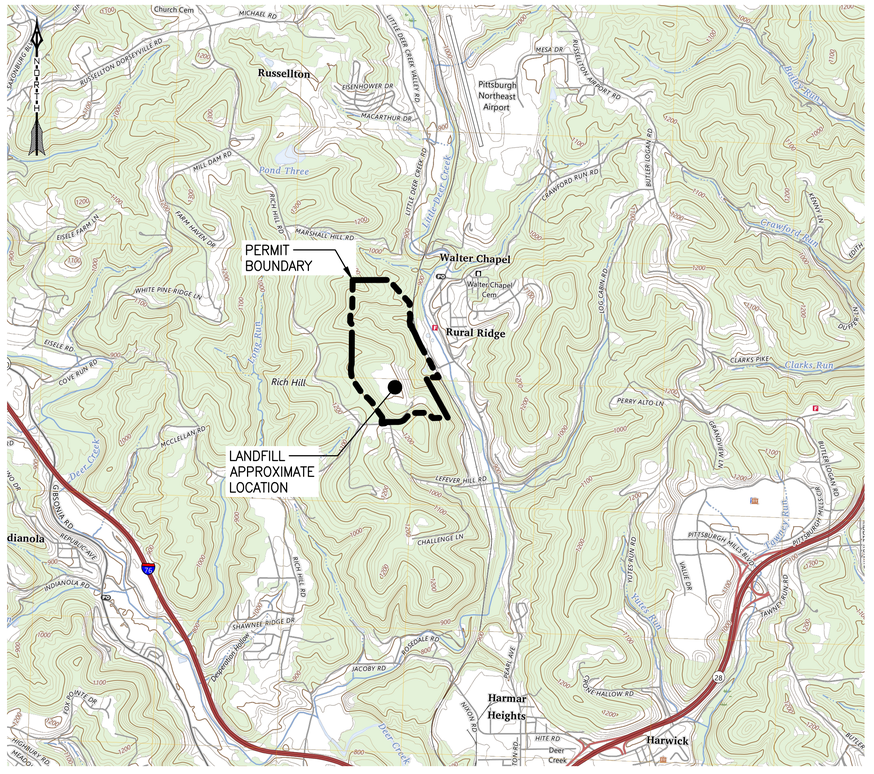
Photograph 8. View of the final cover surface facing south (August 2026).

DRAWINGS

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CHARAH SOLUTIONS, LLC
CHESWICK ASH DISPOSAL FACILITY
FACILITY CLOSURE
OCTOBER 2026

GAI CONSULTANTS INC.
385 E WATERFRONT DRIVE
HOMESTEAD, PA 15120



SITE LOCATION MAP

SCALE: 1" = 2000'

2000 0 2000 4000

MAP REFERENCE:
U.S.G.S. 7.5-MINUTE SERIES
NEW KENSINGTON WEST QUADRANGLE,
PENNSYLVANIA, CREATED 2023

DRAWING INDEX		
DRAWING NO.	REV. NO.	DRAWING TITLE
D2-001	1	COVER SHEET
D2-004	1	FINAL CCR SUBGRADE PLAN
D2-010	1	FINAL COVER PLAN
D2-005	1	CLOSURE PLAN DETAILS – SHEET 1 OF 2
D2-006	1	CLOSURE PLAN DETAILS – SHEET 2 OF 2

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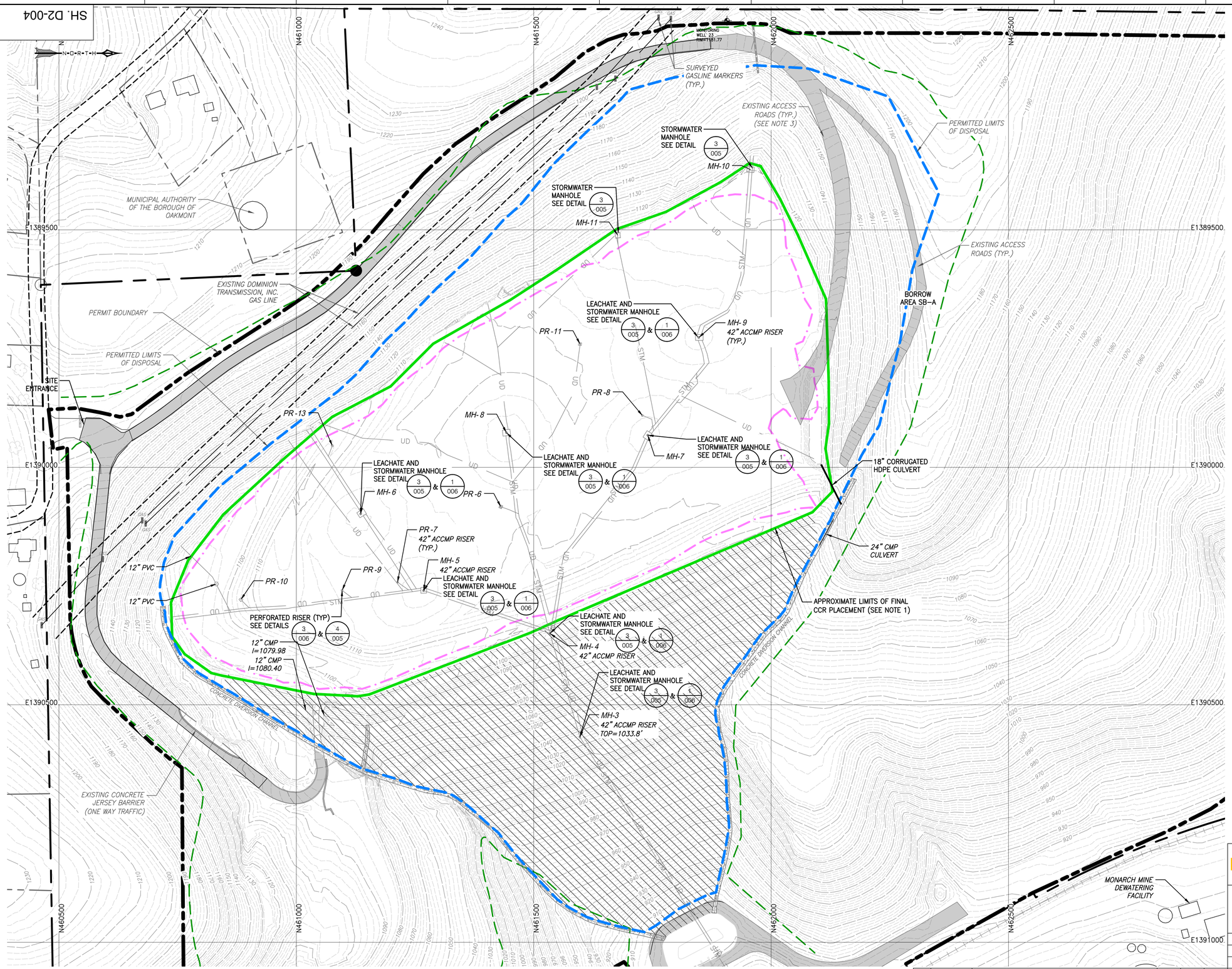
Cheswick Lefever, LLC

CHESWICK GENERATION STATION

CHESWICK ASH DISPOSAL SITE
COVER SHEET

DRAWN: 11-13-2024	DMURGI	DRAWING NUMBER
CHECKED	CWHITE	
APPROVED	KBORTZ	SHEET: D2-001
SIZE: D 22X34		REV:
DISCIPLINE: CIVIL	SCALE: AS SHOWN	FILE: R220960-00-002-C-D2-001

NO.	DATE	REVISION	BY	CHK.	APP.
1	10-02-2026	REVISED DRAWING INDEX	BW	CSW	KMB



LEGEND

- PERMIT BOUNDARY
- SURVEYED MAJOR CONTOUR
- SURVEYED MINOR CONTOUR
- PROPERTY BOUNDARY
- EXISTING ADJOINING PROPERY
- EXISTING ACCESS EASEMENT
- CLOSED AREA
- FORMER ACTIVE WASTE DISPOSAL AREA
- PERMITTED LIMITS OF WASTE DISPOSAL
- STM — EXISTING STORM DRAIN PIPING
- UD — EXISTING UNDERDRAIN PIPING
- EXISTING CONCRETE CHANNEL/DOWNCHUTE
- PR-8 ○ MH-7 — EXISTING PERFORATED RISER MANHOLE
- EXISTING ACCESS ROAD
- EXISTING GAS LINE
- GAS LINE RIGHT-OF-WAY
- GAS — SURVEYED GASLINE MARKER
- TREE LINE
- EXISTING CULVERT
- EXISTING JERSEY BARRIER
- EXISTING RAILROAD TRACKS
- PERMITTED LIMIT OF CLEARING AND GRUBBING

NOTES:

1. THE FINAL CCR SUBGRADE SURFACE ELEVATIONS SHOWN REPRESENT CONDITIONS AT LANDFILL CLOSURE.
2. A MINIMUM OF TWO FEET OF FINAL COVER SOIL WILL BE PLACED ON THE CCR SUBGRADE SURFACE TO COMPLETE CLOSURE OF THE LANDFILL.

REFERENCE

1. CCR FINAL SURFACE ELEVATIONS FROM GAI FIELD SURVEYS DATED 02/24/2025, 03/31/2025, 05/02/2025, 05/28/2025, 06/30/2025, AND 07/22/2025. PLAN NORTH IS BASED UPON PENNSYLVANIA STATE PLANE NAD83 AND VERTICAL DATUM IS BASED UPON NAVD88.
2. PROPERTY BOUNDARY SURVEY BY GAI CONSULTANTS INC. DATED 11-8-2024, IS TITLED CHESWICK LANDFILL PROPERTY.
3. TOPOGRAPHY OF AREA OUTSIDE THE ACTIVE WASTE DISPOSAL AREA WERE REFERENCED FROM THE END OF 2017 ANNUAL TOPOGRAPHIC SURVEY. THE FOLLOWING ITEMS ARE NOTED:
   - A. THE EXISTING PERMITTED LIMIT OF DISPOSAL WAS REFERENCED FROM DUQUESNE LIGHT COMPANY PERMIT DRAWING 12079-B10, DATED 3/1/79. LOCATIONS SHOWN ARE APPROXIMATE.
   - B. THE APPROXIMATE LOCATION OF THE TREELINE IS BASED ON INFORMATION PROVIDED BY CHARAH, INC IN MAY 2015.
   - C. DOMINION TRANSMISSION, INC. (DTI) GAS LINES LN-30 AND TL-469 HAVE AN ASSUMED RIGHT-OF-WAY WIDTH ON THE OUTSIDE OF EACH GAS LINE OF 25 FEET.
   - D. RAILROAD ALIGNMENT WAS OBTAINED FROM AERIAL IMAGERY.

SCALE: 1" = 100'

100 0 100 200

gai consultants

Cheswick Lefever, LLC

CHESWICK GENERATION STATION

CHESWICK ASH DISPOSAL SITE
FINAL CCR SUBGRADE PLAN

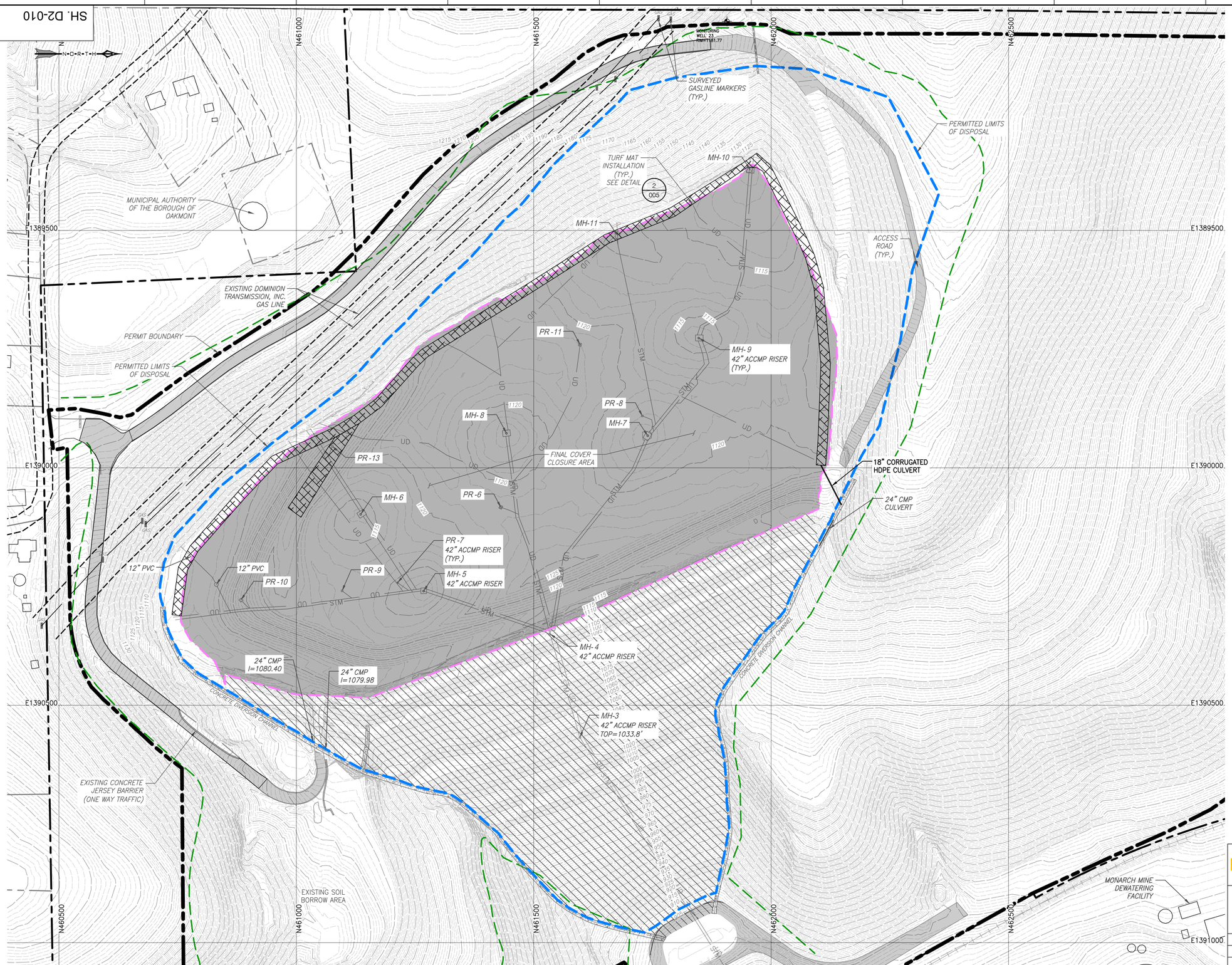
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CHECKED	CWHITE	
APPROVED	KBORTZ	SHEET: D2-004
SIZE: D 22X34		REV:
DISCIPLINE: CIVIL	SCALE: AS SHOWN	FILE: R220960-00-002-C-D2-004

NO.	DATE	REVISION	BY	CHK.	APP.
1	10-02-2026	REVISED DRAINAGE	BW	CSW	KMB

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GAI FILE PATH: Z:\2022\R220960.00 - CHESWICK-FINAL CLOSURE PL\CAD\ACAD\PRODUCTION DWGS\R220960-00-002-C-D2-004.DWG PLOTTED BY: BRANDON WILEY DATE: 09/28/2026 PLOT FILE: GAI.STB

SH. D2-010



LEGEND

- PERMIT BOUNDARY
- 1080 — SURVEYED MAJOR CONTOUR
- 1082 — SURVEYED MINOR CONTOUR
- PROPERTY BOUNDARY
- EXISTING ADJOINING PROPERY
- EXISTING ACCESS EASEMENT
- PREVIOUSLY CLOSED AREA
- FINAL COVER CLOSURE AREA
- PERMITTED LIMITS OF WASTE DISPOSAL
- STM — EXISTING STORM DRAIN PIPING
- UD — EXISTING UNDERDRAIN PIPING
- EXISTING CONCRETE CHANNEL/DOWNCHUTE
- PR-8 ○ MH-7 — EXISTING PERFORATED RISER MANHOLE
- EXISTING ACCESS ROAD
- EXISTING GAS LINE
- GAS LINE RIGHT-OF-WAY
- GAS — SURVEYED GASLINE MARKER
- TREE LINE
- EXISTING CULVERT
- EXISTING JERSEY BARRIER
- EXISTING RAILROAD TRACKS
- PERMITTED LIMIT OF CLEARING AND GRUBBING
- TURF MAT

REFERENCE

1. FINAL COVER SURFACE ELEVATIONS FROM GAI FIELD SURVEYS DATED 12/01/2025, AND 12/02/2025. PLAN NORTH IS BASED UPON PENNSYLVANIA STATE PLANE NAD83 AND VERTICAL DATUM IS BASED UPON NAVD88.
2. PROPERTY BOUNDARY SURVEY BY GAI CONSULTANTS INC. DATED 11-8-2024, IS TITLED CHESWICK LANDFILL PROPERTY.
3. TOPOGRAPHY OF AREAS OUTSIDE THE ACTIVE WASTE DISPOSAL AREA WERE REFERENCED FROM THE END OF 2017 ANNUAL TOPOGRAPHIC SURVEY. THE FOLLOWING ITEMS ARE NOTED:
   - A. THE EXISTING PERMITTED LIMIT OF DISPOSAL WAS REFERENCED FROM DUQUESNE LIGHT COMPANY PERMIT DRAWING 12079-B10, DATED 3/1/79. LOCATIONS SHOWN ARE APPROXIMATE.
   - B. DOMINION TRANSMISSION, INC. (DTI) GAS LINES LN-30 AND TL-469 HAVE AN ASSUMED RIGHT-OF-WAY WIDTH ON THE OUTSIDE OF EACH GAS LINE OF 25 FEET.
   - C. RAILROAD ALIGNMENT WAS OBTAINED FROM AERIAL IMAGERY.

NOTES:

1. ONLY AREAS IDENTIFIED AS "FINAL COVER CLOSURE" ARE BEING CERTIFIED AS CLOSED ON THIS DRAWING. AREAS NOTED AS PREVIOUSLY CLOSED HAVE BEEN CERTIFIED CLOSED UNDER FORM 19R PRIOR TO THIS SUBMISSION.
2. A MINIMUM OF TWO FEET OF FINAL SOIL COVER WAS PLACED ON THE CCR FINAL SURFACE TO COMPLETE CLOSURE OF THE LANDFILL.
3. ROAD LOCATIONS ON THE NORTH SIDE OF THE LANDFILL MAY HAVE BEEN ADJUSTED DURING CLOSURE CONSTRUCTION.

SCALE: 1" = 100'

100 0 100 200

gai consultants

Cheswick Lefever, LLC

CHESWICK GENERATION STATION

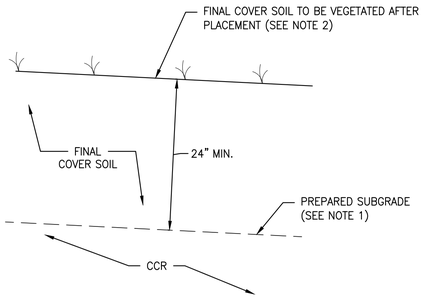
CHESWICK ASH DISPOSAL SITE
FINAL COVER SURFACE AT CLOSURE

DRAWN: 12/22/2025	KAPEL	DRAWING NUMBER
CHECKED	CWHITE	
APPROVED	KBORTZ	SHEET: D2-010
SIZE: D 22X34		REV:
DISCIPLINE: CIVIL	SCALE: AS SHOWN	FILE: R220960-00-002-C-D2-010

NO.	DATE	REVISION	BY	CHK.	APP.
1	10-02-2026	DETAILS ADDED	BW	CSW	KMB

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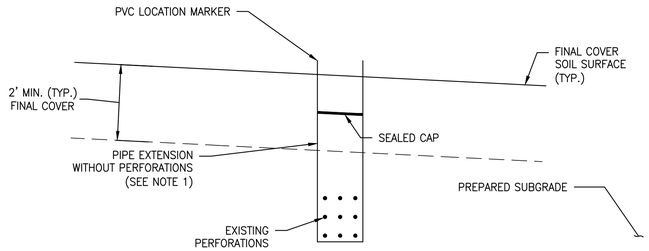
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NOTES:

1. PREPARED SUBGRADE SHALL BE PROOF ROLLED PRIOR TO FINAL COVER SOIL INSTALLATION.
2. FINAL COVER SOIL SHALL BE INSTALLED AND PROOF ROLLED IN 12" LIFTS.

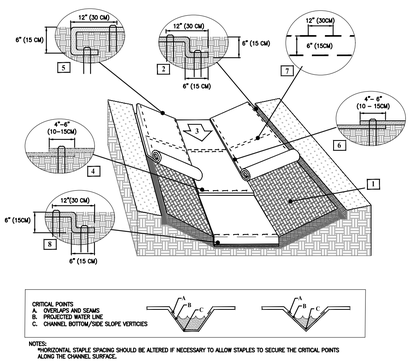
FINAL COVER SYSTEM DETAIL 1/010
N.T.S.



NOTES:

1. USE EXISTING RISER PIPE OR EXTEND RISER AS NEEDED TO ACHIEVE REQUIRED GRADE.

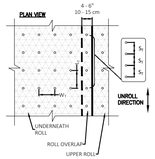
LEACHATE RISER CLOSURE DETAIL 4/004
N.T.S.



INSTRUCTIONS

1. PREPARE SOIL BEFORE INSTALLING ROLLED EROSION CONTROL PRODUCTS (RECPS), INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED. GROUND SURFACE MUST BE FREE OF DEBRIS, ROCKS, CLAY CLODS AND RAKED SMOOTH SUFFICIENT TO ALLOW INTIMATE CONTACT OF THE RECP WITH THE SOIL OVER THE ENTIRETY OF THE INSTALLATION.
2. BEGIN AT THE TOP OF THE CHANNEL BY ANCHORING THE RECPS IN A 6" (15 CM) DEEP X 6" (15 CM) WIDE TRENCH WITH APPROXIMATELY 12" (30 CM) OF RECPS EXTENDED BEYOND THE UP–SLOPE PORTION OF THE TRENCH. USE SHOREMAN MAT AT THE CHANNEL/CULVERT OUTLET AS SUPPLEMENTAL SCOUR PROTECTION AS NEEDED. ANCHOR THE RECPS WITH A ROW OF STAPLES/STAKES/PINS APPROXIMATELY 12" (30 CM) APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO THE COMPACTED SOIL AND FOLD THE REMAINING 12" (30 CM) PORTION OF RECPS BACK OVER THE SEED AND COMPACTED SOIL. SECURE RECPS OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES/PINS SPACED APPROXIMATELY 12" (30 CM) APART ACROSS THE WIDTH OF THE RECPS.
3. ROLL CENTER RECPS IN DIRECTION OF WATER FLOW IN BOTTOM OF CHANNEL. RECPS WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL RECPS MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/STAKES/PINS IN APPROPRIATE LOCATIONS AS SHOWN IN THE STAPLE PATTERN GUIDE.
4. PLACE CONSECUTIVE RECPS END–OVER–END (SHINGLE STYLE) WITH A 4"– 6" (10 – 15 CM) OVERLAP. USE A DOUBLE ROW OF STAPLES STAGGERED 4" APART AND 4" ON CENTER TO SECURE RECPS.
5. FULL LENGTH EDGE OF RECPS AT TOP OF SIDE SLOPES MUST BE ANCHORED WITH A ROW OF STAPLES/STAKES/PINS SPACED AT S_E APART IN A 6" (15 CM) DEEP X 6"(15 CM) WIDE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING.
6. ADJACENT RECPS MUST BE OVERLAPPED APPROXIMATELY 4"– 6" (10 – 15 CM) AND SECURED WITH STAPLES/STAKES/PINS AT S_O.
7. IN HIGH FLOW CHANNEL APPLICATIONS A STAPLE CHECK SLOT IS RECOMMENDED AT 30 TO 40 FOOT (9 –13M) INTERVALS. USE A DOUBLE ROW OF STAPLES STAGGERED 6" (15 CM) APART AND 12" (30 CM) ON CENTER OVER ENTIRE WIDTH OF THE CHANNEL.
8. THE TERMINAL END OF THE RECPS MUST BE ANCHORED WITH A ROW OF STAPLES/STAKES/PINS SPACED AT 6" APART IN A 6" (15 CM) DEEP X 6" (15 CM) WIDE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING.
9. FASTENERS SHOULD PROVIDE A MINIMUM OF TWENTY POUNDS OF PULLOUT RESISTANCE. SIX–INCH (10 CM) X ONE–INCH (2.5 CM) ELEVEN GAUGE STAPLES ARE TYPICALLY ADEQUATE. IN LOOSE SOILS, LONGER STAPLES MAY BE NECESSARY. TWIST PINS CAN PROVIDE THE GREATEST PULLOUT RESISTANCE. IN HARD OR ROCKY SOILS, STRAIGHT PINS MAY BY USED WHERE STAPLES OR TWIST PINS ARE REFUSED, PROVIDED THE MINIMUM PULLOUT REQUIREMENTS ARE MET. BIO–DEGRADABLE FASTENERS SHALL NOT BE USED WITH WMAX (TRM) OR TMAX (NPTRM) MATERIALS.

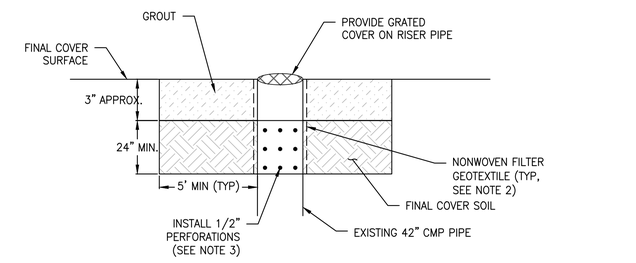
STAPLE PATTERN GUIDE



a PIN/STAPLE/TWIST PIN AS APPROPRIATE FOR FIELD CONDITIONS

	STAPLE PATTERN
DIMENSIONS	E
W_E	20" (50 CM)
L_E	20" (50 CM)
S_E	18" (45 CM)
NOMINAL FREQUENCY	3.8 / SY

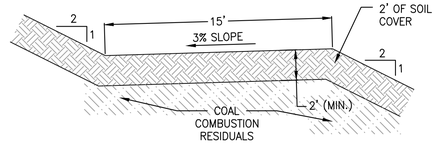
TURF MAT INSTALLATION 2/010
N.T.S.



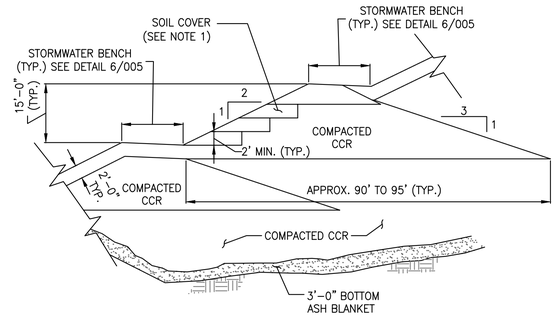
NOTES:

1. USE EXISTING RISER PIPE OR EXTEND RISER AS NEEDED TO ACHIEVE REQUIRED GRADE.
2. WRAP THE RISER PIPE AND STONE LAYER WITH NONWOVEN FILTER GEOTEXTILE.
3. SPACE PERFORATIONS AT 60 DEGREE ANGLES AROUND THE PIPE. SPACE THE PERFORATIONS VERTICALLY EVERY 6 INCHES, WITH THE LOWEST PERFORATION ROW A MINIMUM OF 6 INCHES ABOVE THE SUBGRADE SURFACE.

STORMWATER MANHOLE RISER FOR CLOSURE DETAIL 3/004
N.T.S.



STORMWATER BENCH 5/004
N.T.S.



NOTES:

1. NUMBER OF SOIL LIFTS WILL DEPEND ON LIFT THICKNESS AND PLACEMENT CONDITIONS.

SOIL COVER AND DIKE DETAIL 6/004
N.T.S.

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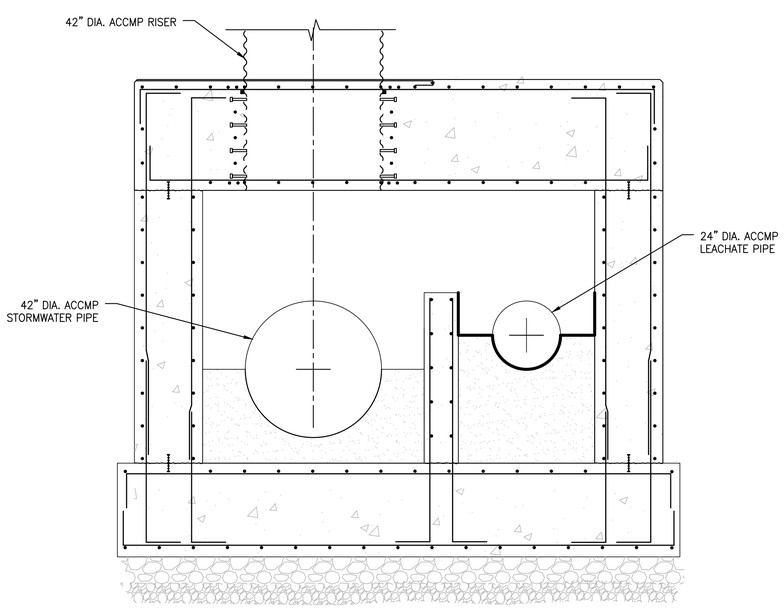
Cheswick Lefever, LLC

CHESWICK GENERATION STATION

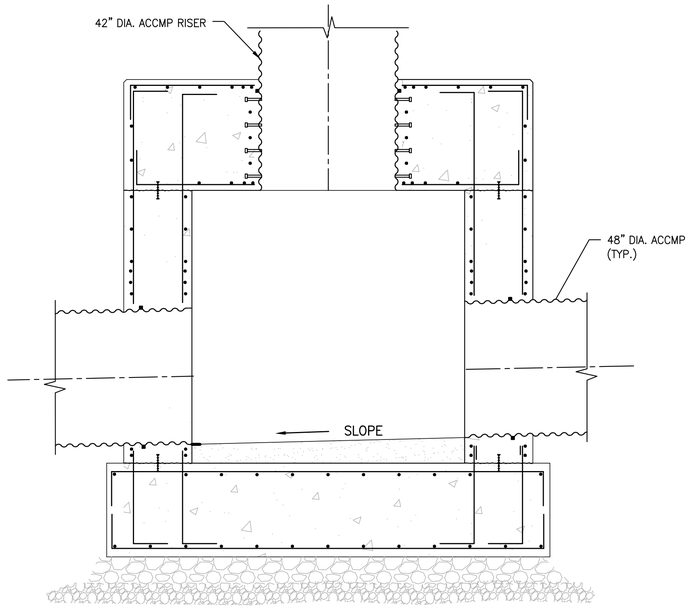
CHESWICK ASH DISPOSAL SITE
CLOSURE PLAN DETAILS - SHEET 1 OF 2

DRAWN: 11-13-2024	DMURGI	DRAWING NUMBER
CHECKED	CWHITE	
APPROVED	KBORTZ	SHEET: D2-005
SIZE: D 22X34		REV:
DISCIPLINE: CIVIL	SCALE: AS SHOWN	FILE: R220960-00-002-C-D2-005

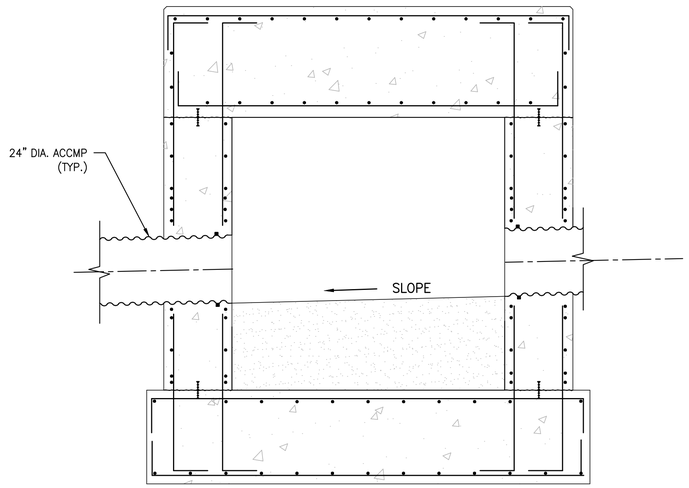
NO.	DATE	REVISION	BY	CHK.	APP.
1	10-02-2026	REVISED DETAILS	BW	CSW	KMB



CROSS SECTION



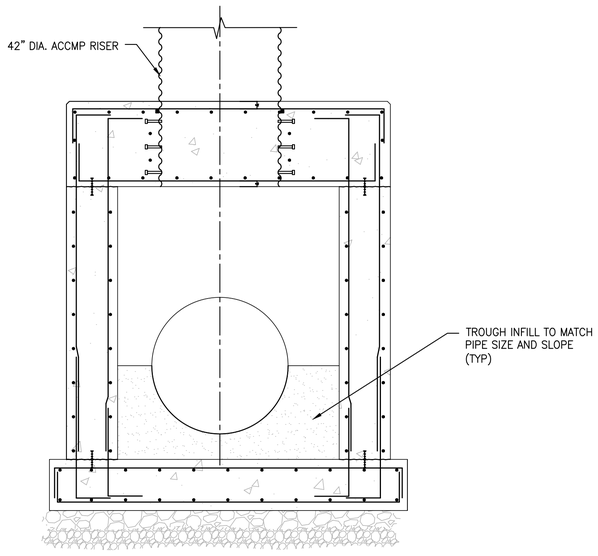
ELEVATION VIEW – STORMWATER PIPE



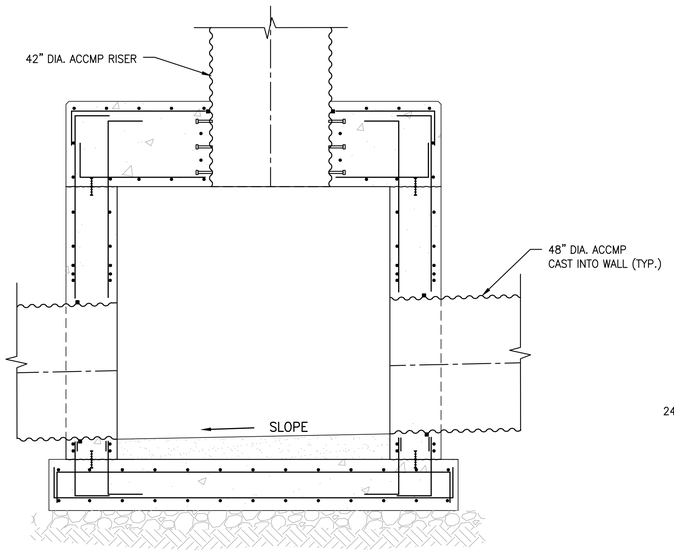
ELEVATION VIEW – LEACHATE PIPE

TYPICAL STORMWATER AND LEACHATE CONVEYANCE MANHOLE 1/004

N.T.S.



SECTION



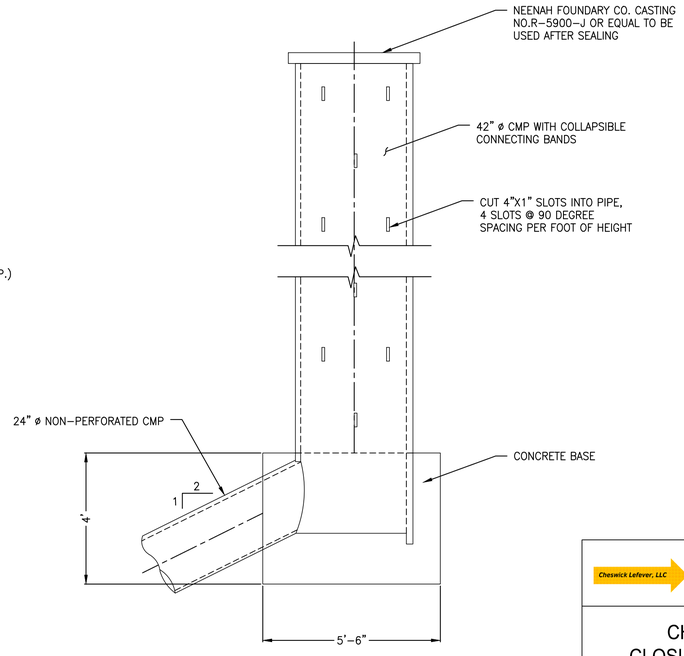
ELEVATION VIEW

TYPICAL STORMWATER CONVEYANCE MANHOLE 2/006

N.T.S.

NOTES:

1. DETAILS 1 AND 2 ARE REPRESENTATIVE OF SITE MANHOLES. SPECIFIC PIPE CONFIGURATIONS FOR THE MANHOLES ARE SHOWN ON THE PLAN VIEWS



TYPICAL PERFORATED RISER 3/004

N.T.S.

gai consultants

Cheswick Lehever, LLC

CHESWICK GENERATION STATION

CHESWICK ASH DISPOSAL SITE
CLOSURE PLAN DETAILS - SHEET 2 OF 2

DRAWN: 11-13-2024	DMURGI	DRAWING NUMBER
CHECKED	CWHITE	
APPROVED	KBORTZ	SHEET: D2-006
SIZE: D 22X34		REV:
DISCIPLINE: CIVIL	SCALE: AS SHOWN	FILE: R220960-00-002-C-D2-005

NO.	DATE	REVISION	BY	CHK.	APP.

APPENDIX A
PADEP Permit Major Modification Letter, 1997

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transforming ideas into reality®

Pennsylvania Department of Environmental Protection

400 Waterfront Drive
Pittsburgh, PA 15222-4745
February 12, 1997

Southwest Regional Office 412-442-4000

CERTIFIED MAIL #P 573 257 723

Scott K. Rodgers, Project Manager
Residual Waste Compliance
Duquesne Light Company
411 7th Avenue
P.O. Box 1930
Pittsburgh, PA 15320-1930

RECEIVED
FEB 13 1997
Allegheny County Health Department
Solid • Hazardous Waste

RE: Lefever Ash Disposal Site
Indiana Township
Allegheny County
I.D. No. 300720

Dear Mr. Rodgers:

Enclosed is a major modification to Permit No. 300720 for the operation of your residual waste landfill. It is issued in accordance with Article V of the Solid Waste Management Act (Act 97).

Compliance with the limitations and stipulations that have been set forth on your permit is mandatory. You have the right to appeal any limitation or stipulation as stated on your permit.

Any person aggrieved by this action may appeal, pursuant to Section 4 of the Environmental Hearing Board Act, 35 P.S. Section 7514, and the Administrative Agency Law, 2 Pa. C.S., Chapter 5A, to the Environmental Hearing Board, Second Floor, Rachel Carson State Office Building, 400 Market Street, P.O. Box 8457, Harrisburg, PA 17105-8457, 717-787-3483. TDD users may contact the Board through the Pennsylvania Relay Service, 800-654-5984. Appeals must be filed with the Environmental Hearing Board within 30 days of receipt of written notice of this action unless the appropriate statute provides a different time period. Copies of the appeal form and the Board's rules of practice and procedure may be obtained from the Board. The appeal form and the Board's rules of practice and procedure are also available in braille or on audiotape from the Secretary to the Board at 717-787-3483. This paragraph does not, in and of itself, create any right of appeal beyond that permitted by applicable statutes and decisional law.

If you have any questions concerning the enclosed permit and/or the requirements set forth by Act 97, please contact me at 412-442-4000.

Sincerely,

Anthony D. Orlando
Regional Manager
Waste Management

Enclosure

cc: Allegheny County Health Department (w/enclosure) **CERTIFIED MAIL #P 573 257 724**
Indiana Township (w/enclosure) **CERTIFIED MAIL #P 573 257 725**

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
WASTE MANAGEMENT

FORM NO. 13-A
MODIFICATION TO SOLID WASTE DISPOSAL AND/OR PROCESSING PERMIT

Under the provisions of Act 97, the Pennsylvania Solid Waste Management Act, the Act of July 7, 1980, P.L. 380, 35 P.S. §6018.101 et seq., Solid Waste Permit Number 300720 issued on March 24, 1982 to Duquesne Light Company (DLC), 411 7th Avenue, P.O. Box 1930, Pittsburgh, PA 15230-1930 for the operation of the Lefever Ash Disposal Site located in Indiana Township, Allegheny County is hereby modified as follows:

1. This permit modifies Solid Waste Permit No. 300720 originally issued March 24, 1982. It is issued in response to Solid Waste Management Application No. 300720 dated October 1995 and revised January, July and November 1996. Subsequent revisions and addendum(s) submitted to the initial application are approved by the Department and are a part of this permit amendment.

2. This permit is issued in accordance with the Solid Waste Management Act, the Act of July 7, 1980, P.L. 380, 35 P.S. §6018.101 et seq.; Air Pollution Control Act of January 8, 1960, P.L. 2119, 35 P.S. §§4001 et seq.; the Clean Streams Law, Act of June 22, 1937, P.L. 1987, as amended and the regulations promulgated pursuant to these acts.

3. This approved application consists of the following documents:

Form No./Letter	Form Title	Date (Revision)
	General Information Form	1-96
Form A	Application For Municipal or Residual Waste Permit	9-95
Form B	Professional Certification	9-95
Form HW-C	Compliance History	10/95
Form C1	Compliance History Certification	12/95
Form E	Contractual Consent of Landowner	9/95
Form F	Soils Information - Phase 1	9/95 (7/96)
Form G(A)	Air Resources Protection - Dust Emissions Estimate and Control Plan	9/95

This modification shall be attached to the existing Solid Waste Permit described above and shall become a part thereof effective on February 12, 1997.

FOR THE DEPARTMENT OF ENVIRONMENTAL PROTECTION

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
WASTE MANAGEMENT

FORM NO. 13-A
MODIFICATION TO SOLID WASTE DISPOSAL AND/OR PROCESSING PERMIT

Permit No. 300720

Form H	Revegetation	9/95 (7/96)
Form I	Soil Erosion and Sedimentation Control	9/95 (7/96 & 11/96)
Form J	Soils Information - Phase II	9/95 (7/96)
Form L	Contingency Plan for Emergency Procedures	9/95
Form 1R	Facility Plan	9/95 (7/96)
Form 2R	Map Requirements - Phase 1 Residual Waste Landfills and Disposal Impoundments	9/95
Form 3R	Map Requirements - Phase II Residual Waste Landfills and Disposal Impoundments	9/95
Form 8R	Residual Waste Landfills and Disposal Impoundments Baseline Ground Water Analyses	9/95 (7/96 & 11/96)
Form 10R	Mineral Deposits Information - Phase 1	7/96
Form 11R	Alternate Water Supply - Phase 1	9/95 (7/96)
Form 12R	Operation Plan - Phase II	9/95 (7/96)
Form 13R	Water Quality Monitoring System - Phase II	7/96 (11/96)
Form 16R	Liner System - Phase II	9/95 (7/96 & 11/96)
Form 17R	Leachate Management - Phase II	9/95 (7/96 & 11/96)
Form 18R	Closure/Post Closure Land Use Plan	9/95 (7/96 & 11/96)
Form 21R	Groundwater Assessment Report	7/96
Form 23R	Control Plans	9/95
Correspondence	Response to Technical Comment	7/16/96
Correspondence	Response to Intent to Deny	11/15/96

Report Title	Date (Revision)
Groundwater Assessment Plan	1/93 (4/93)
Interim Report - Preliminary Assessment of Hydrogeologic Data	11/93
Groundwater Assessment Report (Phase I)	9/94
Benthic Macroinvertebrate Survey Report	3/95
Groundwater Assessment Plan Phase II	7/95
Groundwater Assessment Report Phase II	7/96

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
WASTE MANAGEMENT

FORM NO. 13-A
MODIFICATION TO SOLID WASTE DISPOSAL AND/OR PROCESSING PERMIT

Permit No. 300720

Drawings

Drawing No.	Title	Date (Revision)
16691-C2	Index of Drawings	(7/96)
16691-C3	Surface and Subsurface Landowners	9/96
16691-C4	General Site Map	(11/15/96)
16691-C5	In Situ Soils Map	(7/96)
16691-C6	Contingency Plan - Facility Description	(7/96
16691-C7	Step 1 Storm Drain - Watershed Area Hydrology Map	(7/96)
16691-C8	Step 1 Railroad Culvert - Watershed Area Hydrology Map	(7/96)
16691-C9	Diversion Ditch Hydrology Subwatershed Map	(7/96)
16691-C10	Haul Road No. 1 Modification and Watershed Area Hydrology Map	(7/96)
16691-C11	Proposed Haul Road No. 2 Modification and Watershed Area Hydrology Map	(7/96)
16691-C12	Proposed Haul Road No. 2 Plan and Profile	(7/96)
16691-C13	Proposed Haul Road No. 2 Cross Sections 100' Intervals	9/95
16691-C14	Miscellaneous Details	9/95
16691-C15	Borrow Area Cross Sections	9/95
16691-C16	Limits of Disposal Step 1 through Step 6	7/96
12079-B1	Borehole and Test Pit Locations	(12/86)
12079-B3	Permit Drawing, Phase I Step 1 and Phase II Step 1	(12/86)
12079-B4	Permit Drawing, Phase I Step 2 and Phase II Step 2	(12/86)
12079-B5	Permit Drawing, Phase I Step 3 and Phase II Step 3	(12/86)
12079-B6	Permit Drawing, Phase I Step 4 and Phase II Step 4	(12/86)
12079-B7	Permit Drawing, Phase 1 Step 5 and Phase II Step 5	(12/86)
12079-B8	Permit Drawing, Phase 1 Step 6	(12/86)
12079-B9	Permit Drawing, Cross Sections and Miscellaneous Details	(10/86)
12079-B10	Conservation Plan for Disposal Area	(12/86)
12079-B12	Clearing Limits, Excavation Plan and Foundation Key Details - Phase I Step 1	(12/86)
12079-B13	Plan and Details of Haul Road No. 1	(12/86)
12079-B15	Profile and Cross Sections for Haul Road No. 1	(2/84)

12079-B16	Cross Sections for Haul Road No. 1	(2/84)
12079-B17	Plan and Sections of Storm Drains and Underdrains, Phase I Step 1	(2/84)
12079-B18	Structural Design and Details of Manholes	(2/84)
12079-B19	Miscellaneous Details for Storm Drains and Underdrains	(2/84)
12079-B20	Structural Design and Details of Manhole No. 1, Headwall and Endwall Structures	(2/84)
12079-B21	Plan of Sedimentation Basin, Details of Borehole and Monitoring Wells	(12/86)
12079-B22	Cross Section and Details of Sedimentation Basin	(2/84)
12079-B23	Plan and Details of Headwall and Energy Dissipator	(2/84)
12079-B24	Plan and Details of Emergency Spillway Structure	(2/84)
12079-B25	Design and Details of South Inlet Structure "A"	(2/84)
12079-B26	Design and Details of Inlet Structure "B"	(2/84)
12079-B27	Fill Plan Phase I, Step 1	(12/86)
12079-B28	Fill Plan Phase I, Miscellaneous Details	(2/84)
12079-B29	Procedures for Fly Ash Placement Utilizing Perforated Risers - Phase I, Step 1, Sheet 1	(2/84)
12079-B30	Procedures for Fly Ash Placement Utilizing Perforated Risers - Phase I, Step 1, Sheet 2	(2/84)
12079-B34	Landscape Reclamation Master Plan	(3/85)
12079-E2	Arrangement Plan - Sections - Truck Wash and Truck Metering Station	(4/86)
12079-E3	Schematic Diagram - Truck Wash	(4/86)
12079-M1	Dust Suppression System Plan Sections and Details	(3/84)
12079-M2	Truck Wash and Metering Station Plan, Sections and Details	(3/84)

4. This permit is issued in accordance with 25 Pa. Code Chapters 287 and 288 for 143.4 acres as shown on Drawing No. 16691-C4, "General Site Map" revised November 1996 and authorizes the disposal of residual waste as defined by 25 Pa. Code §287.1. No other solid wastes shall be disposed at this site unless specified by Permit Condition No. 7 or by permit amendment. Acceptance of hazardous waste as defined by 25 Pa. Code Chapter 261 is prohibited at this site.

5. This permit modification satisfies the repermitting requirements of 25 Pa. Code §287.115.

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
WASTE MANAGEMENT

FORM NO. 13-A
MODIFICATION TO SOLID WASTE DISPOSAL AND/OR PROCESSING PERMIT

Permit No. 300720

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6. This permit expires on February 12, 2007. This modification authorizes continued disposal operations at the Lefever Ash Disposal Site until the proposed final grades as shown on Drawing No. 12079 B8 dated December 17, 1986 are achieved. At that time, closure activities will be implemented in accordance with the approved closure plan.

7. The permittee is hereby authorized to accept for disposal at the Lefever Ash Disposal Site a maximum daily tonnage of 880 tons of the following residual wastes generated at Duquesne Light Company's Cheswick Power Station (CPS) and Elrama Power Station (EPS):

Bottom Ash	Monarch Mine Dewatering Facility Sludge
Fly Ash	Coal Pile Runoff Sludge
Pyritic Materials	Bottom Ash Pond Sludge
Stabilized FGD Material	Lime and Lime Grits
NPDES Waste Pond Sludges (CPS)	Floor Sweepings

If the scrubber system is installed at CPS, the maximum daily tonnage may increase to 2000 tons provided that the following items are addressed in a minor modification submitted to the Department for approval prior to acceptance of the increased tonnage:

a. traffic analysis study;
b. necessary changes to Forms 1R and 12R Facility Plan and Operation Plan;
c. necessary changes to Form G(A), related to increased truck traffic.

8. The permitted days and hours in which waste may be delivered to the facility are Monday through Friday 8:00 a.m. to 5:00 p.m. In an emergency situation, the permitted operating hours may be extended with prior Department approval.

9. The annual operation report as required by 25 Pa. Code §288.283 shall be submitted to the Department on or before June 30 of each year. The report shall be submitted on forms provided by the Department or other approved format to the following address:

Department of Environmental Protection
Regional Manager, Waste Management
400 Waterfront Drive
Pittsburgh, PA 15222-4745

10. The waste streams identified in Permit Condition No. 7 shall be characterized at least annually. The waste analysis shall be submitted on the Department's Form 26R with the annual operations report unless another time frame is allowed by the Department.

11. The Department shall be notified of any process change regarding waste generation. This may require a reanalysis of the waste.

12. The following groundwater monitoring wells shall be sampled and analyzed for all parameters outlined in 25 Pa. Code §§288.254(a)(1) through (4) with the addition of boron (B) and reported on the Form 14R - Residual Waste Landfills and Disposal Impoundments Quarterly and Annual Water Quality Analyses and submitted to the Department on a calendar quarterly basis starting the first calendar quarter after permit issuance and on an annual basis on the anniversary date of this permit:

WELL NO.	FORMATION	GRADIENT POSITION
MW-6	First Water	Side Gradient
MW-20	First Water	Side Gradient
MW-23	First Water	Upgradient
MW-13	Woods Run/First Water	Downgradient
MW-21	First Water	Downgradient
MW-22	First Water	Downgradient

13. The following surface water monitoring points shall be sampled and analyzed for all parameters outlined in 25 Pa. Code §§288.254(a)(1),(3) and (4) and reported on the Form 14R - Residual Waste Landfills and Disposal Impoundments Quarterly and Annual Water Quality Analyses and submitted to the Department on a calendar quarterly basis starting the first calendar quarter after permit issuance and on an annual basis on the anniversary date of this permit:

SAMPLE POINT NO.	LOCATION	POSITION
SW-1*	UNT to Little Deer Creek	Upstream
SW-3	UNT to Little Deer Creek	Downstream
SW-4*	UNT to Little Deer Creek	Upstream

*Upon initiation of Step 2 development, surface water monitoring points SW-1 and SW-4 will be replaced by SW-5 and SW-6, respectively.

14. All water well drilling including but not limited to monitoring wells, replacement water wells and public water supplies shall be performed by a person licensed by the Pennsylvania Water Well Drillers Licensing Act of 1956. An additional copy of well records, upon completion of a well or wells, shall be submitted by the well driller to the Pennsylvania Geologic Survey.

15. The permittee shall submit to the Department an annual evaluation report of all groundwater and surface water sampling and analysis reports. This evaluation shall be performed by using appropriate statistical or mathematical methods. This report shall include time series analysis and may include approved methods such as those described in the EPA publication of April 1989, Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Interim Final Guidance and 1992 Addendum to Interim Final Guidance. The report shall include a summary of the statistically significant differences in groundwater and surface water quality and, if present, a statement identifying the existence of degradation.

16. Following are the parameters established for the mandatory abatement trigger levels (MATLs):

Inorganics	Mandatory Abatement Trigger Levels (all values listed in mg/l except as noted)
Fluoride	4
Nitrate - Nitrogen	15

Metals	Mandatory Abatement Trigger Levels (all values listed in ug/l except as noted)
Arsenic (dissolved)	50
Barium (dissolved)	5600
Cadmium (dissolved)	5
Chromium (dissolved)	690
Copper (dissolved)	1300
Lead (dissolved)	1940
Mercury (dissolved)	2
Selenium (dissolved)	50

17. If changes in concentration of parameters for upgradient wells are indicated, the permittee shall re-evaluate the groundwater flow to assure proper location of wells. If the upgradient wells show degradation, the permittee shall conduct a groundwater investigation to define background quality and flow characteristics.

18. The permittee shall maintain a weekly record of the average flow rate and volume of leachate flowing from the landfill and sample and analyze leachate flow from the facility in accordance with 25 Pa. Code §288.556(a)(2). Results shall be submitted quarterly on Form 14R.

19. Copies of all required quarterly reports shall be submitted to the Department as indicated in 25 Pa. Code §288.282. The submission should include two volumes to be divided as follows:

Volume 1 - Groundwater and surface water sampling results.

Volume 2 - Leachate sampling and monitoring results.
Waste analysis and quantities received.
Form 19R, as-built drawings, and associated documentation.
Dustfall monitoring.

An original and one copy of each volume should be submitted to:

Department of Environmental Protection
Regional Manager, Waste Management
400 Waterfront Drive
Pittsburgh, PA 15222-4745

In addition, one copy of Volume 1 should be sent to:

Department of Environmental Protection
Hydrogeologist, Waste Management-Compliance and Monitoring
14th Floor, Rachel Carson State Office Building
Harrisburg, PA 17101-2301

20. The permittee shall comply with the fugitive emission standards adopted under Chapter 123 regulations (Standards for Contaminants) issued under Air Pollution Control Act, the Act of January 8, 1960, P.L. 2119, 35 P.S. §4005 et seq., and shall be required to comply with all the applicable sections of Fugitive Emissions Sections 123.1 and 123.2.

A. All roadways must be maintained as specified in Form G(A) Air Resources Protection as submitted. Paved roadways must be flushed with a pressurized water truck or similar vehicle. If this method of control is deemed to be inadequate, the Department reserves the right to require the use of a vacuum type road sweeper to further control fugitive emissions.

Paved roadways must be maintained so that dust control measures can be effectively applied or operated. Unpaved roadways must be treated on an as needed basis using dust suppressants and/or water to minimize fugitive dust generation.

B. For paved roadways, the following records must be maintained on site and available for Department inspection:

1. Daily log of time and location of any water flushing or vacuum sweeping conducted.

2. Identification, time, and location of any maintenance repairs, patching, or repaving or roads.

3. A log explaining why any water flushing or vacuum sweeping was not performed.

C. For unpaved roadways, the following records must be maintained on-site and available for Department inspection:

1. A daily log of time and location of treated areas.

2. An identification of dust suppressants used.

3. A log of dilution ratios of dust suppressants and diluent used if chemical suppressants are used.

4. A purchase record of all dust suppressants used.

D. All vehicles which come in contact with unpaved roadways must be processed through an operating truck wash as needed before exiting the facility in order to prevent any mud, waste, or debris from being tracked onto the approach route(s).

E. A pressurized water truck or similar vehicle must be available on site to minimize the generation of fugitive dust during landfill construction, filling, or covering operations.

F. Vehicle traffic operating within the landfill shall be restricted to a 15 mph speed limit. This limit shall be clearly posted and easily legible along all access routes and be strictly enforced by landfill personnel.

G. Within thirty days of issuance of this permit, fugitive dust monitoring using a network of dustfall collectors shall be implemented. The location of monitoring sites shall be in accordance with Drawing No. 16691-C4 and Form G(A). Dustfall reports shall be submitted to the Department on a quarterly basis as requested in Permit Condition No. 19.

H. Nothing contained herein shall relieve the applicant's obligation to comply with any provisions of the Pennsylvania Clean Air Act or the Department's Air Quality Regulations. These include but are not limited to fugitive emission regulations contained in 25 Pa. Code Sections 123.1-2, the Department's odor regulations contained in 25 Pa. Code Section 123.31, and the ambient air quality standards specified in 25 Pa. Code Chapter 131.

21. Certification of each component of this facility's design and construction shall be completed by a professional engineer, registered in the Commonwealth of Pennsylvania, as specified by 25 Pa. Code §288.202(a). The permittee must notify the Department in writing, within seventy-two (72) hours, before commencing construction of major phases as defined in 25 Pa. Code §288.202(a).

Completed Form 19R's shall be maintained on site or at the Cheswick Power Station and made available upon request. Certification documentation shall be submitted quarterly as noted in Permit Condition No. 19.

A registered Pennsylvania professional engineer shall certify in writing on Form 19R , provided by the Department, for each phase of the construction under penalty of law respecting unsworn falsification to authority (18 Pa. C.S. §4904), indicating that he/she has personally examined the construction of said phase and it is constructed and prepared in accordance with the documents, statements, design, and plans submitted as part of the application as approved by the Department. The above certifications shall include at a minimum the test results required in the approved Construction Quality Assurance Plan.

22. The permittee shall construct, implement, and maintain all soil erosion and sedimentation control structures as set forth in Form I of the approved Solid Waste Management application.

23. The permittee shall construct, implement and maintain all structures in accordance with the following permits: Industrial Waste Permit No. 0270205 issued on March 24, 1982, and NPDES Permit No. PA0001627 issued on September 27, 1996, which are incorporated herein by reference.

24. Commercial liability insurance covering third party claims for property damage and personal injury in the amounts of $500,000.00 per occurrence with a $1,000,000.00 annual aggregate shall be maintained in force until the Department certifies final closure of the facility. Initial coverage consists of policy #X0194A1A96 from Associated Electric and Gas Insurance Services Limited, approved by the Department on November 1, 1996.

25. The collateral bond in the amount of $2,507,355 dated January 10, 1997 and executed between the permittee and Department is approved in support of this 143 acre permit. Collateral payment consists of $2,507,355 Letter of Credit No. S850521 from Mellon Bank.

26. The following waiver requests are approved by this modification:

    a. The liner system requirements and the leachate treatment requirements are waived/modified under the provisions of 25 Pa. Code §287.115(c)(1).

    b. In accordance with 25 Pa. Code §288.232(b), the Department waives the daily cover requirement. If waste fails to meet the requirements outlined in this section at anytime and for any reason, the permittee shall place a soil daily cover in accordance with requirements outlined in 25 Pa. Code §§288.232(a),(c) and (d).

    c. In accordance with 25 Pa. Code §288.233(b), the Department waives the intermediate cover requirement. If the waste fails to meet requirements outlined in this section at anytime, for any reason, the permittee shall place a soil intermediate cover in accordance with requirements specified in 25 Pa. Code §§288.233(a),(c) and (g).

    d. The final cover requirements specified in 25 Pa. Code §§288.234(a)(1) and (2) are waived under the provisions of 25 Pa. Code §288.234(b).

    e. The access road requirements outlined in 25 Pa. Code §288.213 are hereby waived.

27. Soil volume estimates and plans for development of soil borrow areas PSD-1 and PSD-2, including erosion and sedimentation control plans, shall be submitted to the Department for approval at least 90 days prior to the date of intended use and prior to any earth disturbance in these borrow areas.

28. Any abandoned oil or gas well discovered during the development of this site shall be plugged in a manner consistent with the Oil and Gas Act, the Act of December 19, 1984, P.L. 1140, as amended, 58 P.S. §§601.101 - 601.607 and the provisions of Chapter 78 of the Department's regulations, 25 Pa. Code §§78.1 - 78.906. It shall be the permittee's responsibility to insure that plugging occurs in accordance with the preceding law and regulations.

    In addition, all test bore holes found open during site preparation shall be sealed and grouted to prevent infiltration of liquid into the groundwater. Well and/or test bore hole abandonment plans must be submitted and approved by the Department prior to well or test bore hole abandonment.

29. This permit shall not be construed to supersede, amend, or authorize a violation of any of the provisions of any valid and applicable local law, ordinance, or regulations, providing that said local law, ordinance, or regulation is not preempted by the Pennsylvania Solid Waste Management Act, the Act of July 7, 1980, P.L. 380, No. 97, 35 P.S. 6018.101 et seq.

30. Any final operational, design or other plan developed subsequent to permit issuance which exhibit changes in structure, location, specification or other changes of substance shall be submitted to the Department for subsequent permit action. Any deviation from the plans herein approved shall not be implemented before first obtaining a permit amendment or written approval from the Department.

31. Independent contractors or agents retained by the permittee to operate this site may be subject to a compliance history review by the Department as specified by the Pennsylvania Solid Waste Management Act of 1980.

32. As a condition of this permit and of the permittee's authority to conduct the activities authorized by this permit, the permittee hereby authorizes and consents to allow authorized employees or agents of the Department, without advance notice or search warrant, upon presentation of appropriate credentials and without delay, to have access and to inspect all areas or permittee controlled adjacent areas where solid waste management activities are being or will be conducted. This authorization and consent shall include consent to collect samples of waste, water, or gases; to take photographs; to perform measurements, surveys, and other tests; to inspect any monitoring equipment; to inspect the methods of operation; and to inspect and/or copy documents, books, and papers required by the Department. This permit condition is referenced in accordance with Sections 608 and 610.7 of the Solid Waste Management Act and 25 Pa. Code §287.123.

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
WASTE MANAGEMENT

FORM NO. 13-A
MODIFICATION TO SOLID WASTE DISPOSAL AND/OR PROCESSING PERMIT

Permit No. 300720

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33. This permit does not authorize nor shall be construed as an approval to discharge industrial waste, including without limitation, any leachate discharge from the permitted area without first obtaining necessary permits required by the Clean Streams Law.

34. This permit shall not be construed to authorize the removal of minerals by surface mining without the permittee first obtaining all necessary permits and authorizations pursuant to the Surface Mining Conservation and Reclamation Act, 52 P.S. §1396.1 et seq., and the Clean Streams Law, 35 P.S. §691.1 et seq. from the Department.

35. Approval of this permit does not guarantee site stability or operational effectiveness. Failure of this site to perform as intended or designed according to the application documents herein approved for any reason shall be sufficient grounds for revocation or suspension of this permit.

36. If there is a conflict between the application, its supporting documents and/or amendments and the terms and conditions of this permit, the terms and conditions of this permit shall apply.

37. Unless amended by this permit modification or previously approved modifications, all design and operational requirements stipulated in Solid Waste Permit No. 300720 remain in effect.

Pennsylvania Department of Environmental Protection

400 Waterfront Drive
Pittsburgh, PA 15222-4745
May 22, 1997

Southwest Regional Office 412-442-4000

Scott Rodgers
Duquesne Light Company
411 7th Avenue
PO Box 1930
Pittsburgh, PA 15230-1930

RE: Lefever Ash Disposal Site
Indiana Township
Allegheny County
I.D. No. 300720

Dear Mr. Rodgers:

We feel it is necessary to provide clarification of Permit Condition No. 26.d, of the February 12, 1997 major modification for the referenced site. This permit condition addresses the waiver of final cover requirements specified in 25 Pa. Code Chapter 288. A technical review letter was sent to David Leone of Duquesne Light Company (DLC) on April 18, 1996. In this letter, Comment No. 2 under *Form 18R* requested that DLC appropriate monies for a geomembrane cap into this site's bond liability should the need arise to limit infiltration to the waste to prohibit further contamination of groundwater resulting from landfill activities. DLC responded by appropriating $796,328.00 to synthetically cap the landfill, should the need arise.

Furthermore, during the technical review, DLC was asked to demonstrate that at this time it is not necessary to limit infiltration to the waste. This was in fact documented and the waiver, which is based on this information, was granted. It is our assertion that this waiver is conditional to the effect that the landfill has on the groundwater beneath the site. If at any time in the life of the landfill it should come to our attention that it is necessary to limit infiltration to the waste, the Department will require DLC to comply with 25 Pa. Code §288.234.

APPENDIX B
Compaction Test Results

gai consultants
transforming ideas into reality®

FIELD DENSITY TESTING RECORD (NUCLEAR METHOD)

PROJECT:	Cheswick Ash Disposal	PROJECT NO.:	R220311.01	TECHNICIAN: Cory White	

DATE	GAUGE NO.	STANDARD COUNTS		TEST NO.	LOCATION	SOIL DESCRIPTION (COLOR & TYPE, LIFT THICKNESS, ETC)	FIELD DENSITY			PROCTOR DENSITY					COMPACTION			COMMENTS
		MOISTURE	DENSITY				g_{wet} (pcf)	w (%)	g_{dry} (pcf)	Proctor Name	MAX. g_{dry} (pcf)	OPT. w (%)	OPT. w, + (%)	OPT. w, - (%)	FIELD (%)	REQ. (%)	P / F	
3/14/2025	72176	707	2374	C-031425-1	See Loc Map	1 ft Cover Soil Layer	121.0	15.2	105.0	C-031425-Proctor	105.3	18.3	0.0	0.0	99.7	95.0	Pass	
3/14/2025	72176	707	2374	C-031425-2	See Loc Map	1 ft Cover Soil Layer	118.7	13.5	104.6	C-031425-Proctor	105.3	18.3	0.0	0.0	99.3	95.0	Pass	
3/14/2025	72176	707	2374	C-031425-3	See Loc Map	1 ft Cover Soil Layer	119.2	13.5	105.0	C-031425-Proctor	105.3	18.3	0.0	0.0	99.7	95.0	Pass	

SH. N/A

LEGEND

- PERMIT BOUNDARY
- 1080 EXISTING CONTOUR (BEGINNING OF 2021)
- 1090 SURVEYED CONTOUR (END OF 2022, DATED 1-18-2023)
- CLOSED AREA
- ACTIVE WASTE DISPOSAL AREA
- PERMITTED LIMITS OF WASTE DISPOSAL
- EXISTING STORM DRAIN PIPING
- EXISTING UNDERDRAIN PIPING
- EXISTING CONCRETE CHANNEL/DOWNCHUTE
- MH-7 MANHOLE
- EXISTING ACCESS ROAD
- EXISTING GAS LINE
- GAS LINE RIGHT-OF-WAY
- GAS SURVEYED GASLINE MARKER
- TREE LINE
- EXISTING CULVERT
- EXISTING JERSEY BARRIER
- EXISTING RAILROAD TRACKS
- PERMITTED LIMIT OF CLEARING AND GRUBBING

REFERENCE

1. 2022 FIELD SURVEY BY GAI CONSULTANTS INC. DATED 01-18-2023. PLAN NORTH IS BASED UPON PENNSYLVANIA STATE PLANE NAD83 AND VERTICAL DATUM IS BASED UPON NAVD88.
2. TOPOGRAPHY OF AREA OUTSIDE THE ACTIVE WASTE DISPOSAL AREA WERE REFERENCED FROM THE END OF 2017 ANNUAL TOPOGRAPHIC SURVEY. THE FOLLOWING ITEMS ARE NOTED:
   - A. THE EXISTING PERMITTED LIMIT OF DISPOSAL WAS REFERENCED FROM DUQUESNE LIGHT COMPANY PERMIT DRAWING 12079-B10, DATED 3/1/79. LOCATIONS SHOWN ARE APPROXIMATE.
   - B. THE APPROXIMATE LOCATION OF THE TREELINE IS BASED ON INFORMATION PROVIDED BY CHARAH, INC IN MAY 2015.
   - C. DOMINION TRANSMISSION, INC. (DTI) GAS LINES LN-30 AND TL-469 HAVE AN ASSUMED RIGHT-OF-WAY WIDTH ON THE OUTSIDE OF EACH GAS LINE OF 25 FEET.
   - D. RAILROAD ALIGNMENT WAS OBTAINED FROM AERIAL IMAGERY.

SCALE: 1" = 100'
100 0 100 200

gai consultants

Cheswick Lefever, LLC

CHESWICK GENERATION STATION

CHESWICK ASH DISPOSAL SITE
END OF 2022 ANNUAL TOPOGRAPHIC SURVEY

DRAWN: 06-22-2022	EMAYHOOD	DRAWING NUMBER
CHECKED	-	
APPROVED	-	SHEET: N/A
SIZE: D 22X34		REV:
DISCIPLINE: CIVIL	SCALE: AS SHOWN	FILE: R220311-00-000-C-D2-001

NO.	DATE	REVISION	BY	CHK.	APP.

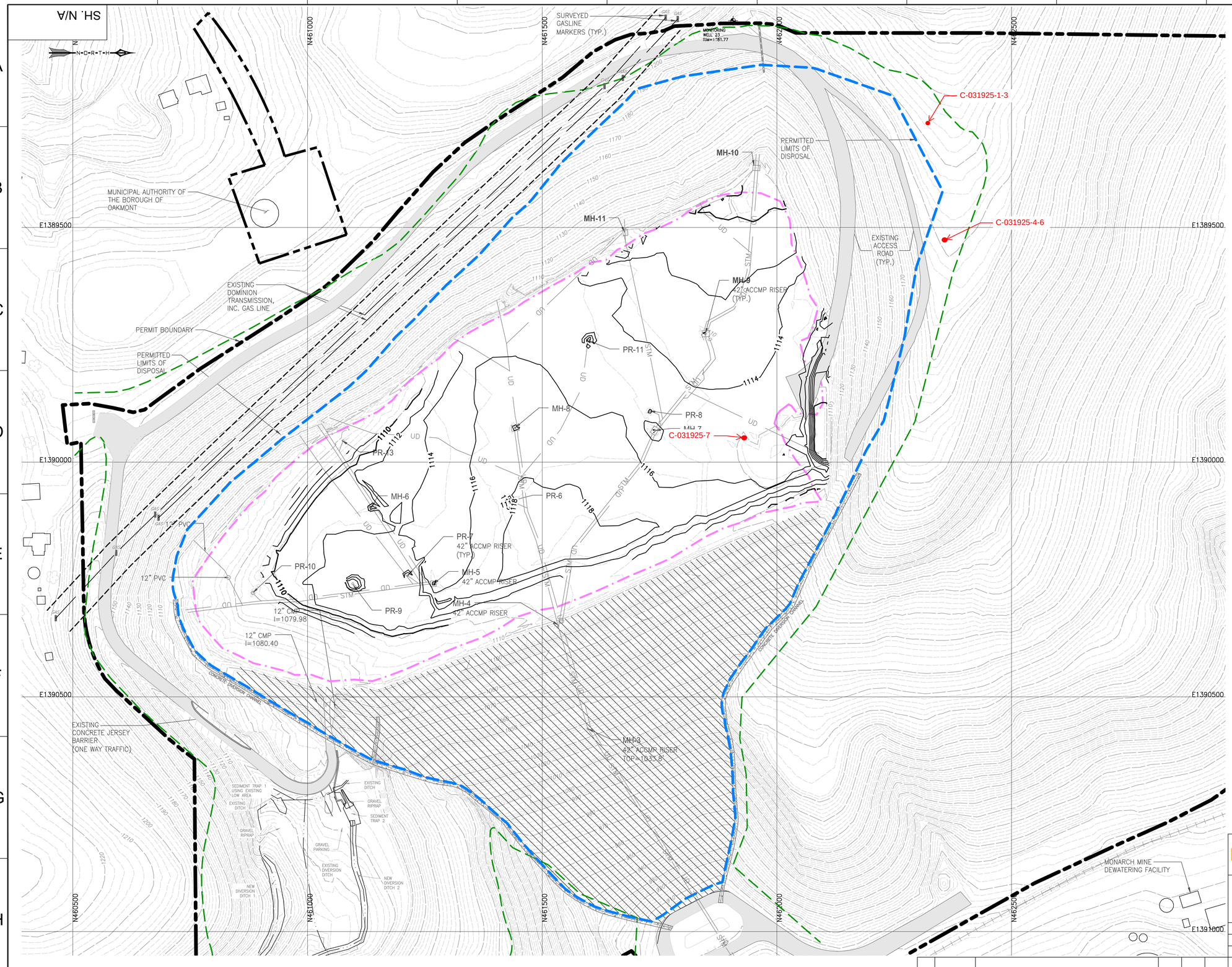
© 2021 GAI Consultants, Inc.
GAI FILE PATH: Z:\2022\R220311.00 - CHESWICK LEFEVER SOLID WA\CAD\ACAD\PRODUCTION DWGS\R220311-00-000-C-D2-001.DWG PLOTTED BY: ED MAYHOOD DATE: 06/22/2023 PLOT FILE: GAI.STB

FIELD DENSITY TESTING RECORD (NUCLEAR METHOD)

PROJECT:	Cheswick Ash Disposal	PROJECT NO.:	R220311.01	TECHNICIAN: Cory White	

DATE	GAUGE NO.	STANDARD COUNTS		TEST NO.	LOCATION	SOIL DESCRIPTION (COLOR & TYPE, LIFT THICKNESS, ETC)	FIELD DENSITY			PROCTOR DENSITY					COMPACTION			COMMENTS
		MOISTURE	DENSITY				g_{wet} (pcf)	w (%)	g_{dry} (pcf)	Proctor Name	MAX. g_{dry} (pcf)	OPT. w (%)	OPT. w, + (%)	OPT. w, - (%)	FIELD (%)	REQ. (%)	P / F	
3/19/2025	72176	706	2353	C-031925-7	See Loc Map	Final Cover Soil	123.2	18.7	103.8	C-031425-Proctor	105.3	18.3	0.0	0.0	98.6	95.0	Pass	

SH. N/A



LEGEND

- PERMIT BOUNDARY
- EXISTING CONTOUR (BEGINNING OF 2021)
- SURVEYED CONTOUR (END OF 2022, DATED 1-18-2023)
- CLOSED AREA
- ACTIVE WASTE DISPOSAL AREA
- PERMITTED LIMITS OF WASTE DISPOSAL
- EXISTING STORM DRAIN PIPING
- EXISTING UNDERDRAIN PIPING
- EXISTING CONCRETE CHANNEL/DOWNCHUTE
- MANHOLE
- EXISTING ACCESS ROAD
- EXISTING GAS LINE
- GAS LINE RIGHT-OF-WAY
- SURVEYED GASLINE MARKER
- TREE LINE
- EXISTING CULVERT
- EXISTING JERSEY BARRIER
- EXISTING RAILROAD TRACKS
- PERMITTED LIMIT OF CLEARING AND GRUBBING

REFERENCE

1. 2022 FIELD SURVEY BY GAI CONSULTANTS INC. DATED 01-18-2023. PLAN NORTH IS BASED UPON PENNSYLVANIA STATE PLANE NAD83 AND VERTICAL DATUM IS BASED UPON NAVD88.
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   - A. THE EXISTING PERMITTED LIMIT OF DISPOSAL WAS REFERENCED FROM DUQUESNE LIGHT COMPANY PERMIT DRAWING 12079-B10, DATED 3/1/79. LOCATIONS SHOWN ARE APPROXIMATE.
   - B. THE APPROXIMATE LOCATION OF THE TREELINE IS BASED ON INFORMATION PROVIDED BY CHARAH, INC IN MAY 2015.
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   - D. RAILROAD ALIGNMENT WAS OBTAINED FROM AERIAL IMAGERY.

SCALE: 1" = 100'
100 0 100 200

gai consultants

Cheswick Lefever, LLC

CHESWICK GENERATION STATION

CHESWICK ASH DISPOSAL SITE
END OF 2022 ANNUAL TOPOGRAPHIC SURVEY

DRAWN: 06-22-2022	EMAYHOOD	DRAWING NUMBER
CHECKED	-	
APPROVED	-	SHEET: N/A
SIZE: D 22X34		REV:
DISCIPLINE: CIVIL	SCALE: AS SHOWN	FILE: R220311-00-000-C-D2-001

NO.	DATE	REVISION	BY	CHK.	APP.

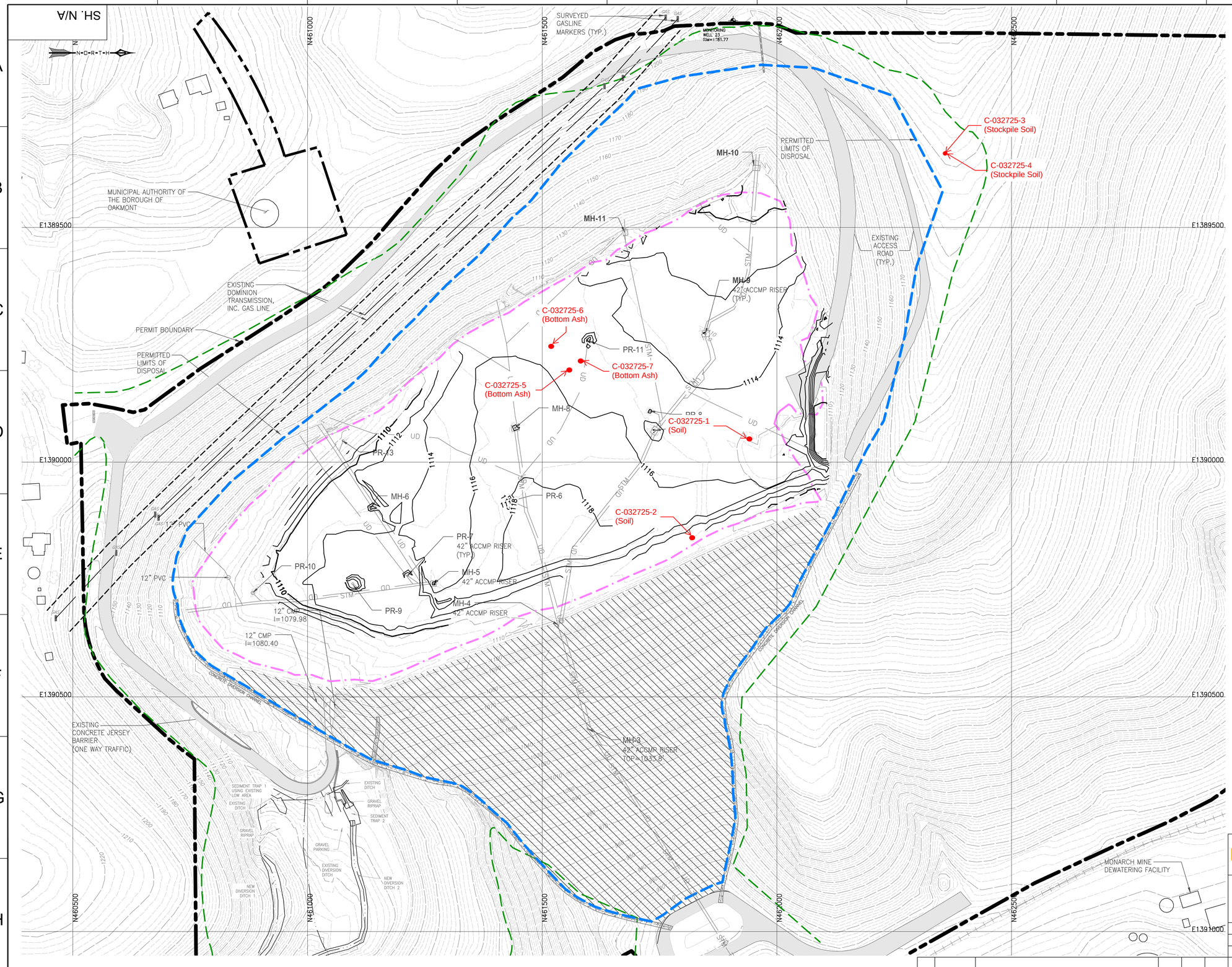
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GAI FILE PATH: Z:\2022\R220311.00 - CHESWICK LEFEVER SOLID WA\CAD\ACAD\PRODUCTION DWGS\R220311-00-000-C-D2-001.DWG PLOTTED BY: ED MAYHOOD DATE: 06/22/2023 PLOT FILE: GAI.STB

FIELD DENSITY TESTING RECORD (NUCLEAR METHOD)

PROJECT:	Cheswick Ash Disposal	PROJECT NO.:	R220311.01	TECHNICIAN: Cory White	

DATE	GAUGE NO.	STANDARD COUNTS		TEST NO.	LOCATION	SOIL DESCRIPTION (COLOR & TYPE, LIFT THICKNESS, ETC)	FIELD DENSITY			PROCTOR DENSITY					COMPACTION			COMMENTS
		MOISTURE	DENSITY				g_{wet} (pcf)	w (%)	g_{dry} (pcf)	Proctor Name	MAX. g_{dry} (pcf)	OPT. w (%)	OPT. w, + (%)	OPT. w, - (%)	FIELD (%)	REQ. (%)	P / F	
3/27/2025	72176	686	2373	C-032725-1	See Loc Map	Final Cover Soil	121.1	16.6	103.9	C-TP#5-2024	107.8	17.7	0.0	0.0	96.3	95.0	Pass	
3/27/2025	72176	686	2373	C-032725-2	See Loc Map	Final Cover Soil	125.1	17.5	106.5	C-TP#5-2024	107.8	17.7	0.0	0.0	98.8	95.0	Pass	

SH. N/A



LEGEND

- PERMIT BOUNDARY
- EXISTING CONTOUR (BEGINNING OF 2021)
- SURVEYED CONTOUR (END OF 2022, DATED 1-18-2023)
- CLOSED AREA
- ACTIVE WASTE DISPOSAL AREA
- PERMITTED LIMITS OF WASTE DISPOSAL
- EXISTING STORM DRAIN PIPING
- EXISTING UNDERDRAIN PIPING
- EXISTING CONCRETE CHANNEL/DOWNCHUTE
- MH-7 MANHOLE
- EXISTING ACCESS ROAD
- EXISTING GAS LINE
- GAS LINE RIGHT-OF-WAY
- GAS SURVEYED GASLINE MARKER
- TREE LINE
- EXISTING CULVERT
- EXISTING JERSEY BARRIER
- EXISTING RAILROAD TRACKS
- PERMITTED LIMIT OF CLEARING AND GRUBBING

REFERENCE

1. 2022 FIELD SURVEY BY GAI CONSULTANTS INC. DATED 01-18-2023. PLAN NORTH IS BASED UPON PENNSYLVANIA STATE PLANE NAD83 AND VERTICAL DATUM IS BASED UPON NAVD88.
2. TOPOGRAPHY OF AREA OUTSIDE THE ACTIVE WASTE DISPOSAL AREA WERE REFERENCED FROM THE END OF 2017 ANNUAL TOPOGRAPHIC SURVEY. THE FOLLOWING ITEMS ARE NOTED:
   - A. THE EXISTING PERMITTED LIMIT OF DISPOSAL WAS REFERENCED FROM DUQUESNE LIGHT COMPANY PERMIT DRAWING 12079-B10, DATED 3/1/79. LOCATIONS SHOWN ARE APPROXIMATE.
   - B. THE APPROXIMATE LOCATION OF THE TREELINE IS BASED ON INFORMATION PROVIDED BY CHARAH, INC IN MAY 2015.
   - C. DOMINION TRANSMISSION, INC. (DTI) GAS LINES LN-30 AND TL-469 HAVE AN ASSUMED RIGHT-OF-WAY WIDTH ON THE OUTSIDE OF EACH GAS LINE OF 25 FEET.
   - D. RAILROAD ALIGNMENT WAS OBTAINED FROM AERIAL IMAGERY.

SCALE: 1" = 100'
100 0 100 200

gai consultants

Cheswick Lefever, LLC

CHESWICK GENERATION STATION

CHESWICK ASH DISPOSAL SITE
END OF 2022 ANNUAL TOPOGRAPHIC SURVEY

DRAWN: 06-22-2022	EMAYHOOD	DRAWING NUMBER
CHECKED	-	
APPROVED	-	SHEET: N/A
SIZE: D 22X34		REV:
DISCIPLINE: CIVIL	SCALE: AS SHOWN	FILE: R220311-00-000-C-D2-001

NO.	DATE	REVISION	BY	CHK.	APP.

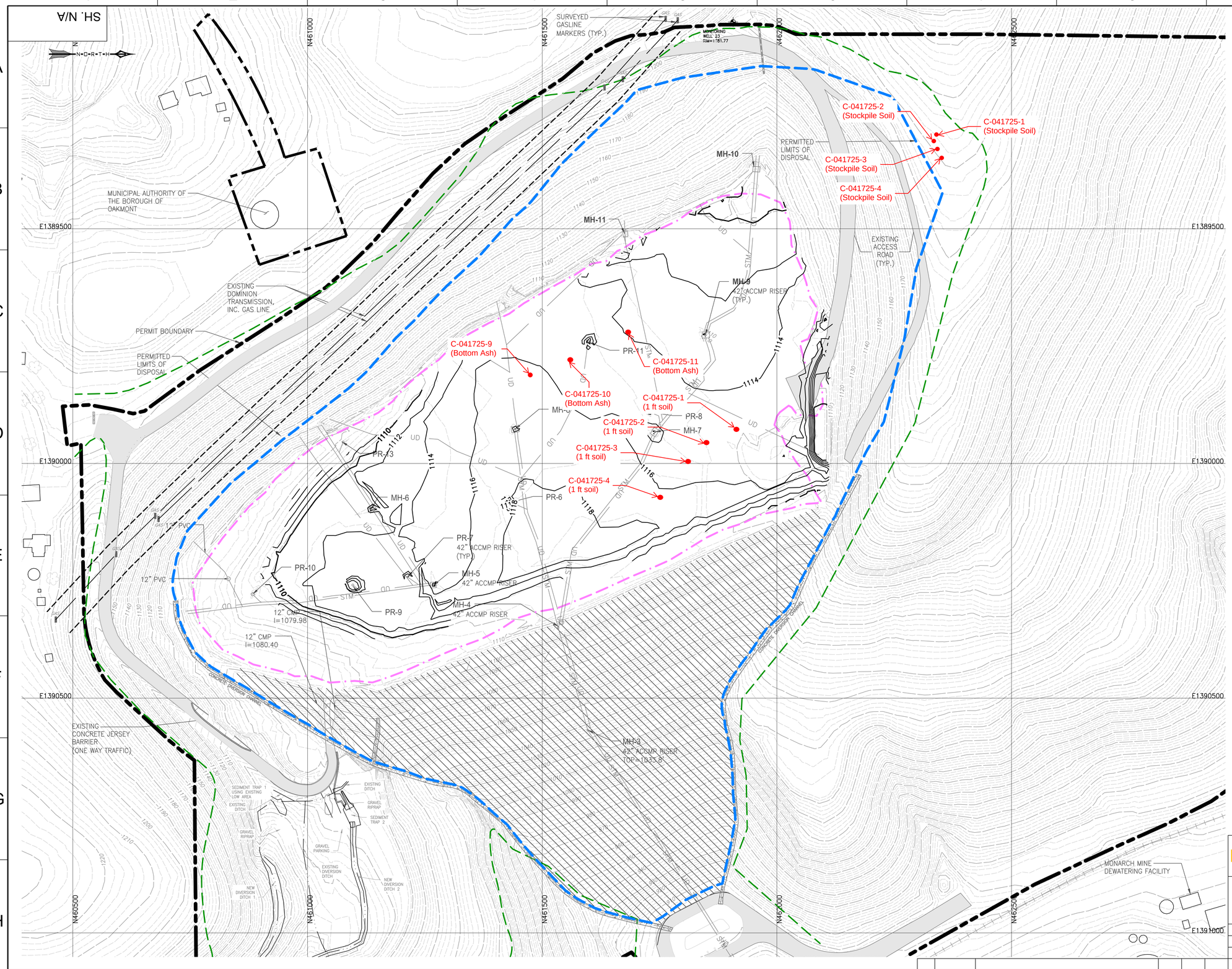
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FIELD DENSITY TESTING RECORD (NUCLEAR METHOD)

PROJECT:	Cheswick Ash Disposal	PROJECT NO.:	R220311.01	TECHNICIAN: Cory White	

DATE	GAUGE NO.	STANDARD COUNTS		TEST NO.	LOCATION	SOIL DESCRIPTION (COLOR & TYPE, LIFT THICKNESS, ETC)	FIELD DENSITY			PROCTOR DENSITY					COMPACTION			COMMENTS
		MOISTURE	DENSITY				g_{wet} (pcf)	w (%)	g_{dry} (pcf)	Proctor Name	MAX. g_{dry} (pcf)	OPT. w (%)	OPT. w, + (%)	OPT. w, - (%)	FIELD (%)	REQ. (%)	P / F	
4/17/2025	72176	707	2378	C-041725-5	See Loc Map	Final Cover Soil	129.8	14.5	113.4	C-TP#4-2024	118.2	13.3	0.0	0.0	95.9	95.0	Pass	
4/17/2025	72176	707	2378	C-041725-6	See Loc Map	Final Cover Soil	134.6	10.0	122.4	C-TP#3-2024	123.6	11.3	0.0	0.0	99.0	95.0	Pass	
4/17/2025	72176	707	2378	C-041725-7	See Loc Map	Final Cover Soil	133.4	9.6	121.7	C-TP#3-2024	123.6	11.3	0.0	0.0	98.5	95.0	Pass	
4/17/2025	72176	707	2378	C-041725-8	See Loc Map	Final Cover Soil	119.8	15.0	104.2	C-031425-Proctor	105.3	18.3	0.0	0.0	98.9	95.0	Pass	

SH. N/A



LEGEND

- PERMIT BOUNDARY
- 1080 EXISTING CONTOUR (BEGINNING OF 2021)
- 1090 SURVEYED CONTOUR (END OF 2022, DATED 1-18-2023)
- CLOSED AREA
- ACTIVE WASTE DISPOSAL AREA
- PERMITTED LIMITS OF WASTE DISPOSAL
- EXISTING STORM DRAIN PIPING
- EXISTING UNDERDRAIN PIPING
- EXISTING CONCRETE CHANNEL/DOWNCHUTE
- MH-7 MANHOLE
- EXISTING ACCESS ROAD
- EXISTING GAS LINE
- GAS LINE RIGHT-OF-WAY
- GAS SURVEYED GASLINE MARKER
- TREE LINE
- EXISTING CULVERT
- EXISTING JERSEY BARRIER
- EXISTING RAILROAD TRACKS
- PERMITTED LIMIT OF CLEARING AND GRUBBING

REFERENCE

1. 2022 FIELD SURVEY BY GAI CONSULTANTS INC. DATED 01-18-2023. PLAN NORTH IS BASED UPON PENNSYLVANIA STATE PLANE NAD83 AND VERTICAL DATUM IS BASED UPON NAVD88.
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   - D. RAILROAD ALIGNMENT WAS OBTAINED FROM AERIAL IMAGERY.

SCALE: 1" = 100'
100 0 100 200

gai consultants

Cheswick Lefever, LLC

CHESWICK GENERATION STATION

CHESWICK ASH DISPOSAL SITE
END OF 2022 ANNUAL TOPOGRAPHIC SURVEY

DRAWN: 06-22-2022	EMAYHOOD	DRAWING NUMBER
CHECKED	-	
APPROVED	-	SHEET: N/A
SIZE: D 22X34		REV:
DISCIPLINE: CIVIL	SCALE: AS SHOWN	FILE: R220311-00-000-C-D2-001

NO.	DATE	REVISION	BY	CHK.	APP.

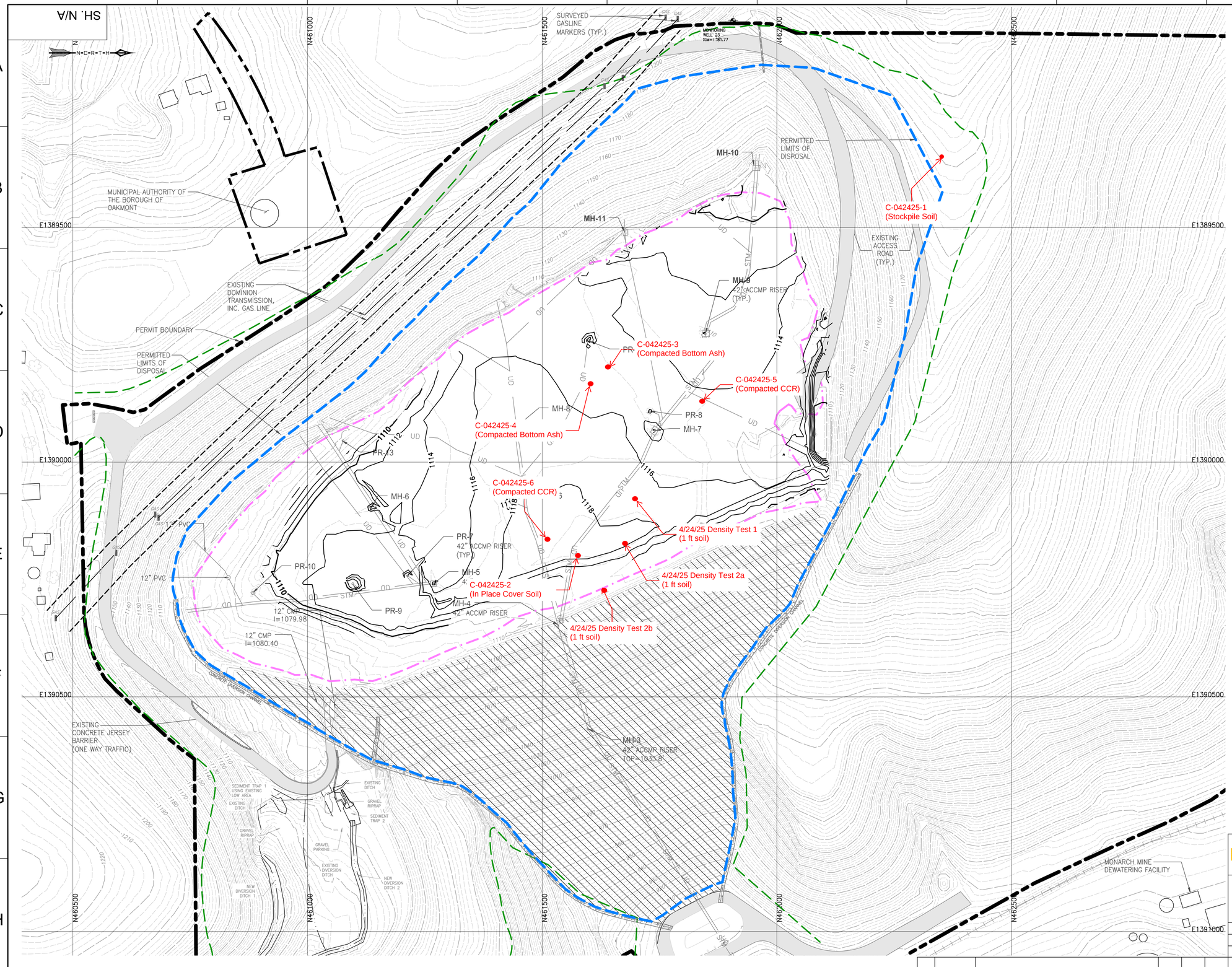
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FIELD DENSITY TESTING RECORD (NUCLEAR METHOD)

PROJECT:	Cheswick Ash Disposal	PROJECT NO.:	R220311.01	TECHNICIAN: Cory White	

DATE	GAUGE NO.	STANDARD COUNTS		TEST NO.	LOCATION	SOIL DESCRIPTION (COLOR & TYPE, LIFT THICKNESS, ETC)	FIELD DENSITY			PROCTOR DENSITY					COMPACTION			COMMENTS
		MOISTURE	DENSITY				g_{wet} (pcf)	w (%)	g_{dry} (pcf)	Proctor Name	MAX. g_{dry} (pcf)	OPT. w (%)	OPT. w, + (%)	OPT. w, - (%)	FIELD (%)	REQ. (%)	P / F	
4/24/2025	19749	665	1418	Density Test 1	See Loc Map	Final Cover Soil	119.2	11.0	107.4	C-TP#5-2024	107.8	17.7	0.0	0.0	99.6	95.0	Pass	
4/24/2025	19749	665	1418	Density Test 2a	See Loc Map	Final Cover Soil	120.9	13.1	106.9	C-TP#5-2024	107.8	17.7	0.0	0.0	99.2	95.0	Pass	
4/24/2025	19749	665	1418	Density Test 2b	See Loc Map	Final Cover Soil	131.1	10.6	118.5	C-TP#3-2024	123.6	11.3	0.0	0.0	95.9	95.0	Pass	

SH. N/A



LEGEND

- PERMIT BOUNDARY
- EXISTING CONTOUR (BEGINNING OF 2021)
- SURVEYED CONTOUR (END OF 2022, DATED 1-18-2023)
- CLOSED AREA
- ACTIVE WASTE DISPOSAL AREA
- PERMITTED LIMITS OF WASTE DISPOSAL
- EXISTING STORM DRAIN PIPING
- EXISTING UNDERDRAIN PIPING
- EXISTING CONCRETE CHANNEL/DOWNCHUTE
- MANHOLE
- EXISTING ACCESS ROAD
- EXISTING GAS LINE
- GAS LINE RIGHT-OF-WAY
- SURVEYED GASLINE MARKER
- TREE LINE
- EXISTING CULVERT
- EXISTING JERSEY BARRIER
- EXISTING RAILROAD TRACKS
- PERMITTED LIMIT OF CLEARING AND GRUBBING

REFERENCE

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   - D. RAILROAD ALIGNMENT WAS OBTAINED FROM AERIAL IMAGERY.

SCALE: 1" = 100'
100 0 100 200

gai consultants

Cheswick Lefever, LLC

CHESWICK GENERATION STATION

CHESWICK ASH DISPOSAL SITE
END OF 2022 ANNUAL TOPOGRAPHIC SURVEY

DRAWN: 06-22-2022	EMAYHOOD	DRAWING NUMBER
CHECKED	-	
APPROVED	-	SHEET: N/A
SIZE: D 22X34		REV:
DISCIPLINE: CIVIL	SCALE: AS SHOWN	FILE: R220311-00-000-C-D2-001

NO.	DATE	REVISION	BY	CHK.	APP.

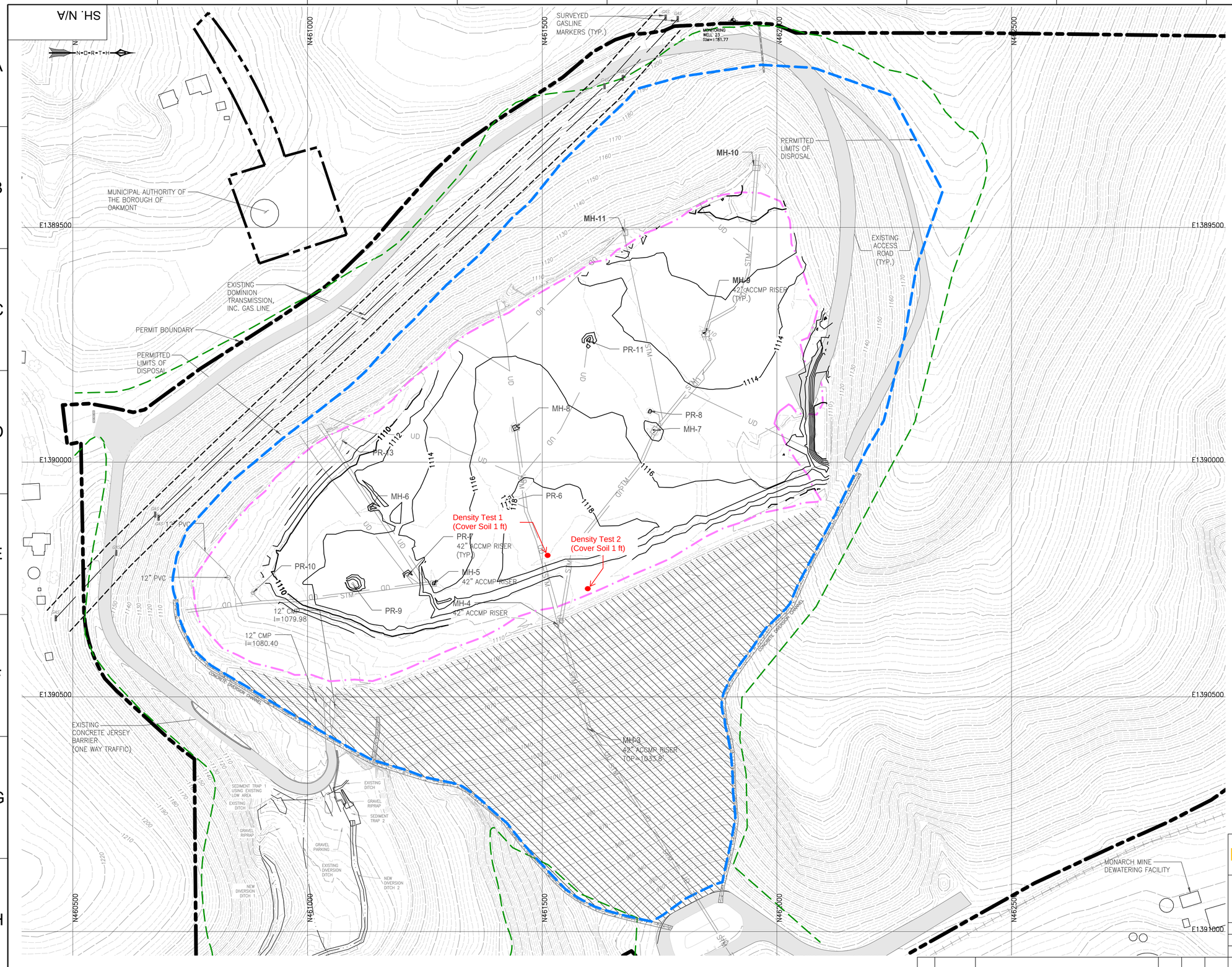
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FIELD DENSITY TESTING RECORD (NUCLEAR METHOD)

PROJECT:	Cheswick Ash Disposal	PROJECT NO.:	R220311.01	TECHNICIAN: Cory White	

DATE	GAUGE NO.	STANDARD COUNTS		TEST NO.	LOCATION	SOIL DESCRIPTION (COLOR & TYPE, LIFT THICKNESS, ETC)	FIELD DENSITY			PROCTOR DENSITY					COMPACTION			COMMENTS
		MOISTURE	DENSITY				g_{wet} (pcf)	w (%)	g_{dry} (pcf)	Proctor Name	MAX. g_{dry} (pcf)	OPT. w (%)	OPT. w, + (%)	OPT. w, - (%)	FIELD (%)	REQ. (%)	P / F	
5/15/2025	71600	682	2484	Density Test 1	See Loc Map	Final Cover Soil	134.8	9.7	122.9	C-TP#3-2024	123.6	11.3	0.0	0.0	99.4	95.0	Pass	
5/15/2025	71600	682	2484	Density Test 2	See Loc Map	Final Cover Soil	131.2	9.7	119.6	C-TP#2-2024	119.6	12.1	0.0	0.0	100.0	95.0	Pass	

SH. N/A



LEGEND

- PERMIT BOUNDARY
- EXISTING CONTOUR (BEGINNING OF 2021)
- SURVEYED CONTOUR (END OF 2022, DATED 1-18-2023)
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- EXISTING ACCESS ROAD
- EXISTING GAS LINE
- GAS LINE RIGHT-OF-WAY
- SURVEYED GASLINE MARKER
- TREE LINE
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SCALE: 1" = 100'
100 0 100 200

gai consultants

Cheswick Lefever, LLC

CHESWICK GENERATION STATION

CHESWICK ASH DISPOSAL SITE
END OF 2022 ANNUAL TOPOGRAPHIC SURVEY

DRAWN: 06-22-2022	EMAYHOOD	DRAWING NUMBER
CHECKED	-	
APPROVED	-	SHEET: N/A
SIZE: D 22X34		REV:
DISCIPLINE: CIVIL	SCALE: AS SHOWN	FILE: R220311-00-000-C-D2-001

NO.	DATE	REVISION	BY	CHK.	APP.

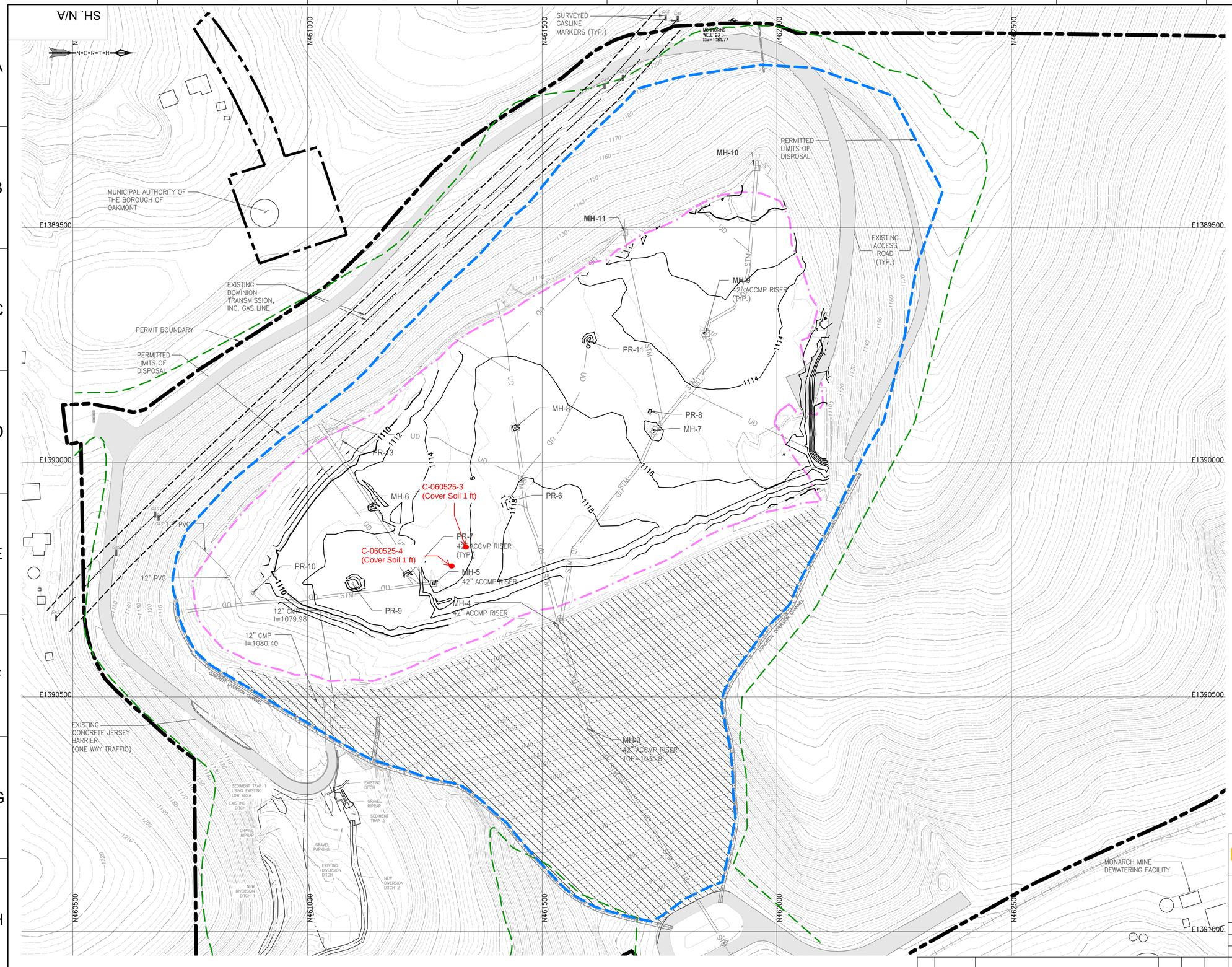
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FIELD DENSITY TESTING RECORD (NUCLEAR METHOD)

PROJECT:	Cheswick Ash Disposal	PROJECT NO.:	R220311.01	TECHNICIAN: Cory White	

DATE	GAUGE NO.	STANDARD COUNTS		TEST NO.	LOCATION	SOIL DESCRIPTION (COLOR & TYPE, LIFT THICKNESS, ETC)	FIELD DENSITY			PROCTOR DENSITY					COMPACTION			COMMENTS
		MOISTURE	DENSITY				g_{wet} (pcf)	w (%)	g_{dry} (pcf)	Proctor Name	MAX. g_{dry} (pcf)	OPT. w (%)	OPT. w, + (%)	OPT. w, - (%)	FIELD (%)	REQ. (%)	P / F	
6/5/2025	71600	682	2484	C-060525-3	See Loc Map	Final Cover Soil	123.7	10.0	112.5	C-TP#4-2024	118.2	13.3	0.0	0.0	95.1	95.0	Pass	
6/5/2025	71600	682	2484	C-060525-4	See Loc Map	Final Cover Soil	131.2	10.7	118.5	C-TP#2-2024	119.6	12.1	0.0	0.0	99.1	95.0	Pass	

SH. N/A



LEGEND

- PERMIT BOUNDARY
- EXISTING CONTOUR (BEGINNING OF 2021)
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- GAS LINE RIGHT-OF-WAY
- SURVEYED GASLINE MARKER
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SCALE: 1" = 100'
100 0 100 200

gai consultants

Cheswick Lefever, LLC

CHESWICK GENERATION STATION

CHESWICK ASH DISPOSAL SITE
END OF 2022 ANNUAL TOPOGRAPHIC SURVEY

DRAWN: 06-22-2022	EMAYHOOD	DRAWING NUMBER
CHECKED	-	
APPROVED	-	SHEET: N/A
SIZE: D 22X34		REV:
DISCIPLINE: CIVIL	SCALE: AS SHOWN	FILE: R220311-00-000-C-D2-001

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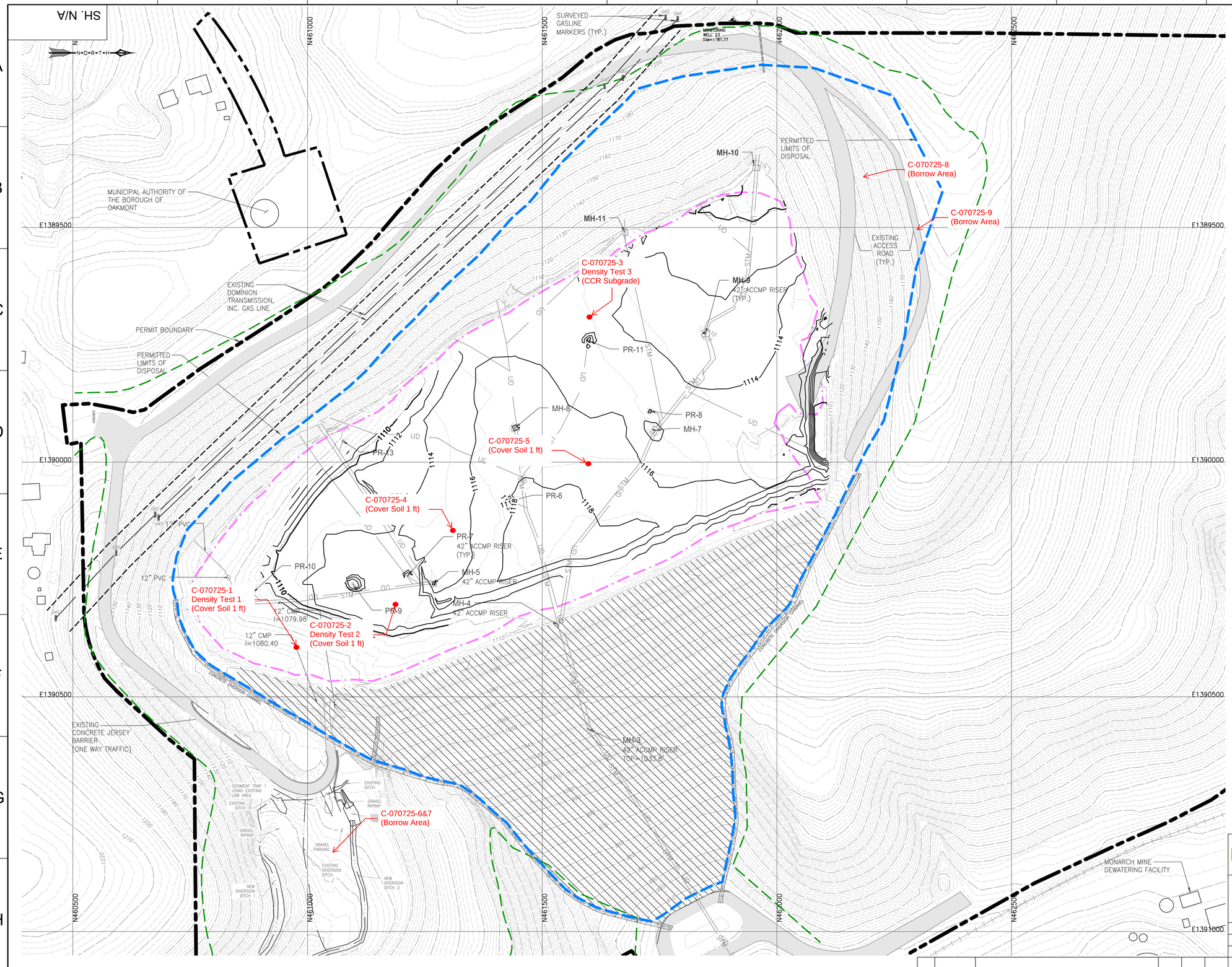
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FIELD DENSITY TESTING RECORD (NUCLEAR METHOD)

PROJECT:	Cheswick Ash Disposal	PROJECT NO.:	R220311.01	TECHNICIAN: Cory White	

DATE	GAUGE NO.	STANDARD COUNTS		TEST NO.	LOCATION	SOIL DESCRIPTION (COLOR & TYPE, LIFT THICKNESS, ETC)	FIELD DENSITY			PROCTOR DENSITY					COMPACTION			COMMENTS
		MOISTURE	DENSITY				g_{wet} (pcf)	w (%)	g_{dry} (pcf)	Proctor Name	MAX. g_{dry} (pcf)	OPT. w (%)	OPT. w, + (%)	OPT. w, - (%)	FIELD (%)	REQ. (%)	P / F	
7/7/2025	72176	711	2323	Density Test 1	See Loc Map	Final Cover Soil	120.5	12.7	106.9	C-TP#5-2024	107.8	17.7	0.0	0.0	99.2	95.0	Pass	
7/7/2025	72176	711	2323	Density Test 2	See Loc Map	Final Cover Soil	131.0	11.1	117.9	C-TP#4-2024	118.2	13.3	0.0	0.0	99.8	95.0	Pass	

SH. N/A



LEGEND

- PERMIT BOUNDARY
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- GAS LINE RIGHT-OF-WAY
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SCALE: 1" = 100'
100 0 100 200

gai consultants

Cheswick Lefever, LLC

CHESWICK GENERATION STATION

CHESWICK ASH DISPOSAL SITE
END OF 2022 ANNUAL TOPOGRAPHIC SURVEY

DRAWN: 06-22-2022	EMAYHOOD	DRAWING NUMBER
CHECKED	-	
APPROVED	-	SHEET: N/A
SIZE: D 22X34		REV:
DISCIPLINE: CIVIL	SCALE: AS SHOWN	FILE: R220311-00-000-C-D2-001

NO.	DATE	REVISION	BY	CHK.	APP.

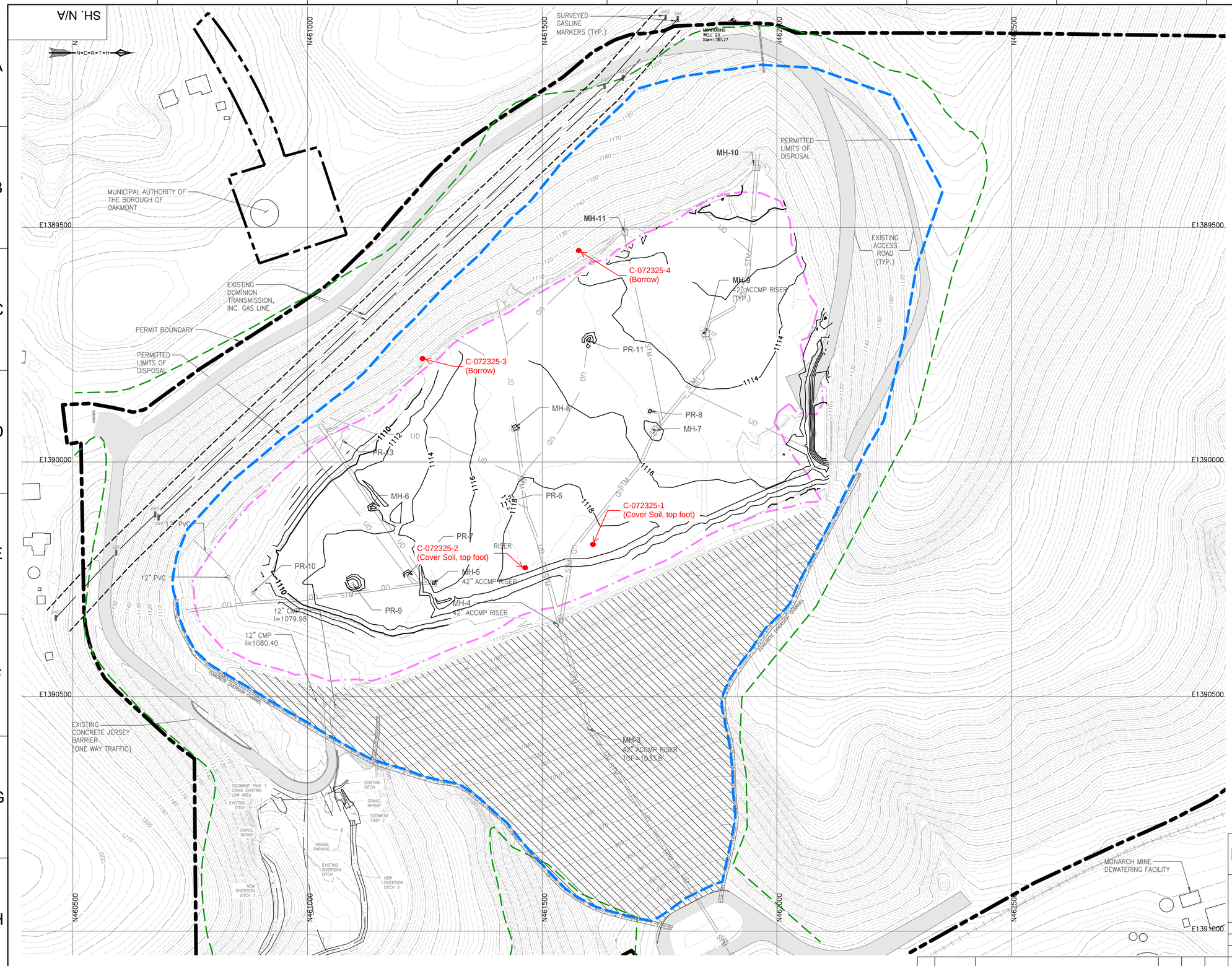
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GAI FILE PATH: Z:\2022\R220311.00 - CHESWICK LEFEVER SOLID WA\CAD\ACAD\PRODUCTION DWGS\R220311-00-000-C-D2-001.DWG PLOTTED BY: ED MAYHOOD DATE: 06/22/2023 PLOT FILE: GAI.STB

FIELD DENSITY TESTING RECORD (NUCLEAR METHOD)

PROJECT:	Cheswick Ash Disposal	PROJECT NO.:	R220311.01	TECHNICIAN: Cory White	

DATE	GAUGE NO.	STANDARD COUNTS		TEST NO.	LOCATION	SOIL DESCRIPTION (COLOR & TYPE, LIFT THICKNESS, ETC)	FIELD DENSITY			PROCTOR DENSITY					COMPACTION			COMMENTS
		MOISTURE	DENSITY				g_{wet} (pcf)	w (%)	g_{dry} (pcf)	Proctor Name	MAX. g_{dry} (pcf)	OPT. w (%)	OPT. w, + (%)	OPT. w, - (%)	FIELD (%)	REQ. (%)	P / F	
7/23/2025	71592	673	2318	C-072325-1	See Loc Map	Final Cover Soil	125.8	11.8	112.5	C-072325-Proctor	114.5	14.7	0.0	0.0	98.3	95.0	Pass	
7/23/2025	71592	673	2318	C-072325-2	See Loc Map	Final Cover Soil	126.9	11.7	113.6	C-072325-Proctor	114.5	14.7	0.0	0.0	99.2	95.0	Pass	

SH. N/A



LEGEND

- PERMIT BOUNDARY
- EXISTING CONTOUR (BEGINNING OF 2021)
- SURVEYED CONTOUR (END OF 2022, DATED 1-18-2023)
- CLOSED AREA
- ACTIVE WASTE DISPOSAL AREA
- PERMITTED LIMITS OF WASTE DISPOSAL
- EXISTING STORM DRAIN PIPING
- EXISTING UNDERDRAIN PIPING
- EXISTING CONCRETE CHANNEL/DOWNCHUTE
- MANHOLE
- EXISTING ACCESS ROAD
- EXISTING GAS LINE
- GAS LINE RIGHT-OF-WAY
- SURVEYED GASLINE MARKER
- TREE LINE
- EXISTING CULVERT
- EXISTING JERSEY BARRIER
- EXISTING RAILROAD TRACKS
- PERMITTED LIMIT OF CLEARING AND GRUBBING

REFERENCE

1. 2022 FIELD SURVEY BY GAI CONSULTANTS INC. DATED 01-18-2023. PLAN NORTH IS BASED UPON PENNSYLVANIA STATE PLANE NAD83 AND VERTICAL DATUM IS BASED UPON NAVD88.
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   - A. THE EXISTING PERMITTED LIMIT OF DISPOSAL WAS REFERENCED FROM DUQUESNE LIGHT COMPANY PERMIT DRAWING 12079-B10, DATED 3/1/79. LOCATIONS SHOWN ARE APPROXIMATE.
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   - C. DOMINION TRANSMISSION, INC. (DTI) GAS LINES LN-30 AND TL-469 HAVE AN ASSUMED RIGHT-OF-WAY WIDTH ON THE OUTSIDE OF EACH GAS LINE OF 25 FEET.
   - D. RAILROAD ALIGNMENT WAS OBTAINED FROM AERIAL IMAGERY.

SCALE: 1" = 100'

100 0 100 200

gai consultants

Cheswick Lefever, LLC

CHESWICK GENERATION STATION

CHESWICK ASH DISPOSAL SITE
END OF 2022 ANNUAL TOPOGRAPHIC SURVEY

DRAWN: 06-22-2022	EMAYHOOD	DRAWING NUMBER
CHECKED	-	
APPROVED	-	SHEET: N/A
SIZE: D 22X34		REV:
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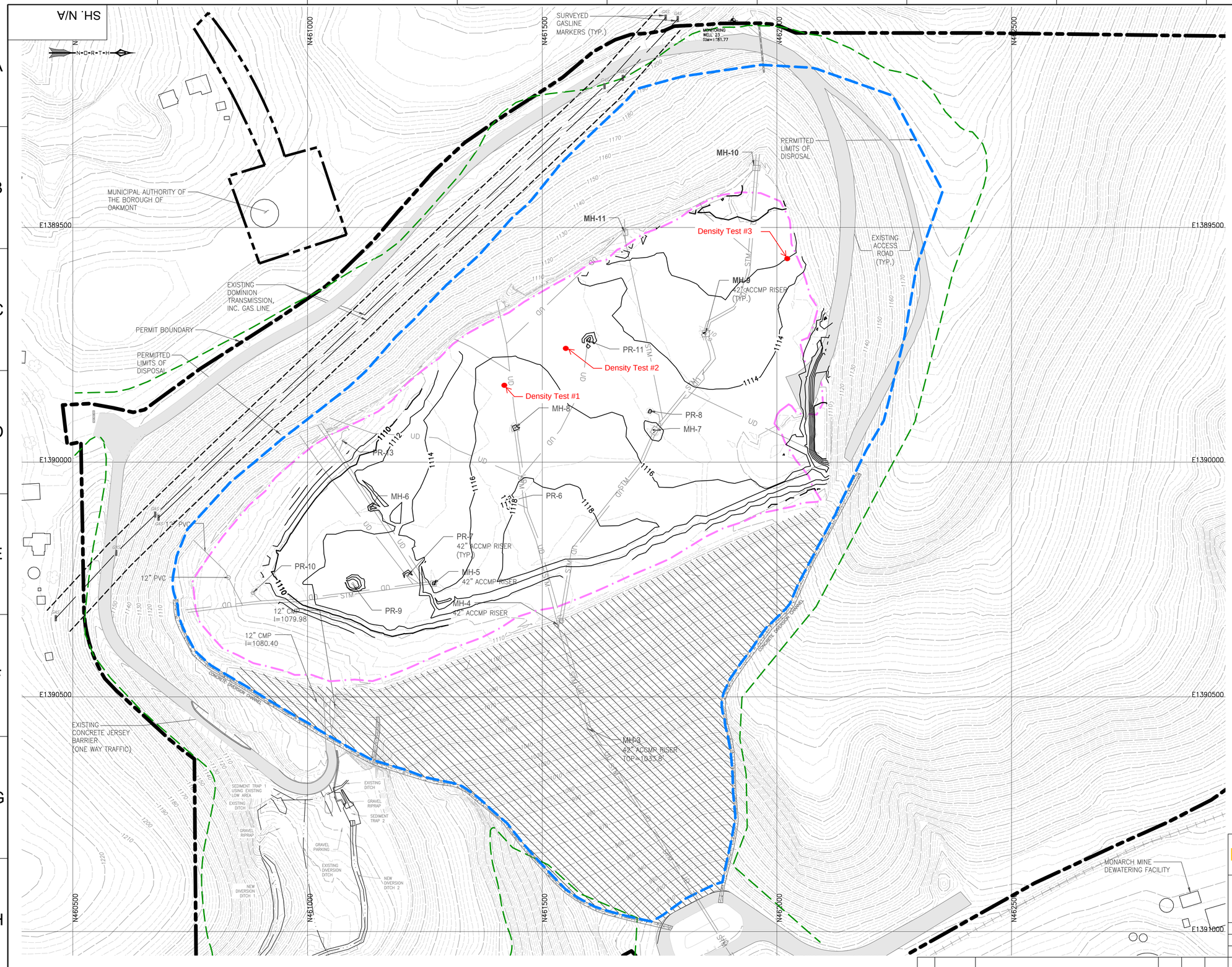
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FIELD DENSITY TESTING RECORD (NUCLEAR METHOD)

PROJECT:	Cheswick Ash Disposal	PROJECT NO.:	R220311.01	TECHNICIAN: Cory White	

DATE	GAUGE NO.	STANDARD COUNTS		TEST NO.	LOCATION	SOIL DESCRIPTION (COLOR & TYPE, LIFT THICKNESS, ETC)	FIELD DENSITY			PROCTOR DENSITY					COMPACTION			COMMENTS
		MOISTURE	DENSITY				g_{wet} (pcf)	w (%)	g_{dry} (pcf)	Proctor Name	MAX. g_{dry} (pcf)	OPT. w (%)	OPT. w, + (%)	OPT. w, - (%)	FIELD (%)	REQ. (%)	P / F	
8/8/2025	28892	592	1522	Density Test #1	See Loc Map	Final Cover Soil	128.7	12.8	114.1	C-072325-Proctor	114.5	14.7	0.0	0.0	99.6	95.0	Pass	
8/8/2025	28892	592	1522	Density Test #2	See Loc Map	Final Cover Soil	126.9	11.1	114.2	C-072325-Proctor	114.5	14.7	0.0	0.0	99.8	95.0	Pass	
8/8/2025	28892	592	1522	Density Test #3	See Loc Map	Final Cover Soil	131.2	15.1	114.0	C-072325-Proctor	114.5	14.7	0.0	0.0	99.6	95.0	Pass	

SH. N/A



LEGEND

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- EXISTING CONCRETE CHANNEL/DOWNCHUTE
- MH-7 MANHOLE
- EXISTING ACCESS ROAD
- EXISTING GAS LINE
- GAS LINE RIGHT-OF-WAY
- GAS SURVEYED GASLINE MARKER
- TREE LINE
- EXISTING CULVERT
- EXISTING JERSEY BARRIER
- EXISTING RAILROAD TRACKS
- PERMITTED LIMIT OF CLEARING AND GRUBBING

REFERENCE

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   - D. RAILROAD ALIGNMENT WAS OBTAINED FROM AERIAL IMAGERY.

SCALE: 1" = 100'
100 0 100 200

gai consultants

Cheswick Lefever, LLC

CHESWICK GENERATION STATION

CHESWICK ASH DISPOSAL SITE
END OF 2022 ANNUAL TOPOGRAPHIC SURVEY

DRAWN: 06-22-2022	EMAYHOOD	DRAWING NUMBER
CHECKED	-	
APPROVED	-	SHEET: N/A
SIZE: D 22X34		REV:
DISCIPLINE: CIVIL	SCALE: AS SHOWN	FILE: R220311-00-000-C-D2-001

NO.	DATE	REVISION	BY	CHK.	APP.

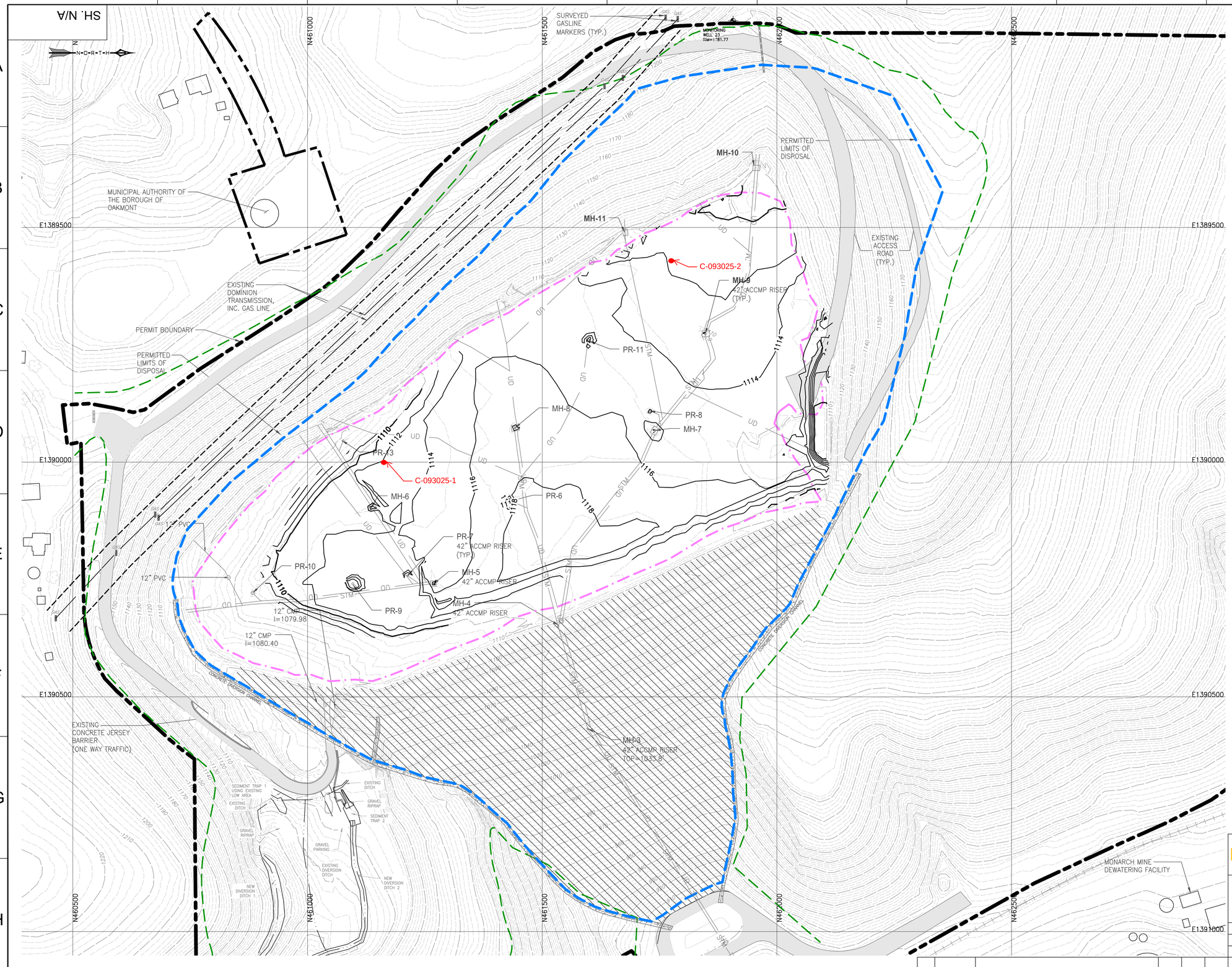
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FIELD DENSITY TESTING RECORD (NUCLEAR METHOD)

PROJECT:	Cheswick Ash Disposal	PROJECT NO.:	R220311.01	TECHNICIAN: Cory White	

DATE	GAUGE NO.	STANDARD COUNTS		TEST NO.	LOCATION	SOIL DESCRIPTION (COLOR & TYPE, LIFT THICKNESS, ETC)	FIELD DENSITY			PROCTOR DENSITY					COMPACTION			COMMENTS
		MOISTURE	DENSITY				g_{wet} (pcf)	w (%)	g_{dry} (pcf)	Proctor Name	MAX. g_{dry} (pcf)	OPT. w (%)	OPT. w, + (%)	OPT. w, - (%)	FIELD (%)	REQ. (%)	P / F	
9/30/2025	19749	663	1399	C-093025-1	See Loc Map	Final Cover Soil	135.1	11.5	121.2	C-TP#3-2024	123.6	11.3	0.0	0.0	98.0	95.0	Pass	
9/30/2025	19749	663	1399	C-093025-2	See Loc Map	Final Cover Soil	135.5	10.3	122.8	C-TP#3-2024	123.6	11.3	0.0	0.0	99.4	95.0	Pass	

SH. N/A



LEGEND

- PERMIT BOUNDARY
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- MANHOLE
- EXISTING ACCESS ROAD
- EXISTING GAS LINE
- GAS LINE RIGHT-OF-WAY
- SURVEYED GASLINE MARKER
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   - D. RAILROAD ALIGNMENT WAS OBTAINED FROM AERIAL IMAGERY.

SCALE: 1" = 100'

100 0 100 200

gai consultants

Cheswick Lefever, LLC

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CHESWICK ASH DISPOSAL SITE
END OF 2022 ANNUAL TOPOGRAPHIC SURVEY

DRAWN: 06-22-2022	EMAYHOOD	DRAWING NUMBER
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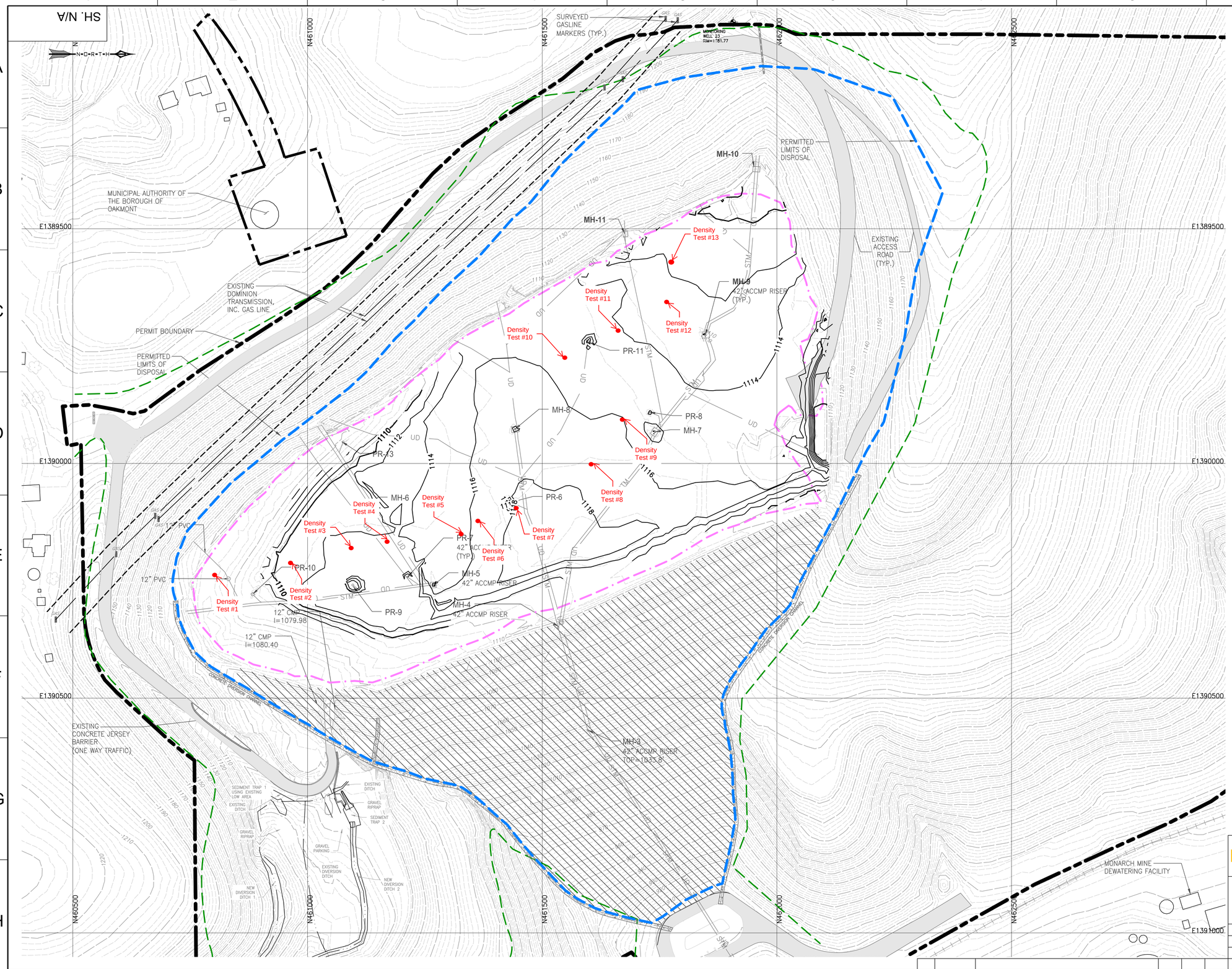
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PROJECT:	Cheswick Ash Disposal	PROJECT NO.:	R220311.01	TECHNICIAN: Cory White	

DATE	GAUGE NO.	STANDARD COUNTS		TEST NO.	LOCATION	SOIL DESCRIPTION (COLOR & TYPE, LIFT THICKNESS, ETC)	FIELD DENSITY			PROCTOR DENSITY					COMPACTION			COMMENTS
		MOISTURE	DENSITY				g_{wet} (pcf)	w (%)	g_{dry} (pcf)	Proctor Name	MAX. g_{dry} (pcf)	OPT. w (%)	OPT. w, + (%)	OPT. w, - (%)	FIELD (%)	REQ. (%)	P / F	
10/14/2025	72175	713	2364	Density Test #1	See Loc Map	Final Cover Soil	126.9	11.0	114.3	C-072325-Proctor	114.5	14.7	0.0	0.0	99.8	95.0	Pass	
10/14/2025	72175	713	2364	Density Test #2	See Loc Map	Final Cover Soil	134.8	9.2	123.4	C-TP#3-2024	123.6	11.3	0.0	0.0	99.9	95.0	Pass	
10/14/2025	72175	713	2364	Density Test #3	See Loc Map	Final Cover Soil	128.4	10.9	115.8	C-TP#4-2024	118.2	13.3	0.0	0.0	98.0	95.0	Pass	
10/14/2025	72175	713	2364	Density Test #4	See Loc Map	Final Cover Soil	133.8	10.5	121.1	C-TP#3-2024	123.6	11.3	0.0	0.0	98.0	95.0	Pass	
10/14/2025	72175	713	2364	Density Test #5	See Loc Map	Final Cover Soil	133.1	8.1	123.1	C-TP#3-2024	123.6	11.3	0.0	0.0	99.6	95.0	Pass	
10/14/2025	72175	713	2364	Density Test #6	See Loc Map	Final Cover Soil	130.4	9.4	119.2	C-TP#3-2024	123.6	11.3	0.0	0.0	96.4	95.0	Pass	
10/14/2025	72175	713	2364	Density Test #7	See Loc Map	Final Cover Soil	134.6	9.2	123.3	C-TP#3-2024	123.6	11.3	0.0	0.0	99.7	95.0	Pass	
10/14/2025	72175	713	2364	Density Test #8	See Loc Map	Final Cover Soil	135.5	10.9	122.2	C-TP#3-2024	123.6	11.3	0.0	0.0	98.9	95.0	Pass	
10/14/2025	72175	713	2364	Density Test #9	See Loc Map	Final Cover Soil	127.6	12.1	113.8	C-072325-Proctor	114.5	14.7	0.0	0.0	99.4	95.0	Pass	
10/14/2025	72175	713	2364	Density Test #10	See Loc Map	Final Cover Soil	124.9	11.1	112.4	C-072325-Proctor	114.5	14.7	0.0	0.0	98.2	95.0	Pass	
10/14/2025	72175	713	2364	Density Test #11	See Loc Map	Final Cover Soil	131.0	11.0	118.0	C-TP#4-2024	118.2	13.3	0.0	0.0	99.8	95.0	Pass	
10/14/2025	72175	713	2364	Density Test #12	See Loc Map	Final Cover Soil	134.1	9.1	122.9	C-TP#3-2024	123.6	11.3	0.0	0.0	99.4	95.0	Pass	
10/14/2025	72175	713	2364	Density Test #13	See Loc Map	Final Cover Soil	130.0	12.2	115.9	C-TP#4-2024	118.2	13.3	0.0	0.0	98.0	95.0	Pass	

SH. N/A



LEGEND

- PERMIT BOUNDARY
- 1080 EXISTING CONTOUR (BEGINNING OF 2021)
- 1090 SURVEYED CONTOUR (END OF 2022, DATED 1-18-2023)
- CLOSED AREA
- ACTIVE WASTE DISPOSAL AREA
- PERMITTED LIMITS OF WASTE DISPOSAL
- EXISTING STORM DRAIN PIPING
- EXISTING UNDERDRAIN PIPING
- EXISTING CONCRETE CHANNEL/DOWNCHUTE
- MH-7 MANHOLE
- EXISTING ACCESS ROAD
- EXISTING GAS LINE
- GAS LINE RIGHT-OF-WAY
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SCALE: 1" = 100'
100 0 100 200

gai consultants

Cheswick Lefever, LLC

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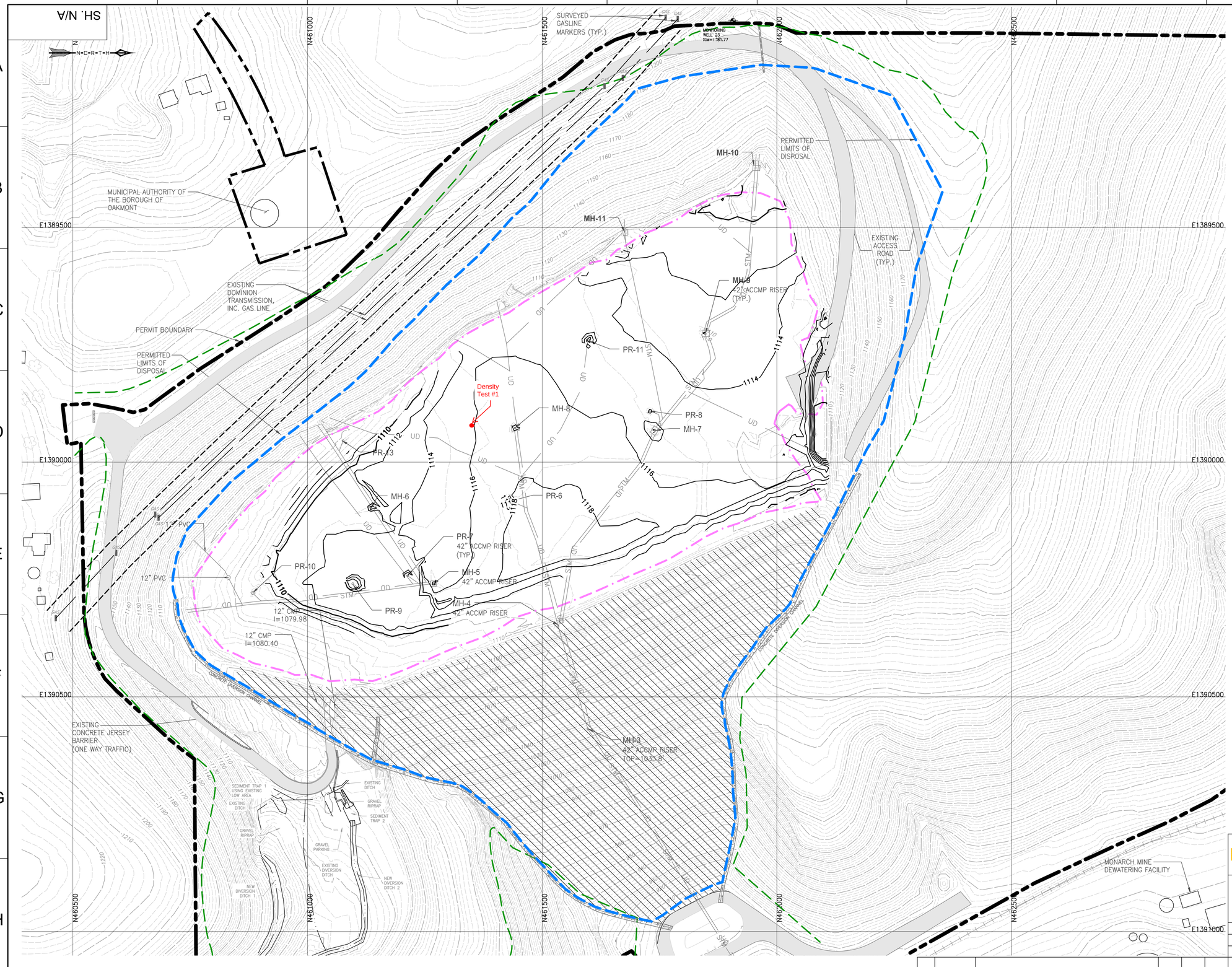
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		MOISTURE	DENSITY				g_{wet} (pcf)	w (%)	g_{dry} (pcf)	Proctor Name	MAX. g_{dry} (pcf)	OPT. w (%)	OPT. w, + (%)	OPT. w, - (%)	FIELD (%)	REQ. (%)	P / F	
11/5/2025	72175	706	2376	Density Test #1	See Loc Map	Final Cover Soil	131.9	14.0	115.7	C-TP#4-2024	118.2	13.3	0.0	0.0	97.9	95.0	Pass	

SH. N/A



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100 0 100 200

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APPENDIX C
Final Cover Soil Conformance Laboratory Testing Results

gai consultants
transforming ideas into reality®

R220960.00

By: CSW 2025/11/19
Checked: KMB 2026/09/16

Table 1

Summary of Soils Laboratory Testing
Cheswick Ash Disposal Site - Capping

Sample No.	Area	USCS Classification	USCS Symbol	USDA Grain Size Summary				USDA Classification	Moisture Content (%)	Ash Conetent/ Organic Matter (%)	Standard Proctor		Average Permeability (cm/sec @ 20 °C)	Fertility
				Gravel (%)	Sand (%)	Silt (%)	Clay (%)				Dry Density (PCF)	Optimum Moisture Content (%)		
C-TP#1-2024	North Borrow Area	Sandy Lean Clay with Gravel	CL	29.45	20.60	31.99	17.95	Loam	16.3	7.3	101.6	18.4	9.80E-06	
C-TP#2-2024	North Borrow Area	Clayey Gravel with Sand	GC	70.00	12.76	12.63	4.60	Loam	11.1	2.8	119.6	12.1	2.30E-06	
C-TP#3-2024	North Borrow Area	Clayey Gravel with Sand	GC	68.34	15.32	12.04	4.30	Loam	9.3	2.0	123.6	11.3	2.20E-06	
C-TP#4-2024	North Borrow Area	Gravelly Lean Clay with Sand	CL	39.53	11.63	34.74	14.10	Silt Loam	11.5	1.8	118.2	13.3	3.90E-06	
C-TP#5-2024	North Borrow Area	Lean Clay with Sand	CL	5.68	13.44	44.33	36.55	Silty Clay Loam	15.6	2.7	107.8	17.7	9.10E-07	
C-031425-1	Final Cover Soil	Lean Clay with Sand	CL	7.81	11.54	40.93	39.72	Silty Clay	12.6	3.1			2.70E-08	
C-031425-2	Final Cover Soil	Lean Clay with Sand	CL	10.09	12.65	41.14	36.12	Silty Clay	18	3.1				
C-031425-3	Final Cover Soil	Lean Clay	CL	4.99	8.76	40.59	45.66	Silty Clay	16.7	3.0			1.70E-08	
C-031425-4	North Borrow Area	Lean Clay	CL	8.87	10.57	48.96	31.60	Silty Clay Loam	20.4	2.5				
C-031425-Proctor	Final Cover Soil	Lean Clay with Sand	CL	12.81	10.65	39.09	37.44	Silty Clay	13.9	2.8	105.3	18.3		
C-031925-1	North Borrow Area	Lean Clay with Sand	CL	14.00	17.83	42.65	25.52	Silty Clay Loam	15.7	2.4				
C-031925-2	North Borrow Area	Sandy Lean Clay	CL	19.81	13.28	40.55	26.36	Silty Clay Loam	17.5	2.6				
C-031925-3	North Borrow Area	Sandy Lean Clay w Gravel	CL	27.17	12.72	38.41	27.70	Silty Clay Loam	15.9	2.6				pH at optimum. P & K below optimum. Mg above optimum.
C-031925-4	North Borrow Area								22	7.6				
C-031925-5	North Borrow Area								20.9	8.1				
C-031925-6	North Borrow Area								31.2	13.9				pH & K at optimum. P below optimum. Mg above optimum.
C-031925-7	Final Cover Soil								16.1	2.4				
C-032725-1	Final Cover Soil	Lean Clay	CL	2.69	9.27	45.30	42.74	Silty Clay	15.9	2.4				
C-032725-2	Final Cover Soil	Lean Clay with Sand	CL	9.62	11.05	46.54	32.79	Silty Clay Loam	16.1	2.1			7.70E-07	
C-032725-3	Borrow								12	1.7				
C-032725-4	Borrow								12.6	2.0				
C-041725-1	Borrow								15	1.8				

R220960.00

By: CSW 2025/11/19
Checked: KMB 2026/09/16

Table 1

Summary of Soils Laboratory Testing
Cheswick Ash Disposal Site - Capping

Sample No.	Area	USCS Classification	USCS Symbol	USDA Grain Size Summary				USDA Classification	Moisture Content (%)	Ash Conetent/ Organic Matter (%)	Standard Proctor		Average Permeability (cm/sec @ 20 °C)	Fertility
				Gravel (%)	Sand (%)	Silt (%)	Clay (%)				Dry Density (PCF)	Optimum Moisture Content (%)		
C-041725-2	Borrow								15	1.8				
C-041725-3	Borrow								15	1.7				
C-041725-4	Borrow								19.3	2.5				
C-041725-5	Final Cover Soil	Clayey Sand with Gravel	SC	36.27	19.46	30.57	13.70	Loam	10.4	1.9				
C-041725-6	Final Cover Soil	Clayey Gravel with Sand	GC	43.51	16.43	28.39	11.66	Silt Loam	10.8	1.8				
C-041725-7	Final Cover Soil	Clayey Gravel with Sand	GC	45.89	20.28	25.16	8.68	Loam	10	1.9			1.40E-07	
C-041725-8	Final Cover Soil	Lean Clay with Sand	CL	9.16	20.41	48.56	21.87	Silt Loam	16.3	1.4			2.20E-05	
C-042425-1	Borrow	Lean Clay with Sand	CL	12.84	15.86	52.79	18.51	Silt Loam	11.8	1.9				
C-042425-2	Final Cover Soil	Clayey Gravel with Sand	GC	43.27	14.69	25.56	16.49	Clay Loam	13.2	2.4			2.80E-07	
C-051525-1	Final Cover Soil	Clayey Gravel with Sand	GC	46.55	19.93	21.91	11.61	Loam	15.7	2.7			1.40E-05	
C-060525-1	Borrow	Clayey Gravel with Sand	GC	62.88	14.28	14.81	8.03	Loam	13.2	2.4				
C-060525-2	Borrow	Gravelly Lean Clay with Sand	CL	29.24	14.17	35.27	21.32	Clay Loam	14.3	3.0				
C-060525-3	Borrow	Clayey Gravel with Sand	GC	37.19	18.24	29.68	14.89	Loam	6.7	2.2			1.40E-07	
C-060525-4	Borrow	Clayey Sand with Gravel	SC	34.84	17.36	28.75	19.05	Clay Loam	5.4	2.5			1.10E-05	
C-070125-1	Final Cover Soil	Lean Clay	CL	7.15	6.71	56.30	29.84	Silty Clay Loam	21.8	2.6				
C-070725-1	Final Cover Soil	Gravelly Lean Clay with Sand	CL	27.65	15.99	35.67	20.69	Clay Loam	8.3	3.1			1.50E-07	
C-070725-2	Final Cover Soil	Clayey Sand with Gravel	SC	38.34	20.66	26.38	14.62	Loam	8.5	2.9			4.70E-06	
C-070725-4	Final Cover Soil	Clayey Gravel with Sand	GC	38.71	16.35	27.60	17.33	Clay Loam	10.9	2.7			1.30E-06	
C-070725-5	Final Cover Soil	Lean Clay	CL	3.65	4.16	43.95	48.25	Silty Clay	9.6	2.7				
C-072325-1	Final Cover Soil	Sandy Lean Clay	CL	20.07	15.54	40.01	24.38	Silty Clay Loam	11.2	2.3				
C-072325-2	Final Cover Soil	Sandy Lean Clay with Gravel	CL	21.32	14.57	38.75	25.36	Silty Clay Loam	8.6	2.2				Low Phosphorous
C-072325-3	Borrow	Gravelly Lean Clay	CL	27.25	8.95	36.40	27.40	Silty Clay Loam	9.6	2.9				Low Phosphorus, low pH

R220960.00

By: CSW 2025/11/19
Checked: KMB 2026/09/16

Table 1

Summary of Soils Laboratory Testing
Cheswick Ash Disposal Site - Capping

Sample No.	Area	USCS Classification	USCS Symbol	USDA Grain Size Summary				USDA Classification	Moisture Content (%)	Ash Conetent/ Organic Matter (%)	Standard Proctor		Average Permeability (cm/sec @ 20 °C)	Fertility
				Gravel (%)	Sand (%)	Silt (%)	Clay (%)				Dry Density (PCF)	Optimum Moisture Content (%)		
C-072325-4	Borrow	Lean Clay with Sand	CL	17.24	13.41	42.20	27.15	Silty Clay Loam	5.3	2.6				
C-072325-Proctor	Final Cover Soil										114.5	14.7		
C-081225-1	Final Cover Soil	Clayey Gravel with Sand	GC	41.09	15.66	28.01	15.24	Loam	4.4	2.3				
C-081225-2	Final Cover Soil	Lean Clay with Sand	CL	15.52	10.88	45.52	28.07	Silty Clay Loam	5.2	2.2			2.30E-07	
C-081225-3	Final Cover Soil	Clayey Gravel with Sand	GC	51.92	16.42	21.77	9.89	Loam	5.6	2.9				
C-081225-4	Final Cover Soil	Lean Clay with Gravel	CL	11.75	4.66	54.70	28.89	Silty Clay Loam	2.4	2.6				
C-090825-1	Final Cover Soil	Silt with Sand	ML	8.72	24.82	48.57	17.89	Silt Loam	8.9	1.4				Low Phosphorus, high Mg, high pH
C-090825-2	Final Cover Soil	Silt with Sand	ML	12.40	13.10	49.05	25.45	Silty Clay Loam	7.2	1.7				Low Phosphorus, high Mg, high pH
C-090825-3	Final Cover Soil	Silt with Sand	ML	12.40	14.42	43.83	29.35	Silty Clay Loam	9.6	2.2				
C-090825-4	Final Cover Soil	Gravelly Silt with Sand	ML	35.48	14.35	32.28	17.88	Clay Loam	9.1	2.3				
C-090825-5	Final Cover Soil	Sandy Silt with Gravel	ML	25.39	18.01	35.39	21.22	Clay Loam	10.1	2.7				
C-090825-6	Final Cover Soil	Silt with Sand	ML	9.31	13.99	51.12	25.57	Silty Clay Loam	7.8	2.1				
C-090825-7	Final Cover Soil	Silt with Sand	ML	8.54	9.88	51.91	29.67	Silty Clay Loam	5.7	2.1				
C-090825-8	Final Cover Soil	Sandy Silt with Gravel	ML	24.13	16.10	37.08	22.69	Clay Loam	5.7	5.0				
C-090825-9	Borrow								15.4	2.7				Low Phosphorus, high Mg
C-090825-10	Borrow								16.8	2.7				Low Phosphorus, high Mg
C-090825-11	Borrow								5.5	1.2				Low Phosphorus, high Mg, high pH
C-090825-12	Borrow								4.9	1.3				
C-090825-13	Borrow								7.3	1.4				
ST-1	Final Cover Soil												5.50E-05	
C-091825-1	Final Cover Soil	Lean Clay with Sand	CL	6.80	16.64	52.58	23.98	Silt Loam	7.3	2.1				
C-091825-2	Final Cover Soil	Lean Clay with Sand	CL	7.68	13.47	52.67	26.18	Silty Clay Loam	8	2.1				

R220960.00

By: CSW 2025/11/19
Checked: KMB 2026/09/16

Table 1

Summary of Soils Laboratory Testing
Cheswick Ash Disposal Site - Capping

Sample No.	Area	USCS Classification	USCS Symbol	USDA Grain Size Summary				USDA Classification	Moisture Content (%)	Ash Conetent/ Organic Matter (%)	Standard Proctor		Average Permeability (cm/sec @ 20 °C)	Fertility
				Gravel (%)	Sand (%)	Silt (%)	Clay (%)				Dry Density (PCF)	Optimum Moisture Content (%)		
C-091825-3	Final Cover Soil	Sandy Lean Clay with Gravel	CL	29.97	18.09	33.44	18.50	Loam	6.4	2.3				
C-091825-4	Final Cover Soil	Clayey Gravel with Sand	GC	37.04	16.72	30.53	15.70	Loam	4.8	2.3				
C-091825-5	Final Cover Soil	Lean Clay with Sand	CL	14.60	15.95	46.68	22.77	Silt Loam	6.4	2.3				
C-091825-6	Final Cover Soil	Lean Clay with Sand	CL	13.71	18.30	50.92	17.07	Silt Loam	4.9	2.2			7.70E-06	
C-091825-7	Final Cover Soil	Lean Clay with Sand	CL	11.65	13.75	50.49	24.11	Silty Clay Loam	3.3	1.7			3.60E-07	
C-091825-8	Final Cover Soil	Lean Clay with Sand	CL	15.82	13.41	45.38	25.38	Silty Clay Loam	3.7	2.2			7.30E-07	
C-091825-9	Final Cover Soil	Sandy Lean Clay with Gravel	CL	25.14	19.60	36.22	19.04	Loam	3.7	3.1			8.20E-07	
C-091825-10	Final Cover Soil	Sandy Lean Clay with Gravel	CL	26.81	18.86	36.20	18.13	Loam	3.7	3.0			1.50E-06	
C-091825-11	Final Cover Soil	Lean Clay with Sand	CL	17.83	14.32	42.67	25.18	Silty Clay Loam	3.7	2.6			1.00E-06	
C-091825-12	Final Cover Soil	Gravelly Lean Clay with Sand	CL	23.50	13.44	40.94	22.11	Silty Clay Loam	6.1	2.5			2.90E-06	
C-091825-13	Borrow								16.6	2.3				
C-091825-14	Borrow								17.4	2.2				
C-091825-15	Borrow								19.6	2.3				
C-091825-16	Borrow								12.7	2.5				
C-091825-17	Borrow								17.7	2.3				
C-091825-18	Borrow								5	2.3				
C-091825-19	Borrow								3.2	3.5				
C-091825-20	Borrow								5.5	1.9				
C-091825-21	Borrow								4	3.2				
C-091825-22	Borrow								2.6	1.8				
C-091825-23	Borrow								3.8	1.6				
C-093025-1	Final Cover Soil												8.80E-08	
C-093025-2	Final Cover Soil												4.50E-07	

November 11, 2024

Project No. 2024-747-002

Cory White
GAI Consultants, Inc.
385 East Waterfront Drive
Homestead, PA 15120

Transmittal
Laboratory Test Results
Cheswick Final Closure Plan R220960.00

Please find attached the laboratory test results for the above referenced project. The tests were outlined on the Project Verification Form that was transmitted to your firm prior to the testing. The testing was performed in general accordance with the methods listed on the enclosed data sheets. The test results are believed to be representative of the samples that were submitted for testing and are indicative only of the specimens that were evaluated. We have no direct knowledge of the origin of the samples and imply no position with regard to the nature of the test results, i.e. pass/fail and no claims as to the suitability of the material for its intended use.

The test data and all associated project information provided shall be held in strict confidence and disclosed to other parties only with authorization by our Client. The test data submitted herein is considered integral with this report and is not to be reproduced except in whole and only with the authorization of the Client and Geotechnics. The remaining sample materials for this project will be retained for a minimum of 90 days as directed by the Geotechnics' Quality Program.

We are pleased to provide these testing services. Should you have any questions or if we may be of further assistance, please contact our office.

Respectfully submitted,
Geotechnics, Inc.

Nathan Melaro
Director of Operations

We understand that you have a choice in your laboratory services and we thank you for choosing Geotechnics.

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MOISTURE CONTENT

ASTM D 2216-19

Client: GAI Consultants, Inc.
Client Reference: Cheswick Closure R220960.00
Project No.: 2024-747-001

Lab ID:	001	002	003	004	005
Boring No.:	Final Closure Plan	Final Closure Plan	Final Closure Plan	Final Closure Plan	Final Closure Plan
Depth (ft):	Composite	Composite	Composite	Composite	Composite
Sample No.:	C-TP#1-2024	C-TP#2-2024	C-TP#3-2024	C-TP#4-2024	C-TP#5-2024
Tare Number	4022	4038	2996	3342	3532
Wt. of Tare & Wet Sample (g)	216.91	257.04	297.53	269.57	236.38
Wt. of Tare & Dry Sample (g)	189.78	233.39	273.71	243.82	207.47
Weight of Tare (g)	8.03	8.16	7.35	8.13	8.12
Weight of Water (g)	27.13	23.65	23.82	25.75	28.91
Weight of Dry Sample (g)	181.75	225.23	266.36	235.69	199.35
Water Content (%)	**14.9**	**10.5**	**8.9**	**10.9**	**14.5**

Notes :

Tested By JW *Date* 10/18/24 *Checked By* GRK *Date* 10/21/24

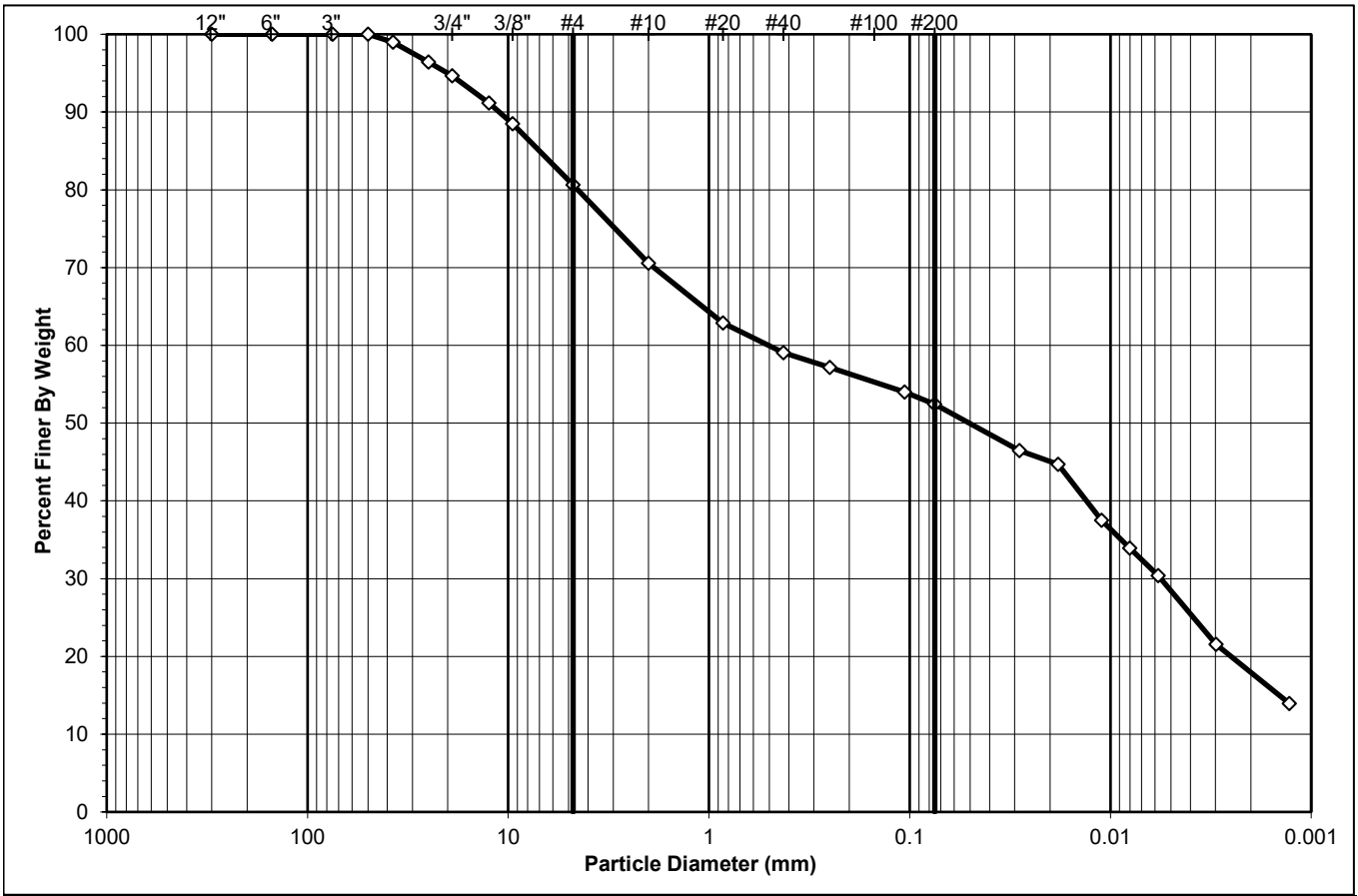
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SIEVE AND HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure Plan
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	Composite
Project No.:	2024-747-001	Sample No.:	C-TP#1-2024
Lab ID:	2024-747-001-001	Soil Color:	Brown

	SIEVE ANALYSIS			HYDROMETER	
USCS	cobbles	gravel	sand	silt and clay fraction	
USDA	cobbles	gravel	sand	silt	clay



USCS Summary

Sieve Size (mm)		Percentage (%)
Greater Than #4	*Gravel*	19.34
#4 to #200	*Sand*	28.23
Finer Than #200	*Silt & Clay*	52.43

USCS Symbol:
CL, TESTED

USCS Classification:
SANDY LEAN CLAY WITH GRAVEL

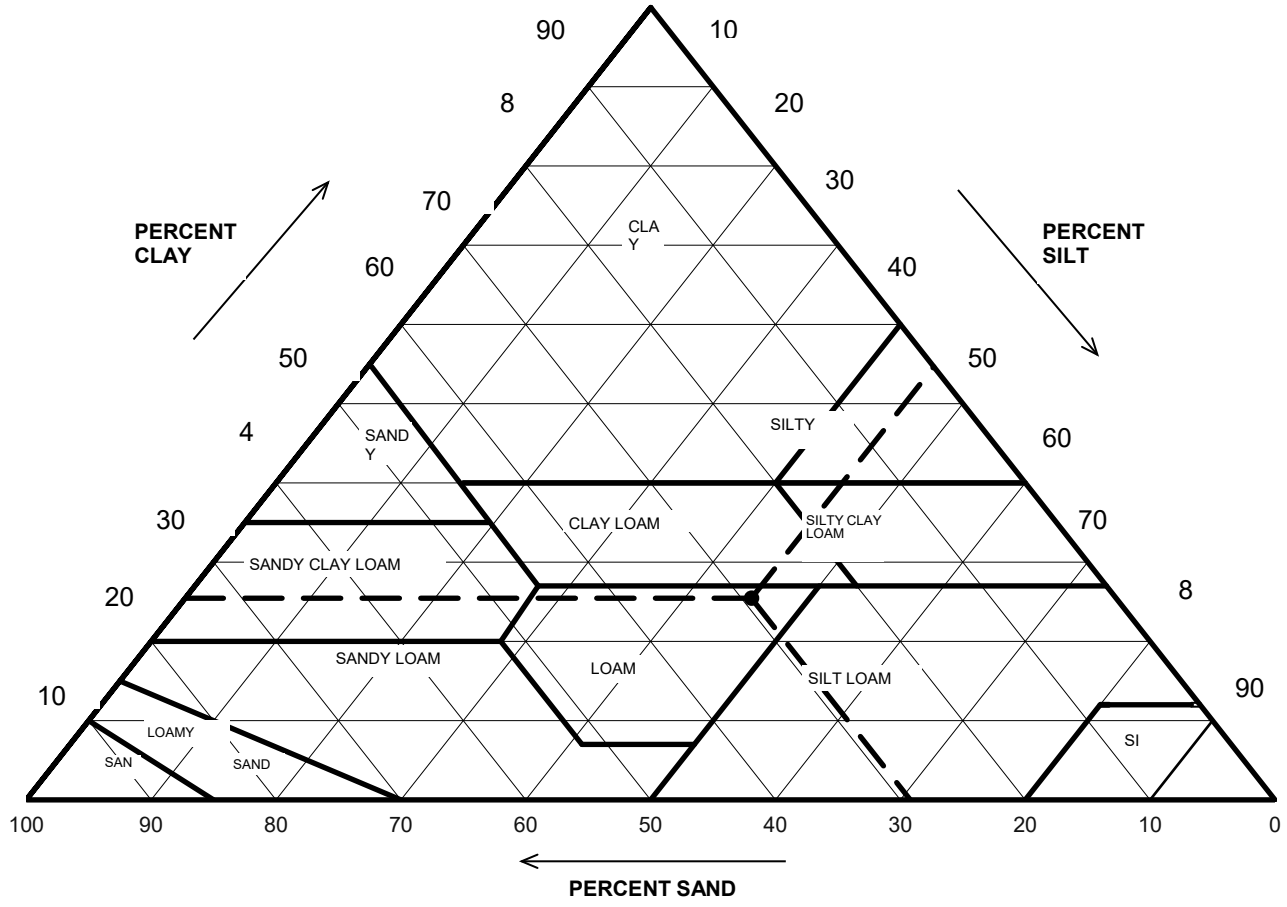
DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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USDA Classification Chart

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure Plan
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	Composite
Project No.:	2024-747-001	Sample No.:	C-TP#1-2024
Lab ID:	2024-747-001-001	Soil Color:	Brown



Particle Size (mm)	Percent Finer	USDA Summary	Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classification
		Gravel	29.45	**0.00**
2	70.55	*Sand*	20.60	**29.20**
0.05	49.95	*Silt*	31.99	**45.35**
0.002	17.95	*Clay*	17.95	**25.45**

USDA Classification ***LOAM***

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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WASH SIEVE ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure Plan
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	Composite
Project No.:	2024-747-001	Sample No.:	C-TP#1-2024
Lab ID:	2024-747-001-001	Soil Color:	Brown

Moisture Content of Passing 3/4" Material		Moisture Content of Retained 3/4" Material	
Tare No.:	1531	Tare No.:	4039
Wt. of Tare & Wet Sample (g):	965.65	Weight of Tare & Wet Sample (g):	380.86
Wt. of Tare & Dry Sample (g):	852.95	Weight of Tare & Dry Sample (g):	362.22
Weight of Tare (g):	145.79	Weight of Tare (g):	8.15
Weight of Water (g):	112.7	Weight of Water (g):	18.64
Weight of Dry Soil (g):	707.16	Weight of Dry Soil (g):	354.07
Moisture Content (%):	**15.9**	**Moisture Content (%):**	**5.3**

Wet Weight of -3/4" Sample (g):	21649.00	Weight of the Dry Sample (g):	707.16
Dry Weight of - 3/4" Sample (g):	18673.07	Weight of minus #200 Material (g):	391.64
Wet Weight of +3/4" Sample (g):	1105.00	Weight of plus #200 Material (g):	315.52
Dry Weight of +3/4" Sample (g):	1049.74		
Total Dry Weight of Sample (g):	19722.81	**J - Factor (Percent Finer than 3/4")**	**94.68%**

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)		Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00		0.00	0.00	100.00	**100.00**
6"	150	0.00		0.00	0.00	100.00	**100.00**
3"	75	0.00		0.00	0.00	100.00	**100.00**
2"	50	0.00	(*)	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	208.00		1.00	1.00	99.00	**99.00**
1"	25	534.00		2.57	3.57	96.43	**96.43**
3/4"	19	363.00		1.75	5.32	94.68	**94.68**
1/2"	12.5	26.21		3.71	3.71	96.29	**91.17**
3/8"	9.5	19.87		2.81	6.52	93.48	**88.51**
#4	4.75	58.62		8.29	14.81	85.19	**80.66**
#10	2	75.50		10.68	25.48	74.52	**70.55**
#20	0.85	57.45	(**)	8.12	33.61	66.39	**62.86**
#40	0.425	28.39		4.01	37.62	62.38	**59.06**
#60	0.25	14.20		2.01	39.63	60.37	**57.16**
#140	0.106	23.60		3.34	42.97	57.03	**54.00**
#200	0.075	11.68		1.65	44.62	55.38	**52.43**
Pan	-	391.64		55.38	100.00	-	**-**

NOTES: *(*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample*
*(**) The - 3/4" sieve analysis is based on the Weight of the Dry Sample*

Tested By	DF	Date	10/23/24	Checked By	BRB	Date	11/5/24

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure Plan
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	Composite
Project No.:	2024-747-001	Sample No.:	C-TP#1-2024
Lab ID:	2024-747-001-001	Soil Color:	Brown

Elapsed Time		R Measured	Temp.	Composite Correction	R Corrected	N	K Factor	Diameter	N'
(min)			(°C)			(%)		(mm)	(%)
0		NA	NA	NA	NA	NA	NA	NA	NA
2		44.5	20.3	5.6	38.9	88.6	0.01340	0.0284	**46.5**
5		43.0	20.3	5.6	37.4	85.2	0.01340	0.0182	**44.7**
15		37.0	20.3	5.6	31.4	71.6	0.01340	0.0111	**37.5**
30		34.0	20.3	5.6	28.4	64.7	0.01340	0.0080	**33.9**
60		31.0	20.4	5.5	25.5	58.0	0.01338	0.0058	**30.4**
250		23.5	20.7	5.5	18.0	41.1	0.01333	0.0030	**21.5**
1440		17.0	21.2	5.3	11.7	26.6	0.01325	0.0013	**13.9**

Soil Specimen Data		**Other Corrections**	
Tare No.	637		
Wt. of Tare & Dry Material (g):	142.05	a - Factor	0.993
Weight of Tare (g):	93.45		
Weight of Deflocculant (g):	5.0	Percent Finer than # 200	52.43
Weight of Dry Material (g):	43.60		
		Specific Gravity	2.70 Assumed

Note: *Hydrometer test is performed on - # 200 sieve material.*

Tested By TO Date 10/29/24 Checked By BRB Date 11/5/24

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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ATTERBERG LIMITS

ASTM D 4318-17

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure Plan
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	Composite
Project No.:	2024-747-001	Sample No.:	C-TP#1-2024
Lab ID:	2024-747-001-001	Soil Description:	BROWN LEAN CLAY

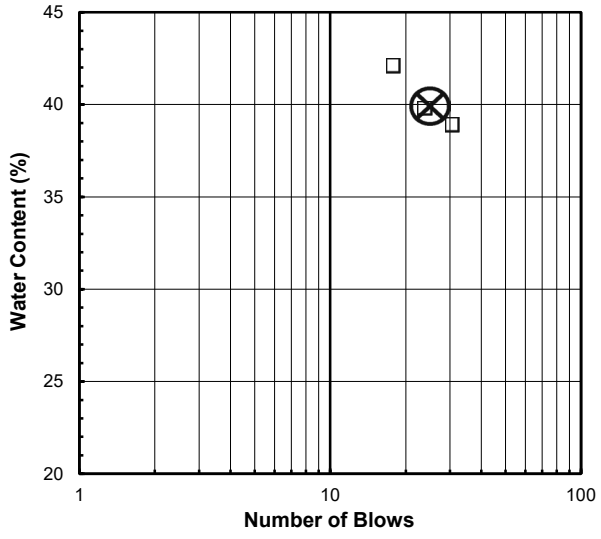
Note: The* USCS *symbol used with this test refers only to the minus No. 40 sieve material. See the "Sieve and Hydrometer Analysis" graph page for the complete material description. (Minus #40 sieve material, Air dried)

As Received Moisture Content		Liquid Limit Test			
ASTM D2216-19		1	2	3	M
Tare Number:	4022	540	2135	616	U
Wt. of Tare & Wet Sample (g):	216.91	41.18	39.82	40.98	L
Wt. of Tare & Dry Sample (g):	189.78	35.37	34.01	34.67	T
Weight of Tare (g):	8.03	20.42	19.40	19.67	I
Weight of Water (g):	27.1	5.8	5.8	6.3	P
Weight of Dry Sample (g):	181.8	15.0	14.6	15.0	O
Was As Received MC Preserved:	**Yes**				I
Moisture Content (%):	**14.9**	**38.9**	**39.8**	**42.1**	N
Number of Blows:		**31**	**24**	**18**	T

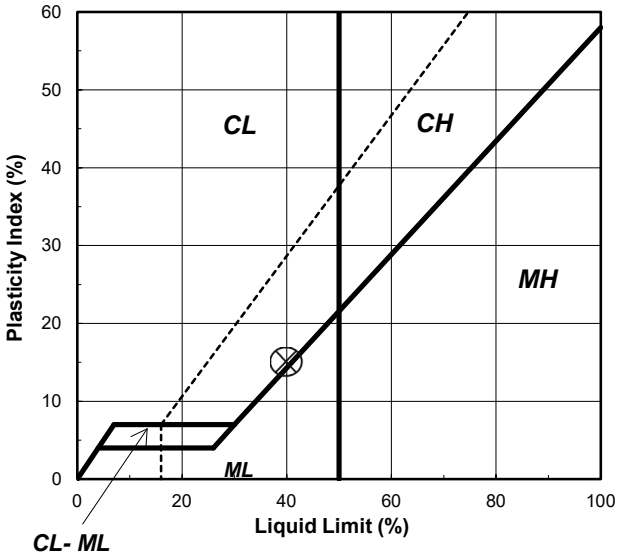
Plastic Limit Test	1	2	Range
Tare Number:	143	603	
Wt. of Tare & Wet Sample (g):	26.08	25.00	
Wt. of Tare & Dry Sample (g):	24.85	23.74	
Weight of Tare (g):	19.96	18.81	
Weight of Water (g):	1.2	1.3	
Weight of Dry Sample (g):	4.9	4.9	
Moisture Content (%):	**25.2**	**25.6**	**-0.4**
Note: The acceptable range of the two Moisture Contents is ±			1.12

Test Results	
Liquid Limit (%):	**40**
Plastic Limit (%):	**25**
Plasticity Index (%):	**15**
USCS Symbol:	**CL**

Flow Curve



Plasticity Chart



Tested By FS *Date* 10/28/24 *Checked By* GRK *Date* 10/29/24

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Moisture, Ash, and Organic Matter (Loss on Ignition)

ASTM D 2974-20e1

Client:	GAI Consultants, Inc.
Client Reference:	Cheswick Closure R220960.00
Project No.:	2024-747-001

Method B (To 0.1%)

Moisture Content

ASTM D2216

Lab ID:	001
Boring No.:	Final Closure Plan
Depth (ft):	Composite
Sample No.:	C-TP#1-2024
Tare Number	EE
Weight of Tare & Wet Sample (g)	317.34
Weight of Tare & Dry Sample (g)	290.71
Weight of Tare (g)	126.93
Weight of Water (g)	26.63
Weight of Dry Sample (g)	163.78
Moisture Content	**16.3%**

Method A

Ash Content, Organic Matter

Furnace Temperature (°C)	440
Weight of Tare & Ash (g)	278.83
Weight of Volatiles (g)	11.88
Weight of Ash (g)	151.90
Ash Content (%)	**92.7%**
Organic Matter (%)	**7.3%**

Tested By *JW* *Date* *10/18/24* *Checked By* *JLK* *Date* 10/18/24

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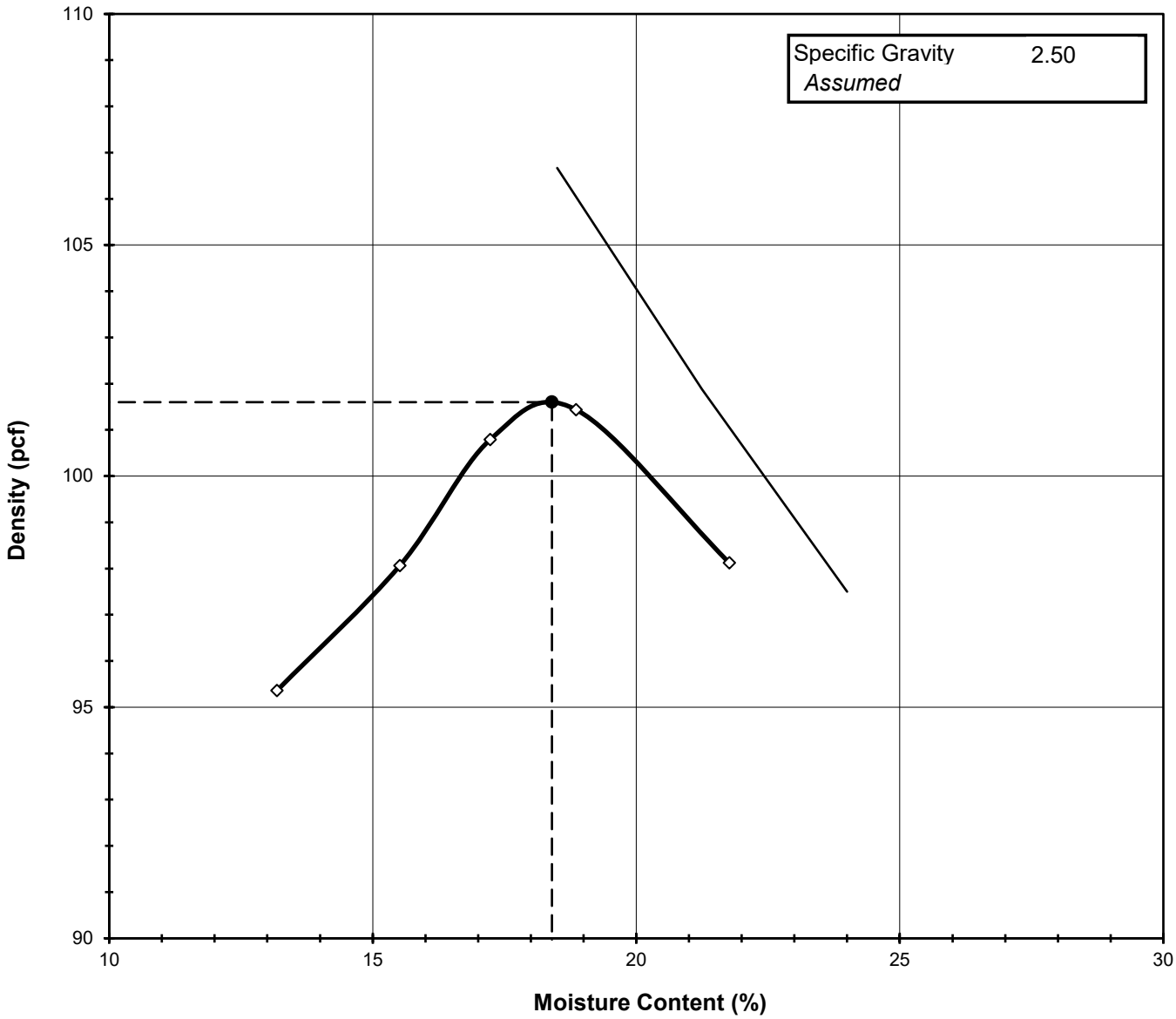
MOISTURE - DENSITY RELATIONSHIP

ASTM D698-12

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure Plant
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	Composite
Project No.:	2024-747-001	Sample No.:	C-TP#1-2024
Lab ID:	2024-747-001-001	Test Method	**STANDARD**

Visual Description: Brown Clay with Rock & Organics

Optimum Moisture Content (%): 18.4
Maximum Dry Density (pcf): 101.6



Tested By AB *Date* 10/22/2024 *Checked By* JLK *Date* 10/23/24

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MOISTURE - DENSITY RELATIONSHIP

ASTM D698-12

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure Plant
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	Composite
Project No.:	2024-747-001	Sample No.:	C-TP#1-2024
Lab ID:	2024-747-001-001		

Visual Description: Brown Clay with Rock & Organics

Total Weight of the Sample (g):	NA
As Received Water Content (%):	NA
Assumed Specific Gravity:	2.50
Percent Retained on 3/4":	NA
Percent Retained on 3/8":	NA
Percent Retained on #4:	NA
Oversize Material:	Not included
Procedure Used:	C

Test Type:	**STANDARD**
Rammer Weight (lb):	5.5
Rammer Drop (in):	12
Rammer Type:	MECHANICAL
Machine ID:	G3349
Mold ID:	G3347
Mold diameter:	6"
Weight of the Mold (g):	5722
Volume of the Mold (cm^3):	2123

Mold / Specimen

Point No.	**1**	**2**	**3**	**4**	**5**
Weight of Mold & Wet Sample (g):	9394	9576	9742	9824	9787
Weight of Mold (g):	5722	5722	5722	5722	5722
Weight of Wet Sample (g):	3672	3854	4020	4102	4065
Mold Volume (cm^3):	2123	2123	2123	2123	2123

Moisture Content / Density

Tare Number:	401	452	470	487	488
Weight of Tare & Wet Sample (g):	498.82	489.61	498.67	498.80	491.83
Weight of Tare & Dry Sample (g):	452.17	435.86	439.80	435.31	420.31
Weight of Tare (g):	98.28	89.41	98.13	98.67	91.71
Weight of Water (g):	46.65	53.75	58.87	63.49	71.52
Weight of Dry Sample (g):	353.89	346.45	341.67	336.64	328.60

Wet Density (g/cm^3):	1.73	1.82	1.89	1.93	1.91
Wet Density (pcf):	107.9	113.3	118.2	120.6	119.5
Moisture Content (%):	**13.2**	**15.5**	**17.2**	**18.9**	**21.8**
Dry Density (pcf):	**95.4**	**98.1**	**100.8**	**101.4**	**98.1**

Zero Air Voids

Moisture Content (%):	18.5	21.3	24.0
Dry Unit Weight (pcf):	106.7	101.9	97.5

Tested By AB *Date* 10/22/24 *Checked By* JLK *Date* 10/23/24

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PERMEABILITY TEST

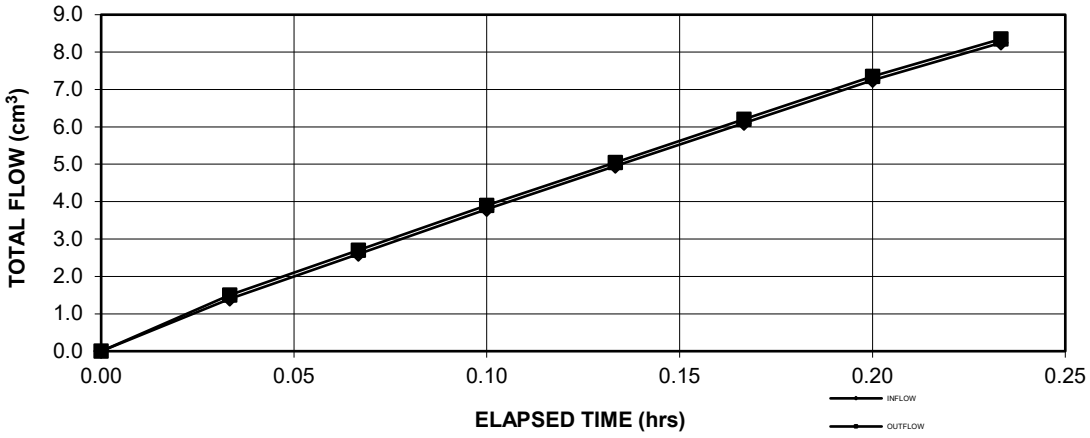
ASTM D 5084-16a Method C

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure Plan
Client Project:	Cheswick Closure R220960.00	Depth (ft):	Composite
Project No.:	2024-747-001	Sample No.:	C-TP#1-2024
Lab ID No.:	2024-747-001-001	Avg. Effective Consol. Pressure (psi):	6.25

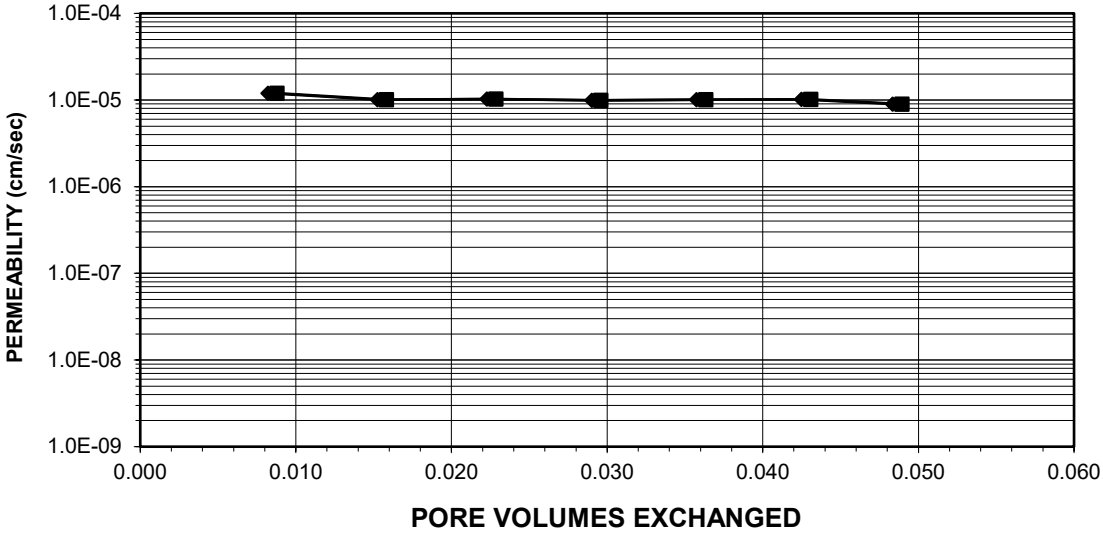
AVERAGE PERMEABILITY = 9.8E-06 cm/sec @ 20°C

AVERAGE PERMEABILITY = 9.8E-08 m/sec @ 20°C

TOTAL FLOW vs. ELAPSED TIME



PORE VOLUMES EXCHANGED vs. PERMEABILITY



Tested By: WT Date: 11/6/24 Checked By: JLK Date: 11/8/24

DCN: CT-22 DATE: 1/1/17 REVISION: 11

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PERMEABILITY TEST

ASTM D 5084-16a Method C

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure Plan
Client Project:	Cheswick Closure R220960.00	Depth (ft):	Composite
Project No.:	2024-747-001	Sample No.:	C-TP#1-2024
Lab ID No.:	2024-747-001-001	Avg. Effective Consol. Pressure (psi):	6.25

Specific Gravity: 2.70 Assumed
Sample Condition: Remolded

Visual Description: Brown Clay with Rock & Organics

Permeant Type: Deaired Water

MOISTURE CONTENT:	BEFORE TEST	AFTER TEST
Tare Number	3025	550
Weight of Tare & Wet Sample (g)	138.75	801.24
Weight of Tare & Dry Sample (g)	117.31	653.30
Weight of Tare (g)	8.12	81.10
Weight of Water (g)	21.44	147.94
Weight of Dry Sample (g)	109.19	572.20
Moisture Content (%)	**19.6**	**25.9**

SPECIMEN:	BEFORE TEST	AFTER TEST
Weight of Tube & Wet Sample (g)	1601.72	NA
Weight of Tube (g)	917.30	NA
Weight of Wet Sample (g)	684.42	720.00
Length 1 (in)	3.490	3.499
Length 2 (in)	3.490	3.534
Length 3 (in)	3.490	3.523
Top Diameter (in)	2.870	2.904
Middle Diameter (in)	2.870	2.905
Bottom Diameter (in)	2.870	2.910
Average Length (in)	3.49	3.52
Average Area (in^2)	6.47	6.63
Sample Volume (cm^3)	369.98	382.53
Unit Wet Weight (g/cm^3)	1.85	1.88
Unit Wet Weight (pcf)	115.5	117.5
Unit Dry Weight (pcf)	96.5	93.4
Unit Dry Weight (g/cm^3)	1.55	1.50
Void Ratio, e	0.75	0.81
Porosity, n	0.43	0.45
Pore Volume (cm^3)	158.1	170.6
Total Weight of Sample After Test (g)		720.35

Tested By: WT Date: 11/6/24 Checked By: JLK Date: 11/8/24

DCN: CT-22 DATE: 1/1/17 REVISION: 11

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PERMEABILITY TEST

ASTM D 5084-16a Method C

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Client:	GAI Consultants, Inc.	Boring No.:	Final Closure Plan
Client Project:	Cheswick Closure R220960.00	Depth (ft):	Composite
Project No.:	2024-747-001	Sample No.:	C-TP#1-2024
Lab ID No.:	2024-747-001-001	Avg. Effective Consol. Pressure (psi):	6.25

Pressure Heads (Constant)	
Top Cap (psi)	97.5
Bottom Cap (psi)	100.0
Cell (psi)	105.0
Total Pressure Head (cm)	175.8
Hydraulic Gradient	19.67

Final Sample Dimensions	
Sample Length (cm), L	8.94
Sample Diameter (cm)	7.38
Sample Area (cm^2), A	42.80
Inflow Burette Area (cm^2), a-in	0.879
Outflow Burette Area (cm^2), a-out	0.896
B Parameter (%)	95

AVERAGE PERMEABILITY = 9.8E-06 cm/sec @ 20°C

AVERAGE PERMEABILITY = 9.8E-08 m/sec @ 20°C

DATE	TIME		ELAPSED TIME t	TOTAL INFLOW	TOTAL OUTFLOW	TOTAL HEAD h	FLOW (0 flow)	TEMP.	INCREMENTAL PERMEABILITY @ 20°C
(mm/dd/yy)	(hr)	(min)	(hr)	(cm^3)	(cm^3)	(cm)	(1 stop)	(°C)	(cm/sec)
11/7/2024	14	3	0.000	0.0	0.0	203.3	0	21.8	NA
11/7/2024	14	5	0.033	1.4	1.5	200.0	0	21.8	1.2E-05
11/7/2024	14	7	0.067	2.6	2.7	197.3	0	21.8	1.0E-05
11/7/2024	14	9	0.100	3.8	3.9	194.6	0	21.8	1.0E-05
11/7/2024	14	11	0.133	5.0	5.1	192.0	0	21.8	9.9E-06
11/7/2024	14	13	0.167	6.1	6.2	189.4	0	21.8	1.0E-05
11/7/2024	14	15	0.200	7.3	7.4	186.8	0	21.8	1.0E-05
11/7/2024	14	17	0.233	8.3	8.4	184.5	1	21.8	9.0E-06

Tested By: WT Date: 11/6/24 Checked By: JLK Date: 11/8/24

DCN: CT-22 DATE: 1/1/17 REVISION: 11

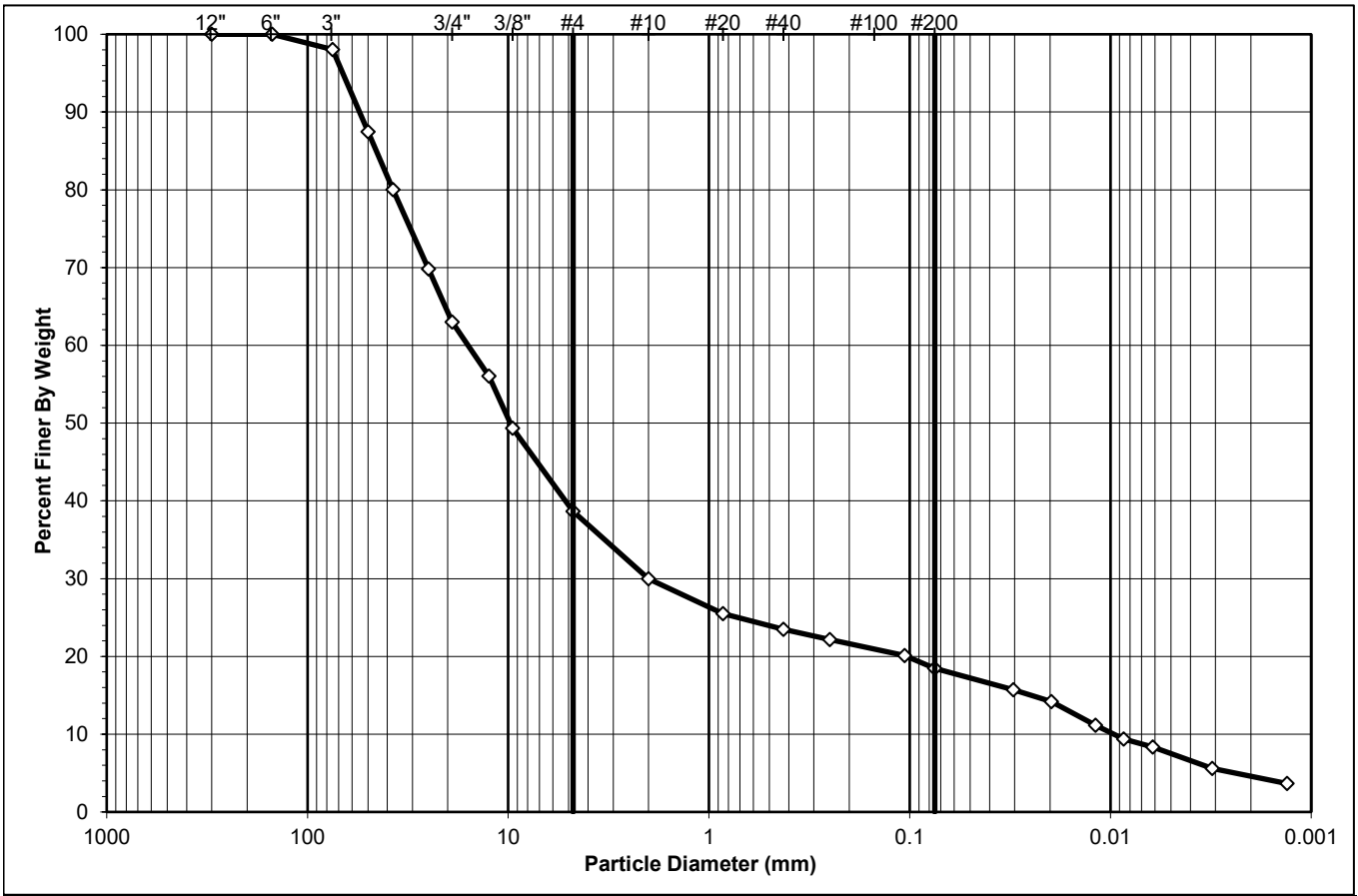
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SIEVE AND HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure Plan
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	Composite
Project No.:	2024-747-001	Sample No.:	C-TP#2-2024
Lab ID:	2024-747-001-002	Soil Color:	Brown

	SIEVE ANALYSIS			HYDROMETER	
USCS	cobbles	gravel	sand	silt and clay fraction	
USDA	cobbles	gravel	sand	silt	clay



USCS Summary

Sieve Size (mm)		Percentage (%)
Greater Than #4	*Gravel*	61.35
#4 to #200	*Sand*	20.19
Finer Than #200	*Silt & Clay*	18.46

USCS Symbol:
GC, TESTED

USCS Classification:
CLAYEY GRAVEL WITH SAND

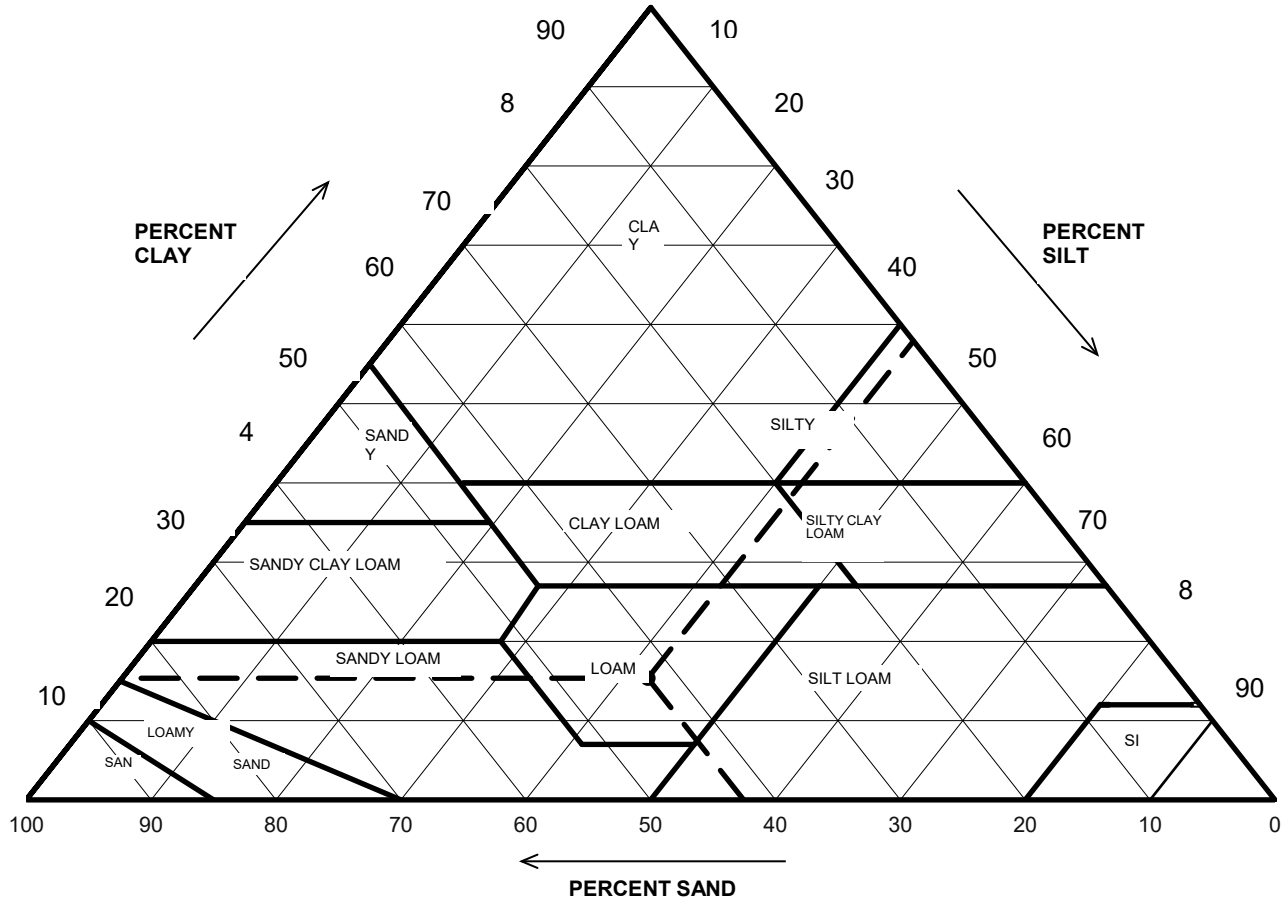
DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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USDA Classification Chart

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure Plan
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	Composite
Project No.:	2024-747-001	Sample No.:	C-TP#2-2024
Lab ID:	2024-747-001-002	Soil Color:	Brown



Particle Size (mm)	Percent Finer	USDA Summary	Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classification
		Gravel	70.00	**0.00**
2	30.00	*Sand*	12.76	**42.55**
0.05	17.23	*Silt*	12.63	**42.10**
0.002	4.60	*Clay*	4.60	**15.35**

USDA Classification ***LOAM***

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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WASH SIEVE ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure Plan
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	Composite
Project No.:	2024-747-001	Sample No.:	C-TP#2-2024
Lab ID:	2024-747-001-002	Soil Color:	Brown

Moisture Content of Passing 3/4" Material		Moisture Content of Retained 3/4" Material	
Tare No.:	1477	Tare No.:	2945
Wt. of Tare & Wet Sample (g):	1001.6	Weight of Tare & Wet Sample (g):	436.82
Wt. of Tare & Dry Sample (g):	918.2	Weight of Tare & Dry Sample (g):	415
Weight of Tare (g):	143.85	Weight of Tare (g):	8.2
Weight of Water (g):	83.4	Weight of Water (g):	21.82
Weight of Dry Soil (g):	774.35	Weight of Dry Soil (g):	406.8
Moisture Content (%):	**10.8**	**Moisture Content (%):**	**5.4**

Wet Weight of -3/4" Sample (g):	17059.00	Weight of the Dry Sample (g):	774.35
Dry Weight of - 3/4" Sample (g):	15400.33	Weight of minus #200 Material (g):	226.87
Wet Weight of +3/4" Sample (g):	9525.00	Weight of plus #200 Material (g):	547.48
Dry Weight of +3/4" Sample (g):	9040.11		
Total Dry Weight of Sample (g):	24440.44	**J - Factor (Percent Finer than 3/4")**	**63.01%**

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)		Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00		0.00	0.00	100.00	**100.00**
6"	150	0.00		0.00	0.00	100.00	**100.00**
3"	75	502.00		1.95	1.95	98.05	**98.05**
2"	50	2720.00	(*)	10.56	12.51	87.49	**87.49**
1 1/2"	37.5	1917.00		7.44	19.96	80.04	**80.04**
1"	25	2626.00		10.20	30.15	69.85	**69.85**
3/4"	19	1760.00		6.83	36.99	63.01	**63.01**
1/2"	12.5	85.53		11.05	11.05	88.95	**56.05**
3/8"	9.5	82.42		10.64	21.69	78.31	**49.34**
#4	4.75	131.40		16.97	38.66	61.34	**38.65**
#10	2	106.35		13.73	52.39	47.61	**30.00**
#20	0.85	55.05	(**)	7.11	59.50	40.50	**25.52**
#40	0.425	25.05		3.23	62.74	37.26	**23.48**
#60	0.25	16.06		2.07	64.81	35.19	**22.17**
#140	0.106	25.07		3.24	68.05	31.95	**20.13**
#200	0.075	20.55		2.65	70.70	29.30	**18.46**
Pan	-	226.87		29.30	100.00	-	**-**

NOTES: *(*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample*
*(**) The - 3/4" sieve analysis is based on the Weight of the Dry Sample*

Tested By	DF	Date	10/23/24	Checked By	BRB	Date	11/5/24

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure Plan
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	Composite
Project No.:	2024-747-001	Sample No.:	C-TP#2-2024
Lab ID:	2024-747-001-002	Soil Color:	Brown

Elapsed Time		R Measured	Temp.	Composite Correction	R Corrected	N	K Factor	Diameter	N'
(min)			(°C)			(%)		(mm)	(%)
0		NA	NA	NA	NA	NA	NA	NA	NA
2		36.5	20.3	5.6	30.9	85.2	0.01340	0.0304	**15.7**
5		33.5	20.3	5.6	27.9	76.9	0.01340	0.0197	**14.2**
15		27.5	20.3	5.6	21.9	60.4	0.01340	0.0119	**11.2**
30		24.0	20.3	5.6	18.4	50.8	0.01340	0.0086	**9.4**
60		22.0	20.4	5.5	16.5	45.3	0.01338	0.0062	**8.4**
250		16.5	20.7	5.5	11.0	30.4	0.01333	0.0031	**5.6**
1440		12.5	21.2	5.3	7.2	19.8	0.01325	0.0013	**3.7**

Soil Specimen Data		**Other Corrections**		
Tare No.	692			
Wt. of Tare & Dry Material (g):	131.76	a - Factor	0.993	
Weight of Tare (g):	90.72			
Weight of Deflocculant (g):	5.0	Percent Finer than # 200	18.46	
Weight of Dry Material (g):	36.04			
		Specific Gravity	2.70	Assumed

Note: *Hydrometer test is performed on - # 200 sieve material.*

Tested By TO Date 10/29/24 Checked By BRB Date 11/5/24

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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ATTERBERG LIMITS

ASTM D 4318-17

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure Plan
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	Composite
Project No.:	2024-747-001	Sample No.:	C-TP#2-2024
Lab ID:	2024-747-001-002	Soil Description:	BROWN LEAN CLAY

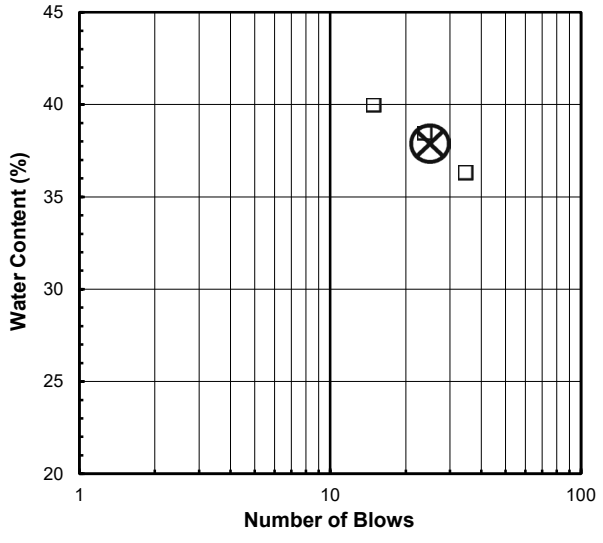
Note: The* USCS *symbol used with this test refers only to the minus No. 40 sieve material. See the "Sieve and Hydrometer Analysis" graph page for the complete material description. (Minus #40 sieve material, Air dried)

As Received Moisture Content ASTM D2216-19		**Liquid Limit Test**			
		1	**2**	**3**	**M**
Tare Number:	4038	743	701	749	**U**
Wt. of Tare & Wet Sample (g):	257.04	44.11	41.66	44.99	**L**
Wt. of Tare & Dry Sample (g):	233.39	37.89	35.80	38.59	**T**
Weight of Tare (g):	8.16	20.74	20.54	22.55	**I**
Weight of Water (g):	23.7	6.2	5.9	6.4	**P**
Weight of Dry Sample (g):	225.2	17.2	15.3	16.0	**O**
Was As Received MC Preserved:	**Yes**				**I**
Moisture Content (%):	**10.5**	**36.3**	**38.4**	**39.9**	**N**
Number of Blows:		**35**	**24**	**15**	**T**

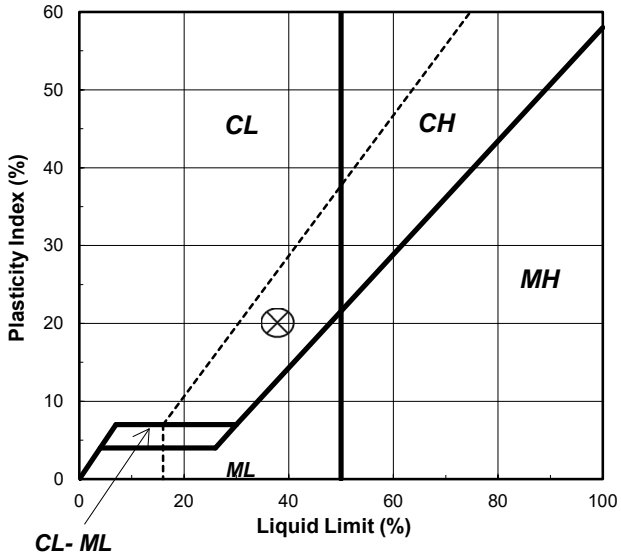
Plastic Limit Test	**1**	**2**	**Range**
Tare Number:	704	748	
Wt. of Tare & Wet Sample (g):	26.86	24.60	
Wt. of Tare & Dry Sample (g):	25.87	23.63	
Weight of Tare (g):	20.30	18.23	
Weight of Water (g):	1.0	1.0	
Weight of Dry Sample (g):	5.6	5.4	
Moisture Content (%):	**17.8**	**18.0**	**-0.2**
Note: The acceptable range of the two Moisture Contents is ±			1.12

Test Results	
Liquid Limit (%):	**38**
Plastic Limit (%):	**18**
Plasticity Index (%):	**20**
USCS Symbol:	**CL**

Flow Curve



Plasticity Chart



Tested By DDA *Date* 10/28/24 *Checked By* GRK *Date* 10/29/24

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Moisture, Ash, and Organic Matter (Loss on Ignition)

ASTM D 2974-20e1

Client:	GAI Consultants, Inc.
Client Reference:	Cheswick Closure R220960.00
Project No.:	2024-747-001

Method B (To 0.1%)

Moisture Content

ASTM D2216

Lab ID:	002
Boring No.:	Final Closure Plan
Depth (ft):	Composite
Sample No.:	C-TP#2-2024
Tare Number	FF
Weight of Tare & Wet Sample (g)	359.32
Weight of Tare & Dry Sample (g)	335.01
Weight of Tare (g)	115.47
Weight of Water (g)	24.31
Weight of Dry Sample (g)	219.54
Moisture Content	**11.1%**

Method A

Ash Content, Organic Matter

Furnace Temperature (°C)	440
Weight of Tare & Ash (g)	328.90
Weight of Volatiles (g)	6.11
Weight of Ash (g)	213.43
Ash Content (%)	**97.2%**
Organic Matter (%)	**2.8%**

Tested By JW *Date* 10/18/24 *Checked By* JLK *Date* 10/18/24

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Correction of Unit Weight and Water Content for Soils Containing Oversize Particles by Specific Gravity

ASTM D4718/D4718M-15

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure Plan
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	Composite
Project No.:	2024-747-001	Sample No.:	C-TP#2-2024
Lab ID:	2024-747-001-002		

Visual Description: Brown Clay w/ Rock & Organics

Total Dry Weight of Sample (g): 24440.4

FINE PORTION		***COARSE PORTION***	
Total Wet Weight of - 3/4" Portion (g):	17059.0	Total Wet Weight of + 3/4" Portion (g):	9525.0
Total Dry Weight of - 3/4" Portion (g):	15400.3	Total Dry Weight of + 3/4" Portion (g):	9040.1
Percent - 3/4" By Dry Weight (%):	63.01	Percent + 3/4" By Dry Weight (%):	36.99

MOISTURE CONTENT OF -3/4" PORTION		***MOISTURE CONTENT OF +3/4" PORTION***	
Tare Number:	1477	Tare Number:	2945
Weight of Tare & Wet Sample (g):	1001.60	Weight of Tare & Wet Sample (g):	436.82
Weight of Tare & Dry Sample (g):	918.20	Weight of Tare & Dry Sample (g):	415.00
Weight of Tare (g):	143.85	Weight of Tare (g):	8.20
Weight of Water (g):	83.40	Weight of Water (g):	21.82
Weight of Dry Sample (g):	774.35	Weight of Dry Sample (g):	406.80
Moisture Content (%):	10.77	**Moisture Content (%):**	5.36

SPECIFIC GRAVITY DETERMINATION

Weight of Basket in Air (g):	1031.5
Weight of Saturated Surface Dry Sample & Basket in Air (g):	2394.5
Weight of Saturated Surface Dry Sample in Air (g):	1363.0
Weight of Basket in Water (g):	896.6
Weight of Saturated Sample & Basket in Water (g):	1712.0
Weight of Saturated Sample in Water (g):	815.4
Tare No.:	1415
Weight of Tare and Dried Sample (g):	1438.5
Weight of Tare (g):	143.3
Weight of Dried Soil (g):	1295.2

Bulk Specific Gravity (+3/4"): 2.37

Tested By DF *Date* 10/18/24 *Checked By* GRK *Date* 10/21/24

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MOISTURE - DENSITY RELATIONSHIP

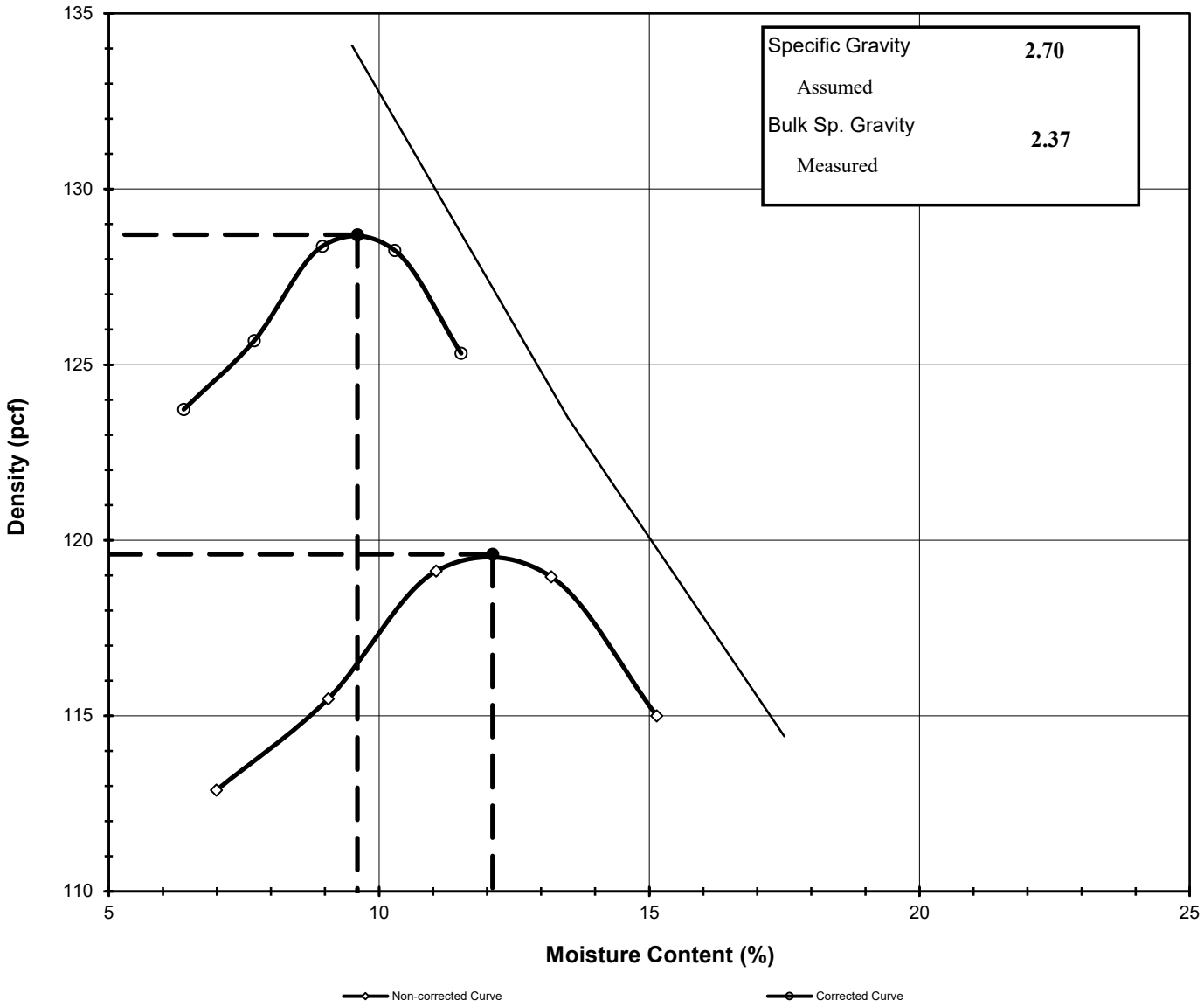
(Corrected for Oversize Particles)

ASTM D 4718-15, D 698-12e2 (SOP-S12,S39)

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure Plan
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	Composite
Project No.:	2024-747-001	Sample No.:	C-TP#2-2024
Lab ID:	2024-747-001-002	Test Method	STANDARD

Visual Description: Brown Clay with Rocks & Organics

Optimum Moisture Content (%):	**12.1**	**Corrected Moisture Content (%):**	**9.6**
Maximum Dry Density (pcf):	**119.6**	**Corrected Dry Density (pcf):**	**128.7**



Tested By AB *Date* 10/22/24 *Checked By* JLK *Date* 10/23/24

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MOISTURE - DENSITY RELATIONSHIP

(Corrected for Oversize Particles) ASTM D 4718-15, D698-12e2 (SOP-S12,S39)

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure Plan
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	Composite
Project No.:	2024-747-001	Sample No.:	C-TP#2-2024
Lab ID:	2024-747-001-002		

Visual Description: Brown Clay with Rocks & Organics

Total Weight of the Sample (g):	NA
As Received Water Content (%):	NA
Assumed Specific Gravity	2.70

Percent Retained on 3/4" (Dry):	36.99
Percent Retained on 3/8" (Dry):	NA
Percent Retained on #4 (Dry):	NA
Oversize Material:	Not included
Procedure Used:	C

TestType:	**STANDARD**
Rammer Weight (lb):	5.5
Rammer Drop (in):	12
Rammer Type:	MECHANICAL
Machine ID:	G3349
Mold ID:	G3347
Mold diameter (in):	6"
Weight of the Mold (g):	5722
Volume Of the Mold (cm^3):	2123

Mold/Specimen

Point No.	**1**	**2**	**3**	**4**	**5**
Weight of Mold & Wet Sample (g):	9831	10007	10223	10303	10227
Weight of Mold (g):	5722	5722	5722	5722	5722
Weight of Wet Sample (g):	4109	4285	4501	4581	4505
Mold Volume (cm^3):	2123	2123	2123	2123	2123

Moisture Content/Density

Tare Number:	405	412	467	480	486
Weight of Tare & Wet Sample (g):	497.09	499.04	490.45	497.97	498.05
Weight of Tare & Dry Sample (g):	470.99	465.80	450.61	451.28	445.38
Weight of Tare (g):	97.65	98.86	90.34	97.15	97.42
Weight of Water (g):	26.10	33.24	39.84	46.69	52.67
Weight of Dry Sample (g):	373.34	366.94	360.27	354.13	347.96

Wet Density (g/cm^3):	1.94	2.02	2.12	2.16	2.12
Wet Density (pcf):	120.8	125.9	132.3	134.6	132.4
Moisture Content (%):	**7.0**	**9.1**	**11.1**	**13.2**	**15.1**
Dry Density (pcf):	**112.9**	**115.5**	**119.1**	**119.0**	**115.0**

Zero Air Voids

Moisture Content (%):		9.5	13.5	17.5	
Dry Unit Weight (pcf):		134.1	123.5	114.4	

Calculated Oversize Corrected Moisture & Density

Moisture Content (%):	**6.4**	**7.7**	**9.0**	**10.3**	**11.5**
Dry Density (pcf):	**123.7**	**125.7**	**128.4**	**128.3**	**125.3**

Tested By AB *Date* 10/22/24 *Checked By* JLK *Date* 10/23/24

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PERMEABILITY TEST

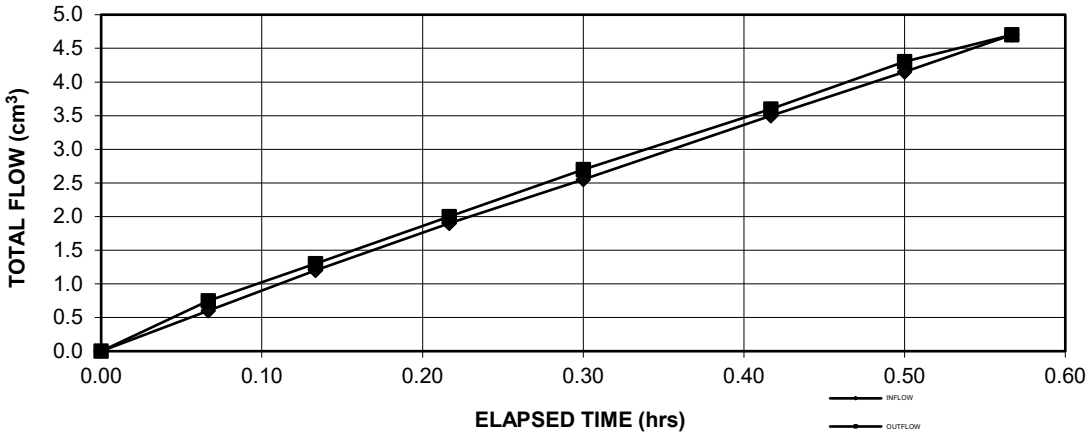
ASTM D 5084-16a Method C

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure Plan
Client Project:	Cheswick Closure R220960.00	Depth (ft):	Composite
Project No.:	2024-747-001	Sample No.:	C-TP#2-2024
Lab ID No.:	2024-747-001-002	Avg. Effective Consol. Pressure (psi):	6.25

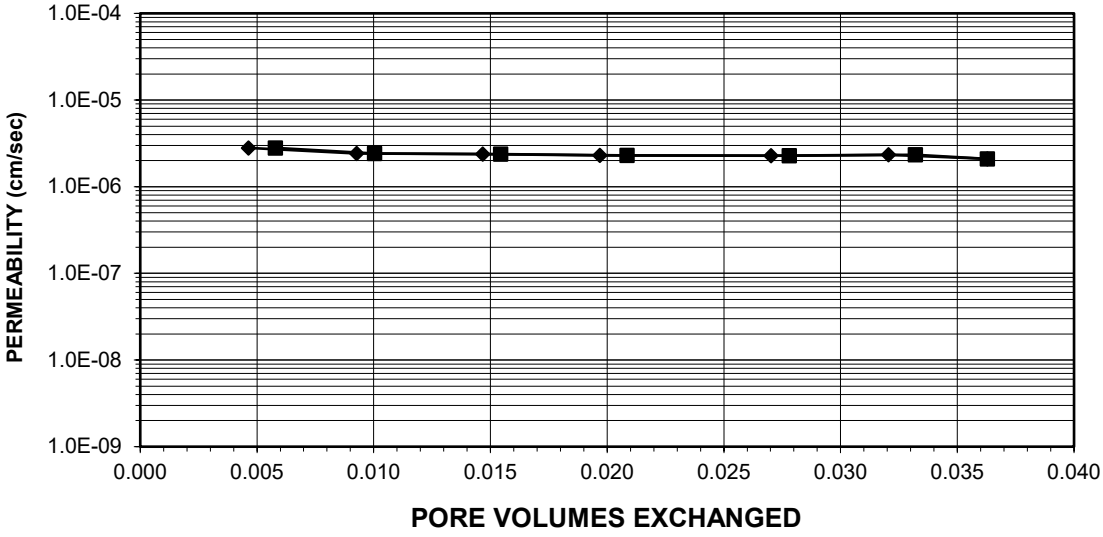
AVERAGE PERMEABILITY = 2.3E-06 cm/sec @ 20°C

AVERAGE PERMEABILITY = 2.3E-08 m/sec @ 20°C

TOTAL FLOW vs. ELAPSED TIME



PORE VOLUMES EXCHANGED vs. PERMEABILITY



Tested By: WT Date: 11/6/24 Checked By: JLK Date: 11/8/24

DCN: CT-22 DATE: 1/1/17 REVISION: 11

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PERMEABILITY TEST

ASTM D 5084-16a Method C

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure Plan
Client Project:	Cheswick Closure R220960.00	Depth (ft):	Composite
Project No.:	2024-747-001	Sample No.:	C-TP#2-2024
Lab ID No.:	2024-747-001-002	Avg. Effective Consol. Pressure (psi):	6.25

Specific Gravity:	2.70	Assumed
Sample Condition:		Remolded

Visual Description: Brown Clay with Rocks & Organics

Permeant Type: Deaired Water

MOISTURE CONTENT:	BEFORE TEST	AFTER TEST
Tare Number	2672	1598
Weight of Tare & Wet Sample (g)	162.04	891.85
Weight of Tare & Dry Sample (g)	143.82	770.98
Weight of Tare (g)	8.18	96.80
Weight of Water (g)	18.22	120.87
Weight of Dry Sample (g)	135.64	674.18
Moisture Content (%)	**13.4**	**17.9**

SPECIMEN:	BEFORE TEST	AFTER TEST
Weight of Tube & Wet Sample (g)	1681.37	NA
Weight of Tube (g)	917.30	NA
Weight of Wet Sample (g)	764.07	794.35
Length 1 (in)	3.490	3.524
Length 2 (in)	3.490	3.508
Length 3 (in)	3.490	3.518
Top Diameter (in)	2.870	2.891
Middle Diameter (in)	2.870	2.892
Bottom Diameter (in)	2.870	2.898
Average Length (in)	3.49	3.52
Average Area (in^2)	6.47	6.58
Sample Volume (cm^3)	369.98	378.98
Unit Wet Weight (g/cm^3)	2.07	2.10
Unit Wet Weight (pcf)	128.9	130.8
Unit Dry Weight (pcf)	113.6	110.9
Unit Dry Weight (g/cm^3)	1.82	1.78
Void Ratio, e	0.48	0.52
Porosity, n	0.33	0.34
Pore Volume (cm^3)	120.5	129.5
Total Weight of Sample After Test (g)		795.23

Tested By: WT Date: 11/6/24 Checked By: JLK Date: 11/8/24

DCN: CT-22 DATE: 1/1/17 REVISION: 11

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PERMEABILITY TEST

ASTM D 5084-16a Method C

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Client:	GAI Consultants, Inc.	Boring No.:	Final Closure Plan
Client Project:	Cheswick Closure R220960.00	Depth (ft):	Composite
Project No.:	2024-747-001	Sample No.:	C-TP#2-2024
Lab ID No.:	2024-747-001-002	Avg. Effective Consol. Pressure (psi):	6.25

Pressure Heads (Constant)	
Top Cap (psi)	77.5
Bottom Cap (psi)	80.0
Cell (psi)	85.0
Total Pressure Head (cm)	175.8
Hydraulic Gradient	19.68

Final Sample Dimensions	
Sample Length (cm), L	8.93
Sample Diameter (cm)	7.35
Sample Area (cm^2), A	42.43
Inflow Burette Area (cm^2), a-in	0.866
Outflow Burette Area (cm^2), a-out	0.962

AVERAGE PERMEABILITY = 2.3E-06 cm/sec @ 20°C

AVERAGE PERMEABILITY = 2.3E-08 m/sec @ 20°C

DATE	TIME		ELAPSED TIME t	TOTAL INFLOW	TOTAL OUTFLOW	TOTAL HEAD h	FLOW (0 flow)	TEMP.	INCREMENTAL PERMEABILITY @ 20°C
(mm/dd/yy)	(hr)	(min)	(hr)	(cm^3)	(cm^3)	(cm)	(1 stop)	(°C)	(cm/sec)
11/7/2024	11	55	0.000	0.0	0.0	202.9	0	21.6	NA
11/7/2024	11	59	0.067	0.6	0.8	201.4	0	21.6	2.8E-06
11/7/2024	12	3	0.133	1.2	1.3	200.1	0	21.6	2.4E-06
11/7/2024	12	8	0.217	1.9	2.0	198.6	0	21.6	2.4E-06
11/7/2024	12	13	0.300	2.6	2.7	197.1	0	21.6	2.3E-06
11/7/2024	12	20	0.417	3.5	3.6	195.1	0	21.6	2.3E-06
11/7/2024	12	25	0.500	4.2	4.3	193.6	0	21.6	2.3E-06
11/7/2024	12	29	0.567	4.7	4.7	192.5	1	21.6	2.1E-06

Tested By: WT Date: 11/6/24 Checked By: JLK Date: 11/8/24

DCN: CT-22 DATE: 1/1/17 REVISION: 11

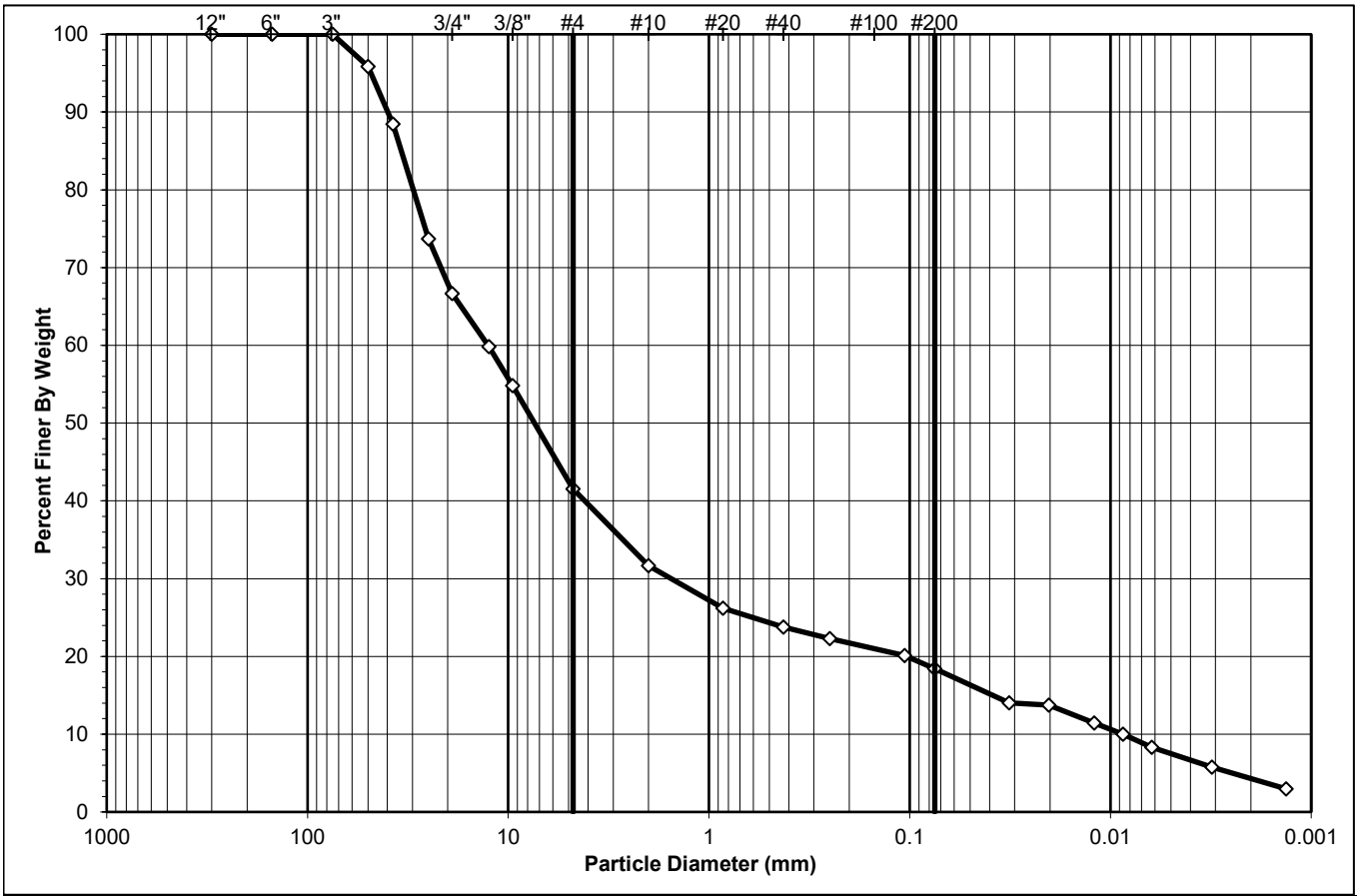
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SIEVE AND HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure Plan
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	Composite
Project No.:	2024-747-001	Sample No.:	C-TP#3-2024
Lab ID:	2024-747-001-003	Soil Color:	Brown

	SIEVE ANALYSIS			HYDROMETER	
USCS	cobbles	gravel	sand	silt and clay fraction	
USDA	cobbles	gravel	sand	silt	clay



USCS Summary

Sieve Size (mm)		Percentage (%)
Greater Than #4	*Gravel*	58.47
#4 to #200	*Sand*	23.10
Finer Than #200	*Silt & Clay*	18.43

USCS Symbol:
GC, TESTED

USCS Classification:
CLAYEY GRAVEL WITH SAND

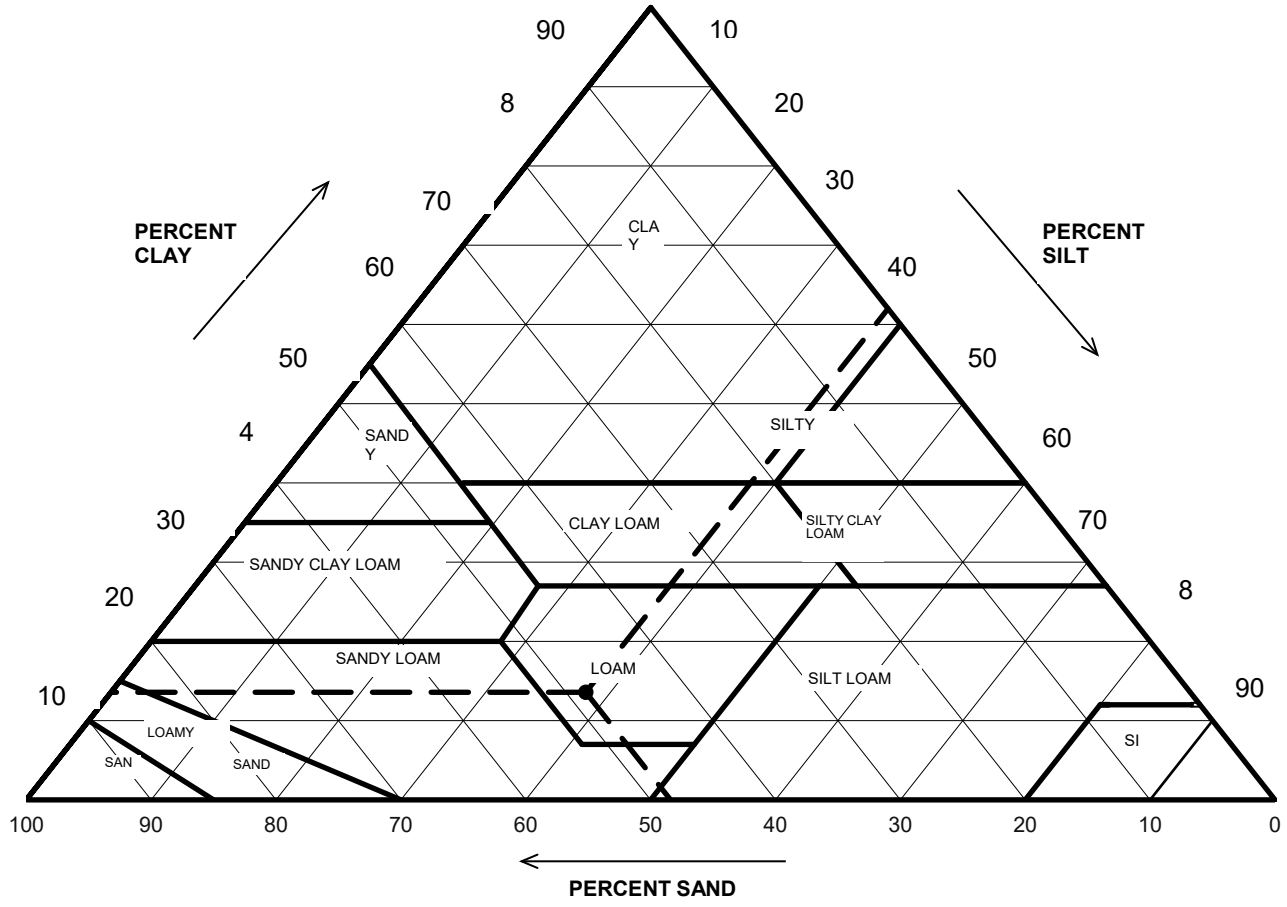
DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

S:Excel\Excel QA\Spreadsheets\SieveHydJ.xls

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USDA Classification Chart

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure Plan
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	Composite
Project No.:	2024-747-001	Sample No.:	C-TP#3-2024
Lab ID:	2024-747-001-003	Soil Color:	Brown



Particle Size (mm)	Percent Finer	USDA Summary	Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classification
		Gravel	68.34	**0.00**
2	31.66	*Sand*	15.32	**48.40**
0.05	16.33	*Silt*	12.04	**38.02**
0.002	4.30	*Clay*	4.30	**13.58**

USDA Classification ***LOAM***

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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WASH SIEVE ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure Plan
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	Composite
Project No.:	2024-747-001	Sample No.:	C-TP#3-2024
Lab ID:	2024-747-001-003	Soil Color:	Brown

Moisture Content of Passing 3/4" Material		Moisture Content of Retained 3/4" Material	
Tare No.:	2045	Tare No.:	3385
Wt. of Tare & Wet Sample (g):	1037.89	Weight of Tare & Wet Sample (g):	436.07
Wt. of Tare & Dry Sample (g):	961.23	Weight of Tare & Dry Sample (g):	413.8
Weight of Tare (g):	144.21	Weight of Tare (g):	8.17
Weight of Water (g):	76.66	Weight of Water (g):	22.27
Weight of Dry Soil (g):	817.02	Weight of Dry Soil (g):	405.63
Moisture Content (%):	**9.4**	**Moisture Content (%):**	**5.5**

Wet Weight of -3/4" Sample (g):	18371.00	Weight of the Dry Sample (g):	817.02
Dry Weight of - 3/4" Sample (g):	16795.13	Weight of minus #200 Material (g):	225.89
Wet Weight of +3/4" Sample (g):	8859.00	Weight of plus #200 Material (g):	591.13
Dry Weight of +3/4" Sample (g):	8397.93		
Total Dry Weight of Sample (g):	25193.07	**J - Factor (Percent Finer than 3/4")**	**66.67%**

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)		Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00		0.00	0.00	100.00	**100.00**
6"	150	0.00		0.00	0.00	100.00	**100.00**
3"	75	0.00		0.00	0.00	100.00	**100.00**
2"	50	1100.00	(*)	4.14	4.14	95.86	**95.86**
1 1/2"	37.5	1965.00		7.39	11.53	88.47	**88.47**
1"	25	3931.00		14.79	26.32	73.68	**73.68**
3/4"	19	1863.00		7.01	33.33	66.67	**66.67**
1/2"	12.5	83.91		10.27	10.27	89.73	**59.82**
3/8"	9.5	61.16		7.49	17.76	82.24	**54.83**
#4	4.75	162.98		19.95	37.70	62.30	**41.53**
#10	2	121.00		14.81	52.51	47.49	**31.66**
#20	0.85	66.73	(**)	8.17	60.68	39.32	**26.21**
#40	0.425	29.66		3.63	64.31	35.69	**23.79**
#60	0.25	18.18		2.23	66.54	33.46	**22.31**
#140	0.106	26.94		3.30	69.83	30.17	**20.11**
#200	0.075	20.57		2.52	72.35	27.65	**18.43**
Pan	-	225.89		27.65	100.00	-	**-**

NOTES: *(*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample*
*(**) The - 3/4" sieve analysis is based on the Weight of the Dry Sample*

Tested By	DF	Date	10/23/24	Checked By	BRB	Date	11/5/24

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

S:Excel\Excel QA\Spreadsheets\SieveHydJ.xls

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HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure Plan
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	Composite
Project No.:	2024-747-001	Sample No.:	C-TP#3-2024
Lab ID:	2024-747-001-003	Soil Color:	Brown

Elapsed Time		R Measured	Temp.	Composite Correction	R Corrected	N	K Factor	Diameter	N'
(min)			(°C)			(%)		(mm)	(%)
0		NA	NA	NA	NA	NA	NA	NA	NA
2		30.0	20.3	5.6	24.4	76.0	0.01340	0.0319	**14.0**
5		29.5	20.3	5.6	23.9	74.5	0.01340	0.0203	**13.7**
15		25.5	20.3	5.6	19.9	62.0	0.01340	0.0120	**11.4**
30		23.0	20.3	5.6	17.4	54.3	0.01340	0.0087	**10.0**
60		20.0	20.4	5.5	14.5	45.0	0.01338	0.0062	**8.3**
250		15.5	20.7	5.5	10.0	31.3	0.01333	0.0031	**5.8**
1440		10.5	21.2	5.3	5.2	16.1	0.01325	0.0013	**3.0**

Soil Specimen Data		**Other Corrections**	
Tare No.	2327		
Wt. of Tare & Dry Material (g):	128.80	a - Factor	0.993
Weight of Tare (g):	91.91		
Weight of Deflocculant (g):	5.0	Percent Finer than # 200	18.43
Weight of Dry Material (g):	31.89		
		Specific Gravity	2.70 Assumed

Note: *Hydrometer test is performed on - # 200 sieve material.*

Tested By TO Date 10/29/24 Checked By BRB Date 11/5/24

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

S:Excel\Excel QA\Spreadsheets\SieveHydJ.xls

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ATTERBERG LIMITS

ASTM D 4318-17

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure Plan
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	Composite
Project No.:	2024-747-001	Sample No.:	C-TP#3-2024
Lab ID:	2024-747-001-003	Soil Description:	BROWN LEAN CLAY

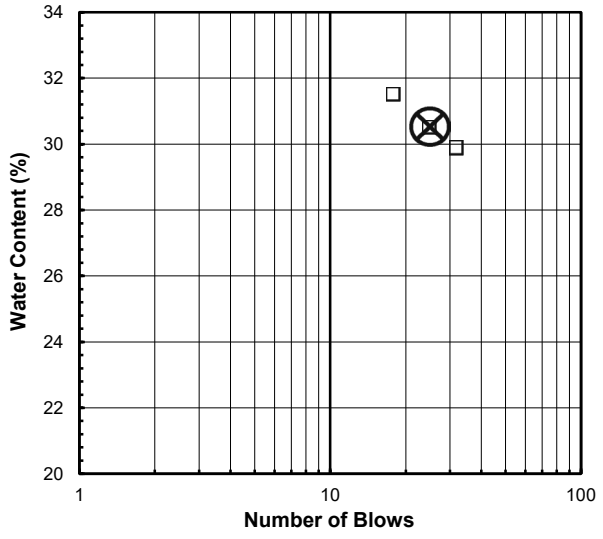
Note: The* USCS *symbol used with this test refers only to the minus No. 40 sieve material. See the "Sieve and Hydrometer Analysis" graph page for the complete material description. (Minus #40 sieve material, Air dried)

As Received Moisture Content ASTM D2216-19		**Liquid Limit Test**			
		1	**2**	**3**	**M**
Tare Number:	2996	129	335	237	**U**
Wt. of Tare & Wet Sample (g):	297.53	39.54	39.14	39.19	**L**
Wt. of Tare & Dry Sample (g):	273.71	34.77	34.39	34.30	**T**
Weight of Tare (g):	7.35	18.80	18.81	18.77	**I**
Weight of Water (g):	23.8	4.8	4.8	4.9	**P**
Weight of Dry Sample (g):	266.4	16.0	15.6	15.5	**O**
Was As Received MC Preserved:	**Yes**				**I**
Moisture Content (%):	**8.9**	**29.9**	**30.5**	**31.5**	**N**
Number of Blows:		**32**	**25**	**18**	**T**

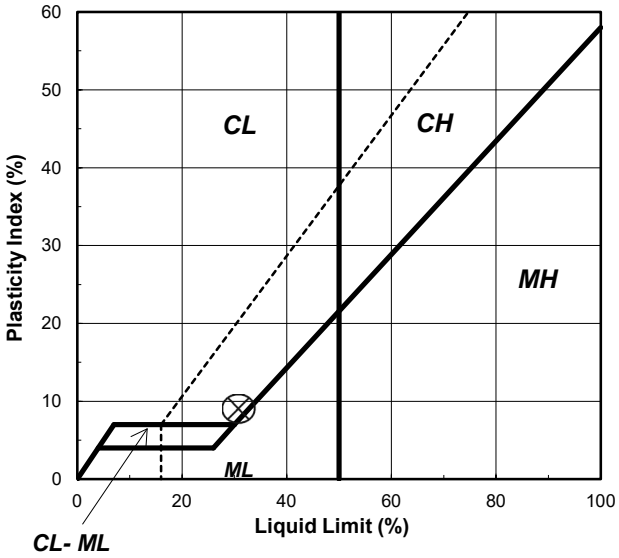
Plastic Limit Test	**1**	**2**	**Range**
Tare Number:	190	506	
Wt. of Tare & Wet Sample (g):	26.22	25.79	
Wt. of Tare & Dry Sample (g):	24.76	24.62	
Weight of Tare (g):	18.08	19.31	
Weight of Water (g):	1.5	1.2	
Weight of Dry Sample (g):	6.7	5.3	
Moisture Content (%):	**21.9**	**22.0**	**-0.2**
Note: The acceptable range of the two Moisture Contents is ±			1.12

Test Results	
Liquid Limit (%):	**31**
Plastic Limit (%):	**22**
Plasticity Index (%):	**9**
USCS Symbol:	**CL**

Flow Curve



Plasticity Chart



Tested By FS *Date* 10/28/24 *Checked By* GRK *Date* 10/29/24

 DCN: CTS4B, DATE: 5/22/18 REVISION: 8

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Moisture, Ash, and Organic Matter (Loss on Ignition)

ASTM D 2974-20e1

Client:	GAI Consultants, Inc.
Client Reference:	Cheswick Closure R220960.00
Project No.:	2024-747-001

Method B (To 0.1%)

Moisture Content

ASTM D2216

Lab ID:	003
Boring No.:	Final Closure Plan
Depth (ft):	Composite
Sample No.:	C-TP#3-2024
Tare Number	HH
Weight of Tare & Wet Sample (g)	424.52
Weight of Tare & Dry Sample (g)	399.72
Weight of Tare (g)	133.97
Weight of Water (g)	24.80
Weight of Dry Sample (g)	265.75
Moisture Content	**9.3%**

Method A

Ash Content, Organic Matter

Furnace Temperature (°C)	440
Weight of Tare & Ash (g)	394.34
Weight of Volatiles (g)	5.38
Weight of Ash (g)	260.37
Ash Content (%)	**98.0%**
Organic Matter (%)	**2.0%**

Tested By JW *Date* 10/18/24 *Checked By* JLK *Date* 10/18/24

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Correction of Unit Weight and Water Content for Soils Containing Oversize Particles by Specific Gravity

ASTM D4718/D4718M-15

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure Plan
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	Composite
Project No.:	2024-747-001	Sample No.:	C-TP#3-2024
Lab ID:	2024-747-001-003		

Visual Description: Brown Clay w/ Rocks & Organics

Total Dry Weight of Sample (g): 25193.1

FINE PORTION		***COARSE PORTION***	
Total Wet Weight of - 3/4" Portion (g):	18371.0	Total Wet Weight of + 3/4" Portion (g):	8859.0
Total Dry Weight of - 3/4" Portion (g):	16795.1	Total Dry Weight of + 3/4" Portion (g):	8397.9
Percent - 3/4" By Dry Weight (%):	66.67	Percent + 3/4" By Dry Weight (%):	33.33

MOISTURE CONTENT OF -3/4" PORTION		***MOISTURE CONTENT OF +3/4" PORTION***	
Tare Number:	2045	Tare Number:	3385
Weight of Tare & Wet Sample (g):	1037.89	Weight of Tare & Wet Sample (g):	436.07
Weight of Tare & Dry Sample (g):	961.23	Weight of Tare & Dry Sample (g):	413.80
Weight of Tare (g):	144.21	Weight of Tare (g):	8.17
Weight of Water (g):	76.66	Weight of Water (g):	22.27
Weight of Dry Sample (g):	817.02	Weight of Dry Sample (g):	405.63
Moisture Content (%):	9.38	**Moisture Content (%):**	5.49

SPECIFIC GRAVITY DETERMINATION

Weight of Basket in Air (g):	1031.5
Weight of Saturated Surface Dry Sample & Basket in Air (g):	2135.7
Weight of Saturated Surface Dry Sample in Air (g):	1104.2
Weight of Basket in Water (g):	896.6
Weight of Saturated Sample & Basket in Water (g):	1564.6
Weight of Saturated Sample in Water (g):	668.0
Tare No.:	1409
Weight of Tare and Dried Sample (g):	1222.2
Weight of Tare (g):	176.2
Weight of Dried Soil (g):	1045.9

Bulk Specific Gravity (+3/4"): 2.40

Tested By DF *Date* 10/18/24 *Checked By* GRK *Date* 10/21/24

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MOISTURE - DENSITY RELATIONSHIP

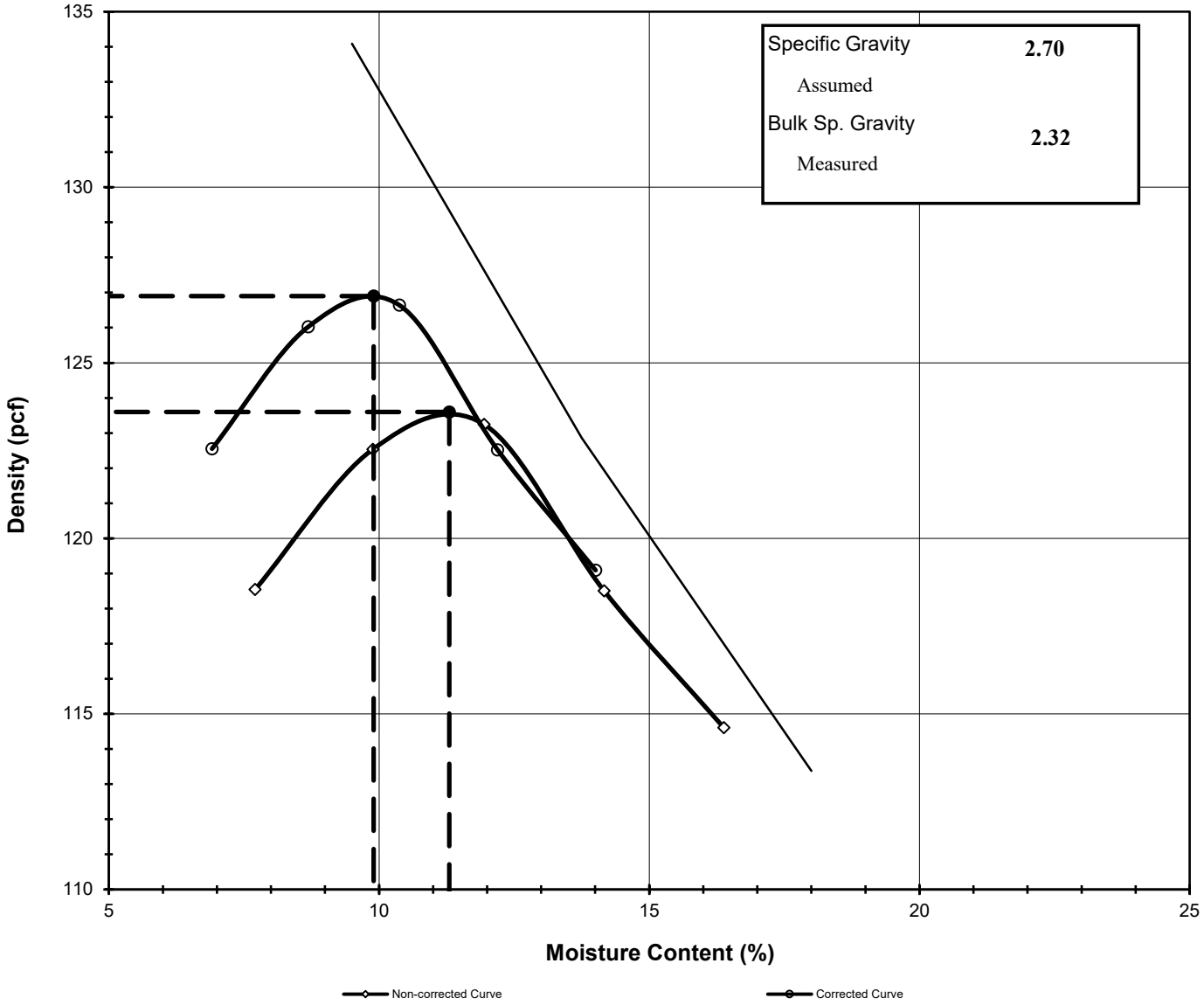
(Corrected for Oversize Particles)

ASTM D 4718-15, D 698-12e2 (SOP-S12,S39)

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure Plan
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	Composite
Project No.:	2024-747-001	Sample No.:	C-TP#3-2024
Lab ID:	2024-747-001-003	Test Method	STANDARD

Visual Description: Brown Clay with Rock & Organics

Optimum Moisture Content (%):	**11.3**	**Corrected Moisture Content (%):**	**9.9**
Maximum Dry Density (pcf):	**123.6**	**Corrected Dry Density (pcf):**	**126.9**



Tested By AB *Date* 10/23/24 *Checked By* JLK *Date* 10/24/24

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MOISTURE - DENSITY RELATIONSHIP

(Corrected for Oversize Particles) ASTM D 4718-15, D698-12e2 (SOP-S12,S39)

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure Plan
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	Composite
Project No.:	2024-747-001	Sample No.:	C-TP#3-2024
Lab ID:	2024-747-001-003		

Visual Description: Brown Clay with Rock & Organics

Total Weight of the Sample (g):	NA
As Received Water Content (%):	NA
Assumed Specific Gravity	2.70

Percent Retained on 3/4" (Dry):	18.20
Percent Retained on 3/8" (Dry):	NA
Percent Retained on #4 (Dry):	NA
Oversize Material:	Not included
Procedure Used:	C

TestType:	**STANDARD**
Rammer Weight (lb):	5.5
Rammer Drop (in):	12
Rammer Type:	MECHANICAL
Machine ID:	G3349
Mold ID:	G3347
Mold diameter (in):	6"
Weight of the Mold (g):	5722
Volume Of the Mold (cm^3):	2123

Mold/Specimen

Point No.	**1**	**2**	**3**	**4**	**5**
Weight of Mold & Wet Sample (g):	10066	10303	10416	10325	10260
Weight of Mold (g):	5722	5722	5722	5722	5722
Weight of Wet Sample (g):	4344	4581	4694	4603	4538
Mold Volume (cm^3):	2123	2123	2123	2123	2123

Moisture Content/Density

Tare Number:	427	456	460	488	487
Weight of Tare & Wet Sample (g):	490.01	492.58	499.29	492.26	499.75
Weight of Tare & Dry Sample (g):	461.35	456.49	456.43	442.57	443.30
Weight of Tare (g):	89.53	91.36	97.59	91.74	98.68
Weight of Water (g):	28.66	36.09	42.86	49.69	56.45
Weight of Dry Sample (g):	371.82	365.13	358.84	350.83	344.62

Wet Density (g/cm^3):	2.05	2.16	2.21	2.17	2.14
Wet Density (pcf):	127.7	134.6	138.0	135.3	133.4
Moisture Content (%):	**7.7**	**9.9**	**11.9**	**14.2**	**16.4**
Dry Density (pcf):	**118.5**	**122.5**	**123.2**	**118.5**	**114.6**

Zero Air Voids

Moisture Content (%):		9.5	13.8	18.0	
Dry Unit Weight (pcf):		134.1	122.9	113.4	

Calculated Oversize Corrected Moisture & Density

Moisture Content (%):	**6.9**	**8.7**	**10.4**	**12.2**	**14.0**
Dry Density (pcf):	**122.6**	**126.0**	**126.6**	**122.5**	**119.1**

Tested By AB *Date* 10/23/24 *Checked By* JLK *Date* 10/24/24

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PERMEABILITY TEST

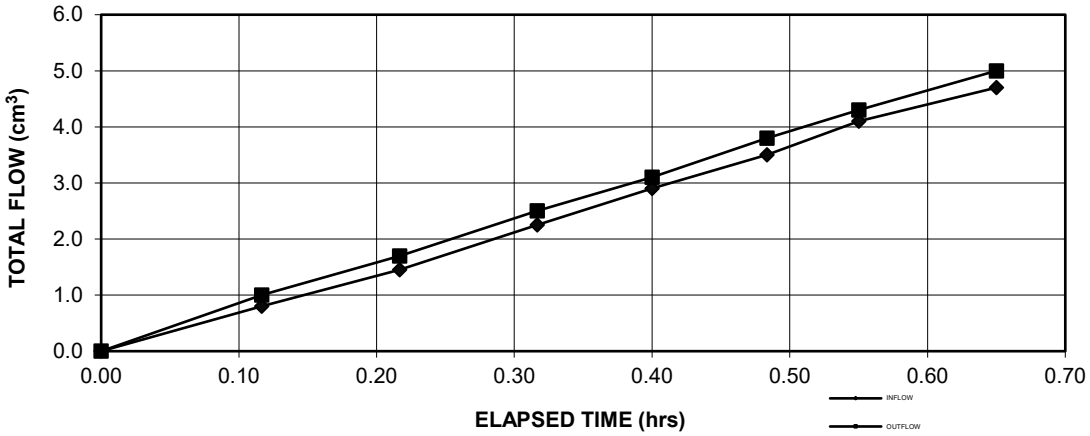
ASTM D 5084-16a Method C

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure Plan
Client Project:	Cheswick Closure R220960.00	Depth (ft):	Composite
Project No.:	2024-747-001	Sample No.:	C-TP#3-2024
Lab ID No.:	2024-747-001-003	Avg. Effective Consol. Pressure (psi):	6.25

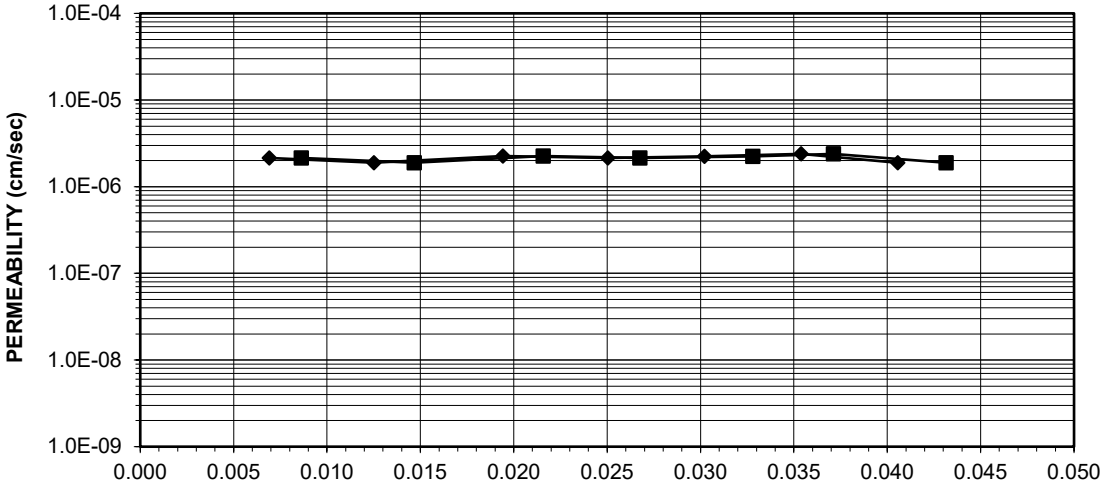
AVERAGE PERMEABILITY = 2.2E-06 cm/sec @ 20°C

AVERAGE PERMEABILITY = 2.2E-08 m/sec @ 20°C

TOTAL FLOW vs. ELAPSED TIME



PORE VOLUMES EXCHANGED vs. PERMEABILITY



Tested By: WT Date: 11/6/24 Checked By: JLK Date: 11/8/24

DCN: CT-22 DATE: 1/1/17 REVISION: 11

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PERMEABILITY TEST

ASTM D 5084-16a Method C

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure Plan
Client Project:	Cheswick Closure R220960.00	Depth (ft):	Composite
Project No.:	2024-747-001	Sample No.:	C-TP#3-2024
Lab ID No.:	2024-747-001-003	Avg. Effective Consol. Pressure (psi):	6.25

Specific Gravity: 2.70 Assumed
Sample Condition: Remolded

Visual Description: Brown Clay with Rock & Organics

Permeant Type: Deaired Water

MOISTURE CONTENT:	BEFORE TEST	AFTER TEST
Tare Number	3267	828
Weight of Tare & Wet Sample (g)	156.88	910.44
Weight of Tare & Dry Sample (g)	140.86	801.38
Weight of Tare (g)	8.15	109.97
Weight of Water (g)	16.02	109.06
Weight of Dry Sample (g)	132.71	691.41
Moisture Content (%)	**12.1**	**15.8**

SPECIMEN:	BEFORE TEST	AFTER TEST
Weight of Tube & Wet Sample (g)	1698.16	NA
Weight of Tube (g)	917.30	NA
Weight of Wet Sample (g)	780.86	806.65
Length 1 (in)	3.490	3.505
Length 2 (in)	3.490	3.483
Length 3 (in)	3.490	3.508
Top Diameter (in)	2.870	2.882
Middle Diameter (in)	2.870	2.880
Bottom Diameter (in)	2.870	2.883
Average Length (in)	3.49	3.50
Average Area (in^2)	6.47	6.52
Sample Volume (cm^3)	369.98	373.92
Unit Wet Weight (g/cm^3)	2.11	2.16
Unit Wet Weight (pcf)	131.7	134.7
Unit Dry Weight (pcf)	117.6	116.3
Unit Dry Weight (g/cm^3)	1.88	1.86
Void Ratio, e	0.43	0.45
Porosity, n	0.30	0.31
Pore Volume (cm^3)	111.9	115.9
Total Weight of Sample After Test (g)		801.12

Tested By: WT Date: 11/6/24 Checked By: JLK Date: 11/8/24

DCN: CT-22 DATE: 1/1/17 REVISION: 11

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PERMEABILITY TEST

ASTM D 5084-16a Method C

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Client:	GAI Consultants, Inc.	Boring No.:	Final Closure Plan
Client Project:	Cheswick Closure R220960.00	Depth (ft):	Composite
Project No.:	2024-747-001	Sample No.:	C-TP#3-2024
Lab ID No.:	2024-747-001-003	Avg. Effective Consol. Pressure (psi):	6.25

Pressure Heads (Constant)	
Top Cap (psi)	77.5
Bottom Cap (psi)	80.0
Cell (psi)	85.0
Total Pressure Head (cm)	175.8
Hydraulic Gradient	19.78

Final Sample Dimensions	
Sample Length (cm), L	8.89
Sample Diameter (cm)	7.32
Sample Area (cm^2), A	42.08
Inflow Burette Area (cm^2), a-in	0.852
Outflow Burette Area (cm^2), a-out	0.862

AVERAGE PERMEABILITY = 2.2E-06 cm/sec @ 20°C

AVERAGE PERMEABILITY = 2.2E-08 m/sec @ 20°C

DATE	TIME		ELAPSED TIME t	TOTAL INFLOW	TOTAL OUTFLOW	TOTAL HEAD h	FLOW (0 flow)	TEMP.	INCREMENTAL PERMEABILITY @ 20°C
(mm/dd/yy)	(hr)	(min)	(hr)	(cm^3)	(cm^3)	(cm)	(1 stop)	(°C)	(cm/sec)
11/7/2024	11	55	0.000	0.0	0.0	203.7	0	21.6	NA
11/7/2024	12	2	0.117	0.8	1.0	201.6	0	21.6	2.1E-06
11/7/2024	12	8	0.217	1.5	1.7	200.0	0	21.6	1.9E-06
11/7/2024	12	14	0.317	2.3	2.5	198.2	0	21.6	2.3E-06
11/7/2024	12	19	0.400	2.9	3.1	196.7	0	21.6	2.1E-06
11/7/2024	12	24	0.483	3.5	3.8	195.2	0	21.6	2.2E-06
11/7/2024	12	28	0.550	4.1	4.3	193.9	0	21.6	2.4E-06
11/7/2024	12	34	0.650	4.7	5.0	192.4	1	21.6	1.9E-06

Tested By: WT Date: 11/6/24 Checked By: JLK Date: 11/8/24

DCN: CT-22 DATE: 1/1/17 REVISION: 11

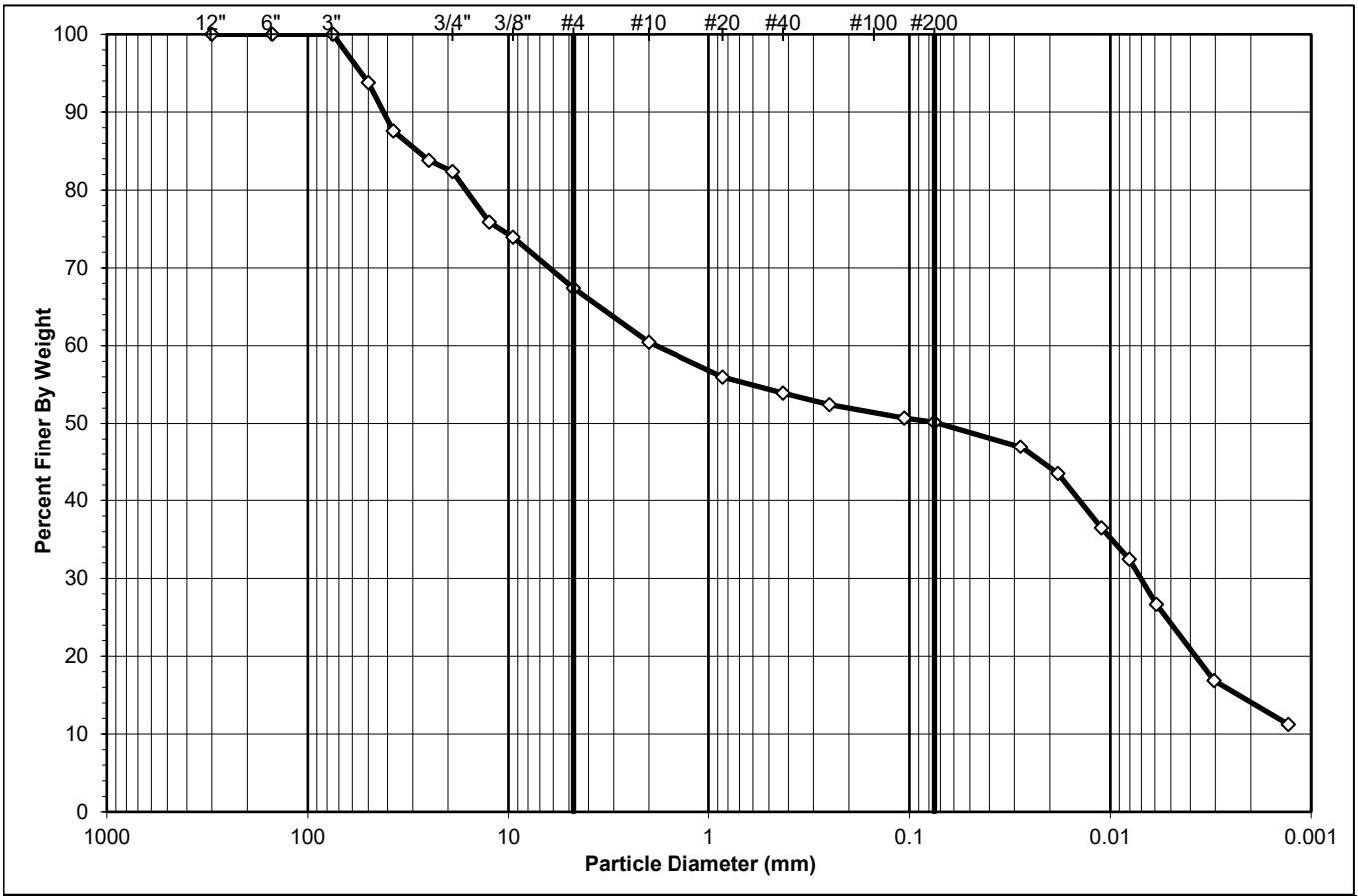
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SIEVE AND HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure Plan
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	Composite
Project No.:	2024-747-001	Sample No.:	C-TP#4-2024
Lab ID:	2024-747-001-004	Soil Color:	Brown

	SIEVE ANALYSIS			HYDROMETER	
USCS	cobbles	gravel	sand	silt and clay fraction	
USDA	cobbles	gravel	sand	silt	clay



USCS Summary

Sieve Size (mm)		Percentage (%)
Greater Than #4	*Gravel*	32.60
#4 to #200	*Sand*	17.23
Finer Than #200	*Silt & Clay*	50.17

USCS Symbol:
CL, TESTED

USCS Classification:
GRAVELLY LEAN CLAY WITH SAND

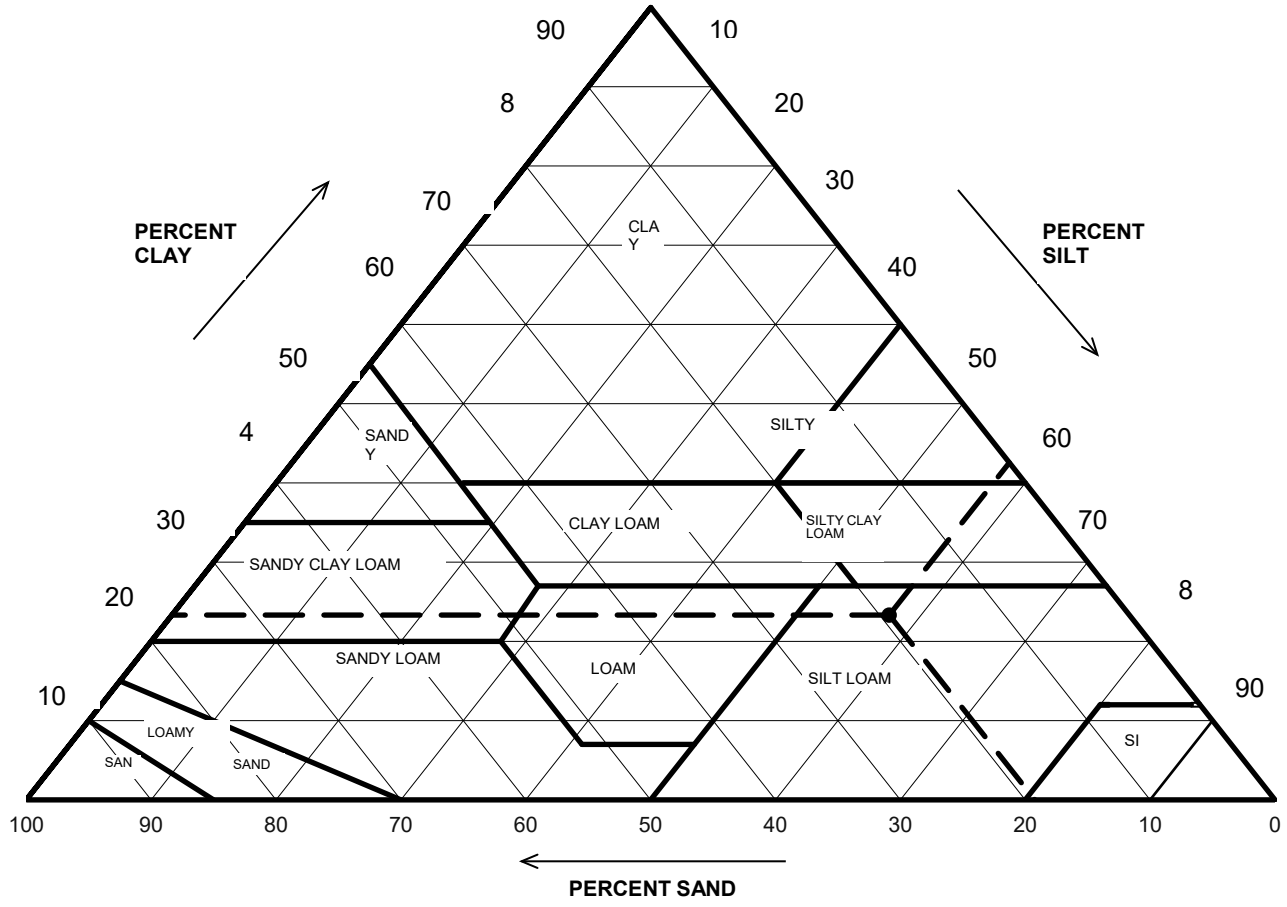
DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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USDA Classification Chart

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure Plan
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	Composite
Project No.:	2024-747-001	Sample No.:	C-TP#4-2024
Lab ID:	2024-747-001-004	Soil Color:	Brown



Particle Size (mm)	Percent Finer	USDA Summary	Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classification
		Gravel	39.53	**0.00**
2	60.47	*Sand*	11.63	**19.23**
0.05	48.84	*Silt*	34.74	**57.45**
0.002	14.10	*Clay*	14.10	**23.32**

USDA Classification ***SILT LOAM***

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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WASH SIEVE ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure Plan
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	Composite
Project No.:	2024-747-001	Sample No.:	C-TP#4-2024
Lab ID:	2024-747-001-004	Soil Color:	Brown

Moisture Content of Passing 3/4" Material		Moisture Content of Retained 3/4" Material	
Tare No.:	2036	Tare No.:	2933
Wt. of Tare & Wet Sample (g):	908.97	Weight of Tare & Wet Sample (g):	470.31
Wt. of Tare & Dry Sample (g):	877.55	Weight of Tare & Dry Sample (g):	445.54
Weight of Tare (g):	146.57	Weight of Tare (g):	7.25
Weight of Water (g):	31.42	Weight of Water (g):	24.77
Weight of Dry Soil (g):	730.98	Weight of Dry Soil (g):	438.29
Moisture Content (%):	**4.3**	**Moisture Content (%):**	**5.7**

Wet Weight of -3/4" Sample (g):	23345.00	Weight of the Dry Sample (g):	730.98
Dry Weight of - 3/4" Sample (g):	22382.91	Weight of minus #200 Material (g):	445.23
Wet Weight of +3/4" Sample (g):	5064.00	Weight of plus #200 Material (g):	285.75
Dry Weight of +3/4" Sample (g):	4793.12		
Total Dry Weight of Sample (g):	27176.02	**J - Factor (Percent Finer than 3/4")**	**82.36%**

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)		Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00		0.00	0.00	100.00	**100.00**
6"	150	0.00		0.00	0.00	100.00	**100.00**
3"	75	0.00		0.00	0.00	100.00	**100.00**
2"	50	1779.00	(*)	6.20	6.20	93.80	**93.80**
1 1/2"	37.5	1781.00		6.20	12.40	87.60	**87.60**
1"	25	1091.00		3.80	16.20	83.80	**83.80**
3/4"	19	413.00		1.44	17.64	82.36	**82.36**
1/2"	12.5	57.71		7.89	7.89	92.11	**75.86**
3/8"	9.5	16.89		2.31	10.21	89.79	**73.96**
#4	4.75	58.21		7.96	18.17	81.83	**67.40**
#10	2	61.50		8.41	26.58	73.42	**60.47**
#20	0.85	39.93	(**)	5.46	32.04	67.96	**55.97**
#40	0.425	18.29		2.50	34.55	65.45	**53.91**
#60	0.25	13.22		1.81	36.36	63.64	**52.42**
#140	0.106	15.08		2.06	38.42	61.58	**50.72**
#200	0.075	4.92		0.67	39.09	60.91	**50.17**
Pan	-	445.23		60.91	100.00	-	**-**

NOTES: *(*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample*
*(**) The - 3/4" sieve analysis is based on the Weight of the Dry Sample*

Tested By	DF	Date	10/23/24	Checked By	BRB	Date	11/5/24

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure Plan
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	Composite
Project No.:	2024-747-001	Sample No.:	C-TP#4-2024
Lab ID:	2024-747-001-004	Soil Color:	Brown

Elapsed Time		R Measured	Temp.	Composite Correction	R Corrected	N	K Factor	Diameter	N'
(min)			(°C)			(%)		(mm)	(%)
0		NA	NA	NA	NA	NA	NA	NA	NA
2		46.0	20.3	5.6	40.4	93.6	0.01340	0.0280	**46.9**
5		43.0	20.3	5.6	37.4	86.6	0.01340	0.0182	**43.5**
15		37.0	20.3	5.6	31.4	72.8	0.01340	0.0111	**36.5**
30		33.5	20.3	5.6	27.9	64.6	0.01340	0.0080	**32.4**
60		28.5	20.4	5.5	23.0	53.1	0.01338	0.0059	**26.7**
250		20.0	20.7	5.5	14.5	33.7	0.01333	0.0030	**16.9**
1440		15.0	21.2	5.3	9.7	22.4	0.01325	0.0013	**11.2**

Soil Specimen Data		**Other Corrections**	
Tare No.	972		
Wt. of Tare & Dry Material (g):	144.74	a - Factor	0.993
Weight of Tare (g):	96.85		
Weight of Deflocculant (g):	5.0	Percent Finer than # 200	50.17
Weight of Dry Material (g):	42.89		
		Specific Gravity	2.70 Assumed

Note: *Hydrometer test is performed on - # 200 sieve material.*

Tested By TO Date 10/29/24 Checked By BRB Date 11/5/24

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

S:Excel\Excel QA\Spreadsheets\SieveHydJ.xls

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ATTERBERG LIMITS

ASTM D 4318-17

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure Plan
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	Composite
Project No.:	2024-747-001	Sample No.:	C-TP#4-2024
Lab ID:	2024-747-001-004	Soil Description:	BROWN LEAN CLAY

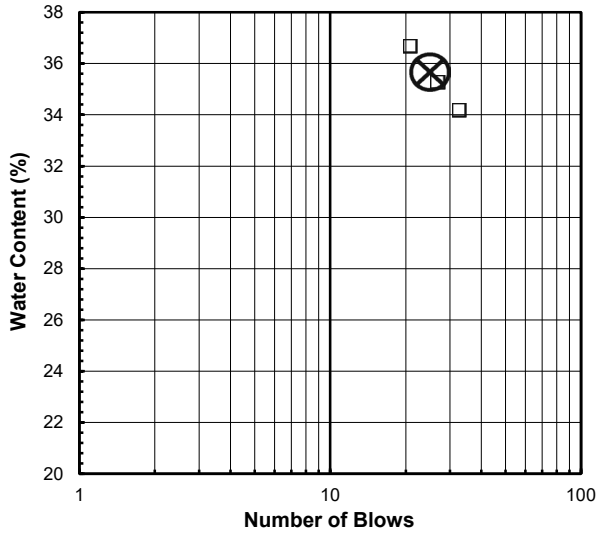
Note: The* USCS *symbol used with this test refers only to the minus No. 40 sieve material. See the "Sieve and Hydrometer Analysis" graph page for the complete material description. (Minus #40 sieve material, Air dried)

As Received Moisture Content ASTM D2216-19		**Liquid Limit Test** 1	2	3	M
Tare Number:	3342	186	166	126	U
Wt. of Tare & Wet Sample (g):	269.57	38.61	39.70	39.87	L
Wt. of Tare & Dry Sample (g):	243.82	33.49	34.40	34.40	T
Weight of Tare (g):	8.13	18.49	19.36	19.47	I
Weight of Water (g):	25.8	5.1	5.3	5.5	P
Weight of Dry Sample (g):	235.7	15.0	15.0	14.9	O
Was As Received MC Preserved:	**Yes**				I
Moisture Content (%):	**10.9**	**34.1**	**35.2**	**36.6**	N
Number of Blows:		**33**	**27**	**21**	T

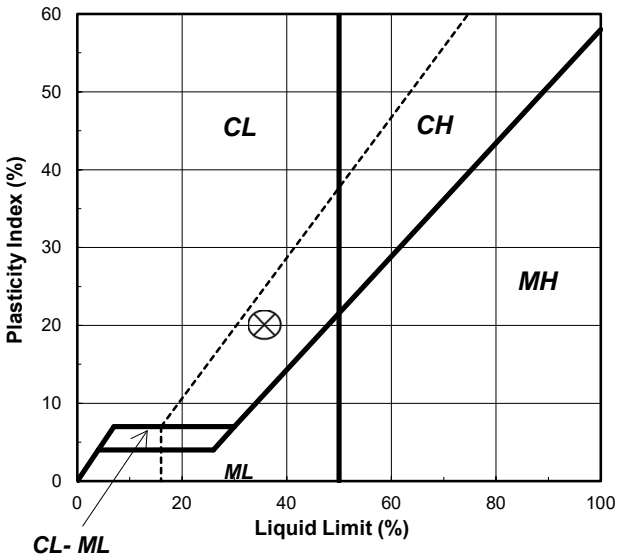
Plastic Limit Test	**1**	**2**	**Range**
Tare Number:	305	635	
Wt. of Tare & Wet Sample (g):	25.65	24.89	
Wt. of Tare & Dry Sample (g):	24.70	24.05	
Weight of Tare (g):	19.04	18.78	
Weight of Water (g):	0.9	0.8	
Weight of Dry Sample (g):	5.7	5.3	
Moisture Content (%):	**16.8**	**15.9**	**0.8**
Note: The acceptable range of the two Moisture Contents is ±			1.12

Test Results	
Liquid Limit (%):	**36**
Plastic Limit (%):	**16**
Plasticity Index (%):	**20**
USCS Symbol:	**CL**

Flow Curve



Plasticity Chart



Tested By FS *Date* 10/28/24 *Checked By* GRK *Date* 10/29/24

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Moisture, Ash, and Organic Matter (Loss on Ignition)

ASTM D 2974-20e1

Client:	GAI Consultants, Inc.
Client Reference:	Cheswick Closure R220960.00
Project No.:	2024-747-001

Method B (To 0.1%)

Moisture Content

ASTM D2216

Lab ID:	004
Boring No.:	Final Closure Plan
Depth (ft):	Composite
Sample No.:	C-TP#4-2024
Tare Number	FF
Weight of Tare & Wet Sample (g)	340.99
Weight of Tare & Dry Sample (g)	317.79
Weight of Tare (g)	115.48
Weight of Water (g)	23.20
Weight of Dry Sample (g)	202.31
Moisture Content	**11.5%**

Method A

Ash Content, Organic Matter

Furnace Temperature (°C)	440
Weight of Tare & Ash (g)	314.22
Weight of Volatiles (g)	3.57
Weight of Ash (g)	198.74
Ash Content (%)	**98.2%**
Organic Matter (%)	**1.8%**

Tested By JW *Date* 10/21/24 *Checked By* GRK *Date* 10/21/24

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Correction of Unit Weight and Water Content for Soils Containing Oversize Particles by Specific Gravity

ASTM D4718/D4718M-15

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure Plan
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	Composite
Project No.:	2024-747-001	Sample No.:	C-TP#4-2024
Lab ID:	2024-747-001-004		
Visual Description:	Brown Clay w/ Rock		

Total Dry Weight of Sample (g): **25859.6**

FINE PORTION		***COARSE PORTION***	
Total Wet Weight of - 3/4" Portion (g):	23345.0	Total Wet Weight of + 3/4" Portion (g):	5064.0
Total Dry Weight of - 3/4" Portion (g):	21066.5	Total Dry Weight of + 3/4" Portion (g):	4793.1
Percent - 3/4" By Dry Weight (%):	81.46	Percent + 3/4" By Dry Weight (%):	18.54

MOISTURE CONTENT OF -3/4" PORTION		***MOISTURE CONTENT OF +3/4" PORTION***	
Tare Number:	4032	Tare Number:	2933
Weight of Tare & Wet Sample (g):	290.53	Weight of Tare & Wet Sample (g):	470.31
Weight of Tare & Dry Sample (g):	262.88	Weight of Tare & Dry Sample (g):	445.54
Weight of Tare (g):	7.24	Weight of Tare (g):	7.25
Weight of Water (g):	27.65	Weight of Water (g):	24.77
Weight of Dry Sample (g):	255.64	Weight of Dry Sample (g):	438.29
Moisture Content (%):	10.82	**Moisture Content (%):**	5.65

SPECIFIC GRAVITY DETERMINATION

Weight of Basket in Air (g):	1031.5
Weight of Saturated Surface Dry Sample & Basket in Air (g):	2991.1
Weight of Saturated Surface Dry Sample in Air (g):	1959.6
Weight of Basket in Water (g):	896.1
Weight of Saturated Sample & Basket in Water (g):	2053.2
Weight of Saturated Sample in Water (g):	1157.1
Tare No.:	1534
Weight of Tare and Dried Sample (g):	1961.3
Weight of Tare (g):	145.1
Weight of Dried Soil (g):	1816.2

Bulk Specific Gravity (+3/4"): **2.26**

Tested By DF *Date* 10/21/24 *Checked By* GRK *Date* 10/22/24

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MOISTURE - DENSITY RELATIONSHIP

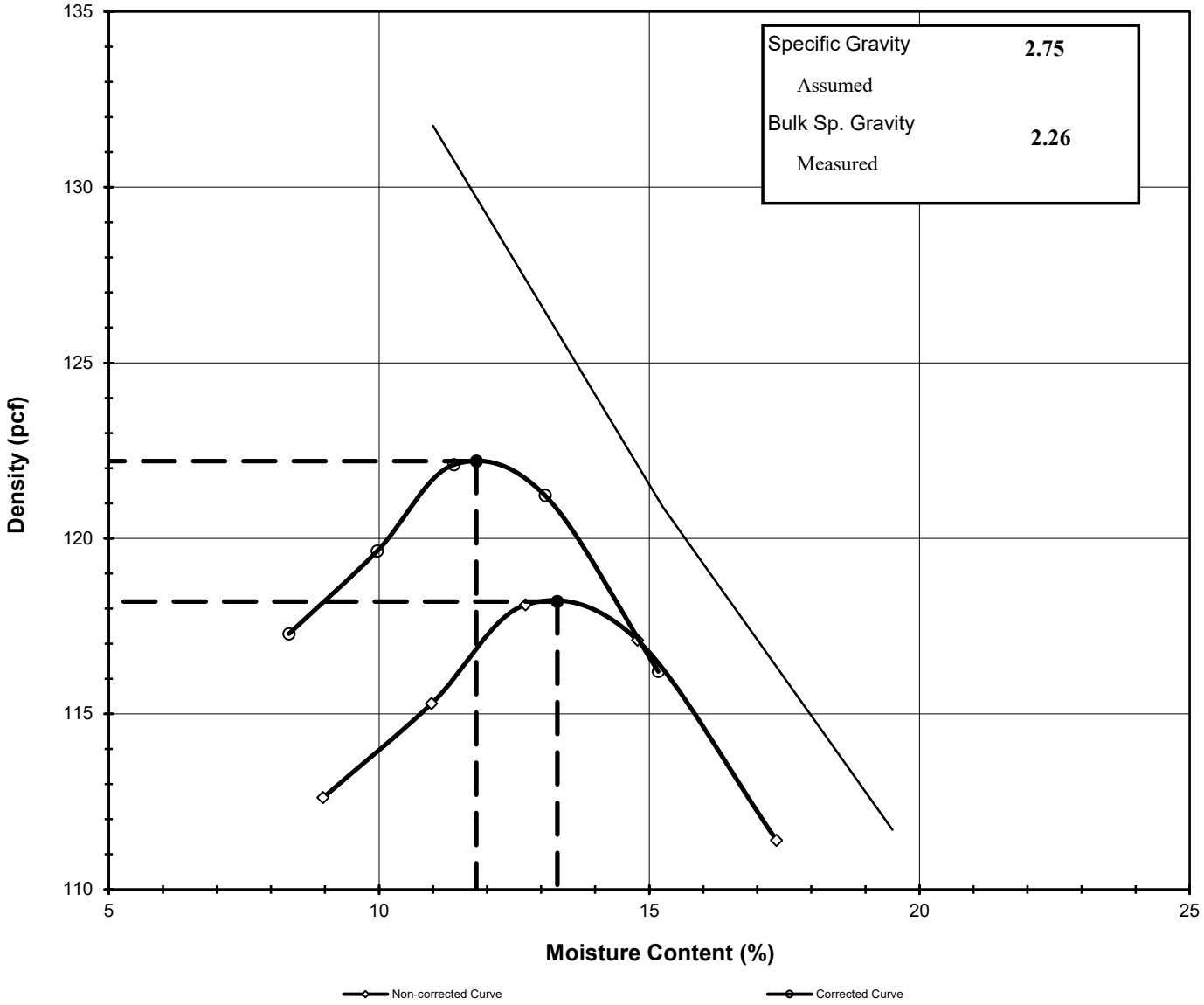
(Corrected for Oversize Particles)

ASTM D 4718-15, D 698-12e2 (SOP-S12,S39)

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure Plan
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	Composite
Project No.:	2024-747-001	Sample No.:	C-TP#4-2024
Lab ID:	2024-747-001-004	Test Method	STANDARD

Visual Description: Brown Clay w/ Rock

Optimum Moisture Content (%):	**13.3**	**Corrected Moisture Content (%):**	**11.8**
Maximum Dry Density (pcf):	**118.2**	**Corrected Dry Density (pcf):**	**122.2**



Tested By AB *Date* 10/23/24 *Checked By* JLK *Date* 10/24/24

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MOISTURE - DENSITY RELATIONSHIP

(Corrected for Oversize Particles) ASTM D 4718-15, D698-12e2 (SOP-S12,S39)

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure Plan
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	Composite
Project No.:	2024-747-001	Sample No.:	C-TP#4-2024
Lab ID:	2024-747-001-004		

Visual Description: Brown Clay w/ Rock

Total Weight of the Sample (g):	NA
As Received Water Content (%):	NA
Assumed Specific Gravity	2.75

Percent Retained on 3/4" (Dry):	18.24
Percent Retained on 3/8" (Dry):	NA
Percent Retained on #4 (Dry):	NA
Oversize Material:	Not included
Procedure Used:	C

TestType:	**STANDARD**
Rammer Weight (lb):	5.5
Rammer Drop (in):	12
Rammer Type:	MECHANICAL
Machine ID:	G3349
Mold ID:	G3347
Mold diameter (in):	6"
Weight of the Mold (g):	5722
Volume Of the Mold (cm^3):	2123

Mold/Specimen

Point No.	**1**	**2**	**3**	**4**	**5**
Weight of Mold & Wet Sample (g):	9897	10075	10251	10295	10170
Weight of Mold (g):	5722	5722	5722	5722	5722
Weight of Wet Sample (g):	4175	4353	4529	4573	4448
Mold Volume (cm^3):	2123	2123	2123	2123	2123

Moisture Content/Density

Tare Number:	405	412	425	445	450
Weight of Tare & Wet Sample (g):	497.75	499.79	488.32	490.82	498.27
Weight of Tare & Dry Sample (g):	464.83	460.15	443.15	439.23	439.10
Weight of Tare (g):	97.64	98.88	87.78	90.24	98.13
Weight of Water (g):	32.92	39.64	45.17	51.59	59.17
Weight of Dry Sample (g):	367.19	361.27	355.37	348.99	340.97

Wet Density (g/cm^3):	1.97	2.05	2.13	2.15	2.10
Wet Density (pcf):	122.7	127.9	133.1	134.4	130.7
Moisture Content (%):	**9.0**	**11.0**	**12.7**	**14.8**	**17.4**
Dry Density (pcf):	**112.6**	**115.3**	**118.1**	**117.1**	**111.4**

Zero Air Voids

Moisture Content (%):		11.0	15.3	19.5	
Dry Unit Weight (pcf):		131.7	120.9	111.7	

Calculated Oversize Corrected Moisture & Density

Moisture Content (%):	**8.3**	**10.0**	**11.4**	**13.1**	**15.2**
Dry Density (pcf):	**117.3**	**119.6**	**122.1**	**121.2**	**116.2**

Tested By AB *Date* 10/23/24 *Checked By* JLK *Date* 10/24/24

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PERMEABILITY TEST

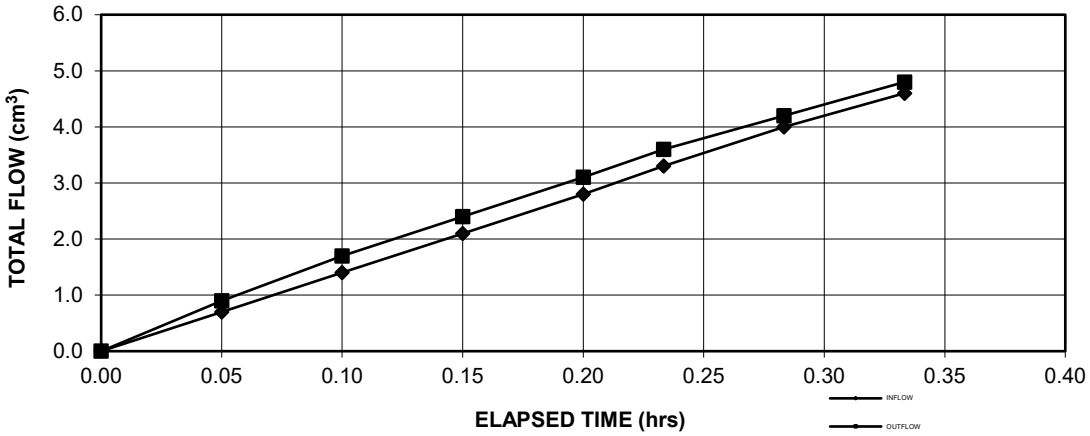
ASTM D 5084-16a Method C

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure Plan
Client Project:	Cheswick Closure R220960.00	Depth (ft):	Composite
Project No.:	2024-747-001	Sample No.:	C-TP#4-2024
Lab ID No.:	2024-747-001-004	Avg. Effective Consol. Pressure (psi):	6.25

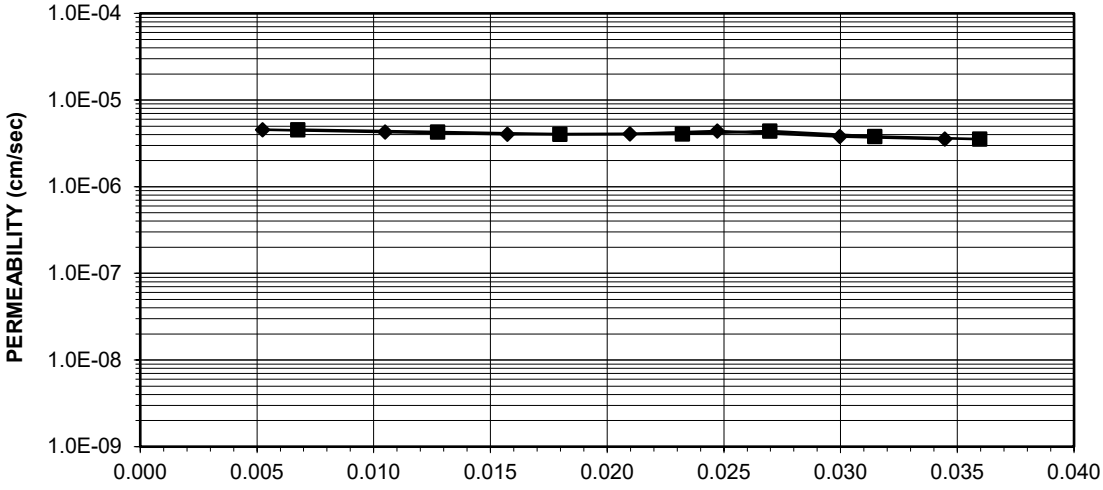
AVERAGE PERMEABILITY = 3.9E-06 cm/sec @ 20°C

AVERAGE PERMEABILITY = 3.9E-08 m/sec @ 20°C

TOTAL FLOW vs. ELAPSED TIME



PORE VOLUMES EXCHANGED vs. PERMEABILITY



Tested By: WT Date: 11/5/24 Checked By: JLK Date: 11/8/24

DCN: CT-22 DATE: 1/1/17 REVISION: 11

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PERMEABILITY TEST

ASTM D 5084-16a Method C

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure Plan
Client Project:	Cheswick Closure R220960.00	Depth (ft):	Composite
Project No.:	2024-747-001	Sample No.:	C-TP#4-2024
Lab ID No.:	2024-747-001-004	Avg. Effective Consol. Pressure (psi):	6.25

Specific Gravity:	2.70	Assumed
Sample Condition:		Remolded

Visual Description: Brown Clay with Rock

Permeant Type: Deaired Water

MOISTURE CONTENT:	BEFORE TEST	AFTER TEST
Tare Number	3321	605
Weight of Tare & Wet Sample (g)	155.38	881.31
Weight of Tare & Dry Sample (g)	136.78	754.49
Weight of Tare (g)	8.27	85.97
Weight of Water (g)	18.60	126.82
Weight of Dry Sample (g)	128.51	668.52
Moisture Content (%)	**14.5**	**19.0**

SPECIMEN:	BEFORE TEST	AFTER TEST
Weight of Tube & Wet Sample (g)	1680.21	NA
Weight of Tube (g)	917.30	NA
Weight of Wet Sample (g)	762.91	792.88
Length 1 (in)	3.490	3.511
Length 2 (in)	3.490	3.517
Length 3 (in)	3.490	3.496
Top Diameter (in)	2.870	2.901
Middle Diameter (in)	2.870	2.902
Bottom Diameter (in)	2.870	2.904
Average Length (in)	3.49	3.51
Average Area (in^2)	6.47	6.62
Sample Volume (cm^3)	369.98	380.32
Unit Wet Weight (g/cm^3)	2.06	2.08
Unit Wet Weight (pcf)	128.7	130.1
Unit Dry Weight (pcf)	112.4	109.4
Unit Dry Weight (g/cm^3)	1.80	1.75
Void Ratio, e	0.50	0.54
Porosity, n	0.33	0.35
Pore Volume (cm^3)	123.1	133.5
Total Weight of Sample After Test (g)		795.53

Tested By: WT Date: 11/5/24 Checked By: JLK Date: 11/8/24

DCN: CT-22 DATE: 1/1/17 REVISION: 11

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PERMEABILITY TEST

ASTM D 5084-16a Method C

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Client:	GAI Consultants, Inc.	Boring No.:	Final Closure Plan
Client Project:	Cheswick Closure R220960.00	Depth (ft):	Composite
Project No.:	2024-747-001	Sample No.:	C-TP#4-2024
Lab ID No.:	2024-747-001-004	Avg. Effective Consol. Pressure (psi):	6.25

Pressure Heads (Constant)	
Top Cap (psi)	77.5
Bottom Cap (psi)	80.0
Cell (psi)	85.0
Total Pressure Head (cm)	175.8
Hydraulic Gradient	19.73

Final Sample Dimensions	
Sample Length (cm), L	8.91
Sample Diameter (cm)	7.37
Sample Area (cm^2), A	42.68
Inflow Burette Area (cm^2), a-in	1.057
Outflow Burette Area (cm^2), a-out	0.957
B Parameter (%)	95

AVERAGE PERMEABILITY = 3.9E-06 cm/sec @ 20°C

AVERAGE PERMEABILITY = 3.9E-08 m/sec @ 20°C

DATE	TIME		ELAPSED TIME t	TOTAL INFLOW	TOTAL OUTFLOW	TOTAL HEAD h	FLOW (0 flow)	TEMP.	INCREMENTAL PERMEABILITY @ 20°C
(mm/dd/yy)	(hr)	(min)	(hr)	(cm^3)	(cm^3)	(cm)	(1 stop)	(°C)	(cm/sec)
11/7/2024	11	55	0.000	0.0	0.0	195.7	0	21.6	NA
11/7/2024	11	58	0.050	0.7	0.9	194.1	0	21.6	4.6E-06
11/7/2024	12	1	0.100	1.4	1.7	192.6	0	21.6	4.3E-06
11/7/2024	12	4	0.150	2.1	2.4	191.3	0	21.6	4.0E-06
11/7/2024	12	7	0.200	2.8	3.1	189.9	0	21.6	4.1E-06
11/7/2024	12	9	0.233	3.3	3.6	188.9	0	21.6	4.4E-06
11/7/2024	12	12	0.283	4.0	4.2	187.6	0	21.6	3.8E-06
11/7/2024	12	15	0.333	4.6	4.8	186.4	1	21.6	3.5E-06

Tested By: WT Date: 11/5/24 Checked By: JLK Date: 11/8/24

DCN: CT-22 DATE: 1/1/17 REVISION: 11

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SIEVE AND HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure Plan
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	Composite
Project No.:	2024-747-001	Sample No.:	C-TP#5-2024
Lab ID:	2024-747-001-005	Soil Color:	Brown

	SIEVE ANALYSIS			HYDROMETER	
USCS	cobbles	gravel	sand	silt and clay fraction	
USDA	cobbles	gravel	sand	silt	clay



USCS Summary

Sieve Size (mm)		Percentage (%)
Greater Than #4	*Gravel*	2.46
#4 to #200	*Sand*	13.51
Finer Than #200	*Silt & Clay*	84.04

USCS Symbol:
CL, TESTED

USCS Classification:
LEAN CLAY WITH SAND

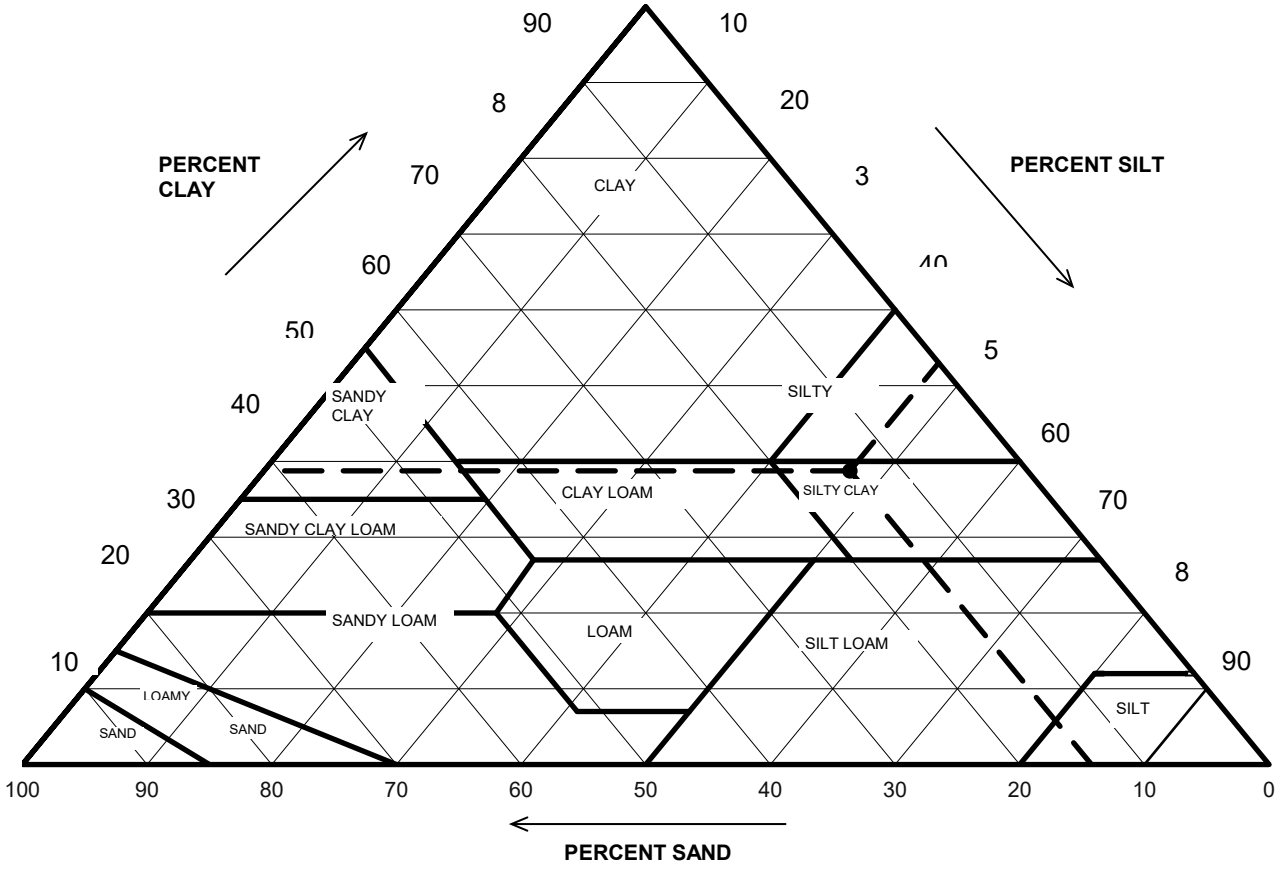
DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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USDA CLASSIFICATION CHART

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure Plan
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	Composite
Project No.:	2024-747-001	Sample No.:	C-TP#5-2024
Lab ID:	2024-747-001-005	Soil Color:	Brown



Particle Size (mm)	Percent Finer	USDA SUMMARY	Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classification
		Gravel	5.68	**0.00**
2	94.32	*Sand*	13.44	**14.25**
0.05	80.88	*Silt*	44.33	**47.00**
0.002	36.55	*Clay*	36.55	**38.75**

USDA Classification ***SILTY CLAY LOAM***

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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WASH SIEVE ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

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Client:	GAI Consultants, Inc.	Boring No.:	Final Closure Plan
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	Composite
Project No.:	2024-747-001	Sample No.:	C-TP#5-2024
Lab ID:	2024-747-001-005	Soil Color:	Brown

Moisture Content of Passing 3/4" Material		Moisture Content of Retained 3/4" Material	
Tare No.:	2026	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	986.77	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	875.30	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	148.06	Weight of Tare (g):	NA
Weight of Water (g):	111.47	Weight of Water (g):	NA
Weight of Dry Soil (g):	727.24	Weight of Dry Soil (g):	NA
Moisture Content (%):	**15.3**	**Moisture Content (%):**	**0.0**

Wet Weight of -3/4" Sample (g):	NA	Weight of the Dry Sample (g):	727.24
Dry Weight of - 3/4" Sample (g):	727.24	Weight of minus #200 Material (g):	611.14
Wet Weight of +3/4" Sample (g):	0.00	Weight of plus #200 Material (g):	116.10
Dry Weight of +3/4" Sample (g):	0.00		
Total Dry Weight of Sample (g):	727.24		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)		Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00		0.00	0.00	100.00	**100.00**
6"	150	0.00		0.00	0.00	100.00	**100.00**
3"	75	0.00		0.00	0.00	100.00	**100.00**
2"	50	0.00	(*)	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00		0.00	0.00	100.00	**100.00**
1"	25	0.00		0.00	0.00	100.00	**100.00**
3/4"	19	0.00		0.00	0.00	100.00	**100.00**
1/2"	12.5	0.00		0.00	0.00	100.00	**100.00**
3/8"	9.5	5.09		0.70	0.70	99.30	**99.30**
#4	4.75	12.78		1.76	2.46	97.54	**97.54**
#10	2	23.44		3.22	5.68	94.32	**94.32**
#20	0.85	24.25	(**)	3.33	9.01	90.99	**90.99**
#40	0.425	16.19		2.23	11.24	88.76	**88.76**
#60	0.25	13.51		1.86	13.10	86.90	**86.90**
#140	0.106	15.37		2.11	15.21	84.79	**84.79**
#200	0.075	5.47		0.75	15.96	84.04	**84.04**
Pan	-	611.14		84.04	100.00	-	**-**

Notes : *(*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample*
*(**) The - 3/4" sieve analysis is based on the Weight of the Dry Sample*

Tested By	DF	Date	10/23/24	Checked By	BRB	Date	11/5/24

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

S:Excel\Excel QA\Spreadsheets\SieveHydJ.xls

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HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure Plan
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	Composite
Project No.:	2024-747-001	Sample No.:	C-TP#5-2024
Lab ID:	2024-747-001-005	Soil Color:	Brown

Elapsed Time		R Measured	Temp.	Composite Correction	R Corrected	N	K Factor	Diameter	N'
(min)			(°C)			(%)		(mm)	(%)
0		NA	NA	NA	NA	NA	NA	NA	NA
2		46.5	20.3	5.6	40.9	90.8	0.01340	0.0279	**76.3**
5		46.0	20.3	5.6	40.4	89.7	0.01340	0.0177	**75.4**
15		43.5	20.3	5.6	37.9	84.2	0.01340	0.0105	**70.7**
30		38.5	20.3	5.6	32.9	73.1	0.01340	0.0077	**61.4**
60		36.0	20.4	5.5	30.5	67.6	0.01338	0.0056	**56.8**
250		28.5	20.7	5.5	23.0	51.1	0.01333	0.0029	**43.0**
1440		20.5	21.2	5.3	15.2	33.7	0.01325	0.0013	**28.3**

Soil Specimen Data		**Other Corrections**	
Tare No.	1463		
Wt. of Tare & Dry Material (g):	146.17	a - Factor	0.993
Weight of Tare (g):	96.44		
Weight of Deflocculant (g):	5.0	Percent Finer than # 200	84.04
Weight of Dry Material (g):	44.73		
		Specific Gravity	2.70 Assumed

Note: *Hydrometer test is performed on - # 200 sieve material.*

Tested By TO Date 10/29/24 Checked By BRB Date 11/5/24

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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ATTERBERG LIMITS

ASTM D 4318-17

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure Plan
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	Composite
Project No.:	2024-747-001	Sample No.:	C-TP#5-2024
Lab ID:	2024-747-001-005	Soil Description:	BROWN LEAN CLAY

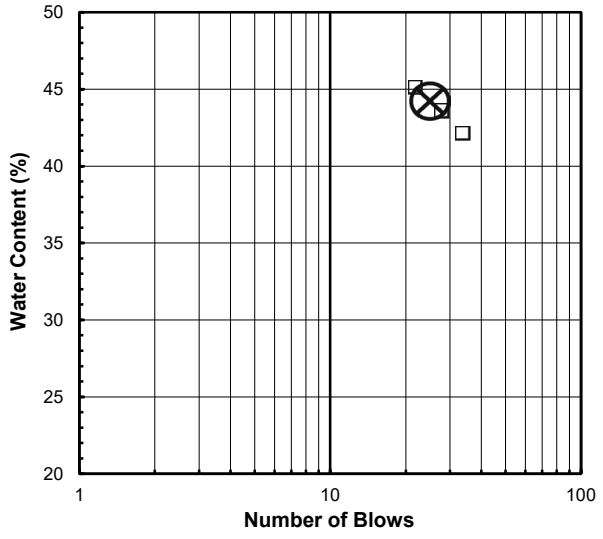
Note: The* USCS *symbol used with this test refers only to the minus No. 40 sieve material. See the "Sieve and Hydrometer Analysis" graph page for the complete material description. (Minus #40 sieve material, Air dried)

As Received Moisture Content ASTM D2216-19		**Liquid Limit Test**			
		1	**2**	**3**	**M**
Tare Number:	3532	1274	543	316	**U**
Wt. of Tare & Wet Sample (g):	236.38	44.41	39.40	40.50	**L**
Wt. of Tare & Dry Sample (g):	207.47	38.15	33.30	34.24	**T**
Weight of Tare (g):	8.12	23.27	19.29	20.35	**I**
Weight of Water (g):	28.9	6.3	6.1	6.3	**P**
Weight of Dry Sample (g):	199.4	14.9	14.0	13.9	**O**
Was As Received MC Preserved:	**Yes**				**I**
Moisture Content (%):	**14.5**	**42.1**	**43.5**	**45.1**	**N**
Number of Blows:		**34**	**28**	**22**	**T**

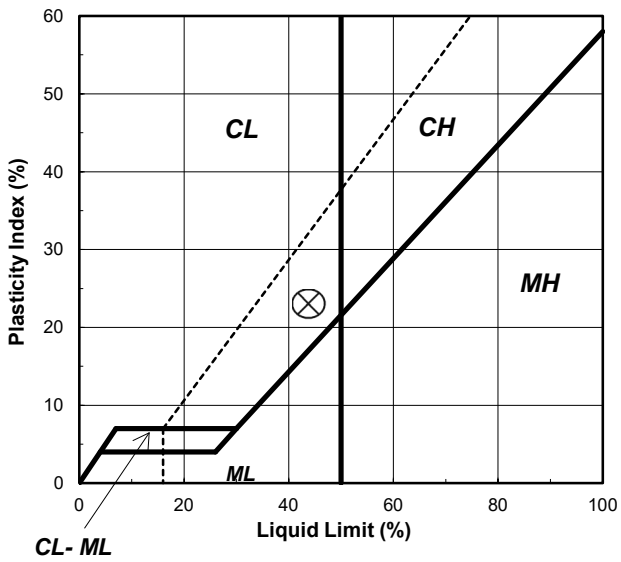
Plastic Limit Test	**1**	**2**	**Range**
Tare Number:	2279	286	
Wt. of Tare & Wet Sample (g):	25.63	22.30	
Wt. of Tare & Dry Sample (g):	24.52	21.14	
Weight of Tare (g):	19.27	15.60	
Weight of Water (g):	1.1	1.2	
Weight of Dry Sample (g):	5.3	5.5	
Moisture Content (%):	**21.1**	**20.9**	**0.2**
Note: The acceptable range of the two Moisture Contents is ±			1.12

Test Results	
Liquid Limit (%):	**44**
Plastic Limit (%):	**21**
Plasticity Index (%):	**23**
USCS Symbol:	**CL**

Flow Curve



Plasticity Chart



Tested By FS *Date* 10/28/24 *Checked By* GRK *Date* 10/29/24

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Moisture, Ash, and Organic Matter (Loss on Ignition)

ASTM D 2974-20e1

Client:	GAI Consultants, Inc.
Client Reference:	Cheswick Closure R220960.00
Project No.:	2024-747-001

Method B (To 0.1%)

Moisture Content

ASTM D2216

Lab ID:	005
Boring No.:	Final Closure Plan
Depth (ft):	Composite
Sample No.:	C-TP#5-2024
Tare Number	EE
Weight of Tare & Wet Sample (g)	337.72
Weight of Tare & Dry Sample (g)	309.34
Weight of Tare (g)	126.90
Weight of Water (g)	28.38
Weight of Dry Sample (g)	182.44
Moisture Content	**15.6%**

Method A

Ash Content, Organic Matter

Furnace Temperature (°C)	440
Weight of Tare & Ash (g)	304.47
Weight of Volatiles (g)	4.87
Weight of Ash (g)	177.57
Ash Content (%)	**97.3%**
Organic Matter (%)	**2.7%**

Tested By JW *Date* 10/21/24 *Checked By* GRK *Date* 10/21/24

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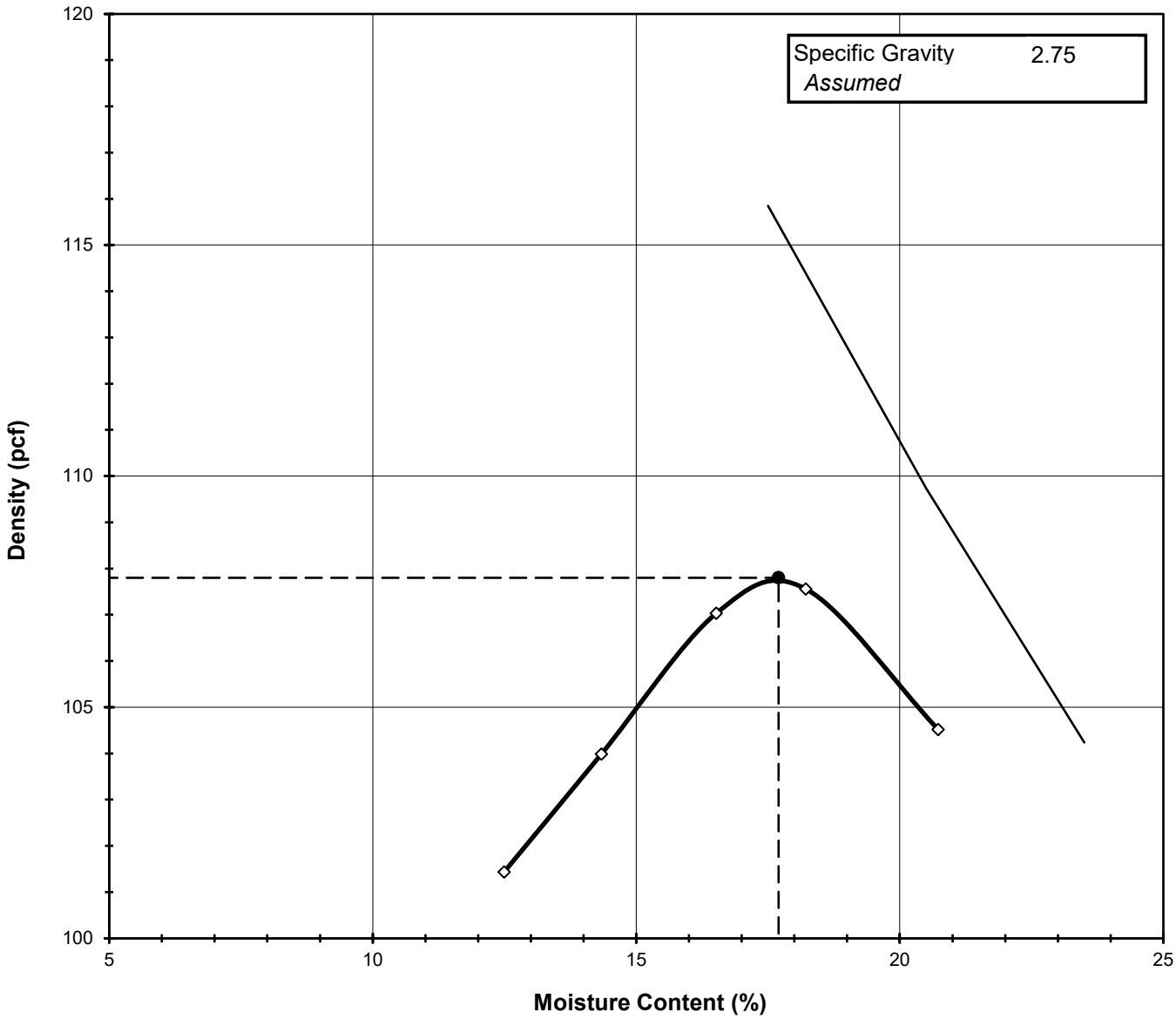
MOISTURE - DENSITY RELATIONSHIP

ASTM D698-12

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure Plan
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	Composite
Project No.:	2024-747-001	Sample No.:	C-TP#5-2024
Lab ID:	2024-747-001-005	Test Method	**STANDARD**

Visual Description: Brown Clay

Optimum Moisture Content (%): 17.7
Maximum Dry Density (pcf): 107.8



Tested By AB *Date* 10/22/2024 *Checked By* JLK *Date* 10/23/24

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MOISTURE - DENSITY RELATIONSHIP

ASTM D698-12

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure Plan
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	Composite
Project No.:	2024-747-001	Sample No.:	C-TP#5-2024
Lab ID:	2024-747-001-005		

Visual Description: Brown Clay

Total Weight of the Sample (g):	NA
As Received Water Content (%):	NA
Assumed Specific Gravity:	2.75
Percent Retained on 3/4":	NA
Percent Retained on 3/8":	NA
Percent Retained on #4:	NA
Oversize Material:	Not included
Procedure Used:	C

Test Type:	**STANDARD**
Rammer Weight (lb):	5.5
Rammer Drop (in):	12
Rammer Type:	MECHANICAL
Machine ID:	G3349
Mold ID:	G3347
Mold diameter:	6"
Weight of the Mold (g):	5722
Volume of the Mold (cm^3):	2123

Mold / Specimen

Point No.	**1**	**2**	**3**	**4**	**5**
Weight of Mold & Wet Sample (g):	9604	9767	9965	10048	10015
Weight of Mold (g):	5722	5722	5722	5722	5722
Weight of Wet Sample (g):	3882	4045	4243	4326	4293
Mold Volume (cm^3):	2123	2123	2123	2123	2123

Moisture Content / Density

Tare Number:	417	427	456	460	485
Weight of Tare & Wet Sample (g):	497.99	489.63	491.74	498.75	498.52
Weight of Tare & Dry Sample (g):	453.52	439.46	434.98	436.94	429.78
Weight of Tare (g):	97.50	89.52	91.37	97.62	98.13
Weight of Water (g):	44.47	50.17	56.76	61.81	68.74
Weight of Dry Sample (g):	356.02	349.94	343.61	339.32	331.65

Wet Density (g/cm^3):	1.83	1.91	2.00	2.04	2.02
Wet Density (pcf):	114.1	118.9	124.7	127.2	126.2
Moisture Content (%):	**12.5**	**14.3**	**16.5**	**18.2**	**20.7**
Dry Density (pcf):	**101.4**	**104.0**	**107.0**	**107.6**	**104.5**

Zero Air Voids

Moisture Content (%):	17.5	20.5	23.5
Dry Unit Weight (pcf):	115.8	109.7	104.2

Tested By AB *Date* 10/22/24 *Checked By* JLK *Date* 10/23/24

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PERMEABILITY TEST

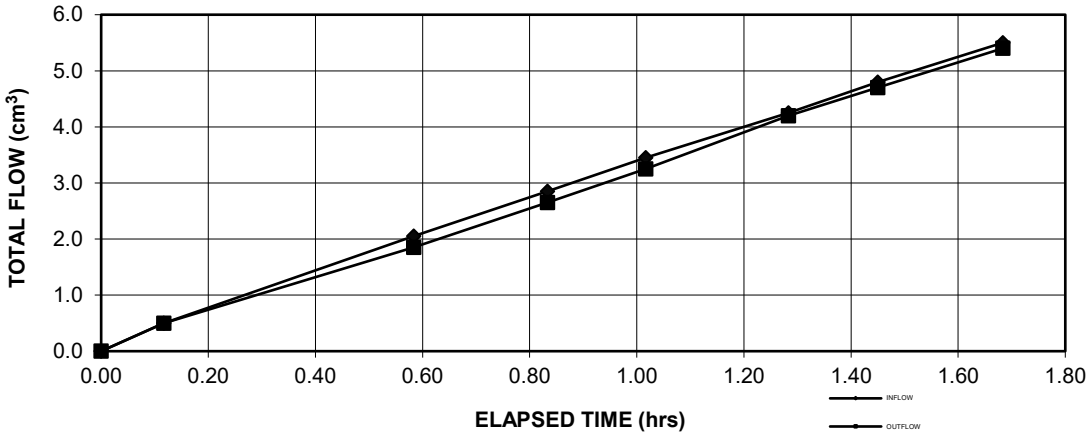
ASTM D 5084-16a Method C

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure Plan
Client Project:	Cheswick Closure R22096.00	Depth (ft):	Composite
Project No.:	2024-747-001	Sample No.:	C-TP#5-2024
Lab ID No.:	2024-747-001-005	Avg. Effective Consol. Pressure (psi):	6.25

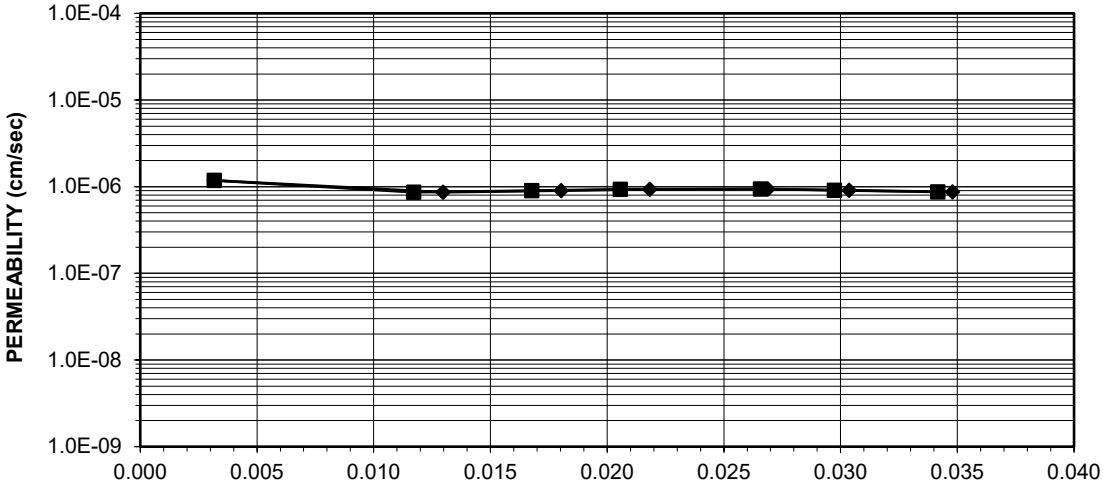
AVERAGE PERMEABILITY = 9.1E-07 cm/sec @ 20°C

AVERAGE PERMEABILITY = 9.1E-09 m/sec @ 20°C

TOTAL FLOW vs. ELAPSED TIME



PORE VOLUMES EXCHANGED vs. PERMEABILITY



Tested By: WT Date: 11/6/24 Checked By: JLK Date: 11/11/24

DCN: CT-22 DATE: 1/1/17 REVISION: 11

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PERMEABILITY TEST

ASTM D 5084-16a Method C

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure Plan
Client Project:	Cheswick Closure R22096.00	Depth (ft):	Composite
Project No.:	2024-747-001	Sample No.:	C-TP#5-2024
Lab ID No.:	2024-747-001-005	Avg. Effective Consol. Pressure (psi):	6.25

Specific Gravity:	2.70	Assumed
Sample Condition:		Remolded

Visual Description: Brown Clay

Permeant Type: Deaired Water

MOISTURE CONTENT:	BEFORE TEST	AFTER TEST
Tare Number	3320	1706
Weight of Tare & Wet Sample (g)	144.25	835.83
Weight of Tare & Dry Sample (g)	123.08	691.48
Weight of Tare (g)	8.14	82.43
Weight of Water (g)	21.17	144.35
Weight of Dry Sample (g)	114.94	609.05
Moisture Content (%)	**18.4**	**23.7**

SPECIMEN:	BEFORE TEST	AFTER TEST
Weight of Tube & Wet Sample (g)	1635.99	NA
Weight of Tube (g)	917.30	NA
Weight of Wet Sample (g)	718.69	750.75
Length 1 (in)	3.490	3.530
Length 2 (in)	3.490	3.515
Length 3 (in)	3.490	3.535
Top Diameter (in)	2.870	2.901
Middle Diameter (in)	2.870	2.906
Bottom Diameter (in)	2.870	2.906
Average Length (in)	3.49	3.53
Average Area (in^2)	6.47	6.62
Sample Volume (cm^3)	369.98	382.87
Unit Wet Weight (g/cm^3)	1.94	1.96
Unit Wet Weight (pcf)	121.3	122.4
Unit Dry Weight (pcf)	102.4	98.9
Unit Dry Weight (g/cm^3)	1.64	1.59
Void Ratio, e	0.65	0.70
Porosity, n	0.39	0.41
Pore Volume (cm^3)	145.2	158.1
Total Weight of Sample After Test (g)		753.67

Tested By: WT Date: 11/6/24 Checked By: JLK Date: 11/11/24

DCN: CT-22 DATE: 1/1/17 REVISION: 11

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PERMEABILITY TEST

ASTM D 5084-16a Method C

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Client:	GAI Consultants, Inc.	Boring No.:	Final Closure Plan
Client Project:	Cheswick Closure R22096.00	Depth (ft):	Composite
Project No.:	2024-747-001	Sample No.:	C-TP#5-2024
Lab ID No.:	2024-747-001-005	Avg. Effective Consol. Pressure (psi):	6.25

Pressure Heads (Constant)	
Top Cap (psi)	87.5
Bottom Cap (psi)	90.0
Cell (psi)	95.0
Total Pressure Head (cm)	175.8
Hydraulic Gradient	19.62

Final Sample Dimensions	
Sample Length (cm), L	8.96
Sample Diameter (cm)	7.38
Sample Area (cm^2), A	42.74
Inflow Burette Area (cm^2), a-in	0.893
Outflow Burette Area (cm^2), a-out	0.853

AVERAGE PERMEABILITY = 9.1E-07 cm/sec @ 20°C

AVERAGE PERMEABILITY = 9.1E-09 m/sec @ 20°C

DATE	TIME		ELAPSED TIME t	TOTAL INFLOW	TOTAL OUTFLOW	TOTAL HEAD h	FLOW (0 flow)	TEMP.	INCREMENTAL PERMEABILITY @ 20°C
(mm/dd/yy)	(hr)	(min)	(hr)	(cm^3)	(cm^3)	(cm)	(1 stop)	(°C)	(cm/sec)
11/7/2024	13	11	0.000	0.0	0.0	203.0	0	21.7	NA
11/7/2024	13	18	0.117	0.5	0.5	201.8	0	21.7	1.2E-06
11/7/2024	13	46	0.583	2.1	1.9	198.5	0	21.8	8.6E-07
11/7/2024	14	1	0.833	2.9	2.7	196.7	0	21.8	9.0E-07
11/7/2024	14	12	1.017	3.5	3.3	195.3	0	21.8	9.3E-07
11/7/2024	14	28	1.283	4.3	4.2	193.3	0	21.8	9.4E-07
11/7/2024	14	38	1.450	4.8	4.7	192.1	0	21.8	9.1E-07
11/7/2024	14	52	1.683	5.5	5.4	190.5	1	21.9	8.7E-07

Tested By: WT Date: 11/6/24 Checked By: JLK Date: 11/11/24

DCN: CT-22 DATE: 1/1/17 REVISION: 11

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Agricultural Analytical Services Laboratory
The Pennsylvania State University
111 Ag Analytical Svcs Lab
University Park, PA 16802
(814) 863-0841 aaslab@psu.edu www.aasl.psu.edu

SOIL TEST REPORT FOR:	ADDITIONAL COPY TO:
K CUMMINGS GEOTECHNICS 544 BRADDOCK AVE EAST PITTSBURGH PA 15112	TYLER VOLPE GEOTECHNICS 544 BRADDOCK AVE EAST PITTSBURGH PA 15112

DATE	LAB #	SERIAL #	COUNTY	ACRES	ASCS ID	FIELD ID	SOIL
10/31/2024	S24-54852		Allegheny			2024-747-001-001	

SOIL NUTRIENT LEVELS			Below Optimum	Optimum	Above Optimum
[1]Soil pH	5.1				
[2]Phosphorus (P)	43	ppm			
[2]Potassium (K)	116	ppm			
[2]Magnesium (Mg)	75	ppm			

RECOMMENDATIONS: *(See back messages for important information)*

Limestone*: 10000 lb/A for a target pH of 6.5. **Magnesium (Mg):** NONE

Calcium Carbonate equivalent

Plant Nutrients: ***(If manure will be applied, adjust these recommendations accordingly. See back of report.)***

Year	Crop	Expected Yield	Nitrogen (lb N/A)	Phosphate (lb P_2O_5/A)	Potash (lb K_2O/A)	
1	Other	0	0	0	0	*See ST2 for other crop recommendations*

No crop was specified. Therefore no recommendation is given.

2	Other	0	0	0	0	*See ST2 for other crop recommendations*

No crop was specified. Therefore no recommendation is given.

3	Other	0	0	0	0	*See ST2 for other crop recommendations*

No crop was specified. Therefore no recommendation is given.

ADDITIONAL RESULTS:						Optional Tests:			[2]Trace Elements		
[2]Calcium (ppm)	[3]Acidity (meq/100 g)	[4]CEC (meq/100 g)	% Saturation of the CEC K	Mg	Ca	Organic Matter %	Nitrate-N ppm	Salts mmhos/cm	*See back for comments* Zinc ppm	Copper ppm	Sulfur ppm
1314	11.7	19.2	1.5	3.3	34.2				2.0	1.6	29.3

Test Methods: [1]1:1 soil:water pH, [2]Mehlich 3 (ICP), [3]Mehlich Buffer pH, [4]Summation of Cations

Agronomy

Recommendation Messages

Enclosures

ST-2 Fertilizer Recommendation Table Guidelines for making recommendations for other crops and for adjusting for a different expected yield.

ST-4 Interpreting Soil Tests for Agronomic Crops Explains the soil test report and provides additional information on the recommendations.

Soil Nutrient Levels Soil nutrient levels are given as parts per million (ppm) elemental P, K , and Mg. As a rule of thumb to convert ppm to lb/A multiply ppm x 2. The elemental results in lb/A can be converted to oxide forms using the following conversions: P x 2.3=P_2O_5, K x 1.2=K_2O, Mg x 1.6=MgO

Below Optimum-Nutrient is deficient. There should be an economic response to adding the recommended nutrient.	**Optimum-**Nutrient is adequate. There will be no yield response to adding more of a nutrient but a recommendation is made to replace what the crop removes and thus maintain the soil test in the optimum range.	**Above Optimum-**The nutrient is more than adequate. Not only will there not be a yield response but the soil nutrient levels are also adequate to accommodate crop removal.

Recommendations N,P, and K recommendations are made for three crop years on this field. New samples should be taken after 3 years. The recommendations for the 2nd and 3rd year assume that the earlier recommendations were followed. These recommendations are based on the results of the soil test and the information provided with the sample. If you think that there is an error on the report, contact the lab at the address on the front of the report. Tables that can be used to adjust or change recommendations for all crops based on the soil test can be found on the web at: www.aasl.psu.edu.

Limestone Recommendations The recommended limestone application should be adequate for 3 years. Limestone recommendations are based on 100% calcium carbonate equivalent limestone and assume "Fine-sized" limestone with 95% passing 20 mesh, 60% passing 60 mesh and 50% passing 100 mesh. Use "ST-2 Liming Materials Conversion Table (enclosed) to adjust for limestone quality. Also see Agronomy Facts #3 "Soil Acidity and Aglime".

Magnesium Only one Mg Recommendation is made for three years. Magnesium is most economically applied by using a limestone containing Mg. Low Mg levels in soils may result in low Mg levels in forage crops especially if a significant amount of N and/or K fertilizer is applied. This can result in potentially fatal grass tetany in animals. Use caution if grazing. Apply the recommended Mg and be sure your feed rations are properly balanced.

Starter Fertilizer Starter fertilizer is important to get a corn crop off to a good start when planting in cold, wet conditions. However, on optimum or higher testing soils, as planting dates get later and soils warm up, the benefit from starter fertilizer goes down. An N only starter is often adequate when soil test levels are above optimum. The correct material, rate, and placement for starter fertilizer are critical to be effective. See Agronomy Facts #51 "Starter Fertilizer".

Nitrogen Nitrogen recommendations on this report are not based on a soil test. They are based on crop requirements for the expected yield of the crop to be grown. The pre-sidedress nitrate soil tests (PSNT) and the Chlorophyll meter test are both available for improving nitrogen recommendations on corn especially when manure is being applied. See: Agronomy Facts 17 "Pre-sidedress Soil Nitrate Test for Corn" and Agronomy Facts 53 "The Early-season Chlorophyll Meter Test for Corn". For optimum efficiency, N should be applied as close to the time of crop need as practical. For corn apply 50-90% of the N when the corn is 10-20" tall. For winter grains apply the N in the spring prior to growth stage 5. For forage grasses split the recommended N for each cutting.

Manure Manure is a very important part of a fertility program. Manure applications may supply all or most of the nutrients recommended and in some cases may apply significantly more than the crop requires. Manure nutrients should be taken into account in developing your fertility program. For details on how to do this see the Penn State Agronomy Guide. Manure analysis kits are available through your county Extension office.

Very High Soil Test Levels Very high soil test levels should be avoided as much as possible. High soil nutrient levels might not only represent an economic loss but they may also indicate potential crop, animal or environmental problems.

Very high pH can results in micronutrient deficiencies and may affect the activity of some pesticides resulting in injury or poor pest control.

Very high phosphorus levels in the soil may lead to crop production problems especially with no manure and may result in potentially harmful P loss to the environment. Best management practices may be necessary to reduce the potential for environmental problems with P.

Zinc, Copper and Sulfur Results Normal ranges for zinc (Zn) copper (Cu), and sulfur (S) in Pennsylvania soils are listed below. These are not used to make recommendations but rather to identify potential deficiencies of Zn and S or toxicity of Cu. While Zn and S deficiencies are not common in PA, they may occur on soils testing below the normal range. Zn deficiencies are more likely to occur when soil levels are low and soil pH 7.0 or higher, especially on lighter soils. Recent research in Pennsylvania on sulfur fertility suggests that when the Mehlich 3 S level is below 15 ppm, there is an approximately 50% chance that yield will increase by adding S fertilizer. When Mehlich 3 S levels are above 15 ppm, S is usually adequate and there is a very low chance of a yield increase from adding S fertilizer. Both Zn or S deficiencies should be confirmed with plant analysis. Cu toxicity may occur at levels testing well above the normal range, but have not been observed in Pennsylvania in agronomic crops even on soils testing 2 to 3 times above the normal range. For additional information, see ST4.

Normal ranges of Zn, Cu and S in Pennsylvania Soils (Mehlich 3)		
Zn (ppm)	Cu (ppm)	S (ppm)
1.1 - 9.4	1.2 - 5.5	15 - 25

Distribution of Soil Test Results Summaries of soil test results may be used in educational programs. However, individual results will not be released outside of Penn State without permission of the client. Electronic copies of your results are available to you, contact the lab for more information.

For additional information on these topics please see the current **Penn State Agronomy Guide** or the **AASL website**: www.aasl.psu.edu. This soil test is part of an ongoing research and extension program of Penn State. If you have any questions or comments about this program or would like copies of publications referenced here, please contact your Penn State County Extension Educator.

PennState Extension

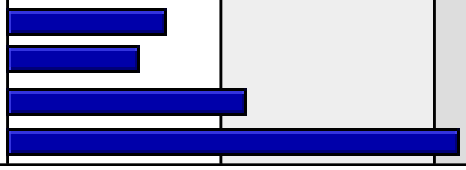
Agricultural Analytical Services Laboratory
The Pennsylvania State University
111 Ag Analytical Svcs Lab
University Park, PA 16802

(814) 863-0841 aaslab@psu.edu www.aasl.psu.edu

SOIL TEST REPORT FOR:	ADDITIONAL COPY TO:
K CUMMINGS GEOTECHNICS 544 BRADDOCK AVE EAST PITTSBURGH PA 15112	TYLER VOLPE GEOTECHNICS 544 BRADDOCK AVE EAST PITTSBURGH PA 15112

DATE	LAB #	SERIAL #	COUNTY	ACRES	ASCS ID	FIELD ID	SOIL
10/31/2024	S24-54853		Allegheny			2024-747-001-002	

SOIL NUTRIENT LEVELS			Below Optimum	Optimum	Above Optimum
[1]Soil pH	5.5				
[2]Phosphorus (P)	16	ppm			
[2]Potassium (K)	106	ppm			
[2]Magnesium (Mg)	134	ppm			



RECOMMENDATIONS: *(See back messages for important information)*

Limestone*: 5000 lb/A for a target pH of 6.5. **Magnesium (Mg):** NONE

Calcium Carbonate equivalent

Plant Nutrients: ***(If manure will be applied, adjust these recommendations accordingly. See back of report.)***

Year	Crop	Expected Yield	Nitrogen (lb N/A)	Phosphate (lb P_2O_5/A)	Potash (lb K_2O/A)	
1	Other	0	0	0	0	*See ST2 for other crop recommendations*

No crop was specified. Therefore no recommendation is given.

2	Other	0	0	0	0	*See ST2 for other crop recommendations*

No crop was specified. Therefore no recommendation is given.

3	Other	0	0	0	0	*See ST2 for other crop recommendations*

No crop was specified. Therefore no recommendation is given.

ADDITIONAL RESULTS:

[2]Calcium (ppm)	[3]Acidity (meq/100 g)	[4]CEC (meq/100 g)	% Saturation of the CEC K	Mg	Ca
1051	6.3	12.9	2.1	8.6	40.6

Optional Tests:

Organic Matter %	Nitrate-N ppm	Salts mmhos/cm

[2]Trace Elements *See back for comments*

Zinc ppm	Copper ppm	Sulfur ppm
1.9	1.2	19.0

Test Methods: [1]1:1 soil:water pH, [2]Mehlich 3 (ICP), [3]Mehlich Buffer pH, [4]Summation of Cations

Agronomy

Recommendation Messages

Enclosures

ST-2 Fertilizer Recommendation Table Guidelines for making recommendations for other crops and for adjusting for a different expected yield.

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Below Optimum-Nutrient is deficient. There should be an economic response to adding the recommended nutrient.	**Optimum-**Nutrient is adequate. There will be no yield response to adding more of a nutrient but a recommendation is made to replace what the crop removes and thus maintain the soil test in the optimum range.	**Above Optimum-**The nutrient is more than adequate. Not only will there not be a yield response but the soil nutrient levels are also adequate to accommodate crop removal.

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Magnesium Only one Mg Recommendation is made for three years. Magnesium is most economically applied by using a limestone containing Mg. Low Mg levels in soils may result in low Mg levels in forage crops especially if a significant amount of N and/or K fertilizer is applied. This can result in potentially fatal grass tetany in animals. Use caution if grazing. Apply the recommended Mg and be sure your feed rations are properly balanced.

Starter Fertilizer Starter fertilizer is important to get a corn crop off to a good start when planting in cold, wet conditions. However, on optimum or higher testing soils, as planting dates get later and soils warm up, the benefit from starter fertilizer goes down. An N only starter is often adequate when soil test levels are above optimum. The correct material, rate, and placement for starter fertilizer are critical to be effective. See Agronomy Facts #51 "Starter Fertilizer".

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Manure Manure is a very important part of a fertility program. Manure applications may supply all or most of the nutrients recommended and in some cases may apply significantly more than the crop requires. Manure nutrients should be taken into account in developing your fertility program. For details on how to do this see the Penn State Agronomy Guide. Manure analysis kits are available through your county Extension office.

Very High Soil Test Levels Very high soil test levels should be avoided as much as possible. High soil nutrient levels might not only represent an economic loss but they may also indicate potential crop, animal or environmental problems.

Very high pH can results in micronutrient deficiencies and may affect the activity of some pesticides resulting in injury or poor pest control.

Very high phosphorus levels in the soil may lead to crop production problems especially with no manure and may result in potentially harmful P loss to the environment. Best management practices may be necessary to reduce the potential for environmental problems with P.

Zinc, Copper and Sulfur Results Normal ranges for zinc (Zn) copper (Cu), and sulfur (S) in Pennsylvania soils are listed below. These are not used to make recommendations but rather to identify potential deficiencies of Zn and S or toxicity of Cu. While Zn and S deficiencies are not common in PA, they may occur on soils testing below the normal range. Zn deficiencies are more likely to occur when soil levels are low and soil pH 7.0 or higher, especially on lighter soils. Recent research in Pennsylvania on sulfur fertility suggests that when the Mehlich 3 S level is below 15 ppm, there is an approximately 50% chance that yield will increase by adding S fertilizer. When Mehlich 3 S levels are above 15 ppm, S is usually adequate and there is a very low chance of a yield increase from adding S fertilizer. Both Zn or S deficiencies should be confirmed with plant analysis. Cu toxicity may occur at levels testing well above the normal range, but have not been observed in Pennsylvania in agronomic crops even on soils testing 2 to 3 times above the normal range. For additional information, see ST4.

Normal ranges of Zn, Cu and S in Pennsylvania Soils (Mehlich 3)		
Zn (ppm)	Cu (ppm)	S (ppm)
1.1 - 9.4	1.2 - 5.5	15 - 25

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DATE	LAB #	SERIAL #	COUNTY	ACRES	ASCS ID	FIELD ID	SOIL
10/31/2024	S24-54854		Allegheny			2024-747-001-003	

SOIL NUTRIENT LEVELS			Below Optimum	Optimum	Above Optimum
[1]Soil pH	5.3				
[2]Phosphorus (P)	7	ppm			
[2]Potassium (K)	97	ppm			
[2]Magnesium (Mg)	153	ppm			



RECOMMENDATIONS: *(See back messages for important information)*

Limestone*: 4000 lb/A for a target pH of 6.5. **Magnesium (Mg):** NONE

Calcium Carbonate equivalent

Plant Nutrients: ***(If manure will be applied, adjust these recommendations accordingly. See back of report.)***

Year	Crop	Expected Yield	Nitrogen (lb N/A)	Phosphate (lb P_2O_5/A)	Potash (lb K_2O/A)	
1	Other	0	0	0	0	*See ST2 for other crop recommendations*

No crop was specified. Therefore no recommendation is given.

2	Other	0	0	0	0	*See ST2 for other crop recommendations*

No crop was specified. Therefore no recommendation is given.

3	Other	0	0	0	0	*See ST2 for other crop recommendations*

No crop was specified. Therefore no recommendation is given.

ADDITIONAL RESULTS:

[2]Calcium (ppm)	[3]Acidity (meq/100 g)	[4]CEC (meq/100 g)	% Saturation of the CEC K	Mg	Ca
951	5.7	12.0	2.1	10.6	39.7

Optional Tests:

Organic Matter %	Nitrate-N ppm	Salts mmhos/cm

[2]Trace Elements *See back for comments*

Zinc ppm	Copper ppm	Sulfur ppm
1.5	0.8	15.6

Test Methods: [1]1:1 soil:water pH, [2]Mehlich 3 (ICP), [3]Mehlich Buffer pH, [4]Summation of Cations

Agronomy

Recommendation Messages

Enclosures

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Magnesium Only one Mg Recommendation is made for three years. Magnesium is most economically applied by using a limestone containing Mg. Low Mg levels in soils may result in low Mg levels in forage crops especially if a significant amount of N and/or K fertilizer is applied. This can result in potentially fatal grass tetany in animals. Use caution if grazing. Apply the recommended Mg and be sure your feed rations are properly balanced.

Starter Fertilizer Starter fertilizer is important to get a corn crop off to a good start when planting in cold, wet conditions. However, on optimum or higher testing soils, as planting dates get later and soils warm up, the benefit from starter fertilizer goes down. An N only starter is often adequate when soil test levels are above optimum. The correct material, rate, and placement for starter fertilizer are critical to be effective. See Agronomy Facts #51 "Starter Fertilizer".

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Manure Manure is a very important part of a fertility program. Manure applications may supply all or most of the nutrients recommended and in some cases may apply significantly more than the crop requires. Manure nutrients should be taken into account in developing your fertility program. For details on how to do this see the Penn State Agronomy Guide. Manure analysis kits are available through your county Extension office.

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Very high pH can results in micronutrient deficiencies and may affect the activity of some pesticides resulting in injury or poor pest control.

Very high phosphorus levels in the soil may lead to crop production problems especially with no manure and may result in potentially harmful P loss to the environment. Best management practices may be necessary to reduce the potential for environmental problems with P.

Zinc, Copper and Sulfur Results Normal ranges for zinc (Zn) copper (Cu), and sulfur (S) in Pennsylvania soils are listed below. These are not used to make recommendations but rather to identify potential deficiencies of Zn and S or toxicity of Cu. While Zn and S deficiencies are not common in PA, they may occur on soils testing below the normal range. Zn deficiencies are more likely to occur when soil levels are low and soil pH 7.0 or higher, especially on lighter soils. Recent research in Pennsylvania on sulfur fertility suggests that when the Mehlich 3 S level is below 15 ppm, there is an approximately 50% chance that yield will increase by adding S fertilizer. When Mehlich 3 S levels are above 15 ppm, S is usually adequate and there is a very low chance of a yield increase from adding S fertilizer. Both Zn or S deficiencies should be confirmed with plant analysis. Cu toxicity may occur at levels testing well above the normal range, but have not been observed in Pennsylvania in agronomic crops even on soils testing 2 to 3 times above the normal range. For additional information, see ST4.

Normal ranges of Zn, Cu and S in Pennsylvania Soils (Mehlich 3)		
Zn (ppm)	Cu (ppm)	S (ppm)
1.1 - 9.4	1.2 - 5.5	15 - 25

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DATE	LAB #	SERIAL #	COUNTY	ACRES	ASCS ID	FIELD ID	SOIL
10/31/2024	S24-54855		Allegheny			2024-747-001-004	

SOIL NUTRIENT LEVELS			Below Optimum	Optimum	Above Optimum
[1]Soil pH	7.4				
[2]Phosphorus (P)	4	ppm			
[2]Potassium (K)	82	ppm			
[2]Magnesium (Mg)	319	ppm			

RECOMMENDATIONS: *(See back messages for important information)*

Limestone*: NONE

Magnesium (Mg): NONE

Calcium Carbonate equivalent

Plant Nutrients:

(If manure will be applied, adjust these recommendations accordingly. See back of report.)

Year	Crop	Expected Yield	Nitrogen (lb N/A)	Phosphate (lb P_2O_5/A)	Potash (lb K_2O/A)	
1	Other	0	0	0	0	*See ST2 for other crop recommendations*

No crop was specified. Therefore no recommendation is given.

2	Other	0	0	0	0	*See ST2 for other crop recommendations*

No crop was specified. Therefore no recommendation is given.

3	Other	0	0	0	0	*See ST2 for other crop recommendations*

No crop was specified. Therefore no recommendation is given.

ADDITIONAL RESULTS:						Optional Tests:			[2]Trace Elements		
[2]Calcium (ppm)	[3]Acidity (meq/100 g)	[4]CEC (meq/100 g)	% Saturation of the CEC K	Mg	Ca	Organic Matter %	Nitrate-N ppm	Salts mmhos/cm	*See back for comments* Zinc ppm	Copper ppm	Sulfur ppm
6758	0.0	17.9	1.2	14.9	83.9				0.9	1.3	12.4

Test Methods: [1]1:1 soil:water pH, [2]Mehlich 3 (ICP), [3]Mehlich Buffer pH, [4]Summation of Cations

The high calcium level in this sample indicates the probable presence of soluble calcium. Therefore the CEC and the percent saturations were calculated using a maximum exchangeable calcium level of 15 meq/100 g.

Recommendation Messages

Enclosures

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Zn (ppm)	Cu (ppm)	S (ppm)
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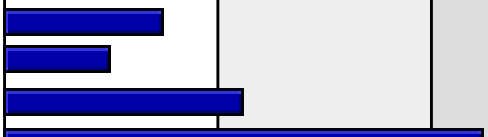
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DATE	LAB #	SERIAL #	COUNTY	ACRES	ASCS ID	FIELD ID	SOIL
10/31/2024	S24-54856		Allegheny			2024-747-001-005	

SOIL NUTRIENT LEVELS			Below Optimum	Optimum	Above Optimum
[1]Soil pH	5.3				
[2]Phosphorus (P)	12	ppm			
[2]Potassium (K)	101	ppm			
[2]Magnesium (Mg)	187	ppm			



RECOMMENDATIONS: *(See back messages for important information)*

Limestone*: 4000 lb/A for a target pH of 6.5. **Magnesium (Mg):** NONE

Calcium Carbonate equivalent

Plant Nutrients: ***(If manure will be applied, adjust these recommendations accordingly. See back of report.)***

Year	Crop	Expected Yield	Nitrogen (lb N/A)	Phosphate (lb P_2O_5/A)	Potash (lb K_2O/A)	
1	Other	0	0	0	0	*See ST2 for other crop recommendations*

No crop was specified. Therefore no recommendation is given.

2	Other	0	0	0	0	*See ST2 for other crop recommendations*

No crop was specified. Therefore no recommendation is given.

3	Other	0	0	0	0	*See ST2 for other crop recommendations*

No crop was specified. Therefore no recommendation is given.

ADDITIONAL RESULTS:

[2]Calcium (ppm)	[3]Acidity (meq/100 g)	[4]CEC (meq/100 g)	% Saturation of the CEC K	Mg	Ca
2702	5.7	21.0	1.2	7.4	64.2

Optional Tests:

Organic Matter %	Nitrate-N ppm	Salts mmhos/cm

[2]Trace Elements *See back for comments*

Zinc ppm	Copper ppm	Sulfur ppm
1.8	2.3	60.7

Test Methods: [1]1:1 soil:water pH, [2]Mehlich 3 (ICP), [3]Mehlich Buffer pH, [4]Summation of Cations

Agronomy

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Recommendations N,P, and K recommendations are made for three crop years on this field. New samples should be taken after 3 years. The recommendations for the 2nd and 3rd year assume that the earlier recommendations were followed. These recommendations are based on the results of the soil test and the information provided with the sample. If you think that there is an error on the report, contact the lab at the address on the front of the report. Tables that can be used to adjust or change recommendations for all crops based on the soil test can be found on the web at: www.aasl.psu.edu.

Limestone Recommendations The recommended limestone application should be adequate for 3 years. Limestone recommendations are based on 100% calcium carbonate equivalent limestone and assume "Fine-sized" limestone with 95% passing 20 mesh, 60% passing 60 mesh and 50% passing 100 mesh. Use "ST-2 Liming Materials Conversion Table (enclosed) to adjust for limestone quality. Also see Agronomy Facts #3 "Soil Acidity and Aglime".

Magnesium Only one Mg Recommendation is made for three years. Magnesium is most economically applied by using a limestone containing Mg. Low Mg levels in soils may result in low Mg levels in forage crops especially if a significant amount of N and/or K fertilizer is applied. This can result in potentially fatal grass tetany in animals. Use caution if grazing. Apply the recommended Mg and be sure your feed rations are properly balanced.

Starter Fertilizer Starter fertilizer is important to get a corn crop off to a good start when planting in cold, wet conditions. However, on optimum or higher testing soils, as planting dates get later and soils warm up, the benefit from starter fertilizer goes down. An N only starter is often adequate when soil test levels are above optimum. The correct material, rate, and placement for starter fertilizer are critical to be effective. See Agronomy Facts #51 "Starter Fertilizer".

Nitrogen Nitrogen recommendations on this report are not based on a soil test. They are based on crop requirements for the expected yield of the crop to be grown. The pre-sidedress nitrate soil tests (PSNT) and the Chlorophyll meter test are both available for improving nitrogen recommendations on corn especially when manure is being applied. See: Agronomy Facts 17 "Pre-sidedress Soil Nitrate Test for Corn" and Agronomy Facts 53 "The Early-season Chlorophyll Meter Test for Corn". For optimum efficiency, N should be applied as close to the time of crop need as practical. For corn apply 50-90% of the N when the corn is 10-20" tall. For winter grains apply the N in the spring prior to growth stage 5. For forage grasses split the recommended N for each cutting.

Manure Manure is a very important part of a fertility program. Manure applications may supply all or most of the nutrients recommended and in some cases may apply significantly more than the crop requires. Manure nutrients should be taken into account in developing your fertility program. For details on how to do this see the Penn State Agronomy Guide. Manure analysis kits are available through your county Extension office.

Very High Soil Test Levels Very high soil test levels should be avoided as much as possible. High soil nutrient levels might not only represent an economic loss but they may also indicate potential crop, animal or environmental problems.

Very high pH can results in micronutrient deficiencies and may affect the activity of some pesticides resulting in injury or poor pest control.

Very high phosphorus levels in the soil may lead to crop production problems especially with no manure and may result in potentially harmful P loss to the environment. Best management practices may be necessary to reduce the potential for environmental problems with P.

Zinc, Copper and Sulfur Results Normal ranges for zinc (Zn) copper (Cu), and sulfur (S) in Pennsylvania soils are listed below. These are not used to make recommendations but rather to identify potential deficiencies of Zn and S or toxicity of Cu. While Zn and S deficiencies are not common in PA, they may occur on soils testing below the normal range. Zn deficiencies are more likely to occur when soil levels are low and soil pH 7.0 or higher, especially on lighter soils. Recent research in Pennsylvania on sulfur fertility suggests that when the Mehlich 3 S level is below 15 ppm, there is an approximately 50% chance that yield will increase by adding S fertilizer. When Mehlich 3 S levels are above 15 ppm, S is usually adequate and there is a very low chance of a yield increase from adding S fertilizer. Both Zn or S deficiencies should be confirmed with plant analysis. Cu toxicity may occur at levels testing well above the normal range, but have not been observed in Pennsylvania in agronomic crops even on soils testing 2 to 3 times above the normal range. For additional information, see ST4.

Normal ranges of Zn, Cu and S in Pennsylvania Soils (Mehlich 3)		
Zn (ppm)	Cu (ppm)	S (ppm)
1.1 - 9.4	1.2 - 5.5	15 - 25

Distribution of Soil Test Results Summaries of soil test results may be used in educational programs. However, individual results will not be released outside of Penn State without permission of the client. Electronic copies of your results are available to you, contact the lab for more information.

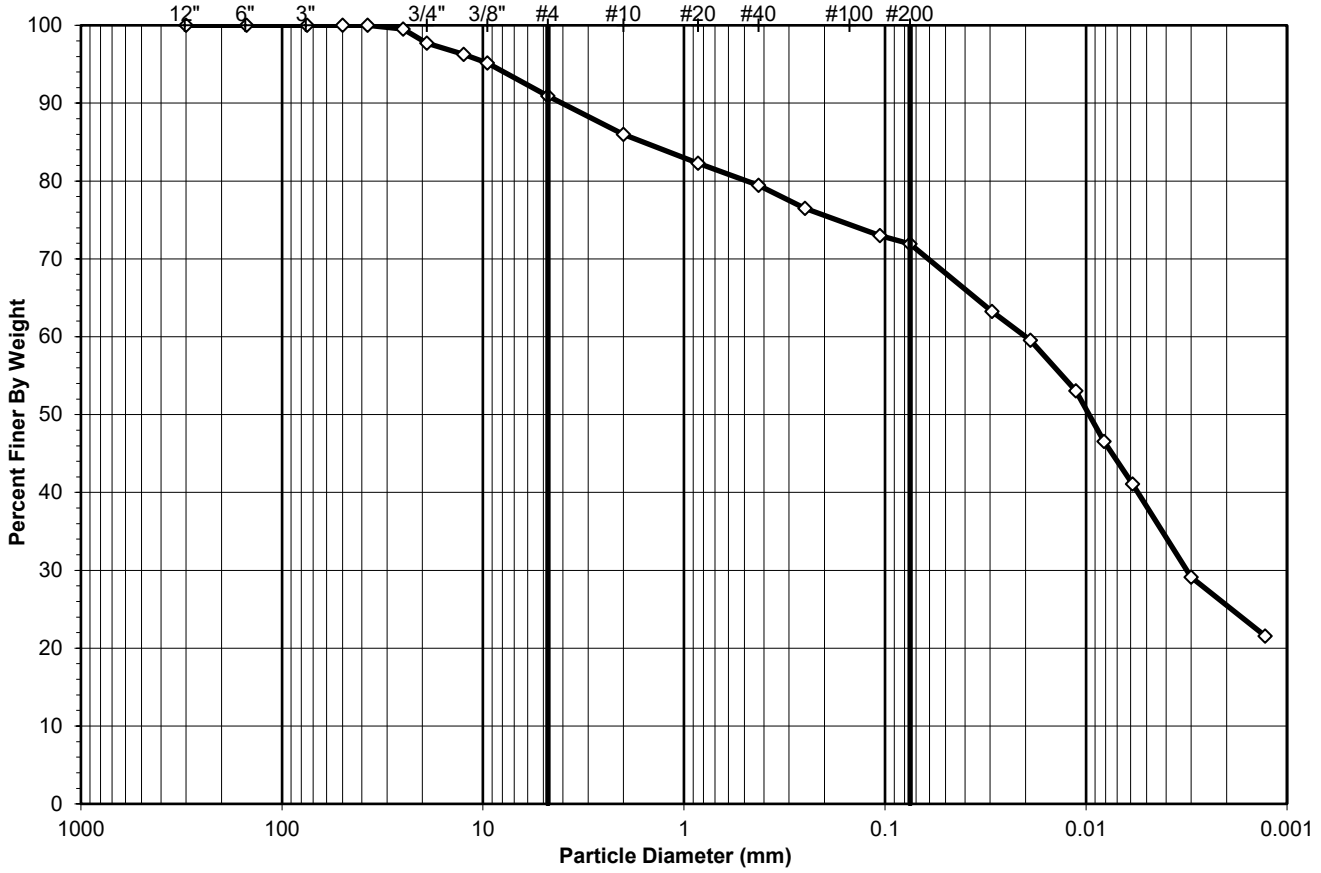
For additional information on these topics please see the current **Penn State Agronomy Guide** or the **AASL website**: www.aasl.psu.edu. This soil test is part of an ongoing research and extension program of Penn State. If you have any questions or comments about this program or would like copies of publications referenced here, please contact your Penn State County Extension Educator.

SIEVE AND HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	Stockpile
Project No.:	2025-173-002	Sample No.:	C-031925-1
Lab ID:	2025-173-002-001	Soil Color:	Brown

	SIEVE ANALYSIS			HYDROMETER	
USCS	cobbles	gravel	sand	silt and clay fraction	
USDA	cobbles	gravel	sand	silt	clay



USCS Summary

Sieve Size (mm)		Percentage (%)
Greater Than #4	*Gravel*	9.08
#4 to #200	*Sand*	18.98
Finer Than #200	*Silt & Clay*	71.93

USCS Symbol:
cl, ASSUMED

USCS Classification:
LEAN CLAY WITH SAND

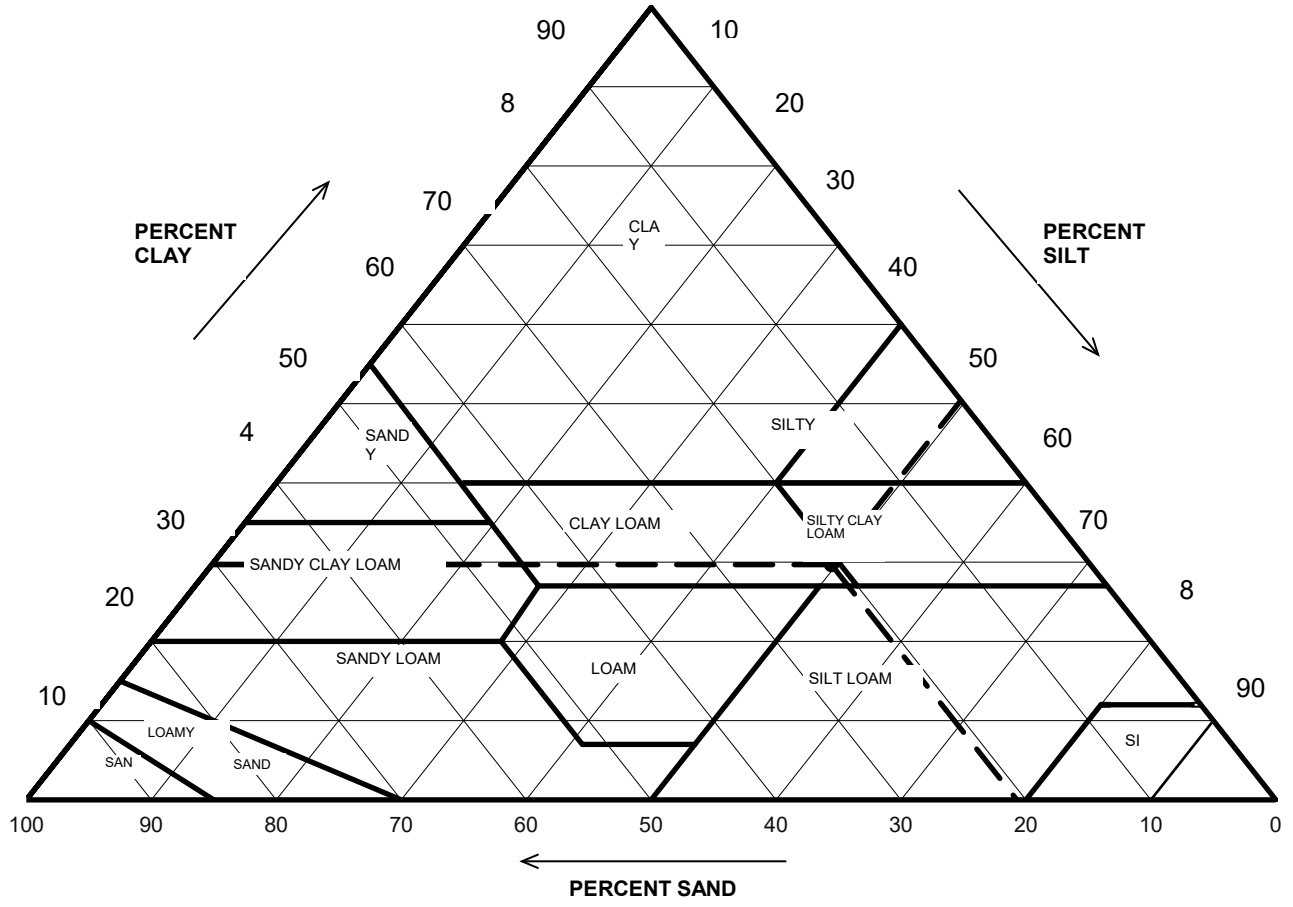
DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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USDA Classification Chart

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	Stockpile
Project No.:	2025-173-002	Sample No.:	C-031925-1
Lab ID:	2025-173-002-001	Soil Color:	Brown



Particle Size (mm)	Percent Finer	USDA Summary	Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classification
		Gravel	14.00	**0.00**
2	86.00	*Sand*	17.83	**20.73**
0.05	68.17	*Silt*	42.65	**49.59**
0.002	25.52	*Clay*	25.52	**29.68**

USDA Classification ***CLAY LOAM***

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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WASH SIEVE ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	Stockpile
Project No.:	2025-173-002	Sample No.:	C-031925-1
Lab ID:	2025-173-002-001	Soil Color:	Brown

Moisture Content of Passing 3/4" Material		Moisture Content of Retained 3/4" Material	
Tare No.:	1457	Tare No.:	3382
Wt. of Tare & Wet Sample (g):	914.71	Weight of Tare & Wet Sample (g):	177.38
Wt. of Tare & Dry Sample (g):	815.14	Weight of Tare & Dry Sample (g):	170.19
Weight of Tare (g):	176.74	Weight of Tare (g):	8.23
Weight of Water (g):	99.57	Weight of Water (g):	7.19
Weight of Dry Soil (g):	638.4	Weight of Dry Soil (g):	161.96
Moisture Content (%):	**15.6**	**Moisture Content (%):**	**4.4**

Wet Weight of -3/4" Sample (g):	8019.00	Weight of the Dry Sample (g):	638.40
Dry Weight of - 3/4" Sample (g):	6937.04	Weight of minus #200 Material (g):	469.93
Wet Weight of +3/4" Sample (g):	169.00	Weight of plus #200 Material (g):	168.47
Dry Weight of +3/4" Sample (g):	161.82		
Total Dry Weight of Sample (g):	7098.86	**J - Factor (Percent Finer than 3/4")**	**97.72%**

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)		Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00		0.00	0.00	100.00	**100.00**
6"	150	0.00		0.00	0.00	100.00	**100.00**
3"	75	0.00		0.00	0.00	100.00	**100.00**
2"	50	0.00	(*)	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00		0.00	0.00	100.00	**100.00**
1"	25	36.00		0.49	0.49	99.51	**99.51**
3/4"	19	133.00		1.79	2.28	97.72	**97.72**
1/2"	12.5	9.57		1.50	1.50	98.50	**96.26**
3/8"	9.5	7.15		1.12	2.62	97.38	**95.16**
#4	4.75	27.73		4.34	6.96	93.04	**90.92**
#10	2	32.14		5.03	12.00	88.00	**86.00**
#20	0.85	24.16	(**)	3.78	15.78	84.22	**82.30**
#40	0.425	18.60		2.91	18.70	81.30	**79.45**
#60	0.25	19.36		3.03	21.73	78.27	**76.49**
#140	0.106	22.76		3.57	25.29	74.71	**73.00**
#200	0.075	7.00		1.10	26.39	73.61	**71.93**
Pan	-	469.93		73.61	100.00	-	**-**

NOTES: *(*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample*
*(**) The - 3/4" sieve analysis is based on the Weight of the Dry Sample*

Tested By	DF	Date	3/27/25	Checked By	BRB	Date	4/18/25

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	Stockpile
Project No.:	2025-173-002	Sample No.:	C-031925-1
Lab ID:	2025-173-002-001	Soil Color:	Brown

Elapsed Time		R Measured	Temp.	Composite Correction	R Corrected	N	K Factor	Diameter	N'
(min)			(°C)			(%)		(mm)	(%)
0		NA	NA	NA	NA	NA	NA	NA	NA
2		39.5	21.1	5.4	34.1	87.9	0.01327	0.0294	**63.2**
5		37.5	21.1	5.4	32.1	82.8	0.01327	0.0189	**59.5**
15		34.0	21.1	5.4	28.6	73.8	0.01327	0.0112	**53.1**
30		30.5	21.1	5.4	25.1	64.7	0.01327	0.0081	**46.6**
60		27.5	21.2	5.3	22.2	57.1	0.01325	0.0059	**41.1**
250		21.0	21.4	5.3	15.7	40.5	0.01322	0.0030	**29.1**
1440		17.0	21.1	5.4	11.6	30.0	0.01327	0.0013	**21.6**

Soil Specimen Data		**Other Corrections**	
Tare No.	958		
Wt. of Tare & Dry Material (g):	137.33	a - Factor	0.993
Weight of Tare (g):	93.76		
Weight of Deflocculant (g):	5.0	Percent Finer than # 200	71.93
Weight of Dry Material (g):	38.57		
		Specific Gravity	2.70 Assumed

Note: *Hydrometer test is performed on - # 200 sieve material.*

Tested By TO Date 4/16/25 Checked By BRB Date 4/18/25

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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Moisture, Ash, and Organic Matter (Loss on Ignition)

ASTM D 2974-20e1

Client:	GAI Consultants, Inc.
Client Reference:	Cheswick Closure R220960.00
Project No.:	2025-173-002

Method B (To 0.1%)

Moisture Content

ASTM D2216

Lab ID:	001
Boring No.:	Final Closure
Depth (ft):	Stockpile
Sample No.:	C-031925-1
Tare Number	EE
Weight of Tare & Wet Sample (g)	346.00
Weight of Tare & Dry Sample (g)	316.21
Weight of Tare (g)	126.94
Weight of Water (g)	29.79
Weight of Dry Sample (g)	189.27
Moisture Content	**15.7%**

Method A

Ash Content, Organic Matter

Furnace Temperature (°C)	440
Weight of Tare & Ash (g)	311.60
Weight of Volatiles (g)	4.61
Weight of Ash (g)	184.66
Ash Content (%)	**97.6%**
Organic Matter (%)	**2.4%**

Tested By JW *Date* 3/26/25 *Checked By* EG *Date* 3/27/25

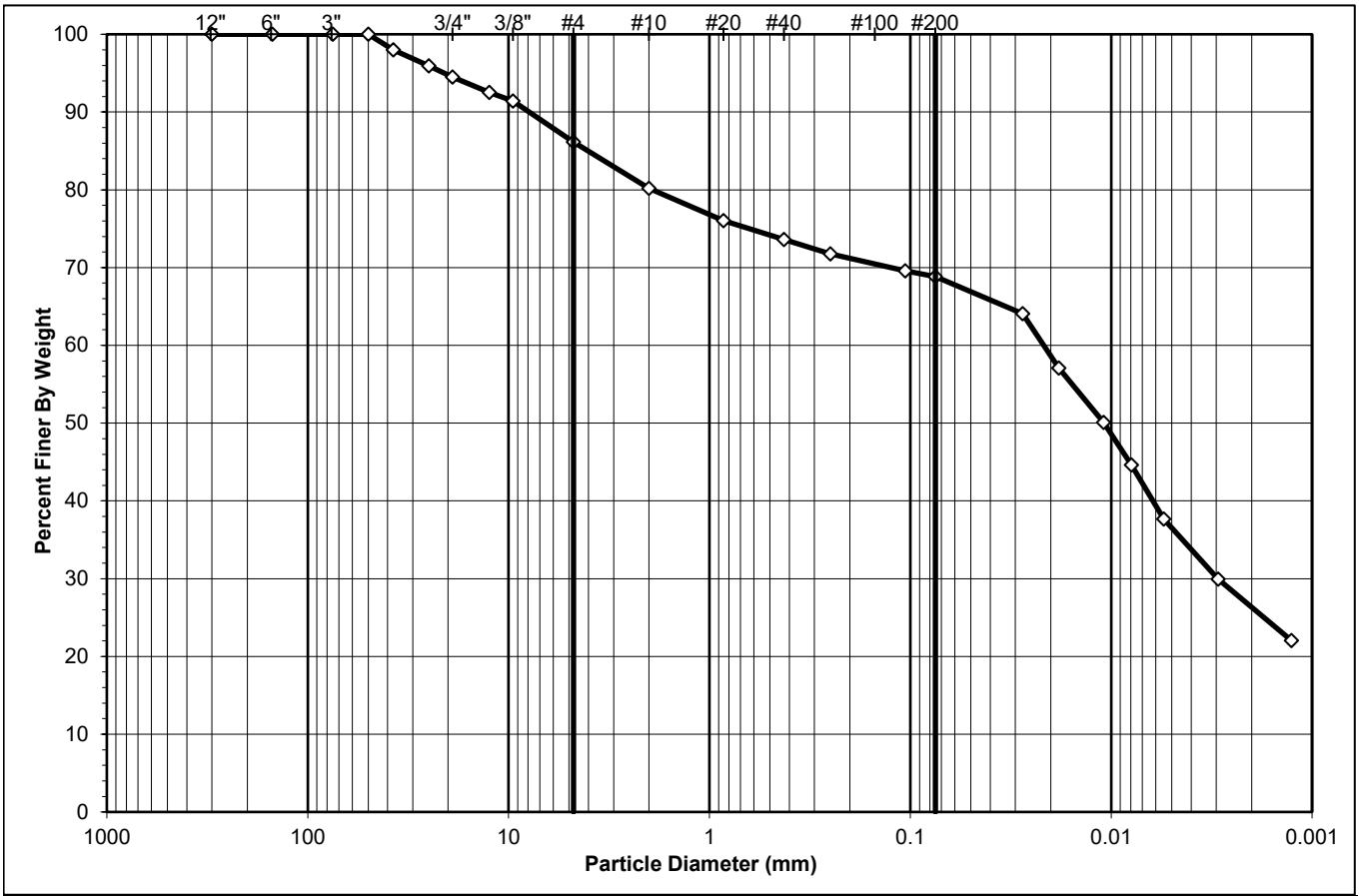
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SIEVE AND HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	Stockpile
Project No.:	2025-173-002	Sample No.:	C-031925-2
Lab ID:	2025-173-002-002	Soil Color:	Brown

	SIEVE ANALYSIS			HYDROMETER	
USCS	cobbles	gravel	sand	silt and clay fraction	
USDA	cobbles	gravel	sand	silt	clay



USCS Summary

Sieve Size (mm)		Percentage (%)
Greater Than #4	*Gravel*	13.86
#4 to #200	*Sand*	17.32
Finer Than #200	*Silt & Clay*	68.83

USCS Symbol:
cl, ASSUMED

USCS Classification:
SANDY LEAN CLAY

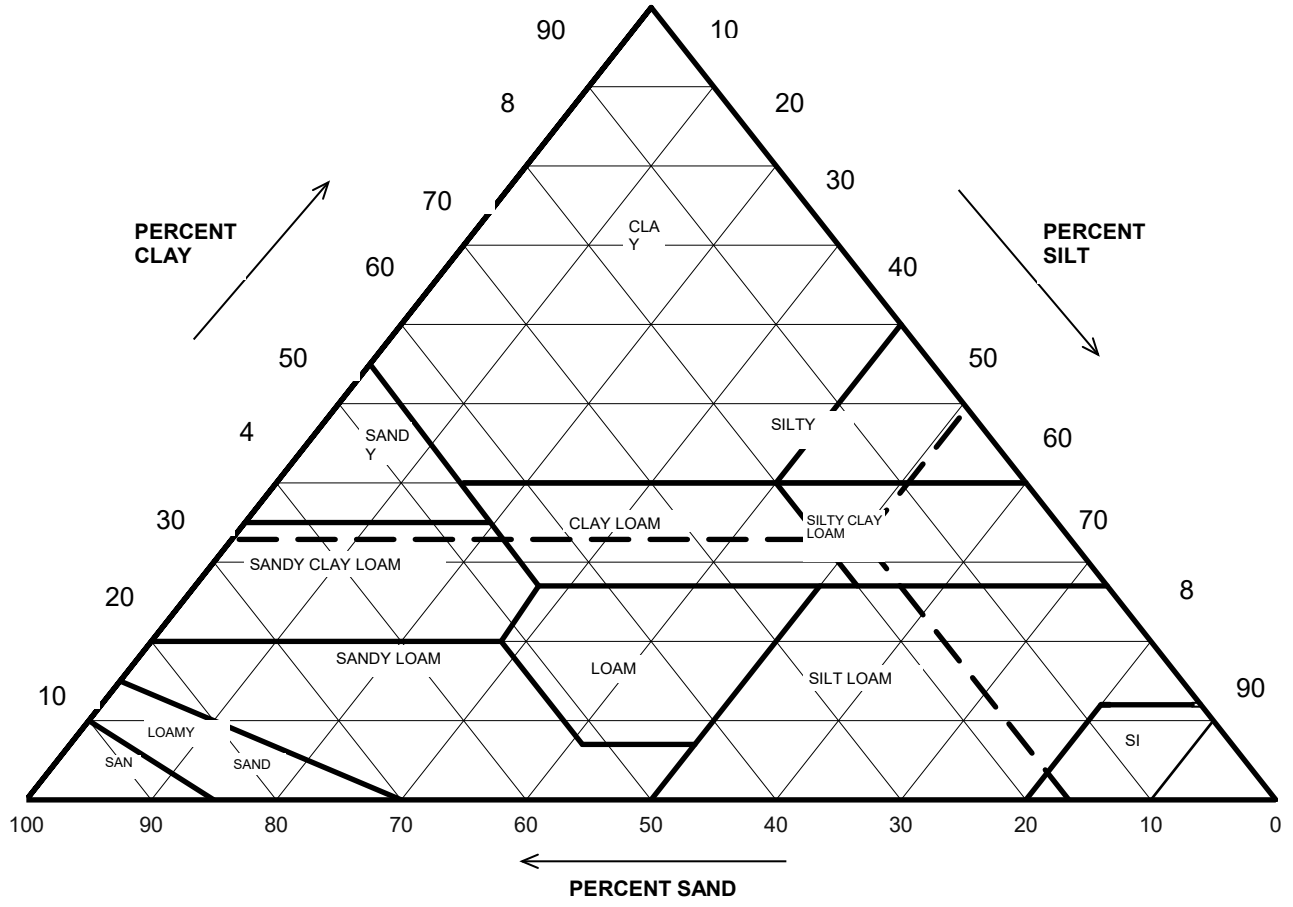
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USDA Classification Chart

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	Stockpile
Project No.:	2025-173-002	Sample No.:	C-031925-2
Lab ID:	2025-173-002-002	Soil Color:	Brown



Particle Size (mm)	Percent Finer	USDA Summary	Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classification
		Gravel	19.81	**0.00**
2	80.19	*Sand*	13.28	**16.56**
0.05	66.90	*Silt*	40.55	**50.57**
0.002	26.36	*Clay*	26.36	**32.87**

USDA Classification ***SILTY CLAY LOAM***

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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WASH SIEVE ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	Stockpile
Project No.:	2025-173-002	Sample No.:	C-031925-2
Lab ID:	2025-173-002-002	Soil Color:	Brown

Moisture Content of Passing 3/4" Material		Moisture Content of Retained 3/4" Material	
Tare No.:	1559	Tare No.:	3033
Wt. of Tare & Wet Sample (g):	838.41	Weight of Tare & Wet Sample (g):	482
Wt. of Tare & Dry Sample (g):	739.99	Weight of Tare & Dry Sample (g):	464
Weight of Tare (g):	176.91	Weight of Tare (g):	6.82
Weight of Water (g):	98.42	Weight of Water (g):	18
Weight of Dry Soil (g):	563.08	Weight of Dry Soil (g):	457.18
Moisture Content (%):	**17.5**	**Moisture Content (%):**	**3.9**

Wet Weight of -3/4" Sample (g):	9251.00	Weight of the Dry Sample (g):	563.08
Dry Weight of - 3/4" Sample (g):	7874.61	Weight of minus #200 Material (g):	410.13
Wet Weight of +3/4" Sample (g):	477.00	Weight of plus #200 Material (g):	152.95
Dry Weight of +3/4" Sample (g):	458.93		
Total Dry Weight of Sample (g):	8333.54	**J - Factor (Percent Finer than 3/4")**	**94.49%**

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)		Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00		0.00	0.00	100.00	**100.00**
6"	150	0.00		0.00	0.00	100.00	**100.00**
3"	75	0.00		0.00	0.00	100.00	**100.00**
2"	50	0.00	(*)	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	175.00		2.02	2.02	97.98	**97.98**
1"	25	176.00		2.03	4.05	95.95	**95.95**
3/4"	19	126.00		1.45	5.51	94.49	**94.49**
1/2"	12.5	11.70		2.08	2.08	97.92	**92.53**
3/8"	9.5	6.53		1.16	3.24	96.76	**91.43**
#4	4.75	31.54		5.60	8.84	91.16	**86.14**
#10	2	35.49		6.30	15.14	84.86	**80.19**
#20	0.85	24.74	(**)	4.39	19.54	80.46	**76.03**
#40	0.425	14.47		2.57	22.11	77.89	**73.61**
#60	0.25	10.90		1.94	24.04	75.96	**71.78**
#140	0.106	13.14		2.33	26.37	73.63	**69.57**
#200	0.075	4.44		0.79	27.16	72.84	**68.83**
Pan	-	410.13		72.84	100.00	-	**-**

NOTES: *(*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample*
*(**) The - 3/4" sieve analysis is based on the Weight of the Dry Sample*

Tested By	DF	Date	3/27/25	Checked By	BRB	Date	4/18/25

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	Stockpile
Project No.:	2025-173-002	Sample No.:	C-031925-2
Lab ID:	2025-173-002-002	Soil Color:	Brown

Elapsed Time		R Measured	Temp.	Composite Correction	R Corrected	N	K Factor	Diameter	N'
(min)			(°C)			(%)		(mm)	(%)
0		NA	NA	NA	NA	NA	NA	NA	NA
2		46.5	21.1	5.4	41.1	93.1	0.01327	0.0276	**64.1**
5		42.0	21.1	5.4	36.6	82.9	0.01327	0.0182	**57.1**
15		37.5	21.1	5.4	32.1	72.8	0.01327	0.0109	**50.1**
30		34.0	21.1	5.4	28.6	64.8	0.01327	0.0079	**44.6**
67		29.5	21.2	5.3	24.2	54.7	0.01325	0.0055	**37.7**
250		24.5	21.4	5.3	19.2	43.5	0.01322	0.0029	**30.0**
1440		19.5	21.1	5.4	14.1	32.0	0.01327	0.0013	**22.0**

Soil Specimen Data		**Other Corrections**		
Tare No.	1920			
Wt. of Tare & Dry Material (g):	141.84	a - Factor	0.993	
Weight of Tare (g):	92.96			
Weight of Deflocculant (g):	5.0	Percent Finer than # 200	68.83	
Weight of Dry Material (g):	43.88			
		Specific Gravity	2.70	Assumed

Note: *Hydrometer test is performed on - # 200 sieve material.*

Tested By TO Date 4/16/25 Checked By BRB Date 4/18/25

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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Moisture, Ash, and Organic Matter (Loss on Ignition)

ASTM D 2974-20e1

Client:	GAI Consultants, Inc.
Client Reference:	Cheswick Closure R220960.00
Project No.:	2025-173-002

Method B (To 0.1%)

Moisture Content

ASTM D2216

Lab ID:	002
Boring No.:	Final Closure
Depth (ft):	Stockpile
Sample No.:	C-031925-2
Tare Number	BB
Weight of Tare & Wet Sample (g)	354.48
Weight of Tare & Dry Sample (g)	320.18
Weight of Tare (g)	123.82
Weight of Water (g)	34.30
Weight of Dry Sample (g)	196.36
Moisture Content	**17.5%**

Method A

Ash Content, Organic Matter

Furnace Temperature (°C)	440
Weight of Tare & Ash (g)	315.04
Weight of Volatiles (g)	5.14
Weight of Ash (g)	191.22
Ash Content (%)	**97.4%**
Organic Matter (%)	**2.6%**

Tested By JW *Date* 3/26/25 *Checked By* EG *Date* 3/27/25

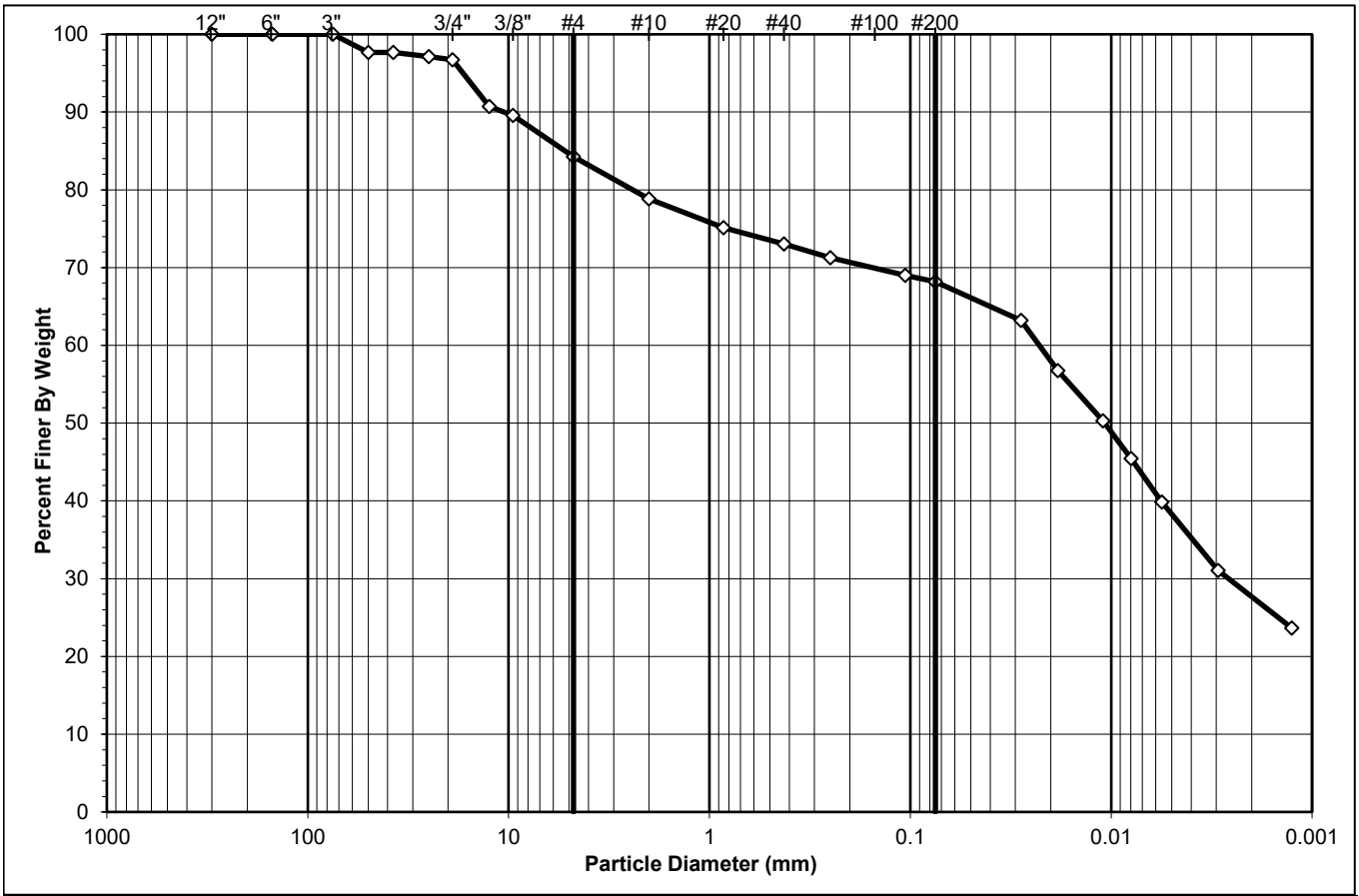
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SIEVE AND HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	Stockpile
Project No.:	2025-173-002	Sample No.:	C-031925-3
Lab ID:	2025-173-002-003	Soil Color:	Brown

	SIEVE ANALYSIS			HYDROMETER	
USCS	cobbles	gravel	sand	silt and clay fraction	
USDA	cobbles	gravel	sand	silt	clay



USCS Summary

Sieve Size (mm)		Percentage (%)
Greater Than #4	*Gravel*	15.72
#4 to #200	*Sand*	16.11
Finer Than #200	*Silt & Clay*	68.17

USCS Symbol:
cl, ASSUMED

USCS Classification:
SANDY LEAN CLAY WITH GRAVEL

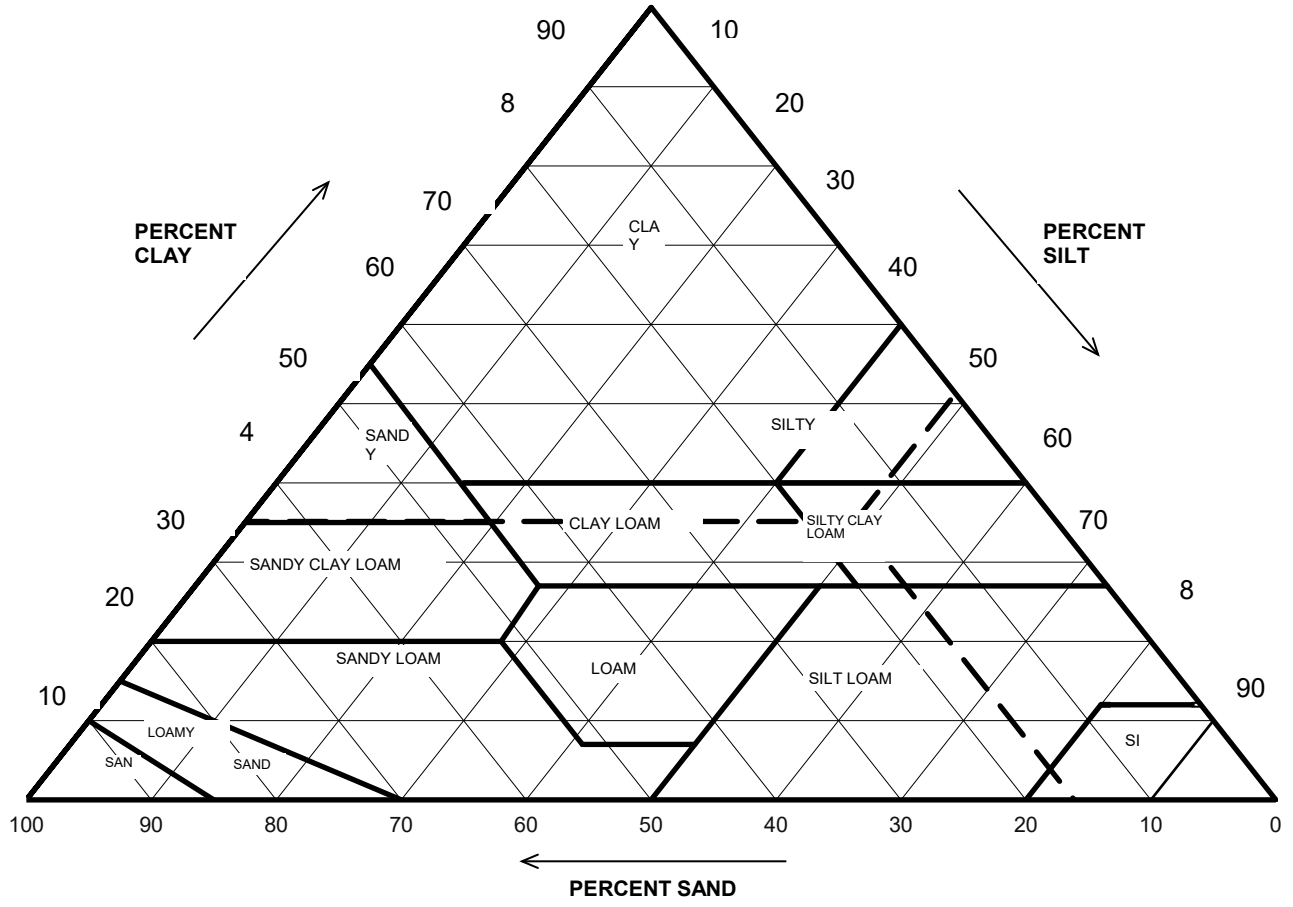
DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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USDA Classification Chart

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	Stockpile
Project No.:	2025-173-002	Sample No.:	C-031925-3
Lab ID:	2025-173-002-003	Soil Color:	Brown



Particle Size (mm)	Percent Finer	USDA Summary	Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classification
		Gravel	21.17	**0.00**
2	78.83	*Sand*	12.72	**16.13**
0.05	66.11	*Silt*	38.41	**48.73**
0.002	27.70	*Clay*	27.70	**35.13**

USDA Classification ***SILTY CLAY LOAM***

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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WASH SIEVE ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	Stockpile
Project No.:	2025-173-002	Sample No.:	C-031925-3
Lab ID:	2025-173-002-003	Soil Color:	Brown

Moisture Content of Passing 3/4" Material		Moisture Content of Retained 3/4" Material	
Tare No.:	1518	Tare No.:	3096
Wt. of Tare & Wet Sample (g):	768.55	Weight of Tare & Wet Sample (g):	241.67
Wt. of Tare & Dry Sample (g):	675.85	Weight of Tare & Dry Sample (g):	228.44
Weight of Tare (g):	147.45	Weight of Tare (g):	8.23
Weight of Water (g):	92.7	Weight of Water (g):	13.23
Weight of Dry Soil (g):	528.4	Weight of Dry Soil (g):	220.21
Moisture Content (%):	**17.5**	**Moisture Content (%):**	**6.0**

Wet Weight of -3/4" Sample (g):	7762.00	Weight of the Dry Sample (g):	528.40
Dry Weight of - 3/4" Sample (g):	6603.51	Weight of minus #200 Material (g):	372.33
Wet Weight of +3/4" Sample (g):	236.00	Weight of plus #200 Material (g):	156.07
Dry Weight of +3/4" Sample (g):	222.62		
Total Dry Weight of Sample (g):	6826.14	**J - Factor (Percent Finer than 3/4")**	**96.74%**

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)		Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00		0.00	0.00	100.00	**100.00**
6"	150	0.00		0.00	0.00	100.00	**100.00**
3"	75	0.00		0.00	0.00	100.00	**100.00**
2"	50	170.00	(*)	2.35	2.35	97.65	**97.65**
1 1/2"	37.5	0.00		0.00	2.35	97.65	**97.65**
1"	25	36.00		0.50	2.85	97.15	**97.15**
3/4"	19	30.00		0.41	3.26	96.74	**96.74**
1/2"	12.5	32.81		6.21	6.21	93.79	**90.73**
3/8"	9.5	6.33		1.20	7.41	92.59	**89.57**
#4	4.75	28.91		5.47	12.88	87.12	**84.28**
#10	2	29.77		5.63	18.51	81.49	**78.83**
#20	0.85	20.27	(**)	3.84	22.35	77.65	**75.12**
#40	0.425	11.39		2.16	24.50	75.50	**73.03**
#60	0.25	9.67		1.83	26.33	73.67	**71.26**
#140	0.106	12.33		2.33	28.67	71.33	**69.01**
#200	0.075	4.59		0.87	29.54	70.46	**68.17**
Pan	-	372.33		70.46	100.00	-	**-**

NOTES: *(*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample*
*(**) The - 3/4" sieve analysis is based on the Weight of the Dry Sample*

Tested By	DF	Date	3/27/25	Checked By	BRB	Date	4/18/25

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	Stockpile
Project No.:	2025-173-002	Sample No.:	C-031925-3
Lab ID:	2025-173-002-003	Soil Color:	Brown

Elapsed Time		R Measured	Temp.	Composite Correction	R Corrected	N	K Factor	Diameter	N'
(min)			(°C)			(%)		(mm)	(%)
0		NA	NA	NA	NA	NA	NA	NA	NA
2		44.5	21.1	5.4	39.1	92.7	0.01327	0.0281	**63.2**
5		40.5	21.1	5.4	35.1	83.2	0.01327	0.0184	**56.7**
15		36.5	21.1	5.4	31.1	73.8	0.01327	0.0110	**50.3**
30		33.5	21.1	5.4	28.1	66.7	0.01327	0.0080	**45.4**
64		30.0	21.2	5.3	24.7	58.4	0.01325	0.0056	**39.8**
250		24.5	21.4	5.3	19.2	45.6	0.01322	0.0029	**31.1**
1440		20.0	21.1	5.4	14.6	34.7	0.01327	0.0013	**23.6**

Soil Specimen Data		**Other Corrections**	
Tare No.	1465		
Wt. of Tare & Dry Material (g):	140.35	a - Factor	0.993
Weight of Tare (g):	93.42		
Weight of Deflocculant (g):	5.0	Percent Finer than # 200	68.17
Weight of Dry Material (g):	41.93		
		Specific Gravity	2.70 Assumed

Note: *Hydrometer test is performed on - # 200 sieve material.*

Tested By TO Date 4/16/25 Checked By BRB Date 4/18/25

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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Moisture, Ash, and Organic Matter (Loss on Ignition)

ASTM D 2974-20e1

Client:	GAI Consultants, Inc.
Client Reference:	Cheswick Closure R220960.00
Project No.:	2025-173-002

Method B (To 0.1%)

Moisture Content

ASTM D2216

Lab ID:	003
Boring No.:	Final Closure
Depth (ft):	Stockpile
Sample No.:	C-031925-3
Tare Number	HH
Weight of Tare & Wet Sample (g)	375.57
Weight of Tare & Dry Sample (g)	342.50
Weight of Tare (g)	134.00
Weight of Water (g)	33.07
Weight of Dry Sample (g)	208.50
Moisture Content	**15.9%**

Method A

Ash Content, Organic Matter

Furnace Temperature (°C)	440
Weight of Tare & Ash (g)	337.00
Weight of Volatiles (g)	5.50
Weight of Ash (g)	203.00
Ash Content (%)	**97.4%**
Organic Matter (%)	**2.6%**

Tested By JW *Date* 3/26/25 *Checked By* EG *Date* 3/27/25

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Moisture, Ash, and Organic Matter (Loss on Ignition)

ASTM D 2974-20e1

Client:	GAI Consultants, Inc.
Client Reference:	Cheswick Closure R220960.00
Project No.:	2025-173-002

Method B (To 0.1%)

Moisture Content

ASTM D2216

Lab ID:	004
Boring No.:	Final Closure
Depth (ft):	Stockpile
Sample No.:	C-031925-4
Tare Number	FF
Weight of Tare & Wet Sample (g)	299.12
Weight of Tare & Dry Sample (g)	266.01
Weight of Tare (g)	115.48
Weight of Water (g)	33.11
Weight of Dry Sample (g)	150.53
Moisture Content	**22.0%**

Method A

Ash Content, Organic Matter

Furnace Temperature (°C)	440
Weight of Tare & Ash (g)	254.50
Weight of Volatiles (g)	11.51
Weight of Ash (g)	139.02
Ash Content (%)	**92.4%**
Organic Matter (%)	**7.6%**

Tested By JW *Date* 3/26/25 *Checked By* EG *Date* 3/27/25

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Moisture, Ash, and Organic Matter (Loss on Ignition)

ASTM D 2974-20e1

Client:	GAI Consultants, Inc.
Client Reference:	Cheswick Closure R220960.00
Project No.:	2025-173-002

Method B (To 0.1%)

Moisture Content

ASTM D2216

Lab ID:	005
Boring No.:	Final Closure
Depth (ft):	Stockpile
Sample No.:	C-031925-5
Tare Number	CC
Weight of Tare & Wet Sample (g)	341.20
Weight of Tare & Dry Sample (g)	304.85
Weight of Tare (g)	130.51
Weight of Water (g)	36.35
Weight of Dry Sample (g)	174.34
Moisture Content	**20.9%**

Method A

Ash Content, Organic Matter

Furnace Temperature (°C)	440
Weight of Tare & Ash (g)	290.68
Weight of Volatiles (g)	14.17
Weight of Ash (g)	160.17
Ash Content (%)	**91.9%**
Organic Matter (%)	**8.1%**

Tested By JW *Date* 3/26/25 *Checked By* EG *Date* 3/27/25

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Moisture, Ash, and Organic Matter (Loss on Ignition)

ASTM D 2974-20e1

Client:	GAI Consultants, Inc.
Client Reference:	Cheswick Closure R220960.00
Project No.:	2025-173-002

Method B (To 0.1%)

Moisture Content

ASTM D2216

Lab ID:	006
Boring No.:	Final Closure
Depth (ft):	Stockpile
Sample No.:	C-031925-6
Tare Number	A
Weight of Tare & Wet Sample (g)	144.84
Weight of Tare & Dry Sample (g)	127.09
Weight of Tare (g)	70.12
Weight of Water (g)	17.75
Weight of Dry Sample (g)	56.97
Moisture Content	**31.2%**

Method A

Ash Content, Organic Matter

Furnace Temperature (°C)	440
Weight of Tare & Ash (g)	119.15
Weight of Volatiles (g)	7.94
Weight of Ash (g)	49.03
Ash Content (%)	**86.1%**
Organic Matter (%)	**13.9%**

Tested By JW *Date* 4/1/25 *Checked By* EG *Date* 4/2/25

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Moisture, Ash, and Organic Matter (Loss on Ignition)

ASTM D 2974-20e1

Client:	GAI Consultants, Inc.
Client Reference:	Cheswick Closure R220960.00
Project No.:	2025-173-002

Method B (To 0.1%)

Moisture Content

ASTM D2216

Lab ID:	007
Boring No.:	Final Closure
Depth (ft):	12"
Sample No.:	C-031925-7
Tare Number	B
Weight of Tare & Wet Sample (g)	148.97
Weight of Tare & Dry Sample (g)	136.49
Weight of Tare (g)	59.17
Weight of Water (g)	12.48
Weight of Dry Sample (g)	77.32
Moisture Content	**16.1%**

Method A

Ash Content, Organic Matter

Furnace Temperature (°C)	440
Weight of Tare & Ash (g)	134.63
Weight of Volatiles (g)	1.86
Weight of Ash (g)	75.46
Ash Content (%)	**97.6%**
Organic Matter (%)	**2.4%**

Tested By JW *Date* 4/1/25 *Checked By* EG *Date* 4/2/25

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Agricultural Analytical Services Laboratory
The Pennsylvania State University
111 Ag Analytical Svcs Lab
University Park, PA 16802
(814) 863-0841 aaslab@psu.edu www.aasl.psu.edu

SOIL TEST REPORT FOR:	ADDITIONAL COPY TO:
K CUMMINGS GEOTECHNICS 544 BRADDOCK AVE EAST PITTSBURGH PA 15112	TYLER VOLPE GEOTECHNICS 544 BRADDOCK AVE EAST PITTSBURGH PA 15112

DATE	LAB #	SERIAL #	COUNTY	ACRES	ASCS ID	FIELD ID	SOIL
04/09/2025	S25-15778		Allegheny			2025-173-002-003	

SOIL NUTRIENT LEVELS			Below Optimum	Optimum	Above Optimum
[1]Soil pH	7.1				
[2]Phosphorus (P)	9	ppm			
[2]Potassium (K)	74	ppm			
[2]Magnesium (Mg)	182	ppm			

RECOMMENDATIONS: *(See back messages for important information)*

Limestone*: NONE

Magnesium (Mg): NONE

Calcium Carbonate equivalent

Plant Nutrients: ***(If manure will be applied, adjust these recommendations accordingly. See back of report.)***

Year	Crop	Expected Yield	Nitrogen (lb N/A)	Phosphate (lb P_2O_5/A)	Potash (lb K_2O/A)	
1	Disturbed Lands	0	120	120	140	*See ST2 for other crop recommendations*

80 lb/A of the N recommendation should be from a slow release source. When available, use manure or other organic material to supply this slow release N.

2	0	0	0	*See ST2 for other crop recommendations*

3	0	0	0	*See ST2 for other crop recommendations*

ADDITIONAL RESULTS:						Optional Tests:			[2]Trace Elements		
[2]Calcium (ppm)	[3]Acidity (meq/100 g)	[4]CEC (meq/100 g)	% Saturation of the CEC K	Mg	Ca	Organic Matter %	Nitrate-N ppm	Salts mmhos/cm	*See back for comments* Zinc ppm	Copper ppm	Sulfur ppm
4807	0.0	16.7	1.1	9.1	89.8				1.7	0.5	23.0

Test Methods: [1]1:1 soil:water pH, [2]Mehlich 3 (ICP), [3]Mehlich Buffer pH, [4]Summation of Cations

The high calcium level in this sample indicates the probable presence of soluble calcium. Therefore the CEC and the percent saturations were calculated using a maximum exchangeable calcium level of 15 meq/100 g.

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Agronomy

Recommendation Messages

Enclosures

ST-2 Fertilizer Recommendation Table Guidelines for making recommendations for other crops and for adjusting for a different expected yield.

ST-4 Interpreting Soil Tests for Agronomic Crops Explains the soil test report and provides additional information on the recommendations.

Soil Nutrient Levels Soil nutrient levels are given as parts per million (ppm) elemental P, K , and Mg. As a rule of thumb to convert ppm to lb/A multiply ppm x 2. The elemental results in lb/A can be converted to oxide forms using the following conversions: P x 2.3=P_2O_5, K x 1.2=K_2O, Mg x 1.6=MgO

Below Optimum-Nutrient is deficient. There should be an economic response to adding the recommended nutrient.	**Optimum-**Nutrient is adequate. There will be no yield response to adding more of a nutrient but a recommendation is made to replace what the crop removes and thus maintain the soil test in the optimum range.	**Above Optimum-**The nutrient is more than adequate. Not only will there not be a yield response but the soil nutrient levels are also adequate to accommodate crop removal.

Recommendations N,P, and K recommendations are made for three crop years on this field. New samples should be taken after 3 years. The recommendations for the 2nd and 3rd year assume that the earlier recommendations were followed. These recommendations are based on the results of the soil test and the information provided with the sample. If you think that there is an error on the report, contact the lab at the address on the front of the report. Tables that can be used to adjust or change recommendations for all crops based on the soil test can be found on the web at: www.aasl.psu.edu.

Limestone Recommendations The recommended limestone application should be adequate for 3 years. Limestone recommendations are based on 100% calcium carbonate equivalent limestone and assume "Fine-sized" limestone with 95% passing 20 mesh, 60% passing 60 mesh and 50% passing 100 mesh. Use "ST-2 Liming Materials Conversion Table (enclosed) to adjust for limestone quality. Also see Agronomy Facts #3 "Soil Acidity and Aglime".

Magnesium Only one Mg Recommendation is made for three years. Magnesium is most economically applied by using a limestone containing Mg. Low Mg levels in soils may result in low Mg levels in forage crops especially if a significant amount of N and/or K fertilizer is applied. This can result in potentially fatal grass tetany in animals. Use caution if grazing. Apply the recommended Mg and be sure your feed rations are properly balanced.

Starter Fertilizer Starter fertilizer is important to get a corn crop off to a good start when planting in cold, wet conditions. However, on optimum or higher testing soils, as planting dates get later and soils warm up, the benefit from starter fertilizer goes down. An N only starter is often adequate when soil test levels are above optimum. The correct material, rate, and placement for starter fertilizer are critical to be effective. See Agronomy Facts #51 "Starter Fertilizer".

Nitrogen Nitrogen recommendations on this report are not based on a soil test. They are based on crop requirements for the expected yield of the crop to be grown. The pre-sidedress nitrate soil tests (PSNT) and the Chlorophyll meter test are both available for improving nitrogen recommendations on corn especially when manure is being applied. See: Agronomy Facts 17 "Pre-sidedress Soil Nitrate Test for Corn" and Agronomy Facts 53 "The Early-season Chlorophyll Meter Test for Corn". For optimum efficiency, N should be applied as close to the time of crop need as practical. For corn apply 50-90% of the N when the corn is 10-20" tall. For winter grains apply the N in the spring prior to growth stage 5. For forage grasses split the recommended N for each cutting.

Manure Manure is a very important part of a fertility program. Manure applications may supply all or most of the nutrients recommended and in some cases may apply significantly more than the crop requires. Manure nutrients should be taken into account in developing your fertility program. For details on how to do this see the Penn State Agronomy Guide. Manure analysis kits are available through your county Extension office.

Very High Soil Test Levels Very high soil test levels should be avoided as much as possible. High soil nutrient levels might not only represent an economic loss but they may also indicate potential crop, animal or environmental problems.

Very high pH can results in micronutrient deficiencies and may affect the activity of some pesticides resulting in injury or poor pest control.

Very high phosphorus levels in the soil may lead to crop production problems especially with no manure and may result in potentially harmful P loss to the environment. Best management practices may be necessary to reduce the potential for environmental problems with P.

Zinc, Copper and Sulfur Results Normal ranges for zinc (Zn) copper (Cu), and sulfur (S) in Pennsylvania soils are listed below. These are not used to make recommendations but rather to identify potential deficiencies of Zn and S or toxicity of Cu. While Zn and S deficiencies are not common in PA, they may occur on soils testing below the normal range. Zn deficiencies are more likely to occur when soil levels are low and soil pH 7.0 or higher, especially on lighter soils. Recent research in Pennsylvania on sulfur fertility suggests that when the Mehlich 3 S level is below 15 ppm, there is an approximately 50% chance that yield will increase by adding S fertilizer. When Mehlich 3 S levels are above 15 ppm, S is usually adequate and there is a very low chance of a yield increase from adding S fertilizer. Both Zn or S deficiencies should be confirmed with plant analysis. Cu toxicity may occur at levels testing well above the normal range, but have not been observed in Pennsylvania in agronomic crops even on soils testing 2 to 3 times above the normal range. For additional information, see ST4.

Normal ranges of Zn, Cu and S in Pennsylvania Soils (Mehlich 3)		
Zn (ppm)	Cu (ppm)	S (ppm)
1.1 - 9.4	1.2 - 5.5	15 - 25

Distribution of Soil Test Results Summaries of soil test results may be used in educational programs. However, individual results will not be released outside of Penn State without permission of the client. Electronic copies of your results are available to you, contact the lab for more information.

For additional information on these topics please see the current **Penn State Agronomy Guide** or the **AASL website**: www.aasl.psu.edu. This soil test is part of an ongoing research and extension program of Penn State. If you have any questions or comments about this program or would like copies of publications referenced here, please contact your Penn State County Extension Educator.

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The Pennsylvania State University
111 Ag Analytical Svcs Lab
University Park, PA 16802
(814) 863-0841 aaslab@psu.edu www.aasl.psu.edu

SOIL TEST REPORT FOR:	ADDITIONAL COPY TO:
K CUMMINGS GEOTECHNICS 544 BRADDOCK AVE EAST PITTSBURGH PA 15112	TYLER VOLPE GEOTECHNICS 544 BRADDOCK AVE EAST PITTSBURGH PA 15112

DATE	LAB #	SERIAL #	COUNTY	ACRES	ASCS ID	FIELD ID	SOIL
04/09/2025	S25-15779		Allegheny			2025-173-002-006	

SOIL NUTRIENT LEVELS			Below Optimum	Optimum	Above Optimum
[1]Soil pH	6.9				
[2]Phosphorus (P)	17	ppm			
[2]Potassium (K)	132	ppm			
[2]Magnesium (Mg)	168	ppm			

RECOMMENDATIONS: *(See back messages for important information)*

Limestone*: NONE

Magnesium (Mg): NONE

Calcium Carbonate equivalent

Plant Nutrients: ***(If manure will be applied, adjust these recommendations accordingly. See back of report.)***

Year	Crop	Expected Yield	Nitrogen (lb N/A)	Phosphate (lb P_2O_5/A)	Potash (lb K_2O/A)	
1	Disturbed Lands	0	120	100	20	*See ST2 for other crop recommendations*

80 lb/A of the N recommendation should be from a slow release source. When available, use manure or other organic material to supply this slow release N.

2	0	0	0	*See ST2 for other crop recommendations*

3	0	0	0	*See ST2 for other crop recommendations*

ADDITIONAL RESULTS:						Optional Tests:			[2]Trace Elements		
[2]Calcium (ppm)	[3]Acidity (meq/100 g)	[4]CEC (meq/100 g)	% Saturation of the CEC K	Mg	Ca	Organic Matter %	Nitrate-N ppm	Salts mmhos/cm	*See back for comments* Zinc ppm	Copper ppm	Sulfur ppm
4951	0.0	16.7	2.0	8.4	89.6				1.8	1.7	40.9

Test Methods: [1]1:1 soil:water pH, [2]Mehlich 3 (ICP), [3]Mehlich Buffer pH, [4]Summation of Cations

The high calcium level in this sample indicates the probable presence of soluble calcium. Therefore the CEC and the percent saturations were calculated using a maximum exchangeable calcium level of 15 meq/100 g.

6760

Agronomy

Recommendation Messages

Enclosures

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Normal ranges of Zn, Cu and S in Pennsylvania Soils (Mehlich 3)		
Zn (ppm)	Cu (ppm)	S (ppm)
1.1 - 9.4	1.2 - 5.5	15 - 25

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Agricultural Analytical Services Laboratory
The Pennsylvania State University
111 Ag Analytical Svcs Lab
University Park, PA 16802
(814) 863-0841 aaslab@psu.edu www.aasl.psu.edu

SOIL TEST REPORT FOR:	ADDITIONAL COPY TO:
K CUMMINGS GEOTECHNICS 544 BRADDOCK AVE EAST PITTSBURGH PA 15112	TYLER VOLPE GEOTECHNICS 544 BRADDOCK AVE EAST PITTSBURGH PA 15112

DATE	LAB #	SERIAL #	COUNTY	ACRES	ASCS ID	FIELD ID	SOIL
04/09/2025	S25-15778		Allegheny			2025-173-002-003	

SOIL NUTRIENT LEVELS			Below Optimum	Optimum	Above Optimum
[1]Soil pH	7.1				
[2]Phosphorus (P)	9	ppm			
[2]Potassium (K)	74	ppm			
[2]Magnesium (Mg)	182	ppm			

RECOMMENDATIONS: *(See back messages for important information)*

Limestone*: NONE

Magnesium (Mg): NONE

Calcium Carbonate equivalent

Plant Nutrients: ***(If manure will be applied, adjust these recommendations accordingly. See back of report.)***

Year	Crop	Expected Yield	Nitrogen (lb N/A)	Phosphate (lb P_2O_5/A)	Potash (lb K_2O/A)	
1	Disturbed Lands	0	120	120	140	*See ST2 for other crop recommendations*

80 lb/A of the N recommendation should be from a slow release source. When available, use manure or other organic material to supply this slow release N.

2	0	0	0	*See ST2 for other crop recommendations*

3	0	0	0	*See ST2 for other crop recommendations*

ADDITIONAL RESULTS:						Optional Tests:			[2]Trace Elements		
[2]Calcium (ppm)	[3]Acidity (meq/100 g)	[4]CEC (meq/100 g)	% Saturation of the CEC K	Mg	Ca	Organic Matter %	Nitrate-N ppm	Salts mmhos/cm	*See back for comments* Zinc ppm	Copper ppm	Sulfur ppm
4807	0.0	16.7	1.1	9.1	89.8				1.7	0.5	23.0

Test Methods: [1]1:1 soil:water pH, [2]Mehlich 3 (ICP), [3]Mehlich Buffer pH, [4]Summation of Cations

The high calcium level in this sample indicates the probable presence of soluble calcium. Therefore the CEC and the percent saturations were calculated using a maximum exchangeable calcium level of 15 meq/100 g.

6759

Agronomy

Recommendation Messages

Enclosures

ST-2 Fertilizer Recommendation Table Guidelines for making recommendations for other crops and for adjusting for a different expected yield.

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Soil Nutrient Levels Soil nutrient levels are given as parts per million (ppm) elemental P, K , and Mg. As a rule of thumb to convert ppm to lb/A multiply ppm x 2. The elemental results in lb/A can be converted to oxide forms using the following conversions: P x 2.3=P_2O_5, K x 1.2=K_2O, Mg x 1.6=MgO

Below Optimum-Nutrient is deficient. There should be an economic response to adding the recommended nutrient.	**Optimum-**Nutrient is adequate. There will be no yield response to adding more of a nutrient but a recommendation is made to replace what the crop removes and thus maintain the soil test in the optimum range.	**Above Optimum-**The nutrient is more than adequate. Not only will there not be a yield response but the soil nutrient levels are also adequate to accommodate crop removal.

Recommendations N,P, and K recommendations are made for three crop years on this field. New samples should be taken after 3 years. The recommendations for the 2nd and 3rd year assume that the earlier recommendations were followed. These recommendations are based on the results of the soil test and the information provided with the sample. If you think that there is an error on the report, contact the lab at the address on the front of the report. Tables that can be used to adjust or change recommendations for all crops based on the soil test can be found on the web at: www.aasl.psu.edu.

Limestone Recommendations The recommended limestone application should be adequate for 3 years. Limestone recommendations are based on 100% calcium carbonate equivalent limestone and assume "Fine-sized" limestone with 95% passing 20 mesh, 60% passing 60 mesh and 50% passing 100 mesh. Use "ST-2 Liming Materials Conversion Table (enclosed) to adjust for limestone quality. Also see Agronomy Facts #3 "Soil Acidity and Aglime".

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Very high pH can results in micronutrient deficiencies and may affect the activity of some pesticides resulting in injury or poor pest control.

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Normal ranges of Zn, Cu and S in Pennsylvania Soils (Mehlich 3)		
Zn (ppm)	Cu (ppm)	S (ppm)
1.1 - 9.4	1.2 - 5.5	15 - 25

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DATE	LAB #	SERIAL #	COUNTY	ACRES	ASCS ID	FIELD ID	SOIL
04/09/2025	S25-15779		Allegheny			2025-173-002-006	

SOIL NUTRIENT LEVELS			Below Optimum	Optimum	Above Optimum
[1]Soil pH	6.9				
[2]Phosphorus (P)	17	ppm			
[2]Potassium (K)	132	ppm			
[2]Magnesium (Mg)	168	ppm			

RECOMMENDATIONS: *(See back messages for important information)*

Limestone*: NONE

Magnesium (Mg): NONE

Calcium Carbonate equivalent

Plant Nutrients: ***(If manure will be applied, adjust these recommendations accordingly. See back of report.)***

Year	Crop	Expected Yield	Nitrogen (lb N/A)	Phosphate (lb P_2O_5/A)	Potash (lb K_2O/A)	
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2	0	0	0	*See ST2 for other crop recommendations*

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[2]Calcium (ppm)	[3]Acidity (meq/100 g)	[4]CEC (meq/100 g)	% Saturation of the CEC K	Mg	Ca	Organic Matter %	Nitrate-N ppm	Salts mmhos/cm	*See back for comments* Zinc ppm	Copper ppm	Sulfur ppm
4951	0.0	16.7	2.0	8.4	89.6				1.8	1.7	40.9

Test Methods: [1]1:1 soil:water pH, [2]Mehlich 3 (ICP), [3]Mehlich Buffer pH, [4]Summation of Cations

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6760

Agronomy

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MOISTURE CONTENT

ASTM D 2216-19

Client:	GAI Consultants, Inc.
Client Reference:	Cheswick Closure R220960.00
Project No.:	2025-173-003

Lab ID:	005	006	007
Boring No.:	Final Closure	Final Closure	Final Closure
Depth (ft):	12"	12"	12"
Sample No.:	C-032725-5	C-032725-6	C-032725-7
Tare Number	3188	3350	3198
Wt. of Tare & Wet Sample (g)	240.44	273.21	264.35
Wt. of Tare & Dry Sample (g)	210.76	232.83	231.97
Weight of Tare (g)	8.02	8.07	8.10
Weight of Water (g)	29.68	40.38	32.38
Weight of Dry Sample (g)	202.74	224.76	223.87
Water Content (%)	**14.6**	**18.0**	**14.5**

Notes :

Tested By JW *Date* 3/31/25 *Checked By* EG *Date* 4/1/25

544 Braddock Avenue • East Pittsburgh, PA 15112 • Phone (412) 823-7600 • Fax (412) 823-8999 • www.geotechnics.net

Moisture, Ash, and Organic Matter (Loss on Ignition)

ASTM D 2974-20e1

Client:	GAI Consultants, Inc.
Client Reference:	Cheswick Closure R220960.00
Project No.:	2025-173-003

Method B (To 0.1%)

Moisture Content

ASTM D2216

Lab ID:	001
Boring No.:	Final Closure
Depth (ft):	12"
Sample No.:	C-032725-1
Tare Number	A
Weight of Tare & Wet Sample (g)	156.55
Weight of Tare & Dry Sample (g)	144.68
Weight of Tare (g)	70.12
Weight of Water (g)	11.87
Weight of Dry Sample (g)	74.56
Moisture Content	**15.9%**

Method A

Ash Content, Organic Matter

Furnace Temperature (°C)	440
Weight of Tare & Ash (g)	142.90
Weight of Volatiles (g)	1.78
Weight of Ash (g)	72.78
Ash Content (%)	**97.6%**
Organic Matter (%)	**2.4%**

Tested By JW *Date* 4/2/25 *Checked By* EG *Date* 4/3/25

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Moisture, Ash, and Organic Matter (Loss on Ignition)

ASTM D 2974-20e1

Client:	GAI Consultants, Inc.
Client Reference:	Cheswick Closure R220960.00
Project No.:	2025-173-003

Method B (To 0.1%)

Moisture Content

ASTM D2216

Lab ID:	002
Boring No.:	Final Closure
Depth (ft):	12"
Sample No.:	C-032725-2
Tare Number	B
Weight of Tare & Wet Sample (g)	159.93
Weight of Tare & Dry Sample (g)	145.99
Weight of Tare (g)	59.17
Weight of Water (g)	13.94
Weight of Dry Sample (g)	86.82
Moisture Content	**16.1%**

Method A

Ash Content, Organic Matter

Furnace Temperature (°C)	440
Weight of Tare & Ash (g)	144.14
Weight of Volatiles (g)	1.85
Weight of Ash (g)	84.97
Ash Content (%)	**97.9%**
Organic Matter (%)	**2.1%**

Tested By JW *Date* 4/2/25 *Checked By* EG *Date* 4/3/25

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PERMEABILITY TEST

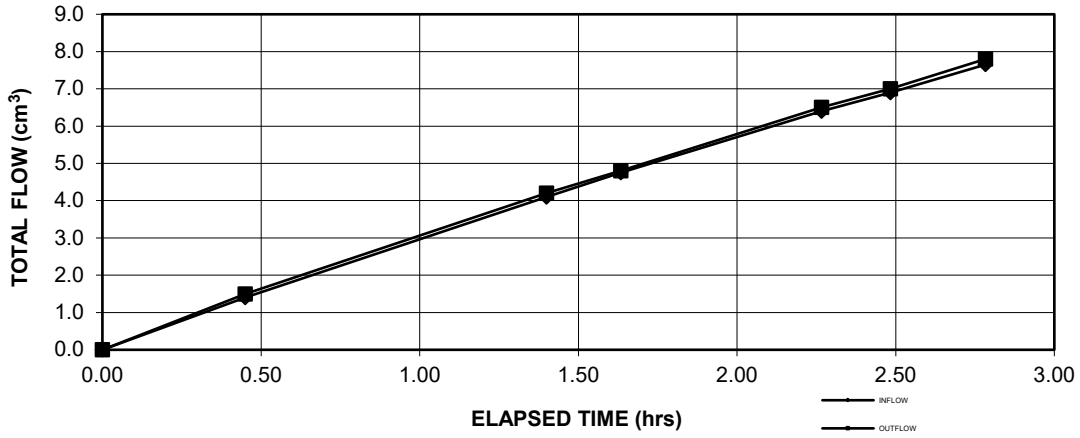
ASTM D 5084-16a Method C

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Project:	Cheswick Closure R220960.00	Depth (ft):	12"
Project No.:	2025-173-003	Sample No.:	C-0327525-2
Lab ID No.:	2025-173-003-002	Avg. Effective Consol. Pressure (psi):	6.25

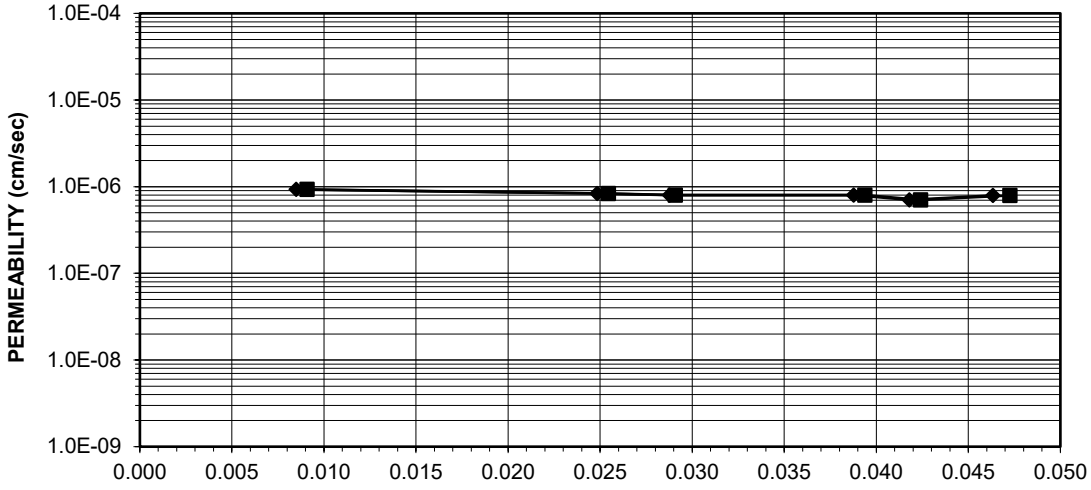
AVERAGE PERMEABILITY = 7.7E-07 cm/sec @ 20°C

AVERAGE PERMEABILITY = 7.7E-09 m/sec @ 20°C

TOTAL FLOW vs. ELAPSED TIME



PORE VOLUMES EXCHANGED vs. PERMEABILITY



Tested By: WT Date: 4/10/25 Checked By: JLK Date: 4/15/25

DCN: CT-22 DATE: 1/1/17 REVISION: 11

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PERMEABILITY TEST

ASTM D 5084-16a Method C

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Project:	Cheswick Closure R220960.00	Depth (ft):	12"
Project No.:	2025-173-003	Sample No.:	C-0327525-2
Lab ID No.:	2025-173-003-002	Avg. Effective Consol. Pressure (psi):	6.25

Specific Gravity: 2.70 Assumed
Sample Condition: Remolded

Visual Description: Brown Clay with Rocks

Permeant Type: Deaired Water

MOISTURE CONTENT:	BEFORE TEST	AFTER TEST
Tare Number	3029	1698
Weight of Tare & Wet Sample (g)	149.38	831.20
Weight of Tare & Dry Sample (g)	126.34	675.09
Weight of Tare (g)	8.26	80.99
Weight of Water (g)	23.04	156.11
Weight of Dry Sample (g)	118.08	594.10
Moisture Content (%)	**19.5**	**26.3**

SPECIMEN:	BEFORE TEST	AFTER TEST
Weight of Tube & Wet Sample (g)	1625.56	NA
Weight of Tube (g)	917.30	NA
Weight of Wet Sample (g)	708.26	748.35
Length 1 (in)	3.490	3.556
Length 2 (in)	3.490	3.569
Length 3 (in)	3.490	3.568
Top Diameter (in)	2.870	2.894
Middle Diameter (in)	2.870	2.903
Bottom Diameter (in)	2.870	2.889
Average Length (in)	3.49	3.56
Average Area (in^2)	6.47	6.58
Sample Volume (cm^3)	369.98	384.56
Unit Wet Weight (g/cm^3)	1.91	1.95
Unit Wet Weight (pcf)	119.5	121.5
Unit Dry Weight (pcf)	100.0	96.2
Unit Dry Weight (g/cm^3)	1.60	1.54
Void Ratio, e	0.69	0.75
Porosity, n	0.41	0.43
Pore Volume (cm^3)	150.5	165.1
Total Weight of Sample After Test (g)		751.24

Tested By: WT Date: 4/10/25 Checked By: JLK Date: 4/15/25

DCN: CT-22 DATE: 1/1/17 REVISION: 11

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PERMEABILITY TEST

ASTM D 5084-16a Method C

geotechnics
geotechnical & geosynthetic testing

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Project:	Cheswick Closure R220960.00	Depth (ft):	12"
Project No.:	2025-173-003	Sample No.:	C-0327525-2
Lab ID No.:	2025-173-003-002	Avg. Effective Consol. Pressure (psi):	6.25

Pressure Heads (Constant)	
Top Cap (psi)	67.5
Bottom Cap (psi)	70.0
Cell (psi)	75.0
Total Pressure Head (cm)	175.8
Hydraulic Gradient	19.41

Final Sample Dimensions	
Sample Length (cm), L	9.05
Sample Diameter (cm)	7.35
Sample Area (cm^2), A	42.48
Inflow Burette Area (cm^2), a-in	0.945
Outflow Burette Area (cm^2), a-out	0.915
B Parameter (%)	98

AVERAGE PERMEABILITY = 7.7E-07 cm/sec @ 20°C

AVERAGE PERMEABILITY = 7.7E-09 m/sec @ 20°C

DATE	TIME		ELAPSED TIME t	TOTAL INFLOW	TOTAL OUTFLOW	TOTAL HEAD h	FLOW (0 flow)	TEMP.	INCREMENTAL PERMEABILITY @ 20°C
(mm/dd/yy)	(hr)	(min)	(hr)	(cm^3)	(cm^3)	(cm)	(1 stop)	(°C)	(cm/sec)
4/14/2025	10	23	0.000	0.0	0.0	201.0	0	20.4	NA
4/14/2025	10	50	0.450	1.4	1.5	197.9	0	20.5	9.3E-07
4/14/2025	11	47	1.400	4.1	4.2	192.2	0	20.7	8.3E-07
4/14/2025	12	1	1.633	4.8	4.8	190.9	0	20.7	8.0E-07
4/14/2025	12	39	2.267	6.4	6.5	187.3	0	20.8	8.0E-07
4/14/2025	12	52	2.483	6.9	7.0	186.3	0	20.8	7.0E-07
4/14/2025	13	10	2.783	7.7	7.8	184.6	1	20.9	7.9E-07

Tested By: WT Date: 4/10/25 Checked By: JLK Date: 4/15/25

DCN: CT-22 DATE: 1/1/17 REVISION: 11

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Moisture, Ash, and Organic Matter (Loss on Ignition)

ASTM D 2974-20e1

Client:	GAI Consultants, Inc.
Client Reference:	Cheswick Closure R220960.00
Project No.:	2025-173-003

Method B (To 0.1%)

Moisture Content

ASTM D2216

Lab ID:	003
Boring No.:	Final Closure
Depth (ft):	Stockpile
Sample No.:	C-032725-3
Tare Number	A
Weight of Tare & Wet Sample (g)	158.60
Weight of Tare & Dry Sample (g)	149.11
Weight of Tare (g)	70.16
Weight of Water (g)	9.49
Weight of Dry Sample (g)	78.95
Moisture Content	**12.0%**

Method A

Ash Content, Organic Matter

Furnace Temperature (°C)	440
Weight of Tare & Ash (g)	147.79
Weight of Volatiles (g)	1.32
Weight of Ash (g)	77.63
Ash Content (%)	**98.3%**
Organic Matter (%)	**1.7%**

Tested By JW *Date* 4/2/25 *Checked By* EG *Date* 4/4/25

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Moisture, Ash, and Organic Matter (Loss on Ignition)

ASTM D 2974-20e1

Client:	GAI Consultants, Inc.
Client Reference:	Cheswick Closure R220960.00
Project No.:	2025-173-003

Method B (To 0.1%)

Moisture Content

ASTM D2216

Lab ID:	004
Boring No.:	Final Closure
Depth (ft):	Stockpile
Sample No.:	C-032725-4
Tare Number	B
Weight of Tare & Wet Sample (g)	153.00
Weight of Tare & Dry Sample (g)	142.52
Weight of Tare (g)	59.23
Weight of Water (g)	10.48
Weight of Dry Sample (g)	83.29
Moisture Content	**12.6%**

Method A

Ash Content, Organic Matter

Furnace Temperature (°C)	440
Weight of Tare & Ash (g)	140.87
Weight of Volatiles (g)	1.65
Weight of Ash (g)	81.64
Ash Content (%)	**98.0%**
Organic Matter (%)	**2.0%**

Tested By JW *Date* 4/3/25 *Checked By* EG *Date* 4/4/25

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April 25, 2025

Project No. 2025-173-003

Cory White
GAI Consultants, Inc.
385 East Waterfront Drive
Homestead, PA 15120

Transmittal
Laboratory Test Results
Cheswick Closure R220960.00

Please find attached the laboratory test results for the above referenced project. The tests were outlined on the Project Verification Form that was transmitted to your firm prior to the testing. The testing was performed in general accordance with the methods listed on the enclosed data sheets. The test results are believed to be representative of the samples that were submitted for testing and are indicative only of the specimens that were evaluated. We have no direct knowledge of the origin of the samples and imply no position with regard to the nature of the test results, i.e. pass/fail and no claims as to the suitability of the material for its intended use.

The test data and all associated project information provided shall be held in strict confidence and disclosed to other parties only with authorization by our Client. The test data submitted herein is considered integral with this report and is not to be reproduced except in whole and only with the authorization of the Client and Geotechnics. The remaining sample materials for this project will be retained for a minimum of 90 days as directed by the Geotechnics' Quality Program.

We are pleased to provide these testing services. Should you have any questions or if we may be of further assistance, please contact our office.

Respectfully submitted,
Geotechnics, Inc.

Nathan Melaro
Director of Operations

We understand that you have a choice in your laboratory services and we thank you for choosing Geotechnics.

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MOISTURE CONTENT

ASTM D 2216-19

Client:	GAI Consultants, Inc.
Client Reference:	Cheswick Closure R220960.00
Project No.:	2025-173-003

Lab ID:	005	006	007
Boring No.:	Final Closure	Final Closure	Final Closure
Depth (ft):	12"	12"	12"
Sample No.:	C-032725-5	C-032725-6	C-032725-7
Tare Number	3188	3350	3198
Wt. of Tare & Wet Sample (g)	240.44	273.21	264.35
Wt. of Tare & Dry Sample (g)	210.76	232.83	231.97
Weight of Tare (g)	8.02	8.07	8.10
Weight of Water (g)	29.68	40.38	32.38
Weight of Dry Sample (g)	202.74	224.76	223.87
Water Content (%)	**14.6**	**18.0**	**14.5**

Notes :

Tested By JW *Date* 3/31/25 *Checked By* EG *Date* 4/1/25

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SIEVE AND HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R2200960.00	Depth (ft):	12"
Project No.:	2025-173-003	Sample No.:	C-032725-1
Lab ID:	2025-173-003-001	Soil Color:	Brown

	SIEVE ANALYSIS			HYDROMETER	
USCS	cobbles	gravel	sand	silt and clay fraction	
USDA	cobbles	gravel	sand	silt	clay



USCS Summary

Sieve Size (mm)		Percentage (%)
Greater Than #4	*Gravel*	0.97
#4 to #200	*Sand*	8.99
Finer Than #200	*Silt & Clay*	90.04

USCS Symbol:
cl, ASSUMED

USCS Classification:
LEAN CLAY

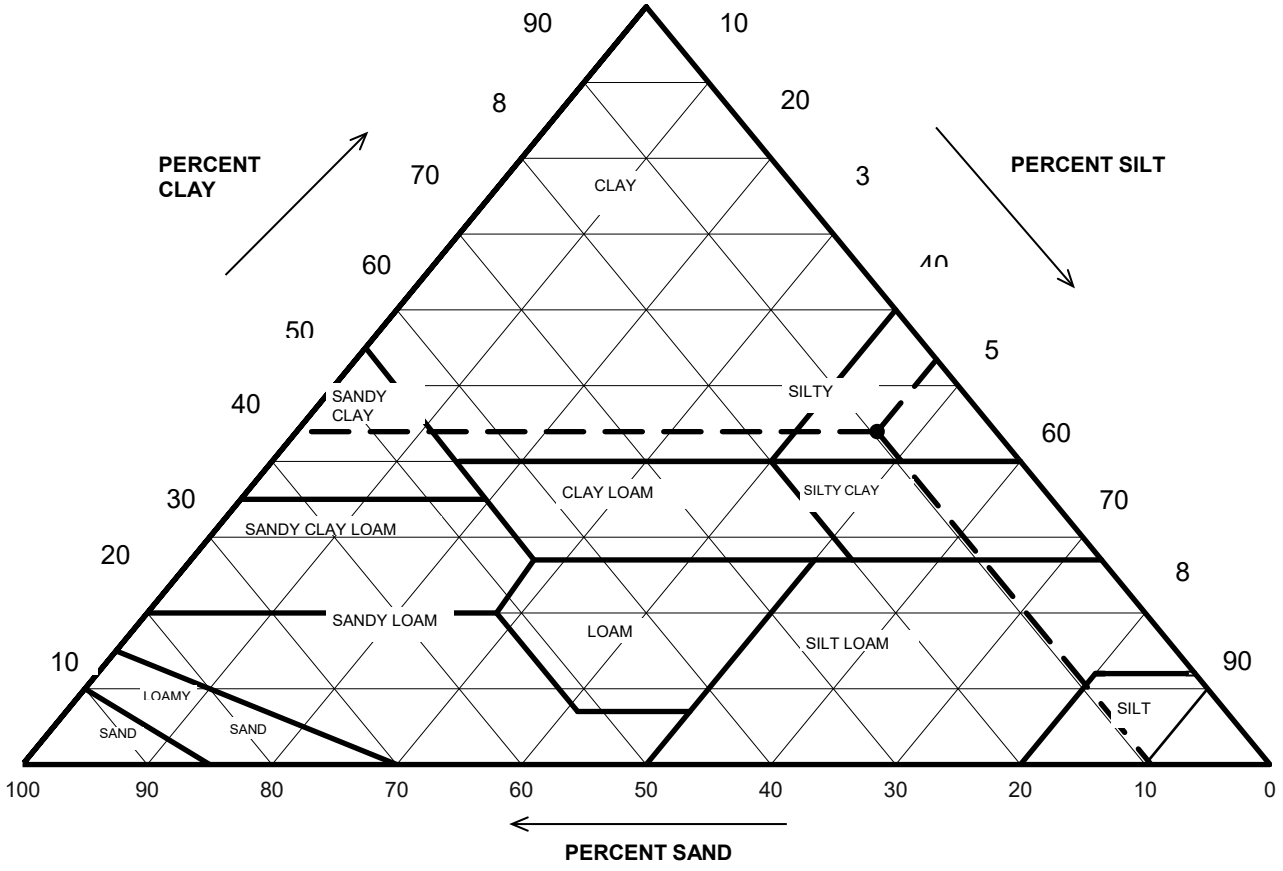
DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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USDA CLASSIFICATION CHART

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R2200960.00	Depth (ft):	12"
Project No.:	2025-173-003	Sample No.:	C-032725-1
Lab ID:	2025-173-003-001	Soil Color:	Brown



Particle Size (mm)	Percent Finer	USDA SUMMARY	Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classification
		Gravel	2.69	**0.00**
2	97.31	*Sand*	9.27	**9.52**
0.05	88.04	*Silt*	45.30	**46.55**
0.002	42.74	*Clay*	42.74	**43.93**

USDA Classification ***SILTY CLAY***

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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WASH SIEVE ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

geotechnics
geotechnical & geosynthetic testing

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R2200960.00	Depth (ft):	12"
Project No.:	2025-173-003	Sample No.:	C-032725-1
Lab ID:	2025-173-003-001	Soil Color:	Brown

Moisture Content of Passing 3/4" Material		Moisture Content of Retained 3/4" Material	
Tare No.:	1453	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	989.45	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	862.26	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	137.10	Weight of Tare (g):	NA
Weight of Water (g):	127.19	Weight of Water (g):	NA
Weight of Dry Soil (g):	725.16	Weight of Dry Soil (g):	NA
Moisture Content (%):	**17.5**	**Moisture Content (%):**	**0.0**

Wet Weight of -3/4" Sample (g):	NA	Weight of the Dry Sample (g):	725.16
Dry Weight of - 3/4" Sample (g):	725.16	Weight of minus #200 Material (g):	652.92
Wet Weight of +3/4" Sample (g):	0.00	Weight of plus #200 Material (g):	72.24
Dry Weight of +3/4" Sample (g):	0.00		
Total Dry Weight of Sample (g):	725.16		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)		Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00		0.00	0.00	100.00	**100.00**
6"	150	0.00		0.00	0.00	100.00	**100.00**
3"	75	0.00		0.00	0.00	100.00	**100.00**
2"	50	0.00	(*)	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00		0.00	0.00	100.00	**100.00**
1"	25	0.00		0.00	0.00	100.00	**100.00**
3/4"	19	0.00		0.00	0.00	100.00	**100.00**
1/2"	12.5	0.00		0.00	0.00	100.00	**100.00**
3/8"	9.5	1.02		0.14	0.14	99.86	**99.86**
#4	4.75	6.04		0.83	0.97	99.03	**99.03**
#10	2	12.47		1.72	2.69	97.31	**97.31**
#20	0.85	13.84	(**)	1.91	4.60	95.40	**95.40**
#40	0.425	11.59		1.60	6.20	93.80	**93.80**
#60	0.25	8.17		1.13	7.33	92.67	**92.67**
#140	0.106	13.07		1.80	9.13	90.87	**90.87**
#200	0.075	6.04		0.83	9.96	90.04	**90.04**
Pan	-	652.92		90.04	100.00	-	**-**

Notes : *(*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample*
*(**) The - 3/4" sieve analysis is based on the Weight of the Dry Sample*

Tested By	DF	Date	4/2/25	Checked By	JLK	Date	4/23/25

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R2200960.00	Depth (ft):	12"
Project No.:	2025-173-003	Sample No.:	C-032725-1
Lab ID:	2025-173-003-001	Soil Color:	Brown

Elapsed Time		R Measured	Temp.	Composite Correction	R Corrected	N	K Factor	Diameter	N'
(min)			(°C)			(%)		(mm)	(%)
0		NA	NA	NA	NA	NA	NA	NA	NA
2		45.0	23.2	4.8	40.2	94.5	0.01294	0.0273	**85.1**
5		42.0	23.2	4.8	37.2	87.4	0.01294	0.0178	**78.7**
15		38.5	23.2	4.8	33.7	79.2	0.01294	0.0106	**71.3**
30		35.5	23.2	4.8	30.7	72.2	0.01294	0.0076	**65.0**
62		33.5	23.1	4.8	28.7	67.4	0.01296	0.0054	**60.7**
250		28.0	22.9	4.8	23.2	54.4	0.01299	0.0028	**48.9**
1440		21.0	22.5	5.0	16.0	37.7	0.01305	0.0012	**33.9**

Soil Specimen Data		**Other Corrections**	
Tare No.	966		
Wt. of Tare & Dry Material (g):	144.98	a - Factor	0.993
Weight of Tare (g):	97.68		
Weight of Deflocculant (g):	5.0	Percent Finer than # 200	90.04
Weight of Dry Material (g):	42.30		
		Specific Gravity	2.70 Assumed

Note: *Hydrometer test is performed on - # 200 sieve material.*

Tested By TO Date 4/21/25 Checked By JLK Date 4/23/25

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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Moisture, Ash, and Organic Matter (Loss on Ignition)

ASTM D 2974-20e1

Client:	GAI Consultants, Inc.
Client Reference:	Cheswick Closure R220960.00
Project No.:	2025-173-003

Method B (To 0.1%)

Moisture Content

ASTM D2216

Lab ID:	001
Boring No.:	Final Closure
Depth (ft):	12"
Sample No.:	C-032725-1
Tare Number	A
Weight of Tare & Wet Sample (g)	156.55
Weight of Tare & Dry Sample (g)	144.68
Weight of Tare (g)	70.12
Weight of Water (g)	11.87
Weight of Dry Sample (g)	74.56
Moisture Content	**15.9%**

Method A

Ash Content, Organic Matter

Furnace Temperature (°C)	440
Weight of Tare & Ash (g)	142.90
Weight of Volatiles (g)	1.78
Weight of Ash (g)	72.78
Ash Content (%)	**97.6%**
Organic Matter (%)	**2.4%**

Tested By JW *Date* 4/2/25 *Checked By* EG *Date* 4/3/25

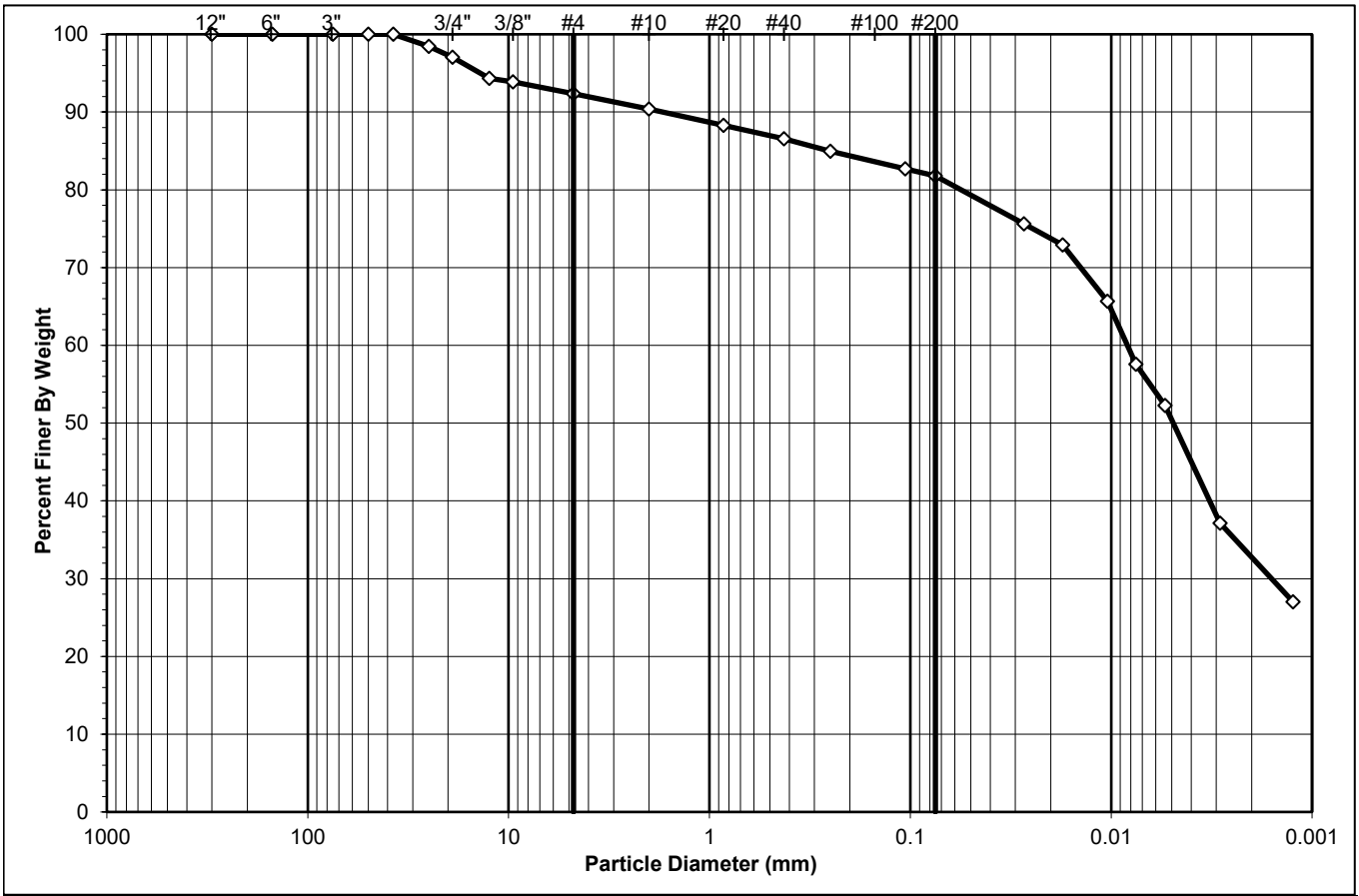
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SIEVE AND HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	12"
Project No.:	2025-173-003	Sample No.:	C-032725-2
Lab ID:	2025-173-003-002	Soil Color:	Brown

	SIEVE ANALYSIS			HYDROMETER	
USCS	cobbles	gravel	sand	silt and clay fraction	
USDA	cobbles	gravel	sand	silt	clay



USCS Summary

Sieve Size (mm)		Percentage (%)
Greater Than #4	*Gravel*	7.65
#4 to #200	*Sand*	10.55
Finer Than #200	*Silt & Clay*	81.80

USCS Symbol:
cl, ASSUMED

USCS Classification:
LEAN CLAY WITH SAND

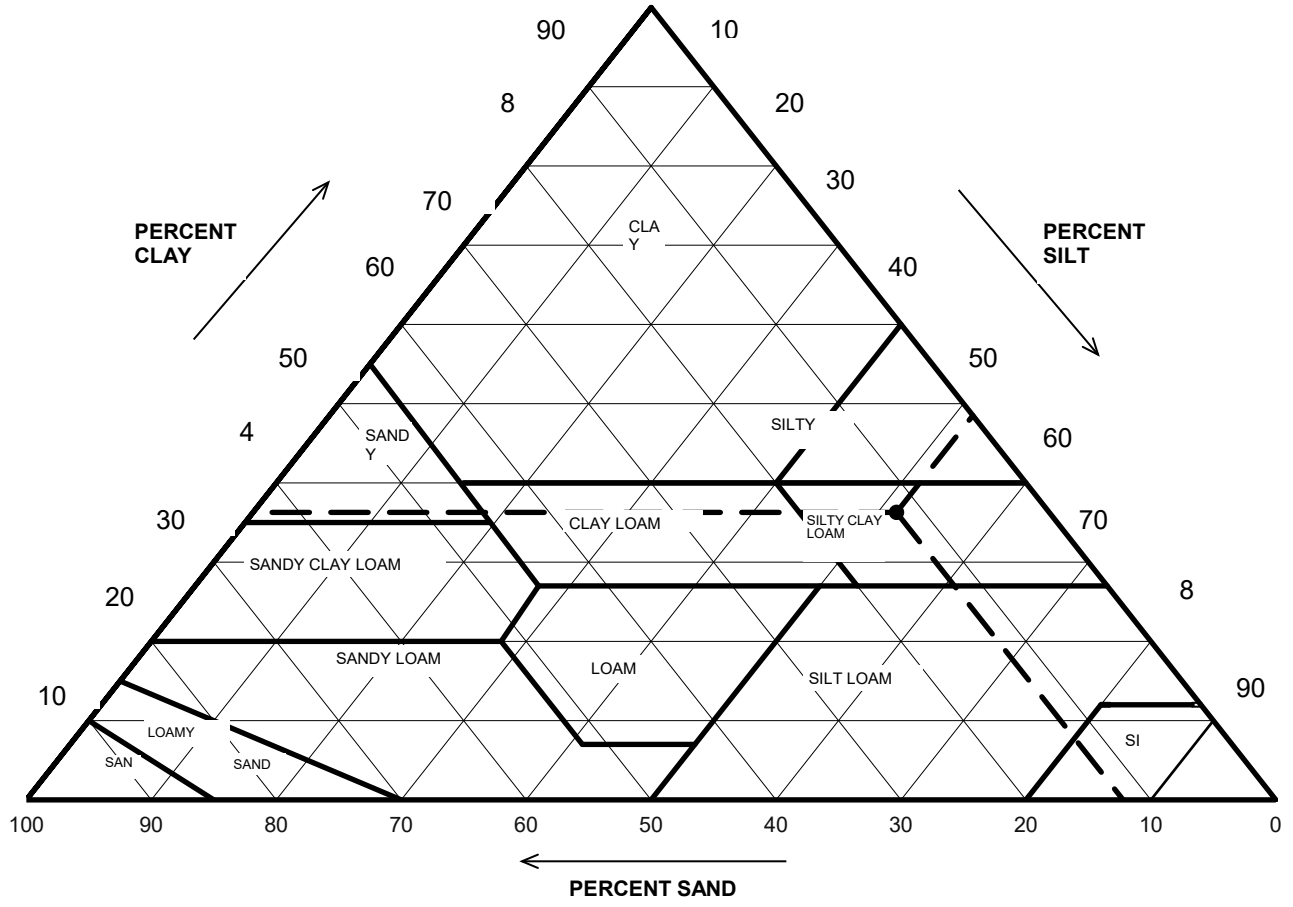
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USDA Classification Chart

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	12"
Project No.:	2025-173-003	Sample No.:	C-032725-2
Lab ID:	2025-173-003-002	Soil Color:	Brown



Particle Size (mm)	Percent Finer	USDA Summary	Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classification
		Gravel	9.62	**0.00**
2	90.38	*Sand*	11.05	**12.22**
0.05	79.33	*Silt*	46.54	**51.50**
0.002	32.79	*Clay*	32.79	**36.28**

USDA Classification ***SILTY CLAY LOAM***

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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WASH SIEVE ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	12"
Project No.:	2025-173-003	Sample No.:	C-032725-2
Lab ID:	2025-173-003-002	Soil Color:	Brown

Moisture Content of Passing 3/4" Material		Moisture Content of Retained 3/4" Material	
Tare No.:	1479	Tare No.:	3230
Wt. of Tare & Wet Sample (g):	867.49	Weight of Tare & Wet Sample (g):	380.01
Wt. of Tare & Dry Sample (g):	768.41	Weight of Tare & Dry Sample (g):	370.22
Weight of Tare (g):	145.55	Weight of Tare (g):	7.55
Weight of Water (g):	99.08	Weight of Water (g):	9.79
Weight of Dry Soil (g):	622.86	Weight of Dry Soil (g):	362.67
Moisture Content (%):	**15.9**	**Moisture Content (%):**	**2.7**

Wet Weight of -3/4" Sample (g):	13897.00	Weight of the Dry Sample (g):	622.86
Dry Weight of - 3/4" Sample (g):	11989.76	Weight of minus #200 Material (g):	525.04
Wet Weight of +3/4" Sample (g):	375.00	Weight of plus #200 Material (g):	97.82
Dry Weight of +3/4" Sample (g):	365.14		
Total Dry Weight of Sample (g):	12354.90	**J - Factor (Percent Finer than 3/4")**	**97.04%**

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)		Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00		0.00	0.00	100.00	**100.00**
6"	150	0.00		0.00	0.00	100.00	**100.00**
3"	75	0.00		0.00	0.00	100.00	**100.00**
2"	50	0.00	(*)	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00		0.00	0.00	100.00	**100.00**
1"	25	196.00		1.54	1.54	98.46	**98.46**
3/4"	19	179.00		1.41	2.96	97.04	**97.04**
1/2"	12.5	17.48		2.81	2.81	97.19	**94.32**
3/8"	9.5	2.73		0.44	3.24	96.76	**93.90**
#4	4.75	9.89		1.59	4.83	95.17	**92.35**
#10	2	12.70		2.04	6.87	93.13	**90.38**
#20	0.85	13.41	(**)	2.15	9.02	90.98	**88.29**
#40	0.425	10.99		1.76	10.79	89.21	**86.57**
#60	0.25	10.43		1.67	12.46	87.54	**84.95**
#140	0.106	14.50		2.33	14.79	85.21	**82.69**
#200	0.075	5.69		0.91	15.70	84.30	**81.80**
Pan	-	525.04		84.30	100.00	-	**-**

NOTES: *(*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample*
*(**) The - 3/4" sieve analysis is based on the Weight of the Dry Sample*

Tested By	DF	Date	4/2/25	Checked By	BRB	Date	4/25/25

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	12"
Project No.:	2025-173-003	Sample No.:	C-032725-2
Lab ID:	2025-173-003-002	Soil Color:	Brown

Elapsed Time		R Measured	Temp.	Composite Correction	R Corrected	N	K Factor	Diameter	N'
(min)			(°C)			(%)		(mm)	(%)
0		NA	NA	NA	NA	NA	NA	NA	NA
2		47.0	22.1	5.1	41.9	92.4	0.01311	0.0272	**75.6**
5		45.5	22.1	5.1	40.4	89.1	0.01311	0.0174	**72.9**
15		41.5	22.1	5.1	36.4	80.3	0.01311	0.0104	**65.7**
31		37.0	22.1	5.1	31.9	70.4	0.01311	0.0075	**57.6**
63		34.0	22.3	5.0	29.0	63.9	0.01308	0.0054	**52.3**
250		25.5	22.7	4.9	20.6	45.4	0.01302	0.0029	**37.1**
1440		20.0	22.3	5.0	15.0	33.0	0.01308	0.0012	**27.0**

Soil Specimen Data		**Other Corrections**		
Tare No.	708			
Wt. of Tare & Dry Material (g):	140.90	a - Factor	0.993	
Weight of Tare (g):	90.85			
Weight of Deflocculant (g):	5.0	Percent Finer than # 200	81.80	
Weight of Dry Material (g):	45.05			
		Specific Gravity	2.70	Assumed

Note: *Hydrometer test is performed on - # 200 sieve material.*

Tested By TO Date 4/23/25 Checked By BRB Date 4/25/25

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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Moisture, Ash, and Organic Matter (Loss on Ignition)

ASTM D 2974-20e1

Client:	GAI Consultants, Inc.
Client Reference:	Cheswick Closure R220960.00
Project No.:	2025-173-003

Method B (To 0.1%)

Moisture Content

ASTM D2216

Lab ID:	002
Boring No.:	Final Closure
Depth (ft):	12"
Sample No.:	C-032725-2
Tare Number	B
Weight of Tare & Wet Sample (g)	159.93
Weight of Tare & Dry Sample (g)	145.99
Weight of Tare (g)	59.17
Weight of Water (g)	13.94
Weight of Dry Sample (g)	86.82
Moisture Content	**16.1%**

Method A

Ash Content, Organic Matter

Furnace Temperature (°C)	440
Weight of Tare & Ash (g)	144.14
Weight of Volatiles (g)	1.85
Weight of Ash (g)	84.97
Ash Content (%)	**97.9%**
Organic Matter (%)	**2.1%**

Tested By JW *Date* 4/2/25 *Checked By* EG *Date* 4/3/25

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PERMEABILITY TEST

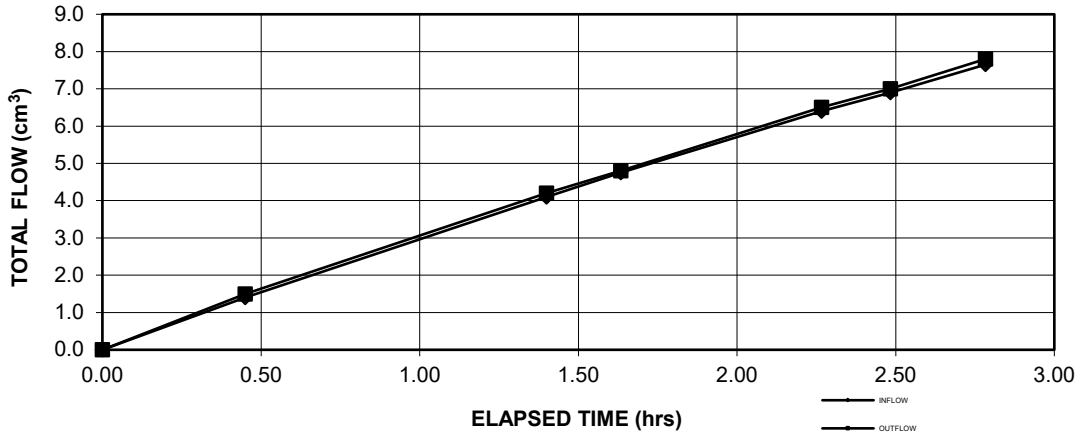
ASTM D 5084-16a Method C

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Project:	Cheswick Closure R220960.00	Depth (ft):	12"
Project No.:	2025-173-003	Sample No.:	C-0327525-2
Lab ID No.:	2025-173-003-002	Avg. Effective Consol. Pressure (psi):	6.25

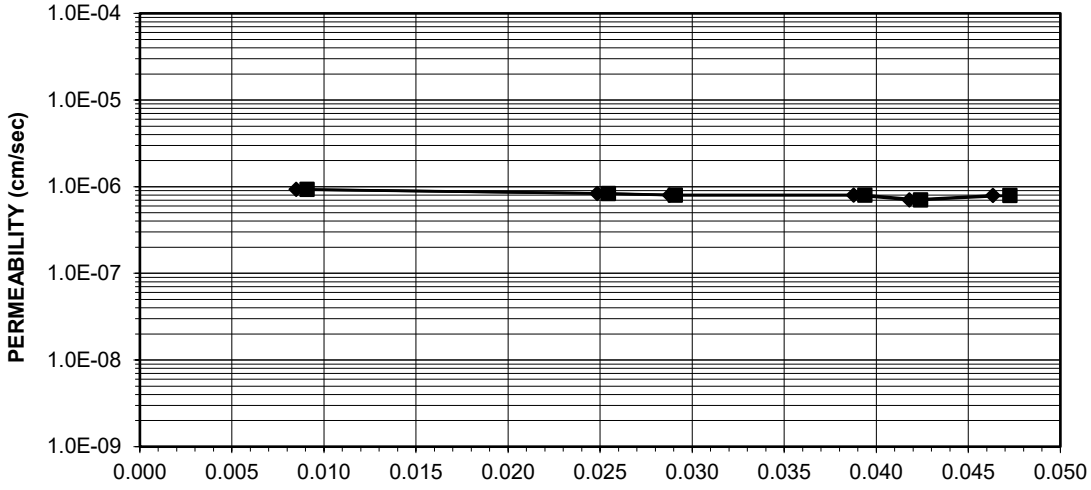
AVERAGE PERMEABILITY = 7.7E-07 cm/sec @ 20°C

AVERAGE PERMEABILITY = 7.7E-09 m/sec @ 20°C

TOTAL FLOW vs. ELAPSED TIME



PORE VOLUMES EXCHANGED vs. PERMEABILITY



Tested By: WT Date: 4/10/25 Checked By: JLK Date: 4/15/25

DCN: CT-22 DATE: 1/1/17 REVISION: 11

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PERMEABILITY TEST

ASTM D 5084-16a Method C

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Project:	Cheswick Closure R220960.00	Depth (ft):	12"
Project No.:	2025-173-003	Sample No.:	C-0327525-2
Lab ID No.:	2025-173-003-002	Avg. Effective Consol. Pressure (psi):	6.25

Specific Gravity: 2.70 Assumed
Sample Condition: Remolded

Visual Description: Brown Clay with Rocks

Permeant Type: Deaired Water

MOISTURE CONTENT:	BEFORE TEST	AFTER TEST
Tare Number	3029	1698
Weight of Tare & Wet Sample (g)	149.38	831.20
Weight of Tare & Dry Sample (g)	126.34	675.09
Weight of Tare (g)	8.26	80.99
Weight of Water (g)	23.04	156.11
Weight of Dry Sample (g)	118.08	594.10
Moisture Content (%)	**19.5**	**26.3**

SPECIMEN:	BEFORE TEST	AFTER TEST
Weight of Tube & Wet Sample (g)	1625.56	NA
Weight of Tube (g)	917.30	NA
Weight of Wet Sample (g)	708.26	748.35
Length 1 (in)	3.490	3.556
Length 2 (in)	3.490	3.569
Length 3 (in)	3.490	3.568
Top Diameter (in)	2.870	2.894
Middle Diameter (in)	2.870	2.903
Bottom Diameter (in)	2.870	2.889
Average Length (in)	3.49	3.56
Average Area (in^2)	6.47	6.58
Sample Volume (cm^3)	369.98	384.56
Unit Wet Weight (g/cm^3)	1.91	1.95
Unit Wet Weight (pcf)	119.5	121.5
Unit Dry Weight (pcf)	100.0	96.2
Unit Dry Weight (g/cm^3)	1.60	1.54
Void Ratio, e	0.69	0.75
Porosity, n	0.41	0.43
Pore Volume (cm^3)	150.5	165.1
Total Weight of Sample After Test (g)		751.24

Tested By: WT Date: 4/10/25 Checked By: JLK Date: 4/15/25

DCN: CT-22 DATE: 1/1/17 REVISION: 11

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PERMEABILITY TEST

ASTM D 5084-16a Method C

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Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Project:	Cheswick Closure R220960.00	Depth (ft):	12"
Project No.:	2025-173-003	Sample No.:	C-0327525-2
Lab ID No.:	2025-173-003-002	Avg. Effective Consol. Pressure (psi):	6.25

Pressure Heads (Constant)	
Top Cap (psi)	67.5
Bottom Cap (psi)	70.0
Cell (psi)	75.0
Total Pressure Head (cm)	175.8
Hydraulic Gradient	19.41

Final Sample Dimensions	
Sample Length (cm), L	9.05
Sample Diameter (cm)	7.35
Sample Area (cm^2), A	42.48
Inflow Burette Area (cm^2), a-in	0.945
Outflow Burette Area (cm^2), a-out	0.915
B Parameter (%)	98

AVERAGE PERMEABILITY = 7.7E-07 cm/sec @ 20°C

AVERAGE PERMEABILITY = 7.7E-09 m/sec @ 20°C

DATE	TIME		ELAPSED TIME t	TOTAL INFLOW	TOTAL OUTFLOW	TOTAL HEAD h	FLOW (0 flow)	TEMP.	INCREMENTAL PERMEABILITY @ 20°C
(mm/dd/yy)	(hr)	(min)	(hr)	(cm^3)	(cm^3)	(cm)	(1 stop)	(°C)	(cm/sec)
4/14/2025	10	23	0.000	0.0	0.0	201.0	0	20.4	NA
4/14/2025	10	50	0.450	1.4	1.5	197.9	0	20.5	9.3E-07
4/14/2025	11	47	1.400	4.1	4.2	192.2	0	20.7	8.3E-07
4/14/2025	12	1	1.633	4.8	4.8	190.9	0	20.7	8.0E-07
4/14/2025	12	39	2.267	6.4	6.5	187.3	0	20.8	8.0E-07
4/14/2025	12	52	2.483	6.9	7.0	186.3	0	20.8	7.0E-07
4/14/2025	13	10	2.783	7.7	7.8	184.6	1	20.9	7.9E-07

Tested By: WT Date: 4/10/25 Checked By: JLK Date: 4/15/25

DCN: CT-22 DATE: 1/1/17 REVISION: 11

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Moisture, Ash, and Organic Matter (Loss on Ignition)

ASTM D 2974-20e1

Client:	GAI Consultants, Inc.
Client Reference:	Cheswick Closure R220960.00
Project No.:	2025-173-003

Method B (To 0.1%)

Moisture Content

ASTM D2216

Lab ID:	003
Boring No.:	Final Closure
Depth (ft):	Stockpile
Sample No.:	C-032725-3
Tare Number	A
Weight of Tare & Wet Sample (g)	158.60
Weight of Tare & Dry Sample (g)	149.11
Weight of Tare (g)	70.16
Weight of Water (g)	9.49
Weight of Dry Sample (g)	78.95
Moisture Content	**12.0%**

Method A

Ash Content, Organic Matter

Furnace Temperature (°C)	440
Weight of Tare & Ash (g)	147.79
Weight of Volatiles (g)	1.32
Weight of Ash (g)	77.63
Ash Content (%)	**98.3%**
Organic Matter (%)	**1.7%**

Tested By JW *Date* 4/2/25 *Checked By* EG *Date* 4/4/25

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Moisture, Ash, and Organic Matter (Loss on Ignition)

ASTM D 2974-20e1

Client:	GAI Consultants, Inc.
Client Reference:	Cheswick Closure R220960.00
Project No.:	2025-173-003

Method B (To 0.1%)

Moisture Content

ASTM D2216

Lab ID:	004
Boring No.:	Final Closure
Depth (ft):	Stockpile
Sample No.:	C-032725-4
Tare Number	B
Weight of Tare & Wet Sample (g)	153.00
Weight of Tare & Dry Sample (g)	142.52
Weight of Tare (g)	59.23
Weight of Water (g)	10.48
Weight of Dry Sample (g)	83.29
Moisture Content	**12.6%**

Method A

Ash Content, Organic Matter

Furnace Temperature (°C)	440
Weight of Tare & Ash (g)	140.87
Weight of Volatiles (g)	1.65
Weight of Ash (g)	81.64
Ash Content (%)	**98.0%**
Organic Matter (%)	**2.0%**

Tested By JW *Date* 4/3/25 *Checked By* EG *Date* 4/4/25

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Correction of Unit Weight and Water Content for Soils Containing Oversize Particles by Specific Gravity

ASTM D4718/D4718M-15

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	12"
Project No.:	2025-173-003	Sample No.:	C-032725-BA
Lab ID:	2025-173-003-008		

Visual Description: Black Sandy Ash with Rock

Total Dry Weight of Sample (g): 12350.1

FINE PORTION		***COARSE PORTION***	
Total Wet Weight of - 3/4" Portion (g):	11921.0	Total Wet Weight of + 3/4" Portion (g):	2154.0
Total Dry Weight of - 3/4" Portion (g):	10331.9	Total Dry Weight of + 3/4" Portion (g):	2018.2
Percent - 3/4" By Dry Weight (%):	83.66	Percent + 3/4" By Dry Weight (%):	16.34

MOISTURE CONTENT OF -3/4" PORTION		***MOISTURE CONTENT OF +3/4" PORTION***	
Tare Number:	4003	Tare Number:	4016
Weight of Tare & Wet Sample (g):	232.64	Weight of Tare & Wet Sample (g):	344.52
Weight of Tare & Dry Sample (g):	202.70	Weight of Tare & Dry Sample (g):	323.26
Weight of Tare (g):	8.04	Weight of Tare (g):	7.20
Weight of Water (g):	29.94	Weight of Water (g):	21.26
Weight of Dry Sample (g):	194.66	Weight of Dry Sample (g):	316.06
Moisture Content (%):	15.38	**Moisture Content (%):**	6.73

SPECIFIC GRAVITY DETERMINATION

Weight of Basket in Air (g):	1031.1
Weight of Saturated Surface Dry Sample & Basket in Air (g):	2214.7
Weight of Saturated Surface Dry Sample in Air (g):	1183.6
Weight of Basket in Water (g):	896.8
Weight of Saturated Sample & Basket in Water (g):	1579.6
Weight of Saturated Sample in Water (g):	682.7
Tare No.:	1551
Weight of Tare and Dried Sample (g):	1226.1
Weight of Tare (g):	143.4
Weight of Dried Soil (g):	1082.7

Bulk Specific Gravity (+3/4"): 2.16

Tested By DF *Date* 4/1/25 *Checked By* EG *Date* 4/2/25

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MOISTURE - DENSITY RELATIONSHIP

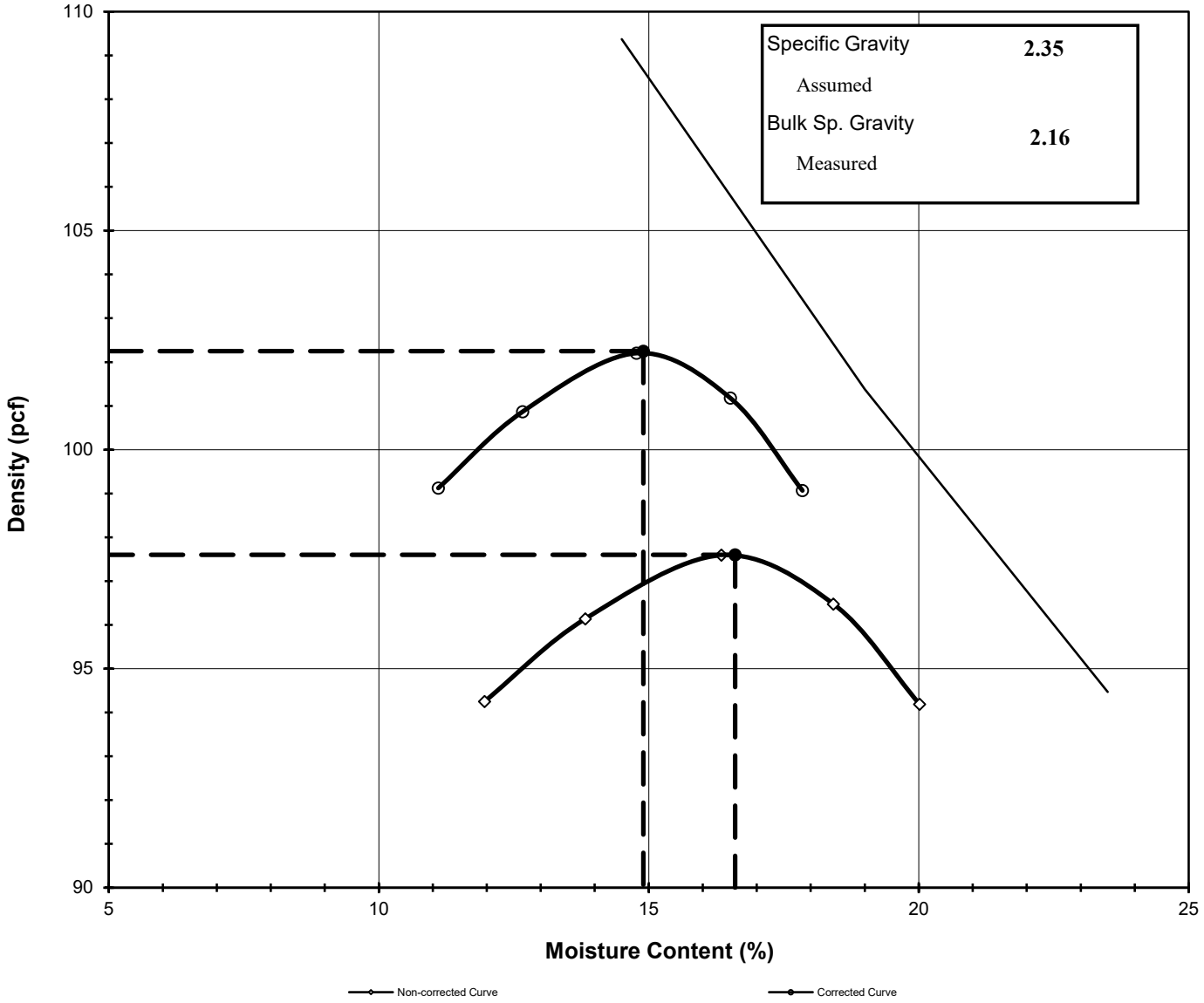
(Corrected for Oversize Particles)

ASTM D 4718-15, D 698-12e2 (SOP-S12,S39)

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	12"
Project No.:	2025-173-003	Sample No.:	C-032725-BA
Lab ID:	2025-173-003-008	Test Method	STANDARD

Visual Description: Black Sandy Ash with Rock

Optimum Moisture Content (%):	**16.6**	**Corrected Moisture Content (%):**	**14.9**
Maximum Dry Density (pcf):	**97.6**	**Corrected Dry Density (pcf):**	**102.3**



Tested By AB *Date* 4/2/25 *Checked By* JLK *Date* 4/3/25

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MOISTURE - DENSITY RELATIONSHIP

(Corrected for Oversize Particles) ASTM D 4718-15, D698-12e2 (SOP-S12,S39)

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	12"
Project No.:	2025-173-003	Sample No.:	C-032725-BA
Lab ID:	2025-173-003-008		

Visual Description: Black Sandy Ash with Rock

Total Weight of the Sample (g):	NA
As Received Water Content (%):	NA
Assumed Specific Gravity	2.35

Percent Retained on 3/4" (Dry):	16.34
Percent Retained on 3/8" (Dry):	NA
Percent Retained on #4 (Dry):	NA
Oversize Material:	Not included
Procedure Used:	C

TestType:	**STANDARD**
Rammer Weight (lb):	5.5
Rammer Drop (in):	12
Rammer Type:	MECHANICAL
Machine ID:	G3349
Mold ID:	G3347
Mold diameter (in):	6"
Weight of the Mold (g):	5715
Volume Of the Mold (cm^3):	2123

Mold/Specimen

Point No.	**1**	**2**	**3**	**4**	**5**
Weight of Mold & Wet Sample (g):	9305	9438	9578	9602	9561
Weight of Mold (g):	5715	5715	5715	5715	5715
Weight of Wet Sample (g):	3590	3723	3863	3887	3846
Mold Volume (cm^3):	2123	2123	2123	2123	2123

Moisture Content/Density

Tare Number:	426	443	472	480	476
Weight of Tare & Wet Sample (g):	492.20	487.74	499.99	497.83	498.78
Weight of Tare & Dry Sample (g):	449.44	439.16	443.68	435.50	431.96
Weight of Tare (g):	91.83	87.73	99.17	97.14	98.16
Weight of Water (g):	42.76	48.58	56.31	62.33	66.82
Weight of Dry Sample (g):	357.61	351.43	344.51	338.36	333.80

Wet Density (g/cm^3):	1.69	1.75	1.82	1.83	1.81
Wet Density (pcf):	105.5	109.4	113.5	114.2	113.0
Moisture Content (%):	**12.0**	**13.8**	**16.3**	**18.4**	**20.0**
Dry Density (pcf):	**94.2**	**96.1**	**97.6**	**96.5**	**94.2**

Zero Air Voids

Moisture Content (%):		14.5	19.0	23.5	
Dry Unit Weight (pcf):		109.4	101.4	94.5	

Calculated Oversize Corrected Moisture & Density

Moisture Content (%):	**11.1**	**12.7**	**14.8**	**16.5**	**17.8**
Dry Density (pcf):	**99.1**	**100.9**	**102.2**	**101.2**	**99.1**

Tested By AB *Date* 4/2/25 *Checked By* JLK *Date* 4/3/25

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April 14, 2025

Project No. 2025-173-001

Cory White
GAI Consultants, Inc.
385 East Waterfront Drive
Homestead, PA 15120

Transmittal
Laboratory Test Results
Cheswick Closure R220960.00

Please find attached the laboratory test results for the above referenced project. The tests were outlined on the Project Verification Form that was transmitted to your firm prior to the testing. The testing was performed in general accordance with the methods listed on the enclosed data sheets. The test results are believed to be representative of the samples that were submitted for testing and are indicative only of the specimens that were evaluated. We have no direct knowledge of the origin of the samples and imply no position with regard to the nature of the test results, i.e. pass/fail and no claims as to the suitability of the material for its intended use.

The test data and all associated project information provided shall be held in strict confidence and disclosed to other parties only with authorization by our Client. The test data submitted herein is considered integral with this report and is not to be reproduced except in whole and only with the authorization of the Client and Geotechnics. The remaining sample materials for this project will be retained for a minimum of 90 days as directed by the Geotechnics' Quality Program.

We are pleased to provide these testing services. Should you have any questions or if we may be of further assistance, please contact our office.

Respectfully submitted,
Geotechnics, Inc.

Nathan Melaro
Director of Operations

We understand that you have a choice in your laboratory services and we thank you for choosing Geotechnics.

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MOISTURE CONTENT

ASTM D 2216-19

Client:	GAI Consultants, Inc.
Client Reference:	Cheswick Closure R220960.00
Project No.:	2025-173-001

Lab ID:	002	003
Boring No.:	Final Closure Plan	Final Closure Plan
Depth (ft):	12"	12"
Sample No.:	C-031425-2	C-031425-3
Tare Number	3534	3009
Wt. of Tare & Wet Sample (g)	300.51	267.77
Wt. of Tare & Dry Sample (g)	257.15	228.38
Weight of Tare (g)	8.10	7.15
Weight of Water (g)	43.36	39.39
Weight of Dry Sample (g)	249.05	221.23
Water Content (%)	**17.4**	**17.8**

Notes :

Tested By JW *Date* 3/24/25 *Checked By* EG *Date* 3/25/25

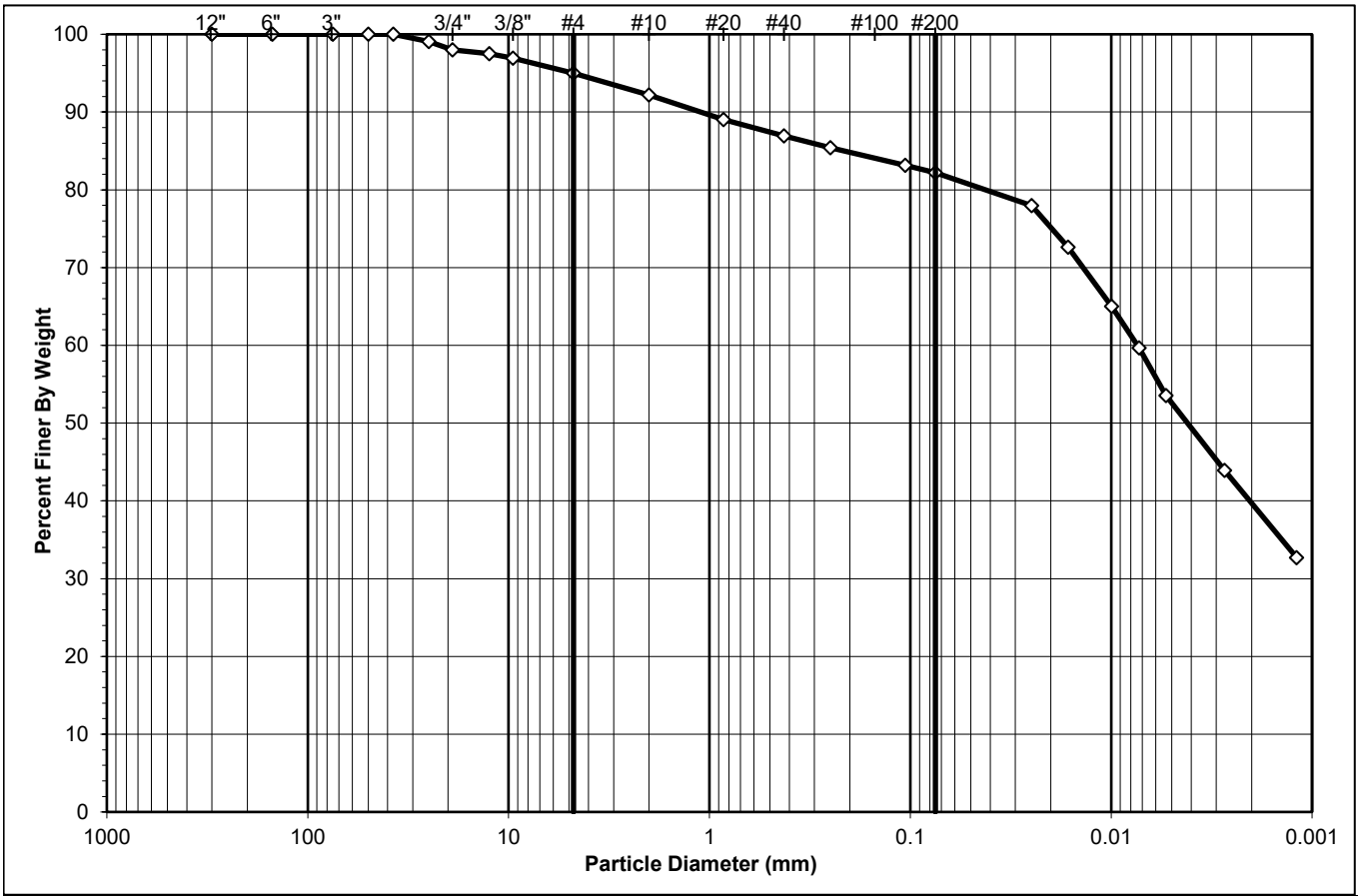
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SIEVE AND HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure Plan
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	Surface
Project No.:	2025-173-001	Sample No.:	C-031425-1
Lab ID:	2025-173-001-001	Soil Color:	Brown

	SIEVE ANALYSIS			HYDROMETER	
USCS	cobbles	gravel	sand	silt and clay fraction	
USDA	cobbles	gravel	sand	silt	clay



USCS Summary

Sieve Size (mm)		Percentage (%)
Greater Than #4	*Gravel*	5.00
#4 to #200	*Sand*	12.79
Finer Than #200	*Silt & Clay*	82.21

USCS Symbol:
cl, ASSUMED

USCS Classification:
LEAN CLAY WITH SAND

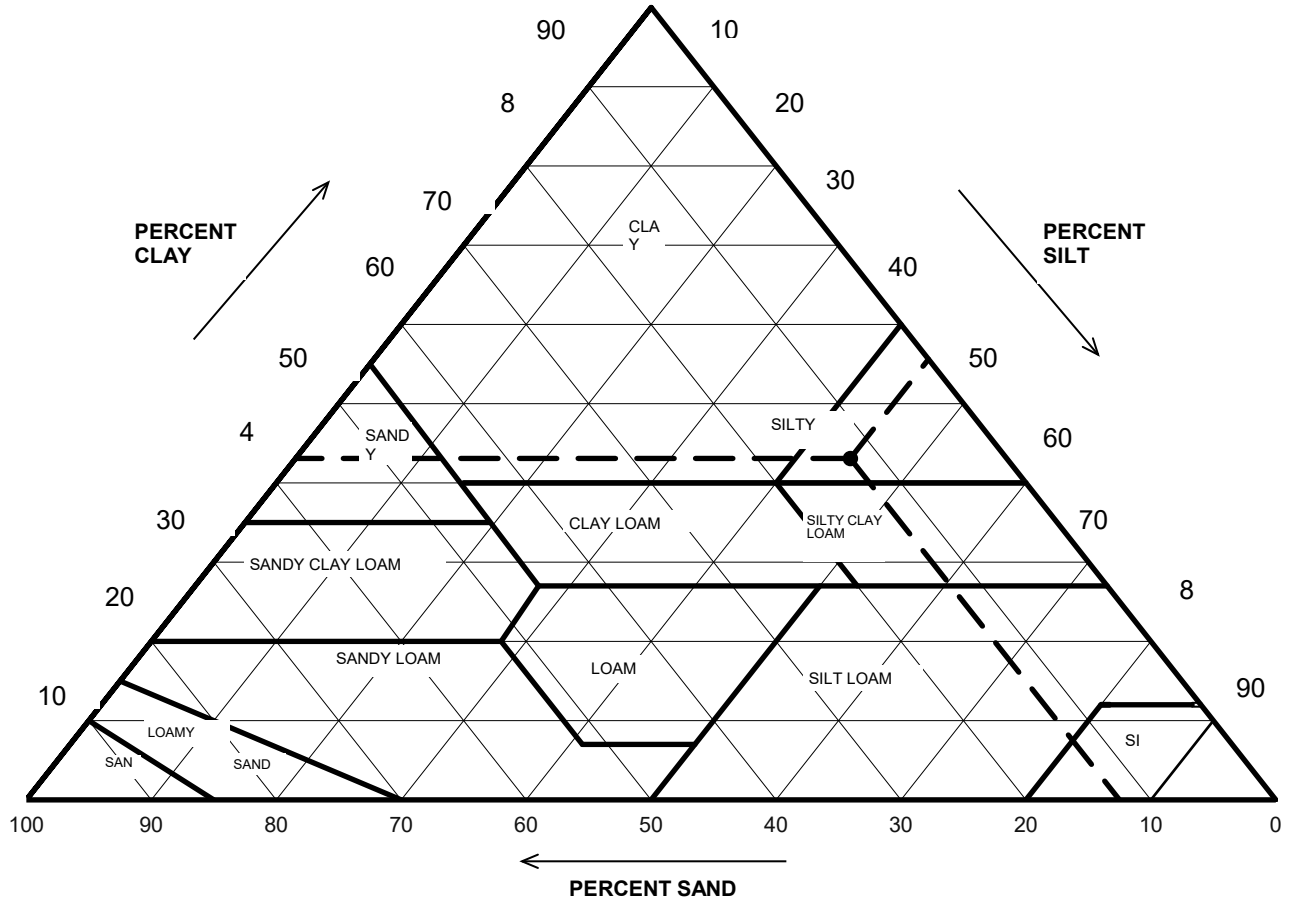
DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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USDA Classification Chart

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure Plan
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	Surface
Project No.:	2025-173-001	Sample No.:	C-031425-1
Lab ID:	2025-173-001-001	Soil Color:	Brown



Particle Size (mm)	Percent Finer	USDA Summary	Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classification
		Gravel	7.81	**0.00**
2	92.19	*Sand*	11.54	**12.51**
0.05	80.65	*Silt*	40.93	**44.40**
0.002	39.72	*Clay*	39.72	**43.09**

USDA Classification ***SILTY CLAY***

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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WASH SIEVE ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure Plan
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	Surface
Project No.:	2025-173-001	Sample No.:	C-031425-1
Lab ID:	2025-173-001-001	Soil Color:	Brown

Moisture Content of Passing 3/4" Material		Moisture Content of Retained 3/4" Material	
Tare No.:	1480	Tare No.:	4031
Wt. of Tare & Wet Sample (g):	948.09	Weight of Tare & Wet Sample (g):	303.53
Wt. of Tare & Dry Sample (g):	864.31	Weight of Tare & Dry Sample (g):	296.2
Weight of Tare (g):	147.82	Weight of Tare (g):	7.14
Weight of Water (g):	83.78	Weight of Water (g):	7.33
Weight of Dry Soil (g):	716.49	Weight of Dry Soil (g):	289.06
Moisture Content (%):	**11.7**	**Moisture Content (%):**	**2.5**

Wet Weight of -3/4" Sample (g):	15891.00	Weight of the Dry Sample (g):	716.49
Dry Weight of - 3/4" Sample (g):	14227.38	Weight of minus #200 Material (g):	601.06
Wet Weight of +3/4" Sample (g):	298.00	Weight of plus #200 Material (g):	115.43
Dry Weight of +3/4" Sample (g):	290.63		
Total Dry Weight of Sample (g):	14518.01	**J - Factor (Percent Finer than 3/4")**	**98.00%**

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)		Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00		0.00	0.00	100.00	**100.00**
6"	150	0.00		0.00	0.00	100.00	**100.00**
3"	75	0.00		0.00	0.00	100.00	**100.00**
2"	50	0.00	(*)	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00		0.00	0.00	100.00	**100.00**
1"	25	138.00		0.93	0.93	99.07	**99.07**
3/4"	19	160.00		1.07	2.00	98.00	**98.00**
1/2"	12.5	3.62		0.51	0.51	99.49	**97.50**
3/8"	9.5	4.19		0.58	1.09	98.91	**96.93**
#4	4.75	14.13		1.97	3.06	96.94	**95.00**
#10	2	20.52		2.86	5.93	94.07	**92.19**
#20	0.85	22.94	(**)	3.20	9.13	90.87	**89.05**
#40	0.425	15.51		2.16	11.29	88.71	**86.93**
#60	0.25	11.08		1.55	12.84	87.16	**85.42**
#140	0.106	16.61		2.32	15.16	84.84	**83.14**
#200	0.075	6.83		0.95	16.11	83.89	**82.21**
Pan	-	601.06		83.89	100.00	-	**-**

NOTES: *(*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample*
*(**) The - 3/4" sieve analysis is based on the Weight of the Dry Sample*

Tested By	DF	Date	3/26/25	Checked By	EG	Date	4/7/25

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure Plan
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	Surface
Project No.:	2025-173-001	Sample No.:	C-031425-1
Lab ID:	2025-173-001-001	Soil Color:	Brown

Elapsed Time		R Measured	Temp.	Composite Correction	R Corrected	N	K Factor	Diameter	N'
(min)			(°C)			(%)		(mm)	(%)
0		NA	NA	NA	NA	NA	NA	NA	NA
2		56.5	21.1	5.4	51.1	94.8	0.01327	0.0249	**78.0**
5		53.0	21.1	5.4	47.6	88.4	0.01327	0.0164	**72.6**
15		48.0	21.1	5.4	42.6	79.1	0.01327	0.0099	**65.0**
30		44.5	21.1	5.4	39.1	72.6	0.01327	0.0073	**59.7**
60		40.5	21.0	5.4	35.1	65.1	0.01328	0.0053	**53.5**
250		34.0	21.7	5.2	28.8	53.4	0.01317	0.0027	**43.9**
1440		26.5	22.2	5.0	21.5	39.8	0.01310	0.0012	**32.7**

Soil Specimen Data		**Other Corrections**	
Tare No.	1920		
Wt. of Tare & Dry Material (g):	151.64	a - Factor	0.993
Weight of Tare (g):	93.09		
Weight of Deflocculant (g):	5.0	Percent Finer than # 200	82.21
Weight of Dry Material (g):	53.55		
		Specific Gravity	2.70 Assumed

Note: *Hydrometer test is performed on - # 200 sieve material.*

Tested By TO Date 4/2/25 Checked By EG Date 4/7/25

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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Moisture, Ash, and Organic Matter (Loss on Ignition)

ASTM D 2974-20e1

Client:	GAI Consultants, Inc.
Client Reference:	Cheswick Closure R220960.00
Project No.:	2025-173-001

Method B (To 0.1%)

Moisture Content

ASTM D2216

Lab ID:	001
Boring No.:	Final Closure Plan
Depth (ft):	Surface
Sample No.:	C-031425-1
Tare Number	EE
Weight of Tare & Wet Sample (g)	378.43
Weight of Tare & Dry Sample (g)	350.37
Weight of Tare (g)	126.95
Weight of Water (g)	28.06
Weight of Dry Sample (g)	223.42
Moisture Content	**12.6%**

Method A

Ash Content, Organic Matter

Furnace Temperature (°C)	440
Weight of Tare & Ash (g)	343.36
Weight of Volatiles (g)	7.01
Weight of Ash (g)	216.41
Ash Content (%)	**96.9%**
Organic Matter (%)	**3.1%**

Tested By JW *Date* 3/25/25 *Checked By* EG *Date* 3/26/25

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PERMEABILITY TEST

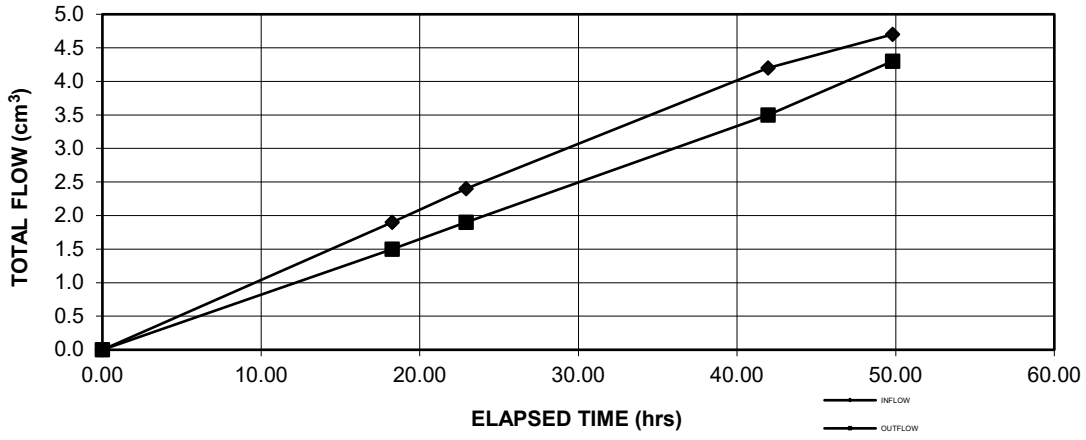
ASTM D 5084-16a Method C

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure Plan
Client Project:	Cheswick Closure R220960.00	Depth (ft):	Surface
Project No.:	2025-173-001	Sample No.:	C-031425-1
Lab ID No.:	2025-173-001-001	Avg. Effective Consol. Pressure (psi):	6.25

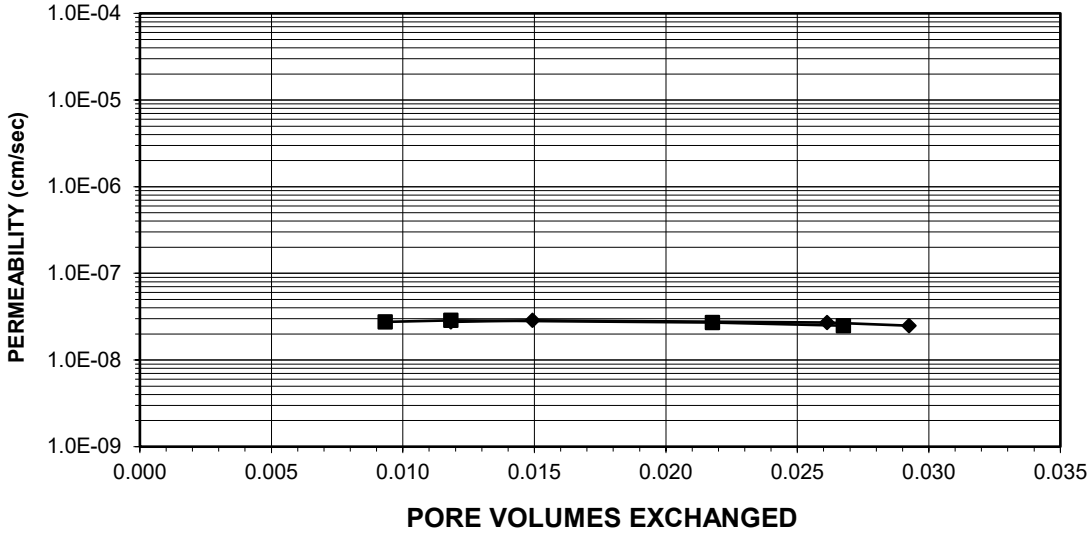
AVERAGE PERMEABILITY = 2.7E-08 cm/sec @ 20°C

AVERAGE PERMEABILITY = 2.7E-10 m/sec @ 20°C

TOTAL FLOW vs. ELAPSED TIME



PORE VOLUMES EXCHANGED vs. PERMEABILITY



Tested By: WT Date: 4/2/25 Checked By: JLK Date: 4/14/25

DCN: CT-22 DATE: 1/1/17 REVISION: 11

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PERMEABILITY TEST

ASTM D 5084-16a Method C

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure Plan
Client Project:	Cheswick Closure R220960.00	Depth (ft):	Surface
Project No.:	2025-173-001	Sample No.:	C-031425-1
Lab ID No.:	2025-173-001-001	Avg. Effective Consol. Pressure (psi):	6.25

Specific Gravity:	2.70	Assumed
Sample Condition:		Remolded

Visual Description: Brown Clay with Rocks

Permeant Type: Deaired Water

MOISTURE CONTENT:	BEFORE TEST	AFTER TEST
Tare Number	3098	909
Weight of Tare & Wet Sample (g)	185.78	852.71
Weight of Tare & Dry Sample (g)	156.80	702.48
Weight of Tare (g)	7.37	108.82
Weight of Water (g)	28.98	150.23
Weight of Dry Sample (g)	149.43	593.66
Moisture Content (%)	**19.4**	**25.3**

SPECIMEN:	BEFORE TEST	AFTER TEST
Weight of Tube & Wet Sample (g)	1624.77	NA
Weight of Tube (g)	917.30	NA
Weight of Wet Sample (g)	707.47	742.50
Length 1 (in)	3.490	3.548
Length 2 (in)	3.490	3.573
Length 3 (in)	3.490	3.566
Top Diameter (in)	2.870	2.878
Middle Diameter (in)	2.870	2.885
Bottom Diameter (in)	2.870	2.876
Average Length (in)	3.49	3.56
Average Area (in^2)	6.47	6.51
Sample Volume (cm^3)	369.98	380.20
Unit Wet Weight (g/cm^3)	1.91	1.95
Unit Wet Weight (pcf)	119.4	121.9
Unit Dry Weight (pcf)	100.0	97.3
Unit Dry Weight (g/cm^3)	1.60	1.56
Void Ratio, e	0.69	0.73
Porosity, n	0.41	0.42
Pore Volume (cm^3)	150.5	160.7
Total Weight of Sample After Test (g)		744.60

Tested By: WT Date: 4/2/25 Checked By: JLK Date: 4/14/25

DCN: CT-22 DATE: 1/1/17 REVISION: 11

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PERMEABILITY TEST

ASTM D 5084-16a Method C

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Client:	GAI Consultants, Inc.	Boring No.:	Final Closure Plan
Client Project:	Cheswick Closure R220960.00	Depth (ft):	Surface
Project No.:	2025-173-001	Sample No.:	C-031425-1
Lab ID No.:	2025-173-001-001	Avg. Effective Consol. Pressure (psi):	6.25

Pressure Heads (Constant)	
Top Cap (psi)	77.5
Bottom Cap (psi)	80.0
Cell (psi)	85.0
Total Pressure Head (cm)	175.8
Hydraulic Gradient	19.42

Final Sample Dimensions	
Sample Length (cm), L	9.05
Sample Diameter (cm)	7.31
Sample Area (cm^2), A	42.02
Inflow Burette Area (cm^2), a-in	0.852
Outflow Burette Area (cm^2), a-out	0.862
B Parameter (%)	95

AVERAGE PERMEABILITY = 2.7E-08 cm/sec @ 20°C

AVERAGE PERMEABILITY = 2.7E-10 m/sec @ 20°C

DATE	TIME		ELAPSED TIME t	TOTAL INFLOW	TOTAL OUTFLOW	TOTAL HEAD h	FLOW (0 flow)	TEMP.	INCREMENTAL PERMEABILITY @ 20°C
(mm/dd/yy)	(hr)	(min)	(hr)	(cm^3)	(cm^3)	(cm)	(1 stop)	(°C)	(cm/sec)
4/8/2025	12	55	0.000	0.0	0.0	203.7	0	20.6	NA
4/9/2025	7	11	18.267	1.9	1.5	199.7	0	20.0	2.8E-08
4/9/2025	11	51	22.933	2.4	1.9	198.7	0	20.3	2.9E-08
4/10/2025	6	53	41.967	4.2	3.5	194.7	0	20.0	2.7E-08
4/10/2025	14	43	49.800	4.7	4.3	193.2	1	21.0	2.5E-08

Tested By: WT Date: 4/2/25 Checked By: JLK Date: 4/14/25

DCN: CT-22 DATE: 1/1/17 REVISION: 11

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SIEVE AND HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure Plan
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	12"
Project No.:	2025-173-001	Sample No.:	C-031425-2
Lab ID:	2025-173-001-002	Soil Color:	Brown

	SIEVE ANALYSIS			HYDROMETER	
USCS	cobbles	gravel	sand	silt and clay fraction	
USDA	cobbles	gravel	sand	silt	clay



USCS Summary

Sieve Size (mm)		Percentage (%)
Greater Than #4	*Gravel*	6.98
#4 to #200	*Sand*	13.27
Finer Than #200	*Silt & Clay*	79.75

USCS Symbol:
cl, ASSUMED

USCS Classification:
LEAN CLAY WITH SAND

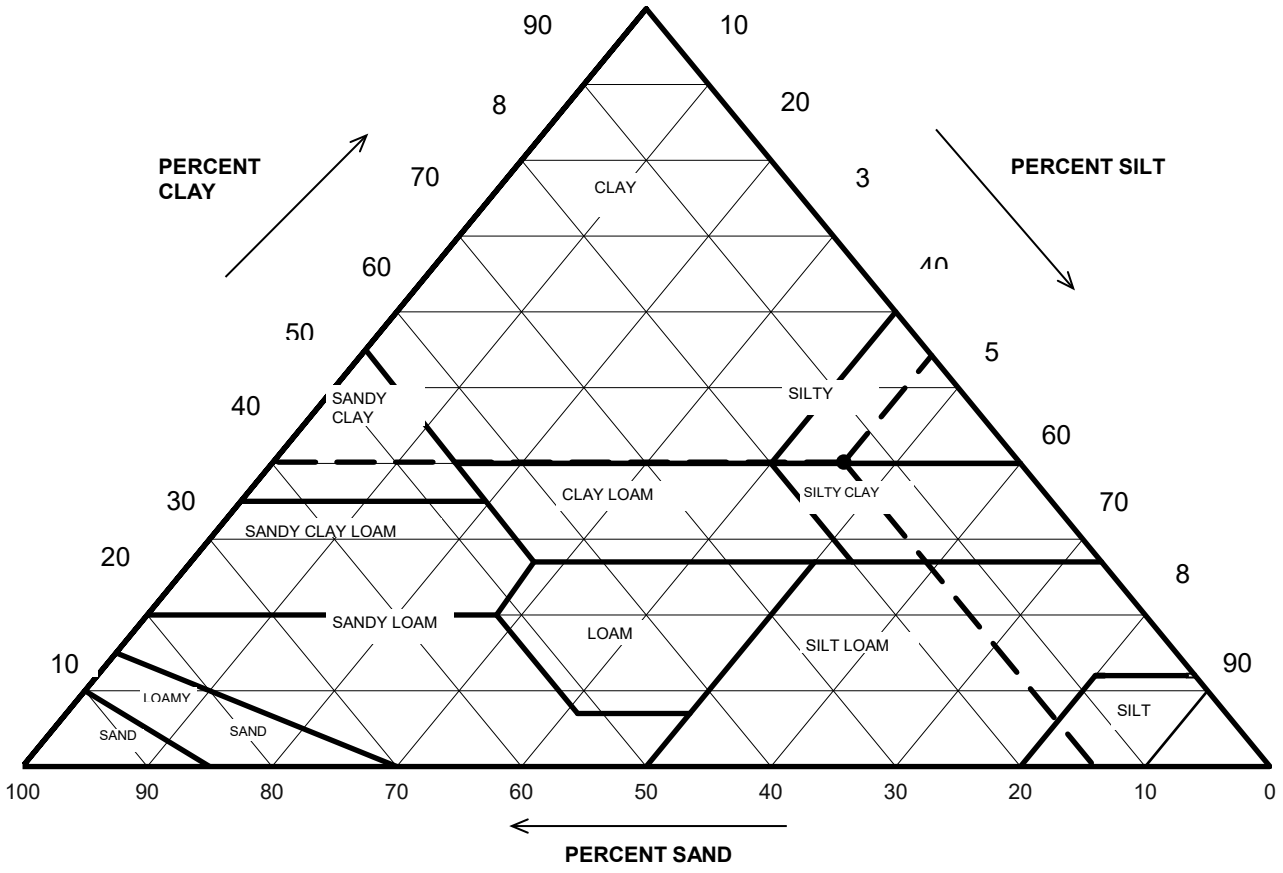
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USDA CLASSIFICATION CHART

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure Plan
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	12"
Project No.:	2025-173-001	Sample No.:	C-031425-2
Lab ID:	2025-173-001-002	Soil Color:	Brown



Particle Size (mm)	Percent Finer	USDA SUMMARY	Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classification
		Gravel	10.09	**0.00**
2	89.91	*Sand*	12.65	**14.07**
0.05	77.26	*Silt*	41.14	**45.76**
0.002	36.12	*Clay*	36.12	**40.17**

USDA Classification ***SILTY CLAY***

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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WASH SIEVE ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

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Client:	GAI Consultants, Inc.	Boring No.:	Final Closure Plan
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	12"
Project No.:	2025-173-001	Sample No.:	C-031425-2
Lab ID:	2025-173-001-002	Soil Color:	Brown

Moisture Content of Passing 3/4" Material		Moisture Content of Retained 3/4" Material	
Tare No.:	1551	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	990.42	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	864.98	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	143.57	Weight of Tare (g):	NA
Weight of Water (g):	125.44	Weight of Water (g):	NA
Weight of Dry Soil (g):	721.41	Weight of Dry Soil (g):	NA
Moisture Content (%):	**17.4**	**Moisture Content (%):**	**0.0**

Wet Weight of -3/4" Sample (g):	NA	Weight of the Dry Sample (g):	721.41
Dry Weight of - 3/4" Sample (g):	699.02	Weight of minus #200 Material (g):	575.34
Wet Weight of +3/4" Sample (g):	22.39	Weight of plus #200 Material (g):	146.07
Dry Weight of +3/4" Sample (g):	22.39		
Total Dry Weight of Sample (g):	721.41		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)		Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00		0.00	0.00	100.00	**100.00**
6"	150	0.00		0.00	0.00	100.00	**100.00**
3"	75	0.00		0.00	0.00	100.00	**100.00**
2"	50	0.00	(*)	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00		0.00	0.00	100.00	**100.00**
1"	25	22.39		3.10	3.10	96.90	**96.90**
3/4"	19	0.00		0.00	3.10	96.90	**96.90**
1/2"	12.5	6.21		0.86	3.96	96.04	**96.04**
3/8"	9.5	8.00		1.11	5.07	94.93	**94.93**
#4	4.75	13.76		1.91	6.98	93.02	**93.02**
#10	2	22.40		3.11	10.09	89.91	**89.91**
#20	0.85	23.46	(**)	3.25	13.34	86.66	**86.66**
#40	0.425	15.89		2.20	15.54	84.46	**84.46**
#60	0.25	10.40		1.44	16.98	83.02	**83.02**
#140	0.106	16.26		2.25	19.24	80.76	**80.76**
#200	0.075	7.30		1.01	20.25	79.75	**79.75**
Pan	-	575.34		79.75	100.00	-	**-**

Notes : *(*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample*
*(**) The - 3/4" sieve analysis is based on the Weight of the Dry Sample*

Tested By	DF	Date	3/26/25	Checked By	EG	Date	4/7/25

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure Plan
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	12"
Project No.:	2025-173-001	Sample No.:	C-031425-2
Lab ID:	2025-173-001-002	Soil Color:	Brown

Elapsed Time		R Measured	Temp.	Composite Correction	R Corrected	N	K Factor	Diameter	N'
(min)			(°C)			(%)		(mm)	(%)
0		NA	NA	NA	NA	NA	NA	NA	NA
2		54.0	21.1	5.4	48.6	91.7	0.01327	0.0256	**73.1**
5		51.5	21.1	5.4	46.1	87.0	0.01327	0.0166	**69.4**
15		47.0	21.1	5.4	41.6	78.5	0.01327	0.0100	**62.6**
31		43.5	21.1	5.4	38.1	71.9	0.01327	0.0072	**57.4**
60		40.0	21.0	5.4	34.6	65.3	0.01328	0.0054	**52.1**
250		31.5	21.7	5.2	26.3	49.6	0.01317	0.0028	**39.6**
1440		25.5	22.2	5.0	20.5	38.6	0.01310	0.0012	**30.8**

Soil Specimen Data		**Other Corrections**		
Tare No.	967			
Wt. of Tare & Dry Material (g):	155.38	a - Factor	0.993	
Weight of Tare (g):	97.71			
Weight of Deflocculant (g):	5.0	Percent Finer than # 200	79.75	
Weight of Dry Material (g):	52.67			
		Specific Gravity	2.70	Assumed

Note: *Hydrometer test is performed on - # 200 sieve material.*

Tested By	TO	Date	4/2/25	Checked By	EG	Date	4/7/25

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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Moisture, Ash, and Organic Matter (Loss on Ignition)

ASTM D 2974-20e1

Client:	GAI Consultants, Inc.
Client Reference:	Cheswick Closure R220960.00
Project No.:	2025-173-001

Method B (To 0.1%)

Moisture Content

ASTM D2216

Lab ID:	002
Boring No.:	Final Closure Plan
Depth (ft):	12"
Sample No.:	C-031425-2
Tare Number	CC
Weight of Tare & Wet Sample (g)	377.95
Weight of Tare & Dry Sample (g)	340.23
Weight of Tare (g)	130.53
Weight of Water (g)	37.72
Weight of Dry Sample (g)	209.70
Moisture Content	**18.0%**

Method A

Ash Content, Organic Matter

Furnace Temperature (°C)	440
Weight of Tare & Ash (g)	333.81
Weight of Volatiles (g)	6.42
Weight of Ash (g)	203.28
Ash Content (%)	**96.9%**
Organic Matter (%)	**3.1%**

Tested By JW *Date* 3/25/25 *Checked By* EG *Date* 3/26/25

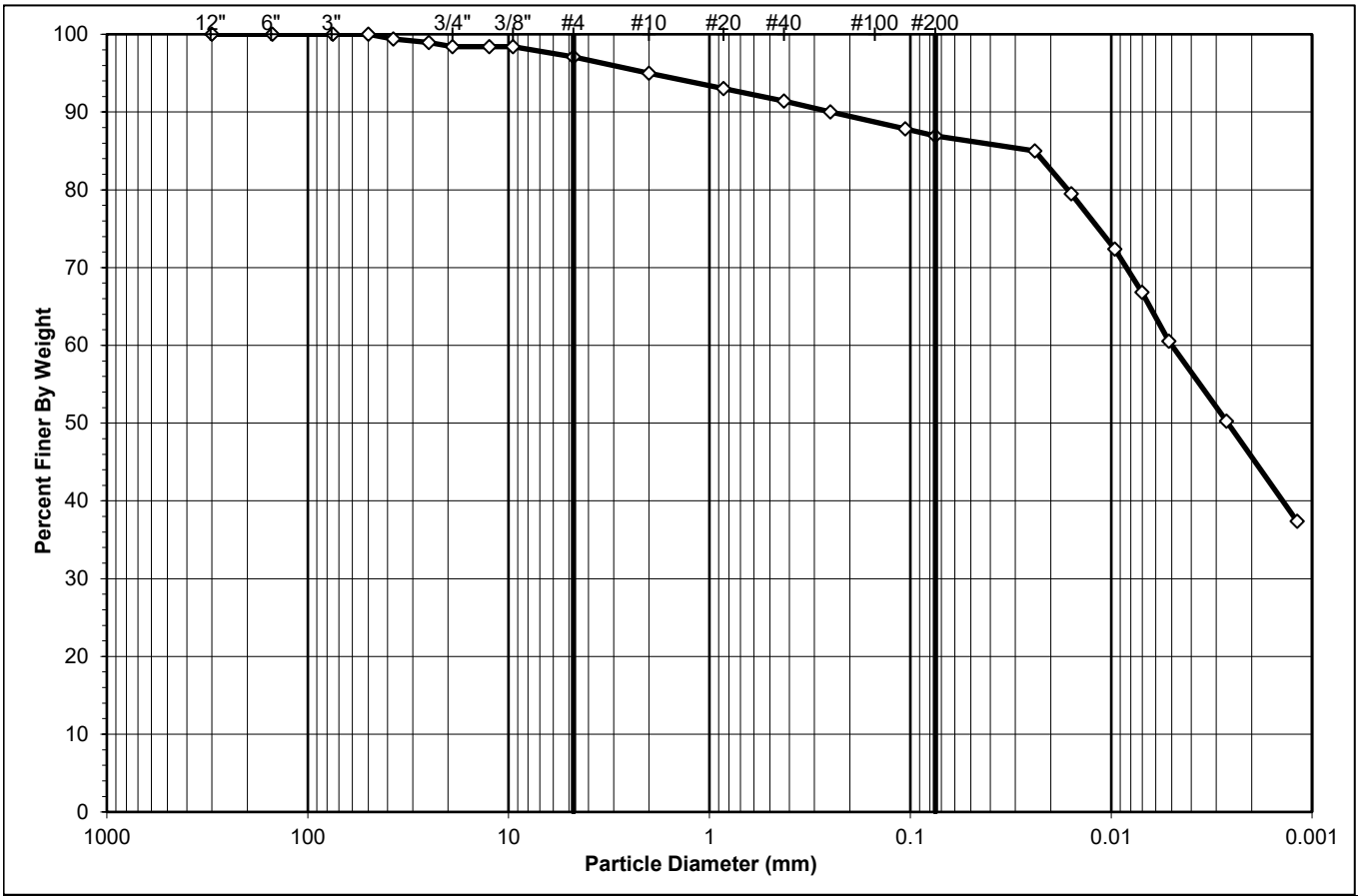
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SIEVE AND HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure Plan
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	12"
Project No.:	2025-173-001	Sample No.:	C-031425-3
Lab ID:	2025-173-001-003	Soil Color:	Brown

	SIEVE ANALYSIS			HYDROMETER	
USCS	cobbles	gravel	sand	silt and clay fraction	
USDA	cobbles	gravel	sand	silt	clay



USCS Summary

Sieve Size (mm)		Percentage (%)
Greater Than #4	*Gravel*	2.89
#4 to #200	*Sand*	10.17
Finer Than #200	*Silt & Clay*	86.94

USCS Symbol:
cl, ASSUMED

USCS Classification:
LEAN CLAY

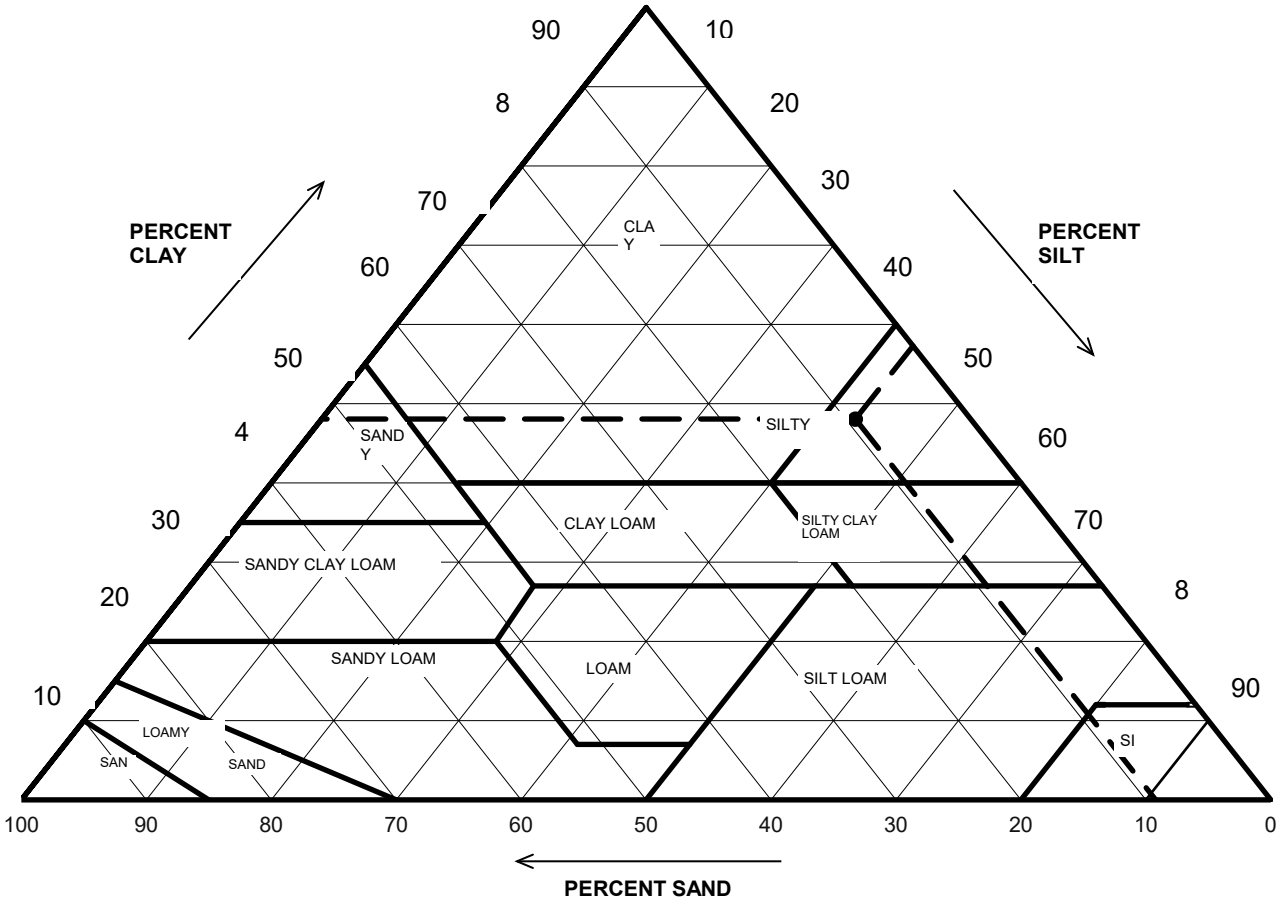
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USDA Classification Chart

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure Plan
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	12"
Project No.:	2025-173-001	Sample No.:	C-031425-3
Lab ID:	2025-173-001-003	Soil Color:	Brown



Particle Size (mm)	Percent Finer	USDA Summary	Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classification
		Gravel	4.99	**0.00**
2	95.01	*Sand*	8.76	**9.22**
0.05	86.26	*Silt*	40.59	**42.72**
0.002	45.66	*Clay*	45.66	**48.06**

USDA Classification ***SILTY CLAY***

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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WASH SIEVE ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure Plan
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	12"
Project No.:	2025-173-001	Sample No.:	C-031425-3
Lab ID:	2025-173-001-003	Soil Color:	Brown

Moisture Content of Passing 3/4" Material		Moisture Content of Retained 3/4" Material	
Tare No.:	1428	Tare No.:	4008
Wt. of Tare & Wet Sample (g):	985.77	Weight of Tare & Wet Sample (g):	210.13
Wt. of Tare & Dry Sample (g):	858.2	Weight of Tare & Dry Sample (g):	203.8
Weight of Tare (g):	144.65	Weight of Tare (g):	8.02
Weight of Water (g):	127.57	Weight of Water (g):	6.33
Weight of Dry Soil (g):	713.55	Weight of Dry Soil (g):	195.78
Moisture Content (%):	**17.9**	**Moisture Content (%):**	**3.2**

Wet Weight of -3/4" Sample (g):	14370.00	Weight of the Dry Sample (g):	713.55
Dry Weight of - 3/4" Sample (g):	12190.55	Weight of minus #200 Material (g):	630.41
Wet Weight of +3/4" Sample (g):	204.00	Weight of plus #200 Material (g):	83.14
Dry Weight of +3/4" Sample (g):	197.61		
Total Dry Weight of Sample (g):	12388.16	**J - Factor (Percent Finer than 3/4")**	**98.40%**

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)		Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00		0.00	0.00	100.00	**100.00**
6"	150	0.00		0.00	0.00	100.00	**100.00**
3"	75	0.00		0.00	0.00	100.00	**100.00**
2"	50	0.00	(*)	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	76.00		0.59	0.59	99.41	**99.41**
1"	25	61.00		0.48	1.07	98.93	**98.93**
3/4"	19	67.00		0.52	1.60	98.40	**98.40**
1/2"	12.5	0.00		0.00	0.00	100.00	**98.40**
3/8"	9.5	0.00		0.00	0.00	100.00	**98.40**
#4	4.75	9.42		1.32	1.32	98.68	**97.11**
#10	2	15.17		2.13	3.45	96.55	**95.01**
#20	0.85	14.55	(**)	2.04	5.49	94.51	**93.01**
#40	0.425	11.49		1.61	7.10	92.90	**91.42**
#60	0.25	10.28		1.44	8.54	91.46	**90.00**
#140	0.106	15.79		2.21	10.75	89.25	**87.83**
#200	0.075	6.44		0.90	11.65	88.35	**86.94**
Pan	-	630.41		88.35	100.00	-	**-**

NOTES: *(*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample*
*(**) The - 3/4" sieve analysis is based on the Weight of the Dry Sample*

Tested By	DF	Date	3/27/25	Checked By	EG	Date	4/4/25

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure Plan
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	12"
Project No.:	2025-173-001	Sample No.:	C-031425-3
Lab ID:	2025-173-001-003	Soil Color:	Brown

Elapsed Time		R Measured	Temp.	Composite Correction	R Corrected	N	K Factor	Diameter	N'
(min)			(°C)			(%)		(mm)	(%)
0		NA	NA	NA	NA	NA	NA	NA	NA
2		59.0	21.6	5.2	53.8	97.8	0.01319	0.0240	**85.0**
5		55.5	21.6	5.2	50.3	91.4	0.01319	0.0158	**79.5**
15		51.0	21.6	5.2	45.8	83.2	0.01319	0.0096	**72.4**
30		47.5	21.6	5.2	42.3	76.9	0.01319	0.0070	**66.8**
60		43.5	21.6	5.2	38.3	69.6	0.01319	0.0052	**60.5**
250		37.0	21.6	5.2	31.8	57.8	0.01319	0.0027	**50.2**
1440		29.0	21.1	5.4	23.6	43.0	0.01327	0.0012	**37.4**

Soil Specimen Data		**Other Corrections**	
Tare No.	2324		
Wt. of Tare & Dry Material (g):	153.80	a - Factor	0.993
Weight of Tare (g):	94.18		
Weight of Deflocculant (g):	5.0	Percent Finer than # 200	86.94
Weight of Dry Material (g):	54.62		
		Specific Gravity	2.70 Assumed

Note: *Hydrometer test is performed on - # 200 sieve material.*

Tested By TO Date 4/1/25 Checked By EG Date 4/4/25

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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Moisture, Ash, and Organic Matter (Loss on Ignition)

ASTM D 2974-20e1

Client:	GAI Consultants, Inc.
Client Reference:	Cheswick Closure R220960.00
Project No.:	2025-173-001

Method B (To 0.1%)

Moisture Content

ASTM D2216

Lab ID:	003
Boring No.:	Final Closure Plan
Depth (ft):	12"
Sample No.:	C-031425-3
Tare Number	FF
Weight of Tare & Wet Sample (g)	308.20
Weight of Tare & Dry Sample (g)	280.56
Weight of Tare (g)	115.50
Weight of Water (g)	27.64
Weight of Dry Sample (g)	165.06
Moisture Content	**16.7%**

Method A

Ash Content, Organic Matter

Furnace Temperature (°C)	440
Weight of Tare & Ash (g)	275.60
Weight of Volatiles (g)	4.96
Weight of Ash (g)	160.10
Ash Content (%)	**97.0%**
Organic Matter (%)	**3.0%**

Tested By JW *Date* 3/25/25 *Checked By* EG *Date* 3/26/25

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PERMEABILITY TEST

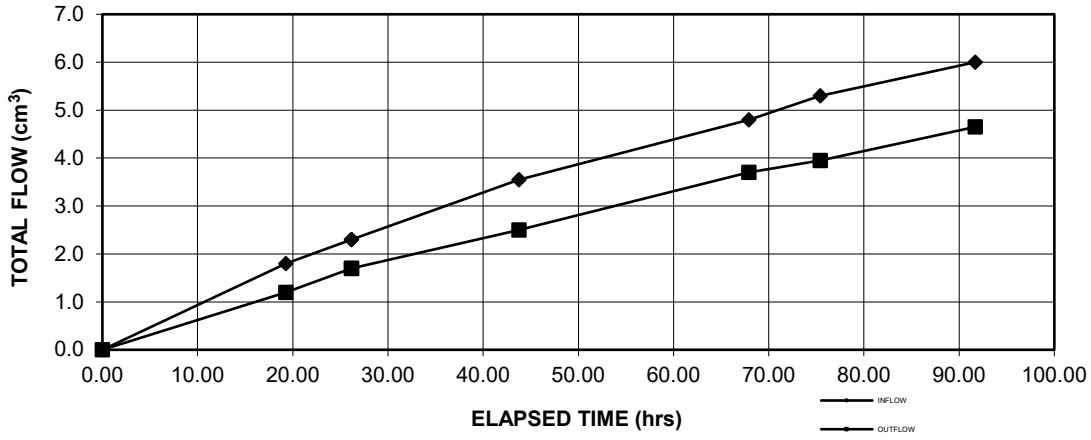
ASTM D 5084-16a Method C

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure Plan
Client Project:	Cheswick Closure R220960.00	Depth (ft):	12"
Project No.:	2025-173-001	Sample No.:	C-031425-3
Lab ID No.:	2025-176-001-003	Avg. Effective Consol. Pressure (psi):	6.25

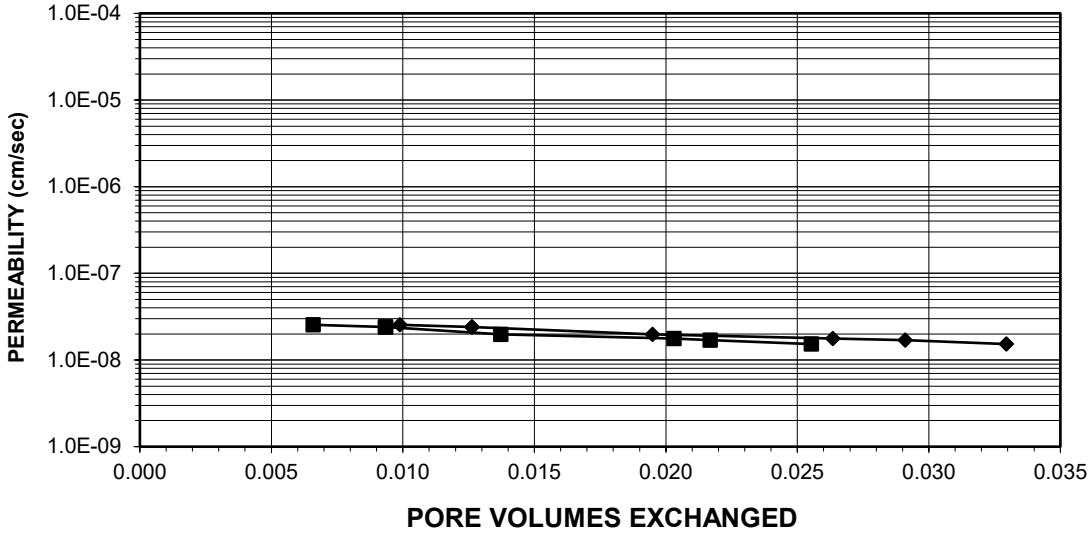
AVERAGE PERMEABILITY = 1.7E-08 cm/sec @ 20°C

AVERAGE PERMEABILITY = 1.7E-10 m/sec @ 20°C

TOTAL FLOW vs. ELAPSED TIME



PORE VOLUMES EXCHANGED vs. PERMEABILITY



Tested By: JAB Date: 4/1/25 Checked By: JLK Date: 4/14/25

DCN: CT-22 DATE: 1/1/17 REVISION: 11

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PERMEABILITY TEST

ASTM D 5084-16a Method C

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure Plan
Client Project:	Cheswick Closure R220960.00	Depth (ft):	12"
Project No.:	2025-173-001	Sample No.:	C-031425-3
Lab ID No.:	2025-176-001-003	Avg. Effective Consol. Pressure (psi):	6.25

Specific Gravity:	2.70	Assumed
Sample Condition:		Remolded

Visual Description: Brown Clay with Rocks

Permeant Type: Deaired Water

MOISTURE CONTENT:	BEFORE TEST	AFTER TEST
Tare Number	3188	1713
Weight of Tare & Wet Sample (g)	195.04	934.36
Weight of Tare & Dry Sample (g)	164.87	761.64
Weight of Tare (g)	8.05	82.59
Weight of Water (g)	30.17	172.72
Weight of Dry Sample (g)	156.82	679.05
Moisture Content (%)	**19.2**	**25.4**

SPECIMEN:	BEFORE TEST	AFTER TEST
Weight of Tube & Wet Sample (g)	2123.44	NA
Weight of Tube (g)	1315.30	NA
Weight of Wet Sample (g)	808.14	850.14
Length 1 (in)	3.970	4.054
Length 2 (in)	3.970	4.047
Length 3 (in)	3.970	4.086
Top Diameter (in)	2.877	2.888
Middle Diameter (in)	2.877	2.866
Bottom Diameter (in)	2.877	2.881
Average Length (in)	3.97	4.06
Average Area (in^2)	6.50	6.51
Sample Volume (cm^3)	422.92	433.16
Unit Wet Weight (g/cm^3)	1.91	1.96
Unit Wet Weight (pcf)	119.3	122.5
Unit Dry Weight (pcf)	100.0	97.7
Unit Dry Weight (g/cm^3)	1.60	1.56
Void Ratio, e	0.68	0.73
Porosity, n	0.41	0.42
Pore Volume (cm^3)	171.9	182.1
Total Weight of Sample After Test (g)		851.96

Tested By: JAB Date: 4/1/25 Checked By: JLK Date: 4/14/25

DCN: CT-22 DATE: 1/1/17 REVISION: 11

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PERMEABILITY TEST

ASTM D 5084-16a Method C

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Client:	GAI Consultants, Inc.	Boring No.:	Final Closure Plan
Client Project:	Cheswick Closure R220960.00	Depth (ft):	12"
Project No.:	2025-173-001	Sample No.:	C-031425-3
Lab ID No.:	2025-176-001-003	Avg. Effective Consol. Pressure (psi):	6.25

Pressure Heads (Constant)	
Top Cap (psi)	87.5
Bottom Cap (psi)	90.0
Cell (psi)	95.0
Total Pressure Head (cm)	175.8
Hydraulic Gradient	17.03

Final Sample Dimensions	
Sample Length (cm), L	10.32
Sample Diameter (cm)	7.31
Sample Area (cm^2), A	41.98
Inflow Burette Area (cm^2), a-in	1.056
Outflow Burette Area (cm^2), a-out	0.902

AVERAGE PERMEABILITY = 1.7E-08 cm/sec @ 20°C

AVERAGE PERMEABILITY = 1.7E-10 m/sec @ 20°C

DATE	TIME		ELAPSED TIME t	TOTAL INFLOW	TOTAL OUTFLOW	TOTAL HEAD h	FLOW (0 flow)	TEMP.	INCREMENTAL PERMEABILITY @ 20°C
(mm/dd/yy)	(hr)	(min)	(hr)	(cm^3)	(cm^3)	(cm)	(1 stop)	(°C)	(cm/sec)
4/3/2025	12	10	0.000	0.0	0.0	198.0	0	21.9	NA
4/4/2025	7	26	19.267	1.8	1.2	194.9	0	21.8	2.5E-08
4/4/2025	14	19	26.150	2.3	1.7	193.9	1	22.5	2.4E-08
4/7/2025	13	24	26.150	2.3	1.7	198.0	0	21.1	NA
4/8/2025	7	0	43.750	3.6	2.5	195.9	0	20.1	2.0E-08
4/9/2025	7	9	67.900	4.8	3.7	193.4	0	20.0	1.8E-08
4/9/2025	14	40	75.417	5.3	4.0	192.6	0	20.5	1.7E-08
4/10/2025	6	57	91.700	6.0	4.7	191.2	1	20.0	1.5E-08

Tested By: JAB Date: 4/1/25 Checked By: JLK Date: 4/14/25

DCN: CT-22 DATE: 1/1/17 REVISION: 11

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SIEVE AND HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure Plan
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	Stockpile
Project No.:	2025-173-001	Sample No.:	C-0314925-4
Lab ID:	2025-173-001-004	Soil Color:	Dark Brown

	SIEVE ANALYSIS			HYDROMETER	
USCS	cobbles	gravel	sand	silt and clay fraction	
USDA	cobbles	gravel	sand	silt	clay



USCS Summary

Sieve Size (mm)		Percentage (%)
Greater Than #4	*Gravel*	7.28
#4 to #200	*Sand*	10.26
Finer Than #200	*Silt & Clay*	82.46

USCS Symbol:
cl, ASSUMED

USCS Classification:
LEAN CLAY WITH SAND

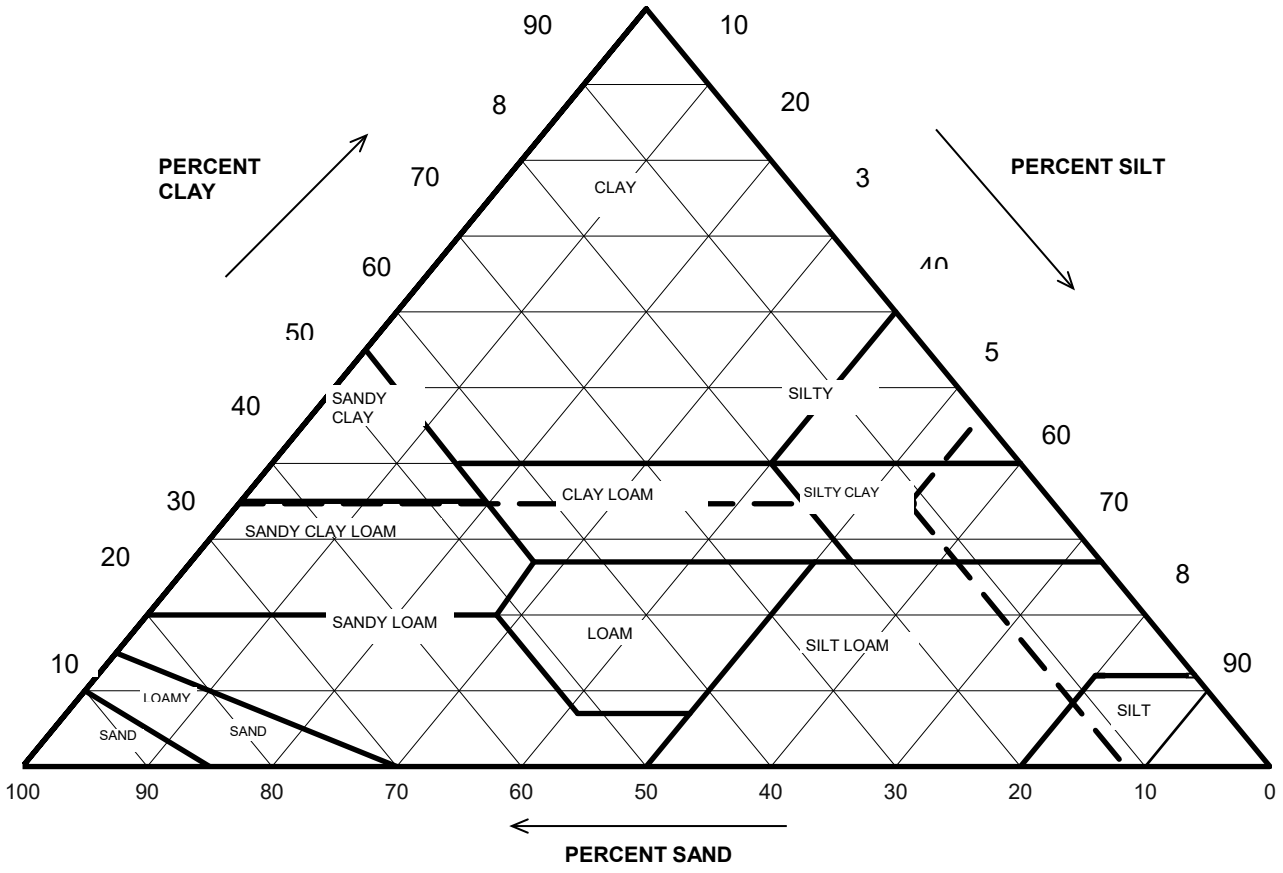
DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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USDA CLASSIFICATION CHART

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure Plan
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	Stockpile
Project No.:	2025-173-001	Sample No.:	C-0314925-4
Lab ID:	2025-173-001-004	Soil Color:	Dark Brown



Particle Size (mm)	Percent Finer	USDA SUMMARY	Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classification
		Gravel	8.87	**0.00**
2	91.13	*Sand*	10.57	**11.60**
0.05	80.56	*Silt*	48.96	**53.73**
0.002	31.60	*Clay*	31.60	**34.67**

USDA Classification ***SILTY CLAY LOAM***

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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WASH SIEVE ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

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Client:	GAI Consultants, Inc.	Boring No.:	Final Closure Plan
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	Stockpile
Project No.:	2025-173-001	Sample No.:	C-0314925-4
Lab ID:	2025-173-001-004	Soil Color:	Dark Brown

Moisture Content of Passing 3/4" Material		Moisture Content of Retained 3/4" Material	
Tare No.:	1554	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	948.46	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	820.11	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	143.32	Weight of Tare (g):	NA
Weight of Water (g):	128.35	Weight of Water (g):	NA
Weight of Dry Soil (g):	676.79	Weight of Dry Soil (g):	NA
Moisture Content (%):	**19.0**	**Moisture Content (%):**	**0.0**

Wet Weight of -3/4" Sample (g):	NA	Weight of the Dry Sample (g):	676.79
Dry Weight of - 3/4" Sample (g):	655.15	Weight of minus #200 Material (g):	558.08
Wet Weight of +3/4" Sample (g):	21.64	Weight of plus #200 Material (g):	118.71
Dry Weight of +3/4" Sample (g):	21.64		
Total Dry Weight of Sample (g):	676.79		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)		Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00		0.00	0.00	100.00	**100.00**
6"	150	0.00		0.00	0.00	100.00	**100.00**
3"	75	0.00		0.00	0.00	100.00	**100.00**
2"	50	0.00	(*)	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00		0.00	0.00	100.00	**100.00**
1"	25	0.00		0.00	0.00	100.00	**100.00**
3/4"	19	21.64		3.20	3.20	96.80	**96.80**
1/2"	12.5	3.52		0.52	3.72	96.28	**96.28**
3/8"	9.5	9.09		1.34	5.06	94.94	**94.94**
#4	4.75	15.03		2.22	7.28	92.72	**92.72**
#10	2	10.75		1.59	8.87	91.13	**91.13**
#20	0.85	12.99	(**)	1.92	10.79	89.21	**89.21**
#40	0.425	10.71		1.58	12.37	87.63	**87.63**
#60	0.25	10.87		1.61	13.98	86.02	**86.02**
#140	0.106	16.53		2.44	16.42	83.58	**83.58**
#200	0.075	7.58		1.12	17.54	82.46	**82.46**
Pan	-	558.08		82.46	100.00	-	**-**

Notes : *(*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample*
*(**) The - 3/4" sieve analysis is based on the Weight of the Dry Sample*

Tested By	DF	Date	3/27/25	Checked By	EG	Date	4/3/25

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure Plan
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	Stockpile
Project No.:	2025-173-001	Sample No.:	C-0314925-4
Lab ID:	2025-173-001-004	Soil Color:	Dark Brown

Elapsed Time		R Measured	Temp.	Composite Correction	R Corrected	N	K Factor	Diameter	N'
(min)			(°C)			(%)		(mm)	(%)
0		NA	NA	NA	NA	NA	NA	NA	NA
2		50.0	21.6	5.2	44.8	94.1	0.01319	0.0265	**77.6**
5		46.5	21.6	5.2	41.3	86.7	0.01319	0.0174	**71.5**
15		42.5	21.6	5.2	37.3	78.3	0.01319	0.0104	**64.6**
30		38.5	21.6	5.2	33.3	69.9	0.01319	0.0076	**57.7**
62		34.0	21.6	5.2	28.8	60.5	0.01319	0.0055	**49.9**
250		27.5	21.6	5.2	22.3	46.8	0.01319	0.0029	**38.6**
1440		18.5	21.1	5.4	13.1	27.6	0.01327	0.0013	**22.8**

Soil Specimen Data		**Other Corrections**		
Tare No.	947			
Wt. of Tare & Dry Material (g):	148.59	a - Factor	0.993	
Weight of Tare (g):	96.32			
Weight of Deflocculant (g):	5.0	Percent Finer than # 200	82.46	
Weight of Dry Material (g):	47.27			
		Specific Gravity	2.70	Assumed

Note: *Hydrometer test is performed on - # 200 sieve material.*

Tested By	TO	Date	4/1/25	Checked By	EG	Date	4/3/25

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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Moisture, Ash, and Organic Matter (Loss on Ignition)

ASTM D 2974-20e1

Client:	GAI Consultants, Inc.
Client Reference:	Cheswick Closure R220960.00
Project No.:	2025-173-001

Method B (To 0.1%)

Moisture Content

ASTM D2216

Lab ID:	004
Boring No.:	Final Closure Plan
Depth (ft):	Stockpile
Sample No.:	C-031425-4
Tare Number	HH
Weight of Tare & Wet Sample (g)	387.56
Weight of Tare & Dry Sample (g)	344.60
Weight of Tare (g)	134.01
Weight of Water (g)	42.96
Weight of Dry Sample (g)	210.59
Moisture Content	**20.4%**

Method A

Ash Content, Organic Matter

Furnace Temperature (°C)	440
Weight of Tare & Ash (g)	339.26
Weight of Volatiles (g)	5.34
Weight of Ash (g)	205.25
Ash Content (%)	**97.5%**
Organic Matter (%)	**2.5%**

Tested By JW *Date* 3/25/25 *Checked By* EG *Date* 3/26/25

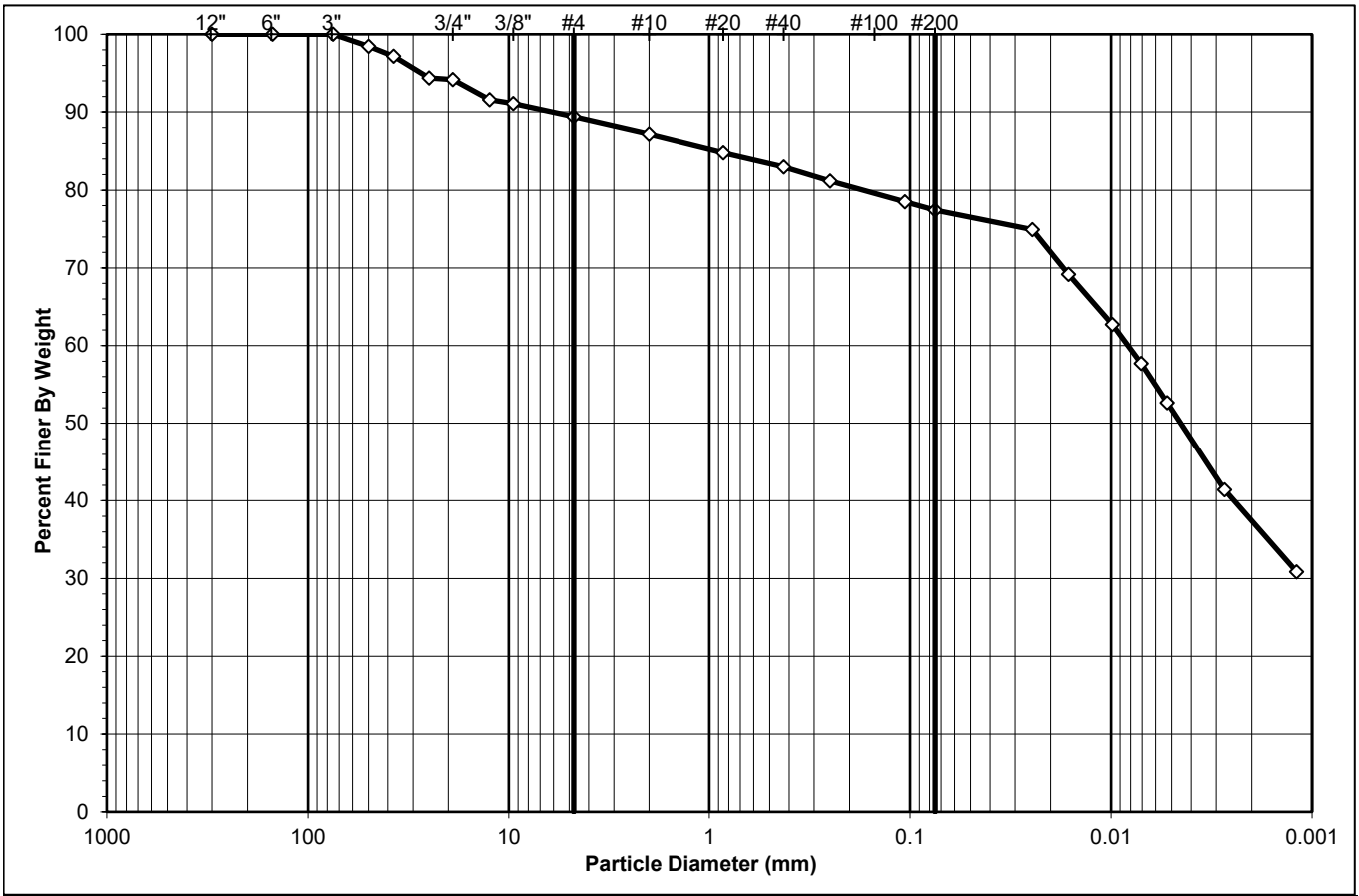
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SIEVE AND HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure Plan
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	Composite
Project No.:	2025-173-001	Sample No.:	C-031425-Proctor
Lab ID:	2025-173-001-005	Soil Color:	Brown

	SIEVE ANALYSIS			HYDROMETER	
USCS	cobbles	gravel	sand	silt and clay fraction	
USDA	cobbles	gravel	sand	silt	clay



USCS Summary

Sieve Size (mm)		Percentage (%)
Greater Than #4	*Gravel*	10.60
#4 to #200	*Sand*	11.95
Finer Than #200	*Silt & Clay*	77.45

USCS Symbol:
cl, ASSUMED

USCS Classification:
LEAN CLAY WITH SAND

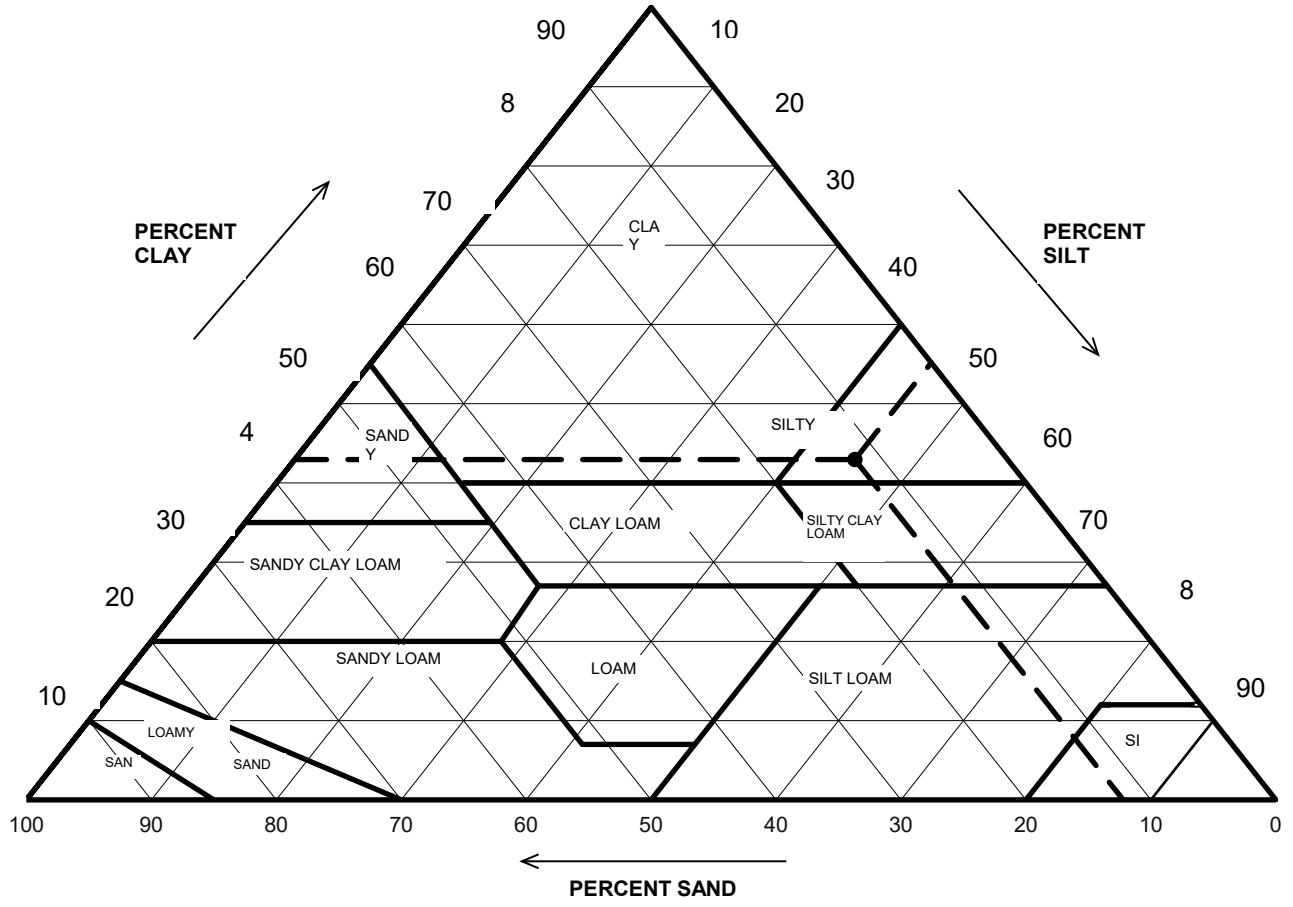
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USDA Classification Chart

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure Plan
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	Composite
Project No.:	2025-173-001	Sample No.:	C-031425-Proctor
Lab ID:	2025-173-001-005	Soil Color:	Brown



Particle Size (mm)	Percent Finer	USDA Summary	Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classification
		Gravel	12.81	**0.00**
2	87.19	*Sand*	10.65	**12.22**
0.05	76.54	*Silt*	39.09	**44.84**
0.002	37.44	*Clay*	37.44	**42.95**

USDA Classification ***SILTY CLAY***

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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WASH SIEVE ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure Plan
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	Composite
Project No.:	2025-173-001	Sample No.:	C-031425-Proctor
Lab ID:	2025-173-001-005	Soil Color:	Brown

Moisture Content of Passing 3/4" Material		Moisture Content of Retained 3/4" Material	
Tare No.:	2043	Tare No.:	3501
Wt. of Tare & Wet Sample (g):	935.8	Weight of Tare & Wet Sample (g):	227.1
Wt. of Tare & Dry Sample (g):	822.7	Weight of Tare & Dry Sample (g):	223.46
Weight of Tare (g):	141.2	Weight of Tare (g):	8.26
Weight of Water (g):	113.1	Weight of Water (g):	3.64
Weight of Dry Soil (g):	681.5	Weight of Dry Soil (g):	215.2
Moisture Content (%):	**16.6**	**Moisture Content (%):**	**1.7**

Wet Weight of -3/4" Sample (g):	14286.00	Weight of the Dry Sample (g):	681.50
Dry Weight of - 3/4" Sample (g):	12252.59	Weight of minus #200 Material (g):	560.40
Wet Weight of +3/4" Sample (g):	769.00	Weight of plus #200 Material (g):	121.10
Dry Weight of +3/4" Sample (g):	756.21		
Total Dry Weight of Sample (g):	13008.80	**J - Factor (Percent Finer than 3/4")**	**94.19%**

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)		Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00		0.00	0.00	100.00	**100.00**
6"	150	0.00		0.00	0.00	100.00	**100.00**
3"	75	0.00		0.00	0.00	100.00	**100.00**
2"	50	207.00	(*)	1.56	1.56	98.44	**98.44**
1 1/2"	37.5	169.00		1.28	2.84	97.16	**97.16**
1"	25	365.00		2.76	5.60	94.40	**94.40**
3/4"	19	28.00		0.21	5.81	94.19	**94.19**
1/2"	12.5	18.86		2.77	2.77	97.23	**91.58**
3/8"	9.5	3.50		0.51	3.28	96.72	**91.10**
#4	4.75	12.29		1.80	5.08	94.92	**89.40**
#10	2	15.98		2.34	7.43	92.57	**87.19**
#20	0.85	17.35	(**)	2.55	9.98	90.02	**84.79**
#40	0.425	13.19		1.94	11.91	88.09	**82.97**
#60	0.25	12.96		1.90	13.81	86.19	**81.18**
#140	0.106	19.23		2.82	16.63	83.37	**78.52**
#200	0.075	7.74		1.14	17.77	82.23	**77.45**
Pan	-	560.40		82.23	100.00	-	**-**

NOTES: *(*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample*
*(**) The - 3/4" sieve analysis is based on the Weight of the Dry Sample*

Tested By	DF	Date	3/27/25	Checked By	EG	Date	4/7/25

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure Plan
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	Composite
Project No.:	2025-173-001	Sample No.:	C-031425-Proctor
Lab ID:	2025-173-001-005	Soil Color:	Brown

Elapsed Time		R Measured	Temp.	Composite Correction	R Corrected	N	K Factor	Diameter	N'
(min)			(°C)			(%)		(mm)	(%)
0		NA	NA	NA	NA	NA	NA	NA	NA
2		57.5	21.1	5.4	52.1	96.8	0.01327	0.0246	**74.9**
5		53.5	21.1	5.4	48.1	89.3	0.01327	0.0163	**69.2**
15		49.0	21.1	5.4	43.6	81.0	0.01327	0.0098	**62.7**
31		45.5	21.1	5.4	40.1	74.5	0.01327	0.0071	**57.7**
60		42.0	21.0	5.4	36.6	67.9	0.01328	0.0053	**52.6**
250		34.0	21.7	5.2	28.8	53.5	0.01317	0.0027	**41.4**
1440		26.5	22.2	5.0	21.5	39.8	0.01310	0.0012	**30.8**

Soil Specimen Data		**Other Corrections**	
Tare No.	692		
Wt. of Tare & Dry Material (g):	148.25	a - Factor	0.993
Weight of Tare (g):	89.73		
Weight of Deflocculant (g):	5.0	Percent Finer than # 200	77.45
Weight of Dry Material (g):	53.52		
		Specific Gravity	2.70 Assumed

Note: *Hydrometer test is performed on - # 200 sieve material.*

Tested By TO Date 4/2/25 Checked By EG Date 4/7/25

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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Moisture, Ash, and Organic Matter (Loss on Ignition)

ASTM D 2974-20e1

Client:	GAI Consultants, Inc.
Client Reference:	Cheswick Closure R220960.00
Project No.:	2025-173-001

Method B (To 0.1%)

Moisture Content

ASTM D2216

Lab ID:	005
Boring No.:	Final Closure Plan
Depth (ft):	Composite
Sample No.:	C-031425-Proctor
Tare Number	BB
Weight of Tare & Wet Sample (g)	354.44
Weight of Tare & Dry Sample (g)	326.34
Weight of Tare (g)	123.85
Weight of Water (g)	28.10
Weight of Dry Sample (g)	202.49
Moisture Content	**13.9%**

Method A

Ash Content, Organic Matter

Furnace Temperature (°C)	440
Weight of Tare & Ash (g)	320.73
Weight of Volatiles (g)	5.61
Weight of Ash (g)	196.88
Ash Content (%)	**97.2%**
Organic Matter (%)	**2.8%**

Tested By JW *Date* 3/25/25 *Checked By* EG *Date* 3/26/25

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Correction of Unit Weight and Water Content for Soils Containing Oversize Particles by Specific Gravity

ASTM D4718/D4718M-15

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure Plan
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	Composite
Project No.:	2025-173-001	Sample No.:	C-031425-Proctor
Lab ID:	2025-173-001-005		
Visual Description:	Brown Clay with Rocks		

Total Dry Weight of Sample (g): **13008.8**

FINE PORTION		***COARSE PORTION***	
Total Wet Weight of - 3/4" Portion (g):	14286.0	Total Wet Weight of + 3/4" Portion (g):	769.0
Total Dry Weight of - 3/4" Portion (g):	12252.6	Total Dry Weight of + 3/4" Portion (g):	756.2
Percent - 3/4" By Dry Weight (%):	94.19	Percent + 3/4" By Dry Weight (%):	5.81

MOISTURE CONTENT OF -3/4" PORTION		***MOISTURE CONTENT OF +3/4" PORTION***	
Tare Number:	2043	Tare Number:	3501
Weight of Tare & Wet Sample (g):	935.80	Weight of Tare & Wet Sample (g):	227.10
Weight of Tare & Dry Sample (g):	822.70	Weight of Tare & Dry Sample (g):	223.46
Weight of Tare (g):	141.20	Weight of Tare (g):	8.26
Weight of Water (g):	113.10	Weight of Water (g):	3.64
Weight of Dry Sample (g):	681.50	Weight of Dry Sample (g):	215.20
Moisture Content (%):	16.60	**Moisture Content (%):**	1.69

SPECIFIC GRAVITY DETERMINATION

Weight of Basket in Air (g):	1031.4
Weight of Saturated Surface Dry Sample & Basket in Air (g):	1612.1
Weight of Saturated Surface Dry Sample in Air (g):	580.8
Weight of Basket in Water (g):	896.4
Weight of Saturated Sample & Basket in Water (g):	1265.4
Weight of Saturated Sample in Water (g):	369.0
Tare No.:	1545
Weight of Tare and Dried Sample (g):	692.8
Weight of Tare (g):	177.7
Weight of Dried Soil (g):	515.1

Bulk Specific Gravity (+3/4"): **2.43**

Tested By DF *Date* 3/25/25 *Checked By* EG *Date* 3/26/25

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MOISTURE - DENSITY RELATIONSHIP

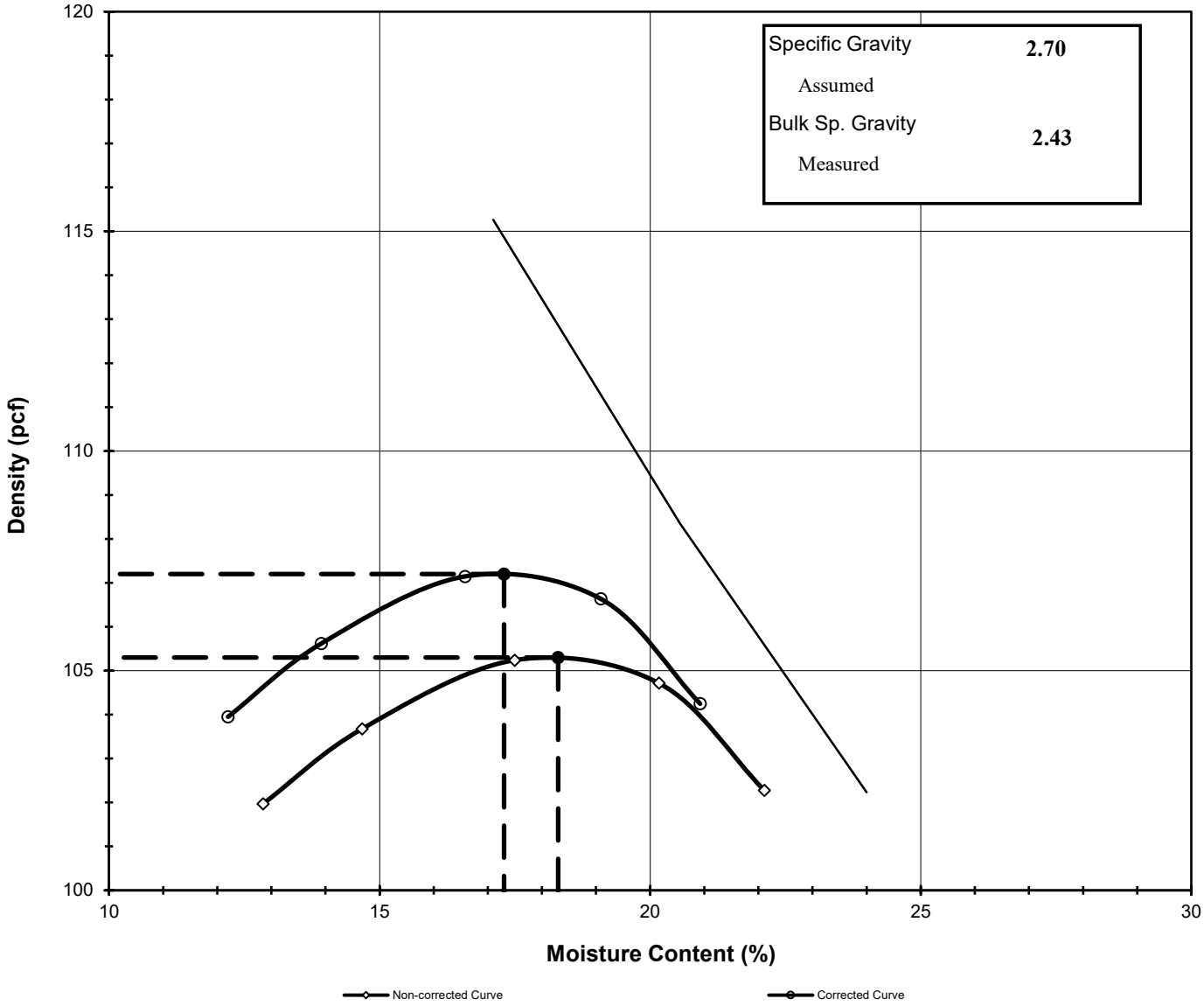
(Corrected for Oversize Particles)

ASTM D 4718-15, D 698-12e2 (SOP-S12,S39)

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure Plan
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	Composite
Project No.:	2025-173-001	Sample No.:	C-031425-Proctor
Lab ID:	2025-173-001-005	Test Method	STANDARD

Visual Description: Brown Clay with Rocks

Optimum Moisture Content (%):	**18.3**	**Corrected Moisture Content (%):**	**17.3**
Maximum Dry Density (pcf):	**105.3**	**Corrected Dry Density (pcf):**	**107.2**



Tested By AB *Date* 3/25/25 *Checked By* JLK *Date* 3/26/25

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MOISTURE - DENSITY RELATIONSHIP

(Corrected for Oversize Particles) ASTM D 4718-15, D698-12e2 (SOP-S12,S39)

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure Plan
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	Composite
Project No.:	2025-173-001	Sample No.:	C-031425-Proctor
Lab ID:	2025-173-001-005		

Visual Description: Brown Clay with Rocks

Total Weight of the Sample (g):	NA
As Received Water Content (%):	NA
Assumed Specific Gravity	2.70

Percent Retained on 3/4" (Dry):	5.81
Percent Retained on 3/8" (Dry):	NA
Percent Retained on #4 (Dry):	NA
Oversize Material:	Not included
Procedure Used:	C

TestType:	**STANDARD**
Rammer Weight (lb):	5.5
Rammer Drop (in):	12
Rammer Type:	MECHANICAL
Machine ID:	G3349
Mold ID:	G3347
Mold diameter (in):	6"
Weight of the Mold (g):	5715
Volume Of the Mold (cm^3):	2123

Mold/Specimen

Point No.	**1**	**2**	**3**	**4**	**5**
Weight of Mold & Wet Sample (g):	9630	9760	9922	9996	9964
Weight of Mold (g):	5715	5715	5715	5715	5715
Weight of Wet Sample (g):	3915	4045	4207	4281	4249
Mold Volume (cm^3):	2123	2123	2123	2123	2123

Moisture Content/Density

Tare Number:	458	460	485	492	488
Weight of Tare & Wet Sample (g):	491.67	497.82	498.72	491.68	491.93
Weight of Tare & Dry Sample (g):	446.10	446.60	439.07	424.53	419.46
Weight of Tare (g):	91.40	97.61	98.15	91.47	91.68
Weight of Water (g):	45.57	51.22	59.65	67.15	72.47
Weight of Dry Sample (g):	354.70	348.99	340.92	333.06	327.78

Wet Density (g/cm^3):	1.84	1.91	1.98	2.02	2.00
Wet Density (pcf):	115.1	118.9	123.7	125.8	124.9
Moisture Content (%):	**12.8**	**14.7**	**17.5**	**20.2**	**22.1**
Dry Density (pcf):	**102.0**	**103.7**	**105.2**	**104.7**	**102.3**

Zero Air Voids

Moisture Content (%):		17.1	20.6	24.0	
Dry Unit Weight (pcf):		115.3	108.4	102.2	

Calculated Oversize Corrected Moisture & Density

Moisture Content (%):	**12.2**	**13.9**	**16.6**	**19.1**	**20.9**
Dry Density (pcf):	**103.9**	**105.6**	**107.1**	**106.6**	**104.2**

Tested By AB *Date* 3/25/25 *Checked By* JLK *Date* 3/26/25

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May 21, 2025

Project No. 2025-173-004

Cory White
GAI Consultants, Inc.
385 East Waterfront Drive
Homestead, PA 15120

Transmittal
Laboratory Test Results
Cheswick Closure R220960.00

Please find attached the laboratory test results for the above referenced project. The tests were outlined on the Project Verification Form that was transmitted to your firm prior to the testing. The testing was performed in general accordance with the methods listed on the enclosed data sheets. The test results are believed to be representative of the samples that were submitted for testing and are indicative only of the specimens that were evaluated. We have no direct knowledge of the origin of the samples and imply no position with regard to the nature of the test results, i.e. pass/fail and no claims as to the suitability of the material for its intended use.

The test data and all associated project information provided shall be held in strict confidence and disclosed to other parties only with authorization by our Client. The test data submitted herein is considered integral with this report and is not to be reproduced except in whole and only with the authorization of the Client and Geotechnics. The remaining sample materials for this project will be retained for a minimum of 90 days as directed by the Geotechnics' Quality Program.

We are pleased to provide these testing services. Should you have any questions or if we may be of further assistance, please contact our office.

Respectfully submitted,
Geotechnics, Inc.

Nathan Melaro
Director of Operations

We understand that you have a choice in your laboratory services and we thank you for choosing Geotechnics.

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Moisture, Ash, and Organic Matter (Loss on Ignition)

ASTM D 2974-20e1

Client:	GAI Consultants, Inc.
Client Reference:	Cheswick Closure R220960.00
Project No.:	2025-173-004

Method B (To 0.1%)

Moisture Content

ASTM D2216

Lab ID:	001
Boring No.:	Final Closure
Depth (ft):	Stockpile
Sample No.:	C-041725-1
Tare Number	A
Weight of Tare & Wet Sample (g)	164.50
Weight of Tare & Dry Sample (g)	152.22
Weight of Tare (g)	70.12
Weight of Water (g)	12.28
Weight of Dry Sample (g)	82.10
Moisture Content	**15.0%**

Method A

Ash Content, Organic Matter

Furnace Temperature (°C)	440
Weight of Tare & Ash (g)	150.73
Weight of Volatiles (g)	1.49
Weight of Ash (g)	80.61
Ash Content (%)	**98.2%**
Organic Matter (%)	**1.8%**

Tested By JW *Date* 4/22/25 *Checked By* EG *Date* 4/23/25

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Moisture, Ash, and Organic Matter (Loss on Ignition)

ASTM D 2974-20e1

Client:	GAI Consultants, Inc.
Client Reference:	Cheswick Closure R220960.00
Project No.:	2025-173-004

Method B (To 0.1%)

Moisture Content

ASTM D2216

Lab ID:	002
Boring No.:	Final Closure
Depth (ft):	Stockpile
Sample No.:	C-041725-2
Tare Number	B
Weight of Tare & Wet Sample (g)	156.50
Weight of Tare & Dry Sample (g)	143.83
Weight of Tare (g)	59.20
Weight of Water (g)	12.67
Weight of Dry Sample (g)	84.63
Moisture Content	**15.0%**

Method A

Ash Content, Organic Matter

Furnace Temperature (°C)	440
Weight of Tare & Ash (g)	142.31
Weight of Volatiles (g)	1.52
Weight of Ash (g)	83.11
Ash Content (%)	**98.2%**
Organic Matter (%)	**1.8%**

Tested By JW *Date* 4/22/25 *Checked By* EG *Date* 4/23/25

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Moisture, Ash, and Organic Matter (Loss on Ignition)

ASTM D 2974-20e1

Client:	GAI Consultants, Inc.
Client Reference:	Cheswick Closure R220960.00
Project No.:	2025-173-004

Method B (To 0.1%)

Moisture Content

ASTM D2216

Lab ID:	003
Boring No.:	Final Closure
Depth (ft):	Stockpile
Sample No.:	C-041725-3
Tare Number	A
Weight of Tare & Wet Sample (g)	164.90
Weight of Tare & Dry Sample (g)	152.55
Weight of Tare (g)	70.09
Weight of Water (g)	12.35
Weight of Dry Sample (g)	82.46
Moisture Content	**15.0%**

Method A

Ash Content, Organic Matter

Furnace Temperature (°C)	440
Weight of Tare & Ash (g)	151.13
Weight of Volatiles (g)	1.42
Weight of Ash (g)	81.04
Ash Content (%)	**98.3%**
Organic Matter (%)	**1.7%**

Tested By JW *Date* 4/22/25 *Checked By* EG *Date* 4/24/25

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Moisture, Ash, and Organic Matter (Loss on Ignition)

ASTM D 2974-20e1

Client:	GAI Consultants, Inc.
Client Reference:	Cheswick Closure R220960.00
Project No.:	2025-173-004

Method B (To 0.1%)

Moisture Content

ASTM D2216

Lab ID:	004
Boring No.:	Final Closure
Depth (ft):	Stockpile
Sample No.:	C-041725-4
Tare Number	B
Weight of Tare & Wet Sample (g)	154.97
Weight of Tare & Dry Sample (g)	139.50
Weight of Tare (g)	59.18
Weight of Water (g)	15.47
Weight of Dry Sample (g)	80.32
Moisture Content	**19.3%**

Method A

Ash Content, Organic Matter

Furnace Temperature (°C)	440
Weight of Tare & Ash (g)	137.48
Weight of Volatiles (g)	2.02
Weight of Ash (g)	78.30
Ash Content (%)	**97.5%**
Organic Matter (%)	**2.5%**

Tested By JW *Date* 4/22/25 *Checked By* EG *Date* 4/24/25

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SIEVE AND HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	12" Cover Soil
Project No.:	2025-173-004	Sample No.:	C-041725-5
Lab ID:	2025-173-004-005	Soil Color:	Brown

	SIEVE ANALYSIS			HYDROMETER	
USCS	cobbles	gravel	sand	silt and clay fraction	
USDA	cobbles	gravel	sand	silt	clay



USCS Summary

Sieve Size (mm)		Percentage (%)
Greater Than #4	*Gravel*	24.33
#4 to #200	*Sand*	29.21
Finer Than #200	*Silt & Clay*	46.46

USCS Symbol:
sc, ASSUMED

USCS Classification:
CLAYEY SAND WITH GRAVEL

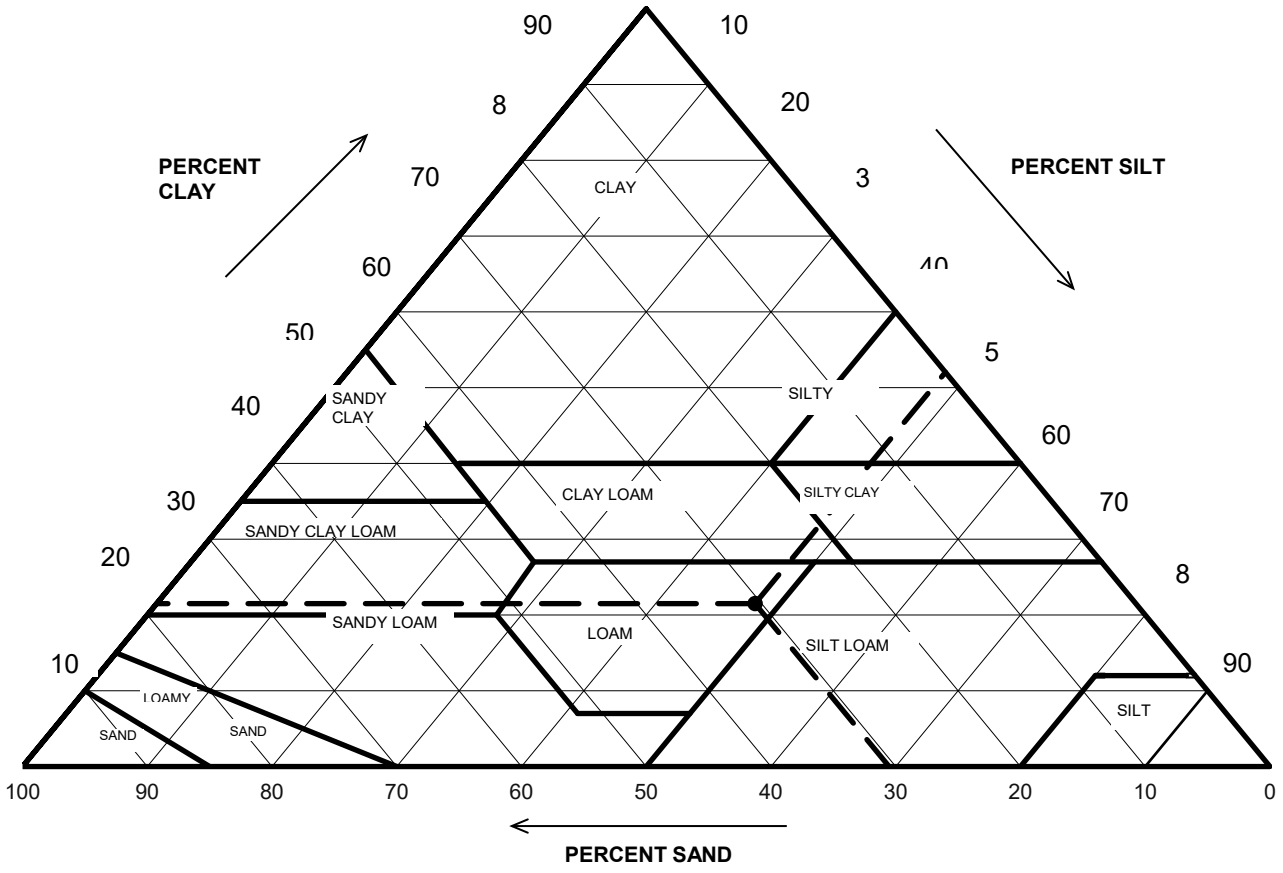
DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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USDA CLASSIFICATION CHART

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	12" Cover Soil
Project No.:	2025-173-004	Sample No.:	C-041725-5
Lab ID:	2025-173-004-005	Soil Color:	Brown



Particle Size (mm)	Percent Finer	USDA SUMMARY	Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classification
		Gravel	36.27	**0.00**
2	63.73	*Sand*	19.46	**30.53**
0.05	44.27	*Silt*	30.57	**47.97**
0.002	13.70	*Clay*	13.70	**21.50**

USDA Classification ***LOAM***

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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WASH SIEVE ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

geotechnics
geotechnical & geosynthetic testing

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	12" Cover Soil
Project No.:	2025-173-004	Sample No.:	C-041725-5
Lab ID:	2025-173-004-005	Soil Color:	Brown

Moisture Content of Passing 3/4" Material		Moisture Content of Retained 3/4" Material	
Tare No.:	2020	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	1028.58	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	946.88	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	145.43	Weight of Tare (g):	NA
Weight of Water (g):	81.70	Weight of Water (g):	NA
Weight of Dry Soil (g):	801.45	Weight of Dry Soil (g):	NA
Moisture Content (%):	**10.2**	**Moisture Content (%):**	**0.0**

Wet Weight of -3/4" Sample (g):	NA	Weight of the Dry Sample (g):	801.45
Dry Weight of - 3/4" Sample (g):	775.80	Weight of minus #200 Material (g):	372.39
Wet Weight of +3/4" Sample (g):	25.65	Weight of plus #200 Material (g):	429.06
Dry Weight of +3/4" Sample (g):	25.65		
Total Dry Weight of Sample (g):	801.45		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)		Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00		0.00	0.00	100.00	**100.00**
6"	150	0.00		0.00	0.00	100.00	**100.00**
3"	75	0.00		0.00	0.00	100.00	**100.00**
2"	50	0.00	(*)	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00		0.00	0.00	100.00	**100.00**
1"	25	0.00		0.00	0.00	100.00	**100.00**
3/4"	19	25.65		3.20	3.20	96.80	**96.80**
1/2"	12.5	40.83		5.09	8.29	91.71	**91.71**
3/8"	9.5	36.26		4.52	12.82	87.18	**87.18**
#4	4.75	92.25		11.51	24.33	75.67	**75.67**
#10	2	95.68		11.94	36.27	63.73	**63.73**
#20	0.85	63.10	(**)	7.87	44.14	55.86	**55.86**
#40	0.425	27.66		3.45	47.59	52.41	**52.41**
#60	0.25	18.11		2.26	49.85	50.15	**50.15**
#140	0.106	21.59		2.69	52.55	47.45	**47.45**
#200	0.075	7.93		0.99	53.54	46.46	**46.46**
Pan	-	372.39		46.46	100.00	-	**-**

Notes : *(*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample*
*(**) The - 3/4" sieve analysis is based on the Weight of the Dry Sample*

Tested By	DF	Date	4/23/25	Checked By	EG	Date	5/13/25

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	12" Cover Soil
Project No.:	2025-173-004	Sample No.:	C-041725-5
Lab ID:	2025-173-004-005	Soil Color:	Brown

Elapsed Time		R Measured	Temp.	Composite Correction	R Corrected	N	K Factor	Diameter	N'
(min)			(°C)			(%)		(mm)	(%)
0		NA	NA	NA	NA	NA	NA	NA	NA
2		39.5	22.1	5.1	34.4	89.0	0.01311	0.0291	**41.3**
5		37.0	22.1	5.1	31.9	82.5	0.01311	0.0188	**38.3**
20		30.5	22.1	5.1	25.4	65.7	0.01311	0.0099	**30.5**
30		28.5	22.1	5.1	23.4	60.5	0.01311	0.0082	**28.1**
60		24.5	22.3	5.0	19.5	50.4	0.01308	0.0059	**23.4**
250		19.0	22.9	4.8	14.2	36.6	0.01299	0.0030	**17.0**
1440		13.5	22.1	5.1	8.4	21.8	0.01311	0.0013	**10.1**

Soil Specimen Data		**Other Corrections**		
Tare No.	703			
Wt. of Tare & Dry Material (g):	137.14	a - Factor	0.993	
Weight of Tare (g):	93.71			
Weight of Deflocculant (g):	5.0	Percent Finer than # 200	46.46	
Weight of Dry Material (g):	38.43			
		Specific Gravity	2.70	Assumed

Note: *Hydrometer test is performed on - # 200 sieve material.*

Tested By	TO	Date	5/8/25	Checked By	EG	Date	5/13/25

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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Moisture, Ash, and Organic Matter (Loss on Ignition)

ASTM D 2974-20e1

Client:	GAI Consultants, Inc.
Client Reference:	Cheswick Closure R220960.00
Project No.:	2025-173-004

Method B (To 0.1%)

Moisture Content

ASTM D2216

Lab ID:	005
Boring No.:	Final Closure
Depth (ft):	12" Cover Soil
Sample No.:	C-041725-5
Tare Number	A
Weight of Tare & Wet Sample (g)	170.45
Weight of Tare & Dry Sample (g)	161.03
Weight of Tare (g)	70.20
Weight of Water (g)	9.42
Weight of Dry Sample (g)	90.83
Moisture Content	**10.4%**

Method A

Ash Content, Organic Matter

Furnace Temperature (°C)	440
Weight of Tare & Ash (g)	159.33
Weight of Volatiles (g)	1.70
Weight of Ash (g)	89.13
Ash Content (%)	**98.1%**
Organic Matter (%)	**1.9%**

Tested By JW *Date* 4/23/25 *Checked By* EG *Date* 4/25/25

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SIEVE AND HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	12" Cover Soil
Project No.:	2025-173-004	Sample No.:	C-041725-6
Lab ID:	2025-173-004-006	Soil Color:	Brown

	SIEVE ANALYSIS			HYDROMETER	
USCS	cobbles	gravel	sand	silt and clay fraction	
USDA	cobbles	gravel	sand	silt	clay



USCS Summary

Sieve Size (mm)		Percentage (%)
Greater Than #4	*Gravel*	32.22
#4 to #200	*Sand*	24.89
Finer Than #200	*Silt & Clay*	42.88

USCS Symbol:
gc, ASSUMED

USCS Classification:
CLAYEY GRAVEL WITH SAND

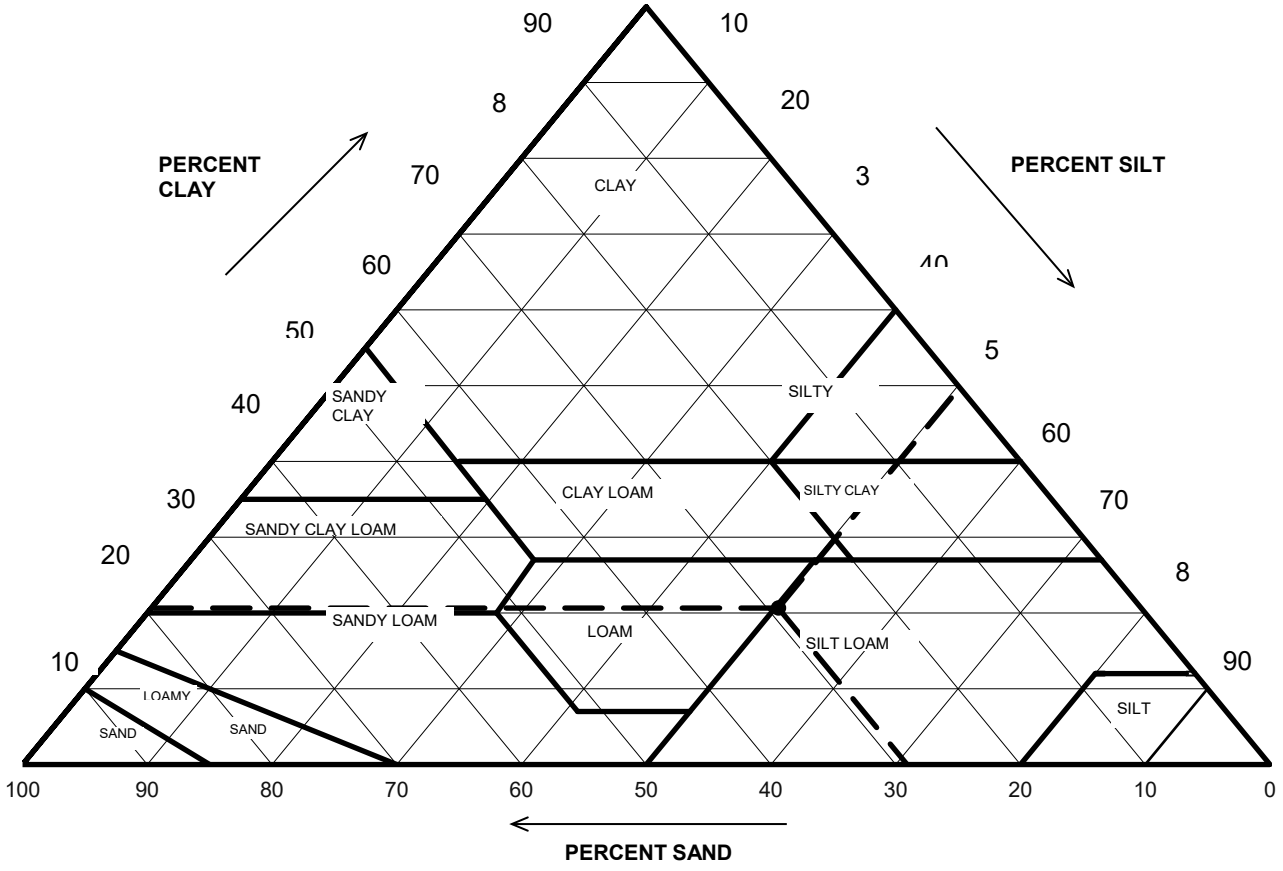
DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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USDA CLASSIFICATION CHART

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	12" Cover Soil
Project No.:	2025-173-004	Sample No.:	C-041725-6
Lab ID:	2025-173-004-006	Soil Color:	Brown



Particle Size (mm)	Percent Finer	USDA SUMMARY	Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classification
		Gravel	43.51	**0.00**
2	56.49	*Sand*	16.43	**29.09**
0.05	40.06	*Silt*	28.39	**50.26**
0.002	11.66	*Clay*	11.66	**20.65**

USDA Classification ***SILT LOAM***

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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WASH SIEVE ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

geotechnics
geotechnical & geosynthetic testing

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	12" Cover Soil
Project No.:	2025-173-004	Sample No.:	C-041725-6
Lab ID:	2025-173-004-006	Soil Color:	Brown

Moisture Content of Passing 3/4" Material		Moisture Content of Retained 3/4" Material	
Tare No.:	1493	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	1007.17	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	928.44	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	147.72	Weight of Tare (g):	NA
Weight of Water (g):	78.73	Weight of Water (g):	NA
Weight of Dry Soil (g):	780.72	Weight of Dry Soil (g):	NA
Moisture Content (%):	**10.1**	**Moisture Content (%):**	**0.0**

Wet Weight of -3/4" Sample (g):	NA	Weight of the Dry Sample (g):	780.72
Dry Weight of - 3/4" Sample (g):	684.71	Weight of minus #200 Material (g):	334.81
Wet Weight of +3/4" Sample (g):	96.01	Weight of plus #200 Material (g):	445.91
Dry Weight of +3/4" Sample (g):	96.01		
Total Dry Weight of Sample (g):	780.72		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)		Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00		0.00	0.00	100.00	**100.00**
6"	150	0.00		0.00	0.00	100.00	**100.00**
3"	75	0.00		0.00	0.00	100.00	**100.00**
2"	50	0.00	(*)	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00		0.00	0.00	100.00	**100.00**
1"	25	79.13		10.14	10.14	89.86	**89.86**
3/4"	19	16.88		2.16	12.30	87.70	**87.70**
1/2"	12.5	35.92		4.60	16.90	83.10	**83.10**
3/8"	9.5	27.93		3.58	20.48	79.52	**79.52**
#4	4.75	91.69		11.74	32.22	67.78	**67.78**
#10	2	88.18		11.29	43.51	56.49	**56.49**
#20	0.85	51.66	(**)	6.62	50.13	49.87	**49.87**
#40	0.425	22.38		2.87	53.00	47.00	**47.00**
#60	0.25	12.70		1.63	54.63	45.37	**45.37**
#140	0.106	14.41		1.85	56.47	43.53	**43.53**
#200	0.075	5.03		0.64	57.12	42.88	**42.88**
Pan	-	334.81		42.88	100.00	-	**-**

Notes : *(*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample*
*(**) The - 3/4" sieve analysis is based on the Weight of the Dry Sample*

Tested By	DF	Date	4/23/25	Checked By	JLK	Date	5/21/25

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	12" Cover Soil
Project No.:	2025-173-004	Sample No.:	C-041725-6
Lab ID:	2025-173-004-006	Soil Color:	Brown

Elapsed Time		R Measured	Temp.	Composite Correction	R Corrected	N	K Factor	Diameter	N'
(min)			(°C)			(%)		(mm)	(%)
0		NA	NA	NA	NA	NA	NA	NA	NA
2		40.5	21.7	5.2	35.3	84.5	0.01317	0.0289	**36.2**
5		38.5	21.7	5.2	33.3	79.7	0.01317	0.0186	**34.2**
15		33.0	21.7	5.2	27.8	66.6	0.01317	0.0112	**28.5**
30		29.0	21.7	5.2	23.8	57.0	0.01317	0.0082	**24.4**
61		24.5	22.7	4.9	19.6	46.9	0.01302	0.0058	**20.1**
250		18.0	22.7	4.9	13.1	31.4	0.01302	0.0030	**13.4**
1440		14.5	22.3	5.0	9.5	22.7	0.01308	0.0013	**9.7**

Soil Specimen Data		**Other Corrections**		
Tare No.	1465			
Wt. of Tare & Dry Material (g):	139.70	a - Factor	0.993	
Weight of Tare (g):	93.20			
Weight of Deflocculant (g):	5.0	Percent Finer than # 200	42.88	
Weight of Dry Material (g):	41.50			
		Specific Gravity	2.70	Assumed

Note: *Hydrometer test is performed on - # 200 sieve material.*

Tested By TO Date 5/19/25 Checked By JLK Date 5/21/25

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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Moisture, Ash, and Organic Matter (Loss on Ignition)

ASTM D 2974-20e1

Client:	GAI Consultants, Inc.
Client Reference:	Cheswick Closure R220960.00
Project No.:	2025-173-004

Method B (To 0.1%)

Moisture Content

ASTM D2216

Lab ID:	006
Boring No.:	Final Closure
Depth (ft):	12" Cover Soil
Sample No.:	C-041725-6
Tare Number	A
Weight of Tare & Wet Sample (g)	174.79
Weight of Tare & Dry Sample (g)	164.55
Weight of Tare (g)	70.16
Weight of Water (g)	10.24
Weight of Dry Sample (g)	94.39
Moisture Content	**10.8%**

Method A

Ash Content, Organic Matter

Furnace Temperature (°C)	440
Weight of Tare & Ash (g)	162.83
Weight of Volatiles (g)	1.72
Weight of Ash (g)	92.67
Ash Content (%)	**98.2%**
Organic Matter (%)	**1.8%**

Tested By JW *Date* 4/24/25 *Checked By* EG *Date* 4/28/25

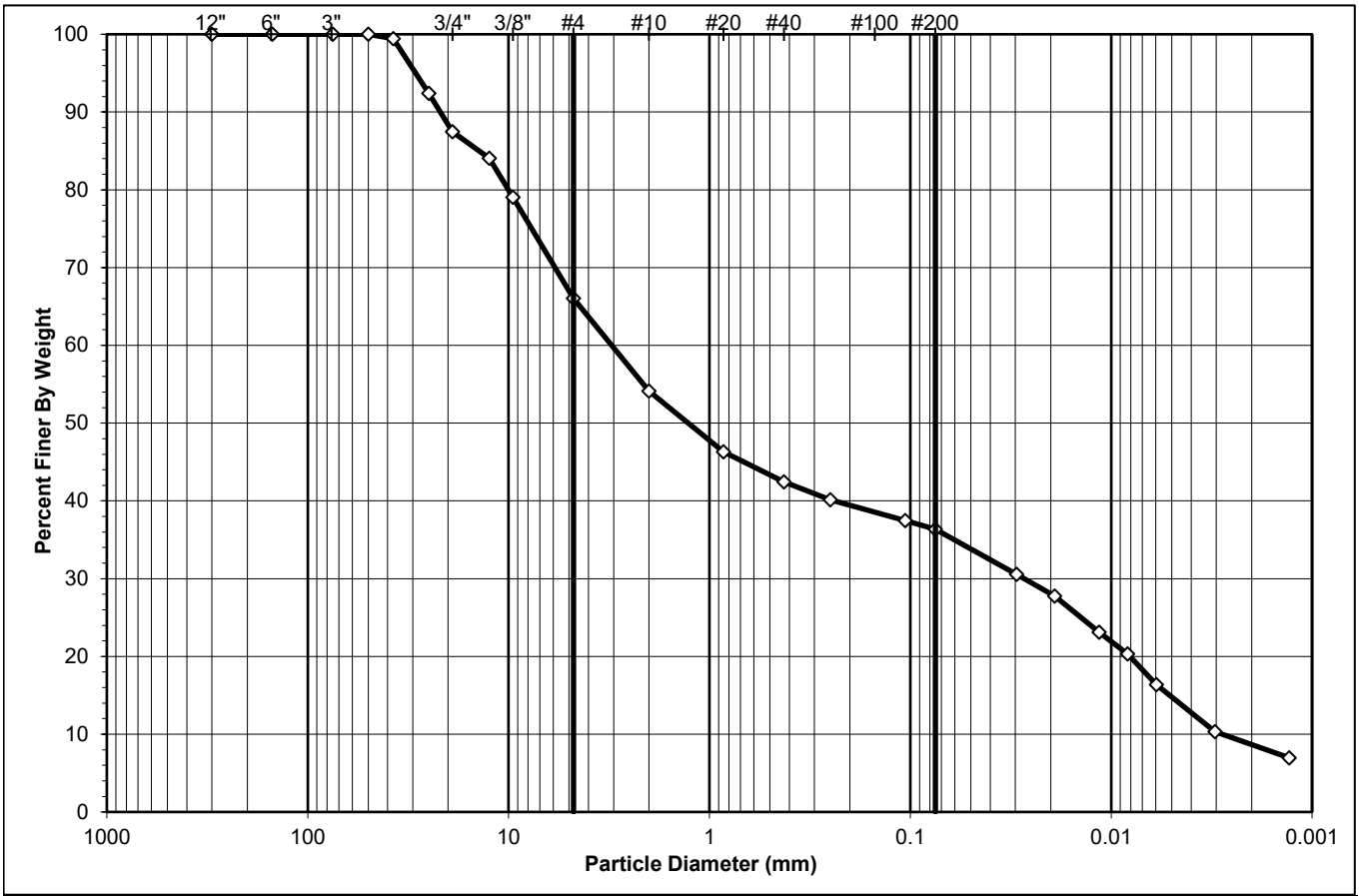
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SIEVE AND HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	12" Cover Soil
Project No.:	2025-173-004	Sample No.:	C-041725-7
Lab ID:	2025-173-004-007	Soil Color:	Brown

	SIEVE ANALYSIS			HYDROMETER	
USCS	cobbles	gravel	sand	silt and clay fraction	
USDA	cobbles	gravel	sand	silt	clay



USCS Summary

Sieve Size (mm)		Percentage (%)
Greater Than #4	*Gravel*	33.97
#4 to #200	*Sand*	29.68
Finer Than #200	*Silt & Clay*	36.35

USCS Symbol:
gc, ASSUMED

USCS Classification:
CLAYEY GRAVEL WITH SAND

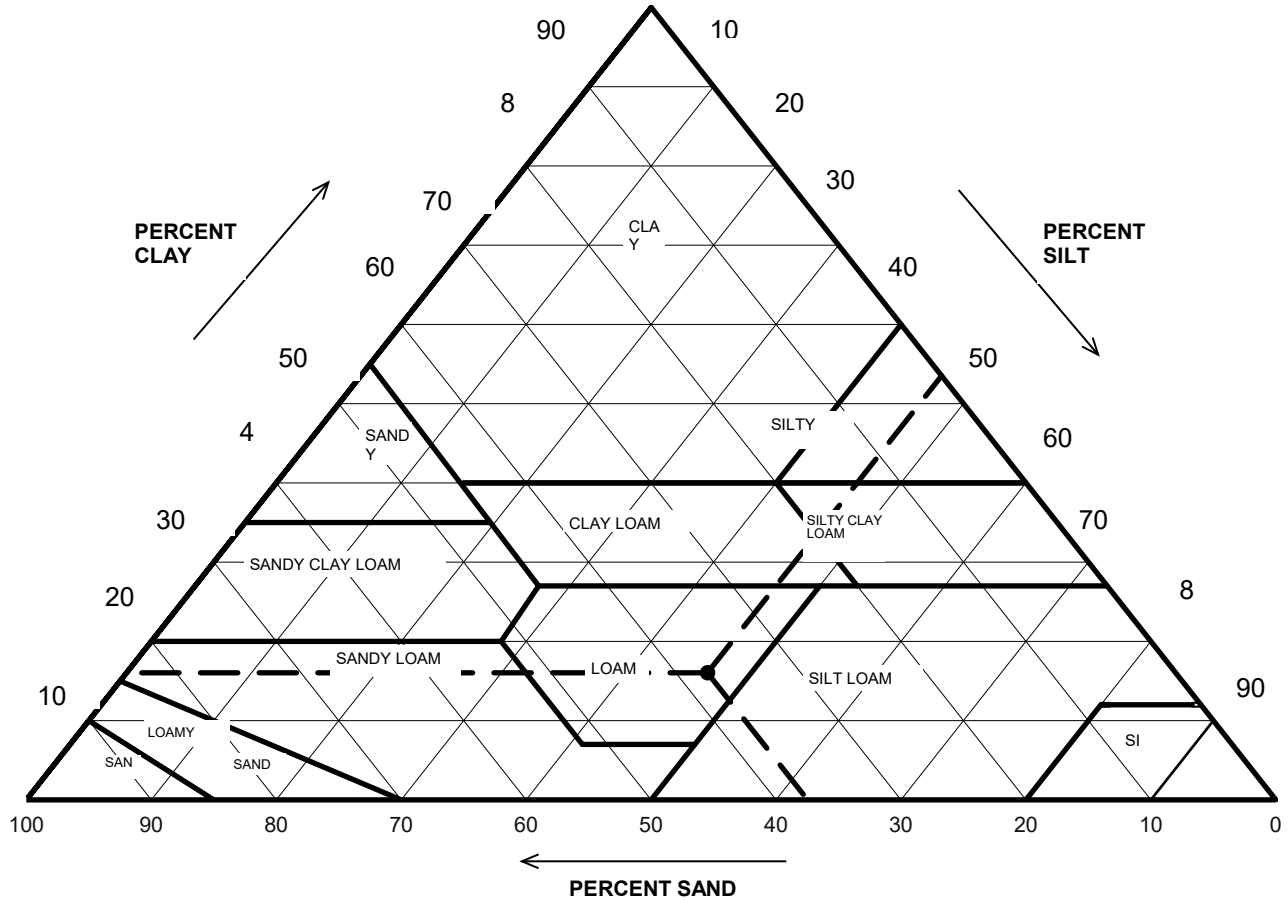
DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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USDA Classification Chart

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	12" Cover Soil
Project No.:	2025-173-004	Sample No.:	C-041725-7
Lab ID:	2025-173-004-007	Soil Color:	Brown



Particle Size (mm)	Percent Finer	USDA Summary	Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classification
		Gravel	45.89	**0.00**
2	54.11	*Sand*	20.28	**37.47**
0.05	33.83	*Silt*	25.16	**46.49**
0.002	8.68	*Clay*	8.68	**16.03**

USDA Classification ***LOAM***

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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WASH SIEVE ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	12" Cover Soil
Project No.:	2025-173-004	Sample No.:	C-041725-7
Lab ID:	2025-173-004-007	Soil Color:	Brown

Moisture Content of Passing 3/4" Material		Moisture Content of Retained 3/4" Material	
Tare No.:	1552	Tare No.:	2672
Wt. of Tare & Wet Sample (g):	899.06	Weight of Tare & Wet Sample (g):	370.97
Wt. of Tare & Dry Sample (g):	832.74	Weight of Tare & Dry Sample (g):	352.96
Weight of Tare (g):	143.48	Weight of Tare (g):	8.23
Weight of Water (g):	66.32	Weight of Water (g):	18.01
Weight of Dry Soil (g):	689.26	Weight of Dry Soil (g):	344.73
Moisture Content (%):	**9.6**	**Moisture Content (%):**	**5.2**

Wet Weight of -3/4" Sample (g):	12539.00	Weight of the Dry Sample (g):	689.26
Dry Weight of - 3/4" Sample (g):	11438.41	Weight of minus #200 Material (g):	286.49
Wet Weight of +3/4" Sample (g):	1726.00	Weight of plus #200 Material (g):	402.77
Dry Weight of +3/4" Sample (g):	1640.30		
Total Dry Weight of Sample (g):	13078.71	**J - Factor (Percent Finer than 3/4")**	**87.46%**

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)		Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00		0.00	0.00	100.00	**100.00**
6"	150	0.00		0.00	0.00	100.00	**100.00**
3"	75	0.00		0.00	0.00	100.00	**100.00**
2"	50	0.00	(*)	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	75.00		0.54	0.54	99.46	**99.46**
1"	25	973.00		7.07	7.62	92.38	**92.38**
3/4"	19	678.00		4.93	12.54	87.46	**87.46**
1/2"	12.5	26.67		3.87	3.87	96.13	**84.07**
3/8"	9.5	39.51		5.73	9.60	90.40	**79.06**
#4	4.75	102.68		14.90	24.50	75.50	**66.03**
#10	2	93.97		13.63	38.13	61.87	**54.11**
#20	0.85	61.33	(**)	8.90	47.03	52.97	**46.33**
#40	0.425	30.46		4.42	51.45	48.55	**42.46**
#60	0.25	18.25		2.65	54.10	45.90	**40.15**
#140	0.106	21.20		3.08	57.17	42.83	**37.46**
#200	0.075	8.70		1.26	58.44	41.56	**36.35**
Pan	-	286.49		41.56	100.00	-	**-**

NOTES: *(*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample*
*(**) The - 3/4" sieve analysis is based on the Weight of the Dry Sample*

Tested By	DF	Date	4/23/25	Checked By	JLK	Date	5/21/25

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	12" Cover Soil
Project No.:	2025-173-004	Sample No.:	C-041725-7
Lab ID:	2025-173-004-007	Soil Color:	Brown

Elapsed Time		R Measured	Temp.	Composite Correction	R Corrected	N	K Factor	Diameter	N'
(min)			(°C)			(%)		(mm)	(%)
0		NA	NA	NA	NA	NA	NA	NA	NA
2		38.0	21.7	5.2	32.8	84.1	0.01317	0.0296	**30.6**
5		35.0	21.7	5.2	29.8	76.4	0.01317	0.0191	**27.8**
15		30.0	21.7	5.2	24.8	63.6	0.01317	0.0115	**23.1**
30		27.0	21.7	5.2	21.8	55.9	0.01317	0.0083	**20.3**
60		22.5	22.7	4.9	17.6	45.1	0.01302	0.0060	**16.4**
250		16.0	22.7	4.9	11.1	28.4	0.01302	0.0030	**10.3**
1440		12.5	22.3	5.0	7.5	19.2	0.01308	0.0013	**7.0**

Soil Specimen Data		**Other Corrections**		
Tare No.	708			
Wt. of Tare & Dry Material (g):	134.54	a - Factor	0.993	
Weight of Tare (g):	90.78			
Weight of Deflocculant (g):	5.0	Percent Finer than # 200	36.35	
Weight of Dry Material (g):	38.76			
		Specific Gravity	2.70	Assumed

Note: *Hydrometer test is performed on - # 200 sieve material.*

Tested By TO Date 5/19/25 Checked By JLK Date 5/21/25

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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Moisture, Ash, and Organic Matter (Loss on Ignition)

ASTM D 2974-20e1

Client:	GAI Consultants, Inc.
Client Reference:	Cheswick Closure R220960.00
Project No.:	2025-173-004

Method B (To 0.1%)

Moisture Content

ASTM D2216

Lab ID:	007
Boring No.:	Final Closure
Depth (ft):	12" Cover Soil
Sample No.:	C-041725-7
Tare Number	B
Weight of Tare & Wet Sample (g)	170.00
Weight of Tare & Dry Sample (g)	159.95
Weight of Tare (g)	59.24
Weight of Water (g)	10.05
Weight of Dry Sample (g)	100.71
Moisture Content	**10.0%**

Method A

Ash Content, Organic Matter

Furnace Temperature (°C)	440
Weight of Tare & Ash (g)	158.01
Weight of Volatiles (g)	1.94
Weight of Ash (g)	98.77
Ash Content (%)	**98.1%**
Organic Matter (%)	**1.9%**

Tested By JW *Date* 4/24/25 *Checked By* EG *Date* 4/28/25

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PERMEABILITY TEST

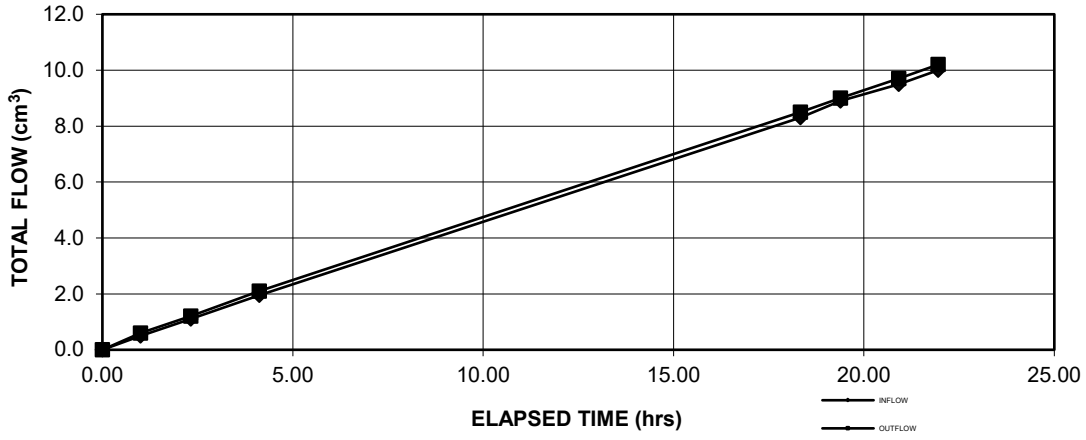
ASTM D 5084-16a Method C

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Project:	Cheswick Closure R220960.00	Depth (ft):	12" Cover Soil
Project No.:	2025-173-004	Sample No.:	C-041725-7
Lab ID No.:	2025-173-004-007	Avg. Effective Consol. Pressure (psi):	6.25

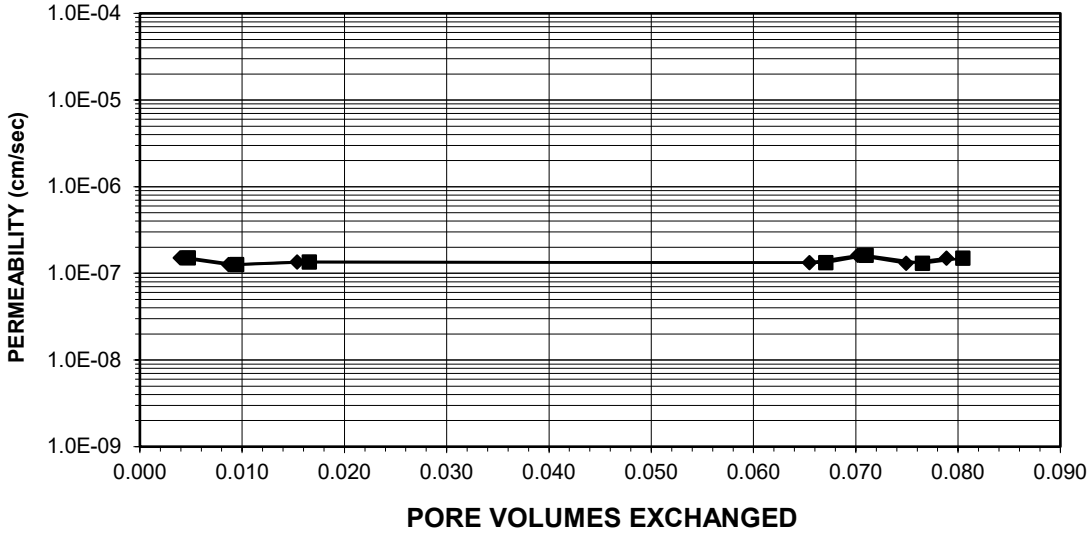
AVERAGE PERMEABILITY = 1.4E-07 cm/sec @ 20°C

AVERAGE PERMEABILITY = 1.4E-09 m/sec @ 20°C

TOTAL FLOW vs. ELAPSED TIME



PORE VOLUMES EXCHANGED vs. PERMEABILITY



Tested By: WT Date: 5/7/25 Checked By: JLK Date: 5/12/25

DCN: CT-22 DATE: 1/1/17 REVISION: 11

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PERMEABILITY TEST

ASTM D 5084-16a Method C

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Project:	Cheswick Closure R220960.00	Depth (ft):	12" Cover Soil
Project No.:	2025-173-004	Sample No.:	C-041725-7
Lab ID No.:	2025-173-004-007	Avg. Effective Consol. Pressure (psi):	6.25

Specific Gravity: 2.70 Assumed
Sample Condition: Remolded

Visual Description: Brown Clay and Soil

Permeant Type: Deaired Water

MOISTURE CONTENT:	BEFORE TEST	AFTER TEST
Tare Number	3023	545
Weight of Tare & Wet Sample (g)	184.24	787.43
Weight of Tare & Dry Sample (g)	155.81	674.81
Weight of Tare (g)	8.03	82.53
Weight of Water (g)	28.43	112.62
Weight of Dry Sample (g)	147.78	592.28
Moisture Content (%)	**19.2**	**19.0**

SPECIMEN:	BEFORE TEST	AFTER TEST
Weight of Tube & Wet Sample (g)	1624.25	NA
Weight of Tube (g)	917.30	NA
Weight of Wet Sample (g)	706.95	705.63
Length 1 (in)	3.490	3.367
Length 2 (in)	3.490	3.368
Length 3 (in)	3.490	3.360
Top Diameter (in)	2.870	2.828
Middle Diameter (in)	2.870	2.828
Bottom Diameter (in)	2.870	2.828
Average Length (in)	3.49	3.37
Average Area (in^2)	6.47	6.28
Sample Volume (cm^3)	369.98	346.37
Unit Wet Weight (g/cm^3)	1.91	2.04
Unit Wet Weight (pcf)	119.3	127.2
Unit Dry Weight (pcf)	100.0	106.9
Unit Dry Weight (g/cm^3)	1.60	1.71
Void Ratio, e	0.68	0.58
Porosity, n	0.41	0.37
Pore Volume (cm^3)	150.4	126.8
Total Weight of Sample After Test (g)		705.06

Tested By: WT Date: 5/7/25 Checked By: JLK Date: 5/12/25

DCN: CT-22 DATE: 1/1/17 REVISION: 11

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PERMEABILITY TEST

ASTM D 5084-16a Method C

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Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Project:	Cheswick Closure R220960.00	Depth (ft):	12" Cover Soil
Project No.:	2025-173-004	Sample No.:	C-041725-7
Lab ID No.:	2025-173-004-007	Avg. Effective Consol. Pressure (psi):	6.25

Pressure Heads (Constant)	
Top Cap (psi)	77.5
Bottom Cap (psi)	80.0
Cell (psi)	85.0
Total Pressure Head (cm)	175.8
Hydraulic Gradient	20.56

Final Sample Dimensions	
Sample Length (cm), L	8.55
Sample Diameter (cm)	7.18
Sample Area (cm^2), A	40.52
Inflow Burette Area (cm^2), a-in	0.852
Outflow Burette Area (cm^2), a-out	0.862
B Parameter (%)	95

AVERAGE PERMEABILITY = 1.4E-07 cm/sec @ 20°C

AVERAGE PERMEABILITY = 1.4E-09 m/sec @ 20°C

DATE	TIME		ELAPSED TIME t	TOTAL INFLOW	TOTAL OUTFLOW	TOTAL HEAD h	FLOW (0 flow)	TEMP.	INCREMENTAL PERMEABILITY @ 20°C
(mm/dd/yy)	(hr)	(min)	(hr)	(cm^3)	(cm^3)	(cm)	(1 stop)	(°C)	(cm/sec)
5/8/2025	12	48	0.000	0.0	0.0	203.7	0	21.9	NA
5/8/2025	13	48	1.000	0.5	0.6	202.4	0	21.9	1.5E-07
5/8/2025	15	7	2.317	1.1	1.2	201.0	0	22.0	1.3E-07
5/8/2025	16	55	4.117	2.0	2.1	199.0	0	22.0	1.4E-07
5/9/2025	7	8	18.333	8.3	8.5	184.1	0	21.4	1.3E-07
5/9/2025	8	11	19.383	8.9	9.0	182.9	0	21.5	1.6E-07
5/9/2025	9	43	20.917	9.5	9.7	181.3	0	21.7	1.3E-07
5/9/2025	10	45	21.950	10.0	10.2	180.2	1	21.8	1.5E-07

Tested By: WT Date: 5/7/25 Checked By: JLK Date: 5/12/25

DCN: CT-22 DATE: 1/1/17 REVISION: 11

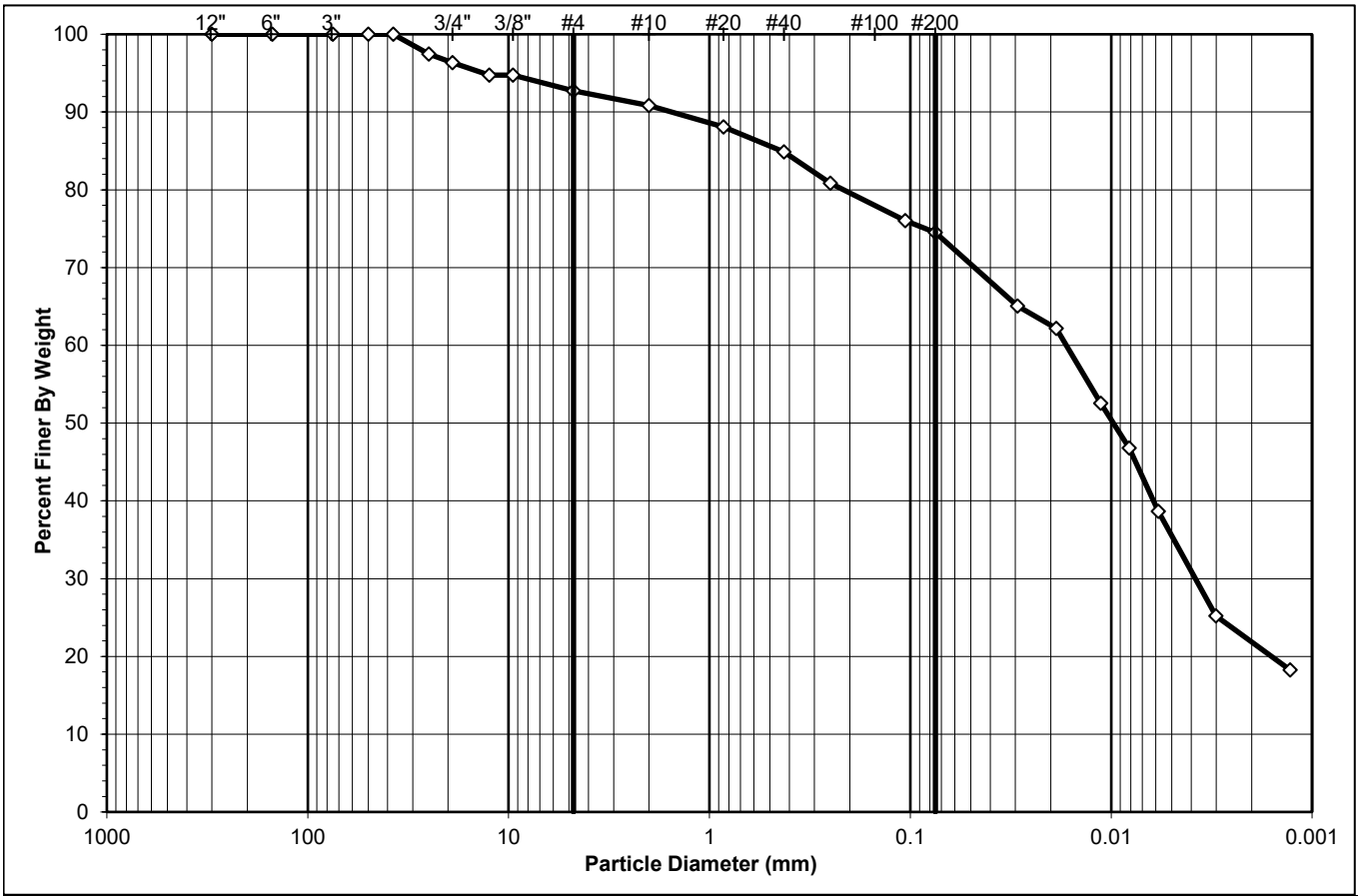
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SIEVE AND HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	12" Cover Soil
Project No.:	2025-173-004	Sample No.:	C-041725-8
Lab ID:	2025-173-004-008	Soil Color:	Brown

	SIEVE ANALYSIS			HYDROMETER	
USCS	cobbles	gravel	sand	silt and clay fraction	
USDA	cobbles	gravel	sand	silt	clay



USCS Summary

Sieve Size (mm)		Percentage (%)
Greater Than #4	*Gravel*	7.27
#4 to #200	*Sand*	18.22
Finer Than #200	*Silt & Clay*	74.51

USCS Symbol:
cl, ASSUMED

USCS Classification:
LEAN CLAY WITH SAND

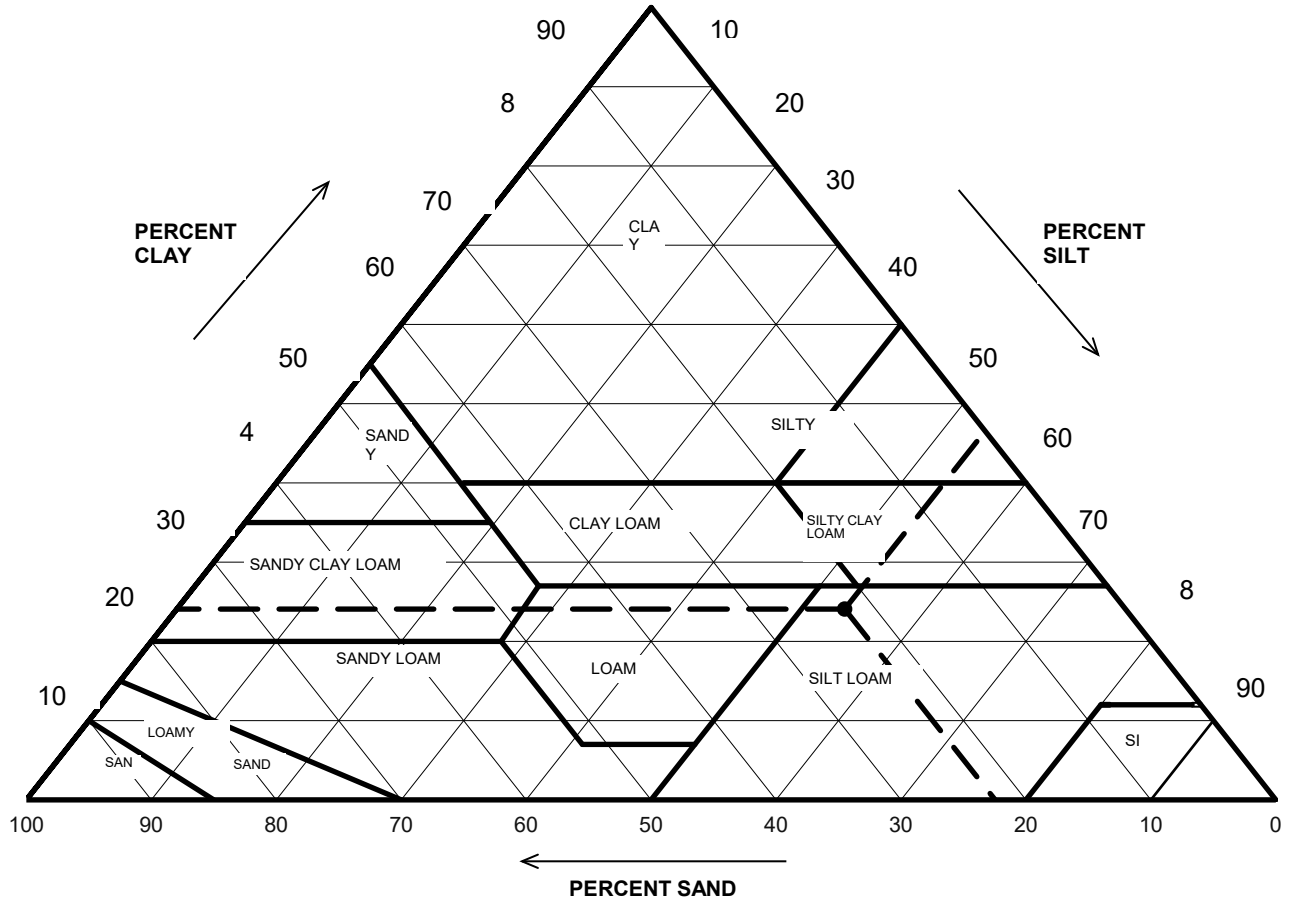
DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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USDA Classification Chart

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	12" Cover Soil
Project No.:	2025-173-004	Sample No.:	C-041725-8
Lab ID:	2025-173-004-008	Soil Color:	Brown



Particle Size (mm)	Percent Finer	USDA Summary	Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classification
		Gravel	9.16	**0.00**
2	90.84	*Sand*	20.41	**22.46**
0.05	70.44	*Silt*	48.56	**53.46**
0.002	21.87	*Clay*	21.87	**24.08**

USDA Classification ***SILT LOAM***

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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WASH SIEVE ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	12" Cover Soil
Project No.:	2025-173-004	Sample No.:	C-041725-8
Lab ID:	2025-173-004-008	Soil Color:	Brown

Moisture Content of Passing 3/4" Material		Moisture Content of Retained 3/4" Material	
Tare No.:	1470	Tare No.:	3208
Wt. of Tare & Wet Sample (g):	809.24	Weight of Tare & Wet Sample (g):	357.27
Wt. of Tare & Dry Sample (g):	721.6	Weight of Tare & Dry Sample (g):	341.4
Weight of Tare (g):	174.23	Weight of Tare (g):	7.24
Weight of Water (g):	87.64	Weight of Water (g):	15.87
Weight of Dry Soil (g):	547.37	Weight of Dry Soil (g):	334.16
Moisture Content (%):	**16.0**	**Moisture Content (%):**	**4.7**

Wet Weight of -3/4" Sample (g):	14853.00	Weight of the Dry Sample (g):	547.37
Dry Weight of - 3/4" Sample (g):	12803.08	Weight of minus #200 Material (g):	423.31
Wet Weight of +3/4" Sample (g):	509.00	Weight of plus #200 Material (g):	124.06
Dry Weight of +3/4" Sample (g):	485.92		
Total Dry Weight of Sample (g):	13289.01	**J - Factor (Percent Finer than 3/4")**	**96.34%**

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)		Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00		0.00	0.00	100.00	**100.00**
6"	150	0.00		0.00	0.00	100.00	**100.00**
3"	75	0.00		0.00	0.00	100.00	**100.00**
2"	50	0.00	(*)	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00		0.00	0.00	100.00	**100.00**
1"	25	351.00		2.52	2.52	97.48	**97.48**
3/4"	19	158.00		1.14	3.66	96.34	**96.34**
1/2"	12.5	9.01		1.65	1.65	98.35	**94.76**
3/8"	9.5	0.00		0.00	1.65	98.35	**94.76**
#4	4.75	11.52		2.10	3.75	96.25	**92.73**
#10	2	10.71		1.96	5.71	94.29	**90.84**
#20	0.85	15.58	(**)	2.85	8.55	91.45	**88.10**
#40	0.425	18.22		3.33	11.88	88.12	**84.90**
#60	0.25	22.88		4.18	16.06	83.94	**80.87**
#140	0.106	27.53		5.03	21.09	78.91	**76.02**
#200	0.075	8.61		1.57	22.66	77.34	**74.51**
Pan	-	423.31		77.34	100.00	-	**-**

NOTES: *(*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample*
*(**) The - 3/4" sieve analysis is based on the Weight of the Dry Sample*

Tested By	DF	Date	4/23/25	Checked By	JLK	Date	5/21/25

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	12" Cover Soil
Project No.:	2025-173-004	Sample No.:	C-041725-8
Lab ID:	2025-173-004-008	Soil Color:	Brown

Elapsed Time		R Measured	Temp.	Composite Correction	R Corrected	N	K Factor	Diameter	N'
(min)			(°C)			(%)		(mm)	(%)
0		NA	NA	NA	NA	NA	NA	NA	NA
2		39.0	21.7	5.2	33.8	87.3	0.01317	0.0293	**65.1**
5		37.5	21.7	5.2	32.3	83.5	0.01317	0.0188	**62.2**
15		32.5	21.7	5.2	27.3	70.6	0.01317	0.0113	**52.6**
30		29.5	21.7	5.2	24.3	62.8	0.01317	0.0081	**46.8**
61		25.0	22.7	4.9	20.1	51.9	0.01302	0.0058	**38.7**
250		18.0	22.7	4.9	13.1	33.8	0.01302	0.0030	**25.2**
1440		14.5	22.3	5.0	9.5	24.5	0.01308	0.0013	**18.3**

Soil Specimen Data		**Other Corrections**		
Tare No.	922			
Wt. of Tare & Dry Material (g):	139.94	a - Factor	0.993	
Weight of Tare (g):	96.49			
Weight of Deflocculant (g):	5.0	Percent Finer than # 200	74.51	
Weight of Dry Material (g):	38.45			
		Specific Gravity	2.70	Assumed

Note: *Hydrometer test is performed on - # 200 sieve material.*

Tested By	TO	Date	5/19/25	Checked By	JLK	Date	5/21/25

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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Moisture, Ash, and Organic Matter (Loss on Ignition)

ASTM D 2974-20e1

Client:	GAI Consultants, Inc.
Client Reference:	Cheswick Closure R220960.00
Project No.:	2025-173-004

Method B (To 0.1%)

Moisture Content

ASTM D2216

Lab ID:	008
Boring No.:	Final Closure
Depth (ft):	12" Cover Soil
Sample No.:	C-041725-8
Tare Number	A
Weight of Tare & Wet Sample (g)	175.21
Weight of Tare & Dry Sample (g)	160.50
Weight of Tare (g)	70.17
Weight of Water (g)	14.71
Weight of Dry Sample (g)	90.33
Moisture Content	**16.3%**

Method A

Ash Content, Organic Matter

Furnace Temperature (°C)	440
Weight of Tare & Ash (g)	159.22
Weight of Volatiles (g)	1.28
Weight of Ash (g)	89.05
Ash Content (%)	**98.6%**
Organic Matter (%)	**1.4%**

Tested By JW *Date* 4/25/25 *Checked By* EG *Date* 4/29/25

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PERMEABILITY TEST

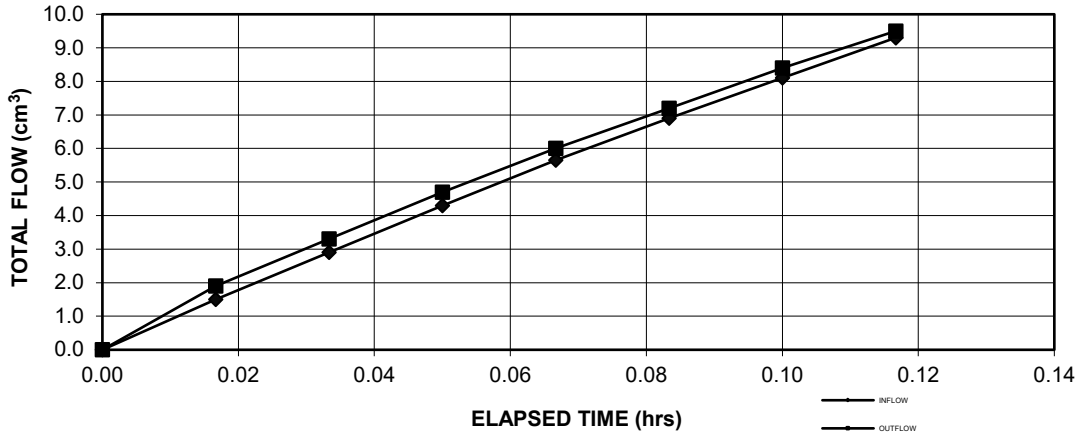
ASTM D 5084-16a Method C

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Project:	Cheswick Closure R220960.00	Depth (ft):	12" Cover Soil
Project No.:	2025-173-004	Sample No.:	C-041725-8
Lab ID No.:	2025-173-004-008	Avg. Effective Consol. Pressure (psi):	6.25

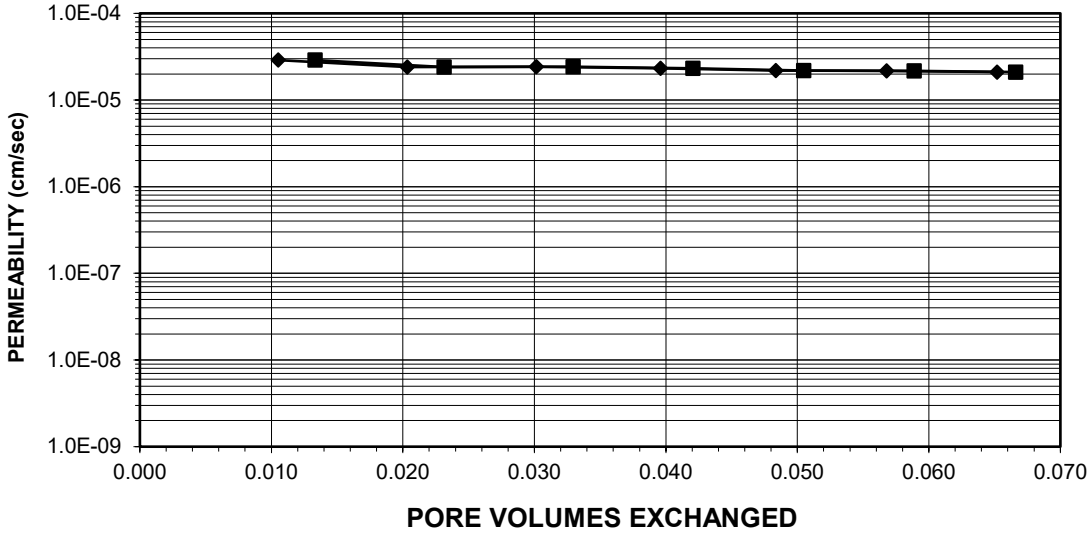
AVERAGE PERMEABILITY = 2.2E-05 cm/sec @ 20°C

AVERAGE PERMEABILITY = 2.2E-07 m/sec @ 20°C

TOTAL FLOW vs. ELAPSED TIME



PORE VOLUMES EXCHANGED vs. PERMEABILITY



Tested By: WT Date: 5/7/25 Checked By: JLK Date: 5/12/25

DCN: CT-22 DATE: 1/1/17 REVISION: 11

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PERMEABILITY TEST

ASTM D 5084-16a Method C

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Project:	Cheswick Closure R220960.00	Depth (ft):	12" Cover Soil
Project No.:	2025-173-004	Sample No.:	C-041725-8
Lab ID No.:	2025-173-004-008	Avg. Effective Consol. Pressure (psi):	6.25

Specific Gravity: 2.70 Assumed
Sample Condition: Remolded

Visual Description: Brown Clay

Permeant Type: Deaired Water

MOISTURE CONTENT:	BEFORE TEST	AFTER TEST
Tare Number	3208	884
Weight of Tare & Wet Sample (g)	145.35	842.64
Weight of Tare & Dry Sample (g)	122.80	700.22
Weight of Tare (g)	7.28	109.28
Weight of Water (g)	22.55	142.42
Weight of Dry Sample (g)	115.52	590.94
Moisture Content (%)	**19.5**	**24.1**

SPECIMEN:	BEFORE TEST	AFTER TEST
Weight of Tube & Wet Sample (g)	1625.40	NA
Weight of Tube (g)	917.30	NA
Weight of Wet Sample (g)	708.10	735.24
Length 1 (in)	3.490	3.462
Length 2 (in)	3.490	3.471
Length 3 (in)	3.490	3.419
Top Diameter (in)	2.870	2.850
Middle Diameter (in)	2.870	2.851
Bottom Diameter (in)	2.870	2.865
Average Length (in)	3.49	3.45
Average Area (in^2)	6.47	6.40
Sample Volume (cm^3)	369.98	362.08
Unit Wet Weight (g/cm^3)	1.91	2.03
Unit Wet Weight (pcf)	119.5	126.8
Unit Dry Weight (pcf)	100.0	102.1
Unit Dry Weight (g/cm^3)	1.60	1.64
Void Ratio, e	0.69	0.65
Porosity, n	0.41	0.39
Pore Volume (cm^3)	150.6	142.7
Total Weight of Sample After Test (g)		733.49

Tested By: WT Date: 5/7/25 Checked By: JLK Date: 5/12/25

DCN: CT-22 DATE: 1/1/17 REVISION: 11

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PERMEABILITY TEST

ASTM D 5084-16a Method C

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Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Project:	Cheswick Closure R220960.00	Depth (ft):	12" Cover Soil
Project No.:	2025-173-004	Sample No.:	C-041725-8
Lab ID No.:	2025-173-004-008	Avg. Effective Consol. Pressure (psi):	6.25

Pressure Heads (Constant)	
Top Cap (psi)	77.5
Bottom Cap (psi)	80.0
Cell (psi)	85.0
Total Pressure Head (cm)	175.8
Hydraulic Gradient	20.05

Final Sample Dimensions	
Sample Length (cm), L	8.76
Sample Diameter (cm)	7.25
Sample Area (cm^2), A	41.31
Inflow Burette Area (cm^2), a-in	1.044
Outflow Burette Area (cm^2), a-out	0.888
B Parameter (%)	96

AVERAGE PERMEABILITY = 2.2E-05 cm/sec @ 20°C

AVERAGE PERMEABILITY = 2.2E-07 m/sec @ 20°C

DATE	TIME		ELAPSED TIME t	TOTAL INFLOW	TOTAL OUTFLOW	TOTAL HEAD h	FLOW (0 flow)	TEMP.	INCREMENTAL PERMEABILITY @ 20°C
(mm/dd/yy)	(hr)	(min)	(hr)	(cm^3)	(cm^3)	(cm)	(1 stop)	(°C)	(cm/sec)
5/9/2025	10	29	0.000	0.0	0.0	202.9	0	21.8	NA
5/9/2025	10	30	0.017	1.5	1.9	199.3	0	21.8	2.9E-05
5/9/2025	10	31	0.033	2.9	3.3	196.4	0	21.8	2.4E-05
5/9/2025	10	32	0.050	4.3	4.7	193.4	0	21.8	2.4E-05
5/9/2025	10	33	0.067	5.7	6.0	190.7	0	21.8	2.3E-05
5/9/2025	10	34	0.083	6.9	7.2	188.1	0	21.8	2.2E-05
5/9/2025	10	35	0.100	8.1	8.4	185.6	0	21.8	2.2E-05
5/9/2025	10	36	0.117	9.3	9.5	183.3	1	21.8	2.1E-05

Tested By: WT Date: 5/7/25 Checked By: JLK Date: 5/12/25

DCN: CT-22 DATE: 1/1/17 REVISION: 11

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May 23, 2025

Project No. 2025-173-005

Cory White
GAI Consultants, Inc.
385 East Waterfront Drive
Homestead, PA 15120

Transmittal
Laboratory Test Results
Cheswick Closure R220960.00

Please find attached the laboratory test results for the above referenced project. The tests were outlined on the Project Verification Form that was transmitted to your firm prior to the testing. The testing was performed in general accordance with the methods listed on the enclosed data sheets. The test results are believed to be representative of the samples that were submitted for testing and are indicative only of the specimens that were evaluated. We have no direct knowledge of the origin of the samples and imply no position with regard to the nature of the test results, i.e. pass/fail and no claims as to the suitability of the material for its intended use.

The test data and all associated project information provided shall be held in strict confidence and disclosed to other parties only with authorization by our Client. The test data submitted herein is considered integral with this report and is not to be reproduced except in whole and only with the authorization of the Client and Geotechnics. The remaining sample materials for this project will be retained for a minimum of 90 days as directed by the Geotechnics' Quality Program.

We are pleased to provide these testing services. Should you have any questions or if we may be of further assistance, please contact our office.

Respectfully submitted,
Geotechnics, Inc.

Nathan Melaro
Director of Operations

We understand that you have a choice in your laboratory services and we thank you for choosing Geotechnics.

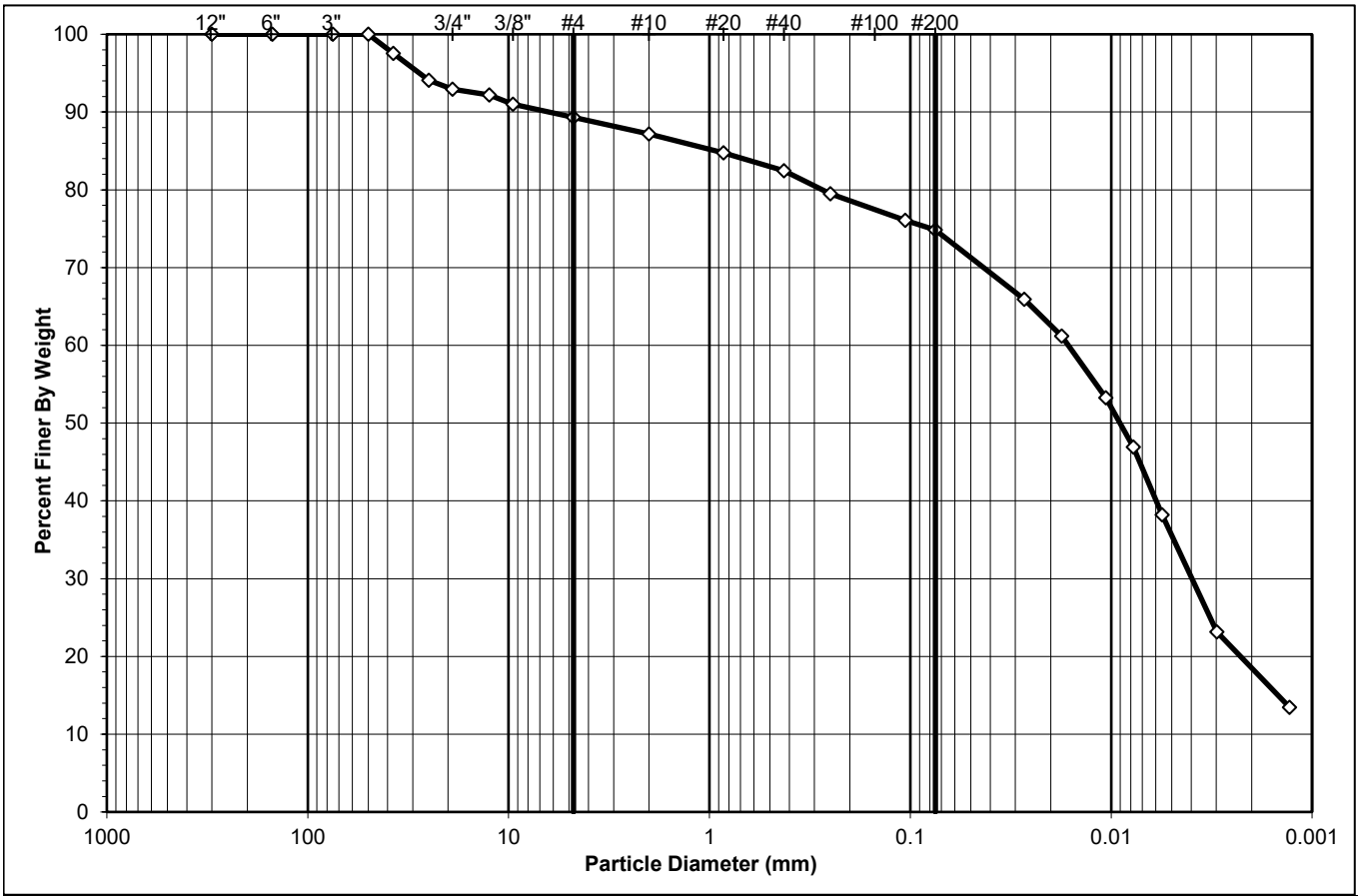
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SIEVE AND HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	Stockpile
Project No.:	2025-173-005	Sample No.:	C-042425-1
Lab ID:	2025-173-005-001	Soil Color:	Brown

	SIEVE ANALYSIS			HYDROMETER	
USCS	**cobbles**	**gravel**	**sand**	**silt and clay fraction**	
USDA	**cobbles**	**gravel**	**sand**	**silt**	**clay**



USCS Summary

Sieve Size (mm)		Percentage (%)
Greater Than #4	*Gravel*	10.68
#4 to #200	*Sand*	14.46
Finer Than #200	*Silt & Clay*	74.86

USCS Symbol:
cl, ASSUMED

USCS Classification:
LEAN CLAY WITH SAND

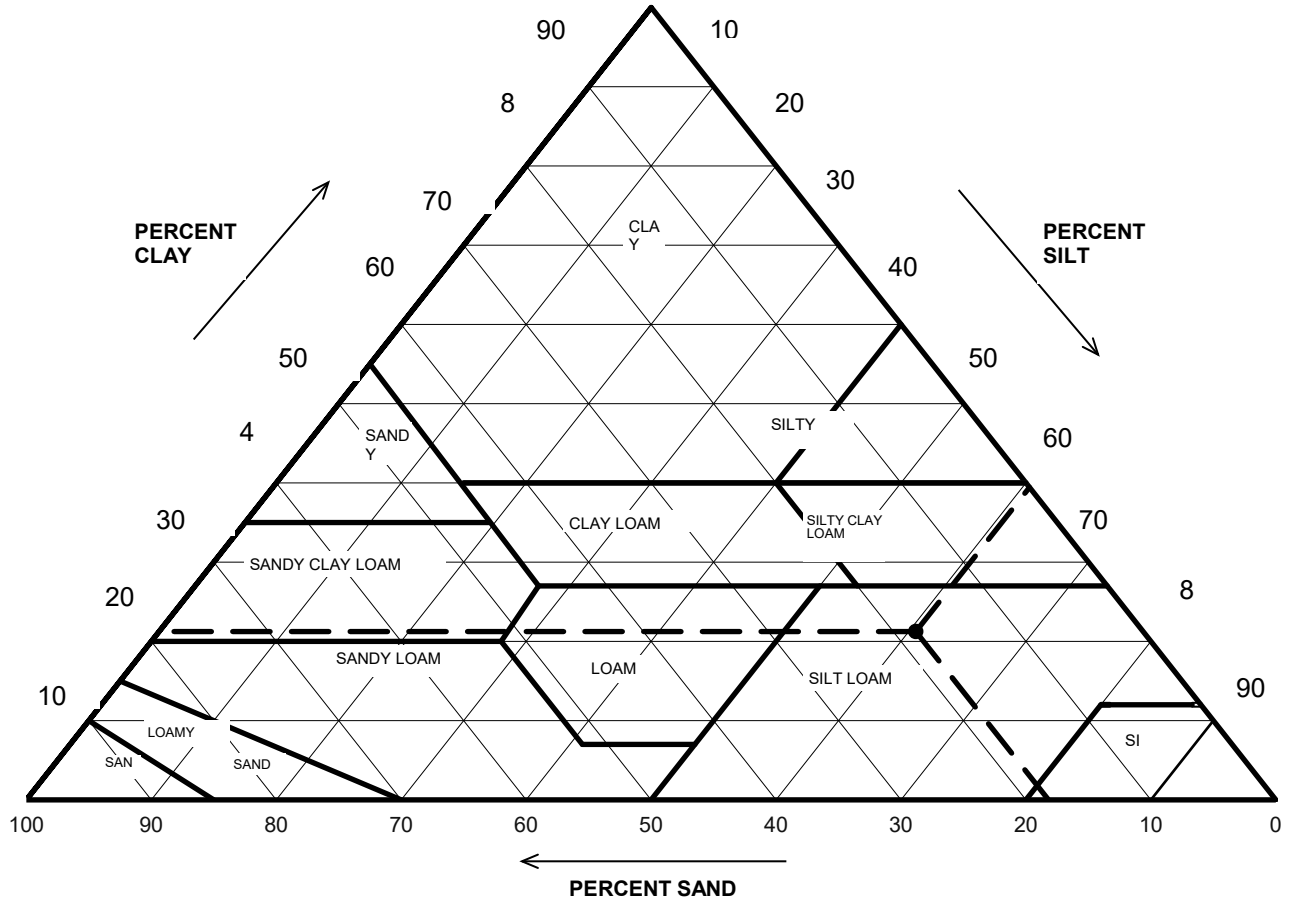
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USDA Classification Chart

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	Stockpile
Project No.:	2025-173-005	Sample No.:	C-042425-1
Lab ID:	2025-173-005-001	Soil Color:	Brown



Particle Size (mm)	Percent Finer	USDA Summary	Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classification
		Gravel	12.84	**0.00**
2	87.16	*Sand*	15.86	**18.19**
0.05	71.31	*Silt*	52.79	**60.57**
0.002	18.51	*Clay*	18.51	**21.24**

USDA Classification ***SILT LOAM***

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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WASH SIEVE ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	Stockpile
Project No.:	2025-173-005	Sample No.:	C-042425-1
Lab ID:	2025-173-005-001	Soil Color:	Brown

Moisture Content of Passing 3/4" Material		Moisture Content of Retained 3/4" Material	
Tare No.:	1492	Tare No.:	2973
Wt. of Tare & Wet Sample (g):	906.94	Weight of Tare & Wet Sample (g):	308.91
Wt. of Tare & Dry Sample (g):	822.78	Weight of Tare & Dry Sample (g):	298.15
Weight of Tare (g):	146.83	Weight of Tare (g):	8.24
Weight of Water (g):	84.16	Weight of Water (g):	10.76
Weight of Dry Soil (g):	675.95	Weight of Dry Soil (g):	289.91
Moisture Content (%):	**12.5**	**Moisture Content (%):**	**3.7**

Wet Weight of -3/4" Sample (g):	14646.00	Weight of the Dry Sample (g):	675.95
Dry Weight of - 3/4" Sample (g):	13024.38	Weight of minus #200 Material (g):	544.49
Wet Weight of +3/4" Sample (g):	1027.00	Weight of plus #200 Material (g):	131.46
Dry Weight of +3/4" Sample (g):	990.25		
Total Dry Weight of Sample (g):	14014.63	**J - Factor (Percent Finer than 3/4")**	**92.93%**

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)		Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00		0.00	0.00	100.00	**100.00**
6"	150	0.00		0.00	0.00	100.00	**100.00**
3"	75	0.00		0.00	0.00	100.00	**100.00**
2"	50	0.00	(*)	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	358.00		2.46	2.46	97.54	**97.54**
1"	25	500.00		3.44	5.90	94.10	**94.10**
3/4"	19	169.00		1.16	7.07	92.93	**92.93**
1/2"	12.5	5.28		0.78	0.78	99.22	**92.21**
3/8"	9.5	8.80		1.30	2.08	97.92	**91.00**
#4	4.75	12.20		1.80	3.89	96.11	**89.32**
#10	2	15.70		2.32	6.21	93.79	**87.16**
#20	0.85	17.49	(**)	2.59	8.80	91.20	**84.76**
#40	0.425	16.82		2.49	11.29	88.71	**82.45**
#60	0.25	21.45		3.17	14.46	85.54	**79.50**
#140	0.106	24.93		3.69	18.15	81.85	**76.07**
#200	0.075	8.79		1.30	19.45	80.55	**74.86**
Pan	-	544.49		80.55	100.00	-	**-**

NOTES: *(*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample*
*(**) The - 3/4" sieve analysis is based on the Weight of the Dry Sample*

Tested By	DF	Date	4/29/25	Checked By	JLK	Date	5/21/25

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

S:Excel\Excel QA\Spreadsheets\SieveHydJ.xls

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HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	Stockpile
Project No.:	2025-173-005	Sample No.:	C-042425-1
Lab ID:	2025-173-005-001	Soil Color:	Brown

Elapsed Time		R Measured	Temp.	Composite Correction	R Corrected	N	K Factor	Diameter	N'
(min)			(°C)			(%)		(mm)	(%)
0		NA	NA	NA	NA	NA	NA	NA	NA
2		46.5	22.7	4.9	41.6	88.1	0.01302	0.0271	**65.9**
5		43.5	22.7	4.9	38.6	81.7	0.01302	0.0176	**61.2**
15		38.5	22.7	4.9	33.6	71.1	0.01302	0.0106	**53.3**
30		34.5	22.7	4.9	29.6	62.7	0.01302	0.0078	**46.9**
63		29.0	22.7	4.9	24.1	51.0	0.01302	0.0056	**38.2**
250		19.5	22.7	4.9	14.6	30.9	0.01302	0.0030	**23.1**
1440		13.5	22.3	5.0	8.5	18.0	0.01308	0.0013	**13.5**

Soil Specimen Data		**Other Corrections**		
Tare No.	644			
Wt. of Tare & Dry Material (g):	147.55	a - Factor	0.993	
Weight of Tare (g):	95.65			
Weight of Deflocculant (g):	5.0	Percent Finer than # 200	74.86	
Weight of Dry Material (g):	46.90			
		Specific Gravity	2.70	Assumed

Note: *Hydrometer test is performed on - # 200 sieve material.*

Tested By TO Date 5/19/25 Checked By JLK Date 5/21/25

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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Moisture, Ash, and Organic Matter (Loss on Ignition)

ASTM D 2974-20e1

Client:	GAI Consultants, Inc.
Client Reference:	Cheswick Closure R220960.00
Project No.:	2025-173-005

Method B (To 0.1%)

Moisture Content

ASTM D2216

Lab ID:	001
Boring No.:	Final Closure
Depth (ft):	Stockpile
Sample No.:	C-042425-1
Tare Number	FF
Weight of Tare & Wet Sample (g)	299.32
Weight of Tare & Dry Sample (g)	279.91
Weight of Tare (g)	115.46
Weight of Water (g)	19.41
Weight of Dry Sample (g)	164.45
Moisture Content	**11.8%**

Method A

Ash Content, Organic Matter

Furnace Temperature (°C)	440
Weight of Tare & Ash (g)	276.85
Weight of Volatiles (g)	3.06
Weight of Ash (g)	161.39
Ash Content (%)	**98.1%**
Organic Matter (%)	**1.9%**

Tested By JW *Date* 4/29/25 *Checked By* EG *Date* 5/1/25

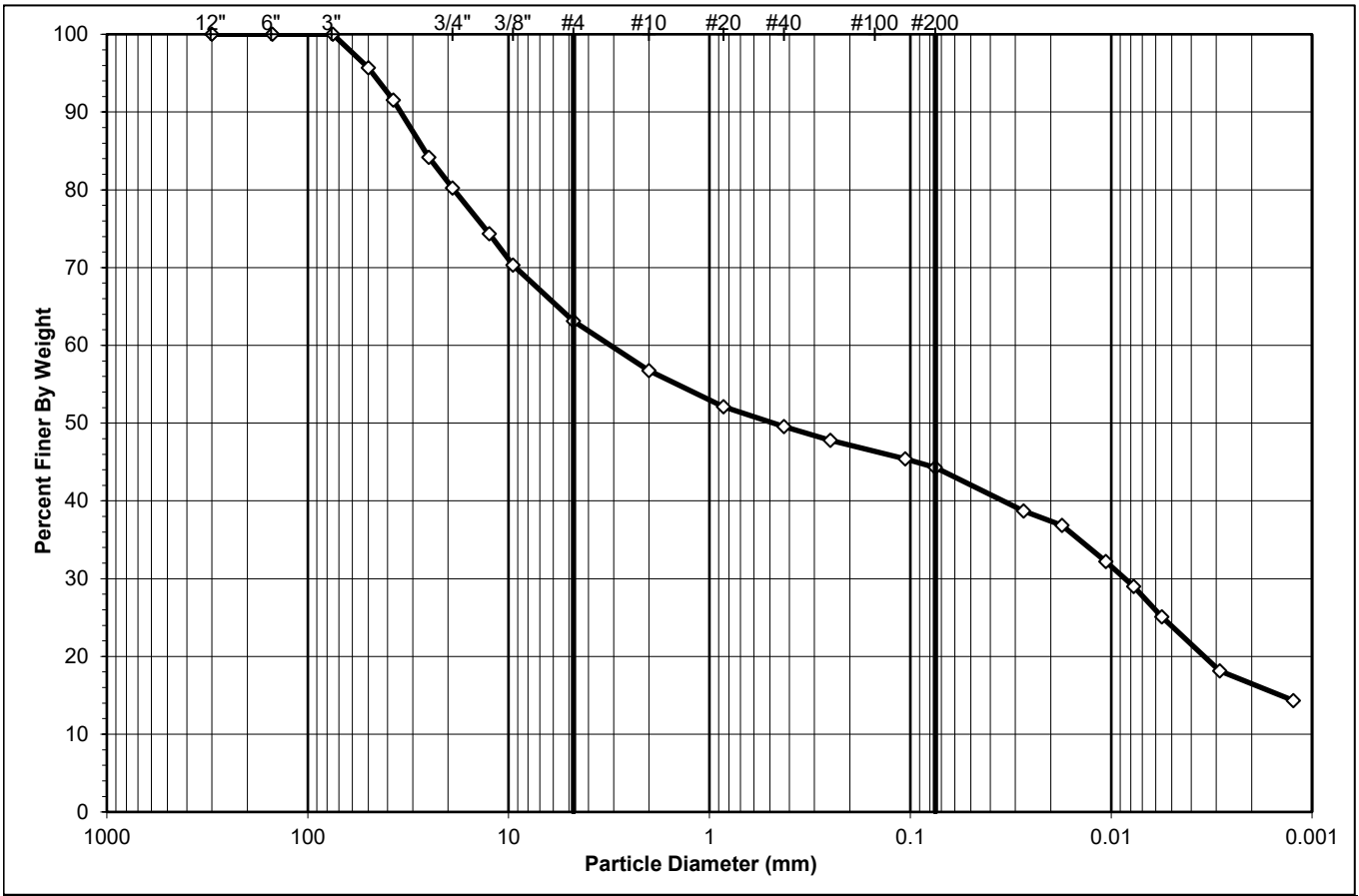
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SIEVE AND HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-005	Sample No.:	C-042425-2
Lab ID:	2025-173-005-002	Soil Color:	Brown

	SIEVE ANALYSIS			HYDROMETER	
USCS	cobbles	gravel	sand	silt and clay fraction	
USDA	cobbles	gravel	sand	silt	clay



USCS Summary

Sieve Size (mm)		Percentage (%)
Greater Than #4	*Gravel*	36.89
#4 to #200	*Sand*	18.82
Finer Than #200	*Silt & Clay*	44.29

USCS Symbol:
gc, ASSUMED

USCS Classification:
CLAYEY GRAVEL WITH SAND

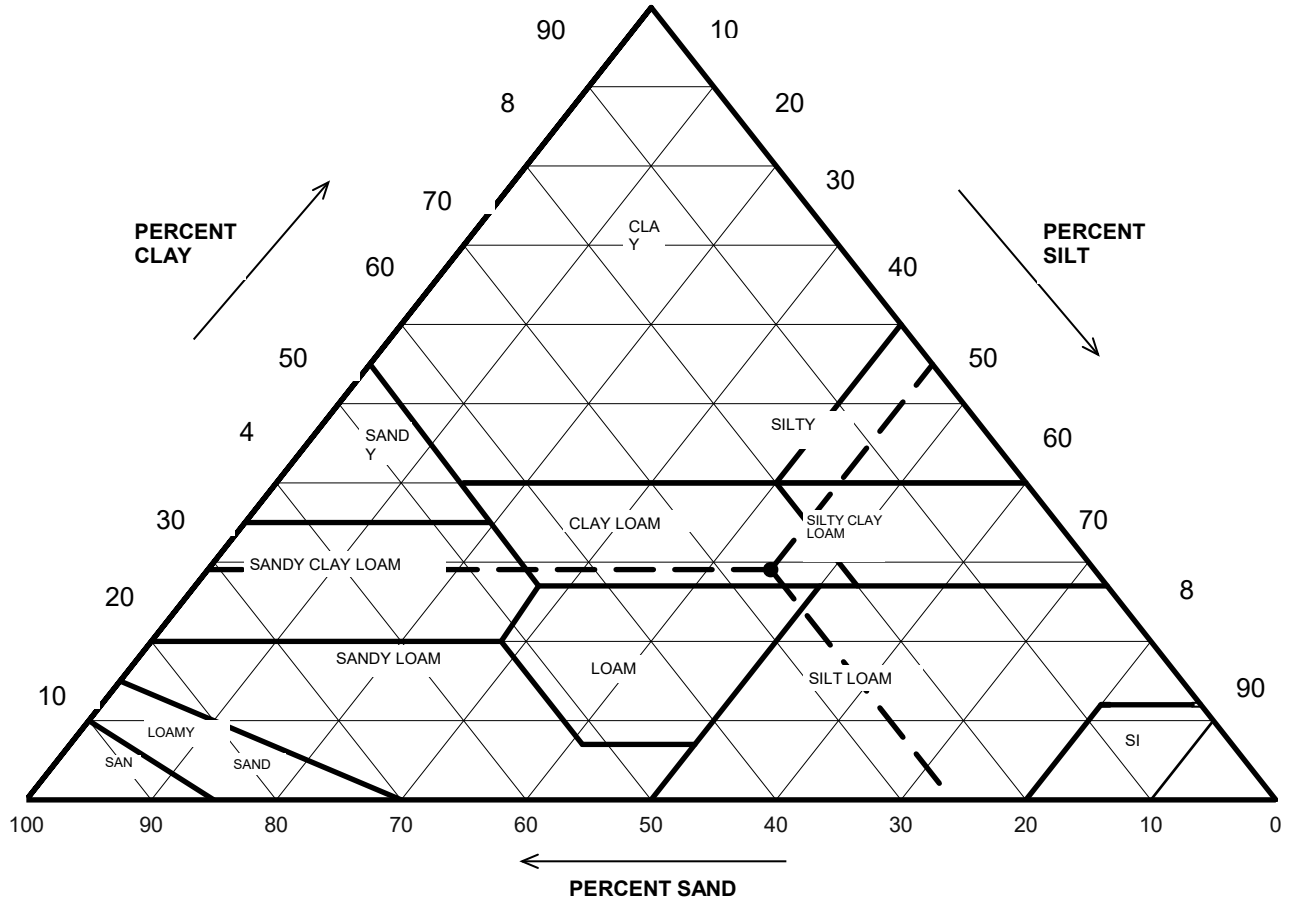
DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

S:Excel\Excel QA\Spreadsheets\SieveHydJ.xls

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USDA Classification Chart

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-005	Sample No.:	C-042425-2
Lab ID:	2025-173-005-002	Soil Color:	Brown



Particle Size (mm)	Percent Finer	USDA Summary	Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classification
		Gravel	43.27	**0.00**
2	56.73	*Sand*	14.69	**25.89**
0.05	42.05	*Silt*	25.56	**45.05**
0.002	16.49	*Clay*	16.49	**29.06**

USDA Classification ***CLAY LOAM***

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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WASH SIEVE ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-005	Sample No.:	C-042425-2
Lab ID:	2025-173-005-002	Soil Color:	Brown

Moisture Content of Passing 3/4" Material		Moisture Content of Retained 3/4" Material	
Tare No.:	1521	Tare No.:	2672
Wt. of Tare & Wet Sample (g):	841.2	Weight of Tare & Wet Sample (g):	437.35
Wt. of Tare & Dry Sample (g):	763.75	Weight of Tare & Dry Sample (g):	420
Weight of Tare (g):	176.86	Weight of Tare (g):	8.15
Weight of Water (g):	77.45	Weight of Water (g):	17.35
Weight of Dry Soil (g):	586.89	Weight of Dry Soil (g):	411.85
Moisture Content (%):	**13.2**	**Moisture Content (%):**	**4.2**

Wet Weight of -3/4" Sample (g):	14029.00	Weight of the Dry Sample (g):	586.89
Dry Weight of - 3/4" Sample (g):	12393.47	Weight of minus #200 Material (g):	323.95
Wet Weight of +3/4" Sample (g):	3180.00	Weight of plus #200 Material (g):	262.94
Dry Weight of +3/4" Sample (g):	3051.45		
Total Dry Weight of Sample (g):	15444.92	**J - Factor (Percent Finer than 3/4")**	**80.24%**

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)		Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00		0.00	0.00	100.00	**100.00**
6"	150	0.00		0.00	0.00	100.00	**100.00**
3"	75	0.00		0.00	0.00	100.00	**100.00**
2"	50	692.00	(*)	4.30	4.30	95.70	**95.70**
1 1/2"	37.5	668.00		4.15	8.45	91.55	**91.55**
1"	25	1188.00		7.38	15.83	84.17	**84.17**
3/4"	19	632.00		3.93	19.76	80.24	**80.24**
1/2"	12.5	43.17		7.36	7.36	92.64	**74.34**
3/8"	9.5	29.43		5.01	12.37	87.63	**70.32**
#4	4.75	52.69		8.98	21.35	78.65	**63.11**
#10	2	46.65		7.95	29.30	70.70	**56.73**
#20	0.85	33.86	(**)	5.77	35.07	64.93	**52.10**
#40	0.425	18.54		3.16	38.23	61.77	**49.57**
#60	0.25	12.91		2.20	40.43	59.57	**47.80**
#140	0.106	17.69		3.01	43.44	56.56	**45.39**
#200	0.075	8.00		1.36	44.80	55.20	**44.29**
Pan	-	323.95		55.20	100.00	-	**-**

NOTES: *(*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample*
*(**) The - 3/4" sieve analysis is based on the Weight of the Dry Sample*

Tested By	DF	Date	4/29/25	Checked By	JLK	Date	5/21/25

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-005	Sample No.:	C-042425-2
Lab ID:	2025-173-005-002	Soil Color:	Brown

Elapsed Time		R Measured	Temp.	Composite Correction	R Corrected	N	K Factor	Diameter	N'
(min)			(°C)			(%)		(mm)	(%)
0		NA	NA	NA	NA	NA	NA	NA	NA
2		47.0	21.7	5.2	41.8	87.4	0.01317	0.0273	**38.7**
5		45.0	21.7	5.2	39.8	83.2	0.01317	0.0176	**36.8**
15		40.0	21.7	5.2	34.8	72.7	0.01317	0.0106	**32.2**
30		36.5	21.7	5.2	31.3	65.4	0.01317	0.0077	**29.0**
60		32.0	22.7	4.9	27.1	56.6	0.01302	0.0056	**25.1**
250		24.5	22.7	4.9	19.6	41.0	0.01302	0.0029	**18.1**
1440		20.5	22.3	5.0	15.5	32.4	0.01308	0.0012	**14.3**

Soil Specimen Data		**Other Corrections**		
Tare No.	966			
Wt. of Tare & Dry Material (g):	150.00	a - Factor	0.993	
Weight of Tare (g):	97.47			
Weight of Deflocculant (g):	5.0	Percent Finer than # 200	44.29	
Weight of Dry Material (g):	47.53			
		Specific Gravity	2.70	Assumed

Note: *Hydrometer test is performed on - # 200 sieve material.*

Tested By TO Date 5/19/25 Checked By JLK Date 5/21/25

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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Moisture, Ash, and Organic Matter (Loss on Ignition)

ASTM D 2974-20e1

Client:	GAI Consultants, Inc.
Client Reference:	Cheswick Closure R220960.00
Project No.:	2025-173-005

Method B (To 0.1%)

Moisture Content

ASTM D2216

Lab ID:	002
Boring No.:	Final Closure
Depth (ft):	In Place Soil
Sample No.:	C-042425-2
Tare Number	HH
Weight of Tare & Wet Sample (g)	370.85
Weight of Tare & Dry Sample (g)	343.20
Weight of Tare (g)	134.00
Weight of Water (g)	27.65
Weight of Dry Sample (g)	209.20
Moisture Content	**13.2%**

Method A

Ash Content, Organic Matter

Furnace Temperature (°C)	440
Weight of Tare & Ash (g)	338.10
Weight of Volatiles (g)	5.10
Weight of Ash (g)	204.10
Ash Content (%)	**97.6%**
Organic Matter (%)	**2.4%**

Tested By JW *Date* 4/29/25 *Checked By* EG *Date* 5/1/25

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PERMEABILITY TEST

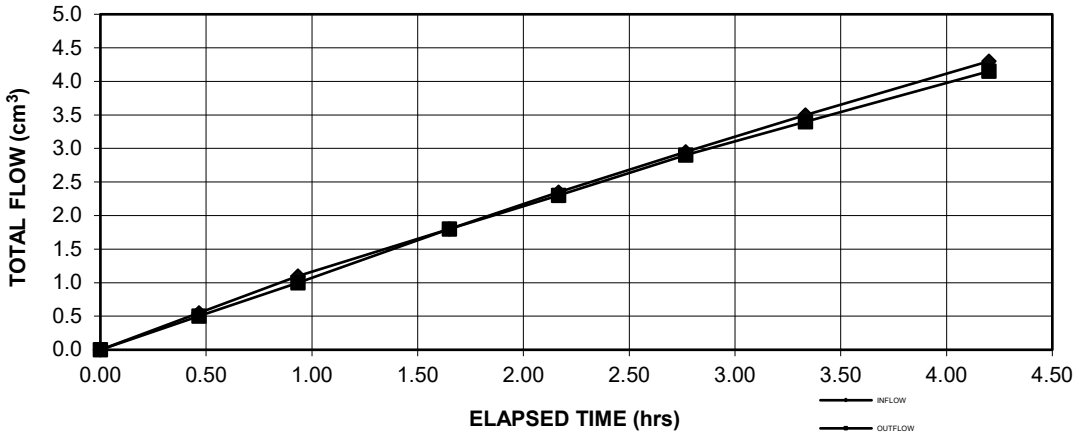
ASTM D 5084-16a Method C

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Project:	Cheswick Closure R22060.00	Depth (ft):	In Place Soil
Project No.:	2025-173-005	Sample No.:	C-042425-2
Lab ID No.:	2025-173-005-002	Avg. Effective Consol. Pressure (psi):	6.25

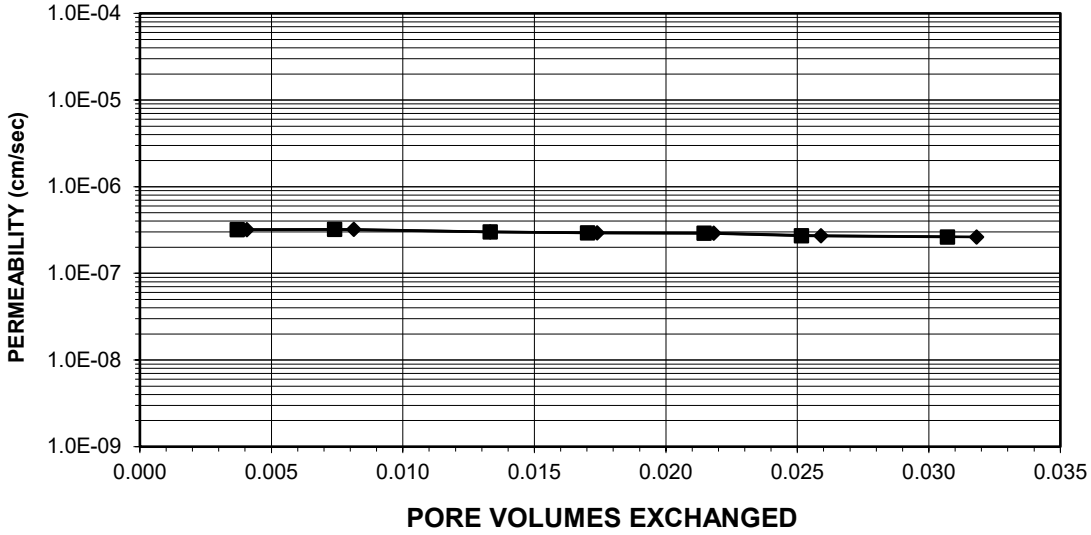
AVERAGE PERMEABILITY = 2.8E-07 cm/sec @ 20°C

AVERAGE PERMEABILITY = 2.8E-09 m/sec @ 20°C

TOTAL FLOW vs. ELAPSED TIME



PORE VOLUMES EXCHANGED vs. PERMEABILITY



Tested By: WT Date: 5/21/25 Checked By: JLK Date: 5/23/25

DCN: CT-22 DATE: 1/1/17 REVISION: 11

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PERMEABILITY TEST

ASTM D 5084-16a Method C

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Project:	Cheswick Closure R22060.00	Depth (ft):	In Place Soil
Project No.:	2025-173-005	Sample No.:	C-042425-2
Lab ID No.:	2025-173-005-002	Avg. Effective Consol. Pressure (psi):	6.25

Specific Gravity: 2.70 Assumed
Sample Condition: Remolded

Visual Description: Brown Clay with Rock

Permeant Type: Deaired Water

MOISTURE CONTENT:	BEFORE TEST	AFTER TEST
Tare Number	2886	538
Weight of Tare & Wet Sample (g)	185.03	871.82
Weight of Tare & Dry Sample (g)	162.42	745.75
Weight of Tare (g)	7.13	81.22
Weight of Water (g)	22.61	126.07
Weight of Dry Sample (g)	155.29	664.53
Moisture Content (%)	**14.6**	**19.0**

SPECIMEN:	BEFORE TEST	AFTER TEST
Weight of Tube & Wet Sample (g)	1680.39	NA
Weight of Tube (g)	917.30	NA
Weight of Wet Sample (g)	763.09	792.47
Length 1 (in)	3.490	3.548
Length 2 (in)	3.490	3.519
Length 3 (in)	3.490	3.544
Top Diameter (in)	2.870	2.891
Middle Diameter (in)	2.870	2.905
Bottom Diameter (in)	2.870	2.893
Average Length (in)	3.49	3.54
Average Area (in^2)	6.47	6.59
Sample Volume (cm^3)	369.98	381.88
Unit Wet Weight (g/cm^3)	2.06	2.08
Unit Wet Weight (pcf)	128.7	129.5
Unit Dry Weight (pcf)	112.4	108.9
Unit Dry Weight (g/cm^3)	1.80	1.74
Void Ratio, e	0.50	0.55
Porosity, n	0.33	0.35
Pore Volume (cm^3)	123.3	135.2
Total Weight of Sample After Test (g)		790.88

Tested By: WT Date: 5/21/25 Checked By: JLK Date: 5/23/25

DCN: CT-22 DATE: 1/1/17 REVISION: 11

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PERMEABILITY TEST

ASTM D 5084-16a Method C

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Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Project:	Cheswick Closure R22060.00	Depth (ft):	In Place Soil
Project No.:	2025-173-005	Sample No.:	C-042425-2
Lab ID No.:	2025-173-005-002	Avg. Effective Consol. Pressure (psi):	6.25

Pressure Heads (Constant)	
Top Cap (psi)	87.5
Bottom Cap (psi)	90.0
Cell (psi)	95.0
Total Pressure Head (cm)	175.8
Hydraulic Gradient	19.56

Final Sample Dimensions	
Sample Length (cm), L	8.98
Sample Diameter (cm)	7.36
Sample Area (cm^2), A	42.51
Inflow Burette Area (cm^2), a-in	0.960
Outflow Burette Area (cm^2), a-out	0.922
B Parameter (%)	95

AVERAGE PERMEABILITY = 2.8E-07 cm/sec @ 20°C

AVERAGE PERMEABILITY = 2.8E-09 m/sec @ 20°C

DATE	TIME		ELAPSED TIME t	TOTAL INFLOW	TOTAL OUTFLOW	TOTAL HEAD h	FLOW (0 flow)	TEMP.	INCREMENTAL PERMEABILITY @ 20°C
(mm/dd/yy)	(hr)	(min)	(hr)	(cm^3)	(cm^3)	(cm)	(1 stop)	(°C)	(cm/sec)
5/22/2025	11	35	0.000	0.0	0.0	200.4	0	21.2	NA
5/22/2025	12	3	0.467	0.6	0.5	199.2	0	21.2	3.2E-07
5/22/2025	12	31	0.933	1.1	1.0	198.1	0	21.2	3.2E-07
5/22/2025	13	14	1.650	1.8	1.8	196.5	0	21.2	3.0E-07
5/22/2025	13	45	2.167	2.4	2.3	195.4	0	21.2	2.9E-07
5/22/2025	14	21	2.767	3.0	2.9	194.2	0	21.2	2.9E-07
5/22/2025	14	55	3.333	3.5	3.4	193.1	0	21.3	2.7E-07
5/22/2025	15	47	4.200	4.3	4.2	191.4	1	21.3	2.6E-07

Tested By: WT Date: 5/21/25 Checked By: JLK Date: 5/23/25

DCN: CT-22 DATE: 1/1/17 REVISION: 11

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June 17, 2025

Project No. 2025-173-006

Cory White
GAI Consultants, Inc.
385 East Waterfront Drive
Homestead, PA 15120

Transmittal
Laboratory Test Results
Cheswick Closure R220960.00

Please find attached the laboratory test results for the above referenced project. The tests were outlined on the Project Verification Form that was transmitted to your firm prior to the testing. The testing was performed in general accordance with the methods listed on the enclosed data sheets. The test results are believed to be representative of the samples that were submitted for testing and are indicative only of the specimens that were evaluated. We have no direct knowledge of the origin of the samples and imply no position with regard to the nature of the test results, i.e. pass/fail and no claims as to the suitability of the material for its intended use.

The test data and all associated project information provided shall be held in strict confidence and disclosed to other parties only with authorization by our Client. The test data submitted herein is considered integral with this report and is not to be reproduced except in whole and only with the authorization of the Client and Geotechnics. The remaining sample materials for this project will be retained for a minimum of 90 days as directed by the Geotechnics' Quality Program.

We are pleased to provide these testing services. Should you have any questions or if we may be of further assistance, please contact our office.

Respectfully submitted,
Geotechnics, Inc.

Nathan Melaro
Director of Operations

We understand that you have a choice in your laboratory services and we thank you for choosing Geotechnics.

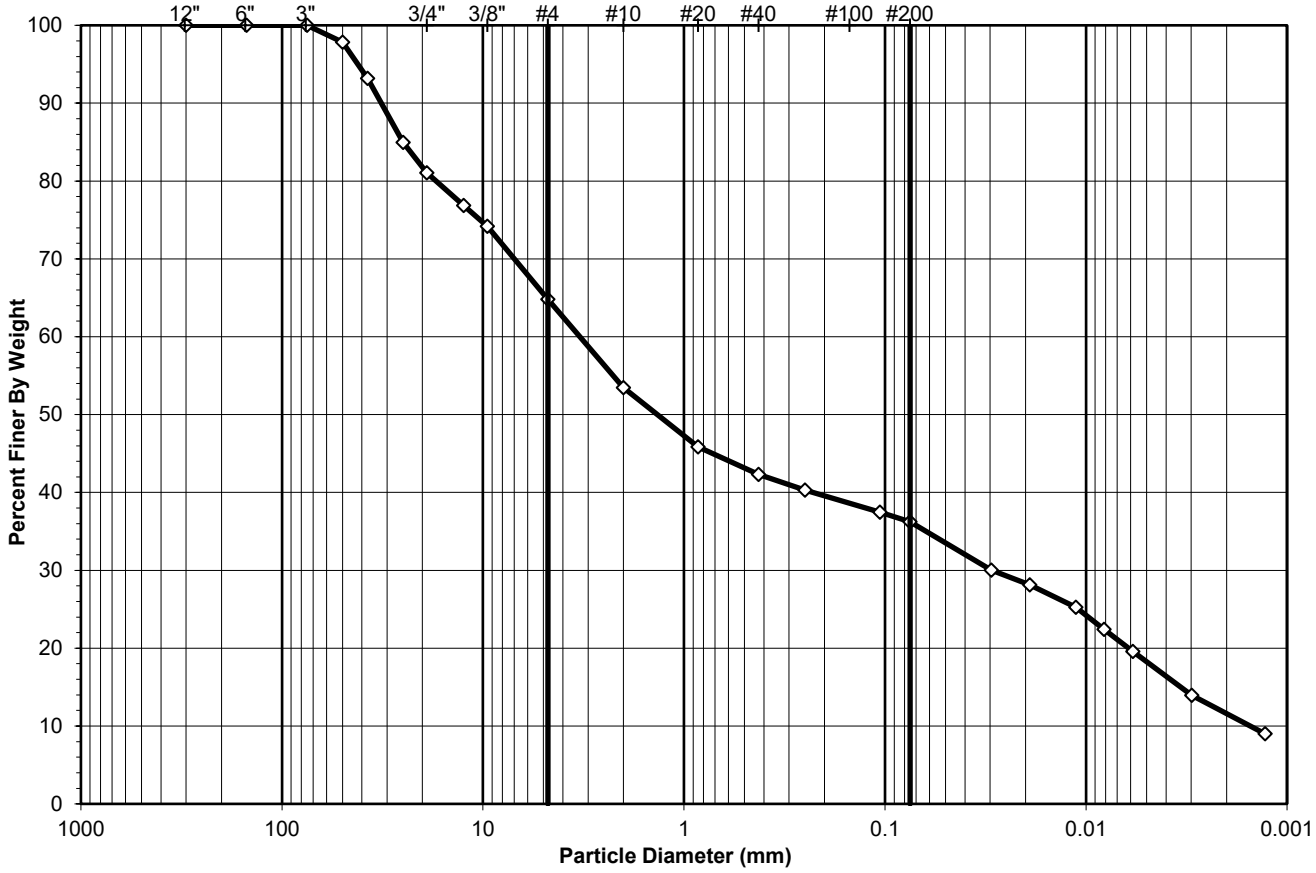
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SIEVE AND HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-006	Sample No.:	C-051525-1
Lab ID:	2025-173-006-001	Soil Color:	Brown

	SIEVE ANALYSIS			HYDROMETER	
USCS	cobbles	gravel	sand	silt and clay fraction	
USDA	cobbles	gravel	sand	silt	clay



USCS Summary

Sieve Size (mm)		Percentage (%)
Greater Than #4	*Gravel*	35.17
#4 to #200	*Sand*	28.60
Finer Than #200	*Silt & Clay*	36.23

USCS Symbol:
gc, ASSUMED

USCS Classification:
CLAYEY GRAVEL WITH SAND

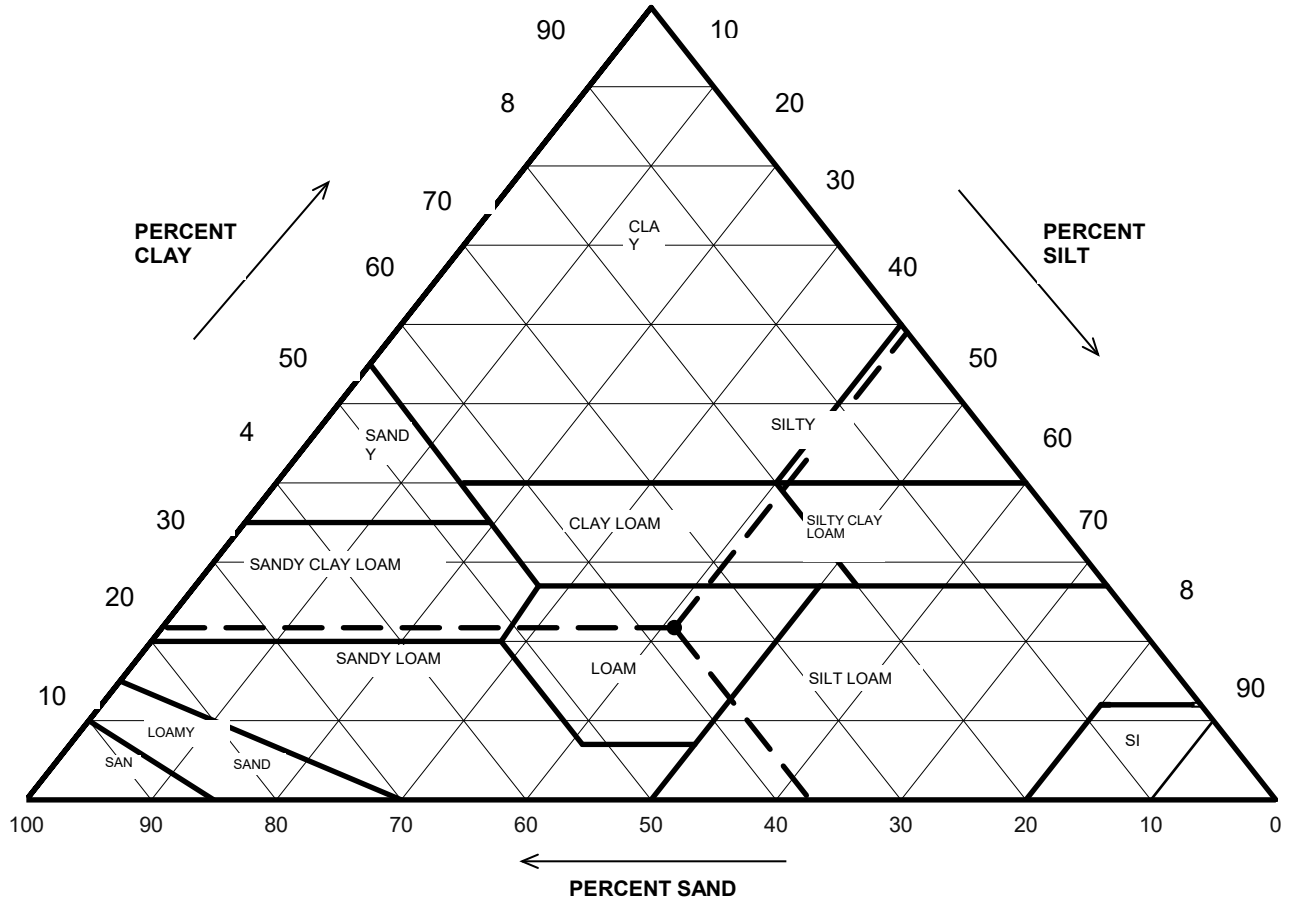
DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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USDA Classification Chart

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-006	Sample No.:	C-051525-1
Lab ID:	2025-173-006-001	Soil Color:	Brown



Particle Size (mm)	Percent Finer	USDA Summary	Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classification
		Gravel	46.55	**0.00**
2	53.45	*Sand*	19.93	**37.28**
0.05	33.52	*Silt*	21.91	**40.99**
0.002	11.61	*Clay*	11.61	**21.72**

USDA Classification ***LOAM***

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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WASH SIEVE ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-006	Sample No.:	C-051525-1
Lab ID:	2025-173-006-001	Soil Color:	Brown

Moisture Content of Passing 3/4" Material		Moisture Content of Retained 3/4" Material	
Tare No.:	2019	Tare No.:	3316
Wt. of Tare & Wet Sample (g):	911.7	Weight of Tare & Wet Sample (g):	372.63
Wt. of Tare & Dry Sample (g):	809.33	Weight of Tare & Dry Sample (g):	351.04
Weight of Tare (g):	149.02	Weight of Tare (g):	7.21
Weight of Water (g):	102.37	Weight of Water (g):	21.59
Weight of Dry Soil (g):	660.31	Weight of Dry Soil (g):	343.83
Moisture Content (%):	**15.5**	**Moisture Content (%):**	**6.3**

Wet Weight of -3/4" Sample (g):	13270.00	Weight of the Dry Sample (g):	660.31
Dry Weight of - 3/4" Sample (g):	11488.85	Weight of minus #200 Material (g):	295.07
Wet Weight of +3/4" Sample (g):	2851.00	Weight of plus #200 Material (g):	365.24
Dry Weight of +3/4" Sample (g):	2682.56		
Total Dry Weight of Sample (g):	14171.40	**J - Factor (Percent Finer than 3/4")**	**81.07%**

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)		Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00		0.00	0.00	100.00	**100.00**
6"	150	0.00		0.00	0.00	100.00	**100.00**
3"	75	0.00		0.00	0.00	100.00	**100.00**
2"	50	327.00	(*)	2.17	2.17	97.83	**97.83**
1 1/2"	37.5	697.00		4.63	6.80	93.20	**93.20**
1"	25	1242.00		8.25	15.05	84.95	**84.95**
3/4"	19	585.00		3.88	18.93	81.07	**81.07**
1/2"	12.5	34.35		5.20	5.20	94.80	**76.85**
3/8"	9.5	21.68		3.28	8.49	91.51	**74.19**
#4	4.75	76.26		11.55	20.03	79.97	**64.83**
#10	2	92.68		14.04	34.07	65.93	**53.45**
#20	0.85	61.79	(**)	9.36	43.43	56.57	**45.86**
#40	0.425	28.73		4.35	47.78	52.22	**42.34**
#60	0.25	16.38		2.48	50.26	49.74	**40.32**
#140	0.106	23.12		3.50	53.76	46.24	**37.49**
#200	0.075	10.25		1.55	55.31	44.69	**36.23**
Pan	-	295.07		44.69	100.00	-	**-**

NOTES: *(*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample*
*(**) The - 3/4" sieve analysis is based on the Weight of the Dry Sample*

Tested By	DF	Date	5/29/25	Checked By	EG	Date	6/9/25

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-006	Sample No.:	C-051525-1
Lab ID:	2025-173-006-001	Soil Color:	Brown

Elapsed Time		R Measured	Temp.	Composite Correction	R Corrected	N	K Factor	Diameter	N'
(min)			(°C)			(%)		(mm)	(%)
0		NA	NA	NA	NA	NA	NA	NA	NA
2		36.5	22.5	5.0	31.5	82.9	0.01305	0.0296	**30.0**
5		34.5	22.5	5.0	29.5	77.6	0.01305	0.0190	**28.1**
15		31.5	22.5	5.0	26.5	69.8	0.01305	0.0112	**25.3**
30		28.5	22.5	5.0	23.5	61.9	0.01305	0.0081	**22.4**
60		25.5	22.6	4.9	20.6	54.1	0.01303	0.0059	**19.6**
250		19.5	22.9	4.8	14.7	38.5	0.01299	0.0030	**14.0**
1440		14.5	22.2	5.0	9.5	24.9	0.01310	0.0013	**9.0**

Soil Specimen Data		**Other Corrections**	
Tare No.	637		
Wt. of Tare & Dry Material (g):	135.81	a - Factor	0.993
Weight of Tare (g):	93.02		
Weight of Deflocculant (g):	5.0	Percent Finer than # 200	36.23
Weight of Dry Material (g):	37.79		
		Specific Gravity	2.70 Assumed

Note: *Hydrometer test is performed on - # 200 sieve material.*

Tested By TO Date 6/6/25 Checked By EG Date 6/9/25

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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Moisture, Ash, and Organic Matter (Loss on Ignition)

ASTM D 2974-20e1

Client:	GAI Consultants, Inc.
Client Reference:	Cheswick Closure R220960.00
Project No.:	2025-173-006

Method B (To 0.1%)

Moisture Content

ASTM D2216

Lab ID:	001
Boring No.:	Final Closure
Depth (ft):	In Place Soil
Sample No.:	C-051525-1
Tare Number	HH
Weight of Tare & Wet Sample (g)	354.75
Weight of Tare & Dry Sample (g)	324.87
Weight of Tare (g)	134.06
Weight of Water (g)	29.88
Weight of Dry Sample (g)	190.81
Moisture Content	**15.7%**

Method A

Ash Content, Organic Matter

Furnace Temperature (°C)	440
Weight of Tare & Ash (g)	319.80
Weight of Volatiles (g)	5.07
Weight of Ash (g)	185.74
Ash Content (%)	**97.3%**
Organic Matter (%)	**2.7%**

Tested By JW *Date* 5/27/25 *Checked By* EG *Date* 5/29/25

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PERMEABILITY TEST

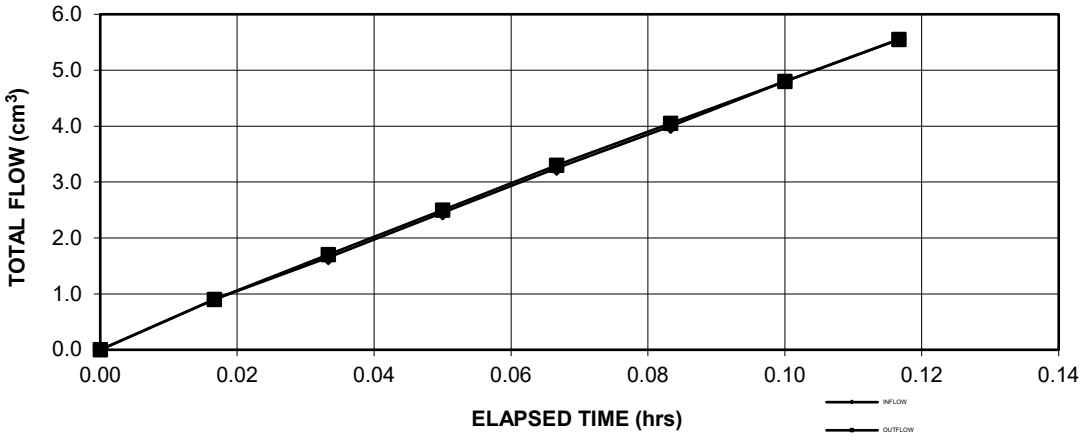
ASTM D 5084-16a Method C

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Project:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-006	Sample No.:	C-051525-1
Lab ID No.:	2025-173-006-001	Avg. Effective Consol. Pressure (psi):	6.25

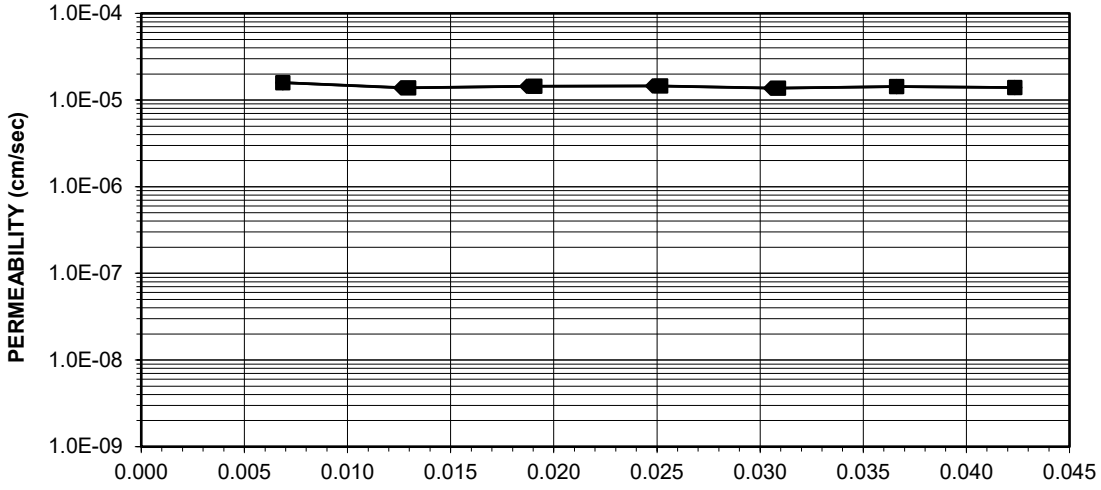
AVERAGE PERMEABILITY = 1.4E-05 cm/sec @ 20°C

AVERAGE PERMEABILITY = 1.4E-07 m/sec @ 20°C

TOTAL FLOW vs. ELAPSED TIME



PORE VOLUMES EXCHANGED vs. PERMEABILITY



Tested By: DP Date: 6/11/25 Checked By: KC Date: 6/17/25

DCN: CT-22 DATE: 1/1/17 REVISION: 11

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PERMEABILITY TEST

ASTM D 5084-16a Method C

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Project:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-006	Sample No.:	C-051525-1
Lab ID No.:	2025-173-006-001	Avg. Effective Consol. Pressure (psi):	6.25

Specific Gravity:	2.70	Assumed
Sample Condition:		Remolded

Visual Description: Brown Clay with Rocks

Permeant Type: Deaired Water

MOISTURE CONTENT:	BEFORE TEST	AFTER TEST
Tare Number	3082	917
Weight of Tare & Wet Sample (g)	136.14	896.65
Weight of Tare & Dry Sample (g)	119.92	770.60
Weight of Tare (g)	8.10	109.44
Weight of Water (g)	16.22	126.05
Weight of Dry Sample (g)	111.82	661.16
Moisture Content (%)	**14.5**	**19.1**

SPECIMEN:	BEFORE TEST	AFTER TEST
Weight of Tube & Wet Sample (g)	1679.45	NA
Weight of Tube (g)	917.30	NA
Weight of Wet Sample (g)	762.15	792.50
Length 1 (in)	3.490	3.547
Length 2 (in)	3.490	3.551
Length 3 (in)	3.490	3.548
Top Diameter (in)	2.870	2.874
Middle Diameter (in)	2.870	2.869
Bottom Diameter (in)	2.870	2.883
Average Length (in)	3.49	3.55
Average Area (in^2)	6.47	6.49
Sample Volume (cm^3)	369.98	377.60
Unit Wet Weight (g/cm^3)	2.06	2.10
Unit Wet Weight (pcf)	128.6	131.0
Unit Dry Weight (pcf)	112.3	110.0
Unit Dry Weight (g/cm^3)	1.80	1.76
Void Ratio, e	0.50	0.53
Porosity, n	0.33	0.35
Pore Volume (cm^3)	123.5	131.1
Total Weight of Sample After Test (g)		787.81

Tested By: DP Date: 6/11/25 Checked By: KC Date: 6/17/25

DCN: CT-22 DATE: 1/1/17 REVISION: 11

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PERMEABILITY TEST

ASTM D 5084-16a Method C

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Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Project:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-006	Sample No.:	C-051525-1
Lab ID No.:	2025-173-006-001	Avg. Effective Consol. Pressure (psi):	6.25

Pressure Heads (Constant)	
Top Cap (psi)	77.5
Bottom Cap (psi)	80.0
Cell (psi)	85.0
Total Pressure Head (cm)	175.8
Hydraulic Gradient	19.50

Final Sample Dimensions	
Sample Length (cm), L	9.01
Sample Diameter (cm)	7.30
Sample Area (cm^2), A	41.89
Inflow Burette Area (cm^2), a-in	1.036
Outflow Burette Area (cm^2), a-out	0.853
B Parameter (%)	96

AVERAGE PERMEABILITY = 1.4E-05 cm/sec @ 20°C

AVERAGE PERMEABILITY = 1.4E-07 m/sec @ 20°C

DATE	TIME		ELAPSED TIME t	TOTAL INFLOW	TOTAL OUTFLOW	TOTAL HEAD h	FLOW (0 flow)	TEMP.	INCREMENTAL PERMEABILITY @ 20°C
(mm/dd/yy)	(hr)	(min)	(hr)	(cm^3)	(cm^3)	(cm)	(1 stop)	(°C)	(cm/sec)
6/13/2025	13	39	0.000	0.0	0.0	199.0	0	21.1	NA
6/13/2025	13	40	0.017	0.9	0.9	197.1	0	21.1	1.6E-05
6/13/2025	13	41	0.033	1.7	1.7	195.4	0	21.1	1.4E-05
6/13/2025	13	42	0.050	2.5	2.5	193.7	0	21.1	1.4E-05
6/13/2025	13	43	0.067	3.3	3.3	192.0	0	21.1	1.4E-05
6/13/2025	13	44	0.083	4.0	4.1	190.4	0	21.1	1.4E-05
6/13/2025	13	45	0.100	4.8	4.8	188.7	0	21.1	1.4E-05
6/13/2025	13	46	0.117	5.6	5.6	187.1	1	21.1	1.4E-05

Tested By: DP Date: 6/11/25 Checked By: KC Date: 6/17/25

DCN: CT-22 DATE: 1/1/17 REVISION: 11

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July 11, 2025

Project No. 2025-173-007

Cory White
GAI Consultants, Inc.
385 East Waterfront Drive
Homestead, PA 15120

Transmittal
Laboratory Test Results
Cheswick Closure R220960.00

Please find attached the laboratory test results for the above referenced project. The tests were outlined on the Project Verification Form that was transmitted to your firm prior to the testing. The testing was performed in general accordance with the methods listed on the enclosed data sheets. The test results are believed to be representative of the samples that were submitted for testing and are indicative only of the specimens that were evaluated. We have no direct knowledge of the origin of the samples and imply no position with regard to the nature of the test results, i.e. pass/fail and no claims as to the suitability of the material for its intended use.

The test data and all associated project information provided shall be held in strict confidence and disclosed to other parties only with authorization by our Client. The test data submitted herein is considered integral with this report and is not to be reproduced except in whole and only with the authorization of the Client and Geotechnics. The remaining sample materials for this project will be retained for a minimum of 90 days as directed by the Geotechnics' Quality Program.

We are pleased to provide these testing services. Should you have any questions or if we may be of further assistance, please contact our office.

Respectfully submitted,
Geotechnics, Inc.

Nathan Melaro
Director of Operations

We understand that you have a choice in your laboratory services and we thank you for choosing Geotechnics.

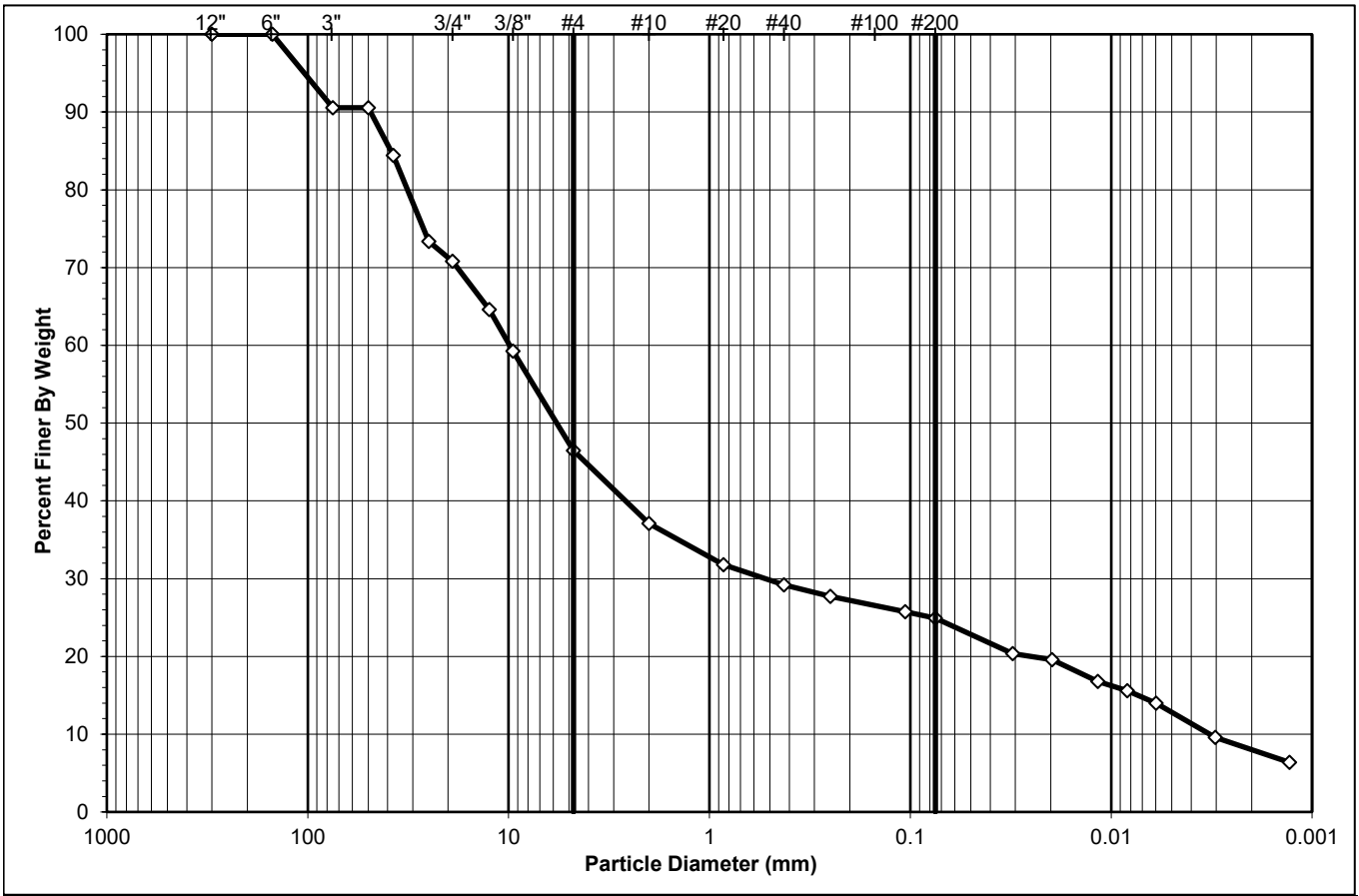
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SIEVE AND HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	Borrow Area North
Project No.:	2025-173-007	Sample No.:	C-060525-1
Lab ID:	2025-173-007-001	Soil Color:	Brown

	SIEVE ANALYSIS			HYDROMETER	
USCS	cobbles	gravel	sand	silt and clay fraction	
USDA	cobbles	gravel	sand	silt	clay



USCS Summary

Sieve Size (mm)		Percentage (%)
Greater Than #4	*Gravel*	53.51
#4 to #200	*Sand*	21.57
Finer Than #200	*Silt & Clay*	24.92

USCS Symbol:
gc, ASSUMED

USCS Classification:
CLAYEY GRAVEL WITH SAND

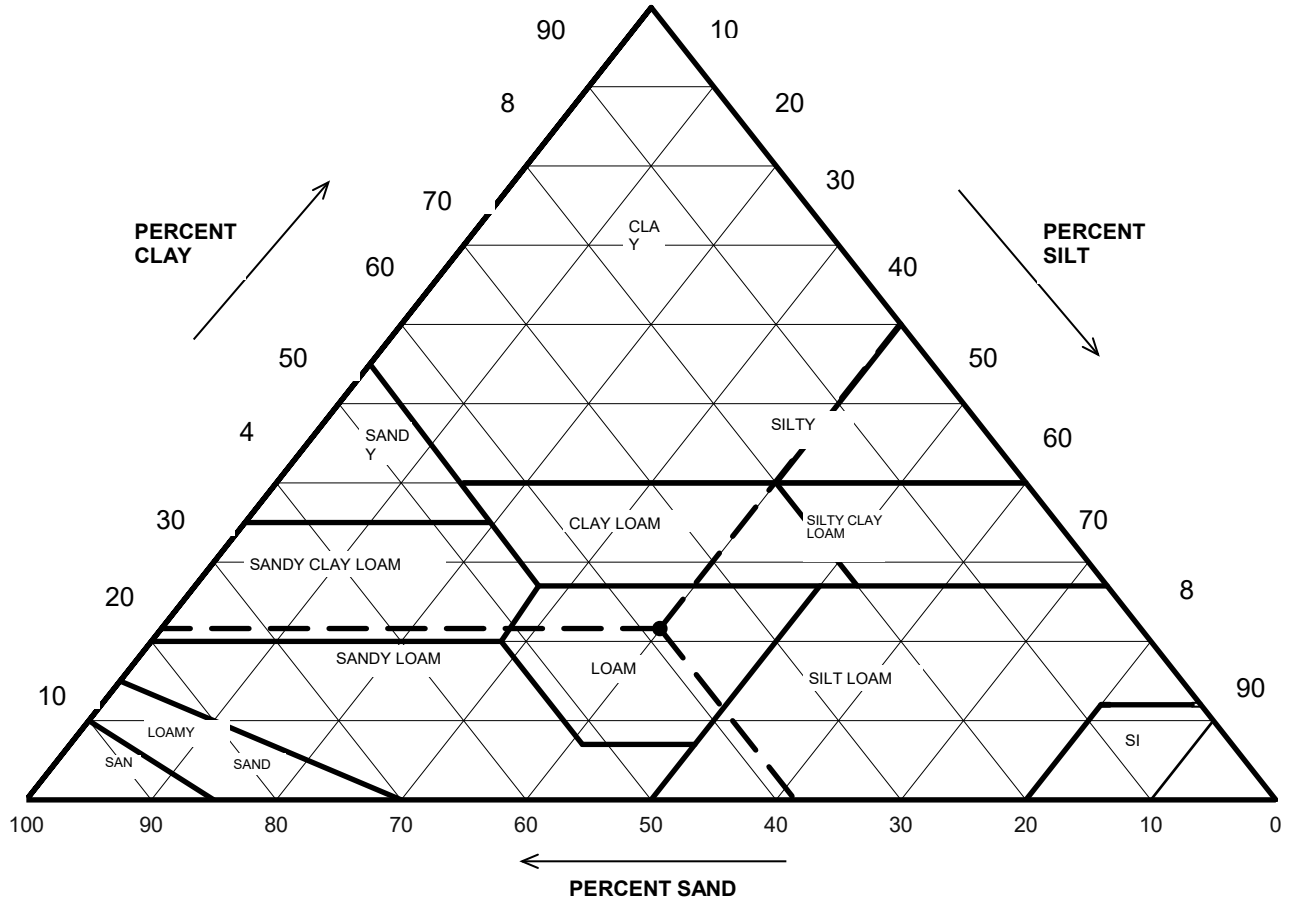
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USDA Classification Chart

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	Borrow Area North
Project No.:	2025-173-007	Sample No.:	C-060525-1
Lab ID:	2025-173-007-001	Soil Color:	Brown



Particle Size (mm)	Percent Finer	USDA Summary	Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classification
		Gravel	62.88	**0.00**
2	37.12	*Sand*	14.28	**38.48**
0.05	22.83	*Silt*	14.81	**39.89**
0.002	8.03	*Clay*	8.03	**21.62**

USDA Classification ***LOAM***

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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WASH SIEVE ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	Borrow Area North
Project No.:	2025-173-007	Sample No.:	C-060525-1
Lab ID:	2025-173-007-001	Soil Color:	Brown

Moisture Content of Passing 3/4" Material		Moisture Content of Retained 3/4" Material	
Tare No.:	1534	Tare No.:	3258
Wt. of Tare & Wet Sample (g):	960.76	Weight of Tare & Wet Sample (g):	460.8
Wt. of Tare & Dry Sample (g):	864.77	Weight of Tare & Dry Sample (g):	436.16
Weight of Tare (g):	145.05	Weight of Tare (g):	8.25
Weight of Water (g):	95.99	Weight of Water (g):	24.64
Weight of Dry Soil (g):	719.72	Weight of Dry Soil (g):	427.91
Moisture Content (%):	**13.3**	**Moisture Content (%):**	**5.8**

Wet Weight of -3/4" Sample (g):	6276.00	Weight of the Dry Sample (g):	719.72
Dry Weight of - 3/4" Sample (g):	5537.46	Weight of minus #200 Material (g):	253.31
Wet Weight of +3/4" Sample (g):	2415.00	Weight of plus #200 Material (g):	466.41
Dry Weight of +3/4" Sample (g):	2283.51		
Total Dry Weight of Sample (g):	7820.97	**J - Factor (Percent Finer than 3/4")**	**70.80%**

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)		Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00		0.00	0.00	100.00	**100.00**
6"	150	0.00		0.00	0.00	100.00	**100.00**
3"	75	780.00		9.43	9.43	90.57	**90.57**
2"	50	0.00	(*)	0.00	9.43	90.57	**90.57**
1 1/2"	37.5	509.00		6.15	15.58	84.42	**84.42**
1"	25	915.00		11.06	26.65	73.35	**73.35**
3/4"	19	211.00		2.55	29.20	70.80	**70.80**
1/2"	12.5	62.78		8.72	8.72	91.28	**64.63**
3/8"	9.5	54.51		7.57	16.30	83.70	**59.26**
#4	4.75	129.88		18.05	34.34	65.66	**46.49**
#10	2	95.25		13.23	47.58	52.42	**37.12**
#20	0.85	54.12	(**)	7.52	55.10	44.90	**31.79**
#40	0.425	26.16		3.63	58.73	41.27	**29.22**
#60	0.25	15.39		2.14	60.87	39.13	**27.71**
#140	0.106	19.71		2.74	63.61	36.39	**25.77**
#200	0.075	8.61		1.20	64.80	35.20	**24.92**
Pan	-	253.31		35.20	100.00	-	**-**

NOTES: *(*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample*
*(**) The - 3/4" sieve analysis is based on the Weight of the Dry Sample*

Tested By	DF	Date	6/18/25	Checked By	EG	Date	6/23/25

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	Borrow Area North
Project No.:	2025-173-007	Sample No.:	C-060525-1
Lab ID:	2025-173-007-001	Soil Color:	Brown

Elapsed Time		R Measured	Temp.	Composite Correction	R Corrected	N	K Factor	Diameter	N'
(min)			(°C)			(%)		(mm)	(%)
0		NA	NA	NA	NA	NA	NA	NA	NA
2		30.5	22.7	4.9	25.6	81.7	0.01302	0.0309	**20.4**
5		29.5	22.7	4.9	24.6	78.5	0.01302	0.0197	**19.6**
15		26.0	22.7	4.9	21.1	67.4	0.01302	0.0117	**16.8**
30		24.5	22.7	4.9	19.6	62.6	0.01302	0.0083	**15.6**
60		22.5	22.6	4.9	17.6	56.1	0.01303	0.0060	**14.0**
250		17.0	22.6	4.9	12.1	38.5	0.01303	0.0030	**9.6**
1440		13.0	22.4	5.0	8.0	25.6	0.01307	0.0013	**6.4**

Soil Specimen Data		**Other Corrections**	
Tare No.	692		
Wt. of Tare & Dry Material (g):	126.55	a - Factor	0.993
Weight of Tare (g):	90.44		
Weight of Deflocculant (g):	5.0	Percent Finer than # 200	24.92
Weight of Dry Material (g):	31.11		
		Specific Gravity	2.70 Assumed

Note: *Hydrometer test is performed on - # 200 sieve material.*

Tested By TO Date 6/19/25 Checked By EG Date 6/23/25

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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Moisture, Ash, and Organic Matter (Loss on Ignition)

ASTM D 2974-20e1

Client:	GAI Consultants, Inc.
Client Reference:	Cheswick Closure R220960.00
Project No.:	2025-173-007

Method B (To 0.1%)

Moisture Content

ASTM D2216

Lab ID:	001
Boring No.:	Final Closure
Depth (ft):	Borrow Area North
Sample No.:	C-060525-1
Tare Number	HH
Weight of Tare & Wet Sample (g)	416.70
Weight of Tare & Dry Sample (g)	383.79
Weight of Tare (g)	134.02
Weight of Water (g)	32.91
Weight of Dry Sample (g)	249.77
Moisture Content	**13.2%**

Method A

Ash Content, Organic Matter

Furnace Temperature (°C)	440
Weight of Tare & Ash (g)	377.86
Weight of Volatiles (g)	5.93
Weight of Ash (g)	243.84
Ash Content (%)	**97.6%**
Organic Matter (%)	**2.4%**

Tested By JW *Date* 6/16/25 *Checked By* EG *Date* 6/20/25

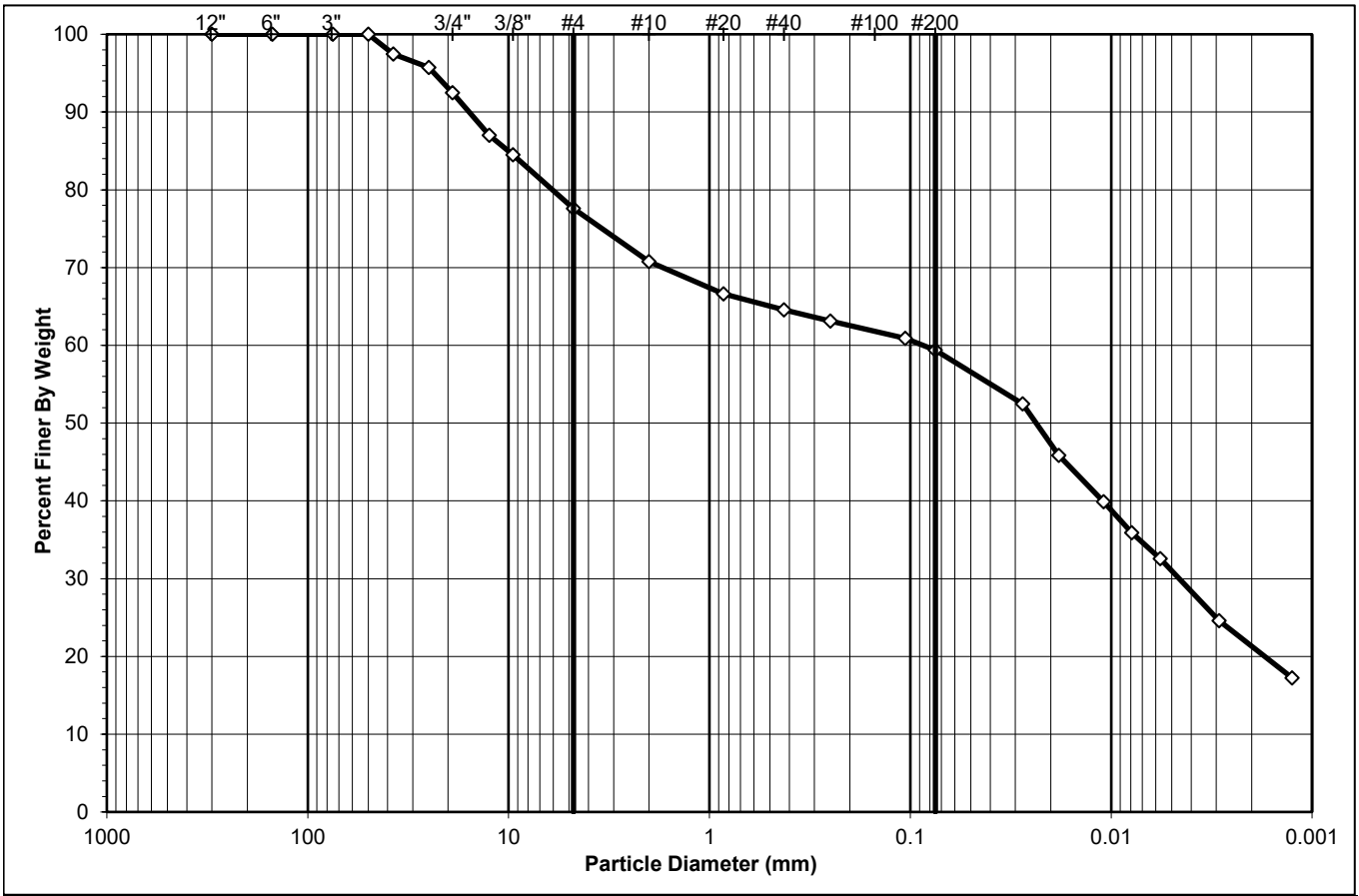
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SIEVE AND HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	Borrow Area North
Project No.:	2025-173-007	Sample No.:	C-060525-2
Lab ID:	2025-173-007-002	Soil Color:	Brown

	SIEVE ANALYSIS			HYDROMETER	
USCS	cobbles	gravel	sand	silt and clay fraction	
USDA	cobbles	gravel	sand	silt	clay



USCS Summary

Sieve Size (mm)		Percentage (%)
Greater Than #4	*Gravel*	22.41
#4 to #200	*Sand*	18.19
Finer Than #200	*Silt & Clay*	59.40

USCS Symbol:
cl, ASSUMED

USCS Classification:
GRAVELLY LEAN CLAY WITH SAND

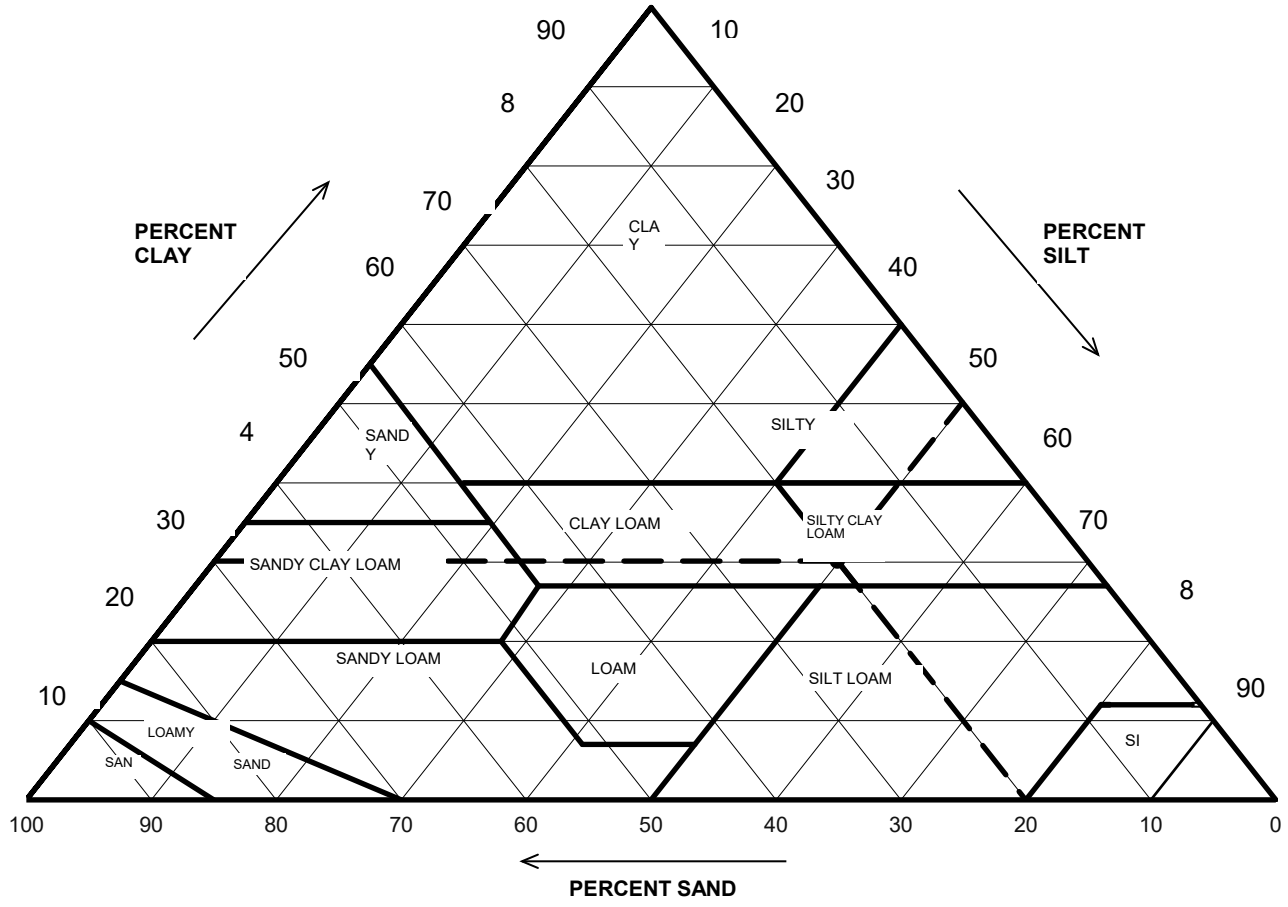
DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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USDA Classification Chart

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	Borrow Area North
Project No.:	2025-173-007	Sample No.:	C-060525-2
Lab ID:	2025-173-007-002	Soil Color:	Brown



Particle Size (mm)	Percent Finer	USDA Summary	Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classification
		Gravel	29.24	**0.00**
2	70.76	*Sand*	14.17	**20.02**
0.05	56.59	*Silt*	35.27	**49.84**
0.002	21.32	*Clay*	21.32	**30.13**

USDA Classification ***CLAY LOAM***

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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WASH SIEVE ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	Borrow Area North
Project No.:	2025-173-007	Sample No.:	C-060525-2
Lab ID:	2025-173-007-002	Soil Color:	Brown

Moisture Content of Passing 3/4" Material		Moisture Content of Retained 3/4" Material	
Tare No.:	1429	Tare No.:	3234
Wt. of Tare & Wet Sample (g):	907.07	Weight of Tare & Wet Sample (g):	362.71
Wt. of Tare & Dry Sample (g):	813.25	Weight of Tare & Dry Sample (g):	348.45
Weight of Tare (g):	142.78	Weight of Tare (g):	8.21
Weight of Water (g):	93.82	Weight of Water (g):	14.26
Weight of Dry Soil (g):	670.47	Weight of Dry Soil (g):	340.24
Moisture Content (%):	**14.0**	**Moisture Content (%):**	**4.2**

Wet Weight of -3/4" Sample (g):	8518.00	Weight of the Dry Sample (g):	670.47
Dry Weight of - 3/4" Sample (g):	7472.38	Weight of minus #200 Material (g):	430.60
Wet Weight of +3/4" Sample (g):	632.00	Weight of plus #200 Material (g):	239.87
Dry Weight of +3/4" Sample (g):	606.58		
Total Dry Weight of Sample (g):	8078.95	**J - Factor (Percent Finer than 3/4")**	**92.49%**

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)		Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00		0.00	0.00	100.00	**100.00**
6"	150	0.00		0.00	0.00	100.00	**100.00**
3"	75	0.00		0.00	0.00	100.00	**100.00**
2"	50	0.00	(*)	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	212.00		2.52	2.52	97.48	**97.48**
1"	25	147.00		1.75	4.26	95.74	**95.74**
3/4"	19	273.00		3.24	7.51	92.49	**92.49**
1/2"	12.5	39.71		5.92	5.92	94.08	**87.01**
3/8"	9.5	18.10		2.70	8.62	91.38	**84.52**
#4	4.75	50.20		7.49	16.11	83.89	**77.59**
#10	2	49.55		7.39	23.50	76.50	**70.76**
#20	0.85	30.03	(**)	4.48	27.98	72.02	**66.61**
#40	0.425	14.80		2.21	30.19	69.81	**64.57**
#60	0.25	10.40		1.55	31.74	68.26	**63.14**
#140	0.106	16.25		2.42	34.16	65.84	**60.90**
#200	0.075	10.83		1.62	35.78	64.22	**59.40**
Pan	-	430.60		64.22	100.00	-	**-**

NOTES: *(*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample*
*(**) The - 3/4" sieve analysis is based on the Weight of the Dry Sample*

Tested By	DF	Date	6/18/25	Checked By	EG	Date	6/23/25

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	Borrow Area North
Project No.:	2025-173-007	Sample No.:	C-060525-2
Lab ID:	2025-173-007-002	Soil Color:	Brown

Elapsed Time		R Measured	Temp.	Composite Correction	R Corrected	N	K Factor	Diameter	N'
(min)			(°C)			(%)		(mm)	(%)
0		NA	NA	NA	NA	NA	NA	NA	NA
2		44.5	22.7	4.9	39.6	88.3	0.01302	0.0276	**52.5**
5		39.5	22.7	4.9	34.6	77.2	0.01302	0.0182	**45.8**
15		35.0	22.7	4.9	30.1	67.1	0.01302	0.0109	**39.9**
30		32.0	22.7	4.9	27.1	60.5	0.01302	0.0079	**35.9**
60		29.5	22.6	4.9	24.6	54.8	0.01303	0.0057	**32.6**
250		23.5	22.6	4.9	18.6	41.4	0.01303	0.0029	**24.6**
1440		18.0	22.4	5.0	13.0	29.0	0.01307	0.0013	**17.2**

Soil Specimen Data		**Other Corrections**		
Tare No.	1466			
Wt. of Tare & Dry Material (g):	155.55	a - Factor	0.993	
Weight of Tare (g):	106.03			
Weight of Deflocculant (g):	5.0	Percent Finer than # 200	59.40	
Weight of Dry Material (g):	44.52			
		Specific Gravity	2.70	Assumed

Note: *Hydrometer test is performed on - # 200 sieve material.*

Tested By TO Date 6/19/25 Checked By EG Date 6/23/25

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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Moisture, Ash, and Organic Matter (Loss on Ignition)

ASTM D 2974-20e1

Client:	GAI Consultants, Inc.
Client Reference:	Cheswick Closure R220960.00
Project No.:	2025-173-007

Method B (To 0.1%)

Moisture Content

ASTM D2216

Lab ID:	002
Boring No.:	Final Closure
Depth (ft):	Borrow Area South
Sample No.:	C-060525-2
Tare Number	FF
Weight of Tare & Wet Sample (g)	374.03
Weight of Tare & Dry Sample (g)	341.63
Weight of Tare (g)	115.51
Weight of Water (g)	32.40
Weight of Dry Sample (g)	226.12
Moisture Content	**14.3%**

Method A

Ash Content, Organic Matter

Furnace Temperature (°C)	440
Weight of Tare & Ash (g)	334.75
Weight of Volatiles (g)	6.88
Weight of Ash (g)	219.24
Ash Content (%)	**97.0%**
Organic Matter (%)	**3.0%**

Tested By JW *Date* 6/16/25 *Checked By* EG *Date* 6/20/25

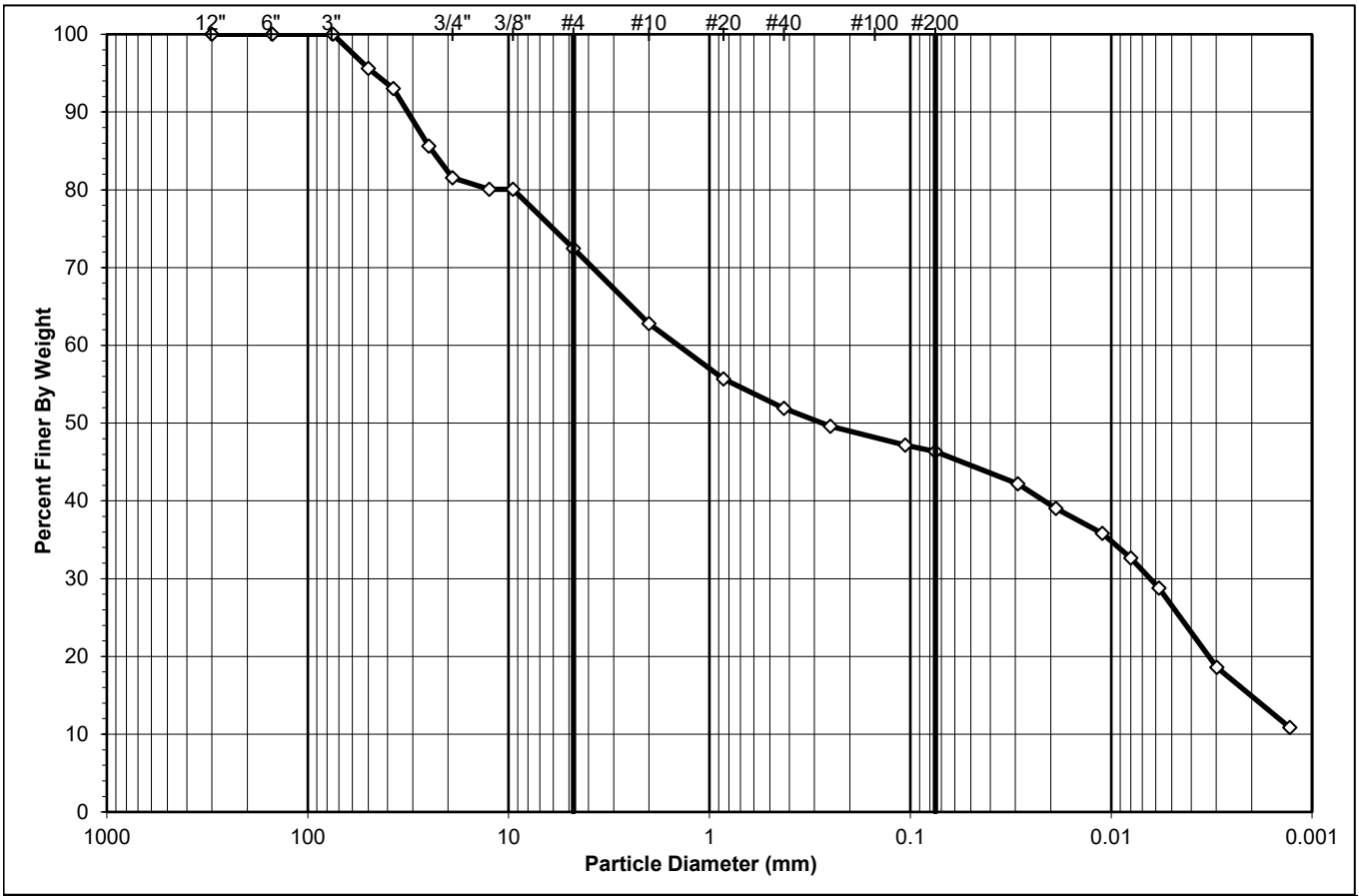
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SIEVE AND HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	Borrow Area North
Project No.:	2025-173-007	Sample No.:	C-060525-3
Lab ID:	2025-173-007-003	Soil Color:	Brown

	SIEVE ANALYSIS			HYDROMETER	
USCS	cobbles	gravel	sand	silt and clay fraction	
USDA	cobbles	gravel	sand	silt	clay



USCS Summary

Sieve Size (mm)		Percentage (%)
Greater Than #4	*Gravel*	27.52
#4 to #200	*Sand*	26.12
Finer Than #200	*Silt & Clay*	46.36

USCS Symbol:
gc, ASSUMED

USCS Classification:
CLAYEY GRAVEL WITH SAND

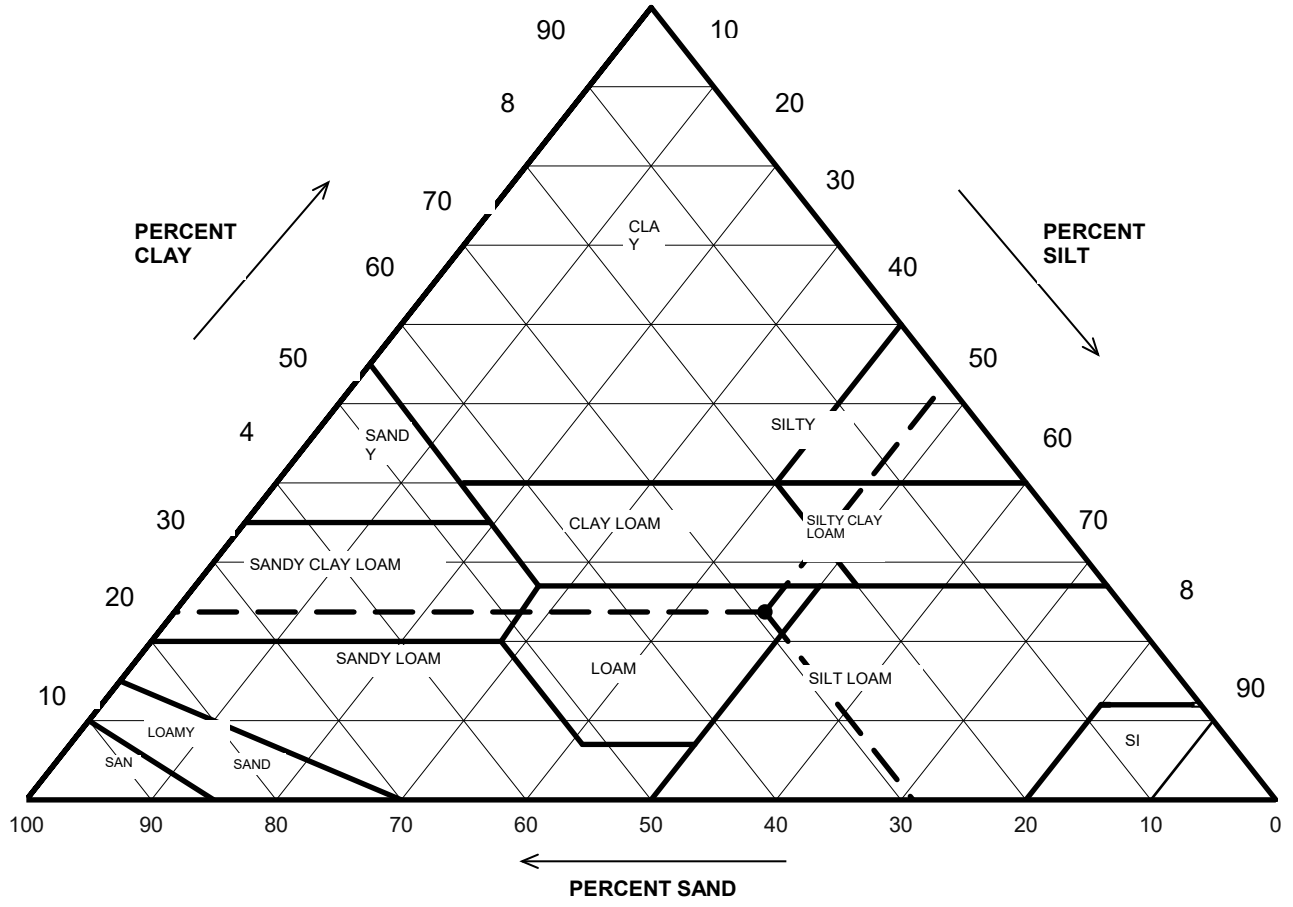
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USDA Classification Chart

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	Borrow Area North
Project No.:	2025-173-007	Sample No.:	C-060525-3
Lab ID:	2025-173-007-003	Soil Color:	Brown



Particle Size (mm)	Percent Finer	USDA Summary	Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classification
		Gravel	37.19	**0.00**
2	62.81	*Sand*	18.24	**29.04**
0.05	44.57	*Silt*	29.68	**47.25**
0.002	14.89	*Clay*	14.89	**23.71**

USDA Classification ***LOAM***

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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WASH SIEVE ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	Borrow Area North
Project No.:	2025-173-007	Sample No.:	C-060525-3
Lab ID:	2025-173-007-003	Soil Color:	Brown

Moisture Content of Passing 3/4" Material		Moisture Content of Retained 3/4" Material	
Tare No.:	1553	Tare No.:	2982
Wt. of Tare & Wet Sample (g):	916.6	Weight of Tare & Wet Sample (g):	409.72
Wt. of Tare & Dry Sample (g):	868.43	Weight of Tare & Dry Sample (g):	394.23
Weight of Tare (g):	144.41	Weight of Tare (g):	7.11
Weight of Water (g):	48.17	Weight of Water (g):	15.49
Weight of Dry Soil (g):	724.02	Weight of Dry Soil (g):	387.12
Moisture Content (%):	**6.7**	**Moisture Content (%):**	**4.0**

Wet Weight of -3/4" Sample (g):	13906.00	Weight of the Dry Sample (g):	724.02
Dry Weight of - 3/4" Sample (g):	13038.53	Weight of minus #200 Material (g):	411.47
Wet Weight of +3/4" Sample (g):	3064.00	Weight of plus #200 Material (g):	312.55
Dry Weight of +3/4" Sample (g):	2946.12		
Total Dry Weight of Sample (g):	15984.65	**J - Factor (Percent Finer than 3/4")**	**81.57%**

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)		Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00		0.00	0.00	100.00	**100.00**
6"	150	0.00		0.00	0.00	100.00	**100.00**
3"	75	0.00		0.00	0.00	100.00	**100.00**
2"	50	730.00	(*)	4.39	4.39	95.61	**95.61**
1 1/2"	37.5	428.00		2.57	6.97	93.03	**93.03**
1"	25	1232.00		7.41	14.38	85.62	**85.62**
3/4"	19	674.00		4.05	18.43	81.57	**81.57**
1/2"	12.5	13.36		1.85	1.85	98.15	**80.06**
3/8"	9.5	0.00		0.00	1.85	98.15	**80.06**
#4	4.75	67.36		9.30	11.15	88.85	**72.48**
#10	2	85.75		11.84	22.99	77.01	**62.81**
#20	0.85	63.15	(**)	8.72	31.71	68.29	**55.70**
#40	0.425	33.88		4.68	36.39	63.61	**51.88**
#60	0.25	20.21		2.79	39.19	60.81	**49.61**
#140	0.106	21.56		2.98	42.16	57.84	**47.18**
#200	0.075	7.28		1.01	43.17	56.83	**46.36**
Pan	-	411.47		56.83	100.00	-	**-**

NOTES: *(*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample*
*(**) The - 3/4" sieve analysis is based on the Weight of the Dry Sample*

Tested By	DF	Date	6/18/25	Checked By	EG	Date	6/23/25

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	Borrow Area North
Project No.:	2025-173-007	Sample No.:	C-060525-3
Lab ID:	2025-173-007-003	Soil Color:	Brown

Elapsed Time		R Measured	Temp.	Composite Correction	R Corrected	N	K Factor	Diameter	N'
(min)			(°C)			(%)		(mm)	(%)
0		NA	NA	NA	NA	NA	NA	NA	NA
2		38.0	22.7	4.9	33.1	91.1	0.01302	0.0292	**42.2**
5		35.5	22.7	4.9	30.6	84.2	0.01302	0.0188	**39.0**
15		33.0	22.7	4.9	28.1	77.3	0.01302	0.0111	**35.8**
30		30.5	22.7	4.9	25.6	70.4	0.01302	0.0080	**32.6**
60		27.5	22.6	4.9	22.6	62.1	0.01303	0.0058	**28.8**
250		19.5	22.6	4.9	14.6	40.1	0.01303	0.0030	**18.6**
1440		13.5	22.4	5.0	8.5	23.4	0.01307	0.0013	**10.9**

Soil Specimen Data		**Other Corrections**	
Tare No.	687		
Wt. of Tare & Dry Material (g):	133.40	a - Factor	0.993
Weight of Tare (g):	92.30		
Weight of Deflocculant (g):	5.0	Percent Finer than # 200	46.36
Weight of Dry Material (g):	36.10		
		Specific Gravity	2.70 Assumed

Note: *Hydrometer test is performed on - # 200 sieve material.*

Tested By TO Date 6/19/25 Checked By EG Date 6/23/25

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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Moisture, Ash, and Organic Matter (Loss on Ignition)

ASTM D 2974-20e1

Client:	GAI Consultants, Inc.
Client Reference:	Cheswick Closure R220960.00
Project No.:	2025-173-007

Method B (To 0.1%)

Moisture Content

ASTM D2216

Lab ID:	003
Boring No.:	Final Closure
Depth (ft):	In Place Soil
Sample No.:	C-060525-3
Tare Number	BB
Weight of Tare & Wet Sample (g)	402.19
Weight of Tare & Dry Sample (g)	384.71
Weight of Tare (g)	123.83
Weight of Water (g)	17.48
Weight of Dry Sample (g)	260.88
Moisture Content	**6.7%**

Method A

Ash Content, Organic Matter

Furnace Temperature (°C)	440
Weight of Tare & Ash (g)	379.01
Weight of Volatiles (g)	5.70
Weight of Ash (g)	255.18
Ash Content (%)	**97.8%**
Organic Matter (%)	**2.2%**

Tested By JW *Date* 6/16/25 *Checked By* EG *Date* 6/20/25

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PERMEABILITY TEST

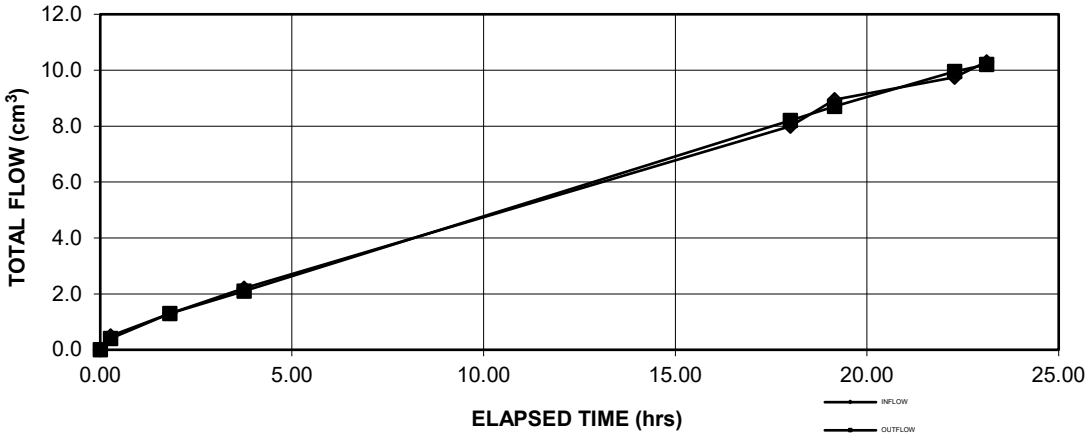
ASTM D 5084-16a Method C

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Project:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-007	Sample No.:	C-060525-3
Lab ID No.:	2025-173-007-003	Avg. Effective Consol. Pressure (psi):	6.25

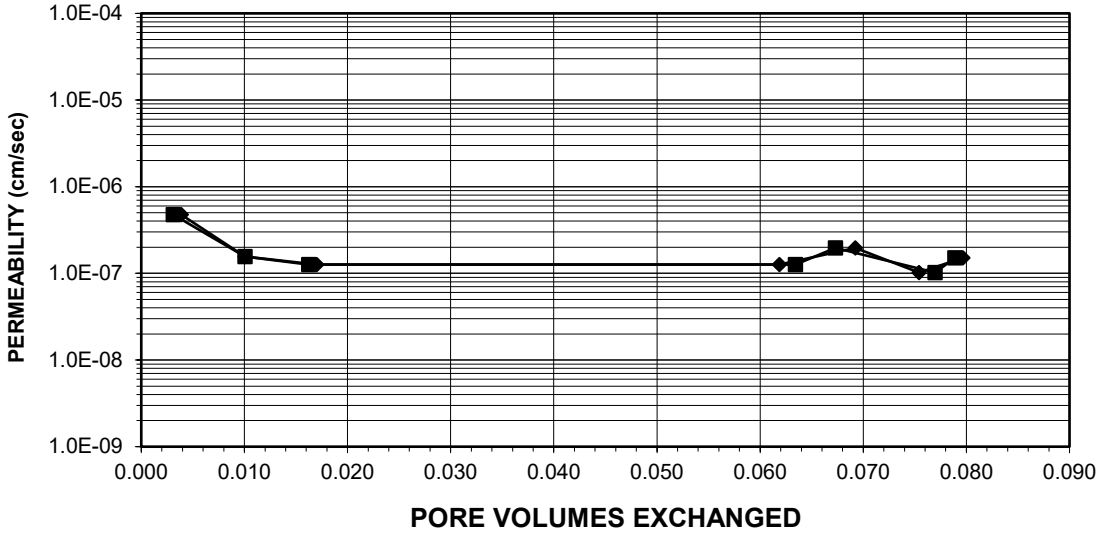
AVERAGE PERMEABILITY = 1.4E-07 cm/sec @ 20°C

AVERAGE PERMEABILITY = 1.4E-09 m/sec @ 20°C

TOTAL FLOW vs. ELAPSED TIME



PORE VOLUMES EXCHANGED vs. PERMEABILITY



Tested By: WT Date: 7/8/25 Checked By: JLK Date: 7/11/25

DCN: CT-22 DATE: 1/1/17 REVISION: 11

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PERMEABILITY TEST

ASTM D 5084-16a Method C

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Project:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-007	Sample No.:	C-060525-3
Lab ID No.:	2025-173-007-003	Avg. Effective Consol. Pressure (psi):	6.25

Specific Gravity:	2.70	Assumed
Sample Condition:		Remolded

Visual Description: Brown Clay

Permeant Type: Deaired Water

MOISTURE CONTENT:	BEFORE TEST	AFTER TEST
Tare Number	3198	1131A
Weight of Tare & Wet Sample (g)	164.53	807.12
Weight of Tare & Dry Sample (g)	140.36	689.60
Weight of Tare (g)	8.16	83.72
Weight of Water (g)	24.17	117.52
Weight of Dry Sample (g)	132.20	605.88
Moisture Content (%)	**18.3**	**19.4**

SPECIMEN:	BEFORE TEST	AFTER TEST
Weight of Tube & Wet Sample (g)	1635.35	NA
Weight of Tube (g)	917.30	NA
Weight of Wet Sample (g)	718.05	724.81
Length 1 (in)	3.490	3.424
Length 2 (in)	3.490	3.429
Length 3 (in)	3.490	3.405
Top Diameter (in)	2.870	2.825
Middle Diameter (in)	2.870	2.832
Bottom Diameter (in)	2.870	2.853
Average Length (in)	3.49	3.42
Average Area (in^2)	6.47	6.32
Sample Volume (cm^3)	369.98	354.12
Unit Wet Weight (g/cm^3)	1.94	2.05
Unit Wet Weight (pcf)	121.1	127.8
Unit Dry Weight (pcf)	102.4	107.0
Unit Dry Weight (g/cm^3)	1.64	1.71
Void Ratio, e	0.65	0.57
Porosity, n	0.39	0.37
Pore Volume (cm^3)	145.1	129.3
Total Weight of Sample After Test (g)		723.86

Tested By: WT Date: 7/8/25 Checked By: JLK Date: 7/11/25

DCN: CT-22 DATE: 1/1/17 REVISION: 11

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PERMEABILITY TEST

ASTM D 5084-16a Method C

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Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Project:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-007	Sample No.:	C-060525-3
Lab ID No.:	2025-173-007-003	Avg. Effective Consol. Pressure (psi):	6.25

Pressure Heads (Constant)	
Top Cap (psi)	77.5
Bottom Cap (psi)	80.0
Cell (psi)	85.0
Total Pressure Head (cm)	175.8
Hydraulic Gradient	20.24

Final Sample Dimensions	
Sample Length (cm), L	8.69
Sample Diameter (cm)	7.21
Sample Area (cm^2), A	40.77
Inflow Burette Area (cm^2), a-in	0.962
Outflow Burette Area (cm^2), a-out	0.962
B Parameter (%)	96

AVERAGE PERMEABILITY = 1.4E-07 cm/sec @ 20°C

AVERAGE PERMEABILITY = 1.4E-09 m/sec @ 20°C

DATE	TIME		ELAPSED TIME t	TOTAL INFLOW	TOTAL OUTFLOW	TOTAL HEAD h	FLOW (0 flow)	TEMP.	INCREMENTAL PERMEABILITY @ 20°C
(mm/dd/yy)	(hr)	(min)	(hr)	(cm^3)	(cm^3)	(cm)	(1 stop)	(°C)	(cm/sec)
7/9/2025	13	29	0.000	0.0	0.0	200.6	0	21.7	NA
7/9/2025	13	45	0.267	0.5	0.4	199.6	0	21.7	4.8E-07
7/9/2025	15	18	1.817	1.3	1.3	197.9	0	21.7	1.6E-07
7/9/2025	17	14	3.750	2.2	2.1	196.1	0	21.7	1.3E-07
7/10/2025	7	29	18.000	8.0	8.2	183.8	0	21.1	1.3E-07
7/10/2025	8	38	19.150	9.0	8.7	182.3	0	21.2	2.0E-07
7/10/2025	11	46	22.283	9.8	10.0	180.2	0	21.6	1.0E-07
7/10/2025	12	36	23.117	10.3	10.2	179.4	1	21.6	1.5E-07

Tested By: WT Date: 7/8/25 Checked By: JLK Date: 7/11/25

DCN: CT-22 DATE: 1/1/17 REVISION: 11

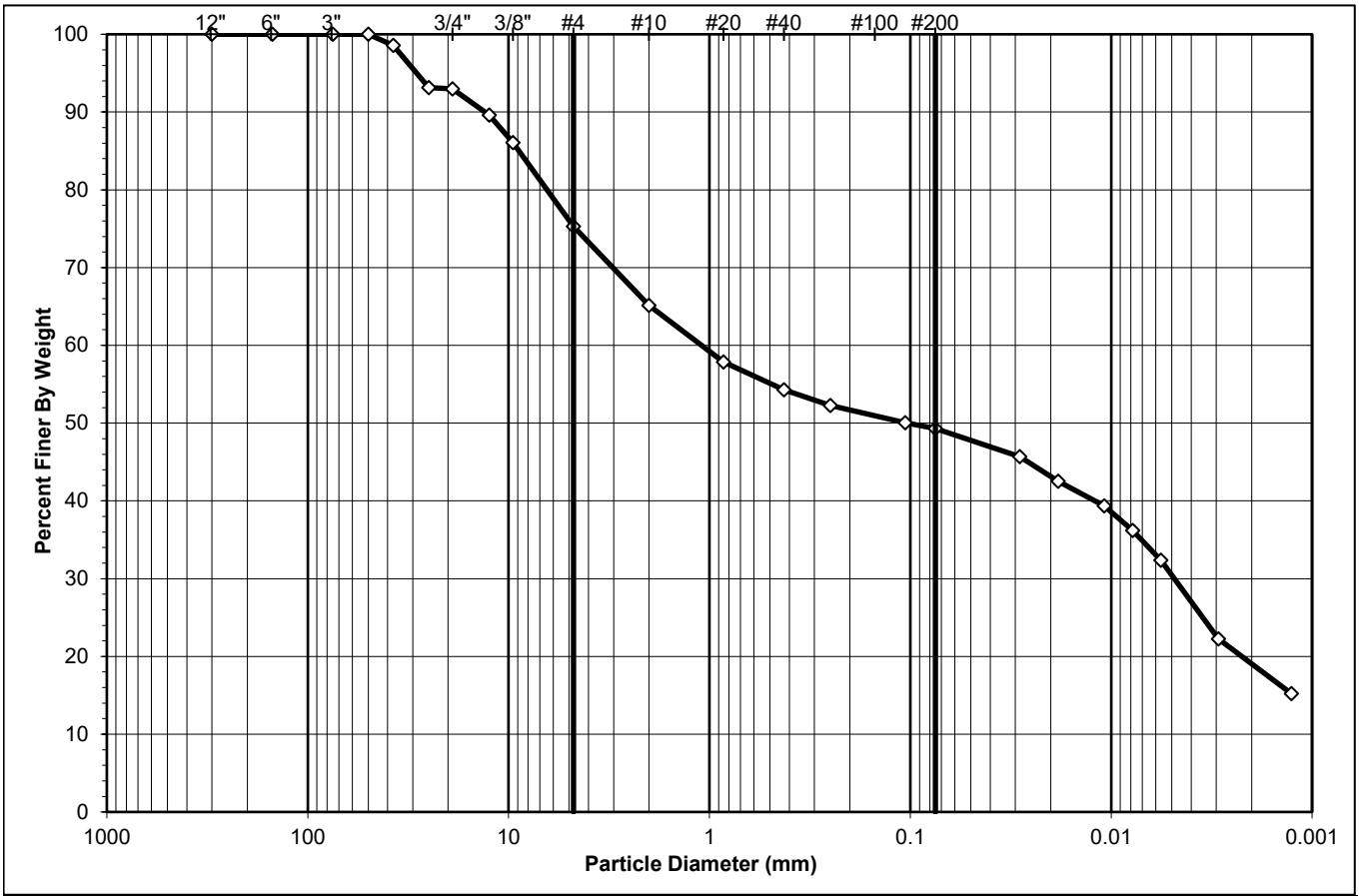
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SIEVE AND HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	Borrow Area North
Project No.:	2025-173-007	Sample No.:	C-060525-4
Lab ID:	2025-173-007-004	Soil Color:	Brown

	SIEVE ANALYSIS			HYDROMETER	
USCS	cobbles	gravel	sand	silt and clay fraction	
USDA	cobbles	gravel	sand	silt	clay



USCS Summary

Sieve Size (mm)		Percentage (%)
Greater Than #4	*Gravel*	24.71
#4 to #200	*Sand*	25.97
Finer Than #200	*Silt & Clay*	49.31

USCS Symbol:
sc, ASSUMED

USCS Classification:
CLAYEY SAND WITH GRAVEL

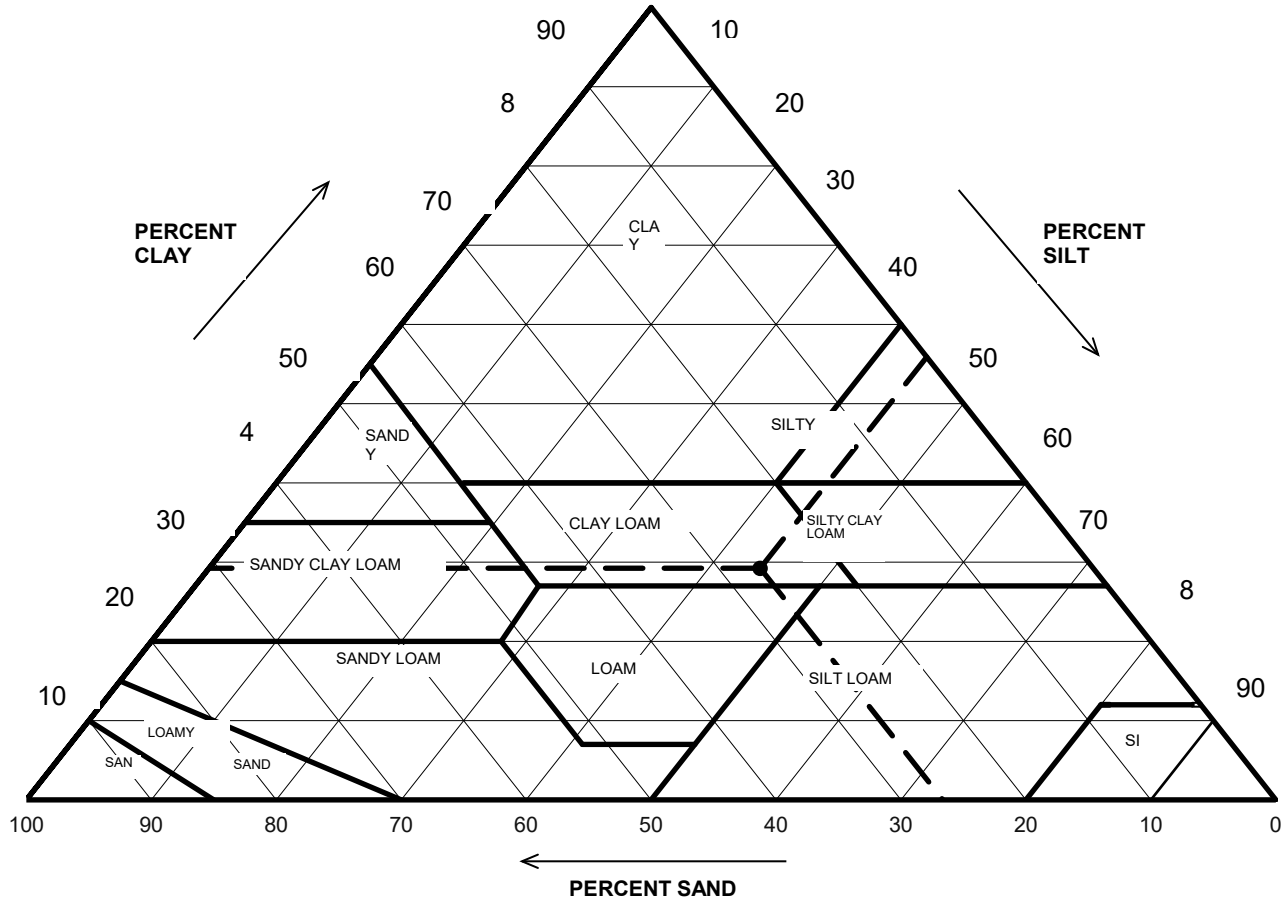
DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

S:Excel\Excel QA\Spreadsheets\SieveHydJ.xls

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USDA Classification Chart

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	Borrow Area North
Project No.:	2025-173-007	Sample No.:	C-060525-4
Lab ID:	2025-173-007-004	Soil Color:	Brown



Particle Size (mm)	Percent Finer	USDA Summary	Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classification
		Gravel	34.84	**0.00**
2	65.16	*Sand*	17.36	**26.65**
0.05	47.80	*Silt*	28.75	**44.12**
0.002	19.05	*Clay*	19.05	**29.23**

USDA Classification ***CLAY LOAM***

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

S:Excel\Excel QA\Spreadsheets\SieveHydJ.xls

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WASH SIEVE ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	Borrow Area North
Project No.:	2025-173-007	Sample No.:	C-060525-4
Lab ID:	2025-173-007-004	Soil Color:	Brown

Moisture Content of Passing 3/4" Material		Moisture Content of Retained 3/4" Material	
Tare No.:	1496	Tare No.:	3185
Wt. of Tare & Wet Sample (g):	946.05	Weight of Tare & Wet Sample (g):	424.26
Wt. of Tare & Dry Sample (g):	903.77	Weight of Tare & Dry Sample (g):	409.89
Weight of Tare (g):	149.41	Weight of Tare (g):	8.11
Weight of Water (g):	42.28	Weight of Water (g):	14.37
Weight of Dry Soil (g):	754.36	Weight of Dry Soil (g):	401.78
Moisture Content (%):	**5.6**	**Moisture Content (%):**	**3.6**

Wet Weight of -3/4" Sample (g):	14770.00	Weight of the Dry Sample (g):	754.36
Dry Weight of - 3/4" Sample (g):	13986.11	Weight of minus #200 Material (g):	400.04
Wet Weight of +3/4" Sample (g):	1092.00	Weight of plus #200 Material (g):	354.32
Dry Weight of +3/4" Sample (g):	1054.29		
Total Dry Weight of Sample (g):	15040.41	**J - Factor (Percent Finer than 3/4")**	**92.99%**

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)		Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00		0.00	0.00	100.00	**100.00**
6"	150	0.00		0.00	0.00	100.00	**100.00**
3"	75	0.00		0.00	0.00	100.00	**100.00**
2"	50	0.00	(*)	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	224.00		1.44	1.44	98.56	**98.56**
1"	25	841.00		5.40	6.84	93.16	**93.16**
3/4"	19	27.00		0.17	7.01	92.99	**92.99**
1/2"	12.5	27.59		3.66	3.66	96.34	**89.59**
3/8"	9.5	28.42		3.77	7.42	92.58	**86.09**
#4	4.75	87.60		11.61	19.04	80.96	**75.29**
#10	2	82.16		10.89	29.93	70.07	**65.16**
#20	0.85	59.33	(**)	7.86	37.79	62.21	**57.85**
#40	0.425	28.88		3.83	41.62	58.38	**54.29**
#60	0.25	16.48		2.18	43.81	56.19	**52.25**
#140	0.106	17.97		2.38	46.19	53.81	**50.04**
#200	0.075	5.89		0.78	46.97	53.03	**49.31**
Pan	-	400.04		53.03	100.00	-	**-**

NOTES: *(*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample*
*(**) The - 3/4" sieve analysis is based on the Weight of the Dry Sample*

Tested By	DF	Date	6/18/25	Checked By	EG	Date	6/23/25

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	Borrow Area North
Project No.:	2025-173-007	Sample No.:	C-060525-4
Lab ID:	2025-173-007-004	Soil Color:	Brown

Elapsed Time		R Measured	Temp.	Composite Correction	R Corrected	N	K Factor	Diameter	N'
(min)			(°C)			(%)		(mm)	(%)
0		NA	NA	NA	NA	NA	NA	NA	NA
2		41.0	22.7	4.9	36.1	92.7	0.01302	0.0285	**45.7**
5		38.5	22.7	4.9	33.6	86.2	0.01302	0.0184	**42.5**
15		36.0	22.7	4.9	31.1	79.8	0.01302	0.0108	**39.4**
30		33.5	22.7	4.9	28.6	73.4	0.01302	0.0078	**36.2**
60		30.5	22.6	4.9	25.6	65.6	0.01303	0.0057	**32.4**
250		22.5	22.6	4.9	17.6	45.1	0.01303	0.0029	**22.2**
1440		17.0	22.4	5.0	12.0	30.8	0.01307	0.0013	**15.2**

Soil Specimen Data		**Other Corrections**		
Tare No.	690			
Wt. of Tare & Dry Material (g):	135.79	a - Factor	0.993	
Weight of Tare (g):	92.10			
Weight of Deflocculant (g):	5.0	Percent Finer than # 200	49.31	
Weight of Dry Material (g):	38.69			
		Specific Gravity	2.70	Assumed

Note: *Hydrometer test is performed on - # 200 sieve material.*

Tested By TO Date 6/19/25 Checked By EG Date 6/23/25

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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Moisture, Ash, and Organic Matter (Loss on Ignition)

ASTM D 2974-20e1

Client:	GAI Consultants, Inc.
Client Reference:	Cheswick Closure R220960.00
Project No.:	2025-173-007

Method B (To 0.1%)

Moisture Content

ASTM D2216

Lab ID:	004
Boring No.:	Final Closure
Depth (ft):	In Place Soil
Sample No.:	C-060525-4
Tare Number	EE
Weight of Tare & Wet Sample (g)	401.52
Weight of Tare & Dry Sample (g)	387.47
Weight of Tare (g)	126.99
Weight of Water (g)	14.05
Weight of Dry Sample (g)	260.48
Moisture Content	**5.4%**

Method A

Ash Content, Organic Matter

Furnace Temperature (°C)	440
Weight of Tare & Ash (g)	380.90
Weight of Volatiles (g)	6.57
Weight of Ash (g)	253.91
Ash Content (%)	**97.5%**
Organic Matter (%)	**2.5%**

Tested By JW *Date* 6/16/25 *Checked By* EG *Date* 6/20/25

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PERMEABILITY TEST

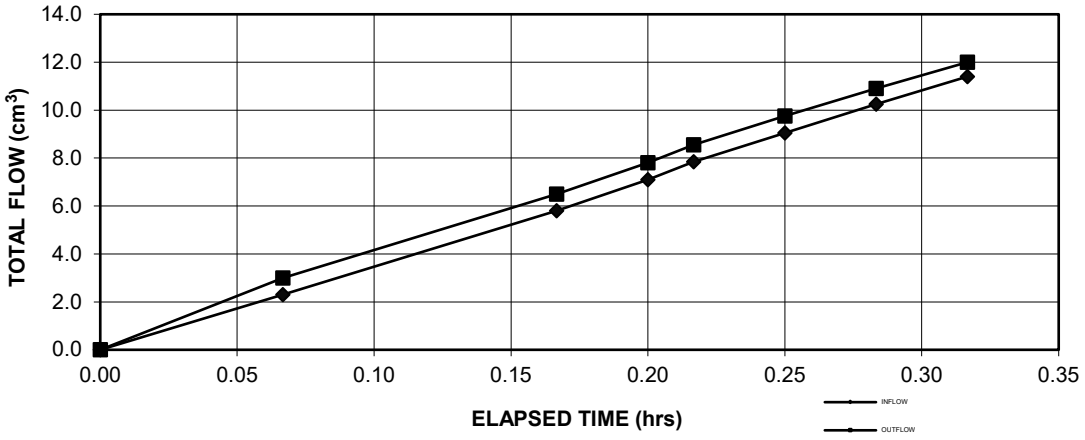
ASTM D 5084-16a Method C

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Project:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-007	Sample No.:	C-060525-4
Lab ID No.:	2025-173-007-004	Avg. Effective Consol. Pressure (psi):	6.25

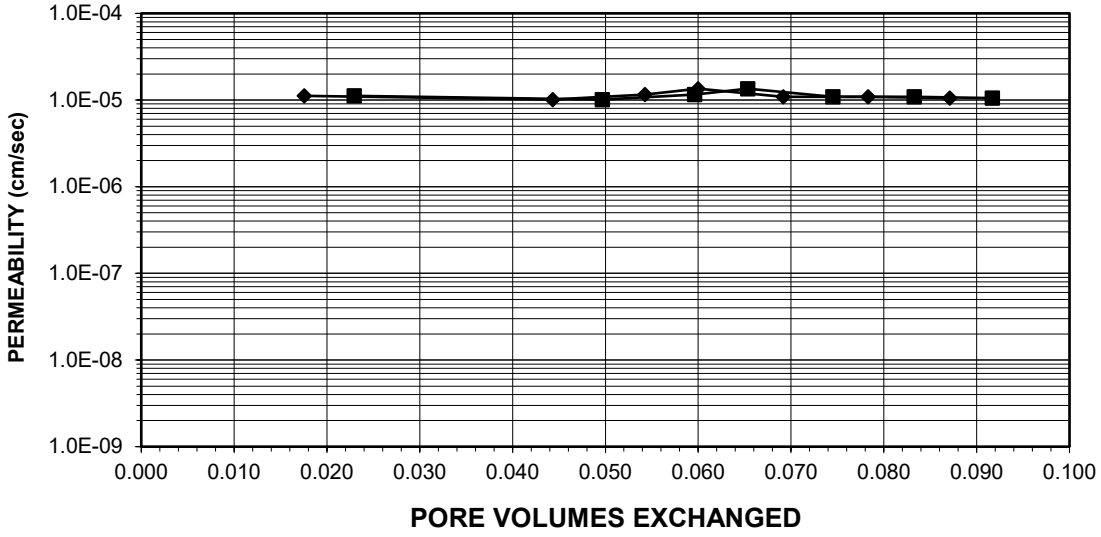
AVERAGE PERMEABILITY = 1.1E-05 cm/sec @ 20°C

AVERAGE PERMEABILITY = 1.1E-07 m/sec @ 20°C

TOTAL FLOW vs. ELAPSED TIME



PORE VOLUMES EXCHANGED vs. PERMEABILITY



Tested By: WT Date: 7/8/25 Checked By: JLK Date: 7/10/25

DCN: CT-22 DATE: 1/1/17 REVISION: 11

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PERMEABILITY TEST

ASTM D 5084-16a Method C

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Project:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-007	Sample No.:	C-060525-4
Lab ID No.:	2025-173-007-004	Avg. Effective Consol. Pressure (psi):	6.25

Specific Gravity:	2.70	Assumed
Sample Condition:		Remolded

Visual Description: Brown Clay with Rocks & Organics

Permeant Type: Deaired Water

MOISTURE CONTENT:	BEFORE TEST	AFTER TEST
Tare Number	3377	871
Weight of Tare & Wet Sample (g)	162.82	905.84
Weight of Tare & Dry Sample (g)	145.06	781.40
Weight of Tare (g)	8.31	110.00
Weight of Water (g)	17.76	124.44
Weight of Dry Sample (g)	136.75	671.40
Moisture Content (%)	**13.0**	**18.5**

SPECIMEN:	BEFORE TEST	AFTER TEST
Weight of Tube & Wet Sample (g)	1678.12	NA
Weight of Tube (g)	917.30	NA
Weight of Wet Sample (g)	760.82	798.17
Length 1 (in)	3.490	3.498
Length 2 (in)	3.490	3.505
Length 3 (in)	3.490	3.527
Top Diameter (in)	2.870	2.900
Middle Diameter (in)	2.870	2.901
Bottom Diameter (in)	2.870	2.903
Average Length (in)	3.49	3.51
Average Area (in^2)	6.47	6.61
Sample Volume (cm^3)	369.98	380.27
Unit Wet Weight (g/cm^3)	2.06	2.10
Unit Wet Weight (pcf)	128.4	131.0
Unit Dry Weight (pcf)	113.6	110.5
Unit Dry Weight (g/cm^3)	1.82	1.77
Void Ratio, e	0.48	0.52
Porosity, n	0.33	0.34
Pore Volume (cm^3)	120.6	130.9
Total Weight of Sample After Test (g)		796.79

Tested By: WT Date: 7/8/25 Checked By: JLK Date: 7/10/25

DCN: CT-22 DATE: 1/1/17 REVISION: 11

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PERMEABILITY TEST

ASTM D 5084-16a Method C

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Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Project:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-007	Sample No.:	C-060525-4
Lab ID No.:	2025-173-007-004	Avg. Effective Consol. Pressure (psi):	6.25

Pressure Heads (Constant)	
Top Cap (psi)	77.5
Bottom Cap (psi)	80.0
Cell (psi)	85.0
Total Pressure Head (cm)	175.8
Hydraulic Gradient	19.71

Final Sample Dimensions	
Sample Length (cm), L	8.92
Sample Diameter (cm)	7.37
Sample Area (cm^2), A	42.65
Inflow Burette Area (cm^2), a-in	0.962
Outflow Burette Area (cm^2), a-out	0.962

AVERAGE PERMEABILITY = 1.1E-05 cm/sec @ 20°C

AVERAGE PERMEABILITY = 1.1E-07 m/sec @ 20°C

DATE	TIME		ELAPSED TIME t	TOTAL INFLOW	TOTAL OUTFLOW	TOTAL HEAD h	FLOW (0 flow)	TEMP.	INCREMENTAL PERMEABILITY @ 20°C
(mm/dd/yy)	(hr)	(min)	(hr)	(cm^3)	(cm^3)	(cm)	(1 stop)	(°C)	(cm/sec)
7/9/2025	13	27	0.000	0.0	0.0	200.6	0	21.7	NA
7/9/2025	13	31	0.067	2.3	3.0	195.1	0	21.7	1.1E-05
7/9/2025	13	37	0.167	5.8	6.5	187.8	0	21.7	1.0E-05
7/9/2025	13	39	0.200	7.1	7.8	185.2	0	21.7	1.2E-05
7/9/2025	13	40	0.217	7.9	8.6	183.6	0	21.7	1.4E-05
7/9/2025	13	42	0.250	9.1	9.8	181.1	0	21.7	1.1E-05
7/9/2025	13	44	0.283	10.3	10.9	178.7	0	21.7	1.1E-05
7/9/2025	13	46	0.317	11.4	12.0	176.4	1	21.7	1.1E-05

Tested By: WT Date: 7/8/25 Checked By: JLK Date: 7/10/25

DCN: CT-22 DATE: 1/1/17 REVISION: 11

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Agricultural Analytical Services Laboratory
The Pennsylvania State University
111 Ag Analytical Svcs Lab
University Park, PA 16802

(814) 863-0841 aaslab@psu.edu www.aasl.psu.edu

SOIL TEST REPORT FOR:	ADDITIONAL COPY TO:
K CUMMINGS GEOTECHNICS 544 BRADDOCK AVE EAST PITTSBURGH PA 15112	

DATE	LAB #	SERIAL #	COUNTY	ACRES	ASCS ID	FIELD ID	SOIL
06/27/2025	S25-35638		Allegheny			2025-173-007-001	

SOIL NUTRIENT LEVELS			Below Optimum	Optimum	Above Optimum
[1]Soil pH	7.1				
[2]Phosphorus (P)	19	ppm			
[2]Potassium (K)	89	ppm			
[2]Magnesium (Mg)	301	ppm			

RECOMMENDATIONS: *(See back messages for important information)*

Limestone*: NONE

Magnesium (Mg): NONE

Calcium Carbonate equivalent

Plant Nutrients:

(If manure will be applied, adjust these recommendations accordingly. See back of report.)

Year	Crop	Expected Yield	Nitrogen (lb N/A)	Phosphate (lb P_2O_5/A)	Potash (lb K_2O/A)	
1	Disturbed Lands	0	120	100	130	*See ST2 for other crop recommendations*

80 lb/A of the N recommendation should be from a slow release source. When available, use manure or other organic material to supply this slow release N.

2	0	0	0	*See ST2 for other crop recommendations*	

3	0	0	0	*See ST2 for other crop recommendations*	

ADDITIONAL RESULTS:						Optional Tests:			[2]Trace Elements		
[2]Calcium (ppm)	[3]Acidity (meq/100 g)	[4]CEC (meq/100 g)	% Saturation of the CEC K	Mg	Ca	Organic Matter %	Nitrate-N ppm	Salts mmhos/cm	*See back for comments* Zinc ppm	Copper ppm	Sulfur ppm
2817	0.0	16.8	1.4	14.9	83.7				1.4	1.6	26.5

Test Methods: [1]1:1 soil:water pH, [2]Mehlich 3 (ICP), [3]Mehlich Buffer pH, [4]Summation of Cations

Agronomy

Recommendation Messages

Enclosures

ST-2 Fertilizer Recommendation Table Guidelines for making recommendations for other crops and for adjusting for a different expected yield.

ST-4 Interpreting Soil Tests for Agronomic Crops Explains the soil test report and provides additional information on the recommendations.

Soil Nutrient Levels Soil nutrient levels are given as parts per million (ppm) elemental P, K , and Mg. As a rule of thumb to convert ppm to lb/A multiply ppm x 2. The elemental results in lb/A can be converted to oxide forms using the following conversions: P x 2.3=P_2O_5, K x 1.2=K_2O, Mg x 1.6=MgO

Below Optimum-Nutrient is deficient. There should be an economic response to adding the recommended nutrient.	**Optimum-**Nutrient is adequate. There will be no yield response to adding more of a nutrient but a recommendation is made to replace what the crop removes and thus maintain the soil test in the optimum range.	**Above Optimum-**The nutrient is more than adequate. Not only will there not be a yield response but the soil nutrient levels are also adequate to accommodate crop removal.

Recommendations N,P, and K recommendations are made for three crop years on this field. New samples should be taken after 3 years. The recommendations for the 2nd and 3rd year assume that the earlier recommendations were followed. These recommendations are based on the results of the soil test and the information provided with the sample. If you think that there is an error on the report, contact the lab at the address on the front of the report. Tables that can be used to adjust or change recommendations for all crops based on the soil test can be found on the web at: www.aasl.psu.edu.

Limestone Recommendations The recommended limestone application should be adequate for 3 years. Limestone recommendations are based on 100% calcium carbonate equivalent limestone and assume "Fine-sized" limestone with 95% passing 20 mesh, 60% passing 60 mesh and 50% passing 100 mesh. Use "ST-2 Liming Materials Conversion Table (enclosed) to adjust for limestone quality. Also see Agronomy Facts #3 "Soil Acidity and Aglime".

Magnesium Only one Mg Recommendation is made for three years. Magnesium is most economically applied by using a limestone containing Mg. Low Mg levels in soils may result in low Mg levels in forage crops especially if a significant amount of N and/or K fertilizer is applied. This can result in potentially fatal grass tetany in animals. Use caution if grazing. Apply the recommended Mg and be sure your feed rations are properly balanced.

Starter Fertilizer Starter fertilizer is important to get a corn crop off to a good start when planting in cold, wet conditions. However, on optimum or higher testing soils, as planting dates get later and soils warm up, the benefit from starter fertilizer goes down. An N only starter is often adequate when soil test levels are above optimum. The correct material, rate, and placement for starter fertilizer are critical to be effective. See Agronomy Facts #51 "Starter Fertilizer".

Nitrogen Nitrogen recommendations on this report are not based on a soil test. They are based on crop requirements for the expected yield of the crop to be grown. The pre-sidedress nitrate soil tests (PSNT) and the Chlorophyll meter test are both available for improving nitrogen recommendations on corn especially when manure is being applied. See: Agronomy Facts 17 "Pre-sidedress Soil Nitrate Test for Corn" and Agronomy Facts 53 "The Early-season Chlorophyll Meter Test for Corn". For optimum efficiency, N should be applied as close to the time of crop need as practical. For corn apply 50-90% of the N when the corn is 10-20" tall. For winter grains apply the N in the spring prior to growth stage 5. For forage grasses split the recommended N for each cutting.

Manure Manure is a very important part of a fertility program. Manure applications may supply all or most of the nutrients recommended and in some cases may apply significantly more than the crop requires. Manure nutrients should be taken into account in developing your fertility program. For details on how to do this see the Penn State Agronomy Guide. Manure analysis kits are available through your county Extension office.

Very High Soil Test Levels Very high soil test levels should be avoided as much as possible. High soil nutrient levels might not only represent an economic loss but they may also indicate potential crop, animal or environmental problems.

Very high pH can results in micronutrient deficiencies and may affect the activity of some pesticides resulting in injury or poor pest control.

Very high phosphorus levels in the soil may lead to crop production problems especially with no manure and may result in potentially harmful P loss to the environment. Best management practices may be necessary to reduce the potential for environmental problems with P.

Zinc, Copper and Sulfur Results Normal ranges for zinc (Zn) copper (Cu), and sulfur (S) in Pennsylvania soils are listed below. These are not used to make recommendations but rather to identify potential deficiencies of Zn and S or toxicity of Cu. While Zn and S deficiencies are not common in PA, they may occur on soils testing below the normal range. Zn deficiencies are more likely to occur when soil levels are low and soil pH 7.0 or higher, especially on lighter soils. Recent research in Pennsylvania on sulfur fertility suggests that when the Mehlich 3 S level is below 15 ppm, there is an approximately 50% chance that yield will increase by adding S fertilizer. When Mehlich 3 S levels are above 15 ppm, S is usually adequate and there is a very low chance of a yield increase from adding S fertilizer. Both Zn or S deficiencies should be confirmed with plant analysis. Cu toxicity may occur at levels testing well above the normal range, but have not been observed in Pennsylvania in agronomic crops even on soils testing 2 to 3 times above the normal range. For additional information, see ST4.

Normal ranges of Zn, Cu and S in Pennsylvania Soils (Mehlich 3)		
Zn (ppm)	Cu (ppm)	S (ppm)
1.1 - 9.4	1.2 - 5.5	15 - 25

Distribution of Soil Test Results Summaries of soil test results may be used in educational programs. However, individual results will not be released outside of Penn State without permission of the client. Electronic copies of your results are available to you, contact the lab for more information.

For additional information on these topics please see the current **Penn State Agronomy Guide** or the **AASL website**: www.aasl.psu.edu. This soil test is part of an ongoing research and extension program of Penn State. If you have any questions or comments about this program or would like copies of publications referenced here, please contact your Penn State County Extension Educator.

Agricultural Analytical Services Laboratory
The Pennsylvania State University
111 Ag Analytical Svcs Lab
University Park, PA 16802
(814) 863-0841 aaslab@psu.edu www.aasl.psu.edu

SOIL TEST REPORT FOR:	ADDITIONAL COPY TO:
K CUMMINGS GEOTECHNICS 544 BRADDOCK AVE EAST PITTSBURGH PA 15112	

DATE	LAB #	SERIAL #	COUNTY	ACRES	ASCS ID	FIELD ID	SOIL
06/27/2025	S25-35639		Allegheny			2025-173-007-002	

SOIL NUTRIENT LEVELS			Below Optimum	Optimum	Above Optimum
[1]Soil pH	7.2				
[2]Phosphorus (P)	6	ppm			
[2]Potassium (K)	95	ppm			
[2]Magnesium (Mg)	365	ppm			

RECOMMENDATIONS: *(See back messages for important information)*

Limestone*: NONE

Magnesium (Mg): NONE

Calcium Carbonate equivalent

Plant Nutrients:

(If manure will be applied, adjust these recommendations accordingly. See back of report.)

Year	Crop	Expected Yield	Nitrogen (lb N/A)	Phosphate (lb P_2O_5/A)	Potash (lb K_2O/A)	
1	Disturbed Lands	0	120	120	120	*See ST2 for other crop recommendations*

80 lb/A of the N recommendation should be from a slow release source. When available, use manure or other organic material to supply this slow release N.

2	0	0	0	*See ST2 for other crop recommendations*

3	0	0	0	*See ST2 for other crop recommendations*

ADDITIONAL RESULTS:						Optional Tests:			[2]Trace Elements		
[2]Calcium (ppm)	[3]Acidity (meq/100 g)	[4]CEC (meq/100 g)	% Saturation of the CEC K	Mg	Ca	Organic Matter %	Nitrate-N ppm	Salts mmhos/cm	*See back for comments* Zinc ppm	Copper ppm	Sulfur ppm
3698	0.0	18.3	1.3	16.6	82.0				1.6	3.5	38.0

Test Methods: [1]1:1 soil:water pH, [2]Mehlich 3 (ICP), [3]Mehlich Buffer pH, [4]Summation of Cations

The high calcium level in this sample indicates the probable presence of soluble calcium. Therefore the CEC and the percent saturations were calculated using a maximum exchangeable calcium level of 15 meq/100 g.

7089

Agronomy

Recommendation Messages

Enclosures

ST-2 Fertilizer Recommendation Table Guidelines for making recommendations for other crops and for adjusting for a different expected yield.

ST-4 Interpreting Soil Tests for Agronomic Crops Explains the soil test report and provides additional information on the recommendations.

Soil Nutrient Levels Soil nutrient levels are given as parts per million (ppm) elemental P, K , and Mg. As a rule of thumb to convert ppm to lb/A multiply ppm x 2. The elemental results in lb/A can be converted to oxide forms using the following conversions: P x 2.3=P_2O_5, K x 1.2=K_2O, Mg x 1.6=MgO

Below Optimum-Nutrient is deficient. There should be an economic response to adding the recommended nutrient.	**Optimum-**Nutrient is adequate. There will be no yield response to adding more of a nutrient but a recommendation is made to replace what the crop removes and thus maintain the soil test in the optimum range.	**Above Optimum-**The nutrient is more than adequate. Not only will there not be a yield response but the soil nutrient levels are also adequate to accommodate crop removal.

Recommendations N,P, and K recommendations are made for three crop years on this field. New samples should be taken after 3 years. The recommendations for the 2nd and 3rd year assume that the earlier recommendations were followed. These recommendations are based on the results of the soil test and the information provided with the sample. If you think that there is an error on the report, contact the lab at the address on the front of the report. Tables that can be used to adjust or change recommendations for all crops based on the soil test can be found on the web at: www.aasl.psu.edu.

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July 15, 2025

Project No. 2025-173-008

Cory White
GAI Consultants, Inc.
385 East Waterfront Drive
Homestead, PA 15120

Transmittal
Laboratory Test Results
Cheswick Closure R220960.00

Please find attached the laboratory test results for the above referenced project. The tests were outlined on the Project Verification Form that was transmitted to your firm prior to the testing. The testing was performed in general accordance with the methods listed on the enclosed data sheets. The test results are believed to be representative of the samples that were submitted for testing and are indicative only of the specimens that were evaluated. We have no direct knowledge of the origin of the samples and imply no position with regard to the nature of the test results, i.e. pass/fail and no claims as to the suitability of the material for its intended use.

The test data and all associated project information provided shall be held in strict confidence and disclosed to other parties only with authorization by our Client. The test data submitted herein is considered integral with this report and is not to be reproduced except in whole and only with the authorization of the Client and Geotechnics. The remaining sample materials for this project will be retained for a minimum of 90 days as directed by the Geotechnics' Quality Program.

We are pleased to provide these testing services. Should you have any questions or if we may be of further assistance, please contact our office.

Respectfully submitted,
Geotechnics, Inc.

Nathan Melaro
Director of Operations

We understand that you have a choice in your laboratory services and we thank you for choosing Geotechnics.

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SIEVE AND HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-008	Sample No.:	C-070125-1
Lab ID:	2025-173-008-001	Soil Color:	Brown

	SIEVE ANALYSIS			HYDROMETER	
USCS	cobbles	gravel	sand	silt and clay fraction	
USDA	cobbles	gravel	sand	silt	clay



USCS Summary

Sieve Size (mm)		Percentage (%)
Greater Than #4	*Gravel*	4.74
#4 to #200	*Sand*	7.06
Finer Than #200	*Silt & Clay*	88.21

USCS Symbol:
cl, ASSUMED

USCS Classification:
LEAN CLAY

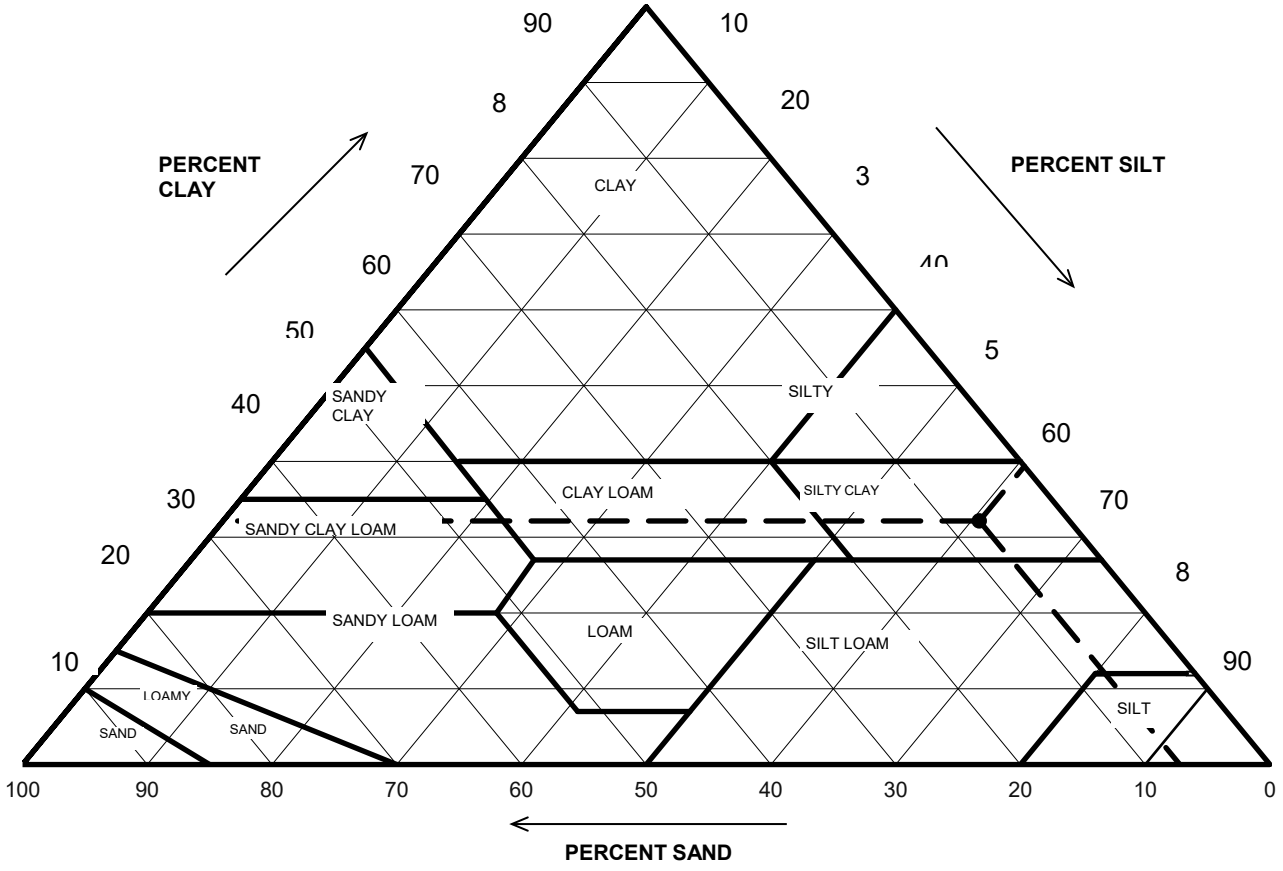
DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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USDA CLASSIFICATION CHART

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-008	Sample No.:	C-070125-1
Lab ID:	2025-173-008-001	Soil Color:	Brown



Particle Size (mm)	Percent Finer	USDA SUMMARY	Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classification
		Gravel	7.15	**0.00**
2	92.85	*Sand*	6.71	**7.22**
0.05	86.15	*Silt*	56.30	**60.64**
0.002	29.84	*Clay*	29.84	**32.14**

USDA Classification ***SILTY CLAY LOAM***

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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WASH SIEVE ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

geotechnics
geotechnical & geosynthetic testing

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-008	Sample No.:	C-070125-1
Lab ID:	2025-173-008-001	Soil Color:	Brown

Moisture Content of Passing 3/4" Material		Moisture Content of Retained 3/4" Material	
Tare No.:	1468	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	1062.72	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	893.91	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	146.63	Weight of Tare (g):	NA
Weight of Water (g):	168.81	Weight of Water (g):	NA
Weight of Dry Soil (g):	747.28	Weight of Dry Soil (g):	NA
Moisture Content (%):	**22.6**	**Moisture Content (%):**	**0.0**

Wet Weight of -3/4" Sample (g):	NA	Weight of the Dry Sample (g):	747.28
Dry Weight of - 3/4" Sample (g):	747.28	Weight of minus #200 Material (g):	659.15
Wet Weight of +3/4" Sample (g):	0.00	Weight of plus #200 Material (g):	88.13
Dry Weight of +3/4" Sample (g):	0.00		
Total Dry Weight of Sample (g):	747.28		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)		Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00		0.00	0.00	100.00	**100.00**
6"	150	0.00		0.00	0.00	100.00	**100.00**
3"	75	0.00		0.00	0.00	100.00	**100.00**
2"	50	0.00	(*)	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00		0.00	0.00	100.00	**100.00**
1"	25	0.00		0.00	0.00	100.00	**100.00**
3/4"	19	0.00		0.00	0.00	100.00	**100.00**
1/2"	12.5	11.33		1.52	1.52	98.48	**98.48**
3/8"	9.5	0.17		0.02	1.54	98.46	**98.46**
#4	4.75	23.90		3.20	4.74	95.26	**95.26**
#10	2	18.00		2.41	7.15	92.85	**92.85**
#20	0.85	9.81	(**)	1.31	8.46	91.54	**91.54**
#40	0.425	5.40		0.72	9.18	90.82	**90.82**
#60	0.25	6.00		0.80	9.98	90.02	**90.02**
#140	0.106	9.63		1.29	11.27	88.73	**88.73**
#200	0.075	3.89		0.52	11.79	88.21	**88.21**
Pan	-	659.15		88.21	100.00	-	**-**

Notes : *(*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample*
*(**) The - 3/4" sieve analysis is based on the Weight of the Dry Sample*

Tested By	DF	Date	7/9/25	Checked By	EG	Date	7/14/25

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-008	Sample No.:	C-070125-1
Lab ID:	2025-173-008-001	Soil Color:	Brown

Elapsed Time		R Measured	Temp.	Composite Correction	R Corrected	N	K Factor	Diameter	N'
(min)			(°C)			(%)		(mm)	(%)
0		NA	NA	NA	NA	NA	NA	NA	NA
2		50.0	22.6	4.9	45.1	94.0	0.01303	0.0262	**82.9**
5		46.5	22.6	4.9	41.6	86.7	0.01303	0.0172	**76.4**
15		43.5	22.6	4.9	38.6	80.4	0.01303	0.0102	**70.9**
30		39.5	22.6	4.9	34.6	72.1	0.01303	0.0075	**63.6**
60		34.0	22.6	4.9	29.1	60.6	0.01303	0.0055	**53.5**
250		25.0	23.0	4.8	20.2	42.1	0.01297	0.0029	**37.1**
1440		16.0	23.0	4.8	11.2	23.3	0.01297	0.0013	**20.6**

Soil Specimen Data		**Other Corrections**	
Tare No.	664		
Wt. of Tare & Dry Material (g):	143.89	a - Factor	0.993
Weight of Tare (g):	91.25		
Weight of Deflocculant (g):	5.0	Percent Finer than # 200	88.21
Weight of Dry Material (g):	47.64		
		Specific Gravity	2.70 Assumed

Note: *Hydrometer test is performed on - # 200 sieve material.*

Tested By	TO	Date	7/10/25	Checked By	EG	Date	7/14/25

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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Moisture, Ash, and Organic Matter (Loss on Ignition)

ASTM D 2974-20e1

Client:	GAI Consultants, Inc.
Client Reference:	Cheswick Closure R220960.00
Project No.:	2025-173-008

Method B (To 0.1%)

Moisture Content

ASTM D2216

Lab ID:	001
Boring No.:	Final Closure
Depth (ft):	In Place Soil
Sample No.:	C-070125-1
Tare Number	CC
Weight of Tare & Wet Sample (g)	505.26
Weight of Tare & Dry Sample (g)	438.26
Weight of Tare (g)	130.58
Weight of Water (g)	67.00
Weight of Dry Sample (g)	307.68
Moisture Content	**21.8%**

Method A

Ash Content, Organic Matter

Furnace Temperature (°C)	440
Weight of Tare & Ash (g)	430.12
Weight of Volatiles (g)	8.14
Weight of Ash (g)	299.54
Ash Content (%)	**97.4%**
Organic Matter (%)	**2.6%**

Tested By JW *Date* 7/7/25 *Checked By* EG *Date* 7/9/25

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July 16, 2025

Project No. 2025-173-009

Cory White
GAI Consultants, Inc.
385 East Waterfront Drive
Homestead, PA 15120

Transmittal
Laboratory Test Results
Cheswick Closure R220960.00

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MOISTURE CONTENT

ASTM D 2216-19

Client:	GAI Consultants, Inc.
Client Reference:	Cheswick Closure R220960.00
Project No.:	2025-173-009

Lab ID:	003
Boring No.:	Final Closure
Depth (ft):	CCR
Sample No.:	C-070725-03
Tare Number	3272
Wt. of Tare & Wet Sample (g)	312.95
Wt. of Tare & Dry Sample (g)	275.07
Weight of Tare (g)	7.21
Weight of Water (g)	37.88
Weight of Dry Sample (g)	267.86
Water Content (%)	**14.1**

Notes :

Tested By DP *Date* 7/9/25 *Checked By* EG *Date* 7/10/25

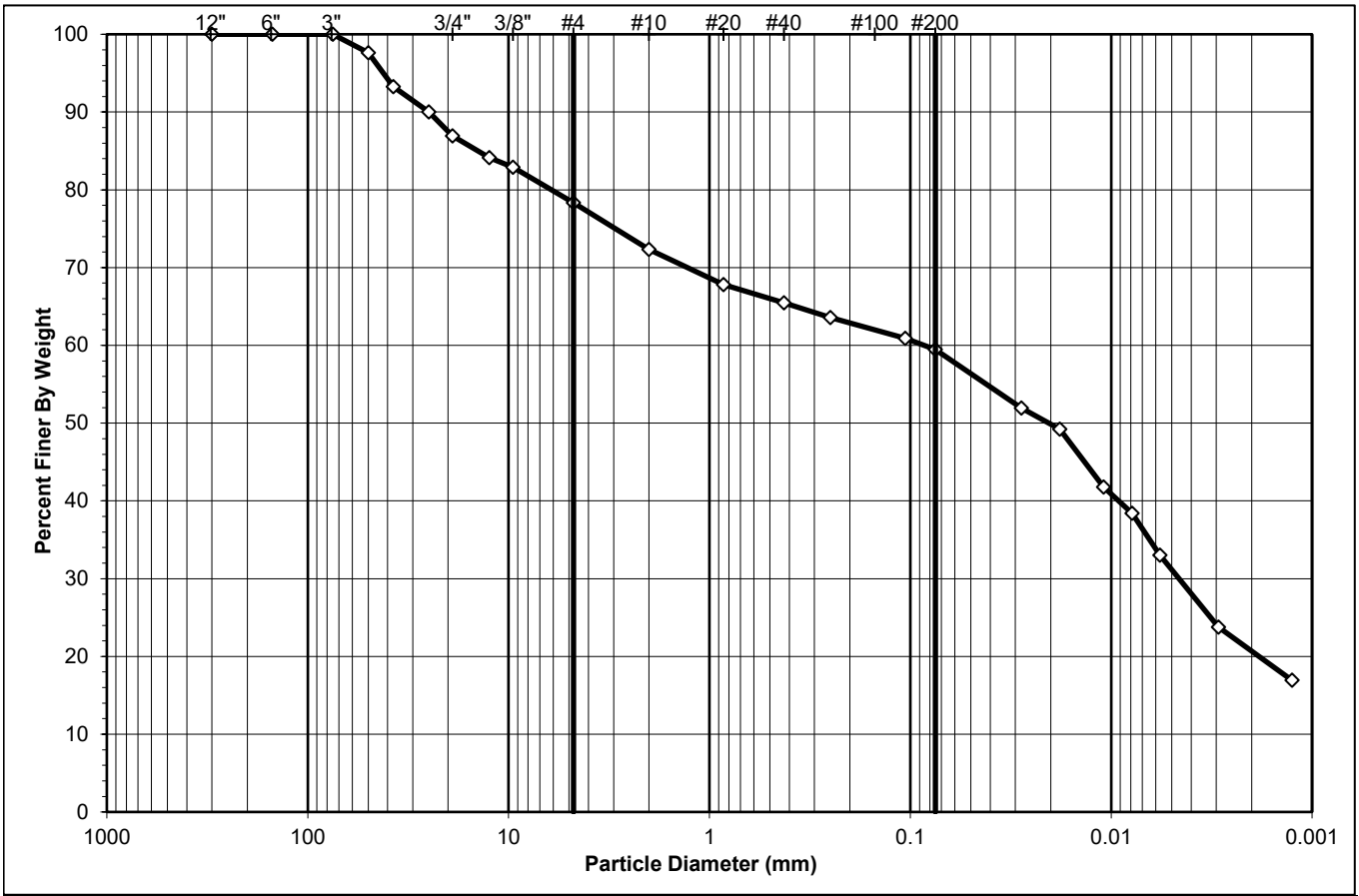
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SIEVE AND HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

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Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-009	Sample No.:	C-070725-1
Lab ID:	2025-173-009-001	Soil Color:	Brown

	SIEVE ANALYSIS			HYDROMETER	
USCS	cobbles	gravel	sand	silt and clay fraction	
USDA	cobbles	gravel	sand	silt	clay



USCS Summary

Sieve Size (mm)		Percentage (%)
Greater Than #4	*Gravel*	21.65
#4 to #200	*Sand*	18.89
Finer Than #200	*Silt & Clay*	59.46

USCS Symbol:
cl, ASSUMED

USCS Classification:
GRAVELLY LEAN CLAY WITH SAND

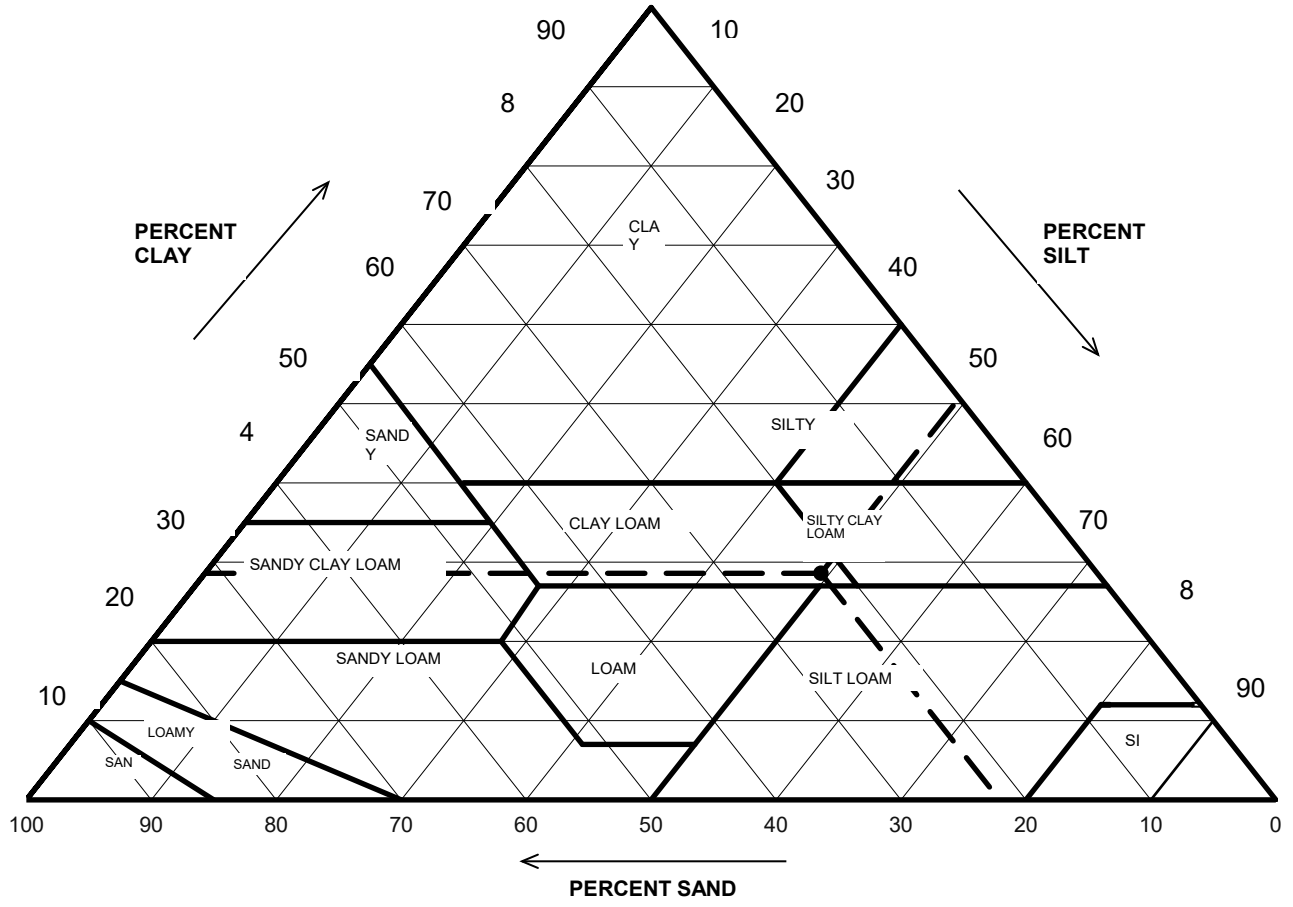
DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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USDA Classification Chart

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-009	Sample No.:	C-070725-1
Lab ID:	2025-173-009-001	Soil Color:	Brown



Particle Size (mm)	Percent Finer	USDA Summary	Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classification
		Gravel	27.65	**0.00**
2	72.35	*Sand*	15.99	**22.11**
0.05	56.36	*Silt*	35.67	**49.30**
0.002	20.69	*Clay*	20.69	**28.59**

USDA Classification ***CLAY LOAM***

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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WASH SIEVE ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-009	Sample No.:	C-070725-1
Lab ID:	2025-173-009-001	Soil Color:	Brown

Moisture Content of Passing 3/4" Material		Moisture Content of Retained 3/4" Material	
Tare No.:	1537	Tare No.:	3198
Wt. of Tare & Wet Sample (g):	937.16	Weight of Tare & Wet Sample (g):	249.5
Wt. of Tare & Dry Sample (g):	881.01	Weight of Tare & Dry Sample (g):	243.19
Weight of Tare (g):	178.15	Weight of Tare (g):	7.1
Weight of Water (g):	56.15	Weight of Water (g):	6.31
Weight of Dry Soil (g):	702.86	Weight of Dry Soil (g):	236.09
Moisture Content (%):	**8.0**	**Moisture Content (%):**	**2.7**

Wet Weight of -3/4" Sample (g):	18158.00	Weight of the Dry Sample (g):	702.86
Dry Weight of - 3/4" Sample (g):	16814.71	Weight of minus #200 Material (g):	480.83
Wet Weight of +3/4" Sample (g):	2598.00	Weight of plus #200 Material (g):	222.03
Dry Weight of +3/4" Sample (g):	2530.37		
Total Dry Weight of Sample (g):	19345.08	**J - Factor (Percent Finer than 3/4")**	**86.92%**

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)		Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00		0.00	0.00	100.00	**100.00**
6"	150	0.00		0.00	0.00	100.00	**100.00**
3"	75	0.00		0.00	0.00	100.00	**100.00**
2"	50	471.00	(*)	2.37	2.37	97.63	**97.63**
1 1/2"	37.5	862.00		4.34	6.71	93.29	**93.29**
1"	25	650.00		3.27	9.98	90.02	**90.02**
3/4"	19	615.00		3.10	13.08	86.92	**86.92**
1/2"	12.5	22.56		3.21	3.21	96.79	**84.13**
3/8"	9.5	9.91		1.41	4.62	95.38	**82.90**
#4	4.75	36.85		5.24	9.86	90.14	**78.35**
#10	2	48.47		6.90	16.76	83.24	**72.35**
#20	0.85	36.80	(**)	5.24	21.99	78.01	**67.80**
#40	0.425	18.95		2.70	24.69	75.31	**65.46**
#60	0.25	15.13		2.15	26.84	73.16	**63.59**
#140	0.106	21.77		3.10	29.94	70.06	**60.90**
#200	0.075	11.59		1.65	31.59	68.41	**59.46**
Pan	-	480.83		68.41	100.00	-	**-**

NOTES: *(*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample*
*(**) The - 3/4" sieve analysis is based on the Weight of the Dry Sample*

Tested By	DF	Date	7/11/25	Checked By	EG	Date	7/16/25

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-009	Sample No.:	C-070725-1
Lab ID:	2025-173-009-001	Soil Color:	Brown

Elapsed Time		R Measured	Temp.	Composite Correction	R Corrected	N	K Factor	Diameter	N'
(min)			(°C)			(%)		(mm)	(%)
0		NA	NA	NA	NA	NA	NA	NA	NA
2		43.5	22.2	5.0	38.5	87.3	0.01310	0.0280	**51.9**
5		41.5	22.2	5.0	36.5	82.8	0.01310	0.0180	**49.2**
15		36.0	22.2	5.0	31.0	70.3	0.01310	0.0109	**41.8**
30		33.5	22.2	5.0	28.5	64.6	0.01310	0.0079	**38.4**
60		29.5	22.2	5.0	24.5	55.5	0.01310	0.0057	**33.0**
250		22.5	22.7	4.9	17.6	40.0	0.01302	0.0029	**23.8**
1440		17.5	22.5	5.0	12.5	28.5	0.01305	0.0013	**16.9**

Soil Specimen Data		**Other Corrections**		
Tare No.	950			
Wt. of Tare & Dry Material (g):	144.84	a - Factor	0.993	
Weight of Tare (g):	96.11			
Weight of Deflocculant (g):	5.0	Percent Finer than # 200	59.46	
Weight of Dry Material (g):	43.73			
		Specific Gravity	2.70	Assumed

Note: *Hydrometer test is performed on - # 200 sieve material.*

Tested By TO Date 7/14/25 Checked By EG Date 7/16/25

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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Moisture, Ash, and Organic Matter (Loss on Ignition)

ASTM D 2974-20e1

Client:	GAI Consultants, Inc.
Client Reference:	Cheswick Closure R220960.00
Project No.:	2025-173-009

Method B (To 0.1%)

Moisture Content

ASTM D2216

Lab ID:	001
Boring No.:	Final Closure
Depth (ft):	In Place Soil
Sample No.:	C-070725-1
Tare Number	HH
Weight of Tare & Wet Sample (g)	452.18
Weight of Tare & Dry Sample (g)	427.82
Weight of Tare (g)	134.04
Weight of Water (g)	24.36
Weight of Dry Sample (g)	293.78
Moisture Content	**8.3%**

Method A

Ash Content, Organic Matter

Furnace Temperature (°C)	440
Weight of Tare & Ash (g)	418.64
Weight of Volatiles (g)	9.18
Weight of Ash (g)	284.60
Ash Content (%)	**96.9%**
Organic Matter (%)	**3.1%**

Tested By DP *Date* 7/9/25 *Checked By* EG *Date* 7/11/25

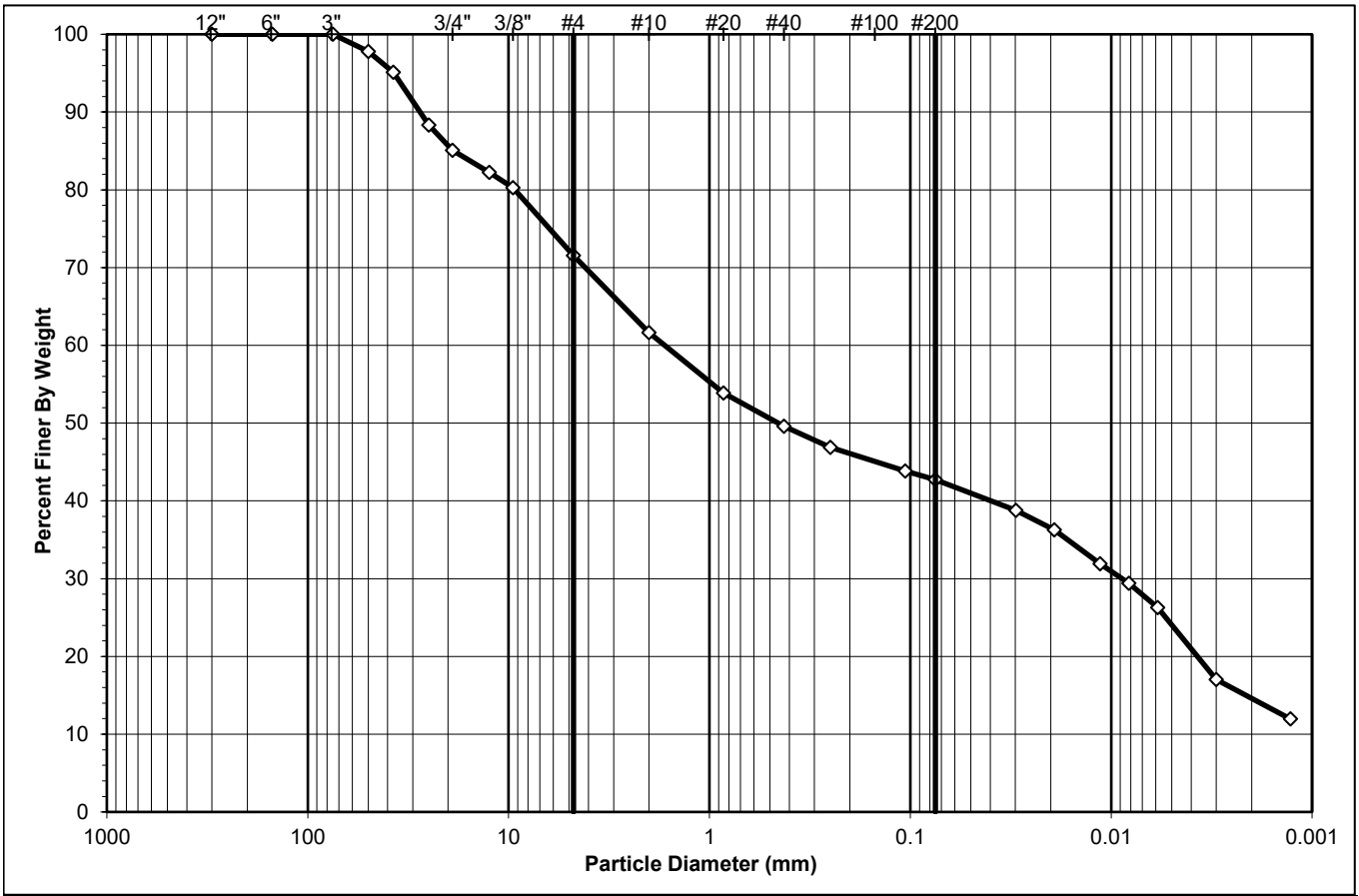
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SIEVE AND HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-009	Sample No.:	C-070725-2
Lab ID:	2025-173-009-002	Soil Color:	Brown

	SIEVE ANALYSIS			HYDROMETER	
USCS	cobbles	gravel	sand	silt and clay fraction	
USDA	cobbles	gravel	sand	silt	clay



USCS Summary

Sieve Size (mm)		Percentage (%)
Greater Than #4	*Gravel*	28.44
#4 to #200	*Sand*	28.82
Finer Than #200	*Silt & Clay*	42.73

USCS Symbol:
sc, ASSUMED

USCS Classification:
CLAYEY SAND WITH GRAVEL

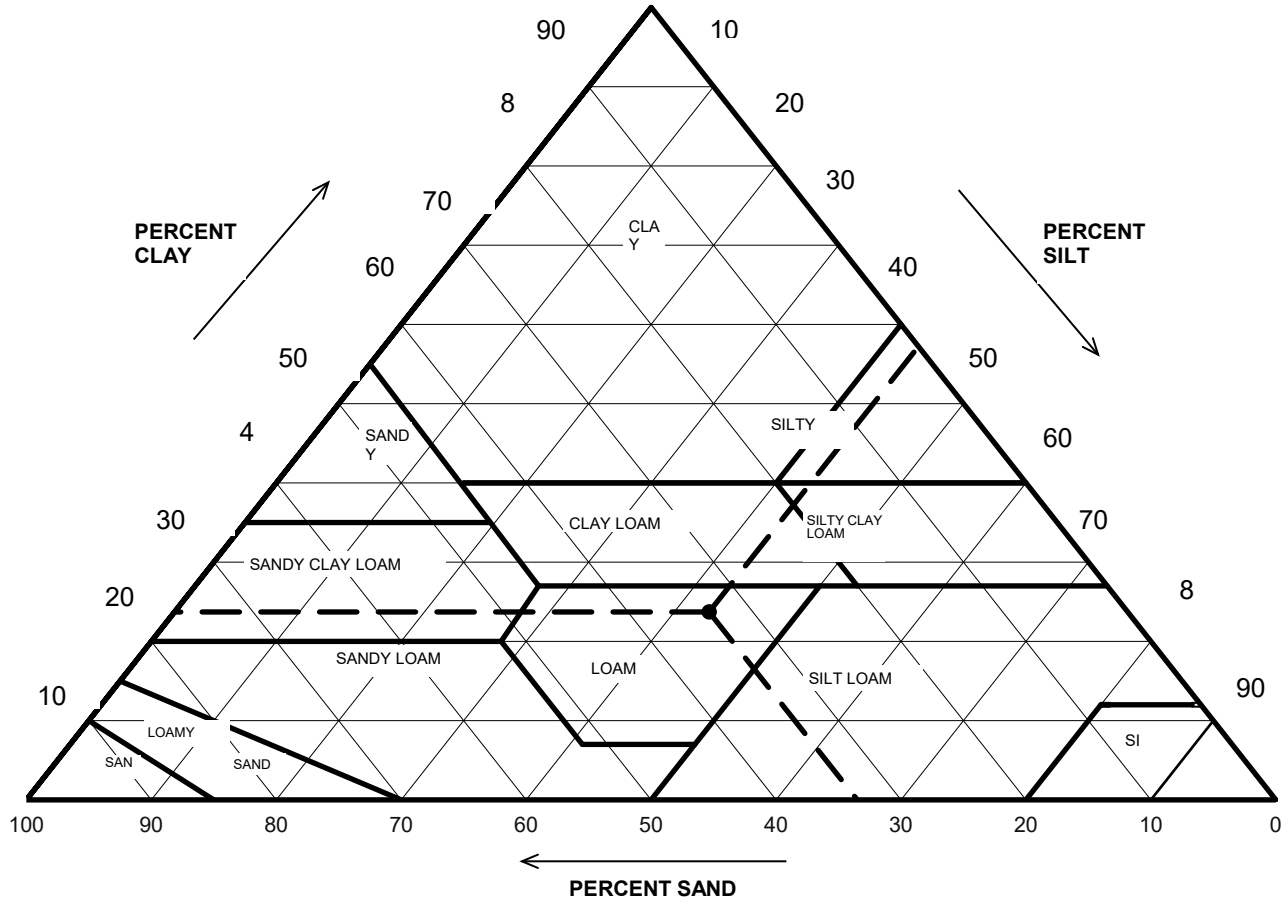
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USDA Classification Chart

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-009	Sample No.:	C-070725-2
Lab ID:	2025-173-009-002	Soil Color:	Brown



Particle Size (mm)	Percent Finer	USDA Summary	Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classification
		Gravel	38.34	**0.00**
2	61.66	*Sand*	20.66	**33.50**
0.05	41.00	*Silt*	26.38	**42.79**
0.002	14.62	*Clay*	14.62	**23.71**

USDA Classification ***LOAM***

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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WASH SIEVE ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-009	Sample No.:	C-070725-2
Lab ID:	2025-173-009-002	Soil Color:	Brown

Moisture Content of Passing 3/4" Material		Moisture Content of Retained 3/4" Material	
Tare No.:	1432	Tare No.:	3530
Wt. of Tare & Wet Sample (g):	820	Weight of Tare & Wet Sample (g):	228.72
Wt. of Tare & Dry Sample (g):	765.42	Weight of Tare & Dry Sample (g):	220.22
Weight of Tare (g):	144.32	Weight of Tare (g):	8.23
Weight of Water (g):	54.58	Weight of Water (g):	8.5
Weight of Dry Soil (g):	621.1	Weight of Dry Soil (g):	211.99
Moisture Content (%):	**8.8**	**Moisture Content (%):**	**4.0**

Wet Weight of -3/4" Sample (g):	18315.00	Weight of the Dry Sample (g):	621.10
Dry Weight of - 3/4" Sample (g):	16835.55	Weight of minus #200 Material (g):	311.98
Wet Weight of +3/4" Sample (g):	3072.00	Weight of plus #200 Material (g):	309.12
Dry Weight of +3/4" Sample (g):	2953.57		
Total Dry Weight of Sample (g):	19789.13	**J - Factor (Percent Finer than 3/4")**	**85.07%**

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)		Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00		0.00	0.00	100.00	**100.00**
6"	150	0.00		0.00	0.00	100.00	**100.00**
3"	75	0.00		0.00	0.00	100.00	**100.00**
2"	50	456.00	(*)	2.22	2.22	97.78	**97.78**
1 1/2"	37.5	549.00		2.67	4.88	95.12	**95.12**
1"	25	1397.00		6.79	11.67	88.33	**88.33**
3/4"	19	670.00		3.26	14.93	85.07	**85.07**
1/2"	12.5	20.76		3.34	3.34	96.66	**82.23**
3/8"	9.5	14.18		2.28	5.63	94.37	**80.29**
#4	4.75	63.75		10.26	15.89	84.11	**71.56**
#10	2	72.27		11.64	27.53	72.47	**61.66**
#20	0.85	56.89	(**)	9.16	36.68	63.32	**53.87**
#40	0.425	31.06		5.00	41.69	58.31	**49.61**
#60	0.25	19.77		3.18	44.87	55.13	**46.90**
#140	0.106	22.26		3.58	48.45	51.55	**43.85**
#200	0.075	8.18		1.32	49.77	50.23	**42.73**
Pan	-	311.98		50.23	100.00	-	**-**

NOTES: *(*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample*
*(**) The - 3/4" sieve analysis is based on the Weight of the Dry Sample*

Tested By	DF	Date	7/11/25	Checked By	EG	Date	7/16/25

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-009	Sample No.:	C-070725-2
Lab ID:	2025-173-009-002	Soil Color:	Brown

Elapsed Time		R Measured	Temp.	Composite Correction	R Corrected	N	K Factor	Diameter	N'
(min)			(°C)			(%)		(mm)	(%)
0		NA	NA	NA	NA	NA	NA	NA	NA
2		36.0	22.2	5.0	31.0	90.8	0.01310	0.0299	**38.8**
5		34.0	22.2	5.0	29.0	84.9	0.01310	0.0192	**36.3**
15		30.5	22.2	5.0	25.5	74.7	0.01310	0.0114	**31.9**
30		28.5	22.2	5.0	23.5	68.8	0.01310	0.0082	**29.4**
60		26.0	22.2	5.0	21.0	61.5	0.01310	0.0059	**26.3**
250		18.5	22.7	4.9	13.6	39.9	0.01302	0.0030	**17.0**
1440		14.5	22.5	5.0	9.5	28.0	0.01305	0.0013	**12.0**

Soil Specimen Data		**Other Corrections**		
Tare No.	947			
Wt. of Tare & Dry Material (g):	135.21	a - Factor	0.993	
Weight of Tare (g):	96.35			
Weight of Deflocculant (g):	5.0	Percent Finer than # 200	42.73	
Weight of Dry Material (g):	33.86			
		Specific Gravity	2.70	Assumed

Note: *Hydrometer test is performed on - # 200 sieve material.*

Tested By TO Date 7/14/25 Checked By EG Date 7/16/25

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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Moisture, Ash, and Organic Matter (Loss on Ignition)

ASTM D 2974-20e1

Client:	GAI Consultants, Inc.
Client Reference:	Cheswick Closure R220960.00
Project No.:	2025-173-009

Method B (To 0.1%)

Moisture Content

ASTM D2216

Lab ID:	002
Boring No.:	Final Closure
Depth (ft):	In Place Soil
Sample No.:	C-070725-2
Tare Number	CC
Weight of Tare & Wet Sample (g)	440.71
Weight of Tare & Dry Sample (g)	416.29
Weight of Tare (g)	130.64
Weight of Water (g)	24.42
Weight of Dry Sample (g)	285.65
Moisture Content	**8.5%**

Method A

Ash Content, Organic Matter

Furnace Temperature (°C)	440
Weight of Tare & Ash (g)	408.00
Weight of Volatiles (g)	8.29
Weight of Ash (g)	277.36
Ash Content (%)	**97.1%**
Organic Matter (%)	**2.9%**

Tested By DP *Date* 7/9/25 *Checked By* EG *Date* 7/11/25

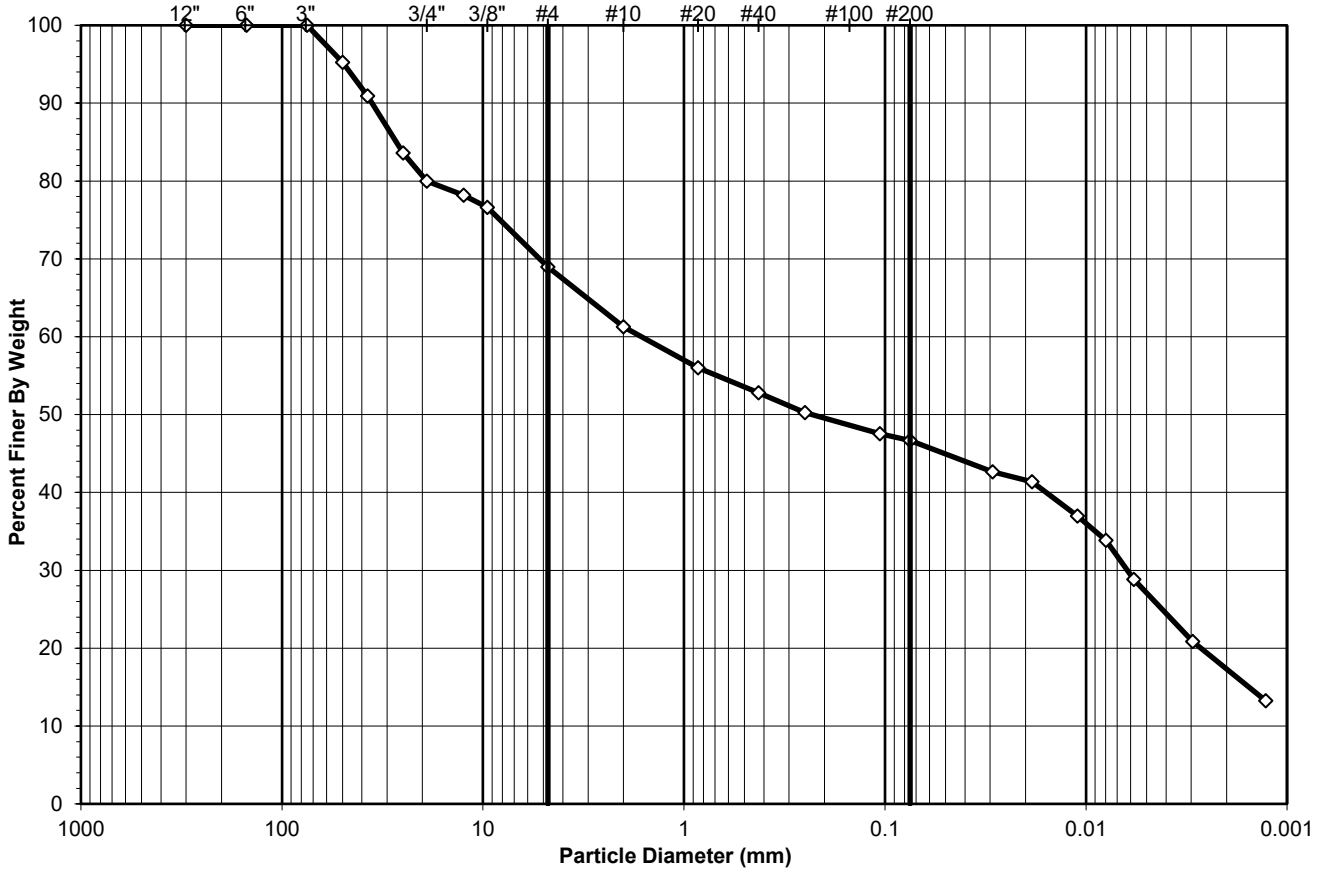
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SIEVE AND HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-009	Sample No.:	C-070725-4
Lab ID:	2025-173-009-004	Soil Color:	Brown

	SIEVE ANALYSIS			HYDROMETER	
USCS	cobbles	gravel	sand	silt and clay fraction	
USDA	cobbles	gravel	sand	silt	clay



USCS Summary

Sieve Size (mm)		Percentage (%)
Greater Than #4	*Gravel*	31.04
#4 to #200	*Sand*	22.29
Finer Than #200	*Silt & Clay*	46.66

USCS Symbol:
gc, ASSUMED

USCS Classification:
CLAYEY GRAVEL WITH SAND

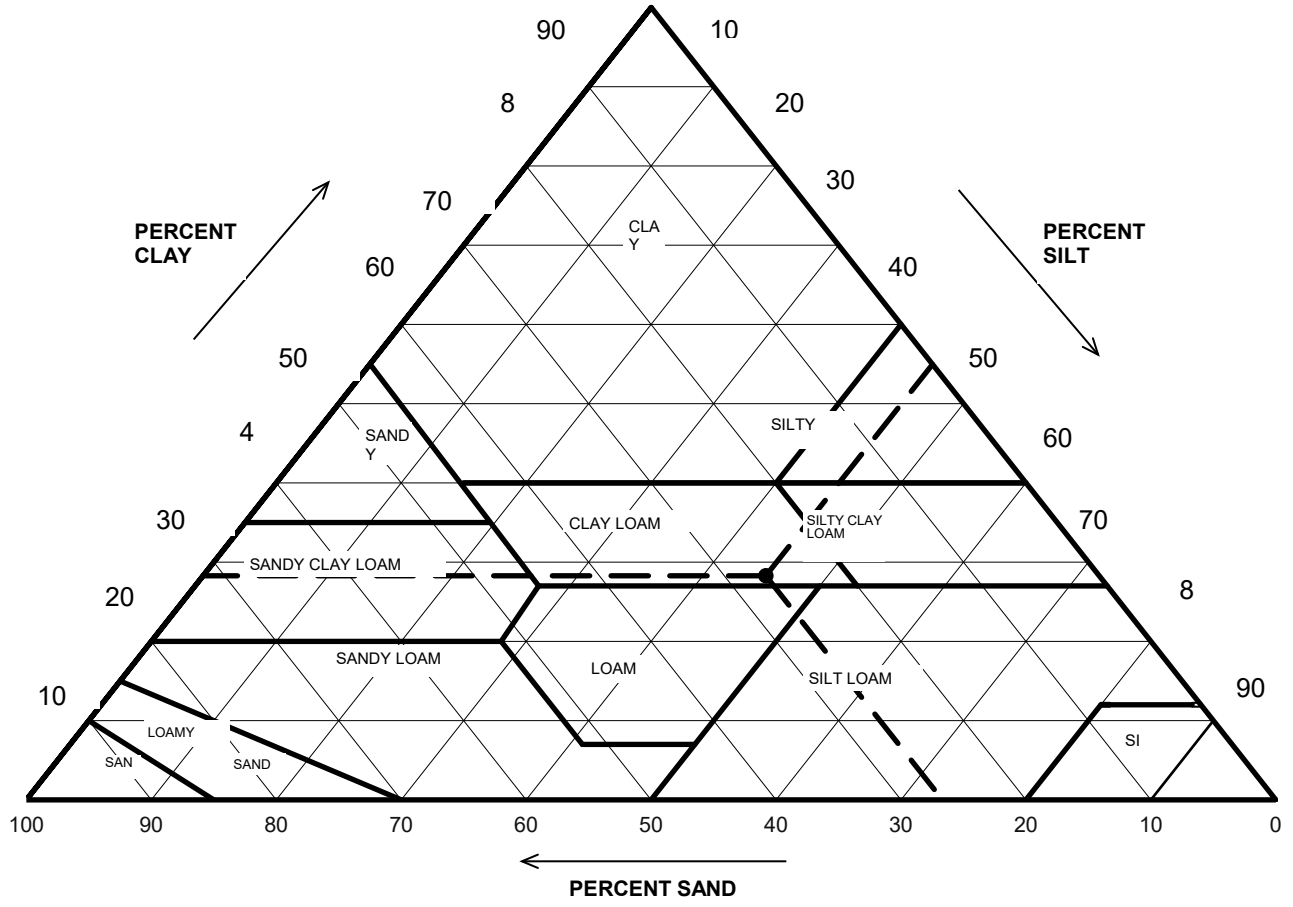
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USDA Classification Chart

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-009	Sample No.:	C-070725-4
Lab ID:	2025-173-009-004	Soil Color:	Brown



Particle Size (mm)	Percent Finer	USDA Summary	Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classification
		Gravel	38.71	**0.00**
2	61.29	*Sand*	16.35	**26.68**
0.05	44.94	*Silt*	27.60	**45.04**
0.002	17.33	*Clay*	17.33	**28.28**

USDA Classification ***CLAY LOAM***

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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WASH SIEVE ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-009	Sample No.:	C-070725-4
Lab ID:	2025-173-009-004	Soil Color:	Brown

Moisture Content of Passing 3/4" Material		Moisture Content of Retained 3/4" Material	
Tare No.:	1541	Tare No.:	3234
Wt. of Tare & Wet Sample (g):	834.22	Weight of Tare & Wet Sample (g):	238.99
Wt. of Tare & Dry Sample (g):	772.14	Weight of Tare & Dry Sample (g):	224.09
Weight of Tare (g):	175.46	Weight of Tare (g):	8.25
Weight of Water (g):	62.08	Weight of Water (g):	14.9
Weight of Dry Soil (g):	596.68	Weight of Dry Soil (g):	215.84
Moisture Content (%):	**10.4**	**Moisture Content (%):**	**6.9**

Wet Weight of -3/4" Sample (g):	12559.00	Weight of the Dry Sample (g):	596.68
Dry Weight of - 3/4" Sample (g):	11375.47	Weight of minus #200 Material (g):	348.15
Wet Weight of +3/4" Sample (g):	3045.00	Weight of plus #200 Material (g):	248.53
Dry Weight of +3/4" Sample (g):	2848.37		
Total Dry Weight of Sample (g):	14223.84	**J - Factor (Percent Finer than 3/4")**	**79.97%**

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)		Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00		0.00	0.00	100.00	**100.00**
6"	150	0.00		0.00	0.00	100.00	**100.00**
3"	75	0.00		0.00	0.00	100.00	**100.00**
2"	50	724.00	(*)	4.76	4.76	95.24	**95.24**
1 1/2"	37.5	655.00		4.31	9.07	90.93	**90.93**
1"	25	1111.00		7.31	16.38	83.62	**83.62**
3/4"	19	555.00		3.65	20.03	79.97	**79.97**
1/2"	12.5	13.34		2.24	2.24	97.76	**78.19**
3/8"	9.5	11.87		1.99	4.23	95.77	**76.60**
#4	4.75	57.00		9.55	13.78	86.22	**68.96**
#10	2	57.23		9.59	23.37	76.63	**61.29**
#20	0.85	39.35	(**)	6.59	29.96	70.04	**56.01**
#40	0.425	23.93		4.01	33.97	66.03	**52.80**
#60	0.25	18.92		3.17	37.15	62.85	**50.27**
#140	0.106	20.26		3.40	40.54	59.46	**47.55**
#200	0.075	6.63		1.11	41.65	58.35	**46.66**
Pan	-	348.15		58.35	100.00	-	**-**

NOTES: *(*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample*
*(**) The - 3/4" sieve analysis is based on the Weight of the Dry Sample*

Tested By	DF	Date	7/11/25	Checked By	EG	Date	7/16/25

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-009	Sample No.:	C-070725-4
Lab ID:	2025-173-009-004	Soil Color:	Brown

Elapsed Time		R Measured	Temp.	Composite Correction	R Corrected	N	K Factor	Diameter	N'
(min)			(°C)			(%)		(mm)	(%)
0		NA	NA	NA	NA	NA	NA	NA	NA
2		39.0	22.2	5.0	34.0	91.4	0.01310	0.0291	**42.6**
5		38.0	22.2	5.0	33.0	88.7	0.01310	0.0186	**41.4**
15		34.5	22.2	5.0	29.5	79.3	0.01310	0.0110	**37.0**
30		32.0	22.2	5.0	27.0	72.5	0.01310	0.0079	**33.8**
60		28.0	22.2	5.0	23.0	61.8	0.01310	0.0058	**28.8**
250		21.5	22.7	4.9	16.6	44.7	0.01302	0.0029	**20.8**
1440		15.5	22.5	5.0	10.5	28.4	0.01305	0.0013	**13.2**

Soil Specimen Data		**Other Corrections**		
Tare No.	687			
Wt. of Tare & Dry Material (g):	133.26	a - Factor	0.993	
Weight of Tare (g):	91.35			
Weight of Deflocculant (g):	5.0	Percent Finer than # 200	46.66	
Weight of Dry Material (g):	36.91			
		Specific Gravity	2.70	Assumed

Note: *Hydrometer test is performed on - # 200 sieve material.*

Tested By TO Date 7/14/25 Checked By EG Date 7/16/25

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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Moisture, Ash, and Organic Matter (Loss on Ignition)

ASTM D 2974-20e1

Client:	GAI Consultants, Inc.
Client Reference:	Cheswick Closure R220960.00
Project No.:	2025-173-009

Method B (To 0.1%)

Moisture Content

ASTM D2216

Lab ID:	004
Boring No.:	Final Closure
Depth (ft):	In Place Soil
Sample No.:	C-070725-4
Tare Number	BB
Weight of Tare & Wet Sample (g)	410.60
Weight of Tare & Dry Sample (g)	382.52
Weight of Tare (g)	123.83
Weight of Water (g)	28.08
Weight of Dry Sample (g)	258.69
Moisture Content	**10.9%**

Method A

Ash Content, Organic Matter

Furnace Temperature (°C)	440
Weight of Tare & Ash (g)	375.46
Weight of Volatiles (g)	7.06
Weight of Ash (g)	251.63
Ash Content (%)	**97.3%**
Organic Matter (%)	**2.7%**

Tested By DP *Date* 7/9/25 *Checked By* EG *Date* 7/11/25

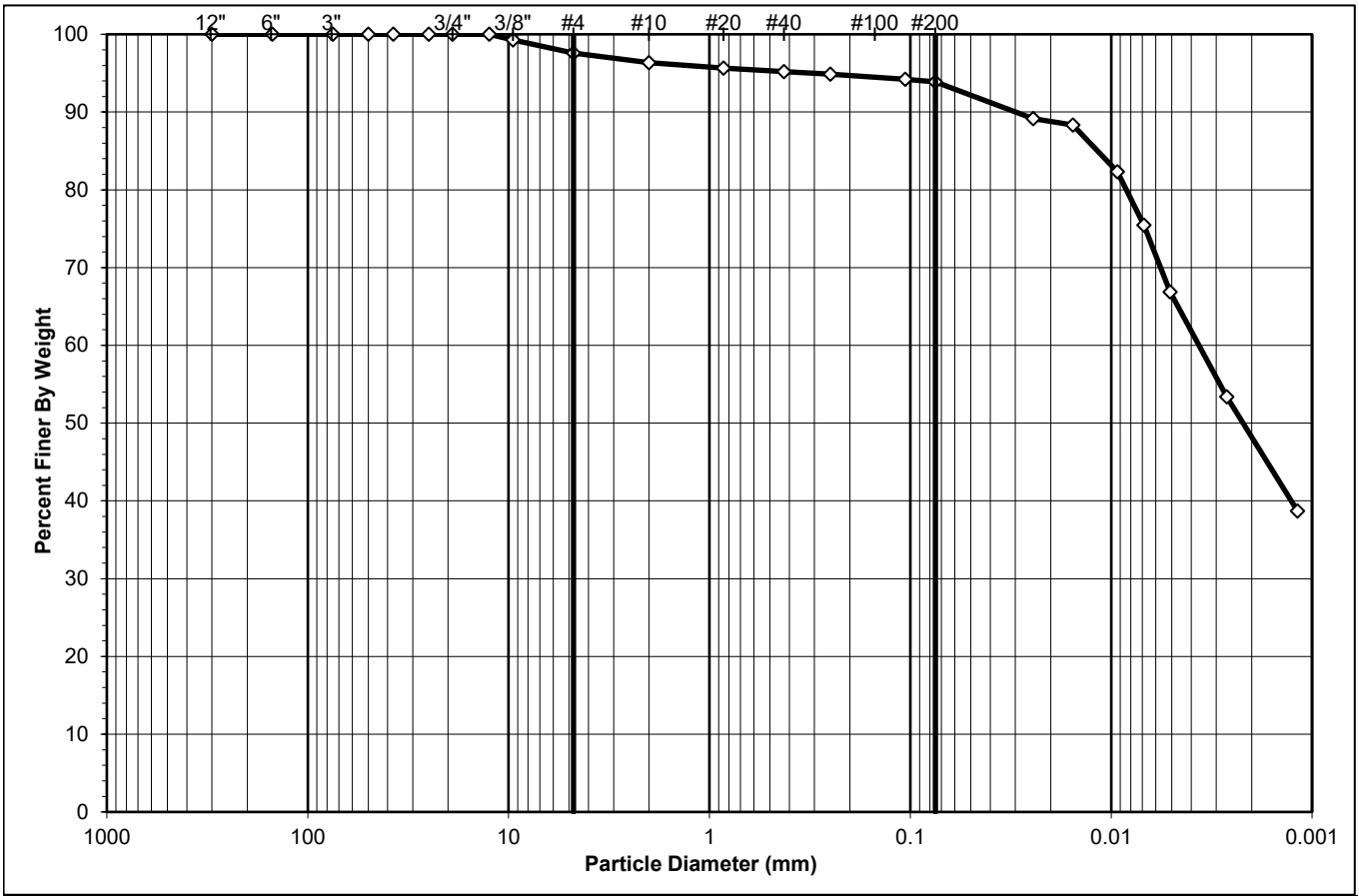
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SIEVE AND HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-009	Sample No.:	C-070725-5
Lab ID:	2025-173-009-005	Soil Color:	Brown

	SIEVE ANALYSIS			HYDROMETER	
USCS	cobbles	gravel	sand	silt and clay fraction	
USDA	cobbles	gravel	sand	silt	clay



USCS Summary

Sieve Size (mm)		Percentage (%)
Greater Than #4	*Gravel*	2.40
#4 to #200	*Sand*	3.70
Finer Than #200	*Silt & Clay*	93.90

USCS Symbol:
cl, ASSUMED

USCS Classification:
LEAN CLAY

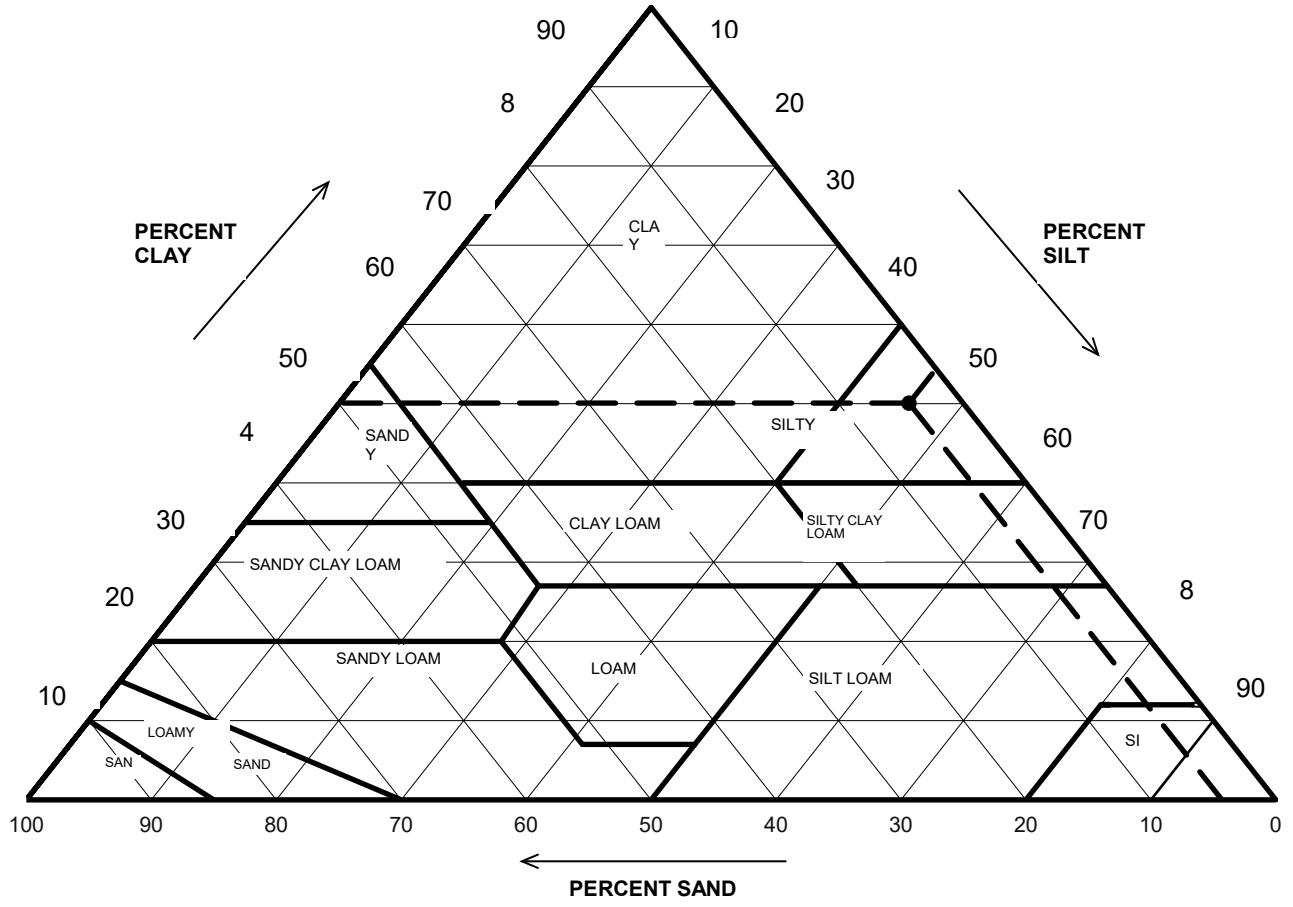
DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

S:Excel\Excel QA\Spreadsheets\SieveHydJ.xls

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USDA Classification Chart

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-009	Sample No.:	C-070725-5
Lab ID:	2025-173-009-005	Soil Color:	Brown



Particle Size (mm)	Percent Finer	USDA Summary	Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classification
		Gravel	3.65	**0.00**
2	96.35	*Sand*	4.16	**4.31**
0.05	92.19	*Silt*	43.95	**45.61**
0.002	48.25	*Clay*	48.25	**50.07**

USDA Classification ***SILTY CLAY***

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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WASH SIEVE ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-009	Sample No.:	C-070725-5
Lab ID:	2025-173-009-005	Soil Color:	Brown

Moisture Content of Passing 3/4" Material		Moisture Content of Retained 3/4" Material	
Tare No.:	1464	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	850.37	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	787.01	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	173.85	Weight of Tare (g):	NA
Weight of Water (g):	63.36	Weight of Water (g):	NA
Weight of Dry Soil (g):	613.16	Weight of Dry Soil (g):	NA
Moisture Content (%):	**10.3**	**Moisture Content (%):**	**0.0**

Wet Weight of -3/4" Sample (g):	6477.00	Weight of the Dry Sample (g):	613.16
Dry Weight of - 3/4" Sample (g):	5870.39	Weight of minus #200 Material (g):	575.75
Wet Weight of +3/4" Sample (g):	0.00	Weight of plus #200 Material (g):	37.41
Dry Weight of +3/4" Sample (g):	0.00		
Total Dry Weight of Sample (g):	5870.39	**J - Factor (Percent Finer than 3/4")**	**100.00%**

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)		Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00		0.00	0.00	100.00	**100.00**
6"	150	0.00		0.00	0.00	100.00	**100.00**
3"	75	0.00		0.00	0.00	100.00	**100.00**
2"	50	0.00	(*)	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00		0.00	0.00	100.00	**100.00**
1"	25	0.00		0.00	0.00	100.00	**100.00**
3/4"	19	0.00		0.00	0.00	100.00	**100.00**
1/2"	12.5	0.00		0.00	0.00	100.00	**100.00**
3/8"	9.5	4.41		0.72	0.72	99.28	**99.28**
#4	4.75	10.31		1.68	2.40	97.60	**97.60**
#10	2	7.67		1.25	3.65	96.35	**96.35**
#20	0.85	4.31	(**)	0.70	4.35	95.65	**95.65**
#40	0.425	2.62		0.43	4.78	95.22	**95.22**
#60	0.25	2.06		0.34	5.12	94.88	**94.88**
#140	0.106	4.15		0.68	5.79	94.21	**94.21**
#200	0.075	1.88		0.31	6.10	93.90	**93.90**
Pan	-	575.75		93.90	100.00	-	**-**

NOTES: *(*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample*
*(**) The - 3/4" sieve analysis is based on the Weight of the Dry Sample*

Tested By	DF	Date	7/11/25	Checked By	EG	Date	7/16/25

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

S:Excel\Excel QA\Spreadsheets\SieveHydJ.xls

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HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-009	Sample No.:	C-070725-5
Lab ID:	2025-173-009-005	Soil Color:	Brown

Elapsed Time		R Measured	Temp.	Composite Correction	R Corrected	N	K Factor	Diameter	N'
(min)			(°C)			(%)		(mm)	(%)
0		NA	NA	NA	NA	NA	NA	NA	NA
2		57.0	22.2	5.0	52.0	95.0	0.01310	0.0244	**89.2**
5		56.5	22.2	5.0	51.5	94.1	0.01310	0.0155	**88.3**
15		53.0	22.2	5.0	48.0	87.7	0.01310	0.0093	**82.3**
30		49.0	22.2	5.0	44.0	80.3	0.01310	0.0069	**75.4**
60		44.0	22.2	5.0	39.0	71.2	0.01310	0.0051	**66.9**
250		36.0	22.7	4.9	31.1	56.8	0.01302	0.0027	**53.4**
1440		27.5	22.5	5.0	22.5	41.2	0.01305	0.0012	**38.7**

Soil Specimen Data		**Other Corrections**		
Tare No.	2331			
Wt. of Tare & Dry Material (g):	148.57	a - Factor	0.993	
Weight of Tare (g):	89.24			
Weight of Deflocculant (g):	5.0	Percent Finer than # 200	93.90	
Weight of Dry Material (g):	54.33			
		Specific Gravity	2.70	Assumed

Note: *Hydrometer test is performed on - # 200 sieve material.*

Tested By TO Date 7/14/25 Checked By EG Date 7/16/25

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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Moisture, Ash, and Organic Matter (Loss on Ignition)

ASTM D 2974-20e1

Client:	GAI Consultants, Inc.
Client Reference:	Cheswick Closure R220960.00
Project No.:	2025-173-009

Method B (To 0.1%)

Moisture Content

ASTM D2216

Lab ID:	005
Boring No.:	Final Closure
Depth (ft):	In Place Soil
Sample No.:	C-070725-5
Tare Number	EE
Weight of Tare & Wet Sample (g)	437.52
Weight of Tare & Dry Sample (g)	410.21
Weight of Tare (g)	126.96
Weight of Water (g)	27.31
Weight of Dry Sample (g)	283.25
Moisture Content	**9.6%**

Method A

Ash Content, Organic Matter

Furnace Temperature (°C)	440
Weight of Tare & Ash (g)	402.64
Weight of Volatiles (g)	7.57
Weight of Ash (g)	275.68
Ash Content (%)	**97.3%**
Organic Matter (%)	**2.7%**

Tested By DP *Date* 7/9/25 *Checked By* EG *Date* 7/11/25

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Moisture, Ash, and Organic Matter (Loss on Ignition)

ASTM D 2974-20e1

Client:	GAI Consultants, Inc.
Client Reference:	Cheswick Closure R220960.00
Project No.:	2025-173-009

Method B (To 0.1%)

Moisture Content

ASTM D2216

Lab ID:	006
Boring No.:	Final Closure
Depth (ft):	In Place Soil
Sample No.:	C-070725-6
Tare Number	FF
Weight of Tare & Wet Sample (g)	419.07
Weight of Tare & Dry Sample (g)	387.27
Weight of Tare (g)	115.47
Weight of Water (g)	31.80
Weight of Dry Sample (g)	271.80
Moisture Content	**11.7%**

Method A

Ash Content, Organic Matter

Furnace Temperature (°C)	440
Weight of Tare & Ash (g)	377.93
Weight of Volatiles (g)	9.34
Weight of Ash (g)	262.46
Ash Content (%)	**96.6%**
Organic Matter (%)	**3.4%**

Tested By DP *Date* 7/9/25 *Checked By* EG *Date* 7/11/25

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Moisture, Ash, and Organic Matter (Loss on Ignition)

ASTM D 2974-20e1

Client:	GAI Consultants, Inc.
Client Reference:	Cheswick Closure R220960.00
Project No.:	2025-173-009

Method B (To 0.1%)

Moisture Content

ASTM D2216

Lab ID:	007
Boring No.:	Final Closure
Depth (ft):	Borrow Area South
Sample No.:	C-070725-7
Tare Number	BB
Weight of Tare & Wet Sample (g)	333.31
Weight of Tare & Dry Sample (g)	314.10
Weight of Tare (g)	123.81
Weight of Water (g)	19.21
Weight of Dry Sample (g)	190.29
Moisture Content	**10.1%**

Method A

Ash Content, Organic Matter

Furnace Temperature (°C)	440
Weight of Tare & Ash (g)	308.86
Weight of Volatiles (g)	5.24
Weight of Ash (g)	185.05
Ash Content (%)	**97.2%**
Organic Matter (%)	**2.8%**

Tested By JW *Date* 7/10/25 *Checked By* EG *Date* 7/14/25

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Moisture, Ash, and Organic Matter (Loss on Ignition)

ASTM D 2974-20e1

Client:	GAI Consultants, Inc.
Client Reference:	Cheswick Closure R220960.00
Project No.:	2025-173-009

Method B (To 0.1%)

Moisture Content

ASTM D2216

Lab ID:	008
Boring No.:	Final Closure
Depth (ft):	Borrow Area North
Sample No.:	C-070725-8
Tare Number	CC
Weight of Tare & Wet Sample (g)	408.86
Weight of Tare & Dry Sample (g)	397.05
Weight of Tare (g)	130.62
Weight of Water (g)	11.81
Weight of Dry Sample (g)	266.43
Moisture Content	**4.4%**

Method A

Ash Content, Organic Matter

Furnace Temperature (°C)	440
Weight of Tare & Ash (g)	391.26
Weight of Volatiles (g)	5.79
Weight of Ash (g)	260.64
Ash Content (%)	**97.8%**
Organic Matter (%)	**2.2%**

Tested By JW *Date* 7/10/25 *Checked By* EG *Date* 7/14/25

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Moisture, Ash, and Organic Matter (Loss on Ignition)

ASTM D 2974-20e1

Client:	GAI Consultants, Inc.
Client Reference:	Cheswick Closure R220960.00
Project No.:	2025-173-009

Method B (To 0.1%)

Moisture Content

ASTM D2216

Lab ID:	009
Boring No.:	Final Closure
Depth (ft):	Borrow Area North
Sample No.:	C-070725-9
Tare Number	HH
Weight of Tare & Wet Sample (g)	417.57
Weight of Tare & Dry Sample (g)	413.35
Weight of Tare (g)	134.00
Weight of Water (g)	4.22
Weight of Dry Sample (g)	279.35
Moisture Content	**1.5%**

Method A

Ash Content, Organic Matter

Furnace Temperature (°C)	440
Weight of Tare & Ash (g)	408.14
Weight of Volatiles (g)	5.21
Weight of Ash (g)	274.14
Ash Content (%)	**98.1%**
Organic Matter (%)	**1.9%**

Tested By JW *Date* 7/10/25 *Checked By* EG *Date* 7/14/25

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August 25, 2025

Project No. 2025-173-010

Leigh Rounce
GAI Consultants, Inc.
385 East Waterfront Drive
Homestead, PA 15120

Transmittal
Laboratory Test Results
Cheswick Closure R220960.00

Please find attached the laboratory test results for the above referenced project. The tests were outlined on the Project Verification Form that was transmitted to your firm prior to the testing. The testing was performed in general accordance with the methods listed on the enclosed data sheets. The test results are believed to be representative of the samples that were submitted for testing and are indicative only of the specimens that were evaluated. We have no direct knowledge of the origin of the samples and imply no position with regard to the nature of the test results, i.e. pass/fail and no claims as to the suitability of the material for its intended use.

The test data and all associated project information provided shall be held in strict confidence and disclosed to other parties only with authorization by our Client. The test data submitted herein is considered integral with this report and is not to be reproduced except in whole and only with the authorization of the Client and Geotechnics. The remaining sample materials for this project will be retained for a minimum of 90 days as directed by the Geotechnics' Quality Program.

We are pleased to provide these testing services. Should you have any questions or if we may be of further assistance, please contact our office.

Respectfully submitted,
Geotechnics, Inc.

Nathan Melaro
Director of Operations

We understand that you have a choice in your laboratory services and we thank you for choosing Geotechnics.

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PERMEABILITY TEST

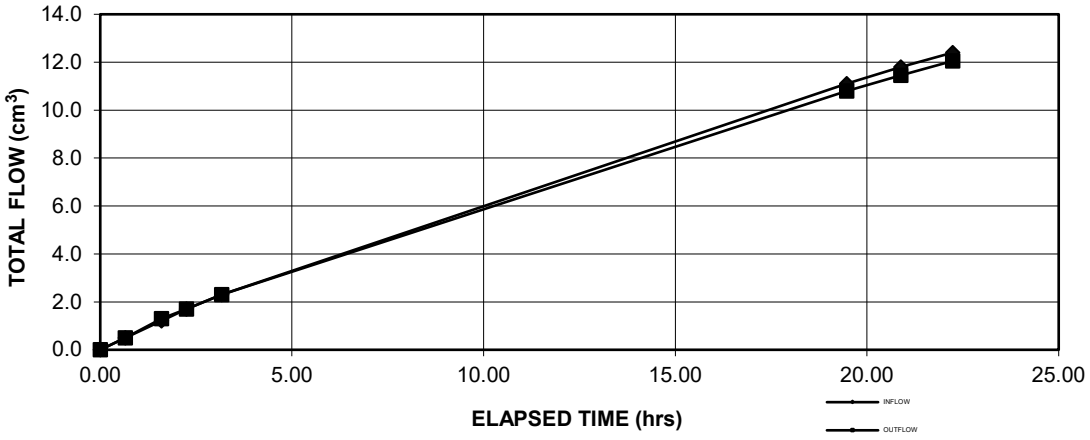
ASTM D 5084-16a Method C

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Project:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-010	Sample No.:	C-070725-1
Lab ID No.:	2025-173-010-001	Avg. Effective Consol. Pressure (psi):	6.25

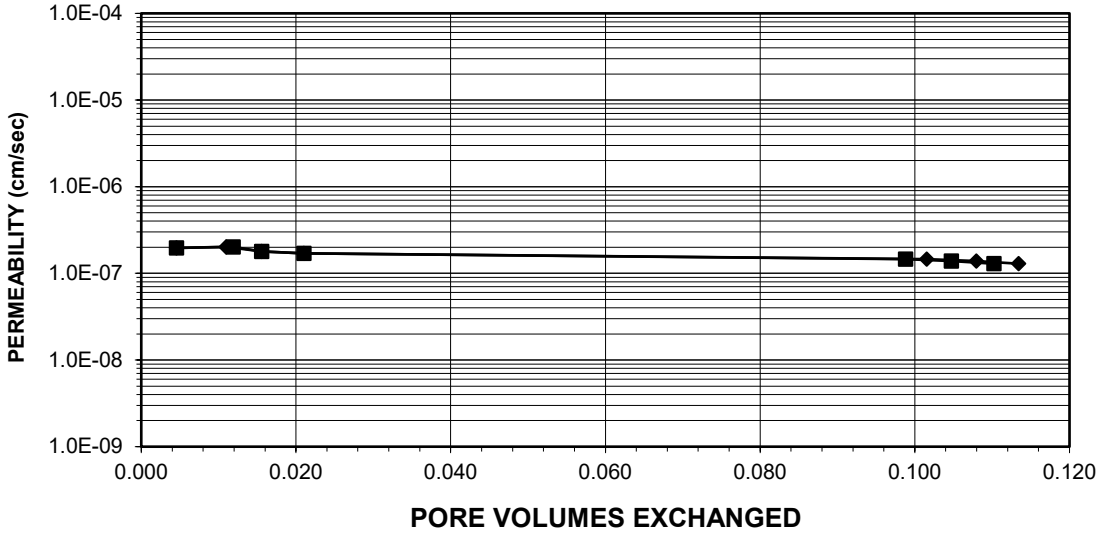
AVERAGE PERMEABILITY = 1.5E-07 cm/sec @ 20°C

AVERAGE PERMEABILITY = 1.5E-09 m/sec @ 20°C

TOTAL FLOW vs. ELAPSED TIME



PORE VOLUMES EXCHANGED vs. PERMEABILITY



Tested By: WT Date: 8/19/25 Checked By: JLK Date: 8/22/25

DCN: CT-22 DATE: 1/1/17 REVISION: 11

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PERMEABILITY TEST

ASTM D 5084-16a Method C

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Project:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-010	Sample No.:	C-070725-1
Lab ID No.:	2025-173-010-001	Avg. Effective Consol. Pressure (psi):	6.25

Specific Gravity:	2.70	Assumed
Sample Condition:		Remolded

Visual Description: Brown Clay

Permeant Type: Deaired Water

MOISTURE CONTENT:	BEFORE TEST	AFTER TEST
Tare Number	2991	1459
Weight of Tare & Wet Sample (g)	150.10	813.27
Weight of Tare & Dry Sample (g)	127.86	678.82
Weight of Tare (g)	7.18	78.54
Weight of Water (g)	22.24	134.45
Weight of Dry Sample (g)	120.68	600.28
Moisture Content (%)	**18.4**	**22.4**

SPECIMEN:	BEFORE TEST	AFTER TEST
Weight of Tube & Wet Sample (g)	1635.46	NA
Weight of Tube (g)	917.30	NA
Weight of Wet Sample (g)	718.16	742.23
Length 1 (in)	3.490	3.498
Length 2 (in)	3.490	3.470
Length 3 (in)	3.490	2.512
Top Diameter (in)	2.870	2.870
Middle Diameter (in)	2.870	2.865
Bottom Diameter (in)	2.870	2.861
Average Length (in)	3.49	3.16
Average Area (in^2)	6.47	6.45
Sample Volume (cm^3)	369.98	333.91
Unit Wet Weight (g/cm^3)	1.94	2.22
Unit Wet Weight (pcf)	121.2	138.8
Unit Dry Weight (pcf)	102.3	113.4
Unit Dry Weight (g/cm^3)	1.64	1.82
Void Ratio, e	0.65	0.49
Porosity, n	0.39	0.33
Pore Volume (cm^3)	145.4	109.3
Total Weight of Sample After Test (g)		736.22

Tested By: WT Date: 8/19/25 Checked By: JLK Date: 8/22/25

DCN: CT-22 DATE: 1/1/17 REVISION: 11

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PERMEABILITY TEST

ASTM D 5084-16a Method C

geotechnics
geotechnical & geosynthetic testing

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Project:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-010	Sample No.:	C-070725-1
Lab ID No.:	2025-173-010-001	Avg. Effective Consol. Pressure (psi):	6.25

Pressure Heads (Constant)	
Top Cap (psi)	67.5
Bottom Cap (psi)	70.0
Cell (psi)	75.0
Total Pressure Head (cm)	175.8
Hydraulic Gradient	21.90

Final Sample Dimensions	
Sample Length (cm), L	8.03
Sample Diameter (cm)	7.28
Sample Area (cm^2), A	41.60
Inflow Burette Area (cm^2), a-in	0.962
Outflow Burette Area (cm^2), a-out	0.962
B Parameter (%)	96

AVERAGE PERMEABILITY = 1.5E-07 cm/sec @ 20°C

AVERAGE PERMEABILITY = 1.5E-09 m/sec @ 20°C

DATE	TIME		ELAPSED TIME t	TOTAL INFLOW	TOTAL OUTFLOW	TOTAL HEAD h	FLOW (0 flow)	TEMP.	INCREMENTAL PERMEABILITY @ 20°C
(mm/dd/yy)	(hr)	(min)	(hr)	(cm^3)	(cm^3)	(cm)	(1 stop)	(°C)	(cm/sec)
8/20/2025	11	56	0.000	0.0	0.0	200.6	0	21.8	NA
8/20/2025	12	35	0.650	0.5	0.5	199.5	0	21.8	2.0E-07
8/20/2025	13	32	1.600	1.2	1.3	198.0	0	21.9	2.0E-07
8/20/2025	14	11	2.250	1.7	1.7	197.0	0	21.9	1.8E-07
8/20/2025	15	6	3.167	2.3	2.3	195.8	0	21.9	1.7E-07
8/21/2025	7	24	19.467	11.1	10.8	177.9	0	21.4	1.5E-07
8/21/2025	8	49	20.883	11.8	11.5	176.5	0	21.5	1.4E-07
8/21/2025	10	10	22.233	12.4	12.1	175.3	1	21.7	1.3E-07

Tested By: WT Date: 8/19/25 Checked By: JLK Date: 8/22/25

DCN: CT-22 DATE: 1/1/17 REVISION: 11

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PERMEABILITY TEST

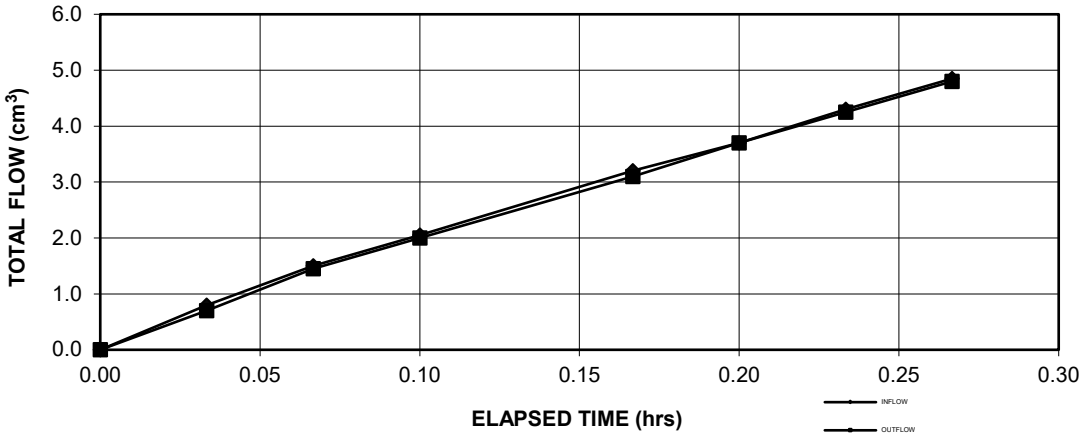
ASTM D 5084-16a Method C

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Project:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-010	Sample No.:	C-070725-2
Lab ID No.:	2025-173-010-002	Avg. Effective Consol. Pressure (psi):	6.25

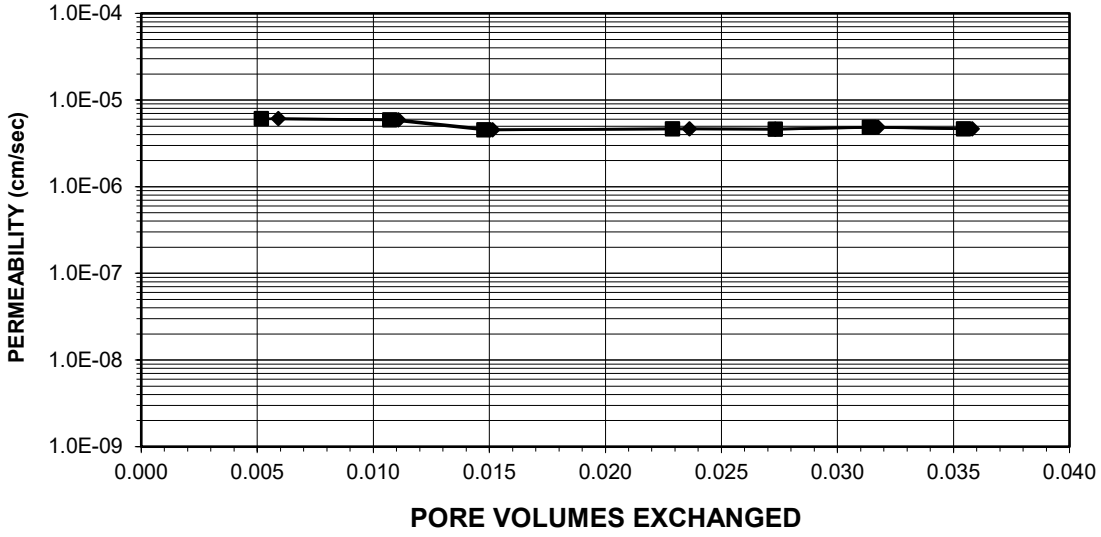
AVERAGE PERMEABILITY = 4.7E-06 cm/sec @ 20°C

AVERAGE PERMEABILITY = 4.7E-08 m/sec @ 20°C

TOTAL FLOW vs. ELAPSED TIME



PORE VOLUMES EXCHANGED vs. PERMEABILITY



Tested By: WT Date: 8/19/25 Checked By: JLK Date: 8/22/25

DCN: CT-22 DATE: 1/1/17 REVISION: 11

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PERMEABILITY TEST

ASTM D 5084-16a Method C

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Project:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-010	Sample No.:	C-070725-2
Lab ID No.:	2025-173-010-002	Avg. Effective Consol. Pressure (psi):	6.25

Specific Gravity:	2.70	Assumed
Sample Condition:		Remolded

Visual Description: Brown Clay with Rock and Organics

Permeant Type: Deaired Water

MOISTURE CONTENT:	BEFORE TEST	AFTER TEST
Tare Number	3152	599
Weight of Tare & Wet Sample (g)	150.41	776.90
Weight of Tare & Dry Sample (g)	127.61	655.62
Weight of Tare (g)	8.17	83.30
Weight of Water (g)	22.80	121.28
Weight of Dry Sample (g)	119.44	572.32
Moisture Content (%)	**19.1**	**21.2**

SPECIMEN:	BEFORE TEST	AFTER TEST
Weight of Tube & Wet Sample (g)	1600.14	NA
Weight of Tube (g)	917.30	NA
Weight of Wet Sample (g)	682.84	694.89
Length 1 (in)	3.490	3.290
Length 2 (in)	3.490	3.320
Length 3 (in)	3.490	3.346
Top Diameter (in)	2.870	2.839
Middle Diameter (in)	2.870	2.856
Bottom Diameter (in)	2.870	2.866
Average Length (in)	3.49	3.32
Average Area (in^2)	6.47	6.40
Sample Volume (cm^3)	369.98	347.83
Unit Wet Weight (g/cm^3)	1.85	2.00
Unit Wet Weight (pcf)	115.2	124.7
Unit Dry Weight (pcf)	96.7	102.9
Unit Dry Weight (g/cm^3)	1.55	1.65
Void Ratio, e	0.74	0.64
Porosity, n	0.43	0.39
Pore Volume (cm^3)	157.6	135.5
Total Weight of Sample After Test (g)		693.75

Tested By: WT Date: 8/19/25 Checked By: JLK Date: 8/22/25

DCN: CT-22 DATE: 1/1/17 REVISION: 11

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PERMEABILITY TEST

ASTM D 5084-16a Method C

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Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Project:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-010	Sample No.:	C-070725-2
Lab ID No.:	2025-173-010-002	Avg. Effective Consol. Pressure (psi):	6.25

Pressure Heads (Constant)	
Top Cap (psi)	67.5
Bottom Cap (psi)	70.0
Cell (psi)	75.0
Total Pressure Head (cm)	175.8
Hydraulic Gradient	20.85

Final Sample Dimensions	
Sample Length (cm), L	8.43
Sample Diameter (cm)	7.25
Sample Area (cm^2), A	41.26
Inflow Burette Area (cm^2), a-in	0.962
Outflow Burette Area (cm^2), a-out	0.962
B Parameter (%)	95

AVERAGE PERMEABILITY = 4.7E-06 cm/sec @ 20°C

AVERAGE PERMEABILITY = 4.7E-08 m/sec @ 20°C

DATE	TIME		ELAPSED TIME t	TOTAL INFLOW	TOTAL OUTFLOW	TOTAL HEAD h	FLOW (0 flow)	TEMP.	INCREMENTAL PERMEABILITY @ 20°C
(mm/dd/yy)	(hr)	(min)	(hr)	(cm^3)	(cm^3)	(cm)	(1 stop)	(°C)	(cm/sec)
8/21/2025	10	57	0.000	0.0	0.0	200.6	0	21.8	NA
8/21/2025	10	59	0.033	0.8	0.7	199.0	0	21.8	6.1E-06
8/21/2025	11	1	0.067	1.5	1.5	197.5	0	21.8	5.9E-06
8/21/2025	11	3	0.100	2.1	2.0	196.4	0	21.8	4.5E-06
8/21/2025	11	7	0.167	3.2	3.1	194.0	0	21.8	4.7E-06
8/21/2025	11	9	0.200	3.7	3.7	192.9	0	21.8	4.6E-06
8/21/2025	11	11	0.233	4.3	4.3	191.7	0	21.8	4.8E-06
8/21/2025	11	13	0.267	4.9	4.8	190.6	1	21.8	4.7E-06

Tested By: WT Date: 8/19/25 Checked By: JLK Date: 8/22/25

DCN: CT-22 DATE: 1/1/17 REVISION: 11

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PERMEABILITY TEST

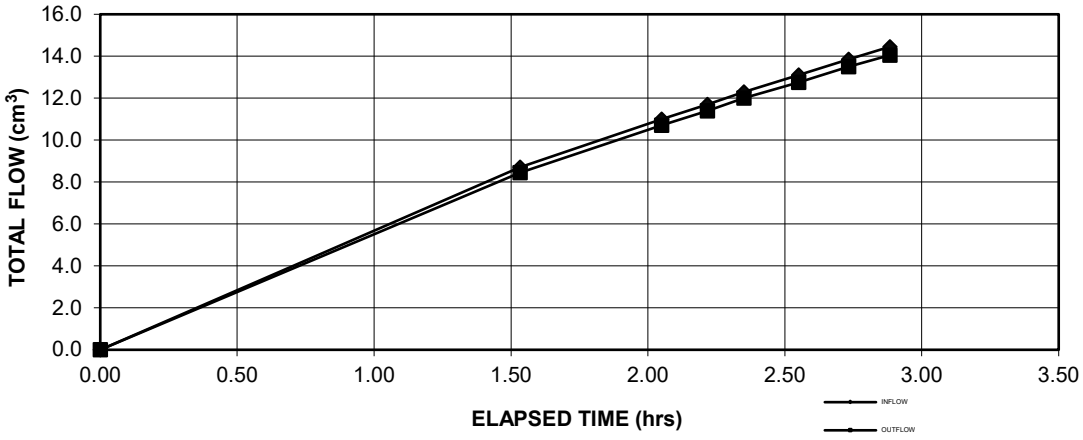
ASTM D 5084-16a Method C

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Project:	Cheswick Closure R220960.00	Depth (ft):	In-Place Soil
Project No.:	2025-173-010	Sample No.:	C-70725-4
Lab ID No.:	2025-173-010-004	Avg. Effective Consol. Pressure (psi):	6.25

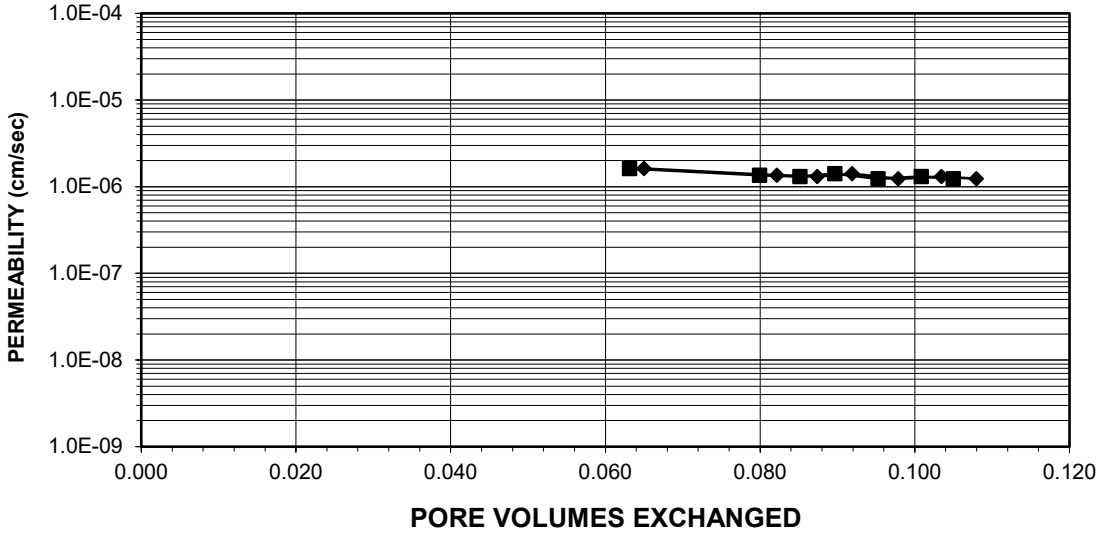
AVERAGE PERMEABILITY = 1.3E-06 cm/sec @ 20°C

AVERAGE PERMEABILITY = 1.3E-08 m/sec @ 20°C

TOTAL FLOW vs. ELAPSED TIME



PORE VOLUMES EXCHANGED vs. PERMEABILITY



Tested By: WT Date: 8/19/25 Checked By: JLK Date: 8/25/25

DCN: CT-22 DATE: 1/1/17 REVISION: 11

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PERMEABILITY TEST

ASTM D 5084-16a Method C

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Project:	Cheswick Closure R220960.00	Depth (ft):	In-Place Soil
Project No.:	2025-173-010	Sample No.:	C-70725-4
Lab ID No.:	2025-173-010-004	Avg. Effective Consol. Pressure (psi):	6.25

Specific Gravity:	2.70	Assumed
Sample Condition:		Remolded

Visual Description: Brown Clay w/ Rock

Permeant Type: Deaired Water

MOISTURE CONTENT:	BEFORE TEST	AFTER TEST
Tare Number	3323	901
Weight of Tare & Wet Sample (g)	151.32	903.75
Weight of Tare & Dry Sample (g)	133.18	774.22
Weight of Tare (g)	7.12	110.07
Weight of Water (g)	18.14	129.53
Weight of Dry Sample (g)	126.06	664.15
Moisture Content (%)	**14.4**	**19.5**

SPECIMEN:	BEFORE TEST	AFTER TEST
Weight of Tube & Wet Sample (g)	1678.53	NA
Weight of Tube (g)	917.30	NA
Weight of Wet Sample (g)	761.23	795.26
Length 1 (in)	3.490	3.536
Length 2 (in)	3.490	3.520
Length 3 (in)	3.490	3.522
Top Diameter (in)	2.870	2.891
Middle Diameter (in)	2.870	2.892
Bottom Diameter (in)	2.870	2.902
Average Length (in)	3.49	3.53
Average Area (in^2)	6.47	6.58
Sample Volume (cm^3)	369.98	380.34
Unit Wet Weight (g/cm^3)	2.06	2.09
Unit Wet Weight (pcf)	128.4	130.5
Unit Dry Weight (pcf)	112.3	109.2
Unit Dry Weight (g/cm^3)	1.80	1.75
Void Ratio, e	0.50	0.54
Porosity, n	0.33	0.35
Pore Volume (cm^3)	123.5	133.9
Total Weight of Sample After Test (g)		794.26

Tested By: WT Date: 8/19/25 Checked By: JLK Date: 8/25/25

DCN: CT-22 DATE: 1/1/17 REVISION: 11

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PERMEABILITY TEST

ASTM D 5084-16a Method C

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Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Project:	Cheswick Closure R220960.00	Depth (ft):	In-Place Soil
Project No.:	2025-173-010	Sample No.:	C-70725-4
Lab ID No.:	2025-173-010-004	Avg. Effective Consol. Pressure (psi):	6.25

Pressure Heads (Constant)	
Top Cap (psi)	77.5
Bottom Cap (psi)	80.0
Cell (psi)	85.0
Total Pressure Head (cm)	175.8
Hydraulic Gradient	19.62

Final Sample Dimensions	
Sample Length (cm), L	8.96
Sample Diameter (cm)	7.35
Sample Area (cm^2), A	42.47
Inflow Burette Area (cm^2), a-in	0.962
Outflow Burette Area (cm^2), a-out	0.962
B Parameter (%)	95

AVERAGE PERMEABILITY = 1.3E-06 cm/sec @ 20°C

AVERAGE PERMEABILITY = 1.3E-08 m/sec @ 20°C

DATE	TIME		ELAPSED TIME t	TOTAL INFLOW	TOTAL OUTFLOW	TOTAL HEAD h	FLOW (0 flow)	TEMP.	INCREMENTAL PERMEABILITY @ 20°C
(mm/dd/yy)	(hr)	(min)	(hr)	(cm^3)	(cm^3)	(cm)	(1 stop)	(°C)	(cm/sec)
8/21/2025	12	54	0.000	0.0	0.0	200.6	0	22.0	NA
8/21/2025	14	26	1.533	8.7	8.5	182.8	0	22.0	1.6E-06
8/21/2025	14	57	2.050	11.0	10.7	178.1	0	22.0	1.4E-06
8/21/2025	15	7	2.217	11.7	11.4	176.7	0	22.0	1.3E-06
8/21/2025	15	15	2.350	12.3	12.0	175.4	0	22.0	1.4E-06
8/21/2025	15	27	2.550	13.1	12.8	173.8	0	22.0	1.2E-06
8/21/2025	15	38	2.733	13.9	13.5	172.3	0	22.0	1.3E-06
8/21/2025	15	47	2.883	14.5	14.1	171.1	1	22.0	1.2E-06

Tested By: WT Date: 8/19/25 Checked By: JLK Date: 8/25/25

DCN: CT-22 DATE: 1/1/17 REVISION: 11

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August 8, 2025

Project No. 2025-173-011

Cory White
GAI Consultants, Inc.
385 East Waterfront Drive
Homestead, PA 15120

Transmittal
Laboratory Test Results
Cheswick Closure R220960.00

Please find attached the laboratory test results for the above referenced project. The tests were outlined on the Project Verification Form that was transmitted to your firm prior to the testing. The testing was performed in general accordance with the methods listed on the enclosed data sheets. The test results are believed to be representative of the samples that were submitted for testing and are indicative only of the specimens that were evaluated. We have no direct knowledge of the origin of the samples and imply no position with regard to the nature of the test results, i.e. pass/fail and no claims as to the suitability of the material for its intended use.

The test data and all associated project information provided shall be held in strict confidence and disclosed to other parties only with authorization by our Client. The test data submitted herein is considered integral with this report and is not to be reproduced except in whole and only with the authorization of the Client and Geotechnics. The remaining sample materials for this project will be retained for a minimum of 90 days as directed by the Geotechnics' Quality Program.

We are pleased to provide these testing services. Should you have any questions or if we may be of further assistance, please contact our office.

Respectfully submitted,
Geotechnics, Inc.

Nathan Melaro
Director of Operations

We understand that you have a choice in your laboratory services and we thank you for choosing Geotechnics.

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SIEVE AND HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-011	Sample No.:	C-072325-1
Lab ID:	2025-173-011-001	Soil Color:	Brown

	SIEVE ANALYSIS			HYDROMETER	
USCS	cobbles	gravel	sand	silt and clay fraction	
USDA	cobbles	gravel	sand	silt	clay



USCS Summary

Sieve Size (mm)		Percentage (%)
Greater Than #4	*Gravel*	11.72
#4 to #200	*Sand*	21.87
Finer Than #200	*Silt & Clay*	66.41

USCS Symbol:
cl, ASSUMED

USCS Classification:
SANDY LEAN CLAY

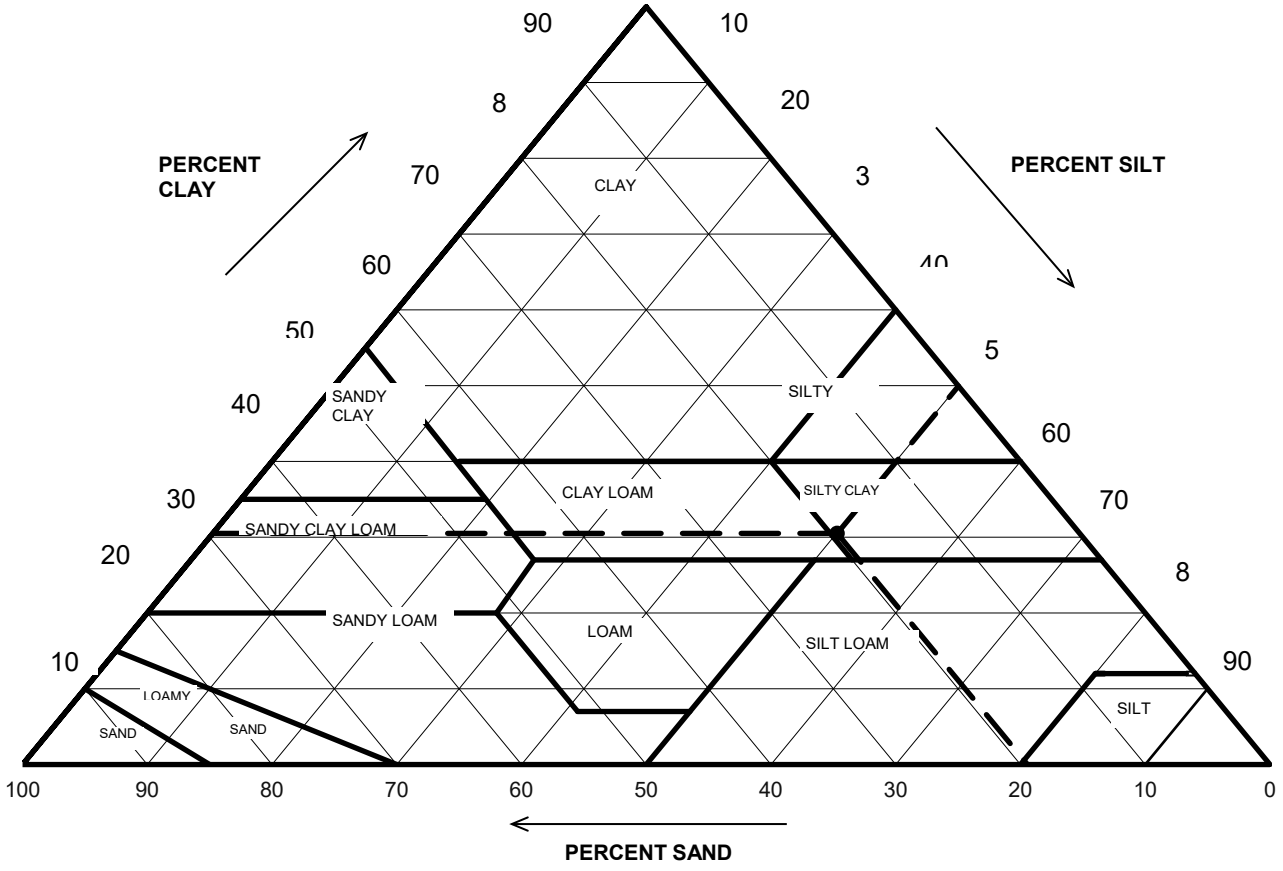
DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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USDA CLASSIFICATION CHART

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-011	Sample No.:	C-072325-1
Lab ID:	2025-173-011-001	Soil Color:	Brown



Particle Size (mm)	Percent Finer	USDA SUMMARY	Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classification
		Gravel	20.07	**0.00**
2	79.93	*Sand*	15.54	**19.44**
0.05	64.39	*Silt*	40.01	**50.06**
0.002	24.38	*Clay*	24.38	**30.50**

USDA Classification ***SILTY CLAY LOAM***

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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WASH SIEVE ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

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Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-011	Sample No.:	C-072325-1
Lab ID:	2025-173-011-001	Soil Color:	Brown

Moisture Content of Passing 3/4" Material		Moisture Content of Retained 3/4" Material	
Tare No.:	1454	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	974.65	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	890.58	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	137.96	Weight of Tare (g):	NA
Weight of Water (g):	84.07	Weight of Water (g):	NA
Weight of Dry Soil (g):	752.62	Weight of Dry Soil (g):	NA
Moisture Content (%):	**11.2**	**Moisture Content (%):**	**0.0**

Wet Weight of -3/4" Sample (g):	NA	Weight of the Dry Sample (g):	752.62
Dry Weight of - 3/4" Sample (g):	752.62	Weight of minus #200 Material (g):	499.81
Wet Weight of +3/4" Sample (g):	0.00	Weight of plus #200 Material (g):	252.81
Dry Weight of +3/4" Sample (g):	0.00		
Total Dry Weight of Sample (g):	752.62		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)		Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00		0.00	0.00	100.00	**100.00**
6"	150	0.00		0.00	0.00	100.00	**100.00**
3"	75	0.00		0.00	0.00	100.00	**100.00**
2"	50	0.00	(*)	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00		0.00	0.00	100.00	**100.00**
1"	25	0.00		0.00	0.00	100.00	**100.00**
3/4"	19	0.00		0.00	0.00	100.00	**100.00**
1/2"	12.5	19.64		2.61	2.61	97.39	**97.39**
3/8"	9.5	6.53		0.87	3.48	96.52	**96.52**
#4	4.75	62.02		8.24	11.72	88.28	**88.28**
#10	2	62.89		8.36	20.07	79.93	**79.93**
#20	0.85	42.82	(**)	5.69	25.76	74.24	**74.24**
#40	0.425	19.82		2.63	28.40	71.60	**71.60**
#60	0.25	12.93		1.72	30.11	69.89	**69.89**
#140	0.106	18.76		2.49	32.61	67.39	**67.39**
#200	0.075	7.40		0.98	33.59	66.41	**66.41**
Pan	-	499.81		66.41	100.00	-	**-**

Notes : *(*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample*
*(**) The - 3/4" sieve analysis is based on the Weight of the Dry Sample*

Tested By	DF	Date	7/30/25	Checked By	EG	Date	8/4/25

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-011	Sample No.:	C-072325-1
Lab ID:	2025-173-011-001	Soil Color:	Brown

Elapsed Time		R Measured	Temp.	Composite Correction	R Corrected	N	K Factor	Diameter	N'
(min)			(°C)			(%)		(mm)	(%)
0		NA	NA	NA	NA	NA	NA	NA	NA
2		44.5	22.7	4.9	39.6	92.5	0.01302	0.0276	**61.4**
5		42.0	22.7	4.9	37.1	86.7	0.01302	0.0179	**57.6**
15		37.0	22.7	4.9	32.1	75.0	0.01302	0.0108	**49.8**
33		33.5	22.7	4.9	28.6	66.8	0.01302	0.0074	**44.4**
60		30.5	22.8	4.9	25.6	59.9	0.01300	0.0056	**39.8**
250		23.5	22.8	4.9	18.6	43.5	0.01300	0.0029	**28.9**
1440		17.0	22.7	4.9	12.1	28.3	0.01302	0.0013	**18.8**

Soil Specimen Data		**Other Corrections**		
Tare No.	703			
Wt. of Tare & Dry Material (g):	140.28	a - Factor	0.993	
Weight of Tare (g):	92.77			
Weight of Deflocculant (g):	5.0	Percent Finer than # 200	66.41	
Weight of Dry Material (g):	42.51			
		Specific Gravity	2.70	Assumed

Note: *Hydrometer test is performed on - # 200 sieve material.*

Tested By	TO	Date	7/31/25	Checked By	EG	Date	8/4/25

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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Moisture, Ash, and Organic Matter (Loss on Ignition)

ASTM D 2974-20e1

Client:	GAI Consultants, Inc.
Client Reference:	Cheswick Closure R220960.0
Project No.:	2025-173-011

Method B (To 0.1%)

Moisture Content

ASTM D2216

Lab ID:	001
Boring No.:	Final Closure
Depth (ft):	In Place Soil
Sample No.:	C-072325-1
Tare Number	HH
Weight of Tare & Wet Sample (g)	384.41
Weight of Tare & Dry Sample (g)	360.83
Weight of Tare (g)	134.04
Weight of Water (g)	23.58
Weight of Dry Sample (g)	226.79
Moisture Content	**10.4%**

Method A

Ash Content, Organic Matter

Furnace Temperature (°C)	440
Weight of Tare & Ash (g)	355.70
Weight of Volatiles (g)	5.13
Weight of Ash (g)	221.66
Ash Content (%)	**97.7%**
Organic Matter (%)	**2.3%**

Tested By JW *Date* 7/29/25 *Checked By* EG *Date* 7/30/25

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SIEVE AND HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-011	Sample No.:	C-072325-2
Lab ID:	2025-173-011-002	Soil Color:	Brown

	SIEVE ANALYSIS			HYDROMETER	
USCS	cobbles	gravel	sand	silt and clay fraction	
USDA	cobbles	gravel	sand	silt	clay



USCS Summary

Sieve Size (mm)		Percentage (%)
Greater Than #4	*Gravel*	15.10
#4 to #200	*Sand*	17.18
Finer Than #200	*Silt & Clay*	67.72

USCS Symbol:
cl, ASSUMED

USCS Classification:
SANDY LEAN CLAY WITH GRAVEL

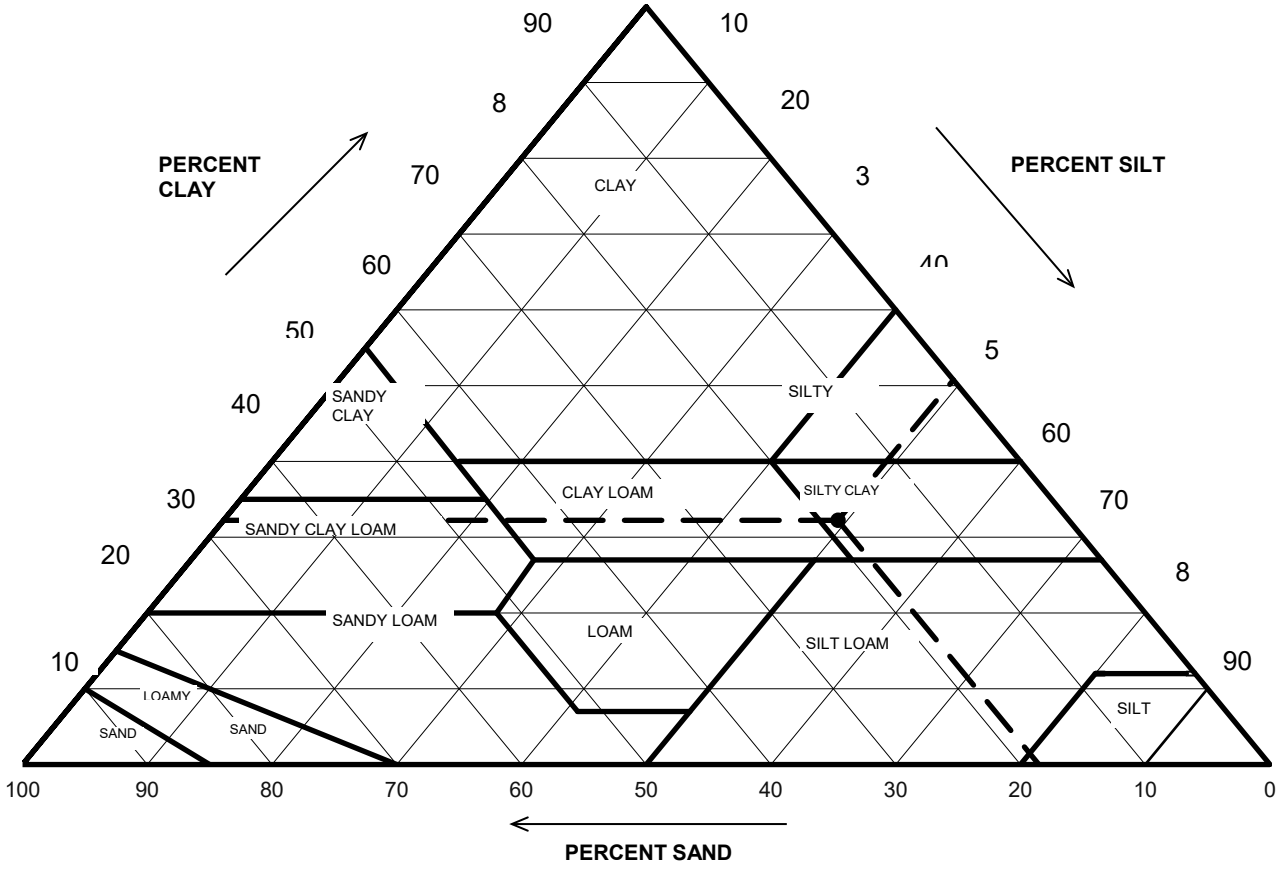
DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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USDA CLASSIFICATION CHART

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-011	Sample No.:	C-072325-2
Lab ID:	2025-173-011-002	Soil Color:	Brown



Particle Size (mm)	Percent Finer	USDA SUMMARY	Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classification
		Gravel	21.32	**0.00**
2	78.68	*Sand*	14.57	**18.52**
0.05	64.10	*Silt*	38.75	**49.25**
0.002	25.36	*Clay*	25.36	**32.23**

USDA Classification ***SILTY CLAY LOAM***

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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WASH SIEVE ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-011	Sample No.:	C-072325-2
Lab ID:	2025-173-011-002	Soil Color:	Brown

Moisture Content of Passing 3/4" Material		Moisture Content of Retained 3/4" Material	
Tare No.:	1550	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	973.49	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	908.13	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	144.01	Weight of Tare (g):	NA
Weight of Water (g):	65.36	Weight of Water (g):	NA
Weight of Dry Soil (g):	764.12	Weight of Dry Soil (g):	NA
Moisture Content (%):	**8.6**	**Moisture Content (%):**	**0.0**

Wet Weight of -3/4" Sample (g):	NA	Weight of the Dry Sample (g):	764.12
Dry Weight of - 3/4" Sample (g):	742.01	Weight of minus #200 Material (g):	517.44
Wet Weight of +3/4" Sample (g):	22.11	Weight of plus #200 Material (g):	246.68
Dry Weight of +3/4" Sample (g):	22.11		
Total Dry Weight of Sample (g):	764.12		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)		Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00		0.00	0.00	100.00	**100.00**
6"	150	0.00		0.00	0.00	100.00	**100.00**
3"	75	0.00		0.00	0.00	100.00	**100.00**
2"	50	0.00	(*)	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00		0.00	0.00	100.00	**100.00**
1"	25	0.00		0.00	0.00	100.00	**100.00**
3/4"	19	22.11		2.89	2.89	97.11	**97.11**
1/2"	12.5	18.48		2.42	5.31	94.69	**94.69**
3/8"	9.5	34.98		4.58	9.89	90.11	**90.11**
#4	4.75	39.82		5.21	15.10	84.90	**84.90**
#10	2	47.55		6.22	21.32	78.68	**78.68**
#20	0.85	32.79	(**)	4.29	25.62	74.38	**74.38**
#40	0.425	14.60		1.91	27.53	72.47	**72.47**
#60	0.25	11.19		1.46	28.99	71.01	**71.01**
#140	0.106	17.76		2.32	31.31	68.69	**68.69**
#200	0.075	7.40		0.97	32.28	67.72	**67.72**
Pan	-	517.44		67.72	100.00	-	**-**

Notes : *(*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample*
*(**) The - 3/4" sieve analysis is based on the Weight of the Dry Sample*

Tested By	DF	Date	7/30/25	Checked By	EG	Date	8/4/25

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-011	Sample No.:	C-072325-2
Lab ID:	2025-173-011-002	Soil Color:	Brown

Elapsed Time		R Measured	Temp.	Composite Correction	R Corrected	N	K Factor	Diameter	N'
(min)			(°C)			(%)		(mm)	(%)
0		NA	NA	NA	NA	NA	NA	NA	NA
2		41.5	22.7	4.9	36.6	87.2	0.01302	0.0284	**59.1**
5		40.5	22.7	4.9	35.6	84.8	0.01302	0.0181	**57.4**
15		37.0	22.7	4.9	32.1	76.5	0.01302	0.0108	**51.8**
30		31.5	22.7	4.9	26.6	63.4	0.01302	0.0079	**42.9**
60		29.5	22.8	4.9	24.6	58.7	0.01300	0.0057	**39.7**
250		23.5	22.8	4.9	18.6	44.4	0.01300	0.0029	**30.1**
1440		17.0	22.7	4.9	12.1	28.8	0.01302	0.0013	**19.5**

Soil Specimen Data		**Other Corrections**		
Tare No.	2343			
Wt. of Tare & Dry Material (g):	135.71	a - Factor	0.993	
Weight of Tare (g):	89.03			
Weight of Deflocculant (g):	5.0	Percent Finer than # 200	67.72	
Weight of Dry Material (g):	41.68			
		Specific Gravity	2.70	Assumed

Note: *Hydrometer test is performed on - # 200 sieve material.*

Tested By	TO	Date	7/31/25	Checked By	EG	Date	8/4/25

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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Moisture, Ash, and Organic Matter (Loss on Ignition)

ASTM D 2974-20e1

Client:	GAI Consultants, Inc.
Client Reference:	Cheswick Closure R220960.0
Project No.:	2025-173-011

Method B (To 0.1%)

Moisture Content

ASTM D2216

Lab ID:	002
Boring No.:	Final Closure
Depth (ft):	In Place Soil
Sample No.:	C-072325-2
Tare Number	CC
Weight of Tare & Wet Sample (g)	387.22
Weight of Tare & Dry Sample (g)	363.27
Weight of Tare (g)	130.61
Weight of Water (g)	23.95
Weight of Dry Sample (g)	232.66
Moisture Content	**10.3%**

Method A

Ash Content, Organic Matter

Furnace Temperature (°C)	440
Weight of Tare & Ash (g)	358.04
Weight of Volatiles (g)	5.23
Weight of Ash (g)	227.43
Ash Content (%)	**97.8%**
Organic Matter (%)	**2.2%**

Tested By JW *Date* 7/29/25 *Checked By* EG *Date* 7/30/25

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SIEVE AND HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	Borrow
Project No.:	2025-173-011	Sample No.:	C-072325-3
Lab ID:	2025-173-011-003	Soil Color:	Reddish Brown

	SIEVE ANALYSIS			HYDROMETER	
USCS	cobbles	gravel	sand	silt and clay fraction	
USDA	cobbles	gravel	sand	silt	clay



USCS Summary

Sieve Size (mm)		Percentage (%)
Greater Than #4	*Gravel*	21.61
#4 to #200	*Sand*	13.45
Finer Than #200	*Silt & Clay*	64.94

USCS Symbol:
cl, ASSUMED

USCS Classification:
GRAVELLY LEAN CLAY

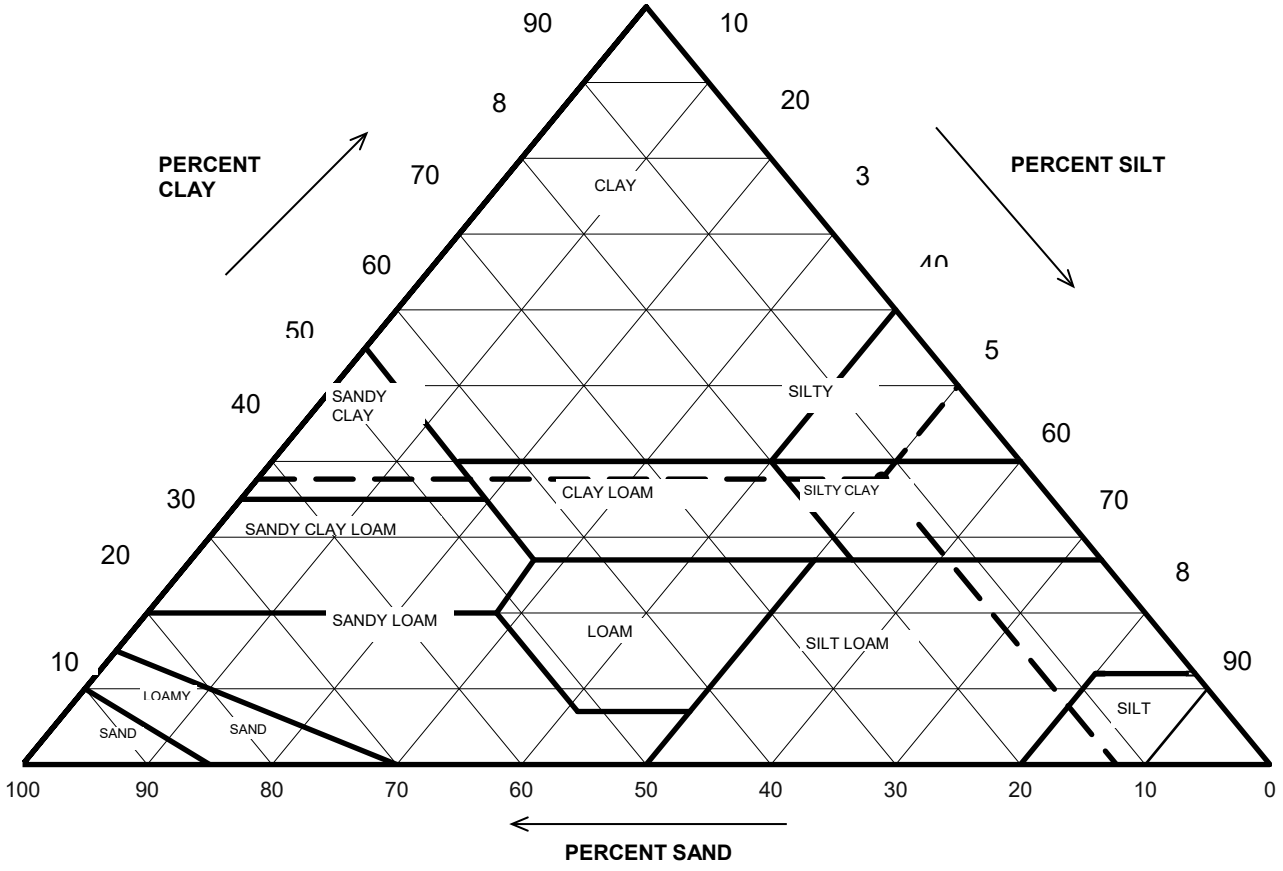
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USDA CLASSIFICATION CHART

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	Borrow
Project No.:	2025-173-011	Sample No.:	C-072325-3
Lab ID:	2025-173-011-003	Soil Color:	Reddish Brown



Particle Size (mm)	Percent Finer	USDA SUMMARY	Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classification
		Gravel	27.25	**0.00**
2	72.75	*Sand*	8.95	**12.31**
0.05	63.80	*Silt*	36.40	**50.03**
0.002	27.40	*Clay*	27.40	**37.67**

USDA Classification ***SILTY CLAY LOAM***

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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WASH SIEVE ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

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Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	Borrow
Project No.:	2025-173-011	Sample No.:	C-072325-3
Lab ID:	2025-173-011-003	Soil Color:	Reddish Brown

Moisture Content of Passing 3/4" Material		Moisture Content of Retained 3/4" Material	
Tare No.:	1498	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	1014.90	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	943.27	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	148.64	Weight of Tare (g):	NA
Weight of Water (g):	71.63	Weight of Water (g):	NA
Weight of Dry Soil (g):	794.63	Weight of Dry Soil (g):	NA
Moisture Content (%):	**9.0**	**Moisture Content (%):**	**0.0**

Wet Weight of -3/4" Sample (g):	NA	Weight of the Dry Sample (g):	794.63
Dry Weight of - 3/4" Sample (g):	741.79	Weight of minus #200 Material (g):	516.04
Wet Weight of +3/4" Sample (g):	52.84	Weight of plus #200 Material (g):	278.59
Dry Weight of +3/4" Sample (g):	52.84		
Total Dry Weight of Sample (g):	794.63		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)		Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00		0.00	0.00	100.00	**100.00**
6"	150	0.00		0.00	0.00	100.00	**100.00**
3"	75	0.00		0.00	0.00	100.00	**100.00**
2"	50	0.00	(*)	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00		0.00	0.00	100.00	**100.00**
1"	25	15.66		1.97	1.97	98.03	**98.03**
3/4"	19	37.18		4.68	6.65	93.35	**93.35**
1/2"	12.5	40.10		5.05	11.70	88.30	**88.30**
3/8"	9.5	33.59		4.23	15.92	84.08	**84.08**
#4	4.75	45.15		5.68	21.61	78.39	**78.39**
#10	2	44.86		5.65	27.25	72.75	**72.75**
#20	0.85	27.16	(**)	3.42	30.67	69.33	**69.33**
#40	0.425	12.40		1.56	32.23	67.77	**67.77**
#60	0.25	8.05		1.01	33.24	66.76	**66.76**
#140	0.106	10.22		1.29	34.53	65.47	**65.47**
#200	0.075	4.22		0.53	35.06	64.94	**64.94**
Pan	-	516.04		64.94	100.00	-	**-**

Notes : *(*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample*
*(**) The - 3/4" sieve analysis is based on the Weight of the Dry Sample*

Tested By	DF	Date	7/30/25	Checked By	EG	Date	8/1/25

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	Borrow
Project No.:	2025-173-011	Sample No.:	C-072325-3
Lab ID:	2025-173-011-003	Soil Color:	Reddish Brown

Elapsed Time		R Measured	Temp.	Composite Correction	R Corrected	N	K Factor	Diameter	N'
(min)			(°C)			(%)		(mm)	(%)
0		NA	NA	NA	NA	NA	NA	NA	NA
2		56.0	23.1	4.8	51.2	95.1	0.01296	0.0244	**61.8**
5		54.0	23.1	4.8	49.2	91.4	0.01296	0.0158	**59.4**
15		48.5	23.1	4.8	43.7	81.2	0.01296	0.0097	**52.7**
30		45.5	23.1	4.8	40.7	75.6	0.01296	0.0070	**49.1**
61		39.5	23.0	4.8	34.7	64.4	0.01297	0.0052	**41.8**
250		30.5	23.0	4.8	25.7	47.7	0.01297	0.0028	**31.0**
1440		23.0	22.7	4.9	18.1	33.6	0.01302	0.0012	**21.8**

Soil Specimen Data		**Other Corrections**	
Tare No.	930		
Wt. of Tare & Dry Material (g):	150.75	a - Factor	0.993
Weight of Tare (g):	92.29		
Weight of Deflocculant (g):	5.0	Percent Finer than # 200	64.94
Weight of Dry Material (g):	53.46		
		Specific Gravity	2.70 Assumed

Note: *Hydrometer test is performed on - # 200 sieve material.*

Tested By TO Date 7/30/25 Checked By EG Date 8/1/25

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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Moisture, Ash, and Organic Matter (Loss on Ignition)

ASTM D 2974-20e1

Client:	GAI Consultants, Inc.
Client Reference:	Cheswick Closure R220960.0
Project No.:	2025-173-011

Method B (To 0.1%)

Moisture Content

ASTM D2216

Lab ID:	003
Boring No.:	Final Closure
Depth (ft):	In Place Soil
Sample No.:	C-072325-3
Tare Number	BB
Weight of Tare & Wet Sample (g)	329.18
Weight of Tare & Dry Sample (g)	311.23
Weight of Tare (g)	123.79
Weight of Water (g)	17.95
Weight of Dry Sample (g)	187.44
Moisture Content	**9.6%**

Method A

Ash Content, Organic Matter

Furnace Temperature (°C)	440
Weight of Tare & Ash (g)	305.77
Weight of Volatiles (g)	5.46
Weight of Ash (g)	181.98
Ash Content (%)	**97.1%**
Organic Matter (%)	**2.9%**

Tested By JW *Date* 7/29/25 *Checked By* EG *Date* 7/30/25

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SIEVE AND HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	Borrow
Project No.:	2025-173-011	Sample No.:	C-072325-4
Lab ID:	2025-173-011-004	Soil Color:	Reddish Brown

	SIEVE ANALYSIS			HYDROMETER	
USCS	cobbles	gravel	sand	silt and clay fraction	
USDA	cobbles	gravel	sand	silt	clay



USCS Summary

Sieve Size (mm)		Percentage (%)
Greater Than #4	*Gravel*	10.82
#4 to #200	*Sand*	18.26
Finer Than #200	*Silt & Clay*	70.92

USCS Symbol:
cl, ASSUMED

USCS Classification:
LEAN CLAY WITH SAND

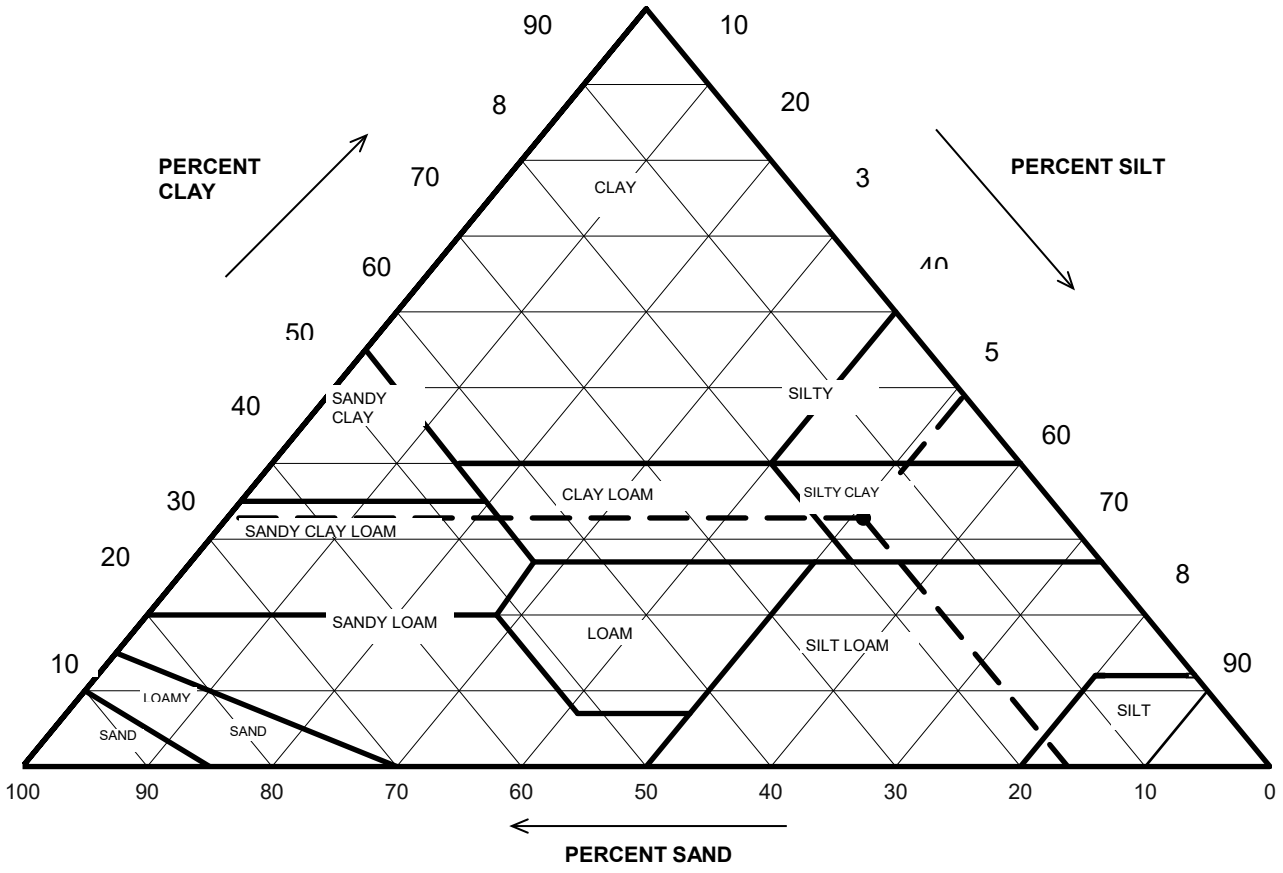
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USDA CLASSIFICATION CHART

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	Borrow
Project No.:	2025-173-011	Sample No.:	C-072325-4
Lab ID:	2025-173-011-004	Soil Color:	Reddish Brown



Particle Size (mm)	Percent Finer	USDA SUMMARY	Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classification
		Gravel	17.24	**0.00**
2	82.76	*Sand*	13.41	**16.21**
0.05	69.35	*Silt*	42.20	**50.99**
0.002	27.15	*Clay*	27.15	**32.80**

USDA Classification ***SILTY CLAY LOAM***

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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WASH SIEVE ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

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Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	Borrow
Project No.:	2025-173-011	Sample No.:	C-072325-4
Lab ID:	2025-173-011-004	Soil Color:	Reddish Brown

Moisture Content of Passing 3/4" Material		Moisture Content of Retained 3/4" Material	
Tare No.:	2043	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	944.48	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	902.92	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	141.32	Weight of Tare (g):	NA
Weight of Water (g):	41.56	Weight of Water (g):	NA
Weight of Dry Soil (g):	761.60	Weight of Dry Soil (g):	NA
Moisture Content (%):	**5.5**	**Moisture Content (%):**	**0.0**

Wet Weight of -3/4" Sample (g):	NA	Weight of the Dry Sample (g):	761.60
Dry Weight of - 3/4" Sample (g):	761.60	Weight of minus #200 Material (g):	540.11
Wet Weight of +3/4" Sample (g):	0.00	Weight of plus #200 Material (g):	221.49
Dry Weight of +3/4" Sample (g):	0.00		
Total Dry Weight of Sample (g):	761.60		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)		Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00		0.00	0.00	100.00	**100.00**
6"	150	0.00		0.00	0.00	100.00	**100.00**
3"	75	0.00		0.00	0.00	100.00	**100.00**
2"	50	0.00	(*)	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00		0.00	0.00	100.00	**100.00**
1"	25	0.00		0.00	0.00	100.00	**100.00**
3/4"	19	0.00		0.00	0.00	100.00	**100.00**
1/2"	12.5	33.60		4.41	4.41	95.59	**95.59**
3/8"	9.5	9.22		1.21	5.62	94.38	**94.38**
#4	4.75	39.58		5.20	10.82	89.18	**89.18**
#10	2	48.90		6.42	17.24	82.76	**82.76**
#20	0.85	38.62	(**)	5.07	22.31	77.69	**77.69**
#40	0.425	19.86		2.61	24.92	75.08	**75.08**
#60	0.25	11.72		1.54	26.46	73.54	**73.54**
#140	0.106	15.60		2.05	28.51	71.49	**71.49**
#200	0.075	4.39		0.58	29.08	70.92	**70.92**
Pan	-	540.11		70.92	100.00	-	**-**

Notes : *(*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample*
*(**) The - 3/4" sieve analysis is based on the Weight of the Dry Sample*

Tested By	DF	Date	7/30/25	Checked By	EG	Date	8/4/25

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

S:Excel\Excel QA\Spreadsheets\SieveHydJ.xls

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HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	Borrow
Project No.:	2025-173-011	Sample No.:	C-072325-4
Lab ID:	2025-173-011-004	Soil Color:	Reddish Brown

Elapsed Time		R Measured	Temp.	Composite Correction	R Corrected	N	K Factor	Diameter	N'
(min)			(°C)			(%)		(mm)	(%)
0		NA	NA	NA	NA	NA	NA	NA	NA
2		53.0	22.7	4.9	48.1	94.1	0.01302	0.0254	**66.7**
5		52.0	22.7	4.9	47.1	92.1	0.01302	0.0162	**65.3**
15		47.0	22.7	4.9	42.1	82.3	0.01302	0.0099	**58.4**
30		43.0	22.7	4.9	38.1	74.5	0.01302	0.0072	**52.9**
88		36.0	22.8	4.9	31.1	60.9	0.01300	0.0045	**43.2**
250		28.0	22.8	4.9	23.1	45.2	0.01300	0.0028	**32.1**
1440		19.5	22.7	4.9	14.6	28.6	0.01302	0.0012	**20.3**

Soil Specimen Data		**Other Corrections**		
Tare No.	686			
Wt. of Tare & Dry Material (g):	146.76	a - Factor	0.993	
Weight of Tare (g):	90.99			
Weight of Deflocculant (g):	5.0	Percent Finer than # 200	70.92	
Weight of Dry Material (g):	50.77			
		Specific Gravity	2.70	Assumed

Note: *Hydrometer test is performed on - # 200 sieve material.*

Tested By TO Date 7/31/25 Checked By EG Date 8/4/25

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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Moisture, Ash, and Organic Matter (Loss on Ignition)

ASTM D 2974-20e1

Client:	GAI Consultants, Inc.
Client Reference:	Cheswick Closure R220960.0
Project No.:	2025-173-011

Method B (To 0.1%)

Moisture Content

ASTM D2216

Lab ID:	004
Boring No.:	Final Closure
Depth (ft):	In Place Soil
Sample No.:	C-072325-4
Tare Number	FF
Weight of Tare & Wet Sample (g)	345.61
Weight of Tare & Dry Sample (g)	334.09
Weight of Tare (g)	115.46
Weight of Water (g)	11.52
Weight of Dry Sample (g)	218.63
Moisture Content	**5.3%**

Method A

Ash Content, Organic Matter

Furnace Temperature (°C)	440
Weight of Tare & Ash (g)	328.41
Weight of Volatiles (g)	5.68
Weight of Ash (g)	212.95
Ash Content (%)	**97.4%**
Organic Matter (%)	**2.6%**

Tested By JW *Date* 7/29/25 *Checked By* EG *Date* 7/30/25

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MOISTURE - DENSITY RELATIONSHIP

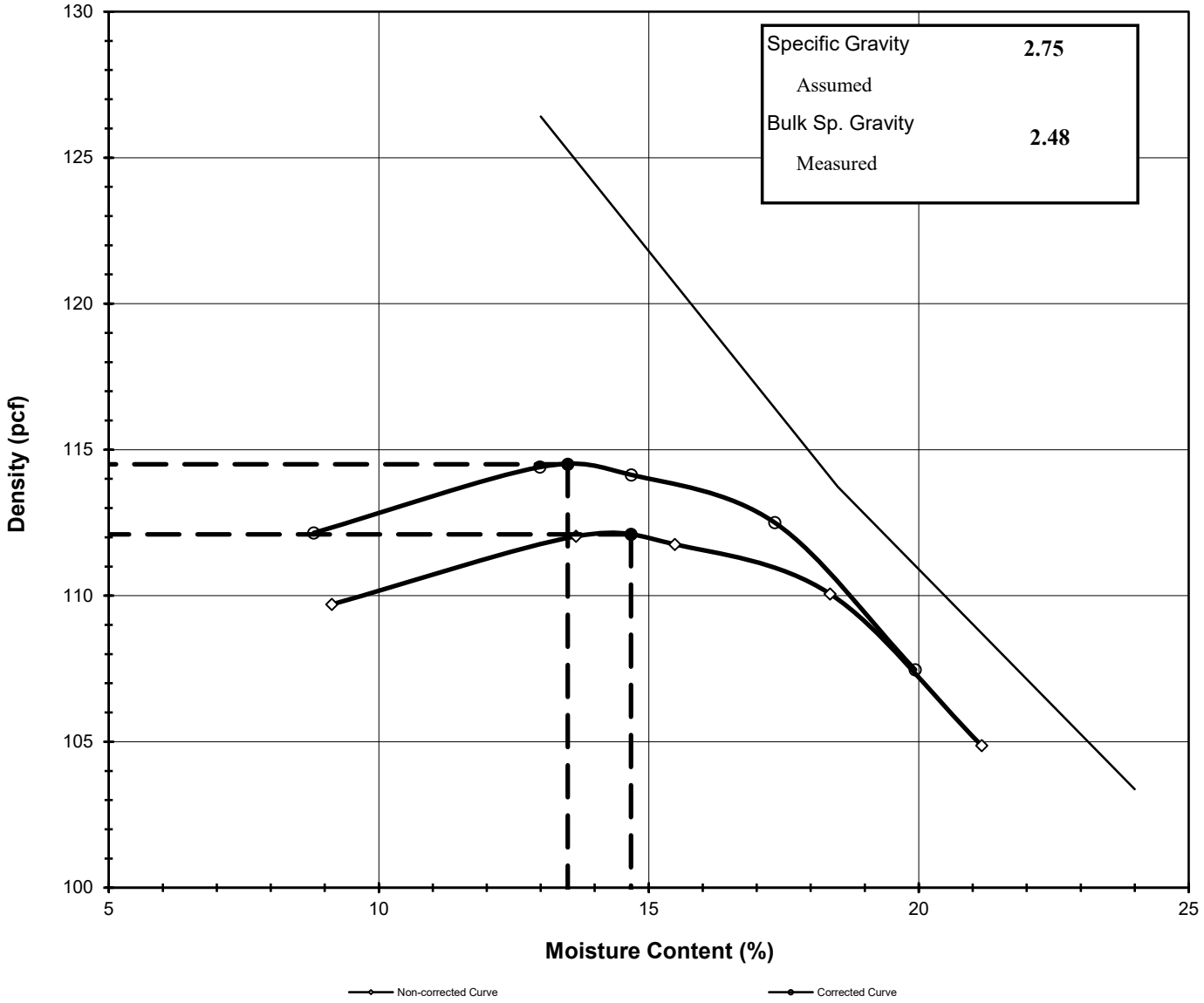
(Corrected for Oversize Particles)

ASTM D 4718-15, D 698-12e2 (SOP-S12,S39)

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-011	Sample No.:	C-072325-Proctor
Lab ID:	2025-173-011-005	Test Method	STANDARD

Visual Description: Reddish Brown Clay with Rock

Optimum Moisture Content (%):	**14.7**	**Corrected Moisture Content (%):**	**13.5**
Maximum Dry Density (pcf):	**112.1**	**Corrected Dry Density (pcf):**	**114.5**



Tested By MLF *Date* 7/30/25 *Checked By* JLK *Date* 8/1/25

 DCN:CT-S39 DATE: 4/21/23, Revision 16

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MOISTURE - DENSITY RELATIONSHIP

(Corrected for Oversize Particles) ASTM D 4718-15, D698-12e2 (SOP-S12,S39)

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-011	Sample No.:	C-072325-Proctor
Lab ID:	2025-173-011-005		

Visual Description: Reddish Brown Clay with Rock

Total Weight of the Sample (g):	NA
As Received Water Content (%):	NA
Assumed Specific Gravity	2.75

Percent Retained on 3/4" (Dry):	7.50
Percent Retained on 3/8" (Dry):	NA
Percent Retained on #4 (Dry):	NA
Oversize Material:	Not included
Procedure Used:	C

TestType:	**STANDARD**
Rammer Weight (lb):	5.5
Rammer Drop (in):	12
Rammer Type:	MECHANICAL
Machine ID:	G441
Mold ID:	G3348
Mold diameter (in):	6"
Weight of the Mold (g):	5713
Volume Of the Mold (cm^3):	2123

Mold/Specimen

Point No.	**1**	**2**	**3**	**4**	**5**
Weight of Mold & Wet Sample (g):	9786	10045	10104	10145	10036
Weight of Mold (g):	5713	5713	5713	5713	5713
Weight of Wet Sample (g):	4073	4332	4391	4432	4323
Mold Volume (cm^3):	2123	2123	2123	2123	2123

Moisture Content/Density

Tare Number:	472	444	455	440	416
Weight of Tare & Wet Sample (g):	452.08	454.52	455.80	450.30	456.75
Weight of Tare & Dry Sample (g):	422.56	410.86	406.92	395.60	394.13
Weight of Tare (g):	99.17	91.06	91.20	97.64	98.28
Weight of Water (g):	29.52	43.66	48.88	54.70	62.62
Weight of Dry Sample (g):	323.39	319.80	315.72	297.96	295.85

Wet Density (g/cm^3):	1.92	2.04	2.07	2.09	2.04
Wet Density (pcf):	119.7	127.3	129.1	130.3	127.1
Moisture Content (%):	**9.1**	**13.7**	**15.5**	**18.4**	**21.2**
Dry Density (pcf):	**109.7**	**112.0**	**111.8**	**110.1**	**104.9**

Zero Air Voids

Moisture Content (%):		13.0	18.5	24.0	
Dry Unit Weight (pcf):		126.4	113.7	103.4	

Calculated Oversize Corrected Moisture & Density

Moisture Content (%):	**8.8**	**13.0**	**14.7**	**17.3**	**19.9**
Dry Density (pcf):	**112.2**	**114.4**	**114.1**	**112.5**	**107.5**

Tested By MLF *Date* 7/30/25 *Checked By* JLK *Date* 8/1/25

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Correction of Unit Weight and Water Content for Soils Containing Oversize Particles by Specific Gravity

ASTM D4718/D4718M-15

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-011	Sample No.:	C-072325-Proctor
Lab ID:	2025-173-011-005		
Visual Description:	Reddish Brown Clay with Rock		

Total Dry Weight of Sample (g): **15581.7**

FINE PORTION		***COARSE PORTION***	
Total Wet Weight of - 3/4" Portion (g):	15979.0	Total Wet Weight of + 3/4" Portion (g):	1224.0
Total Dry Weight of - 3/4" Portion (g):	14412.9	Total Dry Weight of + 3/4" Portion (g):	1168.8
Percent - 3/4" By Dry Weight (%):	92.50	Percent + 3/4" By Dry Weight (%):	7.50

MOISTURE CONTENT OF -3/4" PORTION		***MOISTURE CONTENT OF +3/4" PORTION***	
Tare Number:	2949	Tare Number:	3387
Weight of Tare & Wet Sample (g):	318.03	Weight of Tare & Wet Sample (g):	277.99
Weight of Tare & Dry Sample (g):	287.57	Weight of Tare & Dry Sample (g):	265.77
Weight of Tare (g):	7.24	Weight of Tare (g):	7.00
Weight of Water (g):	30.46	Weight of Water (g):	12.22
Weight of Dry Sample (g):	280.33	Weight of Dry Sample (g):	258.77
Moisture Content (%):	10.87	**Moisture Content (%):**	4.72

SPECIFIC GRAVITY DETERMINATION

Weight of Basket in Air (g):	1032.7
Weight of Saturated Surface Dry Sample & Basket in Air (g):	1849.8
Weight of Saturated Surface Dry Sample in Air (g):	817.1
Weight of Basket in Water (g):	897.7
Weight of Saturated Sample & Basket in Water (g):	1397.9
Weight of Saturated Sample in Water (g):	500.2
Tare No.:	1408
Weight of Tare and Dried Sample (g):	962.1
Weight of Tare (g):	174.8
Weight of Dried Soil (g):	787.3

Bulk Specific Gravity (+3/4"): **2.48**

Tested By DF *Date* 7/29/25 *Checked By* EG *Date* 7/30/25

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Agricultural Analytical Services Laboratory
The Pennsylvania State University
111 Ag Analytical Svcs Lab
University Park, PA 16802
(814) 863-0841 aaslab@psu.edu www.aasl.psu.edu

SOIL TEST REPORT FOR:	ADDITIONAL COPY TO:
GEOTECHNICS, INC 544 BRADDOCK AVE EAST PITTSBURGH PA 15112	

DATE	LAB #	SERIAL #	COUNTY	ACRES	ASCS ID	FIELD ID	SOIL
08/08/2025	S25-44601		Allegheny			2025-173-011-002	

SOIL NUTRIENT LEVELS			Below Optimum	Optimum	Above Optimum
[1]Soil pH	6.7				
[2]Phosphorus (P)	12	ppm			
[2]Potassium (K)	94	ppm			
[2]Magnesium (Mg)	335	ppm			

RECOMMENDATIONS: *(See back messages for important information)*

Limestone*: NONE **Magnesium (Mg):** NONE

Calcium Carbonate equivalent

Plant Nutrients: ***(If manure will be applied, adjust these recommendations accordingly. See back of report.)***

Year	Crop	Expected Yield	Nitrogen (lb N/A)	Phosphate (lb P_2O_5/A)	Potash (lb K_2O/A)	
1	Disturbed Lands	0	120	110	120	*See ST2 for other crop recommendations*

80 lb/A of the N recommendation should be from a slow release source. When available, use manure or other organic material to supply this slow release N.

2	0	0	0	*See ST2 for other crop recommendations*

3	0	0	0	*See ST2 for other crop recommendations*

ADDITIONAL RESULTS:						Optional Tests:			[2]Trace Elements		
[2]Calcium (ppm)	[3]Acidity (meq/100 g)	[4]CEC (meq/100 g)	% Saturation of the CEC K	Mg	Ca	Organic Matter %	Nitrate-N ppm	Salts mmhos/cm	*See back for comments* Zinc ppm	Copper ppm	Sulfur ppm
4570	2.0	20.0	1.2	13.9	74.9				1.6	2.4	22.8

Test Methods: [1]1:1 soil:water pH, [2]Mehlich 3 (ICP), [3]Mehlich Buffer pH, [4]Summation of Cations

The high calcium level in this sample indicates the probable presence of soluble calcium. Therefore the CEC and the percent saturations were calculated using a maximum exchangeable calcium level of 15 meq/100 g.

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Agronomy

Recommendation Messages

Enclosures

ST-2 Fertilizer Recommendation Table Guidelines for making recommendations for other crops and for adjusting for a different expected yield.

ST-4 Interpreting Soil Tests for Agronomic Crops Explains the soil test report and provides additional information on the recommendations.

Soil Nutrient Levels Soil nutrient levels are given as parts per million (ppm) elemental P, K , and Mg. As a rule of thumb to convert ppm to lb/A multiply ppm x 2. The elemental results in lb/A can be converted to oxide forms using the following conversions: P x 2.3=P_2O_5, K x 1.2=K_2O, Mg x 1.6=MgO

Below Optimum-Nutrient is deficient. There should be an economic response to adding the recommended nutrient.	**Optimum-**Nutrient is adequate. There will be no yield response to adding more of a nutrient but a recommendation is made to replace what the crop removes and thus maintain the soil test in the optimum range.	**Above Optimum-**The nutrient is more than adequate. Not only will there not be a yield response but the soil nutrient levels are also adequate to accommodate crop removal.

Recommendations N,P, and K recommendations are made for three crop years on this field. New samples should be taken after 3 years. The recommendations for the 2nd and 3rd year assume that the earlier recommendations were followed. These recommendations are based on the results of the soil test and the information provided with the sample. If you think that there is an error on the report, contact the lab at the address on the front of the report. Tables that can be used to adjust or change recommendations for all crops based on the soil test can be found on the web at: www.aasl.psu.edu.

Limestone Recommendations The recommended limestone application should be adequate for 3 years. Limestone recommendations are based on 100% calcium carbonate equivalent limestone and assume "Fine-sized" limestone with 95% passing 20 mesh, 60% passing 60 mesh and 50% passing 100 mesh. Use "ST-2 Liming Materials Conversion Table (enclosed) to adjust for limestone quality. Also see Agronomy Facts #3 "Soil Acidity and Aglime".

Magnesium Only one Mg Recommendation is made for three years. Magnesium is most economically applied by using a limestone containing Mg. Low Mg levels in soils may result in low Mg levels in forage crops especially if a significant amount of N and/or K fertilizer is applied. This can result in potentially fatal grass tetany in animals. Use caution if grazing. Apply the recommended Mg and be sure your feed rations are properly balanced.

Starter Fertilizer Starter fertilizer is important to get a corn crop off to a good start when planting in cold, wet conditions. However, on optimum or higher testing soils, as planting dates get later and soils warm up, the benefit from starter fertilizer goes down. An N only starter is often adequate when soil test levels are above optimum. The correct material, rate, and placement for starter fertilizer are critical to be effective. See Agronomy Facts #51 "Starter Fertilizer".

Nitrogen Nitrogen recommendations on this report are not based on a soil test. They are based on crop requirements for the expected yield of the crop to be grown. The pre-sidedress nitrate soil tests (PSNT) and the Chlorophyll meter test are both available for improving nitrogen recommendations on corn especially when manure is being applied. See: Agronomy Facts 17 "Pre-sidedress Soil Nitrate Test for Corn" and Agronomy Facts 53 "The Early-season Chlorophyll Meter Test for Corn". For optimum efficiency, N should be applied as close to the time of crop need as practical. For corn apply 50-90% of the N when the corn is 10-20" tall. For winter grains apply the N in the spring prior to growth stage 5. For forage grasses split the recommended N for each cutting.

Manure Manure is a very important part of a fertility program. Manure applications may supply all or most of the nutrients recommended and in some cases may apply significantly more than the crop requires. Manure nutrients should be taken into account in developing your fertility program. For details on how to do this see the Penn State Agronomy Guide. Manure analysis kits are available through your county Extension office.

Very High Soil Test Levels Very high soil test levels should be avoided as much as possible. High soil nutrient levels might not only represent an economic loss but they may also indicate potential crop, animal or environmental problems.

Very high pH can results in micronutrient deficiencies and may affect the activity of some pesticides resulting in injury or poor pest control.

Very high phosphorus levels in the soil may lead to crop production problems especially with no manure and may result in potentially harmful P loss to the environment. Best management practices may be necessary to reduce the potential for environmental problems with P.

Zinc, Copper and Sulfur Results Normal ranges for zinc (Zn) copper (Cu), and sulfur (S) in Pennsylvania soils are listed below. These are not used to make recommendations but rather to identify potential deficiencies of Zn and S or toxicity of Cu. While Zn and S deficiencies are not common in PA, they may occur on soils testing below the normal range. Zn deficiencies are more likely to occur when soil levels are low and soil pH 7.0 or higher, especially on lighter soils. Recent research in Pennsylvania on sulfur fertility suggests that when the Mehlich 3 S level is below 15 ppm, there is an approximately 50% chance that yield will increase by adding S fertilizer. When Mehlich 3 S levels are above 15 ppm, S is usually adequate and there is a very low chance of a yield increase from adding S fertilizer. Both Zn or S deficiencies should be confirmed with plant analysis. Cu toxicity may occur at levels testing well above the normal range, but have not been observed in Pennsylvania in agronomic crops even on soils testing 2 to 3 times above the normal range. For additional information, see ST4.

Normal ranges of Zn, Cu and S in Pennsylvania Soils (Mehlich 3)		
Zn (ppm)	Cu (ppm)	S (ppm)
1.1 - 9.4	1.2 - 5.5	15 - 25

Distribution of Soil Test Results Summaries of soil test results may be used in educational programs. However, individual results will not be released outside of Penn State without permission of the client. Electronic copies of your results are available to you, contact the lab for more information.

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GEOTECHNICS, INC 544 BRADDOCK AVE EAST PITTSBURGH PA 15112	

DATE	LAB #	SERIAL #	COUNTY	ACRES	ASCS ID	FIELD ID	SOIL
08/08/2025	S25-44602		Allegheny			2025-173-011-003	

SOIL NUTRIENT LEVELS			Below Optimum	Optimum	Above Optimum
[1]Soil pH	5.9				
[2]Phosphorus (P)	19	ppm			
[2]Potassium (K)	91	ppm			
[2]Magnesium (Mg)	266	ppm			

RECOMMENDATIONS: *(See back messages for important information)*

Limestone*: 7000 lb/A for a target pH of 6.5. **Magnesium (Mg):** NONE

Calcium Carbonate equivalent

Plant Nutrients: ***(If manure will be applied, adjust these recommendations accordingly. See back of report.)***

Year	Crop	Expected Yield	Nitrogen (lb N/A)	Phosphate (lb P_2O_5/A)	Potash (lb K_2O/A)	
1	Disturbed Lands	0	120	100	120	*See ST2 for other crop recommendations*

80 lb/A of the N recommendation should be from a slow release source. When available, use manure or other organic material to supply this slow release N.

2	0	0	0	*See ST2 for other crop recommendations*	

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2453	8.7	23.4	1.0	9.5	52.4				1.6	1.5	37.8

Test Methods: [1]1:1 soil:water pH, [2]Mehlich 3 (ICP), [3]Mehlich Buffer pH, [4]Summation of Cations

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August 29, 2025

Project No. 2025-173-012

Cory White
GAI Consultants, Inc.
385 East Waterfront Drive
Homestead, PA 15120

Transmittal
Laboratory Test Results
Cheswick Closure R220960.00

Please find attached the laboratory test results for the above referenced project. The tests were outlined on the Project Verification Form that was transmitted to your firm prior to the testing. The testing was performed in general accordance with the methods listed on the enclosed data sheets. The test results are believed to be representative of the samples that were submitted for testing and are indicative only of the specimens that were evaluated. We have no direct knowledge of the origin of the samples and imply no position with regard to the nature of the test results, i.e. pass/fail and no claims as to the suitability of the material for its intended use.

The test data and all associated project information provided shall be held in strict confidence and disclosed to other parties only with authorization by our Client. The test data submitted herein is considered integral with this report and is not to be reproduced except in whole and only with the authorization of the Client and Geotechnics. The remaining sample materials for this project will be retained for a minimum of 90 days as directed by the Geotechnics' Quality Program.

We are pleased to provide these testing services. Should you have any questions or if we may be of further assistance, please contact our office.

Respectfully submitted,
Geotechnics, Inc.

Nathan Melaro
Director of Operations

We understand that you have a choice in your laboratory services and we thank you for choosing Geotechnics.

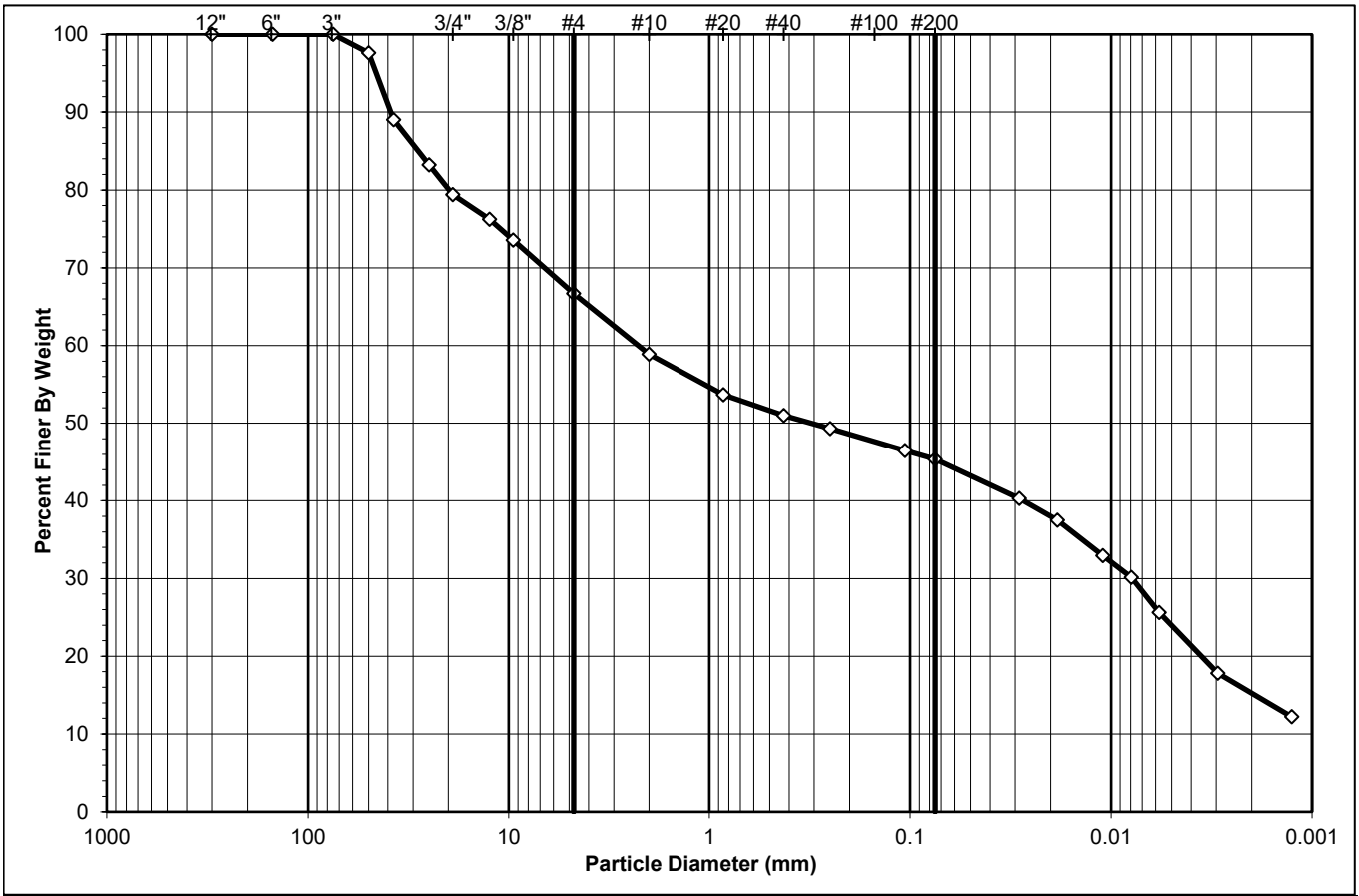
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SIEVE AND HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-012	Sample No.:	C-081225-1
Lab ID:	2025-173-012-001	Soil Color:	Brown

	SIEVE ANALYSIS			HYDROMETER	
USCS	cobbles	gravel	sand	silt and clay fraction	
USDA	cobbles	gravel	sand	silt	clay



USCS Summary

Sieve Size (mm)		Percentage (%)
Greater Than #4	*Gravel*	33.28
#4 to #200	*Sand*	21.35
Finer Than #200	*Silt & Clay*	45.37

USCS Symbol:
gc, ASSUMED

USCS Classification:
CLAYEY GRAVEL WITH SAND

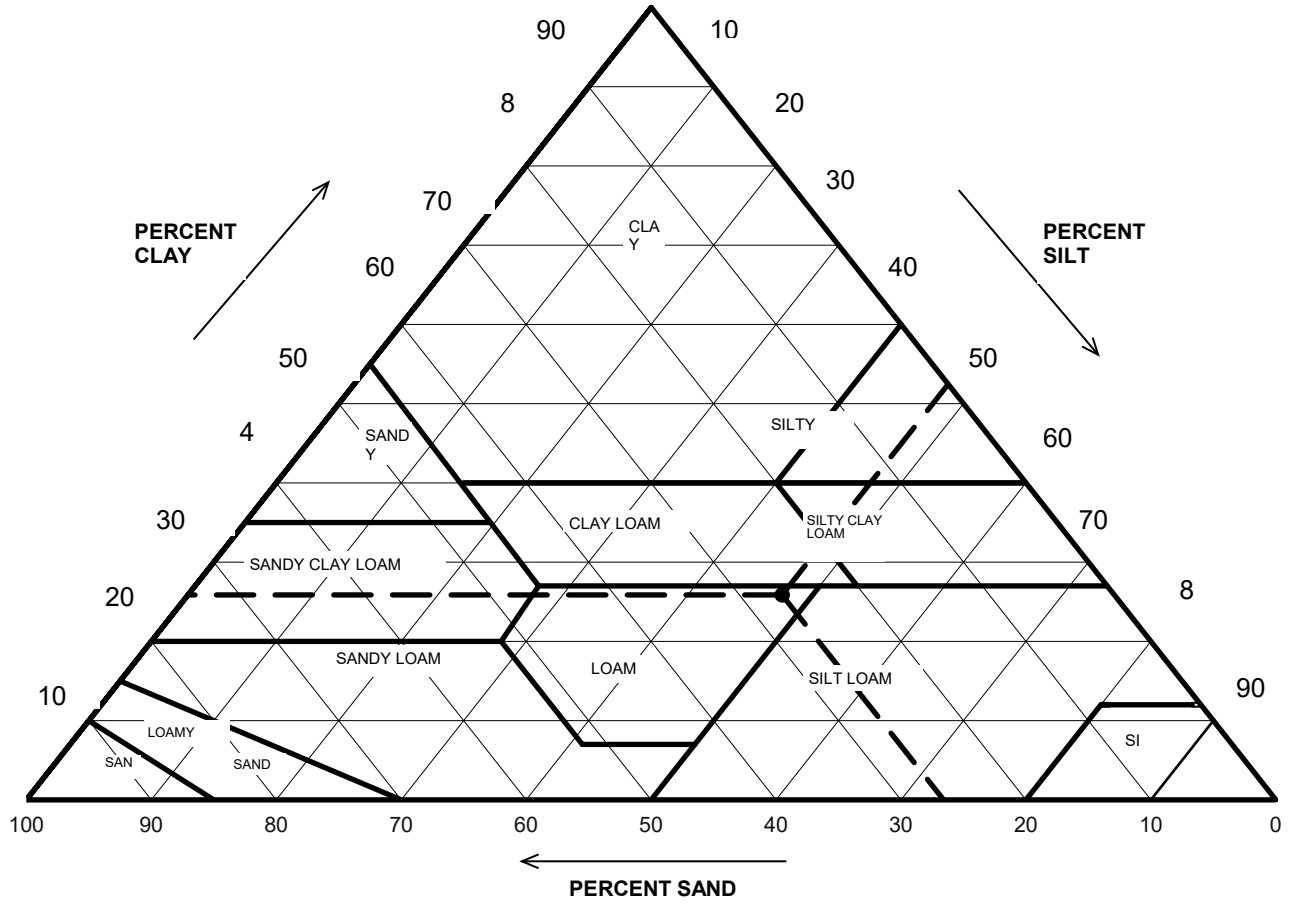
DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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USDA Classification Chart

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-012	Sample No.:	C-081225-1
Lab ID:	2025-173-012-001	Soil Color:	Brown



Particle Size (mm)	Percent Finer	USDA Summary	Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classification
		Gravel	41.09	**0.00**
2	58.91	*Sand*	15.66	**26.59**
0.05	43.25	*Silt*	28.01	**47.55**
0.002	15.24	*Clay*	15.24	**25.86**

USDA Classification ***LOAM***

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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WASH SIEVE ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-012	Sample No.:	C-081225-1
Lab ID:	2025-173-012-001	Soil Color:	Brown

Moisture Content of Passing 3/4" Material		Moisture Content of Retained 3/4" Material	
Tare No.:	1467	Tare No.:	3208
Wt. of Tare & Wet Sample (g):	1012.18	Weight of Tare & Wet Sample (g):	389.28
Wt. of Tare & Dry Sample (g):	930.55	Weight of Tare & Dry Sample (g):	373.25
Weight of Tare (g):	146.23	Weight of Tare (g):	7.19
Weight of Water (g):	81.63	Weight of Water (g):	16.03
Weight of Dry Soil (g):	784.32	Weight of Dry Soil (g):	366.06
Moisture Content (%):	**10.4**	**Moisture Content (%):**	**4.4**

Wet Weight of -3/4" Sample (g):	6778.00	Weight of the Dry Sample (g):	784.32
Dry Weight of - 3/4" Sample (g):	6139.06	Weight of minus #200 Material (g):	448.03
Wet Weight of +3/4" Sample (g):	1660.00	Weight of plus #200 Material (g):	336.29
Dry Weight of +3/4" Sample (g):	1590.36		
Total Dry Weight of Sample (g):	7729.42	**J - Factor (Percent Finer than 3/4")**	**79.42%**

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)		Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00		0.00	0.00	100.00	**100.00**
6"	150	0.00		0.00	0.00	100.00	**100.00**
3"	75	0.00		0.00	0.00	100.00	**100.00**
2"	50	191.00	(*)	2.37	2.37	97.63	**97.63**
1 1/2"	37.5	694.00		8.60	10.97	89.03	**89.03**
1"	25	469.00		5.81	16.78	83.22	**83.22**
3/4"	19	306.00		3.79	20.58	79.42	**79.42**
1/2"	12.5	31.41		4.00	4.00	96.00	**76.24**
3/8"	9.5	26.26		3.35	7.35	92.65	**73.58**
#4	4.75	67.74		8.64	15.99	84.01	**66.72**
#10	2	77.18		9.84	25.83	74.17	**58.91**
#20	0.85	51.61	(**)	6.58	32.41	67.59	**53.68**
#40	0.425	26.52		3.38	35.79	64.21	**51.00**
#60	0.25	16.79		2.14	37.93	62.07	**49.30**
#140	0.106	27.89		3.56	41.49	58.51	**46.47**
#200	0.075	10.89		1.39	42.88	57.12	**45.37**
Pan	-	448.03		57.12	100.00	-	**-**

NOTES: *(*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample*
*(**) The - 3/4" sieve analysis is based on the Weight of the Dry Sample*

Tested By	DF	Date	8/19/25	Checked By	EG	Date	8/22/25

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-012	Sample No.:	C-081225-1
Lab ID:	2025-173-012-001	Soil Color:	Brown

Elapsed Time		R Measured	Temp.	Composite Correction	R Corrected	N	K Factor	Diameter	N'
(min)			(°C)			(%)		(mm)	(%)
0		NA	NA	NA	NA	NA	NA	NA	NA
2		40.5	22.7	4.9	35.6	88.9	0.01302	0.0286	**40.3**
5		38.0	22.7	4.9	33.1	82.6	0.01302	0.0185	**37.5**
15		34.0	22.7	4.9	29.1	72.6	0.01302	0.0110	**33.0**
30		31.5	22.7	4.9	26.6	66.4	0.01302	0.0079	**30.1**
60		27.5	22.8	4.9	22.6	56.5	0.01300	0.0058	**25.6**
250		20.5	23.1	4.8	15.7	39.2	0.01296	0.0029	**17.8**
1440		15.5	23.3	4.7	10.8	26.9	0.01293	0.0013	**12.2**

Soil Specimen Data		**Other Corrections**	
Tare No.	637		
Wt. of Tare & Dry Material (g):	137.59	a - Factor	0.993
Weight of Tare (g):	92.81		
Weight of Deflocculant (g):	5.0	Percent Finer than # 200	45.37
Weight of Dry Material (g):	39.78		
		Specific Gravity	2.70 Assumed

Note: *Hydrometer test is performed on - # 200 sieve material.*

Tested By TO Date 8/20/25 Checked By EG Date 8/22/25

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

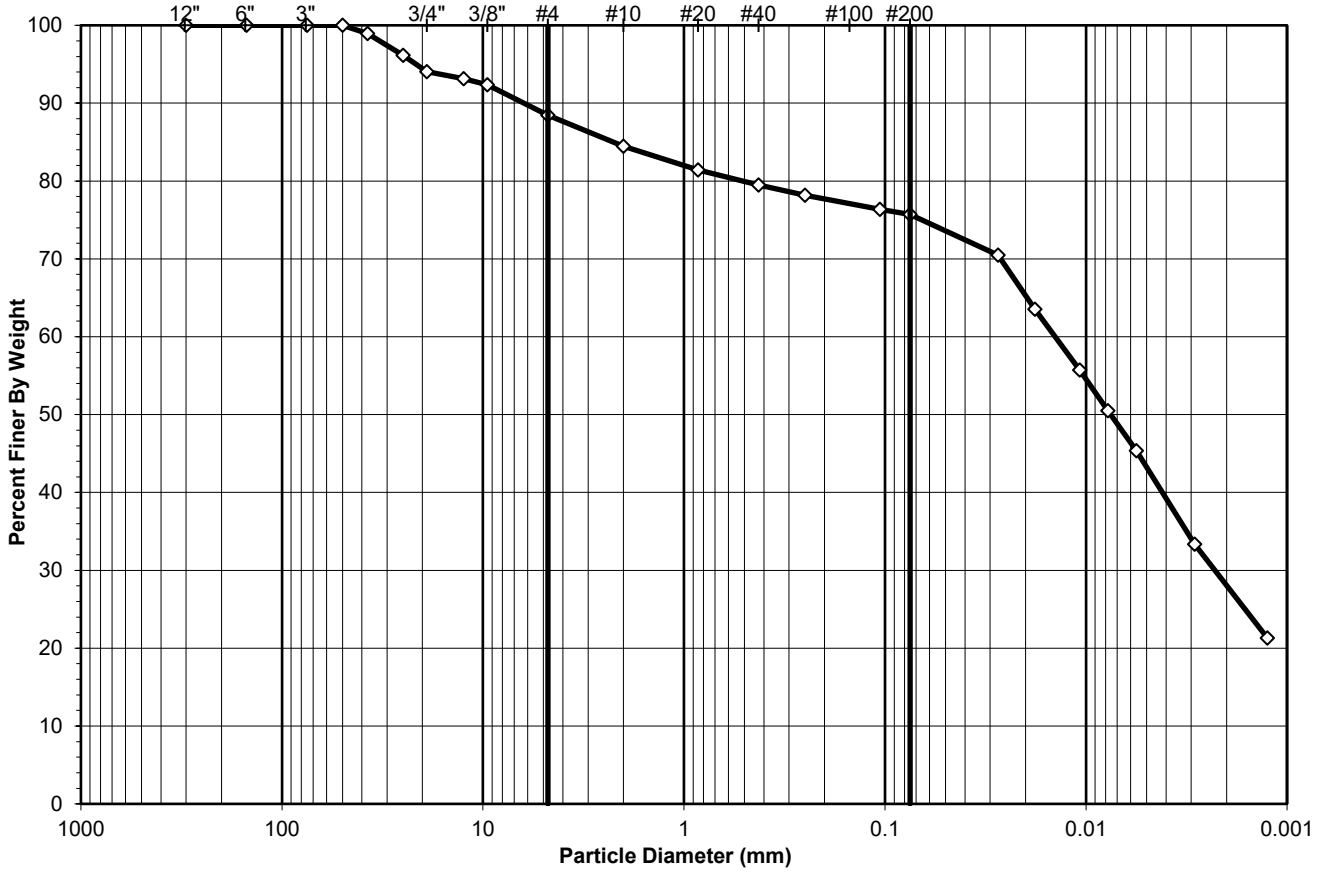
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SIEVE AND HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-012	Sample No.:	C-081225-2
Lab ID:	2025-173-012-002	Soil Color:	Brown

	SIEVE ANALYSIS			HYDROMETER	
USCS	cobbles	gravel	sand	silt and clay fraction	
USDA	cobbles	gravel	sand	silt	clay



USCS Summary

Sieve Size (mm)		Percentage (%)
Greater Than #4	*Gravel*	11.53
#4 to #200	*Sand*	12.78
Finer Than #200	*Silt & Clay*	75.69

USCS Symbol:
cl, ASSUMED

USCS Classification:
LEAN CLAY WITH SAND

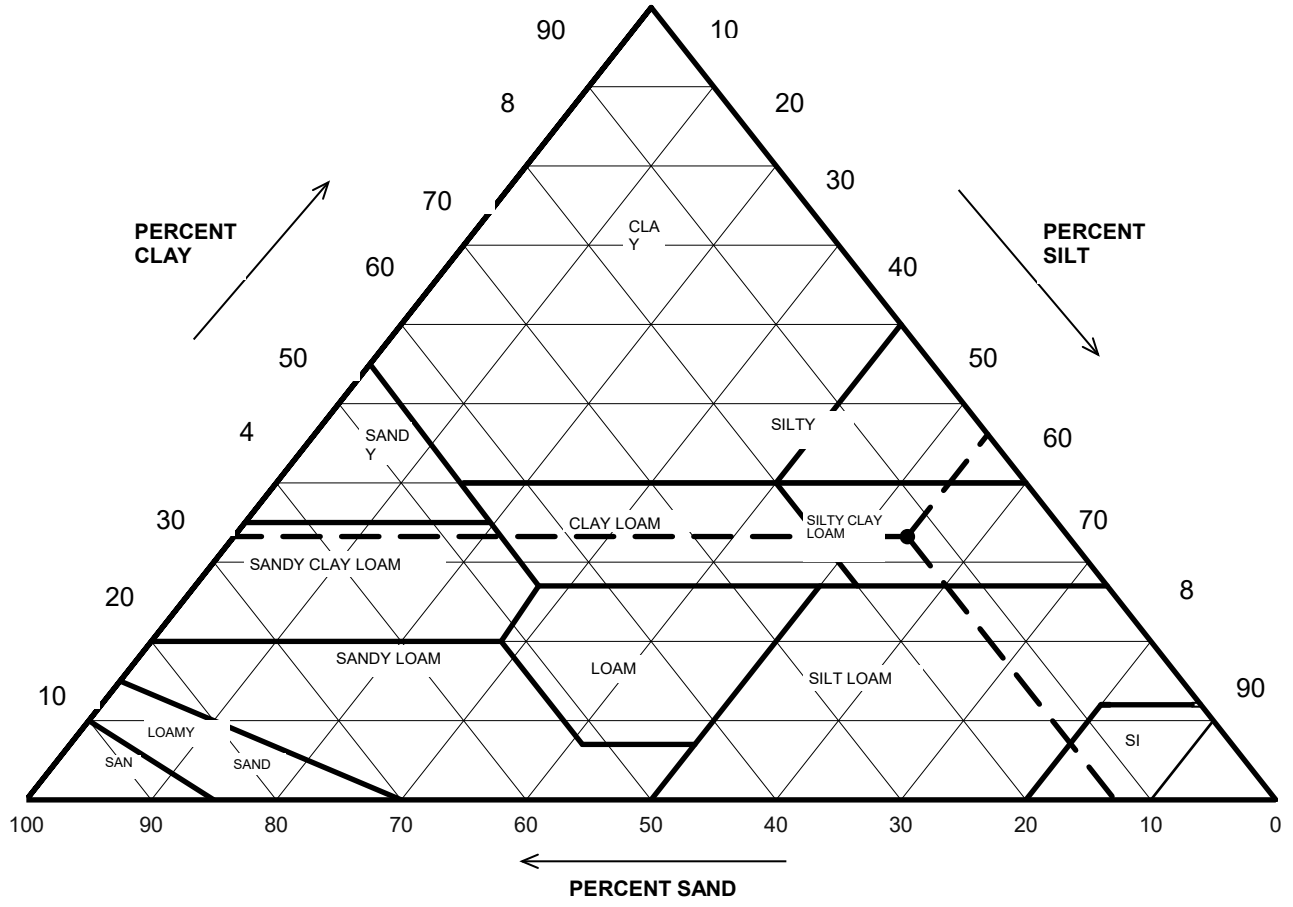
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USDA Classification Chart

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-012	Sample No.:	C-081225-2
Lab ID:	2025-173-012-002	Soil Color:	Brown



Particle Size (mm)	Percent Finer	USDA Summary	Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classification
		Gravel	15.52	**0.00**
2	84.48	*Sand*	10.88	**12.88**
0.05	73.59	*Silt*	45.52	**53.89**
0.002	28.07	*Clay*	28.07	**33.23**

USDA Classification ***SILTY CLAY LOAM***

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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WASH SIEVE ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-012	Sample No.:	C-081225-2
Lab ID:	2025-173-012-002	Soil Color:	Brown

Moisture Content of Passing 3/4" Material		Moisture Content of Retained 3/4" Material	
Tare No.:	1544	Tare No.:	3332
Wt. of Tare & Wet Sample (g):	1014.83	Weight of Tare & Wet Sample (g):	406.73
Wt. of Tare & Dry Sample (g):	891.55	Weight of Tare & Dry Sample (g):	386.99
Weight of Tare (g):	148.95	Weight of Tare (g):	7.35
Weight of Water (g):	123.28	Weight of Water (g):	19.74
Weight of Dry Soil (g):	742.6	Weight of Dry Soil (g):	379.64
Moisture Content (%):	**16.6**	**Moisture Content (%):**	**5.2**

Wet Weight of -3/4" Sample (g):	14666.00	Weight of the Dry Sample (g):	742.60
Dry Weight of - 3/4" Sample (g):	12577.92	Weight of minus #200 Material (g):	597.59
Wet Weight of +3/4" Sample (g):	836.00	Weight of plus #200 Material (g):	145.01
Dry Weight of +3/4" Sample (g):	794.68		
Total Dry Weight of Sample (g):	13372.60	**J - Factor (Percent Finer than 3/4")**	**94.06%**

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)		Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00		0.00	0.00	100.00	**100.00**
6"	150	0.00		0.00	0.00	100.00	**100.00**
3"	75	0.00		0.00	0.00	100.00	**100.00**
2"	50	0.00	(*)	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	146.00		1.04	1.04	98.96	**98.96**
1"	25	395.00		2.81	3.85	96.15	**96.15**
3/4"	19	295.00		2.10	5.94	94.06	**94.06**
1/2"	12.5	7.21		0.97	0.97	99.03	**93.14**
3/8"	9.5	6.07		0.82	1.79	98.21	**92.38**
#4	4.75	30.86		4.16	5.94	94.06	**88.47**
#10	2	31.51		4.24	10.19	89.81	**84.48**
#20	0.85	24.09	(**)	3.24	13.43	86.57	**81.42**
#40	0.425	15.11		2.03	15.47	84.53	**79.51**
#60	0.25	10.49		1.41	16.88	83.12	**78.18**
#140	0.106	14.45		1.95	18.82	81.18	**76.35**
#200	0.075	5.22		0.70	19.53	80.47	**75.69**
Pan	-	597.59		80.47	100.00	-	**-**

NOTES: *(*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample*
*(**) The - 3/4" sieve analysis is based on the Weight of the Dry Sample*

Tested By	DF	Date	8/19/25	Checked By	EG	Date	8/22/25

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-012	Sample No.:	C-081225-2
Lab ID:	2025-173-012-002	Soil Color:	Brown

Elapsed Time		R Measured	Temp.	Composite Correction	R Corrected	N	K Factor	Diameter	N'
(min)			(°C)			(%)		(mm)	(%)
0		NA	NA	NA	NA	NA	NA	NA	NA
2		45.5	22.7	4.9	40.6	93.1	0.01302	0.0274	**70.5**
5		41.5	22.7	4.9	36.6	83.9	0.01302	0.0179	**63.5**
15		37.0	22.7	4.9	32.1	73.6	0.01302	0.0108	**55.7**
30		34.0	22.7	4.9	29.1	66.7	0.01302	0.0078	**50.5**
60		31.0	22.8	4.9	26.1	59.9	0.01300	0.0056	**45.4**
250		24.0	23.1	4.8	19.2	44.1	0.01296	0.0029	**33.4**
1440		17.0	23.3	4.7	12.3	28.1	0.01293	0.0013	**21.3**

Soil Specimen Data		**Other Corrections**		
Tare No.	301			
Wt. of Tare & Dry Material (g):	149.42	a - Factor	0.993	
Weight of Tare (g):	101.12			
Weight of Deflocculant (g):	5.0	Percent Finer than # 200	75.69	
Weight of Dry Material (g):	43.30			
		Specific Gravity	2.70	Assumed

Note: *Hydrometer test is performed on - # 200 sieve material.*

Tested By TO Date 8/20/25 Checked By EG Date 8/22/25

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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PERMEABILITY TEST

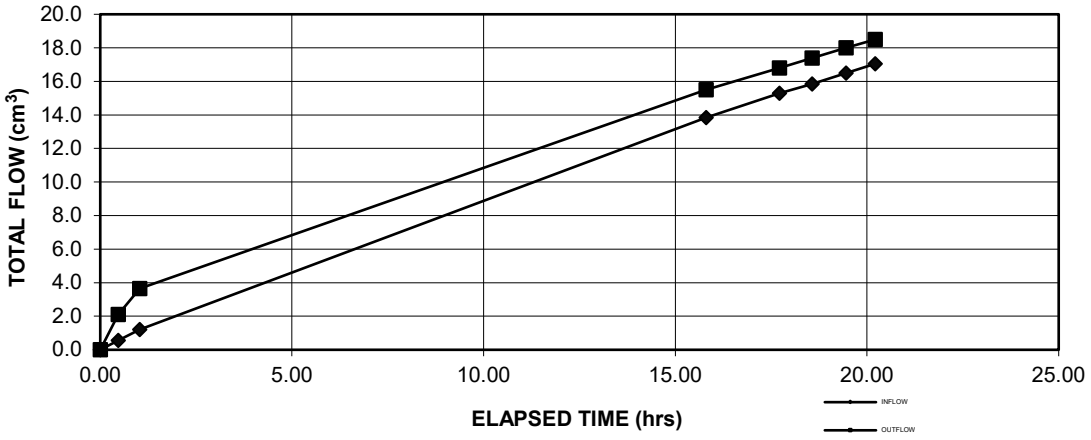
ASTM D 5084-16a Method C

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Project:	Cheswick Closure R220960.00	Depth (ft):	In place Soil
Project No.:	2025-173-012	Sample No.:	C-081225-2
Lab ID No.:	2025-173-012-002	Avg. Effective Consol. Pressure (psi):	6.25

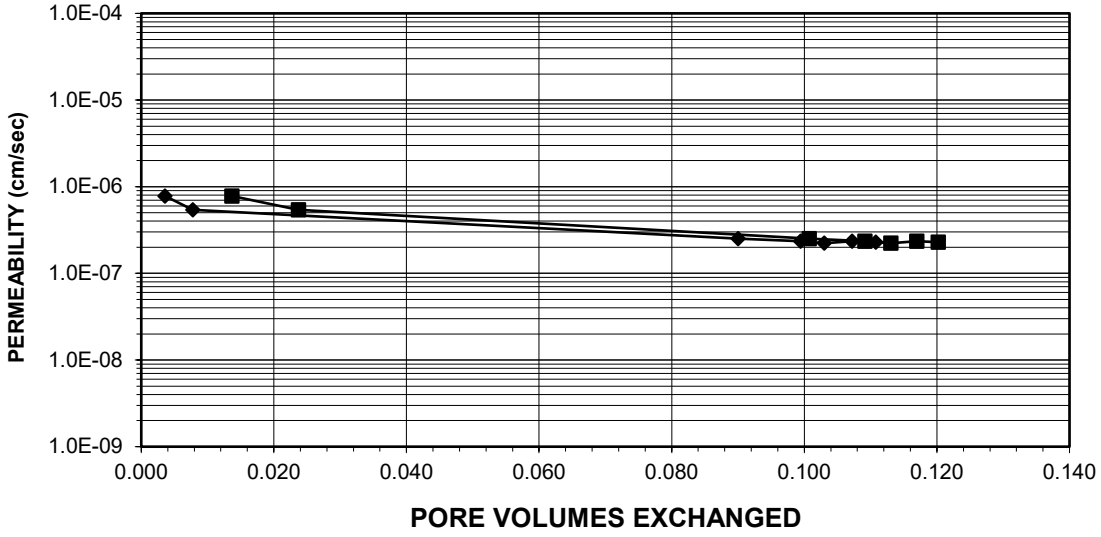
AVERAGE PERMEABILITY = 2.3E-07 cm/sec @ 20°C

AVERAGE PERMEABILITY = 2.3E-09 m/sec @ 20°C

TOTAL FLOW vs. ELAPSED TIME



PORE VOLUMES EXCHANGED vs. PERMEABILITY



Tested By: WT Date: 8/25/25 Checked By: JLK Date: 8/29/25

DCN: CT-22 DATE: 1/1/17 REVISION: 11

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PERMEABILITY TEST

ASTM D 5084-16a Method C

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Project:	Cheswick Closure R220960.00	Depth (ft):	In place Soil
Project No.:	2025-173-012	Sample No.:	C-081225-2
Lab ID No.:	2025-173-012-002	Avg. Effective Consol. Pressure (psi):	6.25

Specific Gravity: 2.70 Assumed
Sample Condition: Remolded

Visual Description: Reddish Brown Clay with Rock

Permeant Type: Deaired Water

MOISTURE CONTENT:	BEFORE TEST	AFTER TEST
Tare Number	3048	1710
Weight of Tare & Wet Sample (g)	147.44	880.86
Weight of Tare & Dry Sample (g)	128.60	733.46
Weight of Tare (g)	7.24	81.46
Weight of Water (g)	18.84	147.40
Weight of Dry Sample (g)	121.36	652.00
Moisture Content (%)	**15.5**	**22.6**

SPECIMEN:	BEFORE TEST	AFTER TEST
Weight of Tube & Wet Sample (g)	1671.58	NA
Weight of Tube (g)	917.30	NA
Weight of Wet Sample (g)	754.28	800.53
Length 1 (in)	3.490	3.550
Length 2 (in)	3.490	3.589
Length 3 (in)	3.490	3.581
Top Diameter (in)	2.870	2.930
Middle Diameter (in)	2.870	2.937
Bottom Diameter (in)	2.870	2.933
Average Length (in)	3.49	3.57
Average Area (in^2)	6.47	6.76
Sample Volume (cm^3)	369.98	395.72
Unit Wet Weight (g/cm^3)	2.04	2.02
Unit Wet Weight (pcf)	127.3	126.3
Unit Dry Weight (pcf)	110.2	103.0
Unit Dry Weight (g/cm^3)	1.76	1.65
Void Ratio, e	0.53	0.64
Porosity, n	0.35	0.39
Pore Volume (cm^3)	128.2	153.9
Total Weight of Sample After Test (g)		799.63

Tested By: WT Date: 8/25/25 Checked By: JLK Date: 8/29/25

DCN: CT-22 DATE: 1/1/17 REVISION: 11

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PERMEABILITY TEST

ASTM D 5084-16a Method C

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geotechnical & geosynthetic testing

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Project:	Cheswick Closure R220960.00	Depth (ft):	In place Soil
Project No.:	2025-173-012	Sample No.:	C-081225-2
Lab ID No.:	2025-173-012-002	Avg. Effective Consol. Pressure (psi):	6.25

Pressure Heads (Constant)	
Top Cap (psi)	77.5
Bottom Cap (psi)	80.0
Cell (psi)	85.0
Total Pressure Head (cm)	175.8
Hydraulic Gradient	19.36

Final Sample Dimensions	
Sample Length (cm), L	9.08
Sample Diameter (cm)	7.45
Sample Area (cm^2), A	43.60
Inflow Burette Area (cm^2), a-in	0.962
Outflow Burette Area (cm^2), a-out	0.962
B Parameter (%)	96

AVERAGE PERMEABILITY = 2.3E-07 cm/sec @ 20°C

AVERAGE PERMEABILITY = 2.3E-09 m/sec @ 20°C

DATE	TIME		ELAPSED TIME t	TOTAL INFLOW	TOTAL OUTFLOW	TOTAL HEAD h	FLOW (0 flow)	TEMP.	INCREMENTAL PERMEABILITY @ 20°C
(mm/dd/yy)	(hr)	(min)	(hr)	(cm^3)	(cm^3)	(cm)	(1 stop)	(°C)	(cm/sec)
8/27/2025	15	38	0.000	0.0	0.0	200.6	0	22.0	NA
8/27/2025	16	6	0.467	0.6	2.1	197.8	0	22.0	7.8E-07
8/27/2025	16	40	1.033	1.2	3.7	195.5	0	22.0	5.4E-07
8/28/2025	7	26	15.800	13.9	15.5	170.2	0	21.5	2.5E-07
8/28/2025	9	21	17.717	15.3	16.8	167.4	0	21.7	2.3E-07
8/28/2025	10	12	18.567	15.9	17.4	166.2	0	21.9	2.2E-07
8/28/2025	11	5	19.450	16.5	18.0	164.9	0	21.9	2.3E-07
8/28/2025	11	51	20.217	17.1	18.5	163.8	1	22.0	2.3E-07

Tested By: WT Date: 8/25/25 Checked By: JLK Date: 8/29/25

DCN: CT-22 DATE: 1/1/17 REVISION: 11

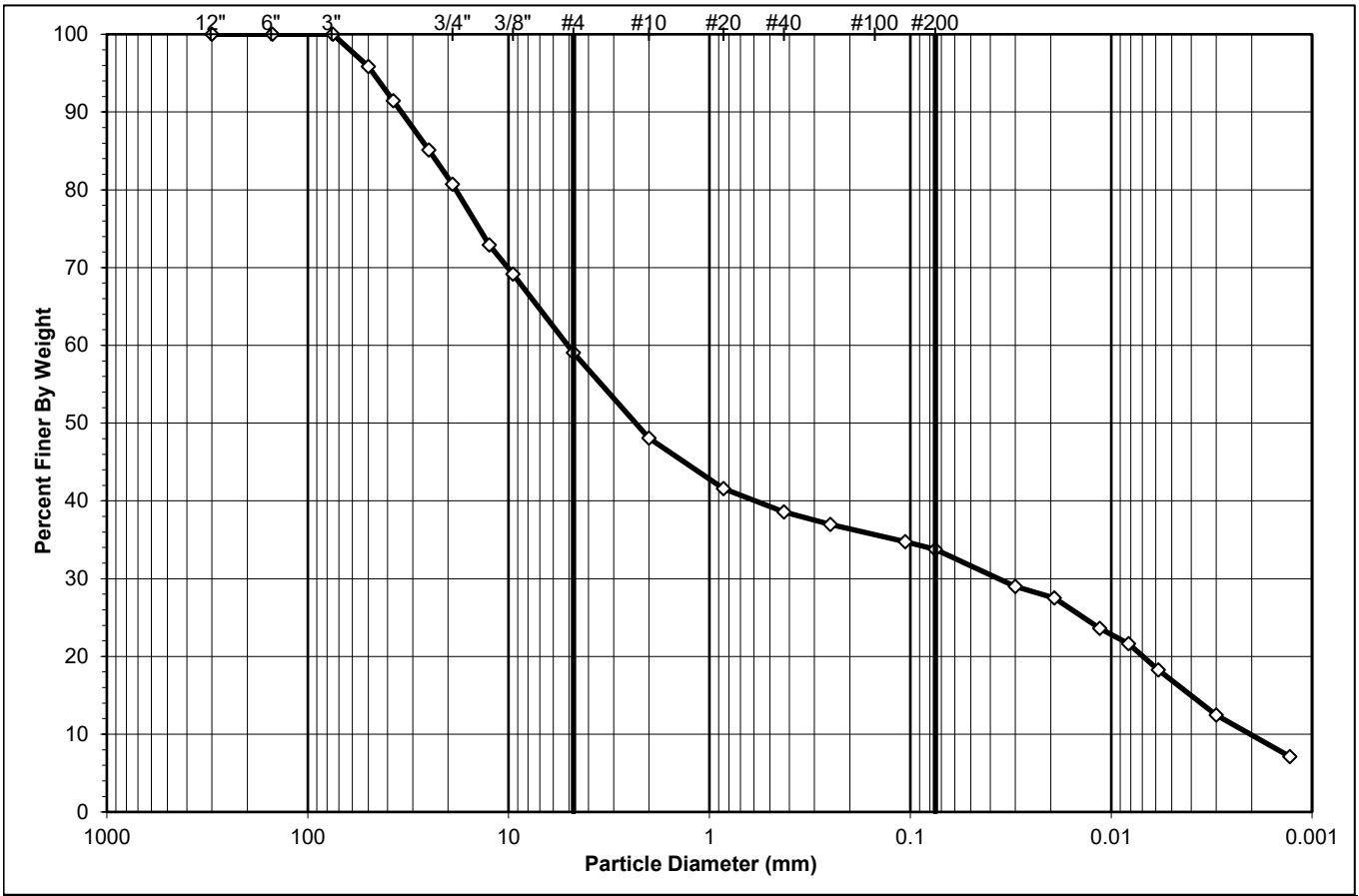
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SIEVE AND HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-012	Sample No.:	C-081225-3
Lab ID:	2025-173-012-003	Soil Color:	Brown

	SIEVE ANALYSIS			HYDROMETER	
USCS	cobbles	gravel	sand	silt and clay fraction	
USDA	cobbles	gravel	sand	silt	clay



USCS Summary

Sieve Size (mm)		Percentage (%)
Greater Than #4	*Gravel*	40.96
#4 to #200	*Sand*	25.26
Finer Than #200	*Silt & Clay*	33.77

USCS Symbol:
gc, ASSUMED

USCS Classification:
CLAYEY GRAVEL WITH SAND

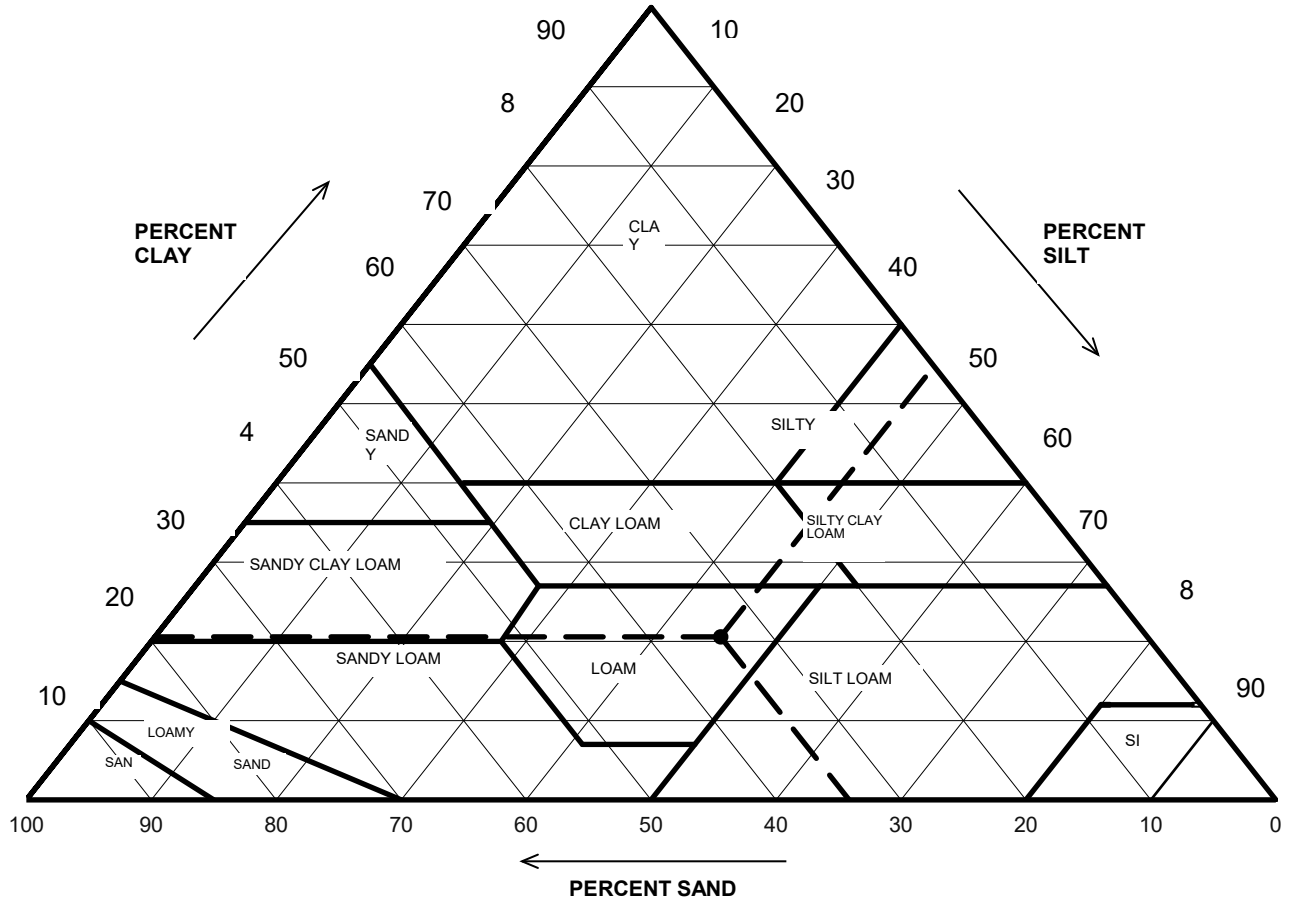
DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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USDA Classification Chart

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-012	Sample No.:	C-081225-3
Lab ID:	2025-173-012-003	Soil Color:	Brown



Particle Size (mm)	Percent Finer	USDA Summary	Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classification
		Gravel	51.92	**0.00**
2	48.08	*Sand*	16.42	**34.15**
0.05	31.66	*Silt*	21.77	**45.27**
0.002	9.89	*Clay*	9.89	**20.57**

USDA Classification ***LOAM***

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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WASH SIEVE ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-012	Sample No.:	C-081225-3
Lab ID:	2025-173-012-003	Soil Color:	Brown

Moisture Content of Passing 3/4" Material		Moisture Content of Retained 3/4" Material	
Tare No.:	1504	Tare No.:	4039
Wt. of Tare & Wet Sample (g):	918.91	Weight of Tare & Wet Sample (g):	319.96
Wt. of Tare & Dry Sample (g):	832.38	Weight of Tare & Dry Sample (g):	303.27
Weight of Tare (g):	148	Weight of Tare (g):	7.11
Weight of Water (g):	86.53	Weight of Water (g):	16.69
Weight of Dry Soil (g):	684.38	Weight of Dry Soil (g):	296.16
Moisture Content (%):	**12.6**	**Moisture Content (%):**	**5.6**

Wet Weight of -3/4" Sample (g):	6497.00	Weight of the Dry Sample (g):	684.38
Dry Weight of - 3/4" Sample (g):	5767.75	Weight of minus #200 Material (g):	286.34
Wet Weight of +3/4" Sample (g):	1455.00	Weight of plus #200 Material (g):	398.04
Dry Weight of +3/4" Sample (g):	1377.38		
Total Dry Weight of Sample (g):	7145.13	**J - Factor (Percent Finer than 3/4")**	**80.72%**

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)		Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00		0.00	0.00	100.00	**100.00**
6"	150	0.00		0.00	0.00	100.00	**100.00**
3"	75	0.00		0.00	0.00	100.00	**100.00**
2"	50	312.00	(*)	4.13	4.13	95.87	**95.87**
1 1/2"	37.5	333.00		4.41	8.55	91.45	**91.45**
1"	25	477.00		6.32	14.87	85.13	**85.13**
3/4"	19	333.00		4.41	19.28	80.72	**80.72**
1/2"	12.5	66.28		9.68	9.68	90.32	**72.91**
3/8"	9.5	31.55		4.61	14.29	85.71	**69.18**
#4	4.75	86.01		12.57	26.86	73.14	**59.04**
#10	2	92.94		13.58	40.44	59.56	**48.08**
#20	0.85	54.98	(**)	8.03	48.48	51.52	**41.59**
#40	0.425	25.55		3.73	52.21	47.79	**38.58**
#60	0.25	13.75		2.01	54.22	45.78	**36.96**
#140	0.106	18.84		2.75	56.97	43.03	**34.73**
#200	0.075	8.14		1.19	58.16	41.84	**33.77**
Pan	-	286.34		41.84	100.00	-	**-**

NOTES: *(*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample*
*(**) The - 3/4" sieve analysis is based on the Weight of the Dry Sample*

Tested By DF Date 8/19/25 Checked By EG Date 8/22/25

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-012	Sample No.:	C-081225-3
Lab ID:	2025-173-012-003	Soil Color:	Brown

Elapsed Time		R Measured	Temp.	Composite Correction	R Corrected	N	K Factor	Diameter	N'
(min)			(°C)			(%)		(mm)	(%)
0		NA	NA	NA	NA	NA	NA	NA	NA
2		34.5	22.7	4.9	29.6	85.8	0.01302	0.0300	**29.0**
5		33.0	22.7	4.9	28.1	81.5	0.01302	0.0192	**27.5**
15		29.0	22.7	4.9	24.1	69.9	0.01302	0.0114	**23.6**
30		27.0	22.7	4.9	22.1	64.1	0.01302	0.0082	**21.6**
62		23.5	22.8	4.9	18.6	54.0	0.01300	0.0058	**18.2**
250		17.5	23.1	4.8	12.7	36.9	0.01296	0.0030	**12.5**
1440		12.0	23.3	4.7	7.3	21.1	0.01293	0.0013	**7.1**

Soil Specimen Data		**Other Corrections**	
Tare No.	961		
Wt. of Tare & Dry Material (g):	136.11	a - Factor	0.993
Weight of Tare (g):	96.87		
Weight of Deflocculant (g):	5.0	Percent Finer than # 200	33.77
Weight of Dry Material (g):	34.24		
		Specific Gravity	2.70 Assumed

Note: *Hydrometer test is performed on - # 200 sieve material.*

Tested By TO Date 8/20/25 Checked By EG Date 8/22/25

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

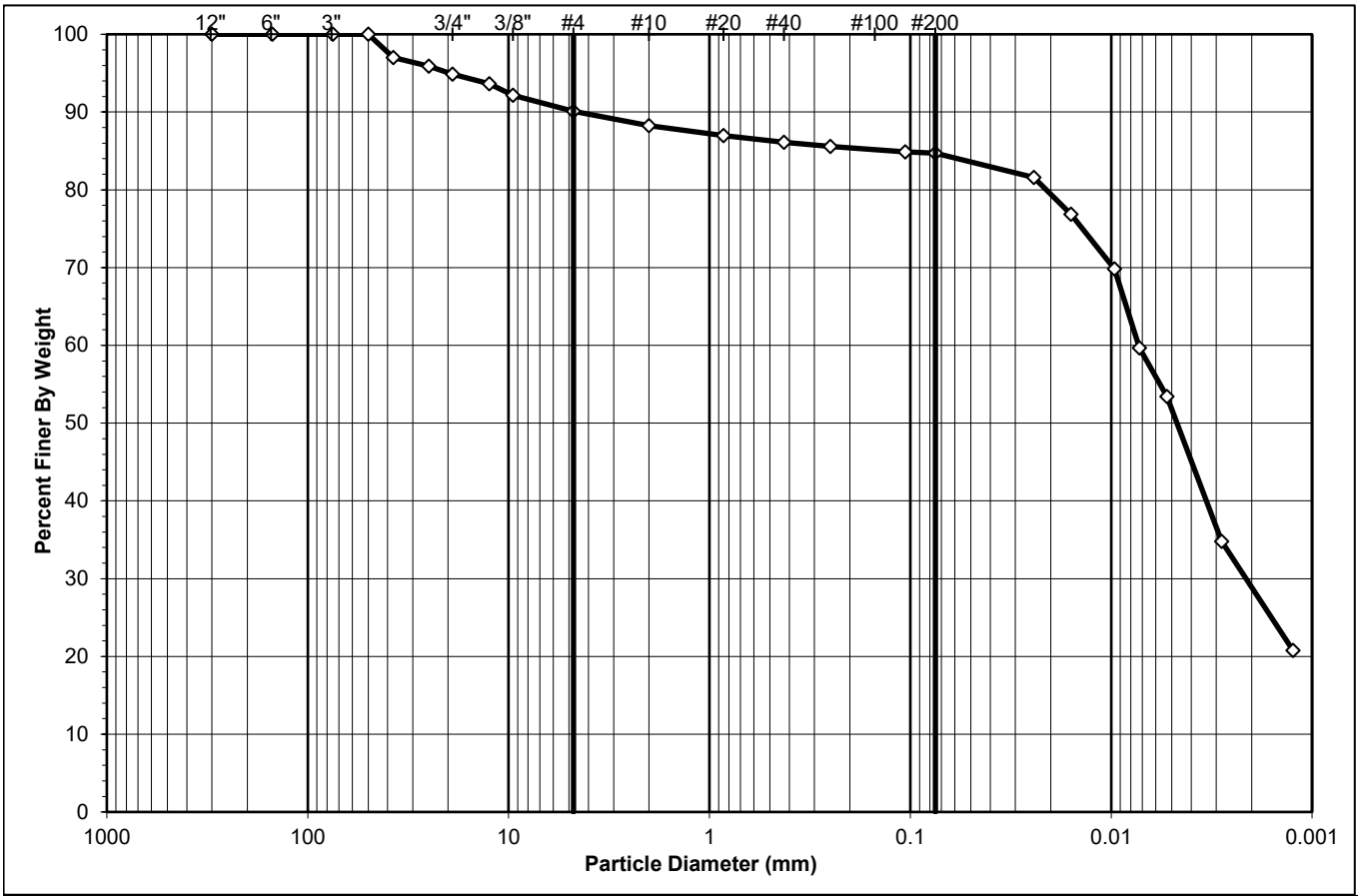
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SIEVE AND HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	Borrow
Project No.:	2025-173-012	Sample No.:	C-081225-4
Lab ID:	2025-173-012-004	Soil Color:	Brown

	SIEVE ANALYSIS			HYDROMETER	
USCS	cobbles	gravel	sand	silt and clay fraction	
USDA	cobbles	gravel	sand	silt	clay



USCS Summary

Sieve Size (mm)		Percentage (%)
Greater Than #4	*Gravel*	9.91
#4 to #200	*Sand*	5.38
Finer Than #200	*Silt & Clay*	84.71

USCS Symbol:
cl, ASSUMED

USCS Classification:
LEAN CLAY WITH GRAVEL

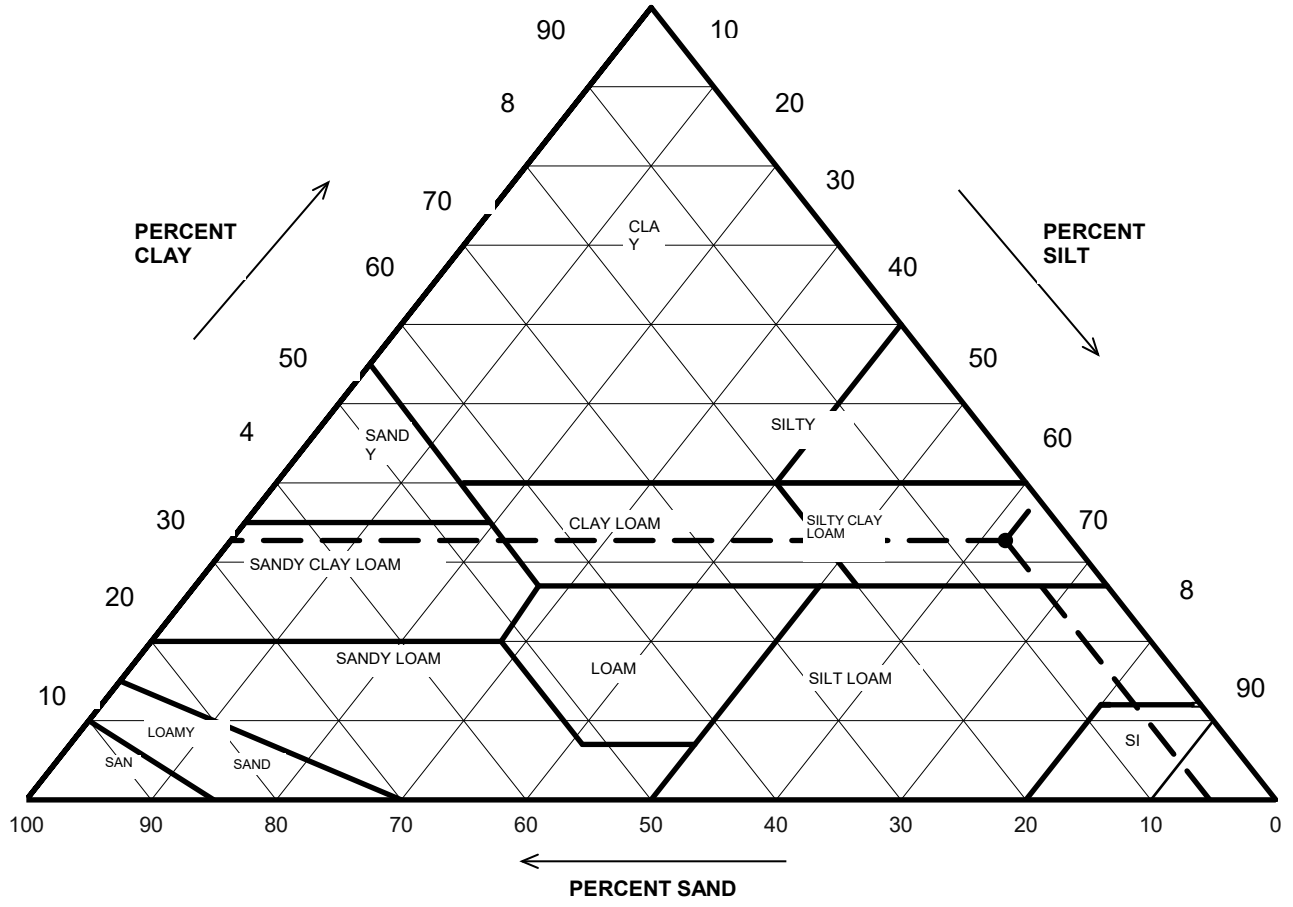
DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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USDA Classification Chart

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	Borrow
Project No.:	2025-173-012	Sample No.:	C-081225-4
Lab ID:	2025-173-012-004	Soil Color:	Brown



Particle Size (mm)	Percent Finer	USDA Summary	Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classification
		Gravel	11.75	**0.00**
2	88.25	*Sand*	4.66	**5.29**
0.05	83.58	*Silt*	54.70	**61.98**
0.002	28.89	*Clay*	28.89	**32.73**

USDA Classification ***SILTY CLAY LOAM***

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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WASH SIEVE ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	Borrow
Project No.:	2025-173-012	Sample No.:	C-081225-4
Lab ID:	2025-173-012-004	Soil Color:	Brown

Moisture Content of Passing 3/4" Material		Moisture Content of Retained 3/4" Material	
Tare No.:	1485	Tare No.:	2982
Wt. of Tare & Wet Sample (g):	1042.01	Weight of Tare & Wet Sample (g):	400.37
Wt. of Tare & Dry Sample (g):	1000.28	Weight of Tare & Dry Sample (g):	391.16
Weight of Tare (g):	147.68	Weight of Tare (g):	7.18
Weight of Water (g):	41.73	Weight of Water (g):	9.21
Weight of Dry Soil (g):	852.6	Weight of Dry Soil (g):	383.98
Moisture Content (%):	**4.9**	**Moisture Content (%):**	**2.4**

Wet Weight of -3/4" Sample (g):	7461.00	Weight of the Dry Sample (g):	852.60
Dry Weight of - 3/4" Sample (g):	7112.87	Weight of minus #200 Material (g):	761.33
Wet Weight of +3/4" Sample (g):	394.00	Weight of plus #200 Material (g):	91.27
Dry Weight of +3/4" Sample (g):	384.77		
Total Dry Weight of Sample (g):	7497.64	**J - Factor (Percent Finer than 3/4")**	**94.87%**

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)		Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00		0.00	0.00	100.00	**100.00**
6"	150	0.00		0.00	0.00	100.00	**100.00**
3"	75	0.00		0.00	0.00	100.00	**100.00**
2"	50	0.00	(*)	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	231.00		3.01	3.01	96.99	**96.99**
1"	25	85.00		1.11	4.12	95.88	**95.88**
3/4"	19	78.00		1.02	5.13	94.87	**94.87**
1/2"	12.5	10.87		1.27	1.27	98.73	**93.66**
3/8"	9.5	13.53		1.59	2.86	97.14	**92.15**
#4	4.75	18.55		2.18	5.04	94.96	**90.09**
#10	2	16.55		1.94	6.98	93.02	**88.25**
#20	0.85	11.56	(**)	1.36	8.33	91.67	**86.96**
#40	0.425	7.45		0.87	9.21	90.79	**86.13**
#60	0.25	5.05		0.59	9.80	90.20	**85.57**
#140	0.106	6.30		0.74	10.54	89.46	**84.87**
#200	0.075	1.41		0.17	10.70	89.30	**84.71**
Pan	-	761.33		89.30	100.00	-	**-**

NOTES: *(*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample*
*(**) The - 3/4" sieve analysis is based on the Weight of the Dry Sample*

Tested By	DF	Date	8/19/25	Checked By	EG	Date	8/22/25

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	Borrow
Project No.:	2025-173-012	Sample No.:	C-081225-4
Lab ID:	2025-173-012-004	Soil Color:	Brown

Elapsed Time		R Measured	Temp.	Composite Correction	R Corrected	N	K Factor	Diameter	N'
(min)			(°C)			(%)		(mm)	(%)
0		NA	NA	NA	NA	NA	NA	NA	NA
2		57.0	22.7	4.9	52.1	96.3	0.01302	0.0243	**81.6**
5		54.0	22.7	4.9	49.1	90.7	0.01302	0.0159	**76.9**
15		49.5	22.7	4.9	44.6	82.4	0.01302	0.0096	**69.8**
30		43.0	22.7	4.9	38.1	70.4	0.01302	0.0072	**59.7**
60		39.0	22.8	4.9	34.1	63.1	0.01300	0.0053	**53.4**
250		27.0	23.1	4.8	22.2	41.1	0.01296	0.0028	**34.8**
1440		18.0	23.3	4.7	13.3	24.5	0.01293	0.0012	**20.8**

Soil Specimen Data		**Other Corrections**	
Tare No.	692		
Wt. of Tare & Dry Material (g):	148.08	a - Factor	0.993
Weight of Tare (g):	89.35		
Weight of Deflocculant (g):	5.0	Percent Finer than # 200	84.71
Weight of Dry Material (g):	53.73		
		Specific Gravity	2.70 Assumed

Note: *Hydrometer test is performed on - # 200 sieve material.*

Tested By TO Date 8/20/25 Checked By EG Date 8/22/25

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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September 25, 2025

Project No. 2025-173-013

Cory White
GAI Consultants, Inc.
385 East Waterfront Drive
Homestead, PA 15120

Transmittal
Laboratory Test Results
Cheswick Closure R220960.00

Please find attached the laboratory test results for the above referenced project. The tests were outlined on the Project Verification Form that was transmitted to your firm prior to the testing. The testing was performed in general accordance with the methods listed on the enclosed data sheets. The test results are believed to be representative of the samples that were submitted for testing and are indicative only of the specimens that were evaluated. We have no direct knowledge of the origin of the samples and imply no position with regard to the nature of the test results, i.e. pass/fail and no claims as to the suitability of the material for its intended use.

The test data and all associated project information provided shall be held in strict confidence and disclosed to other parties only with authorization by our Client. The test data submitted herein is considered integral with this report and is not to be reproduced except in whole and only with the authorization of the Client and Geotechnics. The remaining sample materials for this project will be retained for a minimum of 90 days as directed by the Geotechnics' Quality Program.

We are pleased to provide these testing services. Should you have any questions or if we may be of further assistance, please contact our office.

Respectfully submitted,
Geotechnics, Inc.

Nathan Melaro
Director of Operations

We understand that you have a choice in your laboratory services and we thank you for choosing Geotechnics.

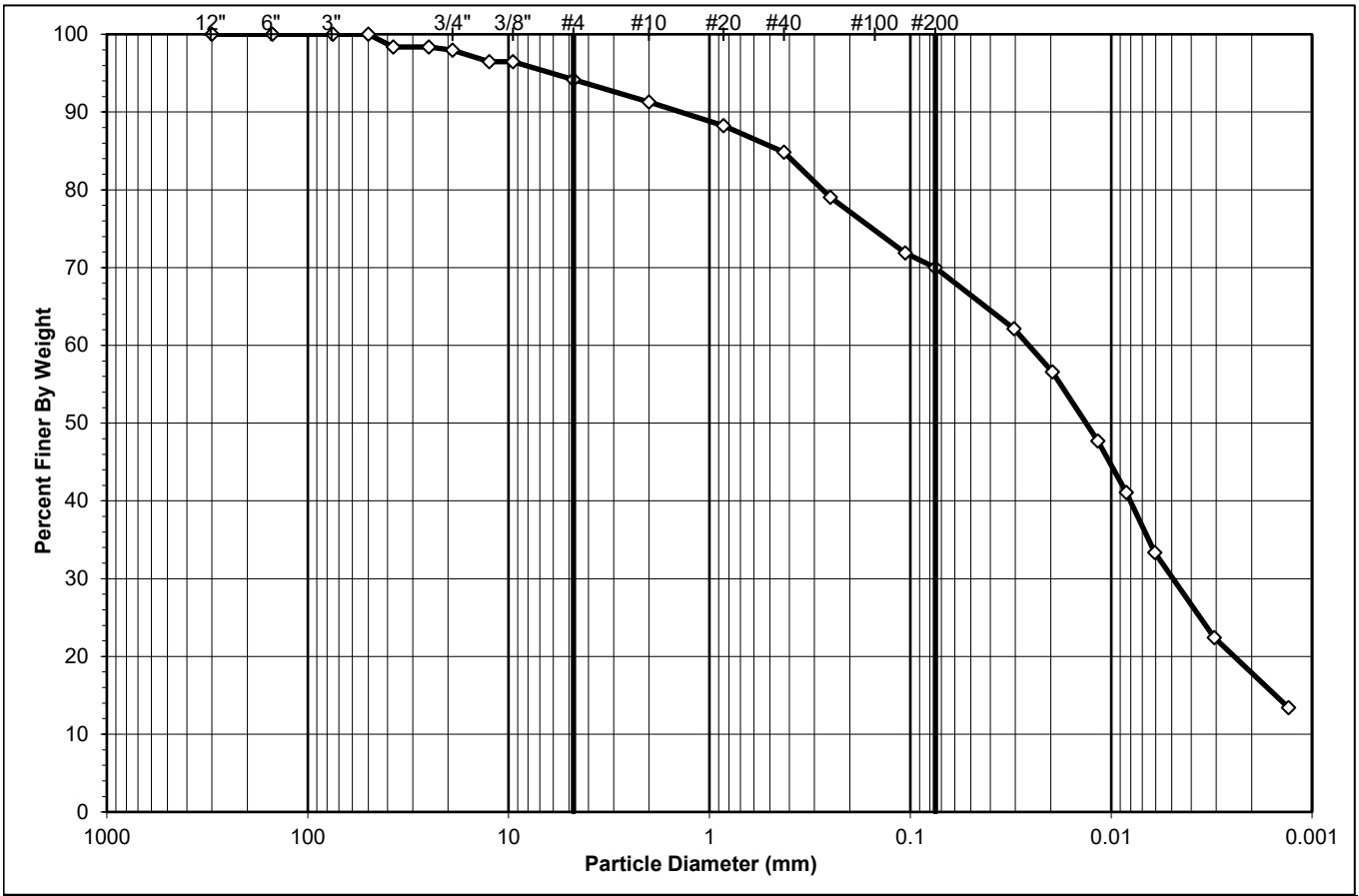
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SIEVE AND HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-013	Sample No.:	C-090825-1
Lab ID:	2025-173-013-001	Soil Color:	Brown

	SIEVE ANALYSIS			HYDROMETER	
USCS	cobbles	gravel	sand	silt and clay fraction	
USDA	cobbles	gravel	sand	silt	clay



USCS Summary

Sieve Size (mm)		Percentage (%)
Greater Than #4	*Gravel*	5.83
#4 to #200	*Sand*	24.17
Finer Than #200	*Silt & Clay*	70.00

USCS Symbol:
ml, ASSUMED

USCS Classification:
SILT WITH SAND

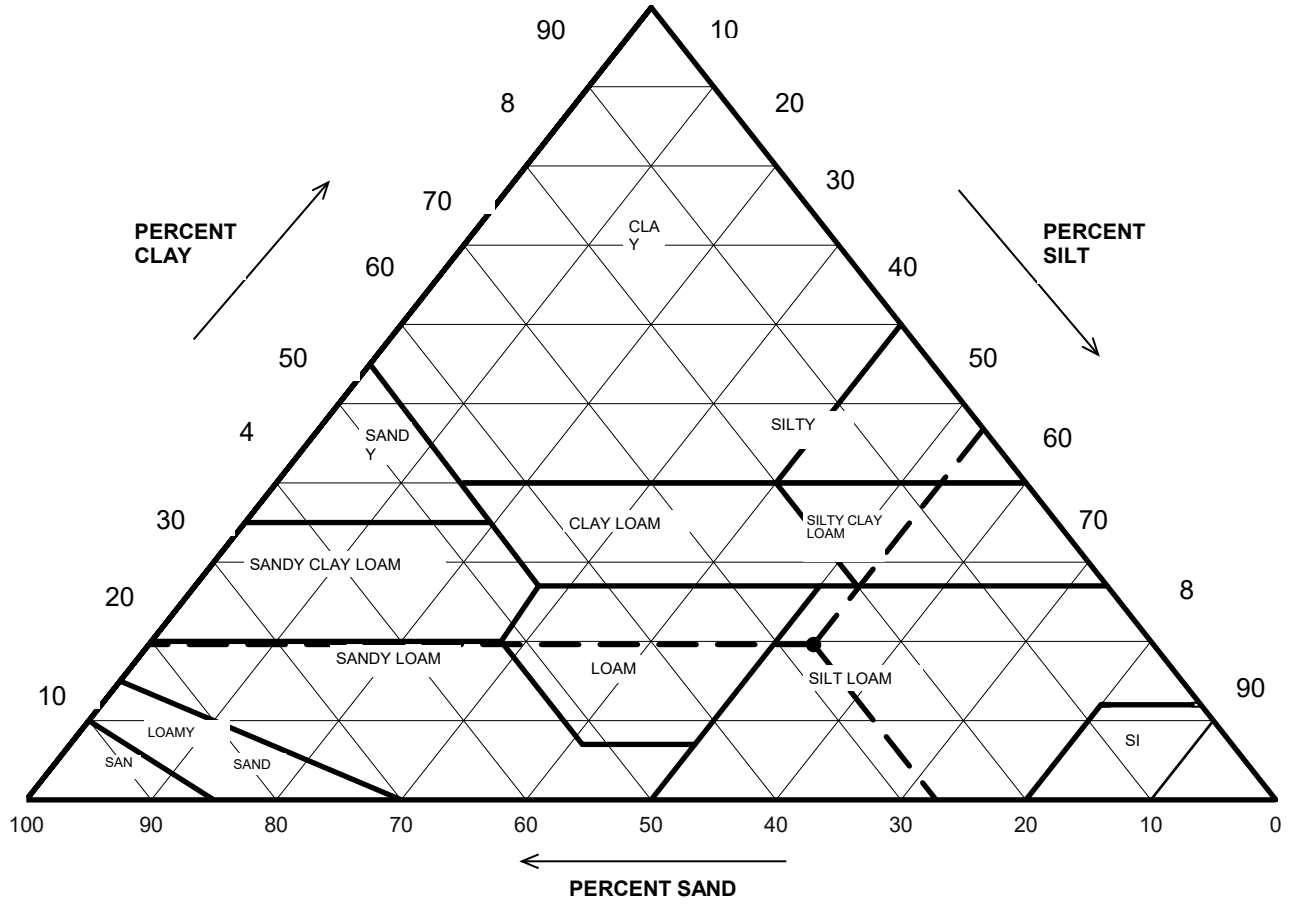
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USDA Classification Chart

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-013	Sample No.:	C-090825-1
Lab ID:	2025-173-013-001	Soil Color:	Brown



Particle Size (mm)	Percent Finer	USDA Summary	Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classification
		Gravel	8.72	**0.00**
2	91.28	*Sand*	24.82	**27.19**
0.05	66.46	*Silt*	48.57	**53.21**
0.002	17.89	*Clay*	17.89	**19.60**

USDA Classification ***SILT LOAM***

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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WASH SIEVE ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-013	Sample No.:	C-090825-1
Lab ID:	2025-173-013-001	Soil Color:	Brown

Moisture Content of Passing 3/4" Material		Moisture Content of Retained 3/4" Material	
Tare No.:	1403	Tare No.:	3023
Wt. of Tare & Wet Sample (g):	958.47	Weight of Tare & Wet Sample (g):	82.76
Wt. of Tare & Dry Sample (g):	592.17	Weight of Tare & Dry Sample (g):	81.81
Weight of Tare (g):	175.46	Weight of Tare (g):	8.09
Weight of Water (g):	366.3	Weight of Water (g):	0.95
Weight of Dry Soil (g):	416.71	Weight of Dry Soil (g):	73.72
Moisture Content (%):	**87.9**	**Moisture Content (%):**	**1.3**

Wet Weight of -3/4" Sample (g):	6428.00	Weight of the Dry Sample (g):	416.71
Dry Weight of - 3/4" Sample (g):	3420.92	Weight of minus #200 Material (g):	297.85
Wet Weight of +3/4" Sample (g):	73.00	Weight of plus #200 Material (g):	118.86
Dry Weight of +3/4" Sample (g):	72.07		
Total Dry Weight of Sample (g):	3492.99	**J - Factor (Percent Finer than 3/4")**	**97.94%**

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)		Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00		0.00	0.00	100.00	**100.00**
6"	150	0.00		0.00	0.00	100.00	**100.00**
3"	75	0.00		0.00	0.00	100.00	**100.00**
2"	50	0.00	(*)	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	58.00		1.64	1.64	98.36	**98.36**
1"	25	0.00		0.00	1.64	98.36	**98.36**
3/4"	19	15.00		0.42	2.06	97.94	**97.94**
1/2"	12.5	6.17		1.48	1.48	98.52	**96.49**
3/8"	9.5	0.00		0.00	1.48	98.52	**96.49**
#4	4.75	9.86		2.37	3.85	96.15	**94.17**
#10	2	12.28		2.95	6.79	93.21	**91.28**
#20	0.85	12.93	(**)	3.10	9.90	90.10	**88.24**
#40	0.425	14.56		3.49	13.39	86.61	**84.82**
#60	0.25	24.54		5.89	19.28	80.72	**79.05**
#140	0.106	30.51		7.32	26.60	73.40	**71.88**
#200	0.075	8.01		1.92	28.52	71.48	**70.00**
Pan	-	297.85		71.48	100.00	-	**-**

NOTES: *(*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample*
*(**) The - 3/4" sieve analysis is based on the Weight of the Dry Sample*

Tested By	DF	Date	9/17/25	Checked By	EG	Date	9/24/25

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-013	Sample No.:	C-090825-1
Lab ID:	2025-173-013-001	Soil Color:	Brown

Elapsed Time		R Measured	Temp.	Composite Correction	R Corrected	N	K Factor	Diameter	N'
(min)			(°C)			(%)		(mm)	(%)
0		NA	NA	NA	NA	NA	NA	NA	NA
2		33.0	22.4	5.0	28.0	88.8	0.01307	0.0305	**62.1**
5		30.5	22.4	5.0	25.5	80.9	0.01307	0.0196	**56.6**
15		26.5	22.4	5.0	21.5	68.2	0.01307	0.0117	**47.7**
30		23.5	22.4	5.0	18.5	58.7	0.01307	0.0084	**41.1**
60		20.0	22.5	5.0	15.0	47.7	0.01305	0.0061	**33.4**
250		15.0	22.7	4.9	10.1	32.0	0.01302	0.0031	**22.4**
1440		11.0	22.5	5.0	6.0	19.2	0.01305	0.0013	**13.4**

Soil Specimen Data		**Other Corrections**		
Tare No.	1092			
Wt. of Tare & Dry Material (g):	131.47	a - Factor	0.993	
Weight of Tare (g):	95.13			
Weight of Deflocculant (g):	5.0	Percent Finer than # 200	70.00	
Weight of Dry Material (g):	31.34			
		Specific Gravity	2.70	Assumed

Note: *Hydrometer test is performed on - # 200 sieve material.*

Tested By TO Date 9/22/25 Checked By EG Date 9/24/25

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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Moisture, Ash, and Organic Matter (Loss on Ignition)

ASTM D 2974-20e1

Client:	GAI Consultants, Inc.
Client Reference:	Cheswick Closue R220960.00
Project No.:	2025-173-013

Method B (To 0.1%)

Moisture Content

ASTM D2216

Lab ID:	001
Boring No.:	Final Closure
Depth (ft):	In Place Soil
Sample No.:	C-090825-1
Tare Number	EE
Weight of Tare & Wet Sample (g)	334.15
Weight of Tare & Dry Sample (g)	317.20
Weight of Tare (g)	126.94
Weight of Water (g)	16.95
Weight of Dry Sample (g)	190.26
Moisture Content	**8.9%**

Method A

Ash Content, Organic Matter

Furnace Temperature (°C)	440
Weight of Tare & Ash (g)	314.60
Weight of Volatiles (g)	2.60
Weight of Ash (g)	187.66
Ash Content (%)	**98.6%**
Organic Matter (%)	**1.4%**

Tested By JW *Date* 9/12/25 *Checked By* EG *Date* 9/16/25

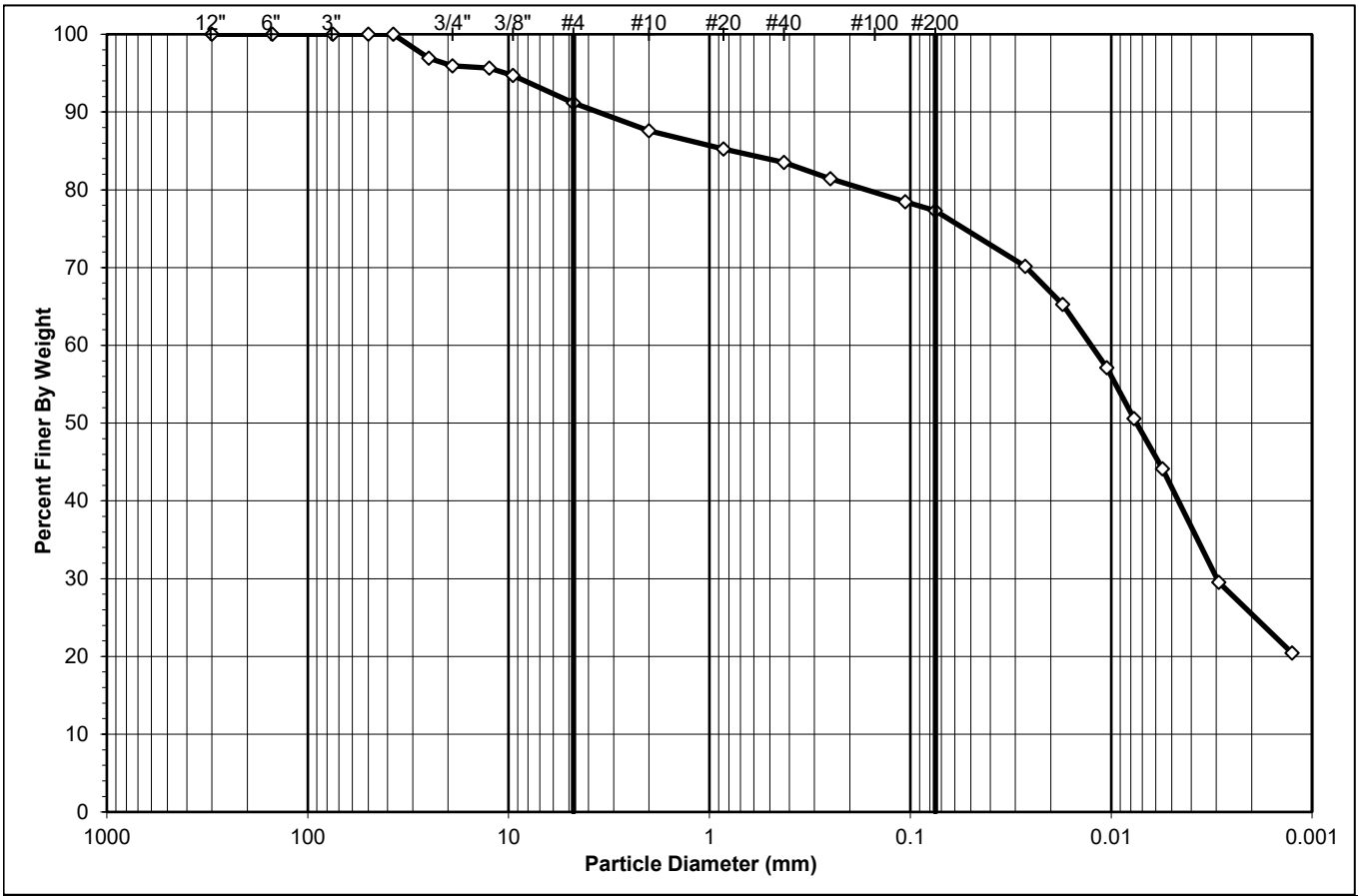
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SIEVE AND HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-013	Sample No.:	C-090825-2
Lab ID:	2025-173-013-002	Soil Color:	Brown

	SIEVE ANALYSIS			HYDROMETER	
USCS	cobbles	gravel	sand	silt and clay fraction	
USDA	cobbles	gravel	sand	silt	clay



USCS Summary

Sieve Size (mm)		Percentage (%)
Greater Than #4	*Gravel*	8.85
#4 to #200	*Sand*	13.83
Finer Than #200	*Silt & Clay*	77.33

USCS Symbol:
ml, ASSUMED

USCS Classification:
SILT WITH SAND

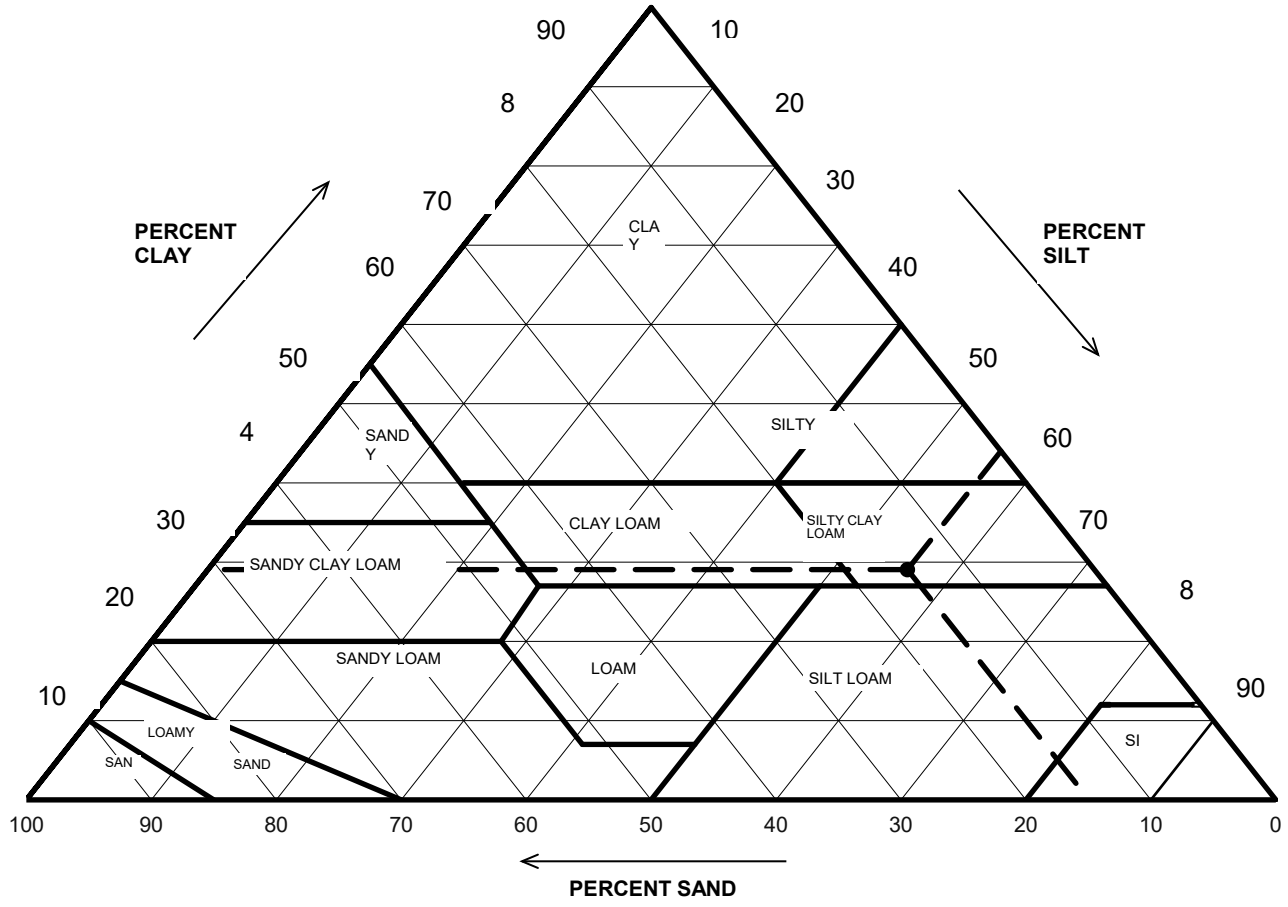
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USDA Classification Chart

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-013	Sample No.:	C-090825-2
Lab ID:	2025-173-013-002	Soil Color:	Brown



Particle Size (mm)	Percent Finer	USDA Summary	Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classification
		Gravel	12.40	**0.00**
2	87.60	*Sand*	13.10	**14.95**
0.05	74.50	*Silt*	49.05	**55.99**
0.002	25.45	*Clay*	25.45	**29.06**

USDA Classification ***SILTY CLAY LOAM***

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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WASH SIEVE ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-013	Sample No.:	C-090825-2
Lab ID:	2025-173-013-002	Soil Color:	Brown

Moisture Content of Passing 3/4" Material		Moisture Content of Retained 3/4" Material	
Tare No.:	1450	Tare No.:	2800
Wt. of Tare & Wet Sample (g):	979.41	Weight of Tare & Wet Sample (g):	277.96
Wt. of Tare & Dry Sample (g):	921.21	Weight of Tare & Dry Sample (g):	269.34
Weight of Tare (g):	144.32	Weight of Tare (g):	7.25
Weight of Water (g):	58.2	Weight of Water (g):	8.62
Weight of Dry Soil (g):	776.89	Weight of Dry Soil (g):	262.09
Moisture Content (%):	**7.5**	**Moisture Content (%):**	**3.3**

Wet Weight of -3/4" Sample (g):	6634.00	Weight of the Dry Sample (g):	776.89
Dry Weight of - 3/4" Sample (g):	6171.66	Weight of minus #200 Material (g):	626.18
Wet Weight of +3/4" Sample (g):	270.00	Weight of plus #200 Material (g):	150.71
Dry Weight of +3/4" Sample (g):	261.40		
Total Dry Weight of Sample (g):	6433.06	**J - Factor (Percent Finer than 3/4")**	**95.94%**

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)		Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00		0.00	0.00	100.00	**100.00**
6"	150	0.00		0.00	0.00	100.00	**100.00**
3"	75	0.00		0.00	0.00	100.00	**100.00**
2"	50	0.00	(*)	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00		0.00	0.00	100.00	**100.00**
1"	25	203.00		3.06	3.06	96.94	**96.94**
3/4"	19	67.00		1.01	4.06	95.94	**95.94**
1/2"	12.5	2.17		0.28	0.28	99.72	**95.67**
3/8"	9.5	7.80		1.00	1.28	98.72	**94.71**
#4	4.75	28.76		3.70	4.99	95.01	**91.15**
#10	2	28.80		3.71	8.69	91.31	**87.60**
#20	0.85	19.10	(**)	2.46	11.15	88.85	**85.24**
#40	0.425	13.95		1.80	12.95	87.05	**83.52**
#60	0.25	17.00		2.19	15.13	84.87	**81.42**
#140	0.106	23.89		3.08	18.21	81.79	**78.47**
#200	0.075	9.24		1.19	19.40	80.60	**77.33**
Pan	-	626.18		80.60	100.00	-	**-**

NOTES: *(*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample*
*(**) The - 3/4" sieve analysis is based on the Weight of the Dry Sample*

Tested By	DF	Date	9/17/25	Checked By	EG	Date	9/24/25

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-013	Sample No.:	C-090825-2
Lab ID:	2025-173-013-002	Soil Color:	Brown

Elapsed Time		R Measured	Temp.	Composite Correction	R Corrected	N	K Factor	Diameter	N'
(min)			(°C)			(%)		(mm)	(%)
0		NA	NA	NA	NA	NA	NA	NA	NA
2		48.0	22.4	5.0	43.0	90.7	0.01307	0.0268	**70.2**
5		45.0	22.4	5.0	40.0	84.4	0.01307	0.0174	**65.3**
15		40.0	22.4	5.0	35.0	73.9	0.01307	0.0105	**57.1**
30		36.0	22.4	5.0	31.0	65.4	0.01307	0.0077	**50.6**
61		32.0	22.5	5.0	27.0	57.0	0.01305	0.0056	**44.1**
250		23.0	22.7	4.9	18.1	38.2	0.01302	0.0029	**29.5**
1440		17.5	22.5	5.0	12.5	26.5	0.01305	0.0013	**20.5**

Soil Specimen Data		**Other Corrections**		
Tare No.	975			
Wt. of Tare & Dry Material (g):	143.81	a - Factor	0.993	
Weight of Tare (g):	91.73			
Weight of Deflocculant (g):	5.0	Percent Finer than # 200	77.33	
Weight of Dry Material (g):	47.08			
		Specific Gravity	2.70	Assumed

Note: *Hydrometer test is performed on - # 200 sieve material.*

Tested By TO Date 9/22/25 Checked By EG Date 9/24/25

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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Moisture, Ash, and Organic Matter (Loss on Ignition)

ASTM D 2974-20e1

Client:	GAI Consultants, Inc.
Client Reference:	Cheswick Closue R220960.00
Project No.:	2025-173-013

Method B (To 0.1%)

Moisture Content

ASTM D2216

Lab ID:	002
Boring No.:	Final Closure
Depth (ft):	In Place Soil
Sample No.:	C-090825-2
Tare Number	HH
Weight of Tare & Wet Sample (g)	395.78
Weight of Tare & Dry Sample (g)	378.19
Weight of Tare (g)	134.03
Weight of Water (g)	17.59
Weight of Dry Sample (g)	244.16
Moisture Content	**7.2%**

Method A

Ash Content, Organic Matter

Furnace Temperature (°C)	440
Weight of Tare & Ash (g)	374.02
Weight of Volatiles (g)	4.17
Weight of Ash (g)	239.99
Ash Content (%)	**98.3%**
Organic Matter (%)	**1.7%**

Tested By JW *Date* 9/12/25 *Checked By* EG *Date* 9/16/25

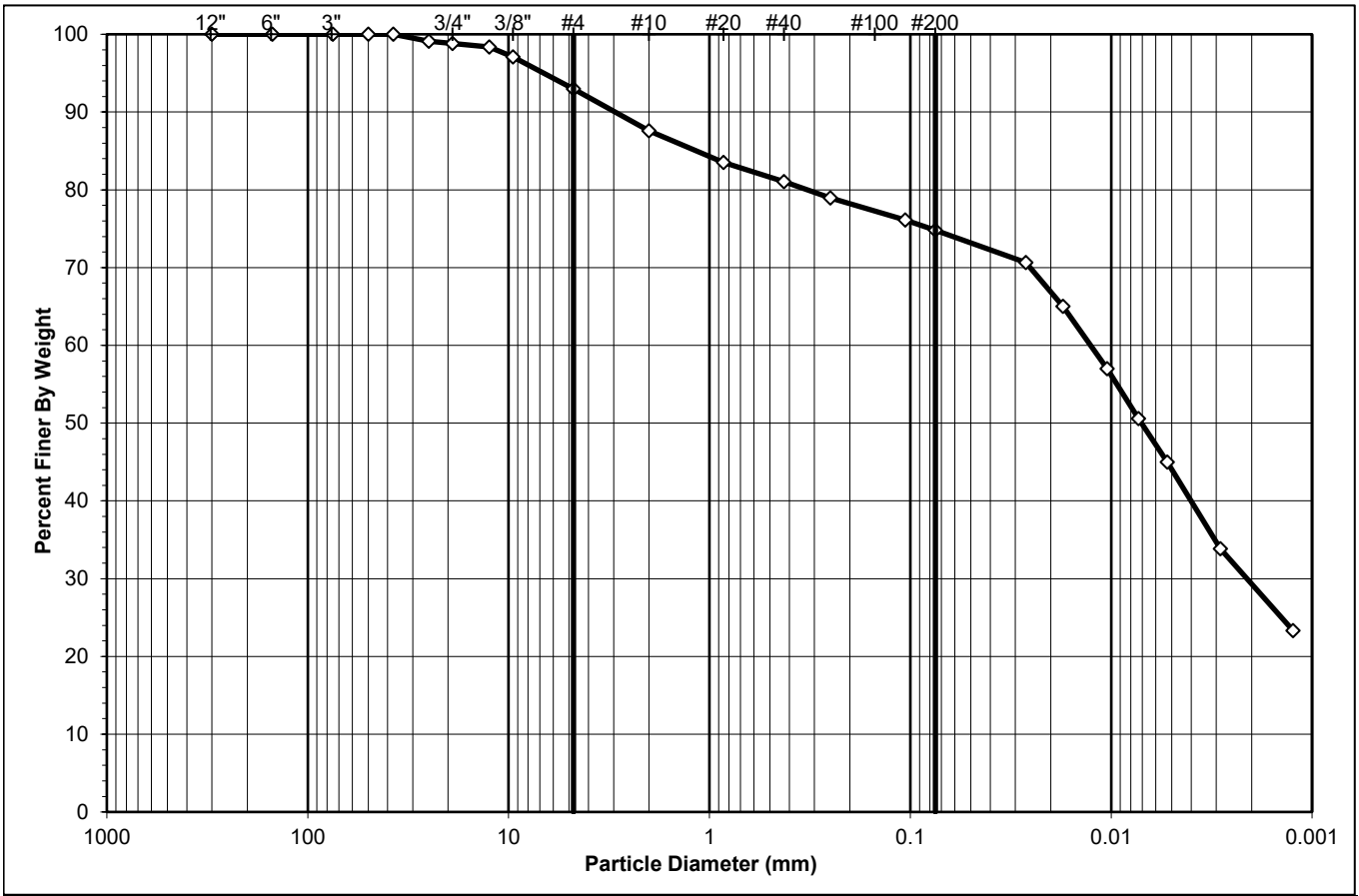
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SIEVE AND HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-013	Sample No.:	C-090825-3
Lab ID:	2025-173-013-003	Soil Color:	Brown

	SIEVE ANALYSIS			HYDROMETER	
USCS	**cobbles**	**gravel**	**sand**	**silt and clay fraction**	
USDA	**cobbles**	**gravel**	**sand**	**silt**	**clay**



USCS Summary

Sieve Size (mm)		Percentage (%)
Greater Than #4	*Gravel*	7.02
#4 to #200	*Sand*	18.17
Finer Than #200	*Silt & Clay*	74.81

USCS Symbol:
ml, ASSUMED

USCS Classification:
SILT WITH SAND

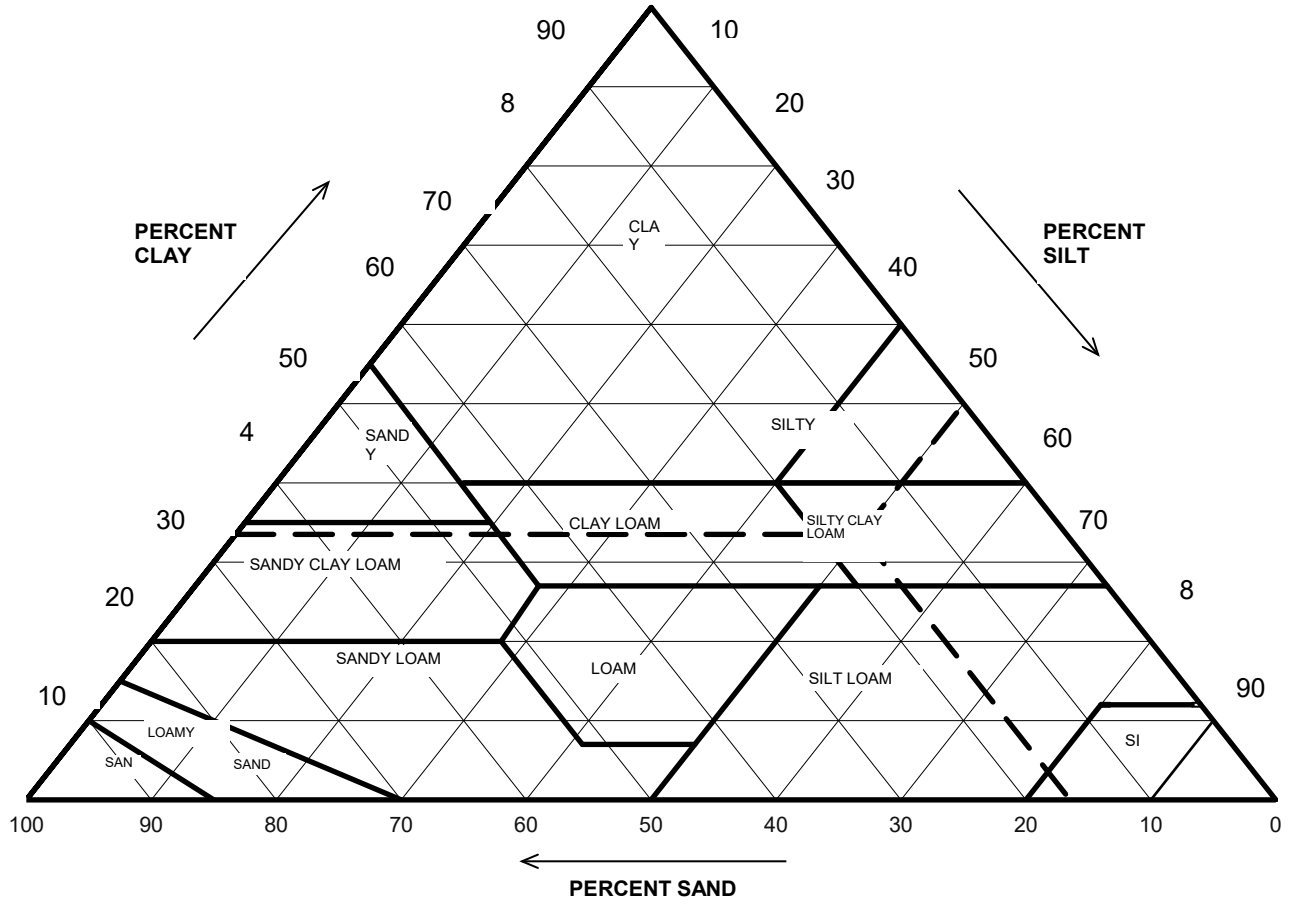
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USDA Classification Chart

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-013	Sample No.:	C-090825-3
Lab ID:	2025-173-013-003	Soil Color:	Brown



Particle Size (mm)	Percent Finer	USDA Summary	Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classification
		Gravel	12.40	**0.00**
2	87.60	*Sand*	14.42	**16.46**
0.05	73.18	*Silt*	43.83	**50.03**
0.002	29.35	*Clay*	29.35	**33.50**

USDA Classification ***SILTY CLAY LOAM***

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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WASH SIEVE ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-013	Sample No.:	C-090825-3
Lab ID:	2025-173-013-003	Soil Color:	Brown

Moisture Content of Passing 3/4" Material		Moisture Content of Retained 3/4" Material	
Tare No.:	2027	Tare No.:	3146
Wt. of Tare & Wet Sample (g):	976.67	Weight of Tare & Wet Sample (g):	49.53
Wt. of Tare & Dry Sample (g):	906.62	Weight of Tare & Dry Sample (g):	48.4
Weight of Tare (g):	145.02	Weight of Tare (g):	7.1
Weight of Water (g):	70.05	Weight of Water (g):	1.13
Weight of Dry Soil (g):	761.6	Weight of Dry Soil (g):	41.3
Moisture Content (%):	**9.2**	**Moisture Content (%):**	**2.7**

Wet Weight of -3/4" Sample (g):	3783.00	Weight of the Dry Sample (g):	761.60
Dry Weight of - 3/4" Sample (g):	3464.36	Weight of minus #200 Material (g):	576.47
Wet Weight of +3/4" Sample (g):	42.00	Weight of plus #200 Material (g):	185.13
Dry Weight of +3/4" Sample (g):	40.88		
Total Dry Weight of Sample (g):	3505.24	**J - Factor (Percent Finer than 3/4")**	**98.83%**

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)		Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00		0.00	0.00	100.00	**100.00**
6"	150	0.00		0.00	0.00	100.00	**100.00**
3"	75	0.00		0.00	0.00	100.00	**100.00**
2"	50	0.00	(*)	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00		0.00	0.00	100.00	**100.00**
1"	25	32.00		0.89	0.89	99.11	**99.11**
3/4"	19	10.00		0.28	1.17	98.83	**98.83**
1/2"	12.5	3.70		0.49	0.49	99.51	**98.35**
3/8"	9.5	9.73		1.28	1.76	98.24	**97.09**
#4	4.75	31.69		4.16	5.92	94.08	**92.98**
#10	2	41.42		5.44	11.36	88.64	**87.60**
#20	0.85	31.53	(**)	4.14	15.50	84.50	**83.51**
#40	0.425	18.97		2.49	17.99	82.01	**81.05**
#60	0.25	16.00		2.10	20.09	79.91	**78.97**
#140	0.106	21.91		2.88	22.97	77.03	**76.13**
#200	0.075	10.18		1.34	24.31	75.69	**74.81**
Pan	-	576.47		75.69	100.00	-	**-**

NOTES: *(*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample*
*(**) The - 3/4" sieve analysis is based on the Weight of the Dry Sample*

Tested By	DF	Date	9/16/25	Checked By	EG	Date	9/24/25

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-013	Sample No.:	C-090825-3
Lab ID:	2025-173-013-003	Soil Color:	Brown

Elapsed Time		R Measured	Temp.	Composite Correction	R Corrected	N	K Factor	Diameter	N'
(min)			(°C)			(%)		(mm)	(%)
0		NA	NA	NA	NA	NA	NA	NA	NA
2		49.0	22.4	5.0	44.0	94.4	0.01307	0.0266	**70.6**
5		45.5	22.4	5.0	40.5	86.9	0.01307	0.0174	**65.0**
15		40.5	22.4	5.0	35.5	76.2	0.01307	0.0105	**57.0**
33		36.5	22.4	5.0	31.5	67.6	0.01307	0.0073	**50.6**
67		33.0	22.5	5.0	28.0	60.2	0.01305	0.0053	**45.0**
250		26.0	22.7	4.9	21.1	45.3	0.01302	0.0029	**33.9**
1440		19.5	22.5	5.0	14.5	31.2	0.01305	0.0012	**23.3**

Soil Specimen Data		**Other Corrections**		
Tare No.	2337			
Wt. of Tare & Dry Material (g):	144.07	a - Factor	0.993	
Weight of Tare (g):	92.78			
Weight of Deflocculant (g):	5.0	Percent Finer than # 200	74.81	
Weight of Dry Material (g):	46.29			
		Specific Gravity	2.70	Assumed

Note: *Hydrometer test is performed on - # 200 sieve material.*

Tested By TO Date 9/22/25 Checked By EG Date 9/24/25

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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Moisture, Ash, and Organic Matter (Loss on Ignition)

ASTM D 2974-20e1

Client:	GAI Consultants, Inc.
Client Reference:	Cheswick Closue R220960.00
Project No.:	2025-173-013

Method B (To 0.1%)

Moisture Content

ASTM D2216

Lab ID:	003
Boring No.:	Final Closure
Depth (ft):	In Place Soil
Sample No.:	C-090825-3
Tare Number	BB
Weight of Tare & Wet Sample (g)	341.14
Weight of Tare & Dry Sample (g)	322.02
Weight of Tare (g)	123.83
Weight of Water (g)	19.12
Weight of Dry Sample (g)	198.19
Moisture Content	**9.6%**

Method A

Ash Content, Organic Matter

Furnace Temperature (°C)	440
Weight of Tare & Ash (g)	317.64
Weight of Volatiles (g)	4.38
Weight of Ash (g)	193.81
Ash Content (%)	**97.8%**
Organic Matter (%)	**2.2%**

Tested By JW *Date* 9/12/25 *Checked By* EG *Date* 9/16/25

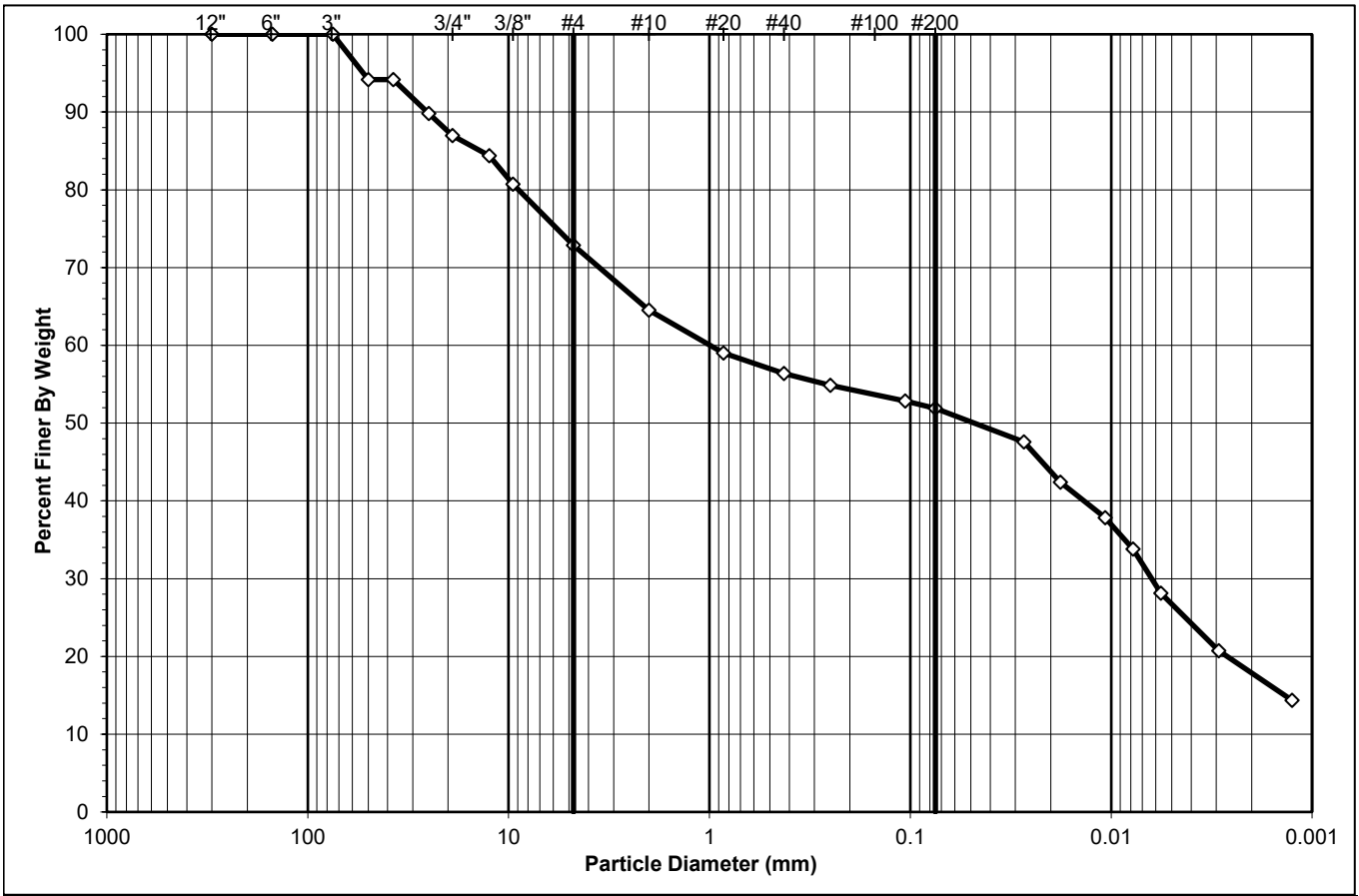
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SIEVE AND HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-013	Sample No.:	C-090825-4
Lab ID:	2025-173-013-004	Soil Color:	Brown

	SIEVE ANALYSIS			HYDROMETER	
USCS	cobbles	gravel	sand	silt and clay fraction	
USDA	cobbles	gravel	sand	silt	clay



USCS Summary

Sieve Size (mm)		Percentage (%)
Greater Than #4	*Gravel*	27.14
#4 to #200	*Sand*	20.97
Finer Than #200	*Silt & Clay*	51.89

USCS Symbol:
ml, ASSUMED

USCS Classification:
GRAVELLY SILT WITH SAND

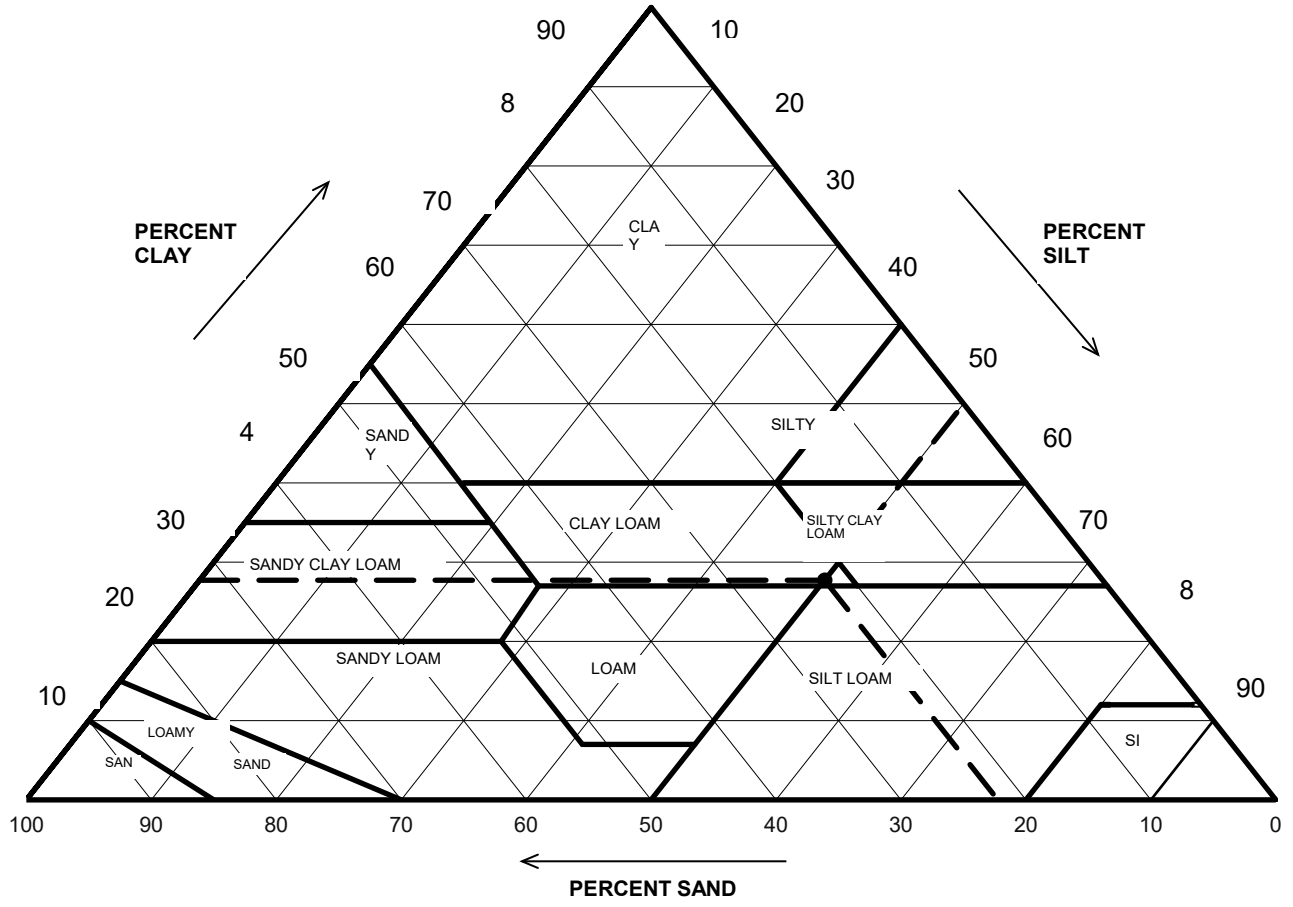
DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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USDA Classification Chart

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-013	Sample No.:	C-090825-4
Lab ID:	2025-173-013-004	Soil Color:	Brown



Particle Size (mm)	Percent Finer	USDA Summary	Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classification
		Gravel	35.48	**0.00**
2	64.52	*Sand*	14.35	**22.25**
0.05	50.16	*Silt*	32.28	**50.03**
0.002	17.88	*Clay*	17.88	**27.72**

USDA Classification ***CLAY LOAM***

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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WASH SIEVE ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-013	Sample No.:	C-090825-4
Lab ID:	2025-173-013-004	Soil Color:	Brown

Moisture Content of Passing 3/4" Material		Moisture Content of Retained 3/4" Material	
Tare No.:	1455	Tare No.:	3341
Wt. of Tare & Wet Sample (g):	929.91	Weight of Tare & Wet Sample (g):	343.04
Wt. of Tare & Dry Sample (g):	896.57	Weight of Tare & Dry Sample (g):	332.98
Weight of Tare (g):	142.88	Weight of Tare (g):	7.23
Weight of Water (g):	33.34	Weight of Water (g):	10.06
Weight of Dry Soil (g):	753.69	Weight of Dry Soil (g):	325.75
Moisture Content (%):	**4.4**	**Moisture Content (%):**	**3.1**

Wet Weight of -3/4" Sample (g):	4107.00	Weight of the Dry Sample (g):	753.69
Dry Weight of - 3/4" Sample (g):	3933.02	Weight of minus #200 Material (g):	449.62
Wet Weight of +3/4" Sample (g):	607.00	Weight of plus #200 Material (g):	304.07
Dry Weight of +3/4" Sample (g):	588.82		
Total Dry Weight of Sample (g):	4521.84	**J - Factor (Percent Finer than 3/4")**	**86.98%**

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)		Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00		0.00	0.00	100.00	**100.00**
6"	150	0.00		0.00	0.00	100.00	**100.00**
3"	75	0.00		0.00	0.00	100.00	**100.00**
2"	50	272.00	(*)	5.84	5.84	94.16	**94.16**
1 1/2"	37.5	0.00		0.00	5.84	94.16	**94.16**
1"	25	202.00		4.33	10.17	89.83	**89.83**
3/4"	19	133.00		2.85	13.02	86.98	**86.98**
1/2"	12.5	22.48		2.98	2.98	97.02	**84.38**
3/8"	9.5	31.61		4.19	7.18	92.82	**80.74**
#4	4.75	68.23		9.05	16.23	83.77	**72.86**
#10	2	72.33		9.60	25.83	74.17	**64.52**
#20	0.85	47.74	(**)	6.33	32.16	67.84	**59.01**
#40	0.425	22.80		3.03	35.19	64.81	**56.37**
#60	0.25	13.23		1.76	36.94	63.06	**54.85**
#140	0.106	17.50		2.32	39.26	60.74	**52.83**
#200	0.075	8.15		1.08	40.34	59.66	**51.89**
Pan	-	449.62		59.66	100.00	-	**-**

NOTES: *(*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample*
*(**) The - 3/4" sieve analysis is based on the Weight of the Dry Sample*

Tested By	DF	Date	9/16/25	Checked By	EG	Date	9/24/25

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-013	Sample No.:	C-090825-4
Lab ID:	2025-173-013-004	Soil Color:	Brown

Elapsed Time		R Measured	Temp.	Composite Correction	R Corrected	N	K Factor	Diameter	N'
(min)			(°C)			(%)		(mm)	(%)
0		NA	NA	NA	NA	NA	NA	NA	NA
2		46.5	22.4	5.0	41.5	91.7	0.01307	0.0272	**47.6**
5		42.0	22.4	5.0	37.0	81.7	0.01307	0.0179	**42.4**
15		38.0	22.4	5.0	33.0	72.9	0.01307	0.0107	**37.8**
30		34.5	22.4	5.0	29.5	65.2	0.01307	0.0078	**33.8**
61		29.5	22.5	5.0	24.5	54.2	0.01305	0.0057	**28.1**
250		23.0	22.7	4.9	18.1	40.0	0.01302	0.0029	**20.7**
1440		17.5	22.5	5.0	12.5	27.7	0.01305	0.0013	**14.4**

Soil Specimen Data		**Other Corrections**		
Tare No.	664			
Wt. of Tare & Dry Material (g):	141.54	a - Factor	0.993	
Weight of Tare (g):	91.57			
Weight of Deflocculant (g):	5.0	Percent Finer than # 200	51.89	
Weight of Dry Material (g):	44.97			
		Specific Gravity	2.70	Assumed

Note: *Hydrometer test is performed on - # 200 sieve material.*

Tested By TO Date 9/22/25 Checked By EG Date 9/24/25

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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Moisture, Ash, and Organic Matter (Loss on Ignition)

ASTM D 2974-20e1

Client:	GAI Consultants, Inc.
Client Reference:	Cheswick Closue R220960.00
Project No.:	2025-173-013

Method B (To 0.1%)

Moisture Content

ASTM D2216

Lab ID:	004
Boring No.:	Final Closure
Depth (ft):	In Place Soil
Sample No.:	C-090825-4
Tare Number	CC
Weight of Tare & Wet Sample (g)	366.08
Weight of Tare & Dry Sample (g)	346.41
Weight of Tare (g)	130.56
Weight of Water (g)	19.67
Weight of Dry Sample (g)	215.85
Moisture Content	**9.1%**

Method A

Ash Content, Organic Matter

Furnace Temperature (°C)	440
Weight of Tare & Ash (g)	341.46
Weight of Volatiles (g)	4.95
Weight of Ash (g)	210.90
Ash Content (%)	**97.7%**
Organic Matter (%)	**2.3%**

Tested By JW *Date* 9/12/25 *Checked By* EG *Date* 9/16/25

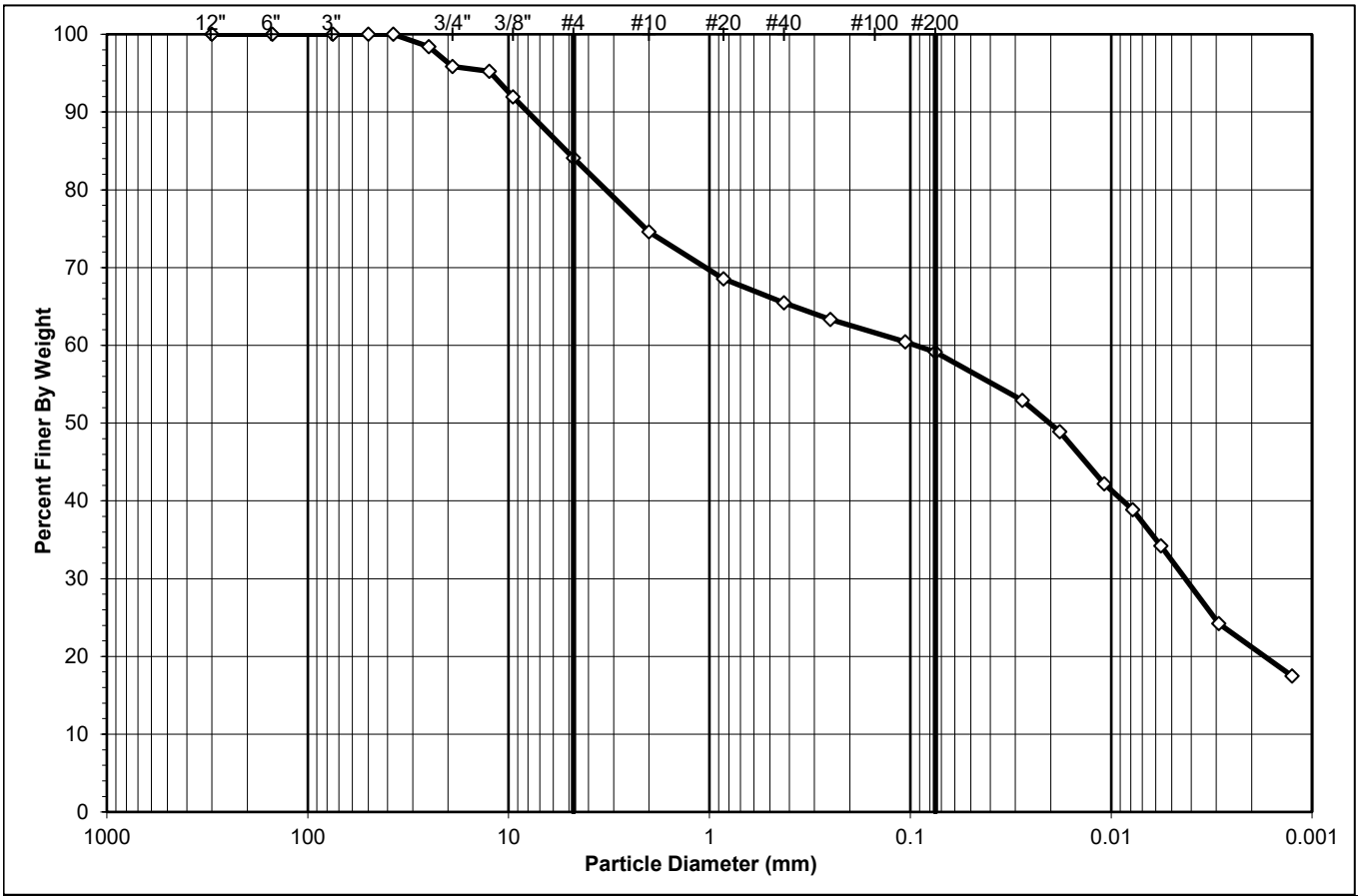
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SIEVE AND HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-013	Sample No.:	C-090825-5
Lab ID:	2025-173-013-005	Soil Color:	Brown

	SIEVE ANALYSIS			HYDROMETER	
USCS	cobbles	gravel	sand	silt and clay fraction	
USDA	cobbles	gravel	sand	silt	clay



USCS Summary

Sieve Size (mm)		Percentage (%)
Greater Than #4	*Gravel*	15.91
#4 to #200	*Sand*	24.95
Finer Than #200	*Silt & Clay*	59.13

USCS Symbol:
ml, ASSUMED

USCS Classification:
SANDY SILT WITH GRAVEL

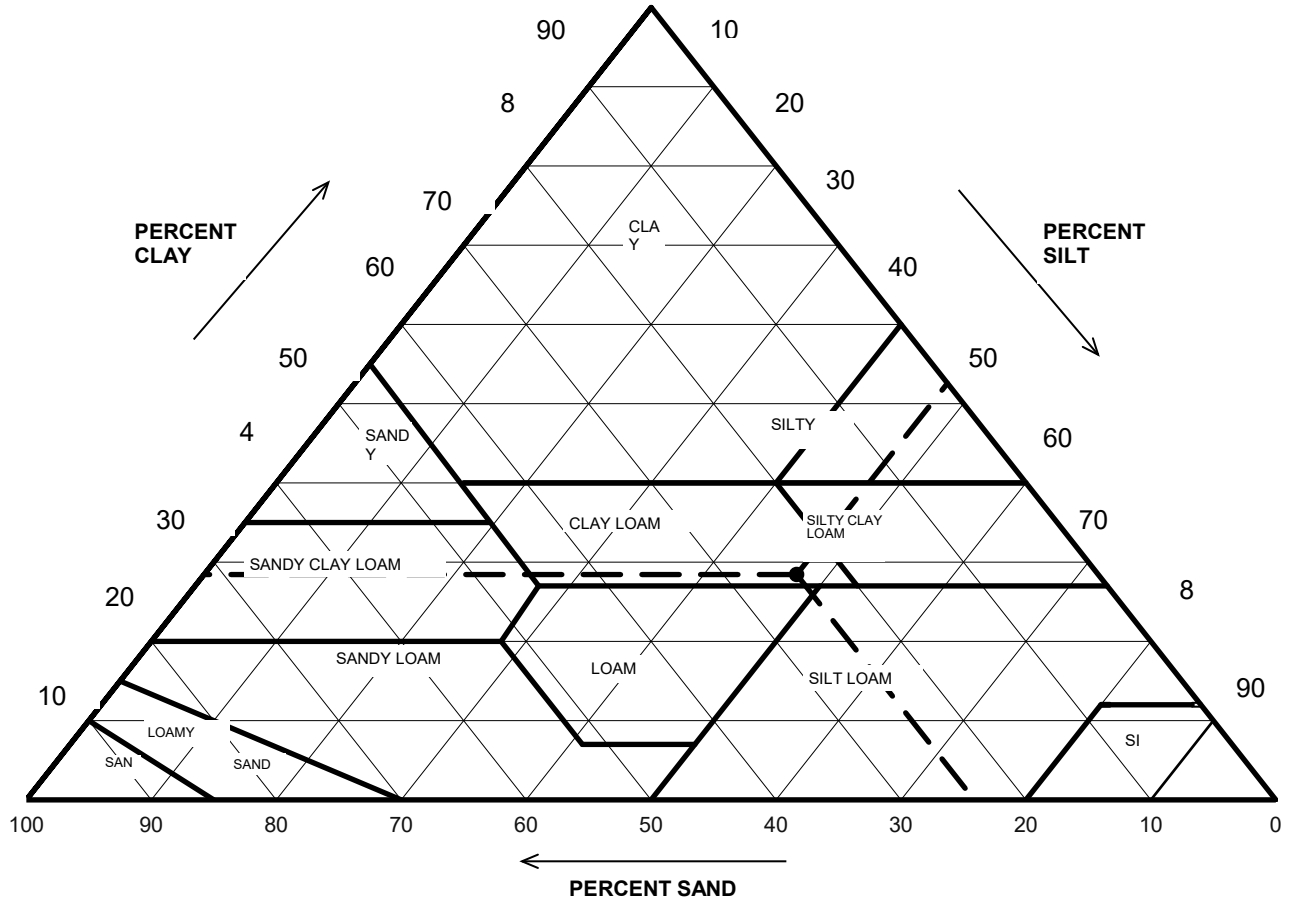
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USDA Classification Chart

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-013	Sample No.:	C-090825-5
Lab ID:	2025-173-013-005	Soil Color:	Brown



Particle Size (mm)	Percent Finer	USDA Summary	Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classification
		Gravel	25.39	**0.00**
2	74.61	*Sand*	18.01	**24.13**
0.05	56.61	*Silt*	35.39	**47.43**
0.002	21.22	*Clay*	21.22	**28.43**

USDA Classification ***CLAY LOAM***

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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WASH SIEVE ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-013	Sample No.:	C-090825-5
Lab ID:	2025-173-013-005	Soil Color:	Brown

Moisture Content of Passing 3/4" Material		Moisture Content of Retained 3/4" Material	
Tare No.:	1555	Tare No.:	3234
Wt. of Tare & Wet Sample (g):	906.36	Weight of Tare & Wet Sample (g):	190.21
Wt. of Tare & Dry Sample (g):	837.79	Weight of Tare & Dry Sample (g):	183.64
Weight of Tare (g):	145.96	Weight of Tare (g):	8.08
Weight of Water (g):	68.57	Weight of Water (g):	6.57
Weight of Dry Soil (g):	691.83	Weight of Dry Soil (g):	175.56
Moisture Content (%):	**9.9**	**Moisture Content (%):**	**3.7**

Wet Weight of -3/4" Sample (g):	4457.00	Weight of the Dry Sample (g):	691.83
Dry Weight of - 3/4" Sample (g):	4055.08	Weight of minus #200 Material (g):	426.81
Wet Weight of +3/4" Sample (g):	182.00	Weight of plus #200 Material (g):	265.02
Dry Weight of +3/4" Sample (g):	175.43		
Total Dry Weight of Sample (g):	4230.52	**J - Factor (Percent Finer than 3/4")**	**95.85%**

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)		Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00		0.00	0.00	100.00	**100.00**
6"	150	0.00		0.00	0.00	100.00	**100.00**
3"	75	0.00		0.00	0.00	100.00	**100.00**
2"	50	0.00	(*)	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00		0.00	0.00	100.00	**100.00**
1"	25	70.00		1.59	1.59	98.41	**98.41**
3/4"	19	112.00		2.55	4.15	95.85	**95.85**
1/2"	12.5	4.30		0.62	0.62	99.38	**95.26**
3/8"	9.5	23.83		3.44	4.07	95.93	**91.96**
#4	4.75	56.80		8.21	12.28	87.72	**84.09**
#10	2	68.36		9.88	22.16	77.84	**74.61**
#20	0.85	43.63	(**)	6.31	28.46	71.54	**68.57**
#40	0.425	22.39		3.24	31.70	68.30	**65.47**
#60	0.25	15.43		2.23	33.93	66.07	**63.33**
#140	0.106	20.70		2.99	36.92	63.08	**60.46**
#200	0.075	9.58		1.38	38.31	61.69	**59.13**
Pan	-	426.81		61.69	100.00	-	**-**

NOTES: *(*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample*
*(**) The - 3/4" sieve analysis is based on the Weight of the Dry Sample*

Tested By	DF	Date	9/17/25	Checked By	EG	Date	9/24/25

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-013	Sample No.:	C-090825-5
Lab ID:	2025-173-013-005	Soil Color:	Brown

Elapsed Time		R Measured	Temp.	Composite Correction	R Corrected	N	K Factor	Diameter	N'
(min)			(°C)			(%)		(mm)	(%)
0		NA	NA	NA	NA	NA	NA	NA	NA
2		44.5	22.4	5.0	39.5	89.5	0.01307	0.0277	**52.9**
5		41.5	22.4	5.0	36.5	82.7	0.01307	0.0180	**48.9**
15		36.5	22.4	5.0	31.5	71.4	0.01307	0.0108	**42.2**
30		34.0	22.4	5.0	29.0	65.7	0.01307	0.0078	**38.9**
60		30.5	22.5	5.0	25.5	57.9	0.01305	0.0057	**34.2**
250		23.0	22.7	4.9	18.1	41.0	0.01302	0.0029	**24.2**
1440		18.0	22.5	5.0	13.0	29.5	0.01305	0.0013	**17.5**

Soil Specimen Data		**Other Corrections**		
Tare No.	932			
Wt. of Tare & Dry Material (g):	142.04	a - Factor	0.993	
Weight of Tare (g):	93.20			
Weight of Deflocculant (g):	5.0	Percent Finer than # 200	59.13	
Weight of Dry Material (g):	43.84			
		Specific Gravity	2.70	Assumed

Note: *Hydrometer test is performed on - # 200 sieve material.*

Tested By TO Date 9/22/25 Checked By EG Date 9/24/25

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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Moisture, Ash, and Organic Matter (Loss on Ignition)

ASTM D 2974-20e1

Client:	GAI Consultants, Inc.
Client Reference:	Cheswick Closue R220960.00
Project No.:	2025-173-013

Method B (To 0.1%)

Moisture Content

ASTM D2216

Lab ID:	005
Boring No.:	Final Closure
Depth (ft):	In Place Soil
Sample No.:	C-090825-5
Tare Number	FF
Weight of Tare & Wet Sample (g)	325.74
Weight of Tare & Dry Sample (g)	306.52
Weight of Tare (g)	115.48
Weight of Water (g)	19.22
Weight of Dry Sample (g)	191.04
Moisture Content	**10.1%**

Method A

Ash Content, Organic Matter

Furnace Temperature (°C)	440
Weight of Tare & Ash (g)	301.43
Weight of Volatiles (g)	5.09
Weight of Ash (g)	185.95
Ash Content (%)	**97.3%**
Organic Matter (%)	**2.7%**

Tested By JW *Date* 9/12/25 *Checked By* EG *Date* 9/16/25

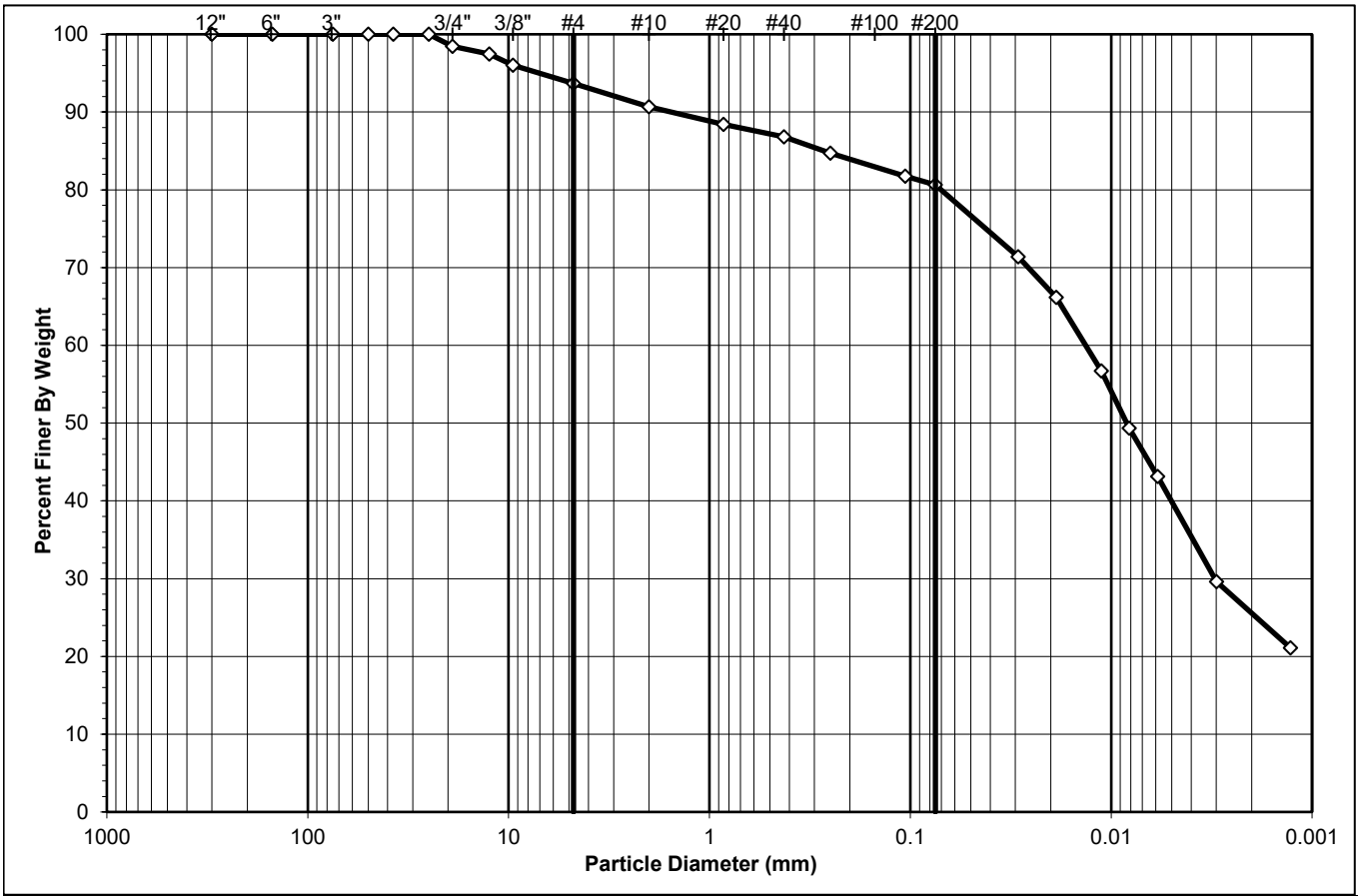
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SIEVE AND HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-013	Sample No.:	C-090825-6
Lab ID:	2025-173-013-006	Soil Color:	Brown

	SIEVE ANALYSIS			HYDROMETER	
USCS	cobbles	gravel	sand	silt and clay fraction	
USDA	cobbles	gravel	sand	silt	clay



USCS Summary

Sieve Size (mm)		Percentage (%)
Greater Than #4	*Gravel*	6.33
#4 to #200	*Sand*	13.03
Finer Than #200	*Silt & Clay*	80.65

USCS Symbol:
ml, ASSUMED

USCS Classification:
SILT WITH SAND

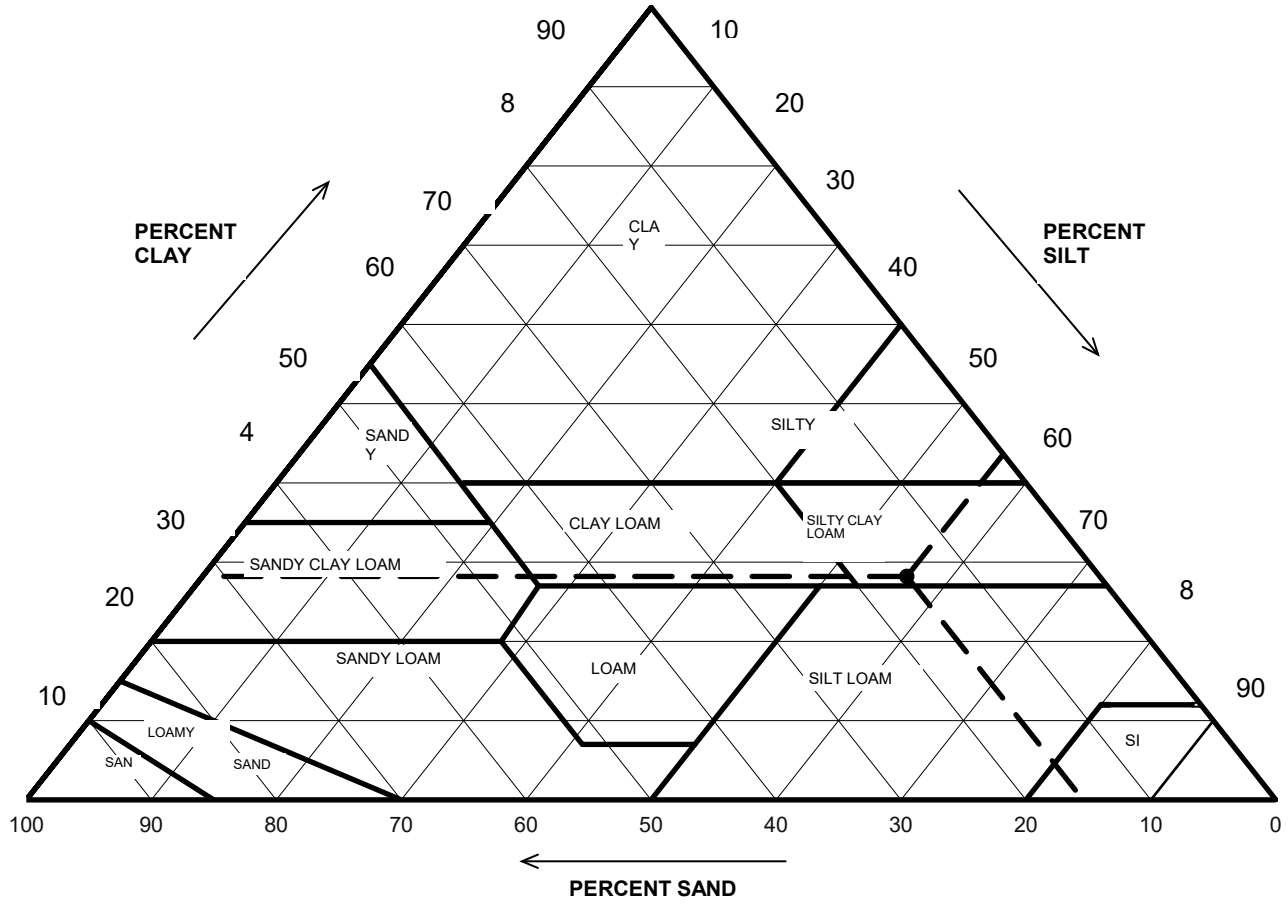
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USDA Classification Chart

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-013	Sample No.:	C-090825-6
Lab ID:	2025-173-013-006	Soil Color:	Brown



Particle Size (mm)	Percent Finer	USDA Summary	Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classification
		Gravel	9.31	**0.00**
2	90.69	*Sand*	13.99	**15.43**
0.05	76.69	*Silt*	51.12	**56.37**
0.002	25.57	*Clay*	25.57	**28.20**

USDA Classification ***SILTY CLAY LOAM***

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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WASH SIEVE ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-013	Sample No.:	C-090825-6
Lab ID:	2025-173-013-006	Soil Color:	Brown

Moisture Content of Passing 3/4" Material		Moisture Content of Retained 3/4" Material	
Tare No.:	1433	Tare No.:	3149
Wt. of Tare & Wet Sample (g):	945.72	Weight of Tare & Wet Sample (g):	62.44
Wt. of Tare & Dry Sample (g):	883.89	Weight of Tare & Dry Sample (g):	61.44
Weight of Tare (g):	143.88	Weight of Tare (g):	7.27
Weight of Water (g):	61.83	Weight of Water (g):	1
Weight of Dry Soil (g):	740.01	Weight of Dry Soil (g):	54.17
Moisture Content (%):	**8.4**	**Moisture Content (%):**	**1.8**

Wet Weight of -3/4" Sample (g):	3690.00	Weight of the Dry Sample (g):	740.01
Dry Weight of - 3/4" Sample (g):	3405.46	Weight of minus #200 Material (g):	606.26
Wet Weight of +3/4" Sample (g):	55.00	Weight of plus #200 Material (g):	133.75
Dry Weight of +3/4" Sample (g):	54.00		
Total Dry Weight of Sample (g):	3459.47	**J - Factor (Percent Finer than 3/4")**	**98.44%**

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)		Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00		0.00	0.00	100.00	**100.00**
6"	150	0.00		0.00	0.00	100.00	**100.00**
3"	75	0.00		0.00	0.00	100.00	**100.00**
2"	50	0.00	(*)	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00		0.00	0.00	100.00	**100.00**
1"	25	0.00		0.00	0.00	100.00	**100.00**
3/4"	19	55.00		1.56	1.56	98.44	**98.44**
1/2"	12.5	7.30		0.99	0.99	99.01	**97.47**
3/8"	9.5	10.80		1.46	2.45	97.55	**96.03**
#4	4.75	17.72		2.39	4.84	95.16	**93.67**
#10	2	22.46		3.04	7.88	92.12	**90.69**
#20	0.85	16.99	(**)	2.30	10.17	89.83	**88.43**
#40	0.425	12.21		1.65	11.82	88.18	**86.80**
#60	0.25	15.75		2.13	13.95	86.05	**84.71**
#140	0.106	22.19		3.00	16.95	83.05	**81.76**
#200	0.075	8.33		1.13	18.07	81.93	**80.65**
Pan	-	606.26		81.93	100.00	-	**-**

NOTES: *(*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample*
*(**) The - 3/4" sieve analysis is based on the Weight of the Dry Sample*

Tested By	DF	Date	9/17/25	Checked By	EG	Date	9/24/25

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-013	Sample No.:	C-090825-6
Lab ID:	2025-173-013-006	Soil Color:	Brown

Elapsed Time		R Measured	Temp.	Composite Correction	R Corrected	N	K Factor	Diameter	N'
(min)			(°C)			(%)		(mm)	(%)
0		NA	NA	NA	NA	NA	NA	NA	NA
2		39.0	22.4	5.0	34.0	88.5	0.01307	0.0291	**71.4**
5		36.5	22.4	5.0	31.5	82.0	0.01307	0.0188	**66.2**
15		32.0	22.4	5.0	27.0	70.3	0.01307	0.0112	**56.7**
30		28.5	22.4	5.0	23.5	61.2	0.01307	0.0081	**49.4**
60		25.5	22.5	5.0	20.5	53.5	0.01305	0.0059	**43.1**
250		19.0	22.7	4.9	14.1	36.7	0.01302	0.0030	**29.6**
1440		15.0	22.5	5.0	10.0	26.1	0.01305	0.0013	**21.1**

Soil Specimen Data		**Other Corrections**		
Tare No.	697			
Wt. of Tare & Dry Material (g):	137.01	a - Factor	0.993	
Weight of Tare (g):	93.86			
Weight of Deflocculant (g):	5.0	Percent Finer than # 200	80.65	
Weight of Dry Material (g):	38.15			
		Specific Gravity	2.70	Assumed

Note: *Hydrometer test is performed on - # 200 sieve material.*

Tested By	TO	Date	9/22/25	Checked By	EG	Date	9/24/25

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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Moisture, Ash, and Organic Matter (Loss on Ignition)

ASTM D 2974-20e1

Client:	GAI Consultants, Inc.
Client Reference:	Cheswick Closue R220960.00
Project No.:	2025-173-013

Method B (To 0.1%)

Moisture Content

ASTM D2216

Lab ID:	006
Boring No.:	Final Closure
Depth (ft):	In Place Soil
Sample No.:	C-090825-6
Tare Number	FF
Weight of Tare & Wet Sample (g)	330.55
Weight of Tare & Dry Sample (g)	314.92
Weight of Tare (g)	115.46
Weight of Water (g)	15.63
Weight of Dry Sample (g)	199.46
Moisture Content	**7.8%**

Method A

Ash Content, Organic Matter

Furnace Temperature (°C)	440
Weight of Tare & Ash (g)	310.79
Weight of Volatiles (g)	4.13
Weight of Ash (g)	195.33
Ash Content (%)	**97.9%**
Organic Matter (%)	**2.1%**

Tested By JW *Date* 9/15/25 *Checked By* EG *Date* 9/17/25

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SIEVE AND HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-013	Sample No.:	C-090825-7
Lab ID:	2025-173-013-007	Soil Color:	Brown

	SIEVE ANALYSIS			HYDROMETER	
USCS	cobbles	gravel	sand	silt and clay fraction	
USDA	cobbles	gravel	sand	silt	clay



USCS Summary

Sieve Size (mm)		Percentage (%)
Greater Than #4	*Gravel*	5.41
#4 to #200	*Sand*	11.54
Finer Than #200	*Silt & Clay*	83.05

USCS Symbol:
ml, ASSUMED

USCS Classification:
SILT WITH SAND

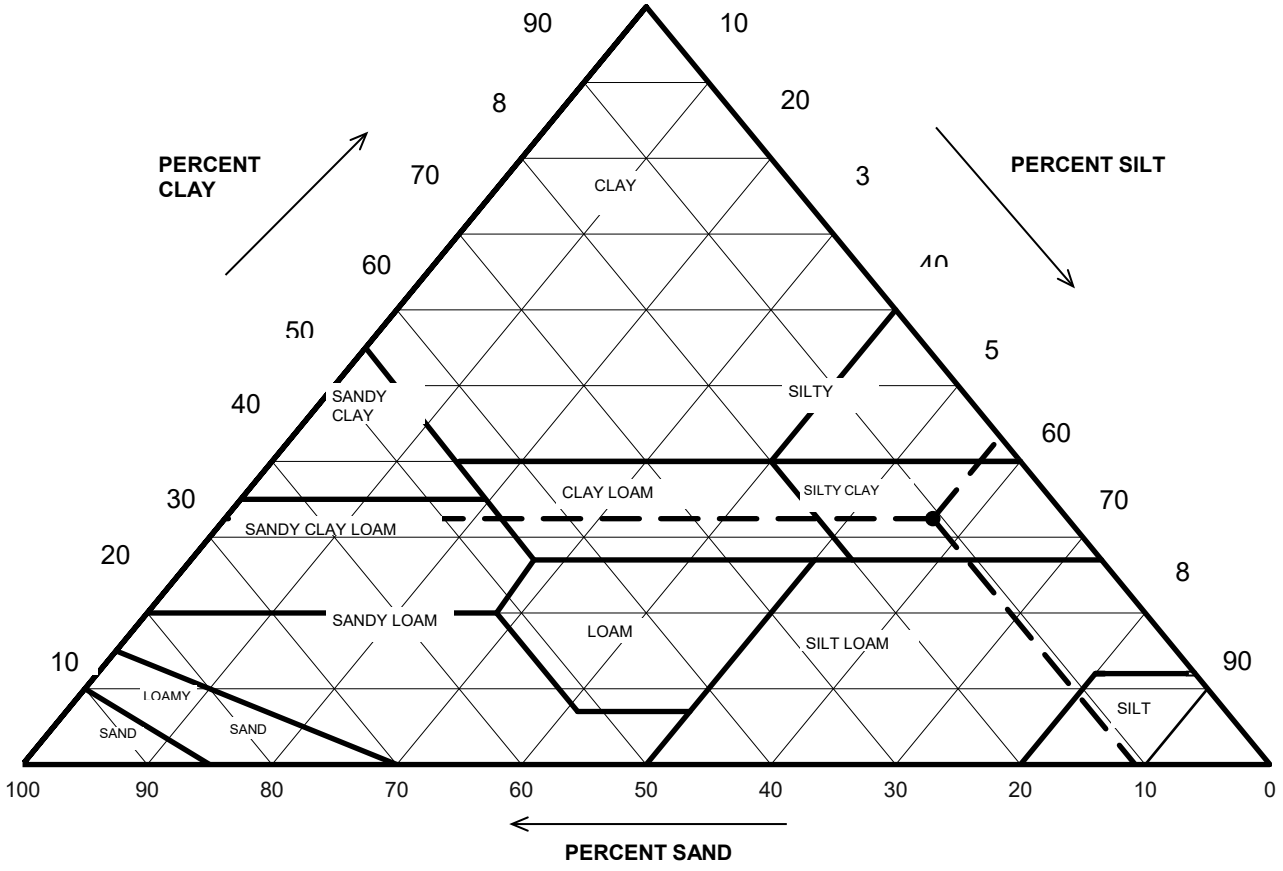
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USDA CLASSIFICATION CHART

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-013	Sample No.:	C-090825-7
Lab ID:	2025-173-013-007	Soil Color:	Brown



Particle Size (mm)	Percent Finer	USDA SUMMARY	Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classification
		Gravel	8.54	**0.00**
2	91.46	*Sand*	9.88	**10.80**
0.05	81.58	*Silt*	51.91	**56.76**
0.002	29.67	*Clay*	29.67	**32.44**

USDA Classification ***SILTY CLAY LOAM***

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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WASH SIEVE ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

geotechnics
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Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-013	Sample No.:	C-090825-7
Lab ID:	2025-173-013-007	Soil Color:	Brown

Moisture Content of Passing 3/4" Material		Moisture Content of Retained 3/4" Material	
Tare No.:	1459	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	974.67	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	926.70	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	139.54	Weight of Tare (g):	NA
Weight of Water (g):	47.97	Weight of Water (g):	NA
Weight of Dry Soil (g):	787.16	Weight of Dry Soil (g):	NA
Moisture Content (%):	**6.1**	**Moisture Content (%):**	**0.0**

Wet Weight of -3/4" Sample (g):	NA	Weight of the Dry Sample (g):	787.16
Dry Weight of - 3/4" Sample (g):	787.16	Weight of minus #200 Material (g):	653.72
Wet Weight of +3/4" Sample (g):	0.00	Weight of plus #200 Material (g):	133.44
Dry Weight of +3/4" Sample (g):	0.00		
Total Dry Weight of Sample (g):	787.16		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)		Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00		0.00	0.00	100.00	**100.00**
6"	150	0.00		0.00	0.00	100.00	**100.00**
3"	75	0.00		0.00	0.00	100.00	**100.00**
2"	50	0.00	(*)	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00		0.00	0.00	100.00	**100.00**
1"	25	0.00		0.00	0.00	100.00	**100.00**
3/4"	19	0.00		0.00	0.00	100.00	**100.00**
1/2"	12.5	19.28		2.45	2.45	97.55	**97.55**
3/8"	9.5	1.94		0.25	2.70	97.30	**97.30**
#4	4.75	21.35		2.71	5.41	94.59	**94.59**
#10	2	24.69		3.14	8.54	91.46	**91.46**
#20	0.85	19.98	(**)	2.54	11.08	88.92	**88.92**
#40	0.425	14.42		1.83	12.91	87.09	**87.09**
#60	0.25	11.89		1.51	14.43	85.57	**85.57**
#140	0.106	15.00		1.91	16.33	83.67	**83.67**
#200	0.075	4.89		0.62	16.95	83.05	**83.05**
Pan	-	653.72		83.05	100.00	-	**-**

Notes : *(*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample*
*(**) The - 3/4" sieve analysis is based on the Weight of the Dry Sample*

Tested By	DF	Date	9/17/25	Checked By	EG	Date	9/24/25

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-013	Sample No.:	C-090825-7
Lab ID:	2025-173-013-007	Soil Color:	Brown

Elapsed Time		R Measured	Temp.	Composite Correction	R Corrected	N	K Factor	Diameter	N'
(min)			(°C)			(%)		(mm)	(%)
0		NA	NA	NA	NA	NA	NA	NA	NA
2		51.0	22.4	5.0	46.0	95.4	0.01307	0.0260	**79.2**
5		48.0	22.4	5.0	43.0	89.2	0.01307	0.0170	**74.0**
15		43.0	22.4	5.0	38.0	78.8	0.01307	0.0103	**65.4**
30		38.5	22.4	5.0	33.5	69.5	0.01307	0.0075	**57.7**
64		34.5	22.5	5.0	29.5	61.2	0.01305	0.0053	**50.9**
250		25.0	22.7	4.9	20.1	41.7	0.01302	0.0029	**34.6**
1440		18.5	22.5	5.0	13.5	28.1	0.01305	0.0013	**23.3**

Soil Specimen Data		**Other Corrections**		
Tare No.	2485			
Wt. of Tare & Dry Material (g):	139.44	a - Factor	0.993	
Weight of Tare (g):	86.53			
Weight of Deflocculant (g):	5.0	Percent Finer than # 200	83.05	
Weight of Dry Material (g):	47.91			
		Specific Gravity	2.70	Assumed

Note: *Hydrometer test is performed on - # 200 sieve material.*

Tested By TO Date 9/22/25 Checked By EG Date 9/24/25

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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Moisture, Ash, and Organic Matter (Loss on Ignition)

ASTM D 2974-20e1

Client:	GAI Consultants, Inc.
Client Reference:	Cheswick Closue R220960.00
Project No.:	2025-173-013

Method B (To 0.1%)

Moisture Content

ASTM D2216

Lab ID:	007
Boring No.:	Final Closure
Depth (ft):	In Place Soil
Sample No.:	C-090825-7
Tare Number	BB
Weight of Tare & Wet Sample (g)	329.87
Weight of Tare & Dry Sample (g)	318.85
Weight of Tare (g)	123.82
Weight of Water (g)	11.02
Weight of Dry Sample (g)	195.03
Moisture Content	**5.7%**

Method A

Ash Content, Organic Matter

Furnace Temperature (°C)	440
Weight of Tare & Ash (g)	314.66
Weight of Volatiles (g)	4.19
Weight of Ash (g)	190.84
Ash Content (%)	**97.9%**
Organic Matter (%)	**2.1%**

Tested By JW *Date* 9/15/25 *Checked By* EG *Date* 9/17/25

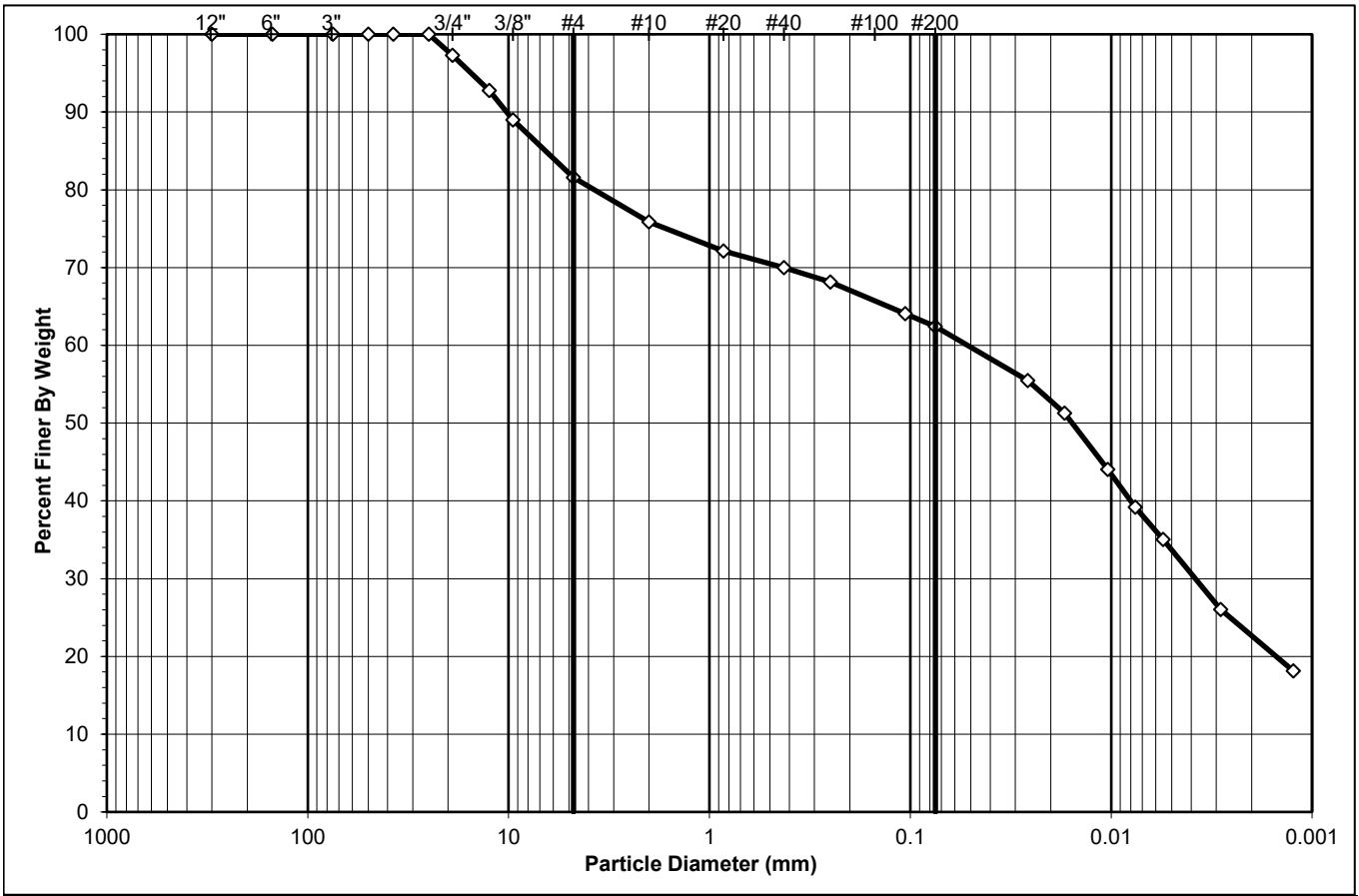
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SIEVE AND HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-013	Sample No.:	C-090825-8
Lab ID:	2025-173-013-008	Soil Color:	Brown

	SIEVE ANALYSIS			HYDROMETER	
USCS	cobbles	gravel	sand	silt and clay fraction	
USDA	cobbles	gravel	sand	silt	clay



USCS Summary

Sieve Size (mm)		Percentage (%)
Greater Than #4	*Gravel*	18.40
#4 to #200	*Sand*	19.17
Finer Than #200	*Silt & Clay*	62.42

USCS Symbol:
ml, ASSUMED

USCS Classification:
SANDY SILT WITH GRAVEL

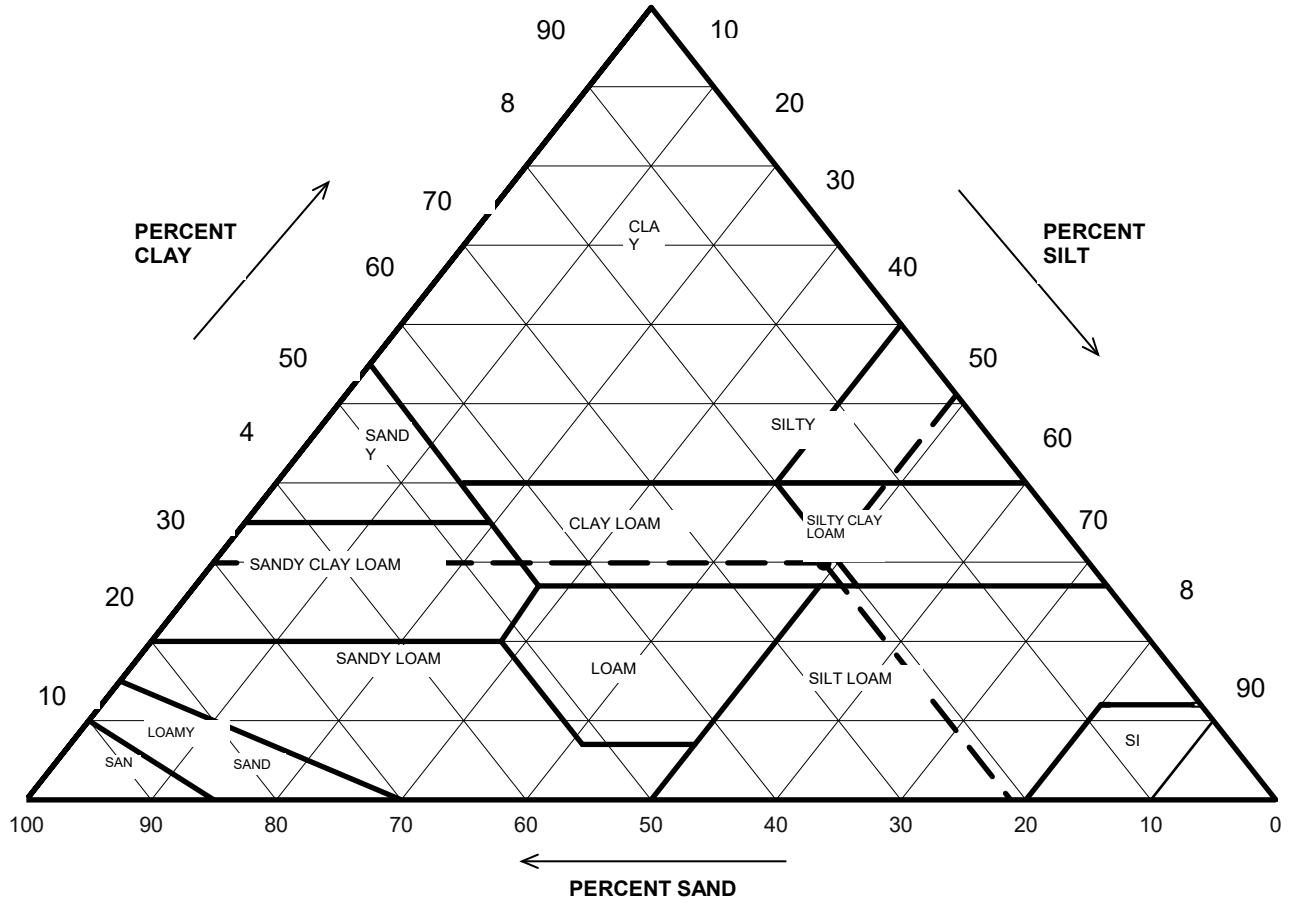
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USDA Classification Chart

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-013	Sample No.:	C-090825-8
Lab ID:	2025-173-013-008	Soil Color:	Brown



Particle Size (mm)	Percent Finer	USDA Summary	Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classification
		Gravel	24.13	**0.00**
2	75.87	*Sand*	16.10	**21.22**
0.05	59.77	*Silt*	37.08	**48.87**
0.002	22.69	*Clay*	22.69	**29.91**

USDA Classification ***CLAY LOAM***

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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WASH SIEVE ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-013	Sample No.:	C-090825-8
Lab ID:	2025-173-013-008	Soil Color:	Brown

Moisture Content of Passing 3/4" Material		Moisture Content of Retained 3/4" Material	
Tare No.:	2016	Tare No.:	4004
Wt. of Tare & Wet Sample (g):	904.63	Weight of Tare & Wet Sample (g):	93.78
Wt. of Tare & Dry Sample (g):	867.23	Weight of Tare & Dry Sample (g):	92.12
Weight of Tare (g):	144.89	Weight of Tare (g):	7.27
Weight of Water (g):	37.4	Weight of Water (g):	1.66
Weight of Dry Soil (g):	722.34	Weight of Dry Soil (g):	84.85
Moisture Content (%):	**5.2**	**Moisture Content (%):**	**2.0**

Wet Weight of -3/4" Sample (g):	3195.00	Weight of the Dry Sample (g):	722.34
Dry Weight of - 3/4" Sample (g):	3037.72	Weight of minus #200 Material (g):	463.41
Wet Weight of +3/4" Sample (g):	86.00	Weight of plus #200 Material (g):	258.93
Dry Weight of +3/4" Sample (g):	84.35		
Total Dry Weight of Sample (g):	3122.07	**J - Factor (Percent Finer than 3/4")**	**97.30%**

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)		Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00		0.00	0.00	100.00	**100.00**
6"	150	0.00		0.00	0.00	100.00	**100.00**
3"	75	0.00		0.00	0.00	100.00	**100.00**
2"	50	0.00	(*)	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00		0.00	0.00	100.00	**100.00**
1"	25	0.00		0.00	0.00	100.00	**100.00**
3/4"	19	86.00		2.70	2.70	97.30	**97.30**
1/2"	12.5	33.64		4.66	4.66	95.34	**92.77**
3/8"	9.5	28.17		3.90	8.56	91.44	**88.97**
#4	4.75	54.77		7.58	16.14	83.86	**81.60**
#10	2	42.51		5.89	22.02	77.98	**75.87**
#20	0.85	27.81	(**)	3.85	25.87	74.13	**72.12**
#40	0.425	15.94		2.21	28.08	71.92	**69.98**
#60	0.25	13.64		1.89	29.97	70.03	**68.14**
#140	0.106	30.19		4.18	34.15	65.85	**64.07**
#200	0.075	12.26		1.70	35.85	64.15	**62.42**
Pan	-	463.41		64.15	100.00	-	**-**

NOTES: *(*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample*
*(**) The - 3/4" sieve analysis is based on the Weight of the Dry Sample*

Tested By DF Date 9/16/25 Checked By EG Date 9/24/25

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-013	Sample No.:	C-090825-8
Lab ID:	2025-173-013-008	Soil Color:	Brown

Elapsed Time		R Measured	Temp.	Composite Correction	R Corrected	N	K Factor	Diameter	N'
(min)			(°C)			(%)		(mm)	(%)
0		NA	NA	NA	NA	NA	NA	NA	NA
2		51.0	22.4	5.0	46.0	88.9	0.01307	0.0260	**55.5**
5		47.5	22.4	5.0	42.5	82.1	0.01307	0.0170	**51.3**
15		41.5	22.4	5.0	36.5	70.5	0.01307	0.0104	**44.0**
30		37.5	22.4	5.0	32.5	62.8	0.01307	0.0076	**39.2**
60		34.0	22.5	5.0	29.0	56.1	0.01305	0.0055	**35.0**
250		26.5	22.7	4.9	21.6	41.7	0.01302	0.0028	**26.1**
1440		20.0	22.5	5.0	15.0	29.1	0.01305	0.0012	**18.1**

Soil Specimen Data		**Other Corrections**	
Tare No.	1465		
Wt. of Tare & Dry Material (g):	149.73	a - Factor	0.993
Weight of Tare (g):	93.33		
Weight of Deflocculant (g):	5.0	Percent Finer than # 200	62.42
Weight of Dry Material (g):	51.40		
		Specific Gravity	2.70 Assumed

Note: *Hydrometer test is performed on - # 200 sieve material.*

Tested By TO Date 9/22/25 Checked By EG Date 9/24/25

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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Moisture, Ash, and Organic Matter (Loss on Ignition)

ASTM D 2974-20e1

Client:	GAI Consultants, Inc.
Client Reference:	Cheswick Closue R220960.00
Project No.:	2025-173-013

Method B (To 0.1%)

Moisture Content

ASTM D2216

Lab ID:	008
Boring No.:	Final Closure
Depth (ft):	In Place Soil
Sample No.:	C-090825-8
Tare Number	EE
Weight of Tare & Wet Sample (g)	296.99
Weight of Tare & Dry Sample (g)	287.81
Weight of Tare (g)	126.89
Weight of Water (g)	9.18
Weight of Dry Sample (g)	160.92
Moisture Content	**5.7%**

Method A

Ash Content, Organic Matter

Furnace Temperature (°C)	440
Weight of Tare & Ash (g)	279.71
Weight of Volatiles (g)	8.10
Weight of Ash (g)	152.82
Ash Content (%)	**95.0%**
Organic Matter (%)	**5.0%**

Tested By JW *Date* 9/15/25 *Checked By* EG *Date* 9/17/25

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Moisture, Ash, and Organic Matter (Loss on Ignition)

ASTM D 2974-20e1

Client:	GAI Consultants, Inc.
Client Reference:	Cheswick Closue R220960.00
Project No.:	2025-173-013

Method B (To 0.1%)

Moisture Content

ASTM D2216

Lab ID:	009
Boring No.:	Final Closure
Depth (ft):	Borrow
Sample No.:	C-090825-9
Tare Number	CC
Weight of Tare & Wet Sample (g)	335.90
Weight of Tare & Dry Sample (g)	308.50
Weight of Tare (g)	130.54
Weight of Water (g)	27.40
Weight of Dry Sample (g)	177.96
Moisture Content	**15.4%**

Method A

Ash Content, Organic Matter

Furnace Temperature (°C)	440
Weight of Tare & Ash (g)	303.68
Weight of Volatiles (g)	4.82
Weight of Ash (g)	173.14
Ash Content (%)	**97.3%**
Organic Matter (%)	**2.7%**

Tested By JW *Date* 9/15/25 *Checked By* EG *Date* 9/17/25

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Moisture, Ash, and Organic Matter (Loss on Ignition)

ASTM D 2974-20e1

Client:	GAI Consultants, Inc.
Client Reference:	Cheswick Closue R220960.00
Project No.:	2025-173-013

Method B (To 0.1%)

Moisture Content

ASTM D2216

Lab ID:	010
Boring No.:	Final Closure
Depth (ft):	Borrow
Sample No.:	C-090825-10
Tare Number	HH
Weight of Tare & Wet Sample (g)	326.81
Weight of Tare & Dry Sample (g)	299.07
Weight of Tare (g)	134.02
Weight of Water (g)	27.74
Weight of Dry Sample (g)	165.05
Moisture Content	**16.8%**

Method A

Ash Content, Organic Matter

Furnace Temperature (°C)	440
Weight of Tare & Ash (g)	294.68
Weight of Volatiles (g)	4.39
Weight of Ash (g)	160.66
Ash Content (%)	**97.3%**
Organic Matter (%)	**2.7%**

Tested By JW *Date* 9/15/25 *Checked By* EG *Date* 9/17/25

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Moisture, Ash, and Organic Matter (Loss on Ignition)

ASTM D 2974-20e1

Client:	GAI Consultants, Inc.
Client Reference:	Cheswick Closure R220960.00
Project No.:	2025-173-013

Method B (To 0.1%)

Moisture Content

ASTM D2216

Lab ID:	011
Boring No.:	Final Closure
Depth (ft):	Borrow
Sample No.:	C-090825-11
Tare Number	EE
Weight of Tare & Wet Sample (g)	374.65
Weight of Tare & Dry Sample (g)	361.67
Weight of Tare (g)	126.95
Weight of Water (g)	12.98
Weight of Dry Sample (g)	234.72
Moisture Content	**5.5%**

Method A

Ash Content, Organic Matter

Furnace Temperature (°C)	440
Weight of Tare & Ash (g)	358.74
Weight of Volatiles (g)	2.93
Weight of Ash (g)	231.79
Ash Content (%)	**98.8%**
Organic Matter (%)	**1.2%**

Tested By JW *Date* 9/16/25 *Checked By* EG *Date* 9/18/25

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Moisture, Ash, and Organic Matter (Loss on Ignition)

ASTM D 2974-20e1

Client:	GAI Consultants, Inc.
Client Reference:	Cheswick Closure R220960.00
Project No.:	2025-173-013

Method B (To 0.1%)

Moisture Content

ASTM D2216

Lab ID:	012
Boring No.:	Final Closure
Depth (ft):	Borrow
Sample No.:	C-090825-12
Tare Number	BB
Weight of Tare & Wet Sample (g)	383.66
Weight of Tare & Dry Sample (g)	371.53
Weight of Tare (g)	123.81
Weight of Water (g)	12.13
Weight of Dry Sample (g)	247.72
Moisture Content	**4.9%**

Method A

Ash Content, Organic Matter

Furnace Temperature (°C)	440
Weight of Tare & Ash (g)	368.42
Weight of Volatiles (g)	3.11
Weight of Ash (g)	244.61
Ash Content (%)	**98.7%**
Organic Matter (%)	**1.3%**

Tested By JW *Date* 9/16/25 *Checked By* EG *Date* 9/18/25

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Moisture, Ash, and Organic Matter (Loss on Ignition)

ASTM D 2974-20e1

Client:	GAI Consultants, Inc.
Client Reference:	Cheswick Closure R220960.00
Project No.:	2025-173-013

Method B (To 0.1%)

Moisture Content

ASTM D2216

Lab ID:	013
Boring No.:	Final Closure
Depth (ft):	Borrow
Sample No.:	C-090825-13
Tare Number	FF
Weight of Tare & Wet Sample (g)	340.33
Weight of Tare & Dry Sample (g)	325.00
Weight of Tare (g)	115.49
Weight of Water (g)	15.33
Weight of Dry Sample (g)	209.51
Moisture Content	**7.3%**

Method A

Ash Content, Organic Matter

Furnace Temperature (°C)	440
Weight of Tare & Ash (g)	322.06
Weight of Volatiles (g)	2.94
Weight of Ash (g)	206.57
Ash Content (%)	**98.6%**
Organic Matter (%)	**1.4%**

Tested By JW *Date* 9/16/25 *Checked By* EG *Date* 9/18/25

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SOIL TEST REPORT FOR:	ADDITIONAL COPY TO:
K CUMMINGS GEOTECHNICS 544 BRADDOCK AVE EAST PITTSBURGH PA 15112	

DATE	LAB #	SERIAL #	COUNTY	ACRES	ASCS ID	FIELD ID	SOIL
09/19/2025	S25-53610		Allegheny			2025-173-013-001	

SOIL NUTRIENT LEVELS			Below Optimum	Optimum	Above Optimum
[1]Soil pH	7.9				
[2]Phosphorus (P)	4	ppm			
[2]Potassium (K)	138	ppm			
[2]Magnesium (Mg)	268	ppm			

RECOMMENDATIONS: *(See back messages for important information)*

Limestone*: NONE

Magnesium (Mg): NONE

Calcium Carbonate equivalent

Plant Nutrients: ***(If manure will be applied, adjust these recommendations accordingly. See back of report.)***

Year	Crop	Expected Yield	Nitrogen (lb N/A)	Phosphate (lb P_2O_5/A)	Potash (lb K_2O/A)	
1	Disturbed Lands	0	120	140	20	*See ST2 for other crop recommendations*

80 lb/A of the N recommendation should be from a slow release source. When available, use manure or other organic material to supply this slow release N.

2	0	0	0	*See ST2 for other crop recommendations*

3	0	0	0	*See ST2 for other crop recommendations*

ADDITIONAL RESULTS:						Optional Tests:			[2]Trace Elements		
[2]Calcium (ppm)	[3]Acidity (meq/100 g)	[4]CEC (meq/100 g)	% Saturation of the CEC K	Mg	Ca	Organic Matter %	Nitrate-N ppm	Salts mmhos/cm	*See back for comments* Zinc ppm	Copper ppm	Sulfur ppm
7395	0.0	17.6	2.0	12.7	85.3				1.3	1.9	11.4

Test Methods: [1]1:1 soil:water pH, [2]Mehlich 3 (ICP), [3]Mehlich Buffer pH, [4]Summation of Cations

The high calcium level in this sample indicates the probable presence of soluble calcium. Therefore the CEC and the percent saturations were calculated using a maximum exchangeable calcium level of 15 meq/100 g.

8287

Agronomy

Recommendation Messages

Enclosures

ST-2 Fertilizer Recommendation Table Guidelines for making recommendations for other crops and for adjusting for a different expected yield.

ST-4 Interpreting Soil Tests for Agronomic Crops Explains the soil test report and provides additional information on the recommendations.

Soil Nutrient Levels Soil nutrient levels are given as parts per million (ppm) elemental P, K , and Mg. As a rule of thumb to convert ppm to lb/A multiply ppm x 2. The elemental results in lb/A can be converted to oxide forms using the following conversions: P x 2.3=P_2O_5, K x 1.2=K_2O, Mg x 1.6=MgO

Below Optimum-Nutrient is deficient. There should be an economic response to adding the recommended nutrient.	**Optimum-**Nutrient is adequate. There will be no yield response to adding more of a nutrient but a recommendation is made to replace what the crop removes and thus maintain the soil test in the optimum range.	**Above Optimum-**The nutrient is more than adequate. Not only will there not be a yield response but the soil nutrient levels are also adequate to accommodate crop removal.

Recommendations N,P, and K recommendations are made for three crop years on this field. New samples should be taken after 3 years. The recommendations for the 2nd and 3rd year assume that the earlier recommendations were followed. These recommendations are based on the results of the soil test and the information provided with the sample. If you think that there is an error on the report, contact the lab at the address on the front of the report. Tables that can be used to adjust or change recommendations for all crops based on the soil test can be found on the web at: www.aasl.psu.edu.

Limestone Recommendations The recommended limestone application should be adequate for 3 years. Limestone recommendations are based on 100% calcium carbonate equivalent limestone and assume "Fine-sized" limestone with 95% passing 20 mesh, 60% passing 60 mesh and 50% passing 100 mesh. Use "ST-2 Liming Materials Conversion Table (enclosed) to adjust for limestone quality. Also see Agronomy Facts #3 "Soil Acidity and Aglime".

Magnesium Only one Mg Recommendation is made for three years. Magnesium is most economically applied by using a limestone containing Mg. Low Mg levels in soils may result in low Mg levels in forage crops especially if a significant amount of N and/or K fertilizer is applied. This can result in potentially fatal grass tetany in animals. Use caution if grazing. Apply the recommended Mg and be sure your feed rations are properly balanced.

Starter Fertilizer Starter fertilizer is important to get a corn crop off to a good start when planting in cold, wet conditions. However, on optimum or higher testing soils, as planting dates get later and soils warm up, the benefit from starter fertilizer goes down. An N only starter is often adequate when soil test levels are above optimum. The correct material, rate, and placement for starter fertilizer are critical to be effective. See Agronomy Facts #51 "Starter Fertilizer".

Nitrogen Nitrogen recommendations on this report are not based on a soil test. They are based on crop requirements for the expected yield of the crop to be grown. The pre-sidedress nitrate soil tests (PSNT) and the Chlorophyll meter test are both available for improving nitrogen recommendations on corn especially when manure is being applied. See: Agronomy Facts 17 "Pre-sidedress Soil Nitrate Test for Corn" and Agronomy Facts 53 "The Early-season Chlorophyll Meter Test for Corn". For optimum efficiency, N should be applied as close to the time of crop need as practical. For corn apply 50-90% of the N when the corn is 10-20" tall. For winter grains apply the N in the spring prior to growth stage 5. For forage grasses split the recommended N for each cutting.

Manure Manure is a very important part of a fertility program. Manure applications may supply all or most of the nutrients recommended and in some cases may apply significantly more than the crop requires. Manure nutrients should be taken into account in developing your fertility program. For details on how to do this see the Penn State Agronomy Guide. Manure analysis kits are available through your county Extension office.

Very High Soil Test Levels Very high soil test levels should be avoided as much as possible. High soil nutrient levels might not only represent an economic loss but they may also indicate potential crop, animal or environmental problems.

Very high pH can results in micronutrient deficiencies and may affect the activity of some pesticides resulting in injury or poor pest control.

Very high phosphorus levels in the soil may lead to crop production problems especially with no manure and may result in potentially harmful P loss to the environment. Best management practices may be necessary to reduce the potential for environmental problems with P.

Zinc, Copper and Sulfur Results Normal ranges for zinc (Zn) copper (Cu), and sulfur (S) in Pennsylvania soils are listed below. These are not used to make recommendations but rather to identify potential deficiencies of Zn and S or toxicity of Cu. While Zn and S deficiencies are not common in PA, they may occur on soils testing below the normal range. Zn deficiencies are more likely to occur when soil levels are low and soil pH 7.0 or higher, especially on lighter soils. Recent research in Pennsylvania on sulfur fertility suggests that when the Mehlich 3 S level is below 15 ppm, there is an approximately 50% chance that yield will increase by adding S fertilizer. When Mehlich 3 S levels are above 15 ppm, S is usually adequate and there is a very low chance of a yield increase from adding S fertilizer. Both Zn or S deficiencies should be confirmed with plant analysis. Cu toxicity may occur at levels testing well above the normal range, but have not been observed in Pennsylvania in agronomic crops even on soils testing 2 to 3 times above the normal range. For additional information, see ST4.

Normal ranges of Zn, Cu and S in Pennsylvania Soils (Mehlich 3)		
Zn (ppm)	Cu (ppm)	S (ppm)
1.1 - 9.4	1.2 - 5.5	15 - 25

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SOIL TEST REPORT FOR:	ADDITIONAL COPY TO:
K CUMMINGS GEOTECHNICS 544 BRADDOCK AVE EAST PITTSBURGH PA 15112	

DATE	LAB #	SERIAL #	COUNTY	ACRES	ASCS ID	FIELD ID	SOIL
09/19/2025	S25-53611		Allegheny			2025-173-013-002	

SOIL NUTRIENT LEVELS			Below Optimum	Optimum	Above Optimum
[1]Soil pH	7.7				
[2]Phosphorus (P)	12	ppm			
[2]Potassium (K)	125	ppm			
[2]Magnesium (Mg)	418	ppm			

RECOMMENDATIONS: *(See back messages for important information)*

Limestone*: NONE

Magnesium (Mg): NONE

Calcium Carbonate equivalent

Plant Nutrients:

(If manure will be applied, adjust these recommendations accordingly. See back of report.)

Year	Crop	Expected Yield	Nitrogen (lb N/A)	Phosphate (lb P_2O_5/A)	Potash (lb K_2O/A)	
1	Disturbed Lands	0	120	110	50	*See ST2 for other crop recommendations*

80 lb/A of the N recommendation should be from a slow release source. When available, use manure or other organic material to supply this slow release N.

2	0	0	0	*See ST2 for other crop recommendations*	

3	0	0	0	*See ST2 for other crop recommendations*	

ADDITIONAL RESULTS:						Optional Tests:			[2]Trace Elements		
[2]Calcium (ppm)	[3]Acidity (meq/100 g)	[4]CEC (meq/100 g)	% Saturation of the CEC K	Mg	Ca	Organic Matter %	Nitrate-N ppm	Salts mmhos/cm	*See back for comments* Zinc ppm	Copper ppm	Sulfur ppm
6573	0.0	18.8	1.7	18.5	79.8				1.6	2.0	19.7

Test Methods: [1]1:1 soil:water pH, [2]Mehlich 3 (ICP), [3]Mehlich Buffer pH, [4]Summation of Cations

The high calcium level in this sample indicates the probable presence of soluble calcium. Therefore the CEC and the percent saturations were calculated using a maximum exchangeable calcium level of 15 meq/100 g.

8288

Agronomy

Recommendation Messages

Enclosures

ST-2 Fertilizer Recommendation Table Guidelines for making recommendations for other crops and for adjusting for a different expected yield.

ST-4 Interpreting Soil Tests for Agronomic Crops Explains the soil test report and provides additional information on the recommendations.

Soil Nutrient Levels Soil nutrient levels are given as parts per million (ppm) elemental P, K , and Mg. As a rule of thumb to convert ppm to lb/A multiply ppm x 2. The elemental results in lb/A can be converted to oxide forms using the following conversions: P x 2.3=P_2O_5, K x 1.2=K_2O, Mg x 1.6=MgO

Below Optimum-Nutrient is deficient. There should be an economic response to adding the recommended nutrient.	**Optimum-**Nutrient is adequate. There will be no yield response to adding more of a nutrient but a recommendation is made to replace what the crop removes and thus maintain the soil test in the optimum range.	**Above Optimum-**The nutrient is more than adequate. Not only will there not be a yield response but the soil nutrient levels are also adequate to accommodate crop removal.

Recommendations N,P, and K recommendations are made for three crop years on this field. New samples should be taken after 3 years. The recommendations for the 2nd and 3rd year assume that the earlier recommendations were followed. These recommendations are based on the results of the soil test and the information provided with the sample. If you think that there is an error on the report, contact the lab at the address on the front of the report. Tables that can be used to adjust or change recommendations for all crops based on the soil test can be found on the web at: www.aasl.psu.edu.

Limestone Recommendations The recommended limestone application should be adequate for 3 years. Limestone recommendations are based on 100% calcium carbonate equivalent limestone and assume "Fine-sized" limestone with 95% passing 20 mesh, 60% passing 60 mesh and 50% passing 100 mesh. Use "ST-2 Liming Materials Conversion Table (enclosed) to adjust for limestone quality. Also see Agronomy Facts #3 "Soil Acidity and Aglime".

Magnesium Only one Mg Recommendation is made for three years. Magnesium is most economically applied by using a limestone containing Mg. Low Mg levels in soils may result in low Mg levels in forage crops especially if a significant amount of N and/or K fertilizer is applied. This can result in potentially fatal grass tetany in animals. Use caution if grazing. Apply the recommended Mg and be sure your feed rations are properly balanced.

Starter Fertilizer Starter fertilizer is important to get a corn crop off to a good start when planting in cold, wet conditions. However, on optimum or higher testing soils, as planting dates get later and soils warm up, the benefit from starter fertilizer goes down. An N only starter is often adequate when soil test levels are above optimum. The correct material, rate, and placement for starter fertilizer are critical to be effective. See Agronomy Facts #51 "Starter Fertilizer".

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Manure Manure is a very important part of a fertility program. Manure applications may supply all or most of the nutrients recommended and in some cases may apply significantly more than the crop requires. Manure nutrients should be taken into account in developing your fertility program. For details on how to do this see the Penn State Agronomy Guide. Manure analysis kits are available through your county Extension office.

Very High Soil Test Levels Very high soil test levels should be avoided as much as possible. High soil nutrient levels might not only represent an economic loss but they may also indicate potential crop, animal or environmental problems.

Very high pH can results in micronutrient deficiencies and may affect the activity of some pesticides resulting in injury or poor pest control.

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Zinc, Copper and Sulfur Results Normal ranges for zinc (Zn) copper (Cu), and sulfur (S) in Pennsylvania soils are listed below. These are not used to make recommendations but rather to identify potential deficiencies of Zn and S or toxicity of Cu. While Zn and S deficiencies are not common in PA, they may occur on soils testing below the normal range. Zn deficiencies are more likely to occur when soil levels are low and soil pH 7.0 or higher, especially on lighter soils. Recent research in Pennsylvania on sulfur fertility suggests that when the Mehlich 3 S level is below 15 ppm, there is an approximately 50% chance that yield will increase by adding S fertilizer. When Mehlich 3 S levels are above 15 ppm, S is usually adequate and there is a very low chance of a yield increase from adding S fertilizer. Both Zn or S deficiencies should be confirmed with plant analysis. Cu toxicity may occur at levels testing well above the normal range, but have not been observed in Pennsylvania in agronomic crops even on soils testing 2 to 3 times above the normal range. For additional information, see ST4.

Normal ranges of Zn, Cu and S in Pennsylvania Soils (Mehlich 3)		
Zn (ppm)	Cu (ppm)	S (ppm)
1.1 - 9.4	1.2 - 5.5	15 - 25

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SOIL TEST REPORT FOR:	ADDITIONAL COPY TO:
K CUMMINGS GEOTECHNICS 544 BRADDOCK AVE EAST PITTSBURGH PA 15112	

DATE	LAB #	SERIAL #	COUNTY	ACRES	ASCS ID	FIELD ID	SOIL
09/19/2025	S25-53612		Allegheny			2025-173-013-009	

SOIL NUTRIENT LEVELS			Below Optimum	Optimum	Above Optimum
[1]Soil pH	7.2				
[2]Phosphorus (P)	4	ppm			
[2]Potassium (K)	97	ppm			
[2]Magnesium (Mg)	403	ppm			

RECOMMENDATIONS: *(See back messages for important information)*

Limestone*: NONE

Magnesium (Mg): NONE

Calcium Carbonate equivalent

Plant Nutrients: ***(If manure will be applied, adjust these recommendations accordingly. See back of report.)***

Year	Crop	Expected Yield	Nitrogen (lb N/A)	Phosphate (lb P_2O_5/A)	Potash (lb K_2O/A)	
1	Disturbed Lands	0	120	140	120	*See ST2 for other crop recommendations*

80 lb/A of the N recommendation should be from a slow release source. When available, use manure or other organic material to supply this slow release N.

2	0	0	0	*See ST2 for other crop recommendations*

3	0	0	0	*See ST2 for other crop recommendations*

ADDITIONAL RESULTS:						Optional Tests:			[2]Trace Elements		
[2]Calcium (ppm)	[3]Acidity (meq/100 g)	[4]CEC (meq/100 g)	% Saturation of the CEC K	Mg	Ca	Organic Matter %	Nitrate-N ppm	Salts mmhos/cm	*See back for comments* Zinc ppm	Copper ppm	Sulfur ppm
3429	0.0	18.6	1.3	18.0	80.6				2.0	3.5	71.0

Test Methods: [1]1:1 soil:water pH, [2]Mehlich 3 (ICP), [3]Mehlich Buffer pH, [4]Summation of Cations

The high calcium level in this sample indicates the probable presence of soluble calcium. Therefore the CEC and the percent saturations were calculated using a maximum exchangeable calcium level of 15 meq/100 g.

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Agronomy

Recommendation Messages

Enclosures

ST-2 Fertilizer Recommendation Table Guidelines for making recommendations for other crops and for adjusting for a different expected yield.

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Normal ranges of Zn, Cu and S in Pennsylvania Soils (Mehlich 3)		
Zn (ppm)	Cu (ppm)	S (ppm)
1.1 - 9.4	1.2 - 5.5	15 - 25

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SOIL TEST REPORT FOR:	ADDITIONAL COPY TO:
K CUMMINGS GEOTECHNICS 544 BRADDOCK AVE EAST PITTSBURGH PA 15112	

DATE	LAB #	SERIAL #	COUNTY	ACRES	ASCS ID	FIELD ID	SOIL
09/19/2025	S25-53613		Allegheny			2025-173-013-010	

SOIL NUTRIENT LEVELS			Below Optimum	Optimum	Above Optimum
[1]Soil pH	7.3				
[2]Phosphorus (P)	4	ppm			
[2]Potassium (K)	104	ppm			
[2]Magnesium (Mg)	473	ppm			

RECOMMENDATIONS: *(See back messages for important information)*

Limestone*: NONE

Magnesium (Mg): NONE

***Calcium Carbonate equivalent**

Plant Nutrients: ***(If manure will be applied, adjust these recommendations accordingly. See back of report.)***

Year	Crop	Expected Yield	Nitrogen (lb N/A)	Phosphate (lb P_2O_5/A)	Potash (lb K_2O/A)	
1	Disturbed Lands	0	120	140	100	*See ST2 for other crop recommendations*

80 lb/A of the N recommendation should be from a slow release source. When available, use manure or other organic material to supply this slow release N.

2	0	0	0	*See ST2 for other crop recommendations*

3	0	0	0	*See ST2 for other crop recommendations*

ADDITIONAL RESULTS:						Optional Tests:			[2]Trace Elements		
[2]Calcium (ppm)	[3]Acidity (meq/100 g)	[4]CEC (meq/100 g)	% Saturation of the CEC K	Mg	Ca	Organic Matter %	Nitrate-N ppm	Salts mmhos/cm	*See back for comments* Zinc ppm	Copper ppm	Sulfur ppm
3423	0.0	19.2	1.4	20.5	78.1				1.8	2.5	45.9

Test Methods: [1]1:1 soil:water pH, [2]Mehlich 3 (ICP), [3]Mehlich Buffer pH, [4]Summation of Cations

The high calcium level in this sample indicates the probable presence of soluble calcium. Therefore the CEC and the percent saturations were calculated using a maximum exchangeable calcium level of 15 meq/100 g.

8290

Agronomy

Recommendation Messages

Enclosures

ST-2 Fertilizer Recommendation Table Guidelines for making recommendations for other crops and for adjusting for a different expected yield.

ST-4 Interpreting Soil Tests for Agronomic Crops Explains the soil test report and provides additional information on the recommendations.

Soil Nutrient Levels Soil nutrient levels are given as parts per million (ppm) elemental P, K , and Mg. As a rule of thumb to convert ppm to lb/A multiply ppm x 2. The elemental results in lb/A can be converted to oxide forms using the following conversions: P x 2.3=P_2O_5, K x 1.2=K_2O, Mg x 1.6=MgO

Below Optimum-Nutrient is deficient. There should be an economic response to adding the recommended nutrient.	**Optimum-**Nutrient is adequate. There will be no yield response to adding more of a nutrient but a recommendation is made to replace what the crop removes and thus maintain the soil test in the optimum range.	**Above Optimum-**The nutrient is more than adequate. Not only will there not be a yield response but the soil nutrient levels are also adequate to accommodate crop removal.

Recommendations N,P, and K recommendations are made for three crop years on this field. New samples should be taken after 3 years. The recommendations for the 2nd and 3rd year assume that the earlier recommendations were followed. These recommendations are based on the results of the soil test and the information provided with the sample. If you think that there is an error on the report, contact the lab at the address on the front of the report. Tables that can be used to adjust or change recommendations for all crops based on the soil test can be found on the web at: www.aasl.psu.edu.

Limestone Recommendations The recommended limestone application should be adequate for 3 years. Limestone recommendations are based on 100% calcium carbonate equivalent limestone and assume "Fine-sized" limestone with 95% passing 20 mesh, 60% passing 60 mesh and 50% passing 100 mesh. Use "ST-2 Liming Materials Conversion Table (enclosed) to adjust for limestone quality. Also see Agronomy Facts #3 "Soil Acidity and Aglime".

Magnesium Only one Mg Recommendation is made for three years. Magnesium is most economically applied by using a limestone containing Mg. Low Mg levels in soils may result in low Mg levels in forage crops especially if a significant amount of N and/or K fertilizer is applied. This can result in potentially fatal grass tetany in animals. Use caution if grazing. Apply the recommended Mg and be sure your feed rations are properly balanced.

Starter Fertilizer Starter fertilizer is important to get a corn crop off to a good start when planting in cold, wet conditions. However, on optimum or higher testing soils, as planting dates get later and soils warm up, the benefit from starter fertilizer goes down. An N only starter is often adequate when soil test levels are above optimum. The correct material, rate, and placement for starter fertilizer are critical to be effective. See Agronomy Facts #51 "Starter Fertilizer".

Nitrogen Nitrogen recommendations on this report are not based on a soil test. They are based on crop requirements for the expected yield of the crop to be grown. The pre-sidedress nitrate soil tests (PSNT) and the Chlorophyll meter test are both available for improving nitrogen recommendations on corn especially when manure is being applied. See: Agronomy Facts 17 "Pre-sidedress Soil Nitrate Test for Corn" and Agronomy Facts 53 "The Early-season Chlorophyll Meter Test for Corn". For optimum efficiency, N should be applied as close to the time of crop need as practical. For corn apply 50-90% of the N when the corn is 10-20" tall. For winter grains apply the N in the spring prior to growth stage 5. For forage grasses split the recommended N for each cutting.

Manure Manure is a very important part of a fertility program. Manure applications may supply all or most of the nutrients recommended and in some cases may apply significantly more than the crop requires. Manure nutrients should be taken into account in developing your fertility program. For details on how to do this see the Penn State Agronomy Guide. Manure analysis kits are available through your county Extension office.

Very High Soil Test Levels Very high soil test levels should be avoided as much as possible. High soil nutrient levels might not only represent an economic loss but they may also indicate potential crop, animal or environmental problems.

Very high pH can results in micronutrient deficiencies and may affect the activity of some pesticides resulting in injury or poor pest control.

Very high phosphorus levels in the soil may lead to crop production problems especially with no manure and may result in potentially harmful P loss to the environment. Best management practices may be necessary to reduce the potential for environmental problems with P.

Zinc, Copper and Sulfur Results Normal ranges for zinc (Zn) copper (Cu), and sulfur (S) in Pennsylvania soils are listed below. These are not used to make recommendations but rather to identify potential deficiencies of Zn and S or toxicity of Cu. While Zn and S deficiencies are not common in PA, they may occur on soils testing below the normal range. Zn deficiencies are more likely to occur when soil levels are low and soil pH 7.0 or higher, especially on lighter soils. Recent research in Pennsylvania on sulfur fertility suggests that when the Mehlich 3 S level is below 15 ppm, there is an approximately 50% chance that yield will increase by adding S fertilizer. When Mehlich 3 S levels are above 15 ppm, S is usually adequate and there is a very low chance of a yield increase from adding S fertilizer. Both Zn or S deficiencies should be confirmed with plant analysis. Cu toxicity may occur at levels testing well above the normal range, but have not been observed in Pennsylvania in agronomic crops even on soils testing 2 to 3 times above the normal range. For additional information, see ST4.

Normal ranges of Zn, Cu and S in Pennsylvania Soils (Mehlich 3)		
Zn (ppm)	Cu (ppm)	S (ppm)
1.1 - 9.4	1.2 - 5.5	15 - 25

Distribution of Soil Test Results Summaries of soil test results may be used in educational programs. However, individual results will not be released outside of Penn State without permission of the client. Electronic copies of your results are available to you, contact the lab for more information.

For additional information on these topics please see the current **Penn State Agronomy Guide** or the **AASL website**: www.aasl.psu.edu. This soil test is part of an ongoing research and extension program of Penn State. If you have any questions or comments about this program or would like copies of publications referenced here, please contact your Penn State County Extension Educator.

Agricultural Analytical Services Laboratory
The Pennsylvania State University
111 Ag Analytical Svcs Lab
University Park, PA 16802
(814) 863-0841 aaslab@psu.edu www.aasl.psu.edu

SOIL TEST REPORT FOR:	ADDITIONAL COPY TO:
K CUMMINGS GEOTECHNICS 544 BRADDOCK AVE EAST PITTSBURGH PA 15112	

DATE	LAB #	SERIAL #	COUNTY	ACRES	ASCS ID	FIELD ID	SOIL
09/19/2025	S25-53614		Allegheny			2025-173-013-011	

SOIL NUTRIENT LEVELS			Below Optimum	Optimum	Above Optimum
[1]Soil pH	7.9				
[2]Phosphorus (P)	2	ppm			
[2]Potassium (K)	143	ppm			
[2]Magnesium (Mg)	567	ppm			

RECOMMENDATIONS: *(See back messages for important information)*

Limestone*: NONE

Magnesium (Mg): NONE

***Calcium Carbonate equivalent**

Plant Nutrients:

(If manure will be applied, adjust these recommendations accordingly. See back of report.)

Year	Crop	Expected Yield	Nitrogen (lb N/A)	Phosphate (lb P_2O_5/A)	Potash (lb K_2O/A)	
1	Disturbed Lands	0	120	140	0	*See ST2 for other crop recommendations*

80 lb/A of the N recommendation should be from a slow release source. When available, use manure or other organic material to supply this slow release N.

2	0	0	0	*See ST2 for other crop recommendations*	

3	0	0	0	*See ST2 for other crop recommendations*	

ADDITIONAL RESULTS:						Optional Tests:			[2]Trace Elements		
[2]Calcium (ppm)	[3]Acidity (meq/100 g)	[4]CEC (meq/100 g)	% Saturation of the CEC K	Mg	Ca	Organic Matter %	Nitrate-N ppm	Salts mmhos/cm	*See back for comments* Zinc ppm	Copper ppm	Sulfur ppm
6585	0.0	20.1	1.8	23.5	74.7				1.3	1.3	20.8

Test Methods: [1]1:1 soil:water pH, [2]Mehlich 3 (ICP), [3]Mehlich Buffer pH, [4]Summation of Cations

The high calcium level in this sample indicates the probable presence of soluble calcium. Therefore the CEC and the percent saturations were calculated using a maximum exchangeable calcium level of 15 meq/100 g.

8291

Agronomy

Recommendation Messages

Enclosures

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October 6, 2025

Project No. 2025-173-014

Cory White
GAI Consultants, Inc.
385 East Waterfront Drive
Homestead, PA 15120

Transmittal
Laboratory Test Results
Cheswick Closure R220960.00

Please find attached the laboratory test results for the above referenced project. The tests were outlined on the Project Verification Form that was transmitted to your firm prior to the testing. The testing was performed in general accordance with the methods listed on the enclosed data sheets. The test results are believed to be representative of the samples that were submitted for testing and are indicative only of the specimens that were evaluated. We have no direct knowledge of the origin of the samples and imply no position with regard to the nature of the test results, i.e. pass/fail and no claims as to the suitability of the material for its intended use.

The test data and all associated project information provided shall be held in strict confidence and disclosed to other parties only with authorization by our Client. The test data submitted herein is considered integral with this report and is not to be reproduced except in whole and only with the authorization of the Client and Geotechnics. The remaining sample materials for this project will be retained for a minimum of 90 days as directed by the Geotechnics' Quality Program.

We are pleased to provide these testing services. Should you have any questions or if we may be of further assistance, please contact our office.

Respectfully submitted,
Geotechnics, Inc.

Nathan Melaro
Director of Operations

We understand that you have a choice in your laboratory services and we thank you for choosing Geotechnics.

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PERMEABILITY TEST

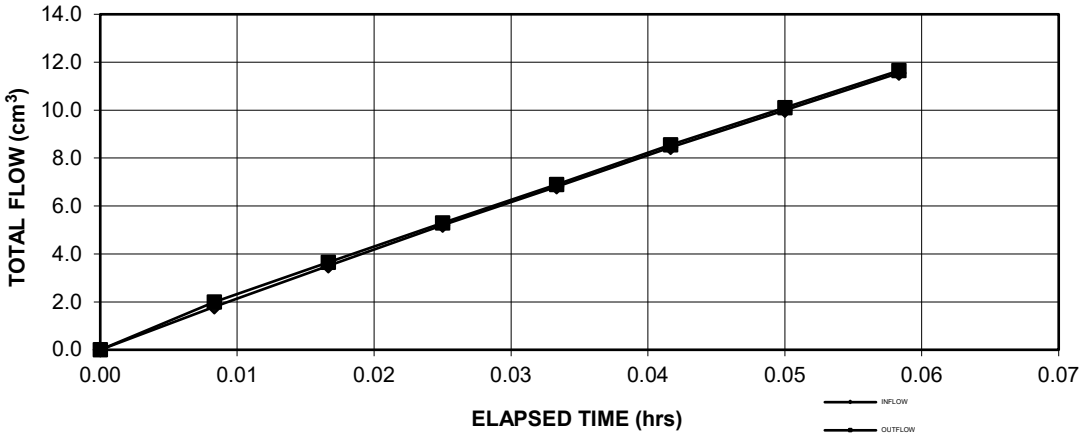
ASTM D 5084-16a Method C

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Project:	Cheswick Closure R220960.00	Depth (ft):	2.0'
Project No.:	2025-173-014	Sample No.:	ST-1
Lab ID No.:	2025-173-014-001	Avg. Effective Consol. Pressure (psi):	6.25

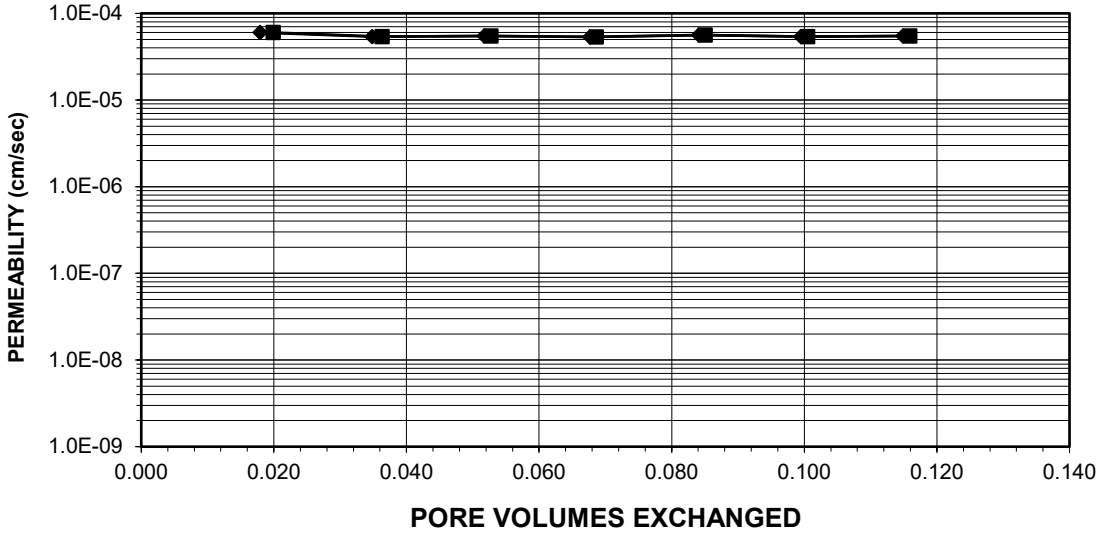
AVERAGE PERMEABILITY = 5.5E-05 cm/sec @ 20°C

AVERAGE PERMEABILITY = 5.5E-07 m/sec @ 20°C

TOTAL FLOW vs. ELAPSED TIME



PORE VOLUMES EXCHANGED vs. PERMEABILITY



Tested By: JAB Date: 1/1/16 Checked By: JLK Date: 9/26/25

DCN: CT-22 DATE: 1/1/17 REVISION: 11

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PERMEABILITY TEST

ASTM D 5084-16a Method C

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Project:	Cheswick Closure R220960.00	Depth (ft):	2.0'
Project No.:	2025-173-014	Sample No.:	ST-1
Lab ID No.:	2025-173-014-001	Avg. Effective Consol. Pressure (psi):	6.25

Specific Gravity:	2.70	Assumed
Sample Condition:		Undisturbed

Visual Description: Rteddish Brown Clay with Claystone and Rock

Permeant Type: Deaired Water

MOISTURE CONTENT:	BEFORE TEST	AFTER TEST
Tare Number	3295	909
Weight of Tare & Wet Sample (g)	182.24	760.71
Weight of Tare & Dry Sample (g)	168.77	653.47
Weight of Tare (g)	8.09	108.84
Weight of Water (g)	13.47	107.24
Weight of Dry Sample (g)	160.68	544.63
Moisture Content (%)	**8.4**	**19.7**

SPECIMEN:	BEFORE TEST	AFTER TEST
Weight of Tube & Wet Sample (g)	835.86	NA
Weight of Tube (g)	215.62	NA
Weight of Wet Sample (g)	620.24	684.95
Length 1 (in)	3.058	3.042
Length 2 (in)	3.044	3.041
Length 3 (in)	3.071	3.080
Top Diameter (in)	2.863	2.825
Middle Diameter (in)	2.850	2.818
Bottom Diameter (in)	2.854	2.815
Average Length (in)	3.06	3.05
Average Area (in^2)	6.40	6.24
Sample Volume (cm^3)	320.92	312.46
Unit Wet Weight (g/cm^3)	1.93	2.19
Unit Wet Weight (pcf)	120.6	136.8
Unit Dry Weight (pcf)	111.3	114.3
Unit Dry Weight (g/cm^3)	1.78	1.83
Void Ratio, e	0.51	0.47
Porosity, n	0.34	0.32
Pore Volume (cm^3)	109.0	100.5
Total Weight of Sample After Test (g)		652.23

Tested By: JAB Date: 1/1/16 Checked By: JLK Date: 9/26/25

DCN: CT-22 DATE: 1/1/17 REVISION: 11

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PERMEABILITY TEST

ASTM D 5084-16a Method C

geotechnics
geotechnical & geosynthetic testing

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Project:	Cheswick Closure R220960.00	Depth (ft):	2.0'
Project No.:	2025-173-014	Sample No.:	ST-1
Lab ID No.:	2025-173-014-001	Avg. Effective Consol. Pressure (psi):	6.25

Pressure Heads (Constant)	
Top Cap (psi)	67.5
Bottom Cap (psi)	70.0
Cell (psi)	75.0
Total Pressure Head (cm)	175.8
Hydraulic Gradient	22.65

Final Sample Dimensions	
Sample Length (cm), L	7.76
Sample Diameter (cm)	7.16
Sample Area (cm^2), A	40.28
Inflow Burette Area (cm^2), a-in	0.961
Outflow Burette Area (cm^2), a-out	1.020
B Parameter (%)	98

AVERAGE PERMEABILITY = 5.5E-05 cm/sec @ 20°C

AVERAGE PERMEABILITY = 5.5E-07 m/sec @ 20°C

DATE	TIME		ELAPSED TIME t	TOTAL INFLOW	TOTAL OUTFLOW	TOTAL HEAD h	FLOW (0 flow)	TEMP.	INCREMENTAL PERMEABILITY @ 20°C
(mm/dd/yy)	(hr)	(min)	(hr)	(cm^3)	(cm^3)	(cm)	(1 stop)	(°C)	(cm/sec)
9/25/2025	10	8	0.000	0.0	0.0	196.1	0	21.7	NA
9/25/2025	10	8.5	0.008	1.8	2.0	192.2	0	21.7	6.0E-05
9/25/2025	10	9	0.017	3.5	3.7	188.9	0	21.7	5.4E-05
9/25/2025	10	9.5	0.025	5.2	5.3	185.5	0	21.7	5.5E-05
9/25/2025	10	10	0.033	6.8	6.9	182.2	0	21.7	5.4E-05
9/25/2025	10	11	0.042	8.5	8.6	178.9	0	21.7	5.6E-05
9/25/2025	10	11	0.050	10.0	10.1	175.8	0	21.7	5.4E-05
9/25/2025	10	12	0.058	11.6	11.7	172.7	1	21.7	5.5E-05

Tested By: JAB Date: 1/1/16 Checked By: JLK Date: 9/26/25

DCN: CT-22 DATE: 1/1/17 REVISION: 11

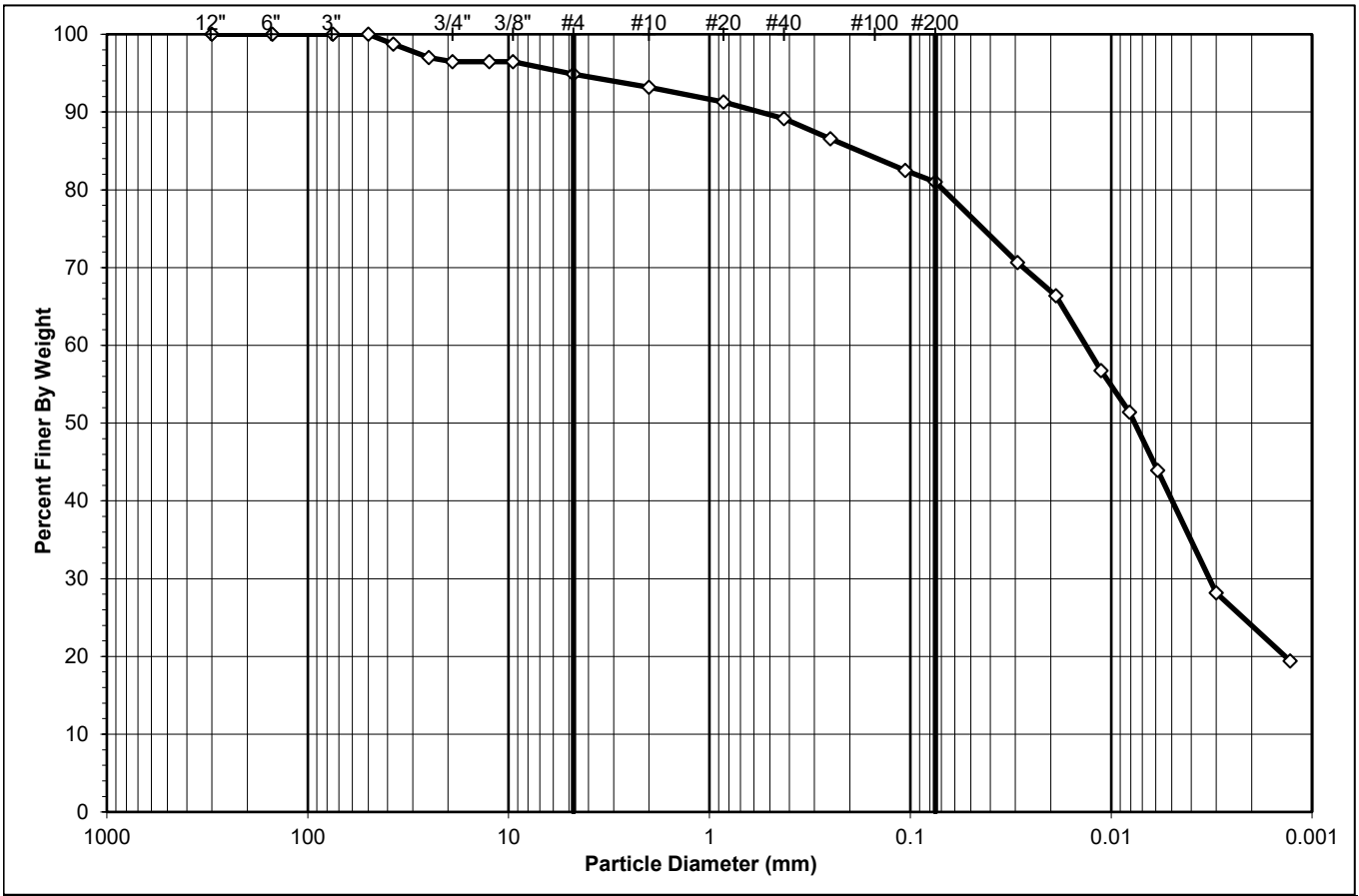
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SIEVE AND HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-014	Sample No.:	C-091825-1
Lab ID:	2025-173-014-003	Soil Color:	Brown

	SIEVE ANALYSIS			HYDROMETER	
USCS	cobbles	gravel	sand	silt and clay fraction	
USDA	cobbles	gravel	sand	silt	clay



USCS Summary

Sieve Size (mm)		Percentage (%)
Greater Than #4	*Gravel*	5.13
#4 to #200	*Sand*	13.84
Finer Than #200	*Silt & Clay*	81.03

USCS Symbol:
cl, ASSUMED

USCS Classification:
LEAN CLAY WITH SAND

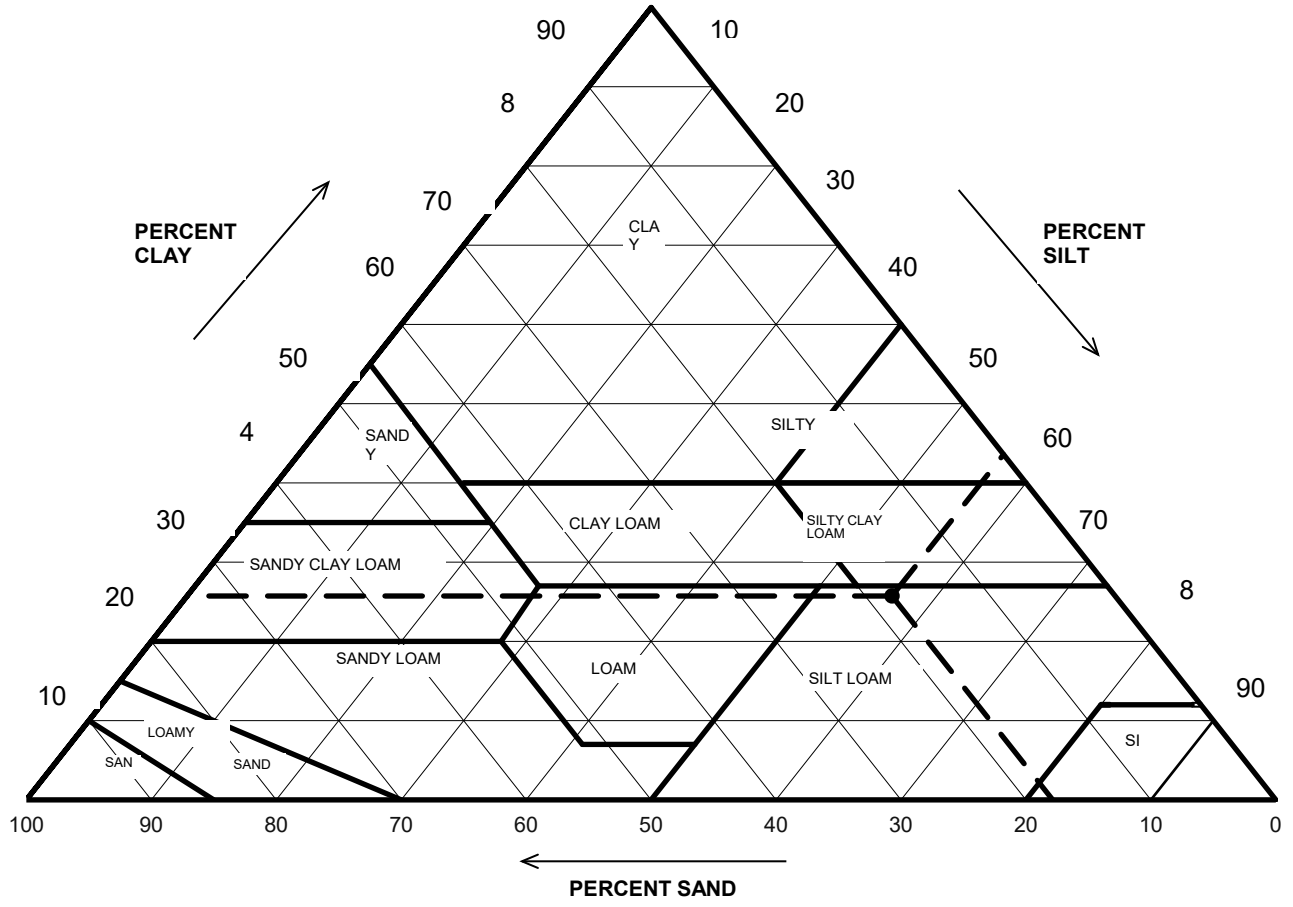
DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

S:Excel\Excel QA\Spreadsheets\SieveHydJ.xls

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USDA Classification Chart

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-014	Sample No.:	C-091825-1
Lab ID:	2025-173-014-003	Soil Color:	Brown



Particle Size (mm)	Percent Finer	USDA Summary	Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classification
		Gravel	6.80	**0.00**
2	93.20	*Sand*	16.64	**17.86**
0.05	76.55	*Silt*	52.58	**56.41**
0.002	23.98	*Clay*	23.98	**25.73**

USDA Classification ***SILT LOAM***

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

S:Excel\Excel QA\Spreadsheets\SieveHydJ.xls

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WASH SIEVE ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-014	Sample No.:	C-091825-1
Lab ID:	2025-173-014-003	Soil Color:	Brown

Moisture Content of Passing 3/4" Material		Moisture Content of Retained 3/4" Material	
Tare No.:	1438	Tare No.:	3267
Wt. of Tare & Wet Sample (g):	933.87	Weight of Tare & Wet Sample (g):	301.99
Wt. of Tare & Dry Sample (g):	881.82	Weight of Tare & Dry Sample (g):	291.34
Weight of Tare (g):	143.75	Weight of Tare (g):	7.21
Weight of Water (g):	52.05	Weight of Water (g):	10.65
Weight of Dry Soil (g):	738.07	Weight of Dry Soil (g):	284.13
Moisture Content (%):	**7.1**	**Moisture Content (%):**	**3.7**

Wet Weight of -3/4" Sample (g):	8463.00	Weight of the Dry Sample (g):	738.07
Dry Weight of - 3/4" Sample (g):	7905.49	Weight of minus #200 Material (g):	619.78
Wet Weight of +3/4" Sample (g):	298.00	Weight of plus #200 Material (g):	118.29
Dry Weight of +3/4" Sample (g):	287.23		
Total Dry Weight of Sample (g):	8192.72	**J - Factor (Percent Finer than 3/4")**	**96.49%**

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)		Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00		0.00	0.00	100.00	**100.00**
6"	150	0.00		0.00	0.00	100.00	**100.00**
3"	75	0.00		0.00	0.00	100.00	**100.00**
2"	50	0.00	(*)	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	107.00		1.26	1.26	98.74	**98.74**
1"	25	147.00		1.73	2.99	97.01	**97.01**
3/4"	19	44.00		0.52	3.51	96.49	**96.49**
1/2"	12.5	0.00		0.00	0.00	100.00	**96.49**
3/8"	9.5	0.00		0.00	0.00	100.00	**96.49**
#4	4.75	12.40		1.68	1.68	98.32	**94.87**
#10	2	12.83		1.74	3.42	96.58	**93.20**
#20	0.85	14.39	(**)	1.95	5.37	94.63	**91.31**
#40	0.425	16.43		2.23	7.59	92.41	**89.17**
#60	0.25	20.00		2.71	10.30	89.70	**86.55**
#140	0.106	31.09		4.21	14.52	85.48	**82.49**
#200	0.075	11.15		1.51	16.03	83.97	**81.03**
Pan	-	619.78		83.97	100.00	-	**-**

NOTES: *(*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample*
*(**) The - 3/4" sieve analysis is based on the Weight of the Dry Sample*

Tested By	DF	Date	9/24/25	Checked By	EG	Date	9/26/25

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-014	Sample No.:	C-091825-1
Lab ID:	2025-173-014-003	Soil Color:	Brown

Elapsed Time		R Measured	Temp.	Composite Correction	R Corrected	N	K Factor	Diameter	N'
(min)			(°C)			(%)		(mm)	(%)
0		NA	NA	NA	NA	NA	NA	NA	NA
2		38.0	22.4	5.0	33.0	87.2	0.01307	0.0293	**70.7**
5		36.0	22.4	5.0	31.0	81.9	0.01307	0.0188	**66.4**
15		31.5	22.4	5.0	26.5	70.0	0.01307	0.0113	**56.7**
30		29.0	22.4	5.0	24.0	63.4	0.01307	0.0081	**51.4**
60		25.5	22.4	5.0	20.5	54.2	0.01307	0.0059	**43.9**
250		18.0	22.9	4.8	13.2	34.8	0.01299	0.0030	**28.2**
1440		14.0	22.6	4.9	9.1	24.0	0.01303	0.0013	**19.4**

Soil Specimen Data		**Other Corrections**		
Tare No.	653			
Wt. of Tare & Dry Material (g):	133.56	a - Factor	0.993	
Weight of Tare (g):	90.96			
Weight of Deflocculant (g):	5.0	Percent Finer than # 200	81.03	
Weight of Dry Material (g):	37.60			
		Specific Gravity	2.70	Assumed

Note: *Hydrometer test is performed on - # 200 sieve material.*

Tested By TO Date 9/24/25 Checked By EG Date 9/26/25

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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Moisture, Ash, and Organic Matter (Loss on Ignition)

ASTM D 2974-20e1

Client:	GAI Consultants, Inc.
Client Reference:	Cheswick Closure R220960.00
Project No.:	2025-173-014

Method B (To 0.1%)

Moisture Content

ASTM D2216

Lab ID:	003
Boring No.:	Final Closure
Depth (ft):	In Place Soil
Sample No.:	C-091825-1
Tare Number	FF
Weight of Tare & Wet Sample (g)	376.61
Weight of Tare & Dry Sample (g)	358.82
Weight of Tare (g)	115.52
Weight of Water (g)	17.79
Weight of Dry Sample (g)	243.30
Moisture Content	**7.3%**

Method A

Ash Content, Organic Matter

Furnace Temperature (°C)	440
Weight of Tare & Ash (g)	353.82
Weight of Volatiles (g)	5.00
Weight of Ash (g)	238.30
Ash Content (%)	**97.9%**
Organic Matter (%)	**2.1%**

Tested By JW *Date* 9/22/25 *Checked By* EG *Date* 9/24/25

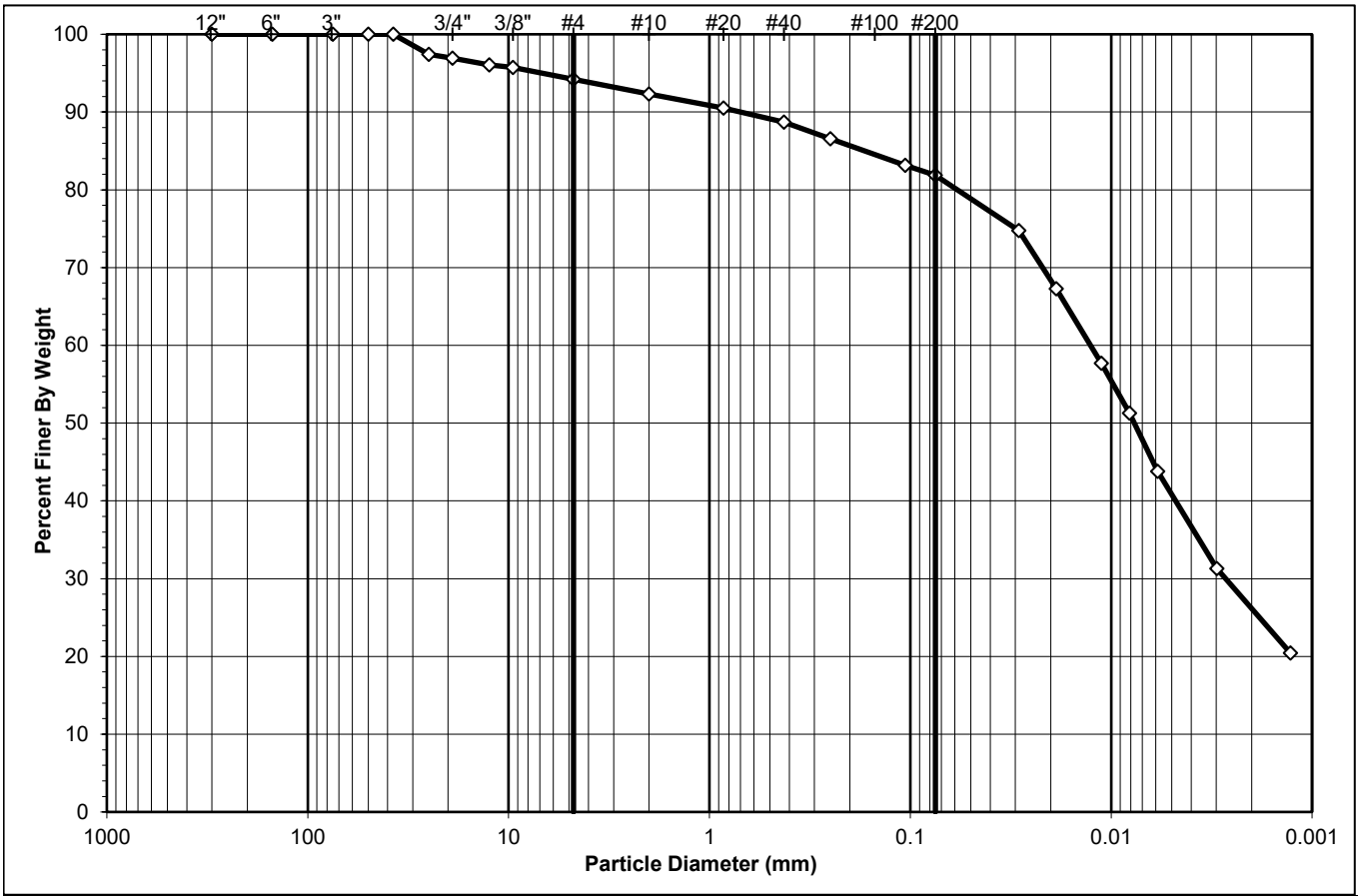
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SIEVE AND HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-014	Sample No.:	C-091825-2
Lab ID:	2025-173-014-004	Soil Color:	Brown

	SIEVE ANALYSIS			HYDROMETER	
USCS	cobbles	gravel	sand	silt and clay fraction	
USDA	cobbles	gravel	sand	silt	clay



USCS Summary

Sieve Size (mm)		Percentage (%)
Greater Than #4	*Gravel*	5.78
#4 to #200	*Sand*	12.35
Finer Than #200	*Silt & Clay*	81.87

USCS Symbol:
cl, ASSUMED

USCS Classification:
LEAN CLAY WITH SAND

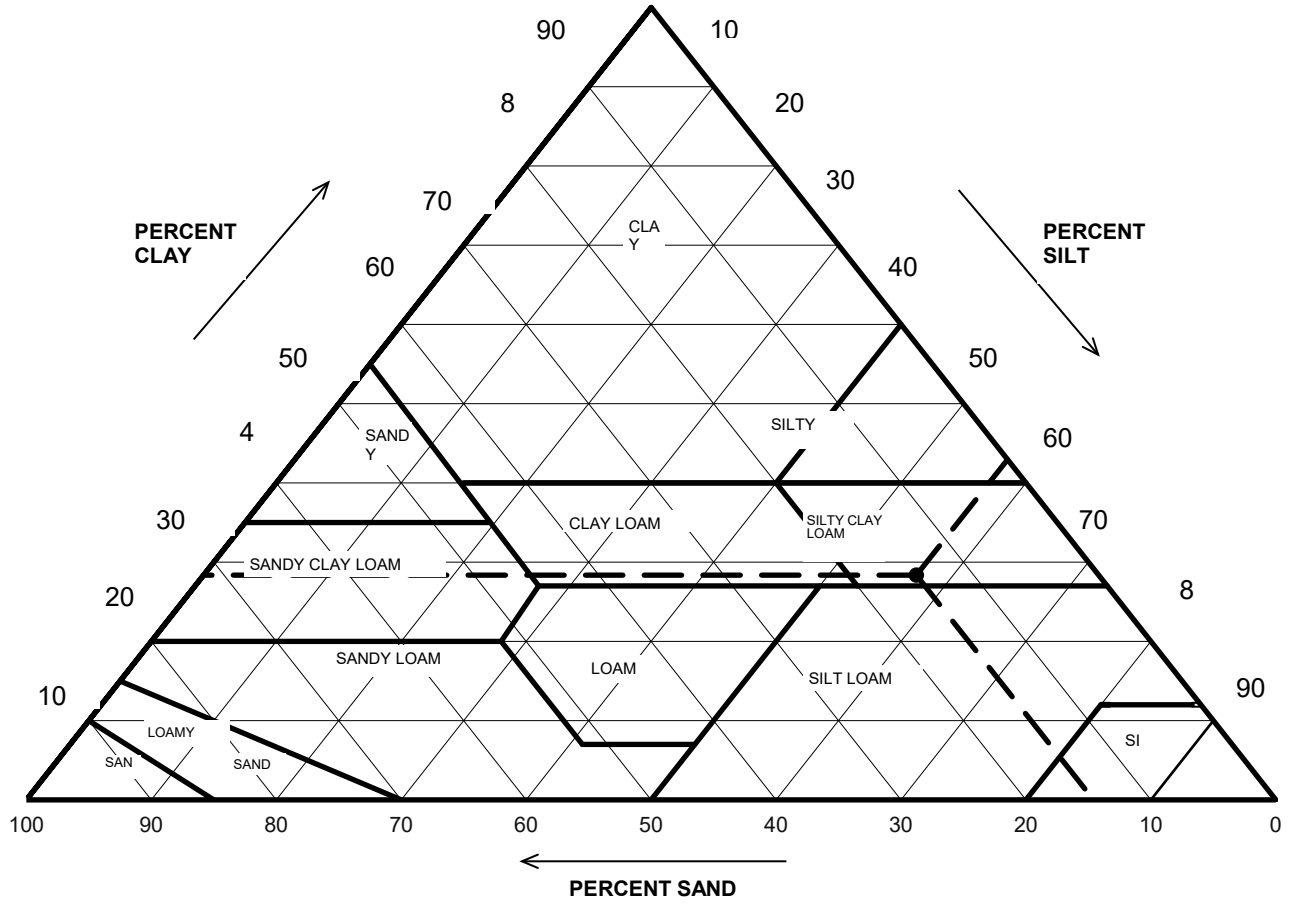
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USDA Classification Chart

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-014	Sample No.:	C-091825-2
Lab ID:	2025-173-014-004	Soil Color:	Brown



Particle Size (mm)	Percent Finer	USDA Summary	Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classification
		Gravel	7.68	**0.00**
2	92.32	*Sand*	13.47	**14.59**
0.05	78.86	*Silt*	52.67	**57.05**
0.002	26.18	*Clay*	26.18	**28.36**

USDA Classification ***SILTY CLAY LOAM***

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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WASH SIEVE ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-014	Sample No.:	C-091825-2
Lab ID:	2025-173-014-004	Soil Color:	Brown

Moisture Content of Passing 3/4" Material		Moisture Content of Retained 3/4" Material	
Tare No.:	1534	Tare No.:	2965
Wt. of Tare & Wet Sample (g):	932.95	Weight of Tare & Wet Sample (g):	275.42
Wt. of Tare & Dry Sample (g):	874.98	Weight of Tare & Dry Sample (g):	260.78
Weight of Tare (g):	145.05	Weight of Tare (g):	7.25
Weight of Water (g):	57.97	Weight of Water (g):	14.64
Weight of Dry Soil (g):	729.93	Weight of Dry Soil (g):	253.53
Moisture Content (%):	**7.9**	**Moisture Content (%):**	**5.8**

Wet Weight of -3/4" Sample (g):	8580.00	Weight of the Dry Sample (g):	729.93
Dry Weight of - 3/4" Sample (g):	7948.72	Weight of minus #200 Material (g):	616.58
Wet Weight of +3/4" Sample (g):	267.00	Weight of plus #200 Material (g):	113.35
Dry Weight of +3/4" Sample (g):	252.42		
Total Dry Weight of Sample (g):	8201.15	**J - Factor (Percent Finer than 3/4")**	**96.92%**

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)		Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00		0.00	0.00	100.00	**100.00**
6"	150	0.00		0.00	0.00	100.00	**100.00**
3"	75	0.00		0.00	0.00	100.00	**100.00**
2"	50	0.00	(*)	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00		0.00	0.00	100.00	**100.00**
1"	25	224.00		2.58	2.58	97.42	**97.42**
3/4"	19	43.00		0.50	3.08	96.92	**96.92**
1/2"	12.5	6.39		0.88	0.88	99.12	**96.07**
3/8"	9.5	2.50		0.34	1.22	98.78	**95.74**
#4	4.75	11.45		1.57	2.79	97.21	**94.22**
#10	2	14.29		1.96	4.74	95.26	**92.32**
#20	0.85	13.56	(**)	1.86	6.60	93.40	**90.52**
#40	0.425	13.80		1.89	8.49	91.51	**88.69**
#60	0.25	15.88		2.18	10.67	89.33	**86.58**
#140	0.106	25.79		3.53	14.20	85.80	**83.16**
#200	0.075	9.69		1.33	15.53	84.47	**81.87**
Pan	-	616.58		84.47	100.00	-	**-**

NOTES: *(*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample*
*(**) The - 3/4" sieve analysis is based on the Weight of the Dry Sample*

Tested By	DF	Date	9/24/25	Checked By	EG	Date	9/26/25

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-014	Sample No.:	C-091825-2
Lab ID:	2025-173-014-004	Soil Color:	Brown

Elapsed Time		R Measured	Temp.	Composite Correction	R Corrected	N	K Factor	Diameter	N'
(min)			(°C)			(%)		(mm)	(%)
0		NA	NA	NA	NA	NA	NA	NA	NA
2		40.0	22.4	5.0	35.0	91.3	0.01307	0.0288	**74.8**
5		36.5	22.4	5.0	31.5	82.2	0.01307	0.0188	**67.3**
15		32.0	22.4	5.0	27.0	70.5	0.01307	0.0112	**57.7**
30		29.0	22.4	5.0	24.0	62.6	0.01307	0.0081	**51.3**
60		25.5	22.4	5.0	20.5	53.5	0.01307	0.0059	**43.8**
250		19.5	22.9	4.8	14.7	38.2	0.01299	0.0030	**31.3**
1440		14.5	22.6	4.9	9.6	25.0	0.01303	0.0013	**20.4**

Soil Specimen Data		**Other Corrections**	
Tare No.	637		
Wt. of Tare & Dry Material (g):	136.12	a - Factor	0.993
Weight of Tare (g):	93.04		
Weight of Deflocculant (g):	5.0	Percent Finer than # 200	81.87
Weight of Dry Material (g):	38.08		
		Specific Gravity	2.70 Assumed

Note: *Hydrometer test is performed on - # 200 sieve material.*

Tested By TO Date 9/24/25 Checked By EG Date 9/26/25

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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Moisture, Ash, and Organic Matter (Loss on Ignition)

ASTM D 2974-20e1

Client:	GAI Consultants, Inc.
Client Reference:	Cheswick Closure R220960.00
Project No.:	2025-173-014

Method B (To 0.1%)

Moisture Content

ASTM D2216

Lab ID:	004
Boring No.:	Final Closure
Depth (ft):	In Place Soil
Sample No.:	C-091825-2
Tare Number	BB
Weight of Tare & Wet Sample (g)	348.45
Weight of Tare & Dry Sample (g)	331.79
Weight of Tare (g)	123.86
Weight of Water (g)	16.66
Weight of Dry Sample (g)	207.93
Moisture Content	**8.0%**

Method A

Ash Content, Organic Matter

Furnace Temperature (°C)	440
Weight of Tare & Ash (g)	327.37
Weight of Volatiles (g)	4.42
Weight of Ash (g)	203.51
Ash Content (%)	**97.9%**
Organic Matter (%)	**2.1%**

Tested By JW *Date* 9/22/25 *Checked By* EG *Date* 9/24/25

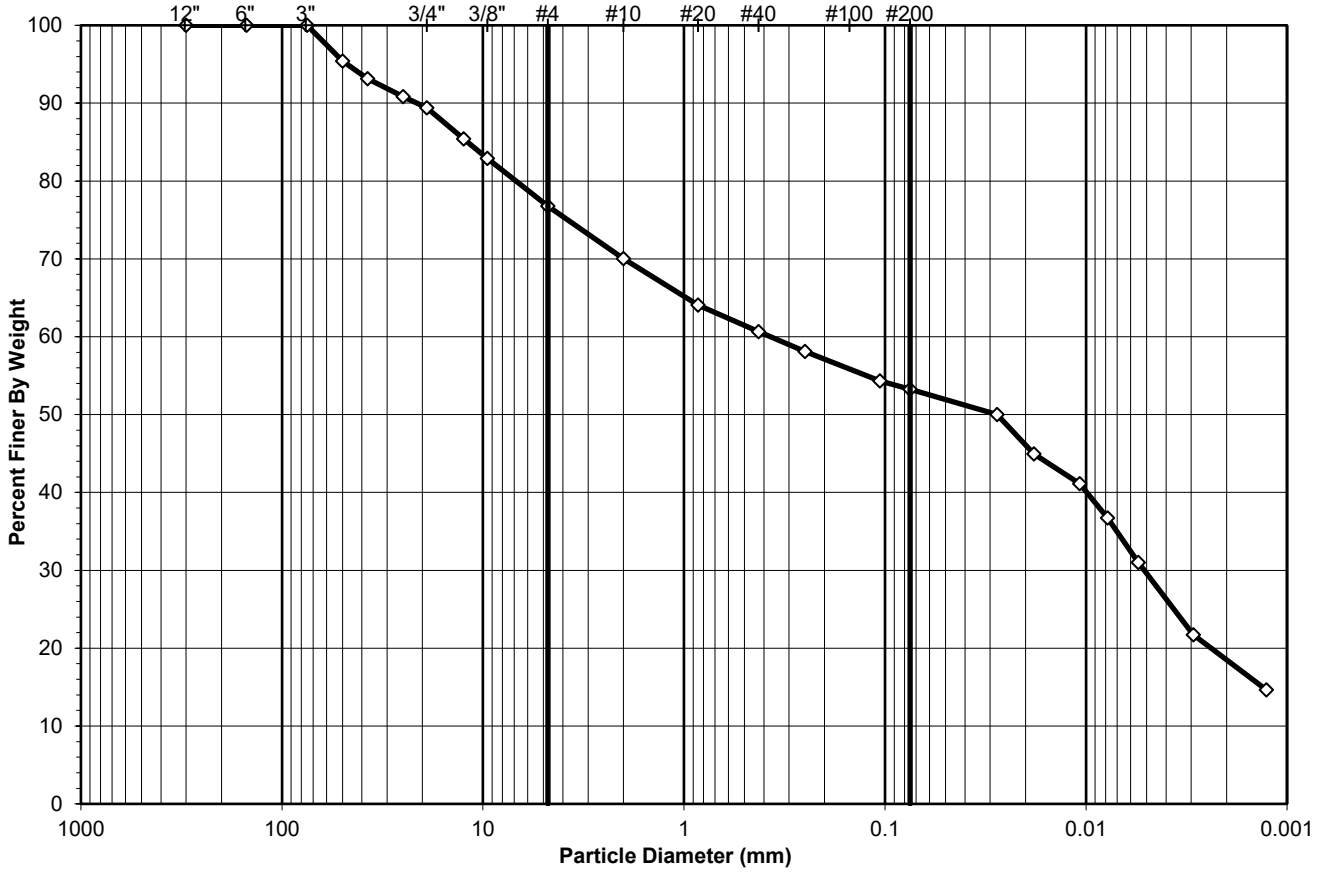
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SIEVE AND HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-014	Sample No.:	C-091825-3
Lab ID:	2025-173-014-005	Soil Color:	Brown

	SIEVE ANALYSIS			HYDROMETER	
USCS	cobbles	gravel	sand	silt and clay fraction	
USDA	cobbles	gravel	sand	silt	clay



USCS Summary

Sieve Size (mm)		Percentage (%)
Greater Than #4	*Gravel*	23.21
#4 to #200	*Sand*	23.53
Finer Than #200	*Silt & Clay*	53.27

USCS Symbol:
cl, ASSUMED

USCS Classification:
SANDY LEAN CLAY WITH GRAVEL

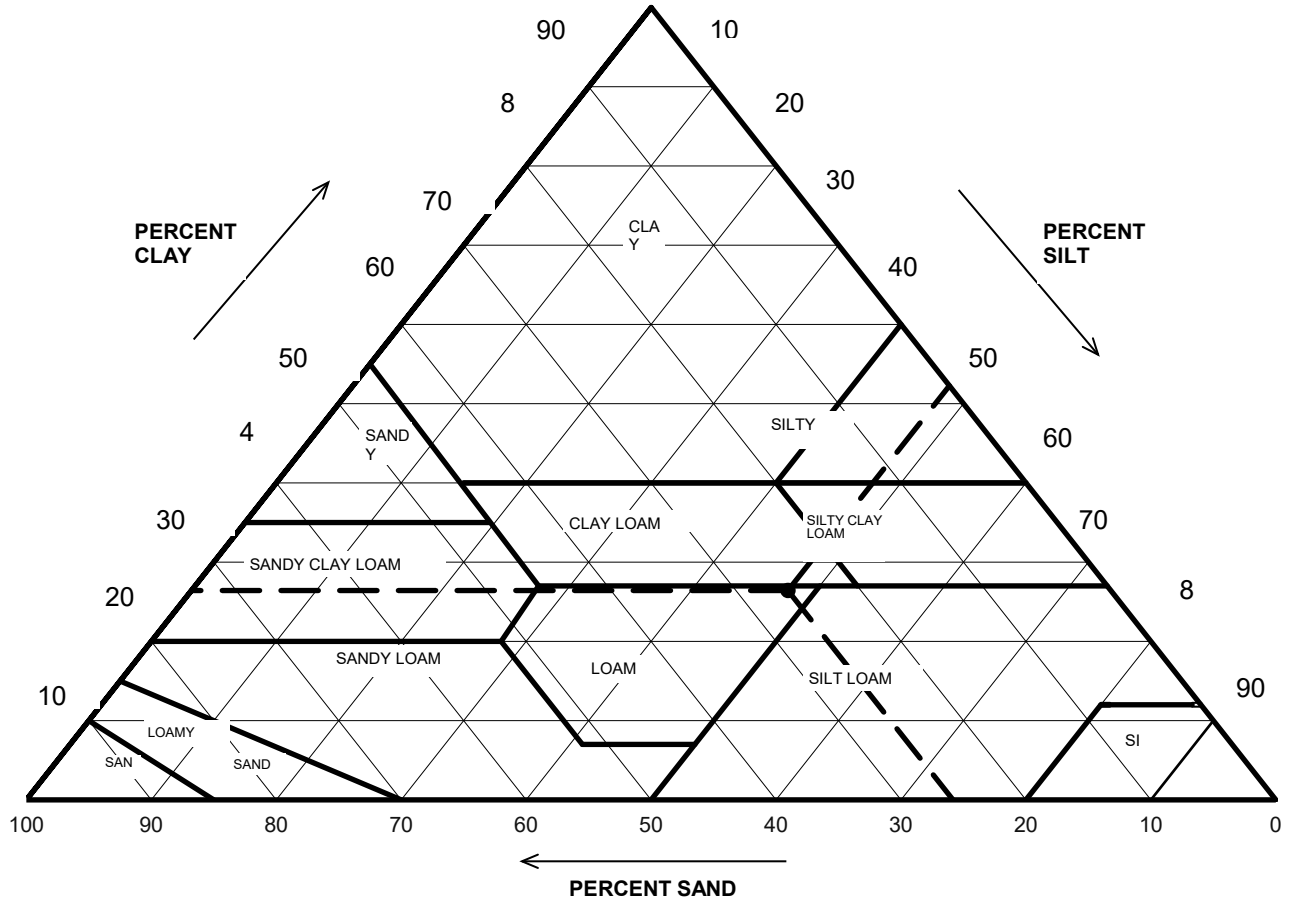
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USDA Classification Chart

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-014	Sample No.:	C-091825-3
Lab ID:	2025-173-014-005	Soil Color:	Brown



Particle Size (mm)	Percent Finer	USDA Summary	Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classification
		Gravel	29.97	**0.00**
2	70.03	*Sand*	18.09	**25.84**
0.05	51.94	*Silt*	33.44	**47.74**
0.002	18.50	*Clay*	18.50	**26.42**

USDA Classification ***LOAM***

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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WASH SIEVE ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-014	Sample No.:	C-091825-3
Lab ID:	2025-173-014-005	Soil Color:	Brown

Moisture Content of Passing 3/4" Material		Moisture Content of Retained 3/4" Material	
Tare No.:	1444	Tare No.:	3323
Wt. of Tare & Wet Sample (g):	992.43	Weight of Tare & Wet Sample (g):	327.78
Wt. of Tare & Dry Sample (g):	941.21	Weight of Tare & Dry Sample (g):	318.08
Weight of Tare (g):	144.43	Weight of Tare (g):	7.18
Weight of Water (g):	51.22	Weight of Water (g):	9.7
Weight of Dry Soil (g):	796.78	Weight of Dry Soil (g):	310.9
Moisture Content (%):	**6.4**	**Moisture Content (%):**	**3.1**

Wet Weight of -3/4" Sample (g):	8312.00	Weight of the Dry Sample (g):	796.78
Dry Weight of - 3/4" Sample (g):	7809.95	Weight of minus #200 Material (g):	474.79
Wet Weight of +3/4" Sample (g):	956.00	Weight of plus #200 Material (g):	321.99
Dry Weight of +3/4" Sample (g):	927.08		
Total Dry Weight of Sample (g):	8737.02	**J - Factor (Percent Finer than 3/4")**	**89.39%**

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)		Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00		0.00	0.00	100.00	**100.00**
6"	150	0.00		0.00	0.00	100.00	**100.00**
3"	75	0.00		0.00	0.00	100.00	**100.00**
2"	50	413.00	(*)	4.58	4.58	95.42	**95.42**
1 1/2"	37.5	203.00		2.25	6.84	93.16	**93.16**
1"	25	210.00		2.33	9.17	90.83	**90.83**
3/4"	19	130.00		1.44	10.61	89.39	**89.39**
1/2"	12.5	35.36		4.44	4.44	95.56	**85.42**
3/8"	9.5	22.39		2.81	7.25	92.75	**82.91**
#4	4.75	54.51		6.84	14.09	85.91	**76.79**
#10	2	60.28		7.57	21.65	78.35	**70.03**
#20	0.85	53.14	(**)	6.67	28.32	71.68	**64.07**
#40	0.425	30.37		3.81	32.14	67.86	**60.66**
#60	0.25	22.81		2.86	35.00	65.00	**58.10**
#140	0.106	33.53		4.21	39.21	60.79	**54.34**
#200	0.075	9.60		1.20	40.41	59.59	**53.27**
Pan	-	474.79		59.59	100.00	-	**-**

NOTES: *(*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample*
*(**) The - 3/4" sieve analysis is based on the Weight of the Dry Sample*

Tested By	DF	Date	9/24/25	Checked By	EG	Date	9/26/25

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-014	Sample No.:	C-091825-3
Lab ID:	2025-173-014-005	Soil Color:	Brown

Elapsed Time		R Measured	Temp.	Composite Correction	R Corrected	N	K Factor	Diameter	N'
(min)			(°C)			(%)		(mm)	(%)
0		NA	NA	NA	NA	NA	NA	NA	NA
2		44.5	22.4	5.0	39.5	93.9	0.01307	0.0277	**50.0**
5		40.5	22.4	5.0	35.5	84.4	0.01307	0.0182	**44.9**
15		37.5	22.4	5.0	32.5	77.2	0.01307	0.0107	**41.1**
30		34.0	22.4	5.0	29.0	68.9	0.01307	0.0078	**36.7**
65		29.5	22.4	5.0	24.5	58.2	0.01307	0.0055	**31.0**
250		22.0	22.9	4.8	17.2	40.8	0.01299	0.0029	**21.7**
1440		16.5	22.6	4.9	11.6	27.5	0.01303	0.0013	**14.6**

Soil Specimen Data		**Other Corrections**	
Tare No.	703		
Wt. of Tare & Dry Material (g):	140.24	a - Factor	0.993
Weight of Tare (g):	93.44		
Weight of Deflocculant (g):	5.0	Percent Finer than # 200	53.27
Weight of Dry Material (g):	41.80		
		Specific Gravity	2.70 Assumed

Note: *Hydrometer test is performed on - # 200 sieve material.*

Tested By TO Date 9/24/25 Checked By EG Date 9/26/25

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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Moisture, Ash, and Organic Matter (Loss on Ignition)

ASTM D 2974-20e1

Client:	GAI Consultants, Inc.
Client Reference:	Cheswick Closure R220960.00
Project No.:	2025-173-014

Method B (To 0.1%)

Moisture Content

ASTM D2216

Lab ID:	005
Boring No.:	Final Closure
Depth (ft):	In Place Soil
Sample No.:	C-091825-3
Tare Number	EE
Weight of Tare & Wet Sample (g)	353.00
Weight of Tare & Dry Sample (g)	339.47
Weight of Tare (g)	126.94
Weight of Water (g)	13.53
Weight of Dry Sample (g)	212.53
Moisture Content	**6.4%**

Method A

Ash Content, Organic Matter

Furnace Temperature (°C)	440
Weight of Tare & Ash (g)	334.56
Weight of Volatiles (g)	4.91
Weight of Ash (g)	207.62
Ash Content (%)	**97.7%**
Organic Matter (%)	**2.3%**

Tested By JW *Date* 9/22/25 *Checked By* EG *Date* 9/24/25

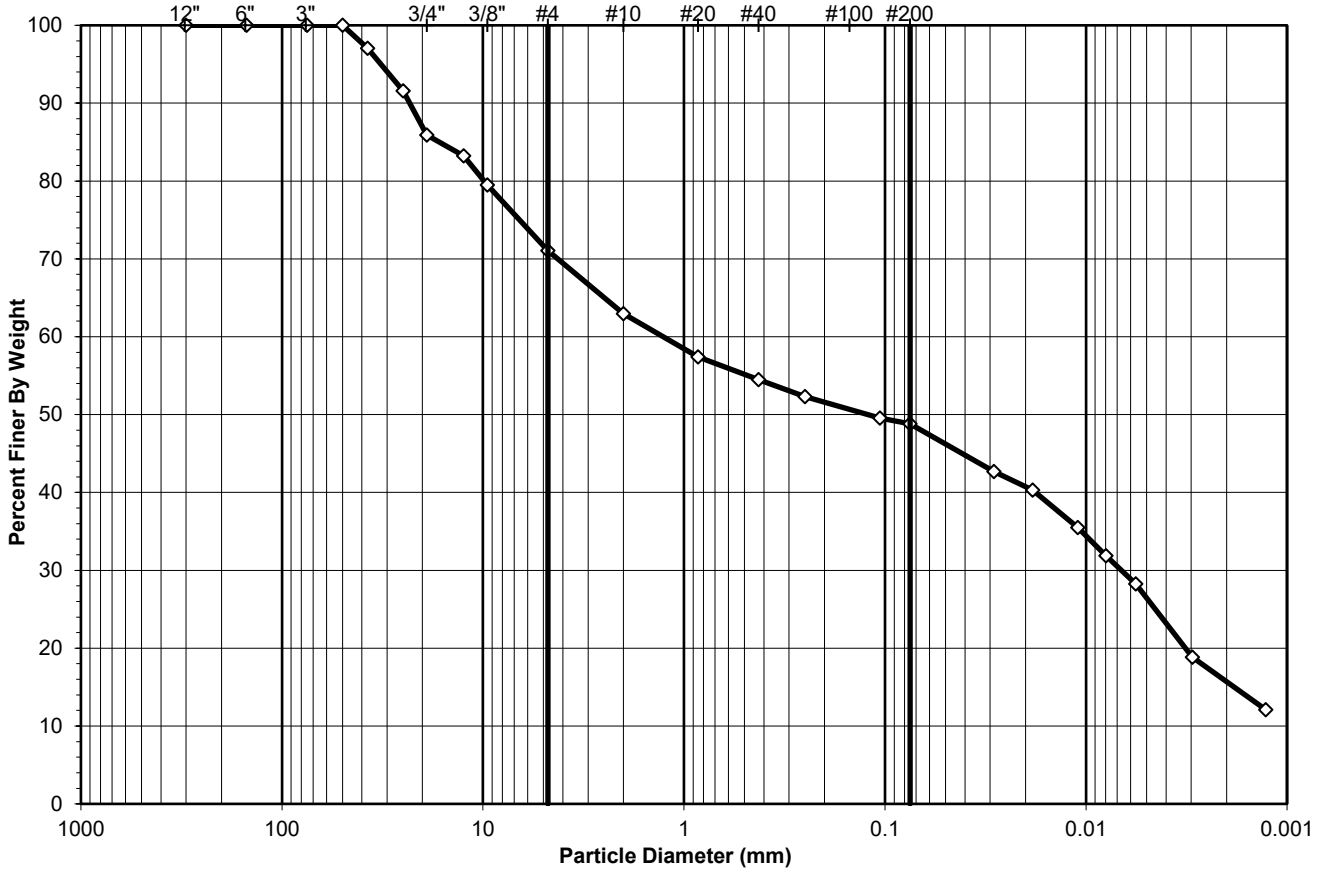
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SIEVE AND HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-014	Sample No.:	C-091825-4
Lab ID:	2025-173-014-006	Soil Color:	Brown

	SIEVE ANALYSIS			HYDROMETER	
USCS	cobbles	gravel	sand	silt and clay fraction	
USDA	cobbles	gravel	sand	silt	clay



USCS Summary

Sieve Size (mm)		Percentage (%)
Greater Than #4	*Gravel*	28.94
#4 to #200	*Sand*	22.24
Finer Than #200	*Silt & Clay*	48.81

USCS Symbol:
gc, ASSUMED

USCS Classification:
CLAYEY GRAVEL WITH SAND

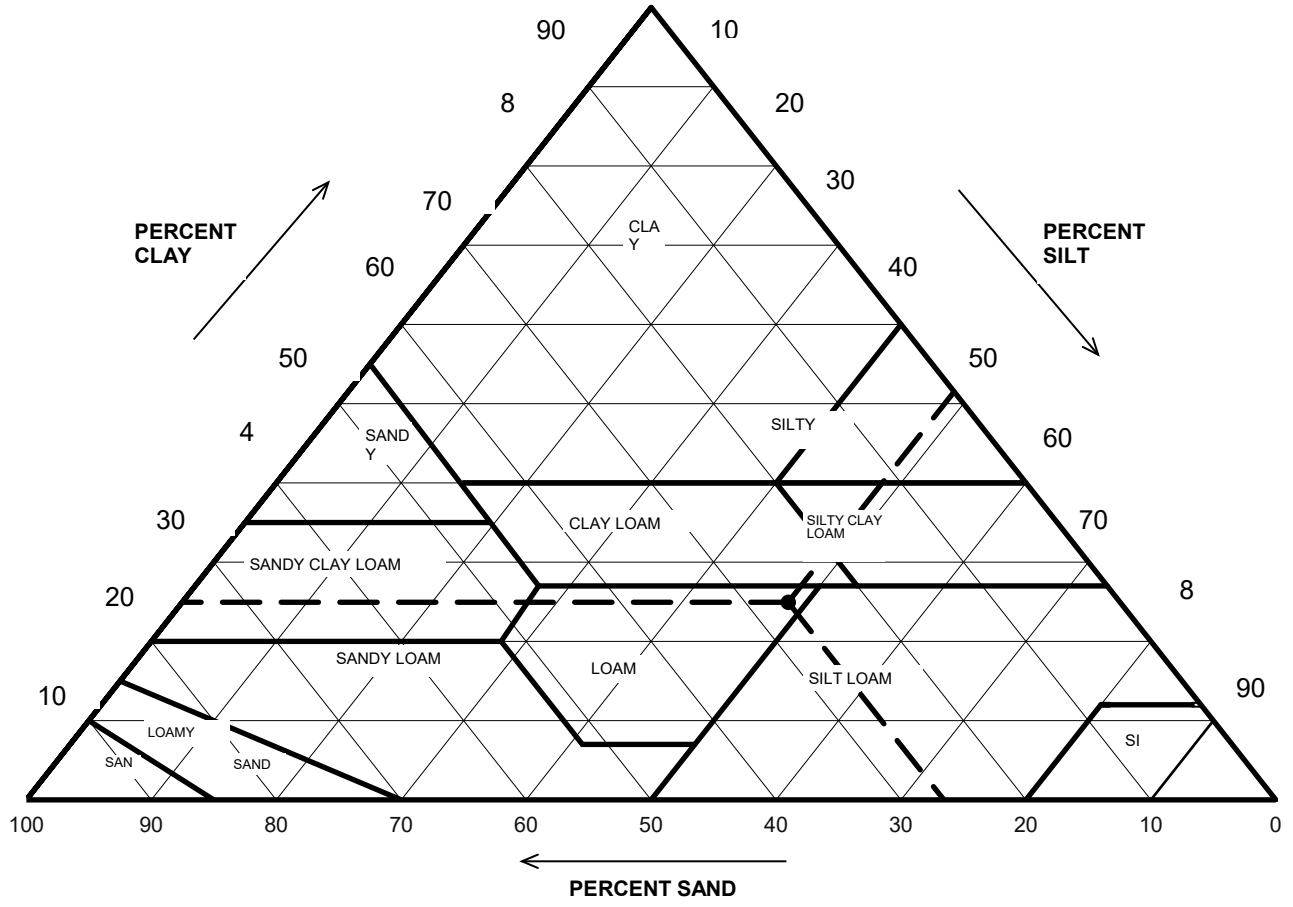
DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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USDA Classification Chart

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-014	Sample No.:	C-091825-4
Lab ID:	2025-173-014-006	Soil Color:	Brown



Particle Size (mm)	Percent Finer	USDA Summary	Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classification
		Gravel	37.04	**0.00**
2	62.96	*Sand*	16.72	**26.56**
0.05	46.23	*Silt*	30.53	**48.50**
0.002	15.70	*Clay*	15.70	**24.94**

USDA Classification ***LOAM***

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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WASH SIEVE ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-014	Sample No.:	C-091825-4
Lab ID:	2025-173-014-006	Soil Color:	Brown

Moisture Content of Passing 3/4" Material		Moisture Content of Retained 3/4" Material	
Tare No.:	1548	Tare No.:	3520
Wt. of Tare & Wet Sample (g):	935.01	Weight of Tare & Wet Sample (g):	340.95
Wt. of Tare & Dry Sample (g):	897.49	Weight of Tare & Dry Sample (g):	330.66
Weight of Tare (g):	144.56	Weight of Tare (g):	7.23
Weight of Water (g):	37.52	Weight of Water (g):	10.29
Weight of Dry Soil (g):	752.93	Weight of Dry Soil (g):	323.43
Moisture Content (%):	**5.0**	**Moisture Content (%):**	**3.2**

Wet Weight of -3/4" Sample (g):	8434.00	Weight of the Dry Sample (g):	752.93
Dry Weight of - 3/4" Sample (g):	8033.67	Weight of minus #200 Material (g):	427.79
Wet Weight of +3/4" Sample (g):	1359.00	Weight of plus #200 Material (g):	325.14
Dry Weight of +3/4" Sample (g):	1317.10		
Total Dry Weight of Sample (g):	9350.76	**J - Factor (Percent Finer than 3/4")**	**85.91%**

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)		Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00		0.00	0.00	100.00	**100.00**
6"	150	0.00		0.00	0.00	100.00	**100.00**
3"	75	0.00		0.00	0.00	100.00	**100.00**
2"	50	0.00	(*)	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	283.00		2.93	2.93	97.07	**97.07**
1"	25	531.00		5.50	8.44	91.56	**91.56**
3/4"	19	545.00		5.65	14.09	85.91	**85.91**
1/2"	12.5	23.40		3.11	3.11	96.89	**83.24**
3/8"	9.5	33.00		4.38	7.49	92.51	**79.48**
#4	4.75	73.81		9.80	17.29	82.71	**71.06**
#10	2	71.00		9.43	26.72	73.28	**62.96**
#20	0.85	48.58	(**)	6.45	33.18	66.82	**57.41**
#40	0.425	25.45		3.38	36.56	63.44	**54.51**
#60	0.25	19.26		2.56	39.11	60.89	**52.31**
#140	0.106	24.09		3.20	42.31	57.69	**49.56**
#200	0.075	6.55		0.87	43.18	56.82	**48.81**
Pan	-	427.79		56.82	100.00	-	**-**

NOTES: *(*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample*
*(**) The - 3/4" sieve analysis is based on the Weight of the Dry Sample*

Tested By	DF	Date	9/24/25	Checked By	EG	Date	9/26/25

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-014	Sample No.:	C-091825-4
Lab ID:	2025-173-014-006	Soil Color:	Brown

Elapsed Time		R Measured	Temp.	Composite Correction	R Corrected	N	K Factor	Diameter	N'
(min)			(°C)			(%)		(mm)	(%)
0		NA	NA	NA	NA	NA	NA	NA	NA
2		40.5	22.4	5.0	35.5	87.5	0.01307	0.0287	**42.7**
5		38.5	22.4	5.0	33.5	82.5	0.01307	0.0185	**40.3**
15		34.5	22.4	5.0	29.5	72.7	0.01307	0.0110	**35.5**
30		31.5	22.4	5.0	26.5	65.3	0.01307	0.0080	**31.9**
62		28.5	22.4	5.0	23.5	57.9	0.01307	0.0057	**28.3**
250		20.5	22.9	4.8	15.7	38.6	0.01299	0.0030	**18.8**
1440		15.0	22.6	4.9	10.1	24.8	0.01303	0.0013	**12.1**

Soil Specimen Data		**Other Corrections**	
Tare No.	679		
Wt. of Tare & Dry Material (g):	135.48	a - Factor	0.993
Weight of Tare (g):	90.16		
Weight of Deflocculant (g):	5.0	Percent Finer than # 200	48.81
Weight of Dry Material (g):	40.32		
		Specific Gravity	2.70 Assumed

Note: *Hydrometer test is performed on - # 200 sieve material.*

Tested By TO Date 9/24/25 Checked By EG Date 9/26/25

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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Moisture, Ash, and Organic Matter (Loss on Ignition)

ASTM D 2974-20e1

Client:	GAI Consultants, Inc.
Client Reference:	Cheswick Closure R220960.00
Project No.:	2025-173-014

Method B (To 0.1%)

Moisture Content

ASTM D2216

Lab ID:	006
Boring No.:	Final Closure
Depth (ft):	In Place Soil
Sample No.:	C-091825-4
Tare Number	CC
Weight of Tare & Wet Sample (g)	388.29
Weight of Tare & Dry Sample (g)	376.50
Weight of Tare (g)	130.56
Weight of Water (g)	11.79
Weight of Dry Sample (g)	245.94
Moisture Content	**4.8%**

Method A

Ash Content, Organic Matter

Furnace Temperature (°C)	440
Weight of Tare & Ash (g)	370.75
Weight of Volatiles (g)	5.75
Weight of Ash (g)	240.19
Ash Content (%)	**97.7%**
Organic Matter (%)	**2.3%**

Tested By JW *Date* 9/22/25 *Checked By* EG *Date* 9/24/25

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SIEVE AND HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-014	Sample No.:	C-091825-5
Lab ID:	2025-173-014-007	Soil Color:	Brown

	SIEVE ANALYSIS			HYDROMETER	
USCS	cobbles	gravel	sand	silt and clay fraction	
USDA	cobbles	gravel	sand	silt	clay



USCS Summary

Sieve Size (mm)		Percentage (%)
Greater Than #4	*Gravel*	10.86
#4 to #200	*Sand*	15.61
Finer Than #200	*Silt & Clay*	73.52

USCS Symbol:
cl, ASSUMED

USCS Classification:
LEAN CLAY WITH SAND

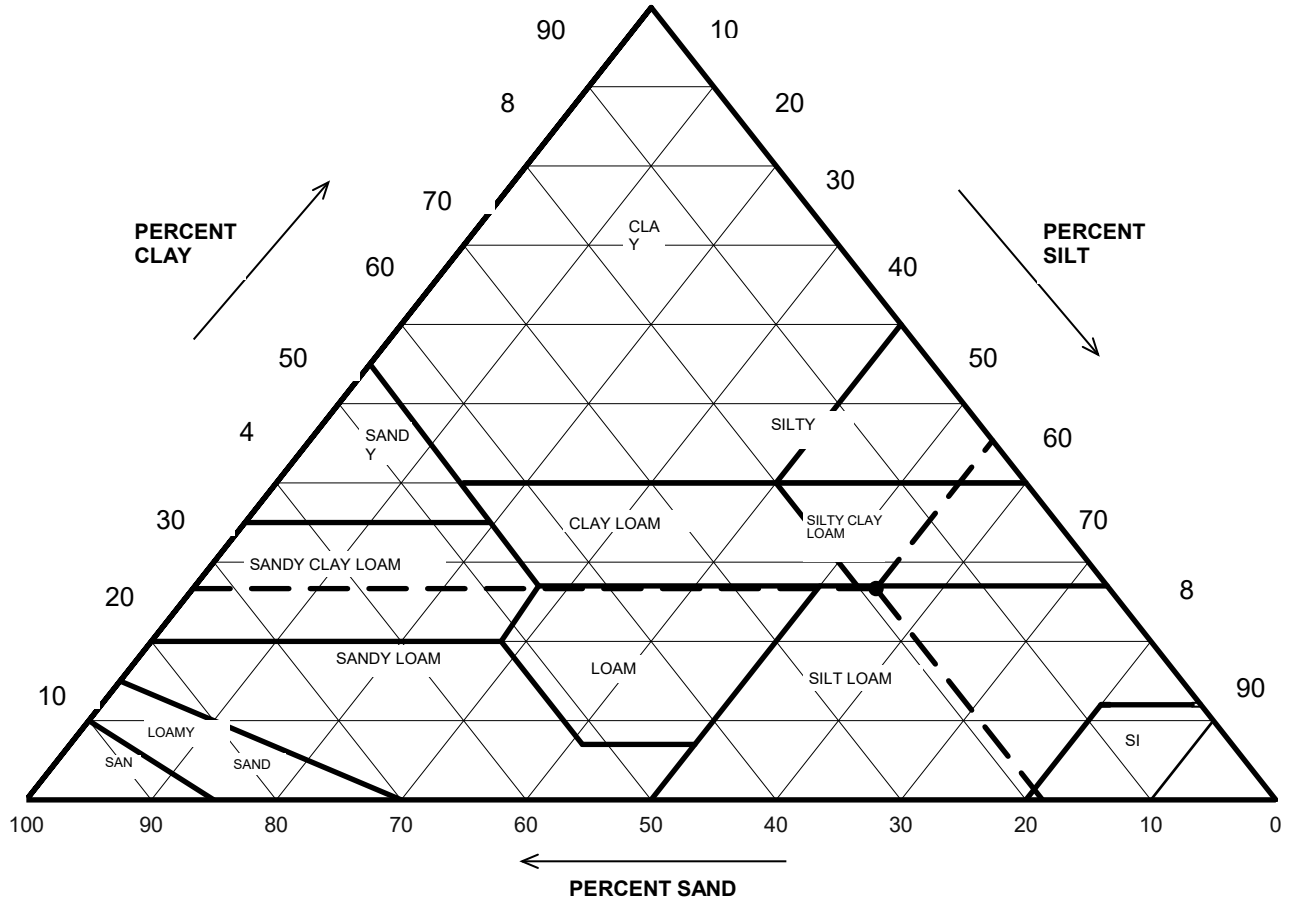
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USDA Classification Chart

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-014	Sample No.:	C-091825-5
Lab ID:	2025-173-014-007	Soil Color:	Brown



Particle Size (mm)	Percent Finer	USDA Summary	Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classification
		Gravel	14.60	**0.00**
2	85.40	*Sand*	15.95	**18.68**
0.05	69.45	*Silt*	46.68	**54.66**
0.002	22.77	*Clay*	22.77	**26.66**

USDA Classification ***SILT LOAM***

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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WASH SIEVE ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-014	Sample No.:	C-091825-5
Lab ID:	2025-173-014-007	Soil Color:	Brown

Moisture Content of Passing 3/4" Material		Moisture Content of Retained 3/4" Material	
Tare No.:	1437	Tare No.:	3350
Wt. of Tare & Wet Sample (g):	933.03	Weight of Tare & Wet Sample (g):	412.15
Wt. of Tare & Dry Sample (g):	886.01	Weight of Tare & Dry Sample (g):	403.98
Weight of Tare (g):	143.97	Weight of Tare (g):	7.13
Weight of Water (g):	47.02	Weight of Water (g):	8.17
Weight of Dry Soil (g):	742.04	Weight of Dry Soil (g):	396.85
Moisture Content (%):	**6.3**	**Moisture Content (%):**	**2.1**

Wet Weight of -3/4" Sample (g):	7797.00	Weight of the Dry Sample (g):	742.04
Dry Weight of - 3/4" Sample (g):	7332.38	Weight of minus #200 Material (g):	575.33
Wet Weight of +3/4" Sample (g):	408.00	Weight of plus #200 Material (g):	166.71
Dry Weight of +3/4" Sample (g):	399.77		
Total Dry Weight of Sample (g):	7732.15	**J - Factor (Percent Finer than 3/4")**	**94.83%**

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)		Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00		0.00	0.00	100.00	**100.00**
6"	150	0.00		0.00	0.00	100.00	**100.00**
3"	75	0.00		0.00	0.00	100.00	**100.00**
2"	50	0.00	(*)	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	149.00		1.89	1.89	98.11	**98.11**
1"	25	153.00		1.94	3.83	96.17	**96.17**
3/4"	19	106.00		1.34	5.17	94.83	**94.83**
1/2"	12.5	4.16		0.56	0.56	99.44	**94.30**
3/8"	9.5	10.03		1.35	1.91	98.09	**93.02**
#4	4.75	30.36		4.09	6.00	94.00	**89.14**
#10	2	29.21		3.94	9.94	90.06	**85.40**
#20	0.85	21.27	(**)	2.87	12.81	87.19	**82.69**
#40	0.425	15.59		2.10	14.91	85.09	**80.69**
#60	0.25	18.71		2.52	17.43	82.57	**78.30**
#140	0.106	27.57		3.72	21.14	78.86	**74.78**
#200	0.075	9.81		1.32	22.47	77.53	**73.52**
Pan	-	575.33		77.53	100.00	-	**-**

NOTES: *(*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample*
*(**) The - 3/4" sieve analysis is based on the Weight of the Dry Sample*

Tested By	DF	Date	9/24/25	Checked By	EG	Date	9/26/25

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-014	Sample No.:	C-091825-5
Lab ID:	2025-173-014-007	Soil Color:	Brown

Elapsed Time		R Measured	Temp.	Composite Correction	R Corrected	N	K Factor	Diameter	N'
(min)			(°C)			(%)		(mm)	(%)
0		NA	NA	NA	NA	NA	NA	NA	NA
2		34.5	22.4	5.0	29.5	87.5	0.01307	0.0301	**64.4**
5		32.5	22.4	5.0	27.5	81.6	0.01307	0.0194	**60.0**
15		29.0	22.4	5.0	24.0	71.2	0.01307	0.0115	**52.4**
30		26.5	22.4	5.0	21.5	63.8	0.01307	0.0082	**46.9**
60		23.0	22.4	5.0	18.0	53.4	0.01307	0.0060	**39.3**
250		17.5	22.9	4.8	12.7	37.5	0.01299	0.0030	**27.6**
1440		13.0	22.6	4.9	8.1	23.9	0.01303	0.0013	**17.6**

Soil Specimen Data		**Other Corrections**	
Tare No.	922		
Wt. of Tare & Dry Material (g):	135.02	a - Factor	0.993
Weight of Tare (g):	96.54		
Weight of Deflocculant (g):	5.0	Percent Finer than # 200	73.52
Weight of Dry Material (g):	33.48		
		Specific Gravity	2.70 Assumed

Note: *Hydrometer test is performed on - # 200 sieve material.*

Tested By TO Date 9/24/25 Checked By EG Date 9/26/25

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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Moisture, Ash, and Organic Matter (Loss on Ignition)

ASTM D 2974-20e1

Client:	GAI Consultants, Inc.
Client Reference:	Cheswick Closure R220960.00
Project No.:	2025-173-014

Method B (To 0.1%)

Moisture Content

ASTM D2216

Lab ID:	007
Boring No.:	Final Closure
Depth (ft):	In Place Soil
Sample No.:	C-091825-5
Tare Number	HH
Weight of Tare & Wet Sample (g)	384.00
Weight of Tare & Dry Sample (g)	368.87
Weight of Tare (g)	134.01
Weight of Water (g)	15.13
Weight of Dry Sample (g)	234.86
Moisture Content	**6.4%**

Method A

Ash Content, Organic Matter

Furnace Temperature (°C)	440
Weight of Tare & Ash (g)	363.43
Weight of Volatiles (g)	5.44
Weight of Ash (g)	229.42
Ash Content (%)	**97.7%**
Organic Matter (%)	**2.3%**

Tested By JW *Date* 9/22/25 *Checked By* EG *Date* 9/24/25

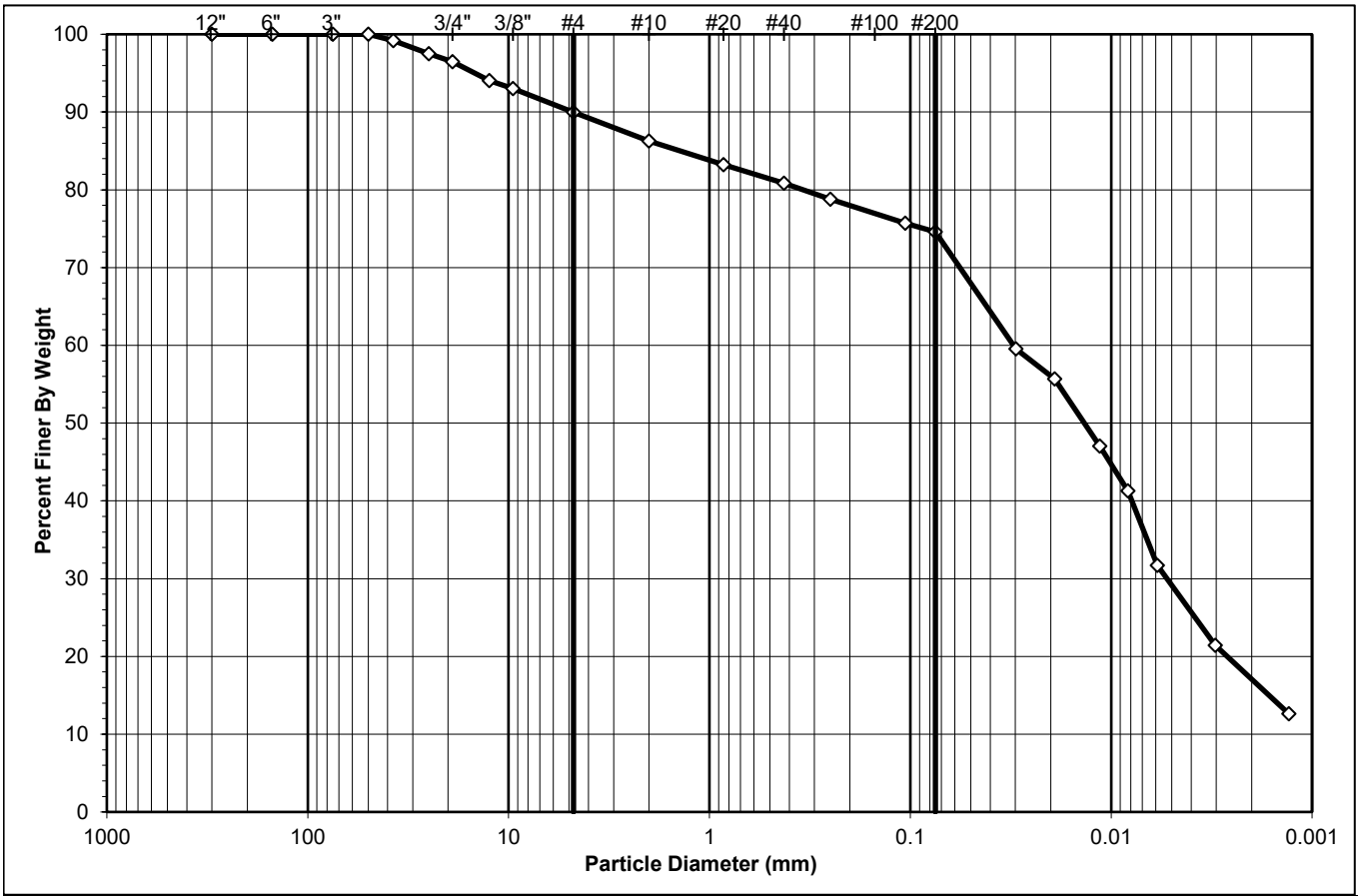
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SIEVE AND HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-014	Sample No.:	C-091825-6
Lab ID:	2025-173-014-008	Soil Color:	Brown

	SIEVE ANALYSIS			HYDROMETER	
USCS	cobbles	gravel	sand	silt and clay fraction	
USDA	cobbles	gravel	sand	silt	clay



USCS Summary

Sieve Size (mm)		Percentage (%)
Greater Than #4	*Gravel*	10.04
#4 to #200	*Sand*	15.35
Finer Than #200	*Silt & Clay*	74.61

USCS Symbol:
cl, ASSUMED

USCS Classification:
LEAN CLAY WITH SAND

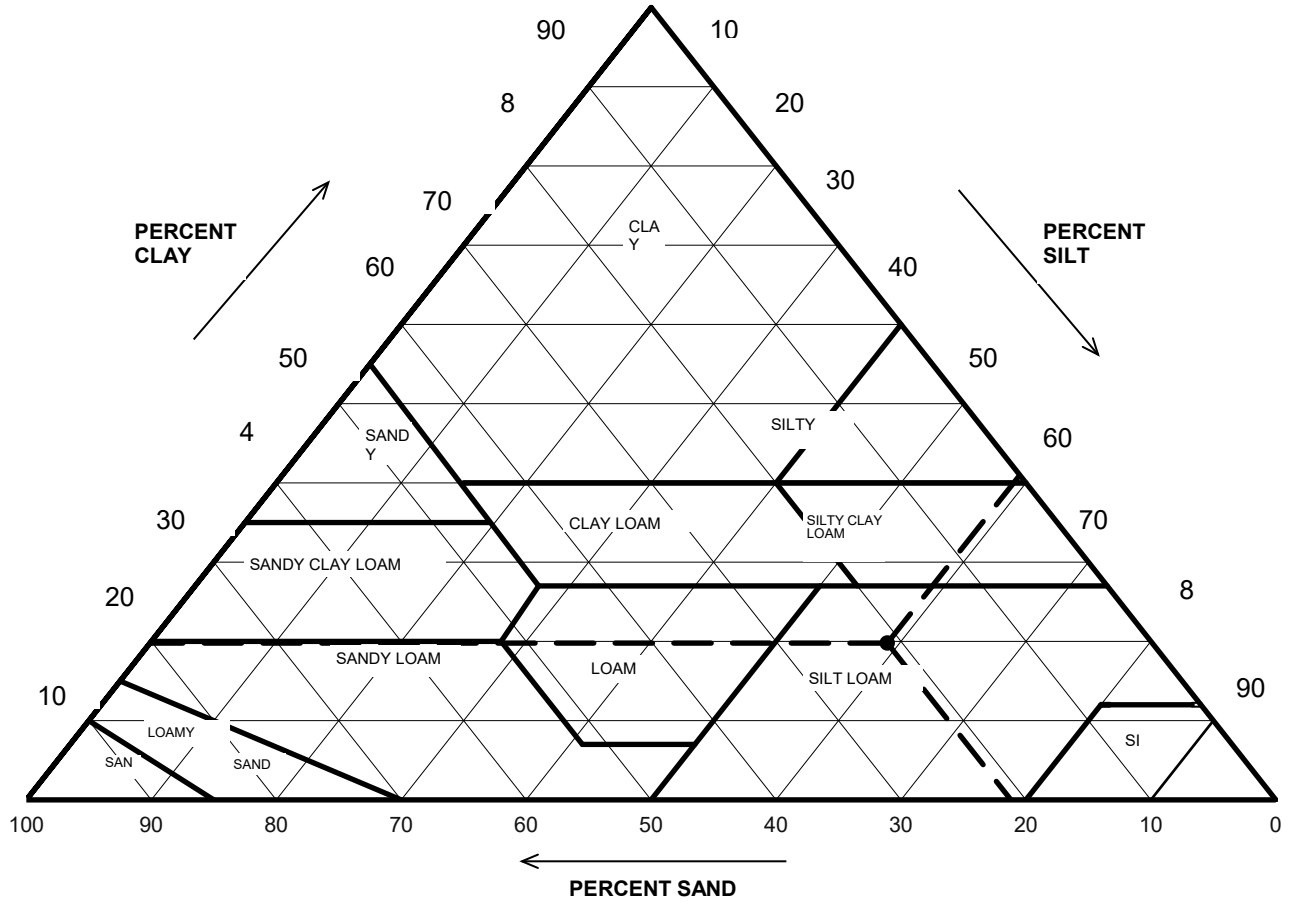
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USDA Classification Chart

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-014	Sample No.:	C-091825-6
Lab ID:	2025-173-014-008	Soil Color:	Brown



Particle Size (mm)	Percent Finer	USDA Summary	Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classification
		Gravel	13.71	**0.00**
2	86.29	*Sand*	18.30	**21.20**
0.05	67.99	*Silt*	50.92	**59.02**
0.002	17.07	*Clay*	17.07	**19.78**

USDA Classification ***SILT LOAM***

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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WASH SIEVE ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-014	Sample No.:	C-091825-6
Lab ID:	2025-173-014-008	Soil Color:	Brown

Moisture Content of Passing 3/4" Material		Moisture Content of Retained 3/4" Material	
Tare No.:	1471	Tare No.:	3234
Wt. of Tare & Wet Sample (g):	901.4	Weight of Tare & Wet Sample (g):	280.71
Wt. of Tare & Dry Sample (g):	868.11	Weight of Tare & Dry Sample (g):	276.25
Weight of Tare (g):	146.69	Weight of Tare (g):	8.05
Weight of Water (g):	33.29	Weight of Water (g):	4.46
Weight of Dry Soil (g):	721.42	Weight of Dry Soil (g):	268.2
Moisture Content (%):	**4.6**	**Moisture Content (%):**	**1.7**

Wet Weight of -3/4" Sample (g):	7694.00	Weight of the Dry Sample (g):	721.42
Dry Weight of - 3/4" Sample (g):	7354.62	Weight of minus #200 Material (g):	557.93
Wet Weight of +3/4" Sample (g):	273.00	Weight of plus #200 Material (g):	163.49
Dry Weight of +3/4" Sample (g):	268.53		
Total Dry Weight of Sample (g):	7623.15	**J - Factor (Percent Finer than 3/4")**	**96.48%**

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)		Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00		0.00	0.00	100.00	**100.00**
6"	150	0.00		0.00	0.00	100.00	**100.00**
3"	75	0.00		0.00	0.00	100.00	**100.00**
2"	50	0.00	(*)	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	62.00		0.80	0.80	99.20	**99.20**
1"	25	132.00		1.70	2.50	97.50	**97.50**
3/4"	19	79.00		1.02	3.52	96.48	**96.48**
1/2"	12.5	18.16		2.52	2.52	97.48	**94.05**
3/8"	9.5	7.81		1.08	3.60	96.40	**93.00**
#4	4.75	22.74		3.15	6.75	93.25	**89.96**
#10	2	27.47		3.81	10.56	89.44	**86.29**
#20	0.85	22.92	(**)	3.18	13.74	86.26	**83.22**
#40	0.425	17.63		2.44	16.18	83.82	**80.87**
#60	0.25	15.61		2.16	18.34	81.66	**78.78**
#140	0.106	22.80		3.16	21.50	78.50	**75.73**
#200	0.075	8.35		1.16	22.66	77.34	**74.61**
Pan	-	557.93		77.34	100.00	-	**-**

NOTES: *(*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample*
*(**) The - 3/4" sieve analysis is based on the Weight of the Dry Sample*

Tested By	DF	Date	9/24/25	Checked By	EG	Date	9/26/25

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-014	Sample No.:	C-091825-6
Lab ID:	2025-173-014-008	Soil Color:	Brown

Elapsed Time		R Measured	Temp.	Composite Correction	R Corrected	N	K Factor	Diameter	N'
(min)			(°C)			(%)		(mm)	(%)
0		NA	NA	NA	NA	NA	NA	NA	NA
2		36.0	22.4	5.0	31.0	79.8	0.01307	0.0298	**59.5**
5		34.0	22.4	5.0	29.0	74.6	0.01307	0.0191	**55.7**
15		29.5	22.4	5.0	24.5	63.1	0.01307	0.0114	**47.1**
30		26.5	22.4	5.0	21.5	55.4	0.01307	0.0082	**41.3**
63		21.5	22.4	5.0	16.5	42.5	0.01307	0.0059	**31.7**
250		16.0	22.9	4.8	11.2	28.7	0.01299	0.0030	**21.4**
1440		11.5	22.6	4.9	6.6	16.9	0.01303	0.0013	**12.6**

Soil Specimen Data		**Other Corrections**		
Tare No.	923			
Wt. of Tare & Dry Material (g):	139.67	a - Factor	0.993	
Weight of Tare (g):	96.07			
Weight of Deflocculant (g):	5.0	Percent Finer than # 200	74.61	
Weight of Dry Material (g):	38.60			
		Specific Gravity	2.70	Assumed

Note: *Hydrometer test is performed on - # 200 sieve material.*

Tested By TO Date 9/24/25 Checked By EG Date 9/26/25

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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Moisture, Ash, and Organic Matter (Loss on Ignition)

ASTM D 2974-20e1

Client:	GAI Consultants, Inc.
Client Reference:	Cheswick Closure R220960.00
Project No.:	2025-173-014

Method B (To 0.1%)

Moisture Content

ASTM D2216

Lab ID:	008
Boring No.:	Final Closure
Depth (ft):	In Place Soil
Sample No.:	C-091825-6
Tare Number	BB
Weight of Tare & Wet Sample (g)	328.65
Weight of Tare & Dry Sample (g)	319.00
Weight of Tare (g)	123.81
Weight of Water (g)	9.65
Weight of Dry Sample (g)	195.19
Moisture Content	**4.9%**

Method A

Ash Content, Organic Matter

Furnace Temperature (°C)	440
Weight of Tare & Ash (g)	314.68
Weight of Volatiles (g)	4.32
Weight of Ash (g)	190.87
Ash Content (%)	**97.8%**
Organic Matter (%)	**2.2%**

Tested By JW *Date* 9/23/25 *Checked By* EG *Date* 9/25/25

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PERMEABILITY TEST

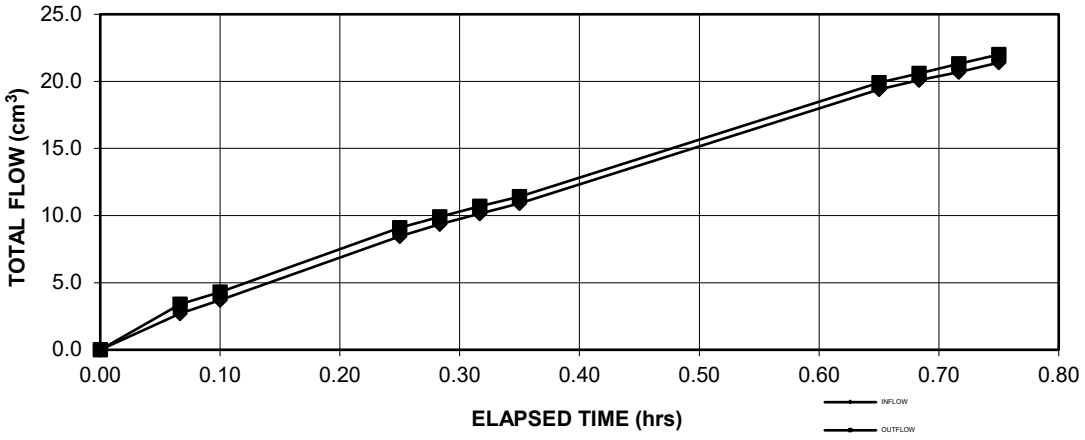
ASTM D 5084-16a Method C

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Project:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-014	Sample No.:	C-091825-6
Lab ID No.:	2025-173-014-008	Avg. Effective Consol. Pressure (psi):	6.25

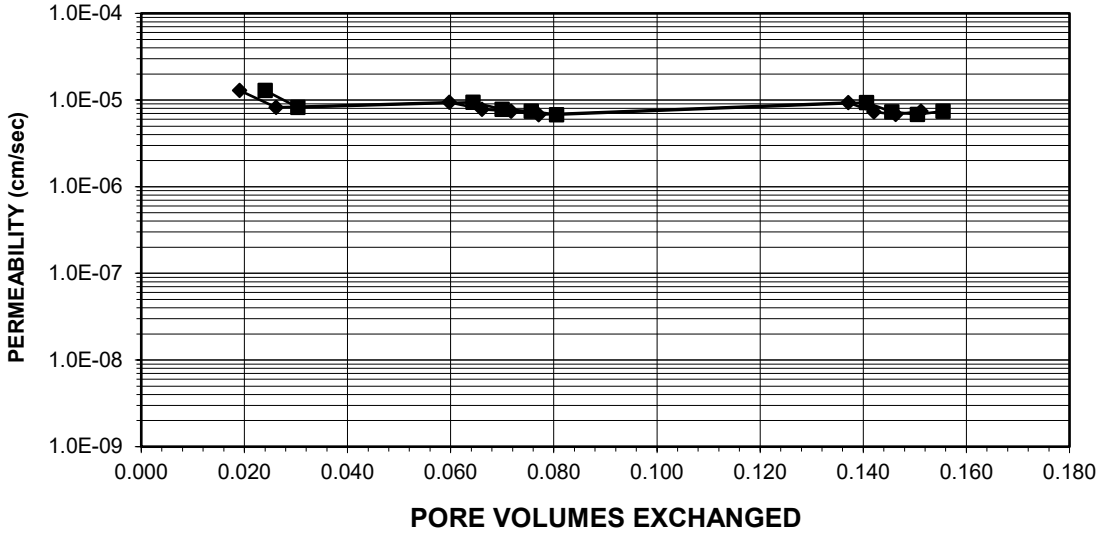
AVERAGE PERMEABILITY = 7.7E-06 cm/sec @ 20°C

AVERAGE PERMEABILITY = 7.7E-08 m/sec @ 20°C

TOTAL FLOW vs. ELAPSED TIME



PORE VOLUMES EXCHANGED vs. PERMEABILITY



Tested By: DP Date: 9/30/25 Checked By: JLK Date: 10/3/25

DCN: CT-22 DATE: 1/1/17 REVISION: 11

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PERMEABILITY TEST

ASTM D 5084-16a Method C

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Project:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-014	Sample No.:	C-091825-6
Lab ID No.:	2025-173-014-008	Avg. Effective Consol. Pressure (psi):	6.25

Specific Gravity:	2.70	Assumed
Sample Condition:		Remolded

Visual Description: Reddish Brown Clay with Rock

Permeant Type: Deaired Water

MOISTURE CONTENT:	BEFORE TEST	AFTER TEST
Tare Number	3020	1458.5
Weight of Tare & Wet Sample (g)	141.79	847.71
Weight of Tare & Dry Sample (g)	124.43	712.00
Weight of Tare (g)	8.31	82.37
Weight of Water (g)	17.36	135.71
Weight of Dry Sample (g)	116.12	629.63
Moisture Content (%)	**15.0**	**21.6**

SPECIMEN:	BEFORE TEST	AFTER TEST
Weight of Tube & Wet Sample (g)	1643.05	NA
Weight of Tube (g)	917.30	NA
Weight of Wet Sample (g)	725.75	767.44
Length 1 (in)	3.490	3.487
Length 2 (in)	3.490	3.501
Length 3 (in)	3.490	3.502
Top Diameter (in)	2.870	2.884
Middle Diameter (in)	2.870	2.879
Bottom Diameter (in)	2.870	2.901
Average Length (in)	3.49	3.50
Average Area (in^2)	6.47	6.55
Sample Volume (cm^3)	369.98	375.35
Unit Wet Weight (g/cm^3)	1.96	2.04
Unit Wet Weight (pcf)	122.4	127.6
Unit Dry Weight (pcf)	106.5	105.0
Unit Dry Weight (g/cm^3)	1.71	1.68
Void Ratio, e	0.58	0.61
Porosity, n	0.37	0.38
Pore Volume (cm^3)	136.1	141.5
Total Weight of Sample After Test (g)		765.53

Tested By: DP Date: 9/30/25 Checked By: JLK Date: 10/3/25

DCN: CT-22 DATE: 1/1/17 REVISION: 11

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PERMEABILITY TEST

ASTM D 5084-16a Method C

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Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Project:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-014	Sample No.:	C-091825-6
Lab ID No.:	2025-173-014-008	Avg. Effective Consol. Pressure (psi):	6.25

Pressure Heads (Constant)	
Top Cap (psi)	67.5
Bottom Cap (psi)	70.0
Cell (psi)	75.0
Total Pressure Head (cm)	175.8
Hydraulic Gradient	19.79

Final Sample Dimensions	
Sample Length (cm), L	8.88
Sample Diameter (cm)	7.34
Sample Area (cm^2), A	42.26
Inflow Burette Area (cm^2), a-in	0.962
Outflow Burette Area (cm^2), a-out	0.962
B Parameter (%)	95

AVERAGE PERMEABILITY = 7.7E-06 cm/sec @ 20°C

AVERAGE PERMEABILITY = 7.7E-08 m/sec @ 20°C

DATE	TIME		ELAPSED TIME t	TOTAL INFLOW	TOTAL OUTFLOW	TOTAL HEAD h	FLOW (0 flow)	TEMP.	INCREMENTAL PERMEABILITY @ 20°C
(mm/dd/yy)	(hr)	(min)	(hr)	(cm^3)	(cm^3)	(cm)	(1 stop)	(°C)	(cm/sec)
10/2/2025	10	51	0.000	0.0	0.0	200.6	0	21.8	NA
10/2/2025	10	55	0.067	2.7	3.4	194.3	0	21.8	1.3E-05
10/2/2025	10	57	0.100	3.7	4.3	192.3	0	21.8	8.2E-06
10/2/2025	11	6	0.250	8.5	9.1	182.4	0	21.8	9.4E-06
10/2/2025	11	8	0.283	9.4	9.9	180.7	0	21.8	7.8E-06
10/2/2025	11	10	0.317	10.2	10.7	179.0	0	21.8	7.4E-06
10/2/2025	11	12	0.350	10.9	11.4	177.5	0	21.8	6.8E-06
10/2/2025	11	30	0.650	19.4	19.9	159.9	0	21.9	9.3E-06
10/2/2025	11	32	0.683	20.1	20.6	158.5	0	21.9	7.3E-06
10/2/2025	11	34	0.717	20.7	21.3	157.2	0	21.9	6.9E-06
10/2/2025	11	36	0.750	21.4	22.0	155.7	1	21.9	7.4E-06

Tested By: DP Date: 9/30/25 Checked By: JLK Date: 10/3/25

DCN: CT-22 DATE: 1/1/17 REVISION: 11

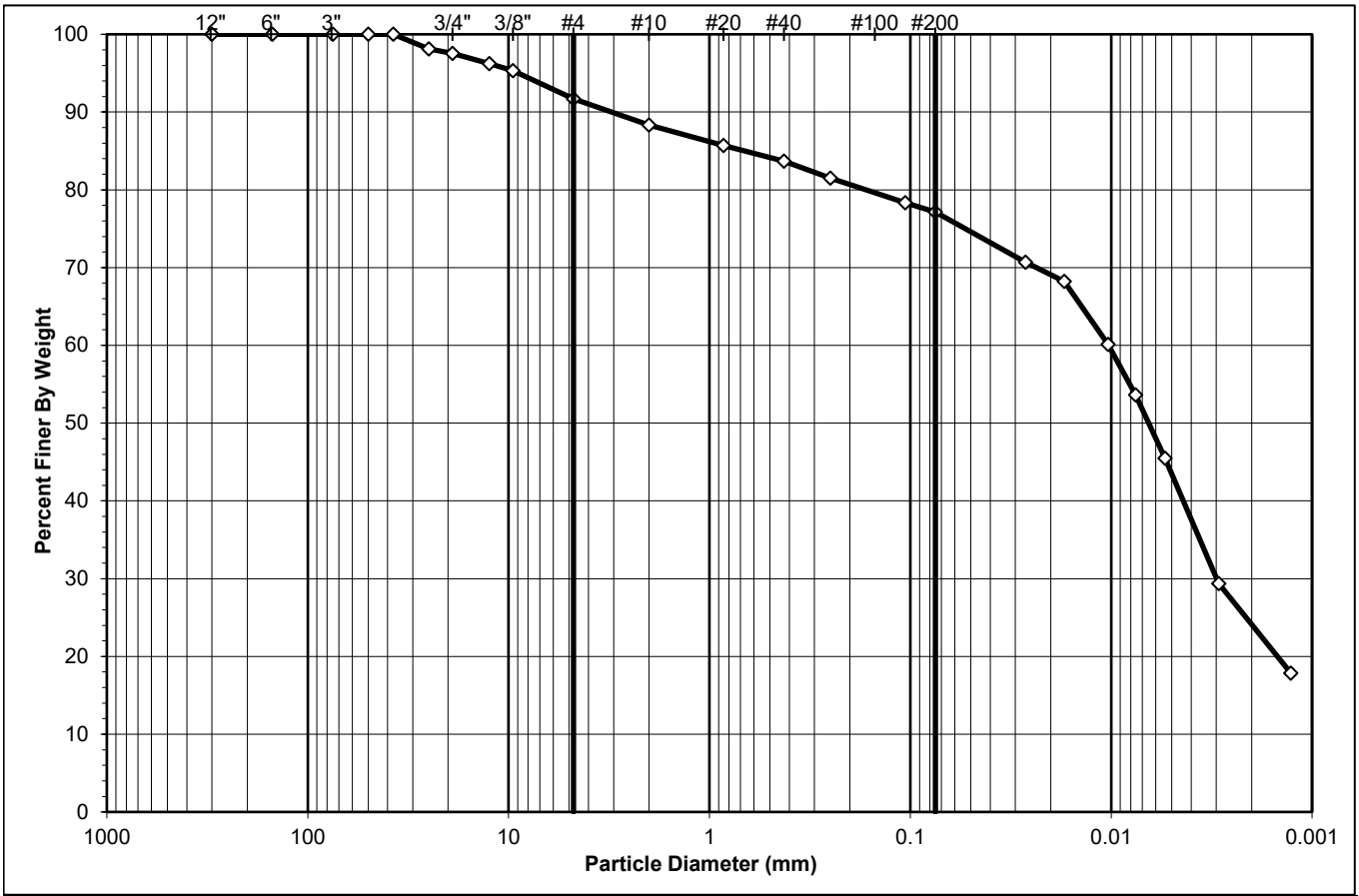
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SIEVE AND HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-014	Sample No.:	C-091825-7
Lab ID:	2025-173-014-009	Soil Color:	Brown

	SIEVE ANALYSIS			HYDROMETER	
USCS	cobbles	gravel	sand	silt and clay fraction	
USDA	cobbles	gravel	sand	silt	clay



USCS Summary

Sieve Size (mm)		Percentage (%)
Greater Than #4	*Gravel*	8.30
#4 to #200	*Sand*	14.57
Finer Than #200	*Silt & Clay*	77.13

USCS Symbol:
cl, ASSUMED

USCS Classification:
LEAN CLAY WITH SAND

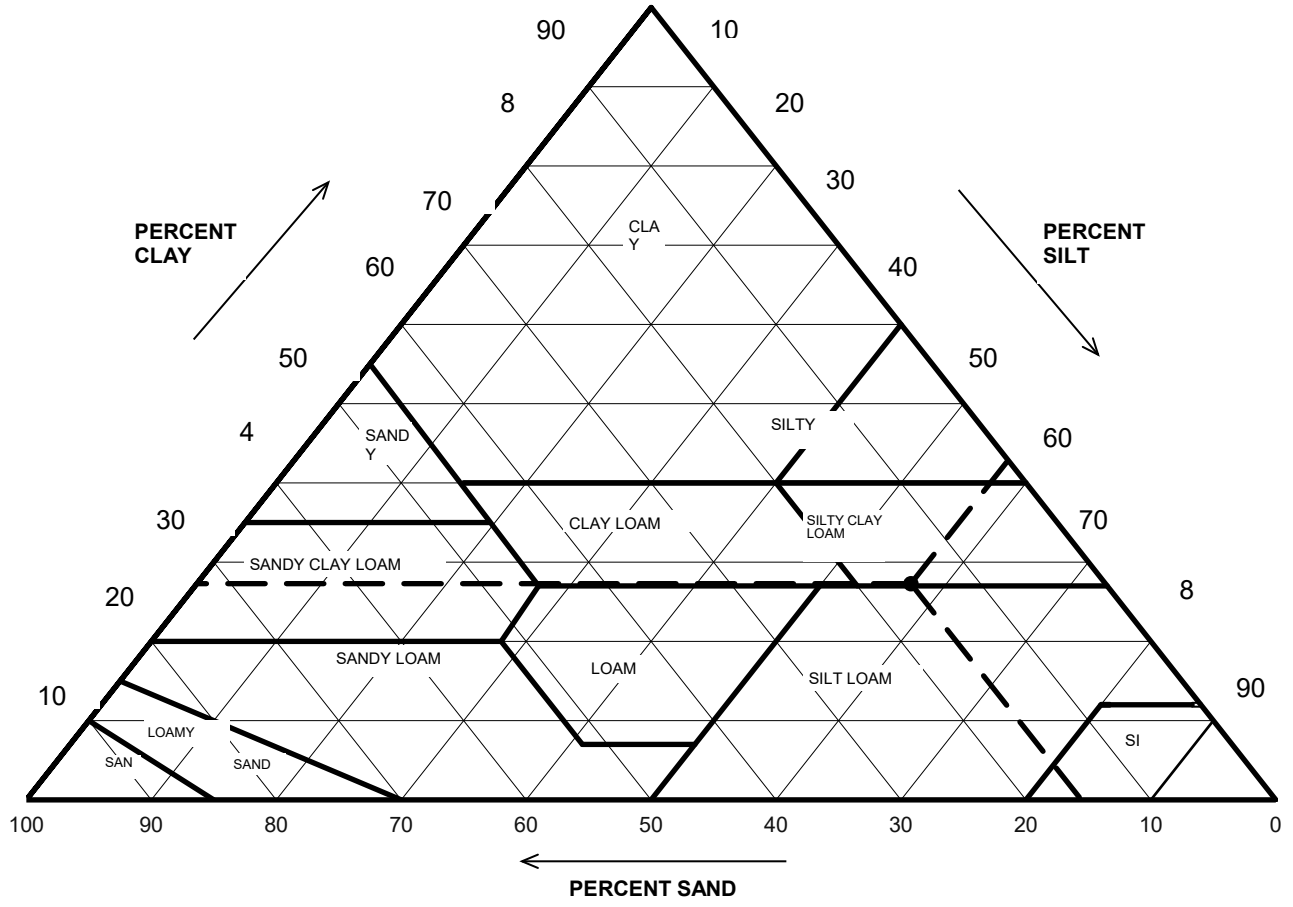
DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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USDA Classification Chart

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-014	Sample No.:	C-091825-7
Lab ID:	2025-173-014-009	Soil Color:	Brown



Particle Size (mm)	Percent Finer	USDA Summary	Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classification
		Gravel	11.65	**0.00**
2	88.35	*Sand*	13.75	**15.57**
0.05	74.60	*Silt*	50.49	**57.15**
0.002	24.11	*Clay*	24.11	**27.29**

USDA Classification ***SILTY CLAY LOAM***

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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WASH SIEVE ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-014	Sample No.:	C-091825-7
Lab ID:	2025-173-014-009	Soil Color:	Brown

Moisture Content of Passing 3/4" Material		Moisture Content of Retained 3/4" Material	
Tare No.:	2012	Tare No.:	2903
Wt. of Tare & Wet Sample (g):	969.29	Weight of Tare & Wet Sample (g):	198.71
Wt. of Tare & Dry Sample (g):	941.97	Weight of Tare & Dry Sample (g):	197.17
Weight of Tare (g):	144.71	Weight of Tare (g):	7.31
Weight of Water (g):	27.32	Weight of Water (g):	1.54
Weight of Dry Soil (g):	797.26	Weight of Dry Soil (g):	189.86
Moisture Content (%):	**3.4**	**Moisture Content (%):**	**0.8**

Wet Weight of -3/4" Sample (g):	7840.00	Weight of the Dry Sample (g):	797.26
Dry Weight of - 3/4" Sample (g):	7580.24	Weight of minus #200 Material (g):	630.32
Wet Weight of +3/4" Sample (g):	191.00	Weight of plus #200 Material (g):	166.94
Dry Weight of +3/4" Sample (g):	189.46		
Total Dry Weight of Sample (g):	7769.71	**J - Factor (Percent Finer than 3/4")**	**97.56%**

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)		Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00		0.00	0.00	100.00	**100.00**
6"	150	0.00		0.00	0.00	100.00	**100.00**
3"	75	0.00		0.00	0.00	100.00	**100.00**
2"	50	0.00	(*)	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00		0.00	0.00	100.00	**100.00**
1"	25	147.00		1.88	1.88	98.12	**98.12**
3/4"	19	44.00		0.56	2.44	97.56	**97.56**
1/2"	12.5	10.80		1.35	1.35	98.65	**96.24**
3/8"	9.5	7.37		0.92	2.28	97.72	**95.34**
#4	4.75	29.69		3.72	6.00	94.00	**91.70**
#10	2	27.40		3.44	9.44	90.56	**88.35**
#20	0.85	21.54	(**)	2.70	12.14	87.86	**85.72**
#40	0.425	16.67		2.09	14.23	85.77	**83.68**
#60	0.25	17.56		2.20	16.44	83.56	**81.53**
#140	0.106	26.05		3.27	19.70	80.30	**78.34**
#200	0.075	9.86		1.24	20.94	79.06	**77.13**
Pan	-	630.32		79.06	100.00	-	**-**

NOTES: *(*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample*
*(**) The - 3/4" sieve analysis is based on the Weight of the Dry Sample*

Tested By DF Date 9/25/25 Checked By EG Date 10/1/25

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-014	Sample No.:	C-091825-7
Lab ID:	2025-173-014-009	Soil Color:	Brown

Elapsed Time		R Measured	Temp.	Composite Correction	R Corrected	N	K Factor	Diameter	N'
(min)			(°C)			(%)		(mm)	(%)
0		NA	NA	NA	NA	NA	NA	NA	NA
2		48.5	22.4	5.0	43.5	91.6	0.01307	0.0267	**70.7**
5		47.0	22.4	5.0	42.0	88.5	0.01307	0.0171	**68.2**
15		42.0	22.4	5.0	37.0	77.9	0.01307	0.0103	**60.1**
30		38.0	22.4	5.0	33.0	69.5	0.01307	0.0076	**53.6**
64		33.0	22.4	5.0	28.0	59.0	0.01307	0.0054	**45.5**
250		23.0	22.6	4.9	18.1	38.1	0.01303	0.0029	**29.4**
1440		16.0	22.3	5.0	11.0	23.1	0.01308	0.0013	**17.8**

Soil Specimen Data		**Other Corrections**		
Tare No.	2331			
Wt. of Tare & Dry Material (g):	140.45	a - Factor	0.993	
Weight of Tare (g):	88.29			
Weight of Deflocculant (g):	5.0	Percent Finer than # 200	77.13	
Weight of Dry Material (g):	47.16			
		Specific Gravity	2.70	Assumed

Note: *Hydrometer test is performed on - # 200 sieve material.*

Tested By TO Date 9/29/25 Checked By EG Date 10/1/25

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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Moisture, Ash, and Organic Matter (Loss on Ignition)

ASTM D 2974-20e1

Client:	GAI Consultants, Inc.
Client Reference:	Cheswick Closure R220960.00
Project No.:	2025-173-014

Method B (To 0.1%)

Moisture Content

ASTM D2216

Lab ID:	009
Boring No.:	Final Closure
Depth (ft):	In Place Soil
Sample No.:	C-091825-7
Tare Number	EE
Weight of Tare & Wet Sample (g)	349.65
Weight of Tare & Dry Sample (g)	342.51
Weight of Tare (g)	126.94
Weight of Water (g)	7.14
Weight of Dry Sample (g)	215.57
Moisture Content	**3.3%**

Method A

Ash Content, Organic Matter

Furnace Temperature (°C)	440
Weight of Tare & Ash (g)	338.77
Weight of Volatiles (g)	3.74
Weight of Ash (g)	211.83
Ash Content (%)	**98.3%**
Organic Matter (%)	**1.7%**

Tested By JW *Date* 9/23/25 *Checked By* EG *Date* 9/25/25

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PERMEABILITY TEST

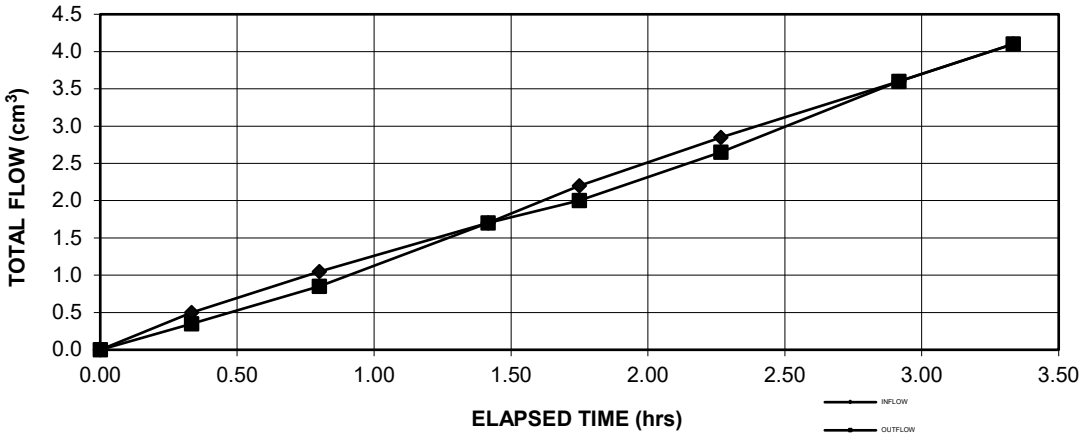
ASTM D 5084-16a Method C

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Project:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-014	Sample No.:	C-091825-7
Lab ID No.:	2025-173-014-009	Avg. Effective Consol. Pressure (psi):	6.25

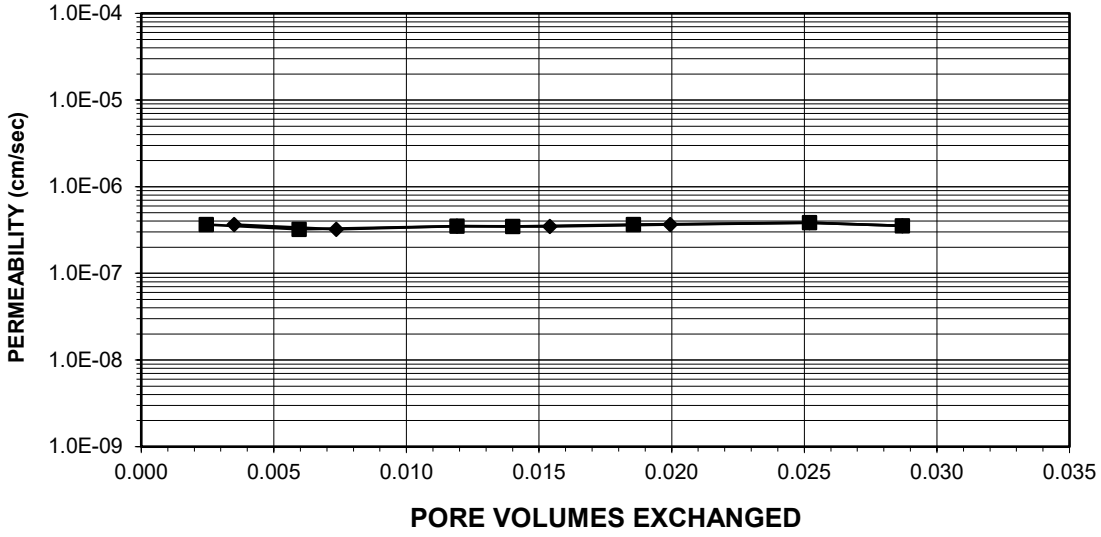
AVERAGE PERMEABILITY = 3.6E-07 cm/sec @ 20°C

AVERAGE PERMEABILITY = 3.6E-09 m/sec @ 20°C

TOTAL FLOW vs. ELAPSED TIME



PORE VOLUMES EXCHANGED vs. PERMEABILITY



Tested By: DP Date: 9/29/25 Checked By: JLK Date: 10/2/25

DCN: CT-22 DATE: 1/1/17 REVISION: 11

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PERMEABILITY TEST

ASTM D 5084-16a Method C

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Project:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-014	Sample No.:	C-091825-7
Lab ID No.:	2025-173-014-009	Avg. Effective Consol. Pressure (psi):	6.25

Specific Gravity:	2.70	Assumed
Sample Condition:		Remolded

Visual Description: Reddish Brown Clay with Rock

Permeant Type: Deaired Water

MOISTURE CONTENT:	BEFORE TEST	AFTER TEST
Tare Number	3517	1128
Weight of Tare & Wet Sample (g)	164.39	845.98
Weight of Tare & Dry Sample (g)	144.97	713.49
Weight of Tare (g)	7.12	84.58
Weight of Water (g)	19.42	132.49
Weight of Dry Sample (g)	137.85	628.91
Moisture Content (%)	**14.1**	**21.1**

SPECIMEN:	BEFORE TEST	AFTER TEST
Weight of Tube & Wet Sample (g)	1641.23	NA
Weight of Tube (g)	917.30	NA
Weight of Wet Sample (g)	723.93	768.23
Length 1 (in)	3.490	3.559
Length 2 (in)	3.490	3.549
Length 3 (in)	3.490	3.558
Top Diameter (in)	2.870	2.886
Middle Diameter (in)	2.870	2.850
Bottom Diameter (in)	2.870	2.885
Average Length (in)	3.49	3.56
Average Area (in^2)	6.47	6.49
Sample Volume (cm^3)	369.98	377.87
Unit Wet Weight (g/cm^3)	1.96	2.03
Unit Wet Weight (pcf)	122.1	126.9
Unit Dry Weight (pcf)	107.1	104.8
Unit Dry Weight (g/cm^3)	1.72	1.68
Void Ratio, e	0.57	0.61
Porosity, n	0.36	0.38
Pore Volume (cm^3)	135.0	142.9
Total Weight of Sample After Test (g)		762.36

Tested By: DP Date: 9/29/25 Checked By: JLK Date: 10/2/25

DCN: CT-22 DATE: 1/1/17 REVISION: 11

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PERMEABILITY TEST

ASTM D 5084-16a Method C

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Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Project:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-014	Sample No.:	C-091825-7
Lab ID No.:	2025-173-014-009	Avg. Effective Consol. Pressure (psi):	6.25

Pressure Heads (Constant)	
Top Cap (psi)	67.5
Bottom Cap (psi)	70.0
Cell (psi)	75.0
Total Pressure Head (cm)	175.8
Hydraulic Gradient	19.46

Final Sample Dimensions	
Sample Length (cm), L	9.03
Sample Diameter (cm)	7.30
Sample Area (cm^2), A	41.84
Inflow Burette Area (cm^2), a-in	0.962
Outflow Burette Area (cm^2), a-out	0.962
B Parameter (%)	99

AVERAGE PERMEABILITY = 3.6E-07 cm/sec @ 20°C

AVERAGE PERMEABILITY = 3.6E-09 m/sec @ 20°C

DATE	TIME		ELAPSED TIME t	TOTAL INFLOW	TOTAL OUTFLOW	TOTAL HEAD h	FLOW (0 flow)	TEMP.	INCREMENTAL PERMEABILITY @ 20°C
(mm/dd/yy)	(hr)	(min)	(hr)	(cm^3)	(cm^3)	(cm)	(1 stop)	(°C)	(cm/sec)
10/1/2025	9	26	0.000	0.0	0.0	200.6	0	21.7	NA
10/1/2025	9	46	0.333	0.5	0.4	199.7	0	21.7	3.6E-07
10/1/2025	10	14	0.800	1.1	0.9	198.6	0	21.8	3.2E-07
10/1/2025	10	51	1.417	1.7	1.7	197.0	0	21.8	3.5E-07
10/1/2025	11	11	1.750	2.2	2.0	196.2	0	21.9	3.5E-07
10/1/2025	11	42	2.267	2.9	2.7	194.9	0	21.9	3.7E-07
10/1/2025	12	21	2.917	3.6	3.6	193.1	0	21.9	3.8E-07
10/1/2025	12	46	3.333	4.1	4.1	192.1	1	21.9	3.5E-07

Tested By: DP Date: 9/29/25 Checked By: JLK Date: 10/2/25

DCN: CT-22 DATE: 1/1/17 REVISION: 11

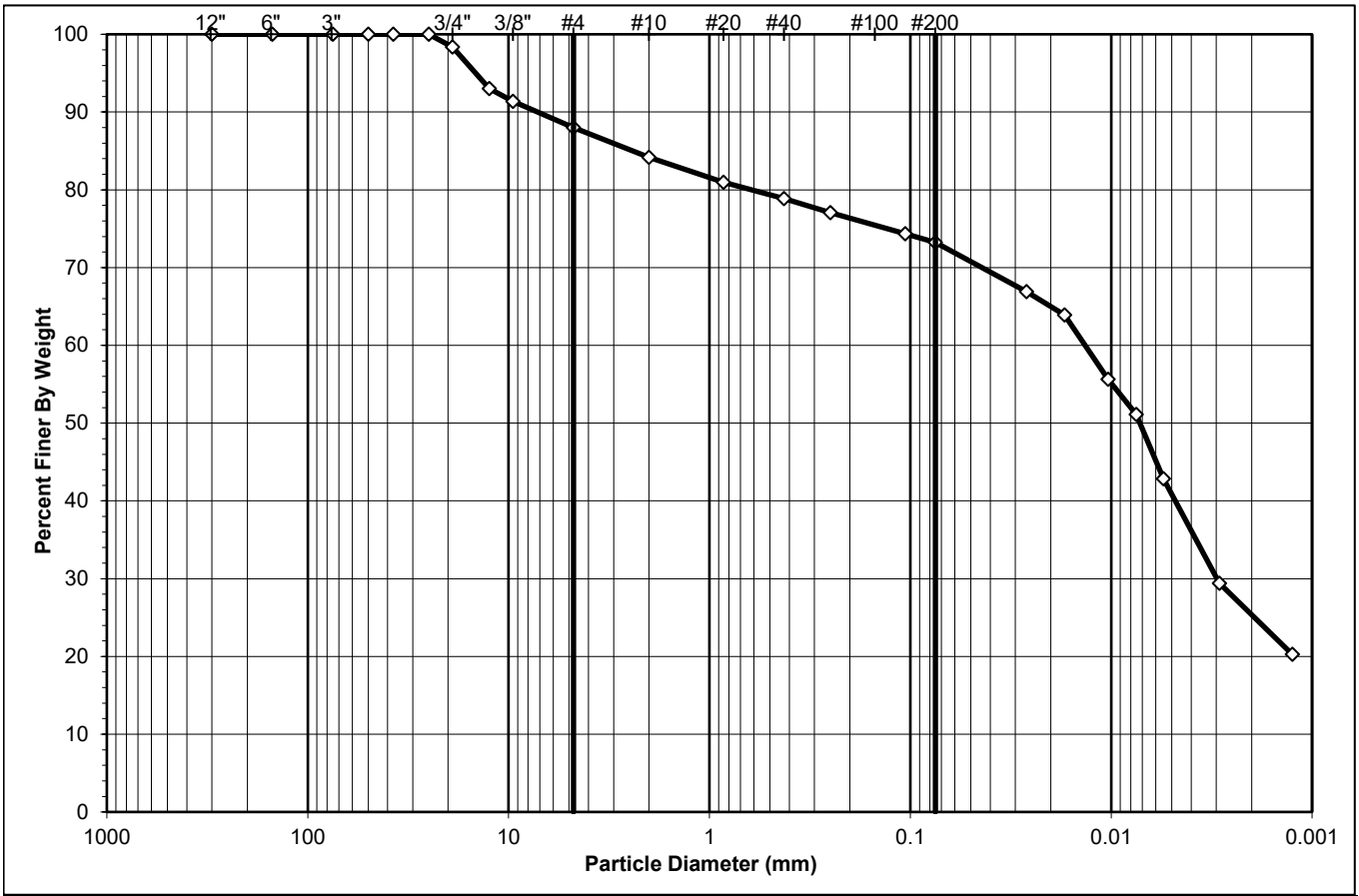
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SIEVE AND HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-014	Sample No.:	C-091825-8
Lab ID:	2025-173-014-010	Soil Color:	Brown

	SIEVE ANALYSIS			HYDROMETER	
USCS	cobbles	gravel	sand	silt and clay fraction	
USDA	cobbles	gravel	sand	silt	clay



USCS Summary

Sieve Size (mm)		Percentage (%)
Greater Than #4	*Gravel*	11.98
#4 to #200	*Sand*	14.79
Finer Than #200	*Silt & Clay*	73.22

USCS Symbol:
cl, ASSUMED

USCS Classification:
LEAN CLAY WITH SAND

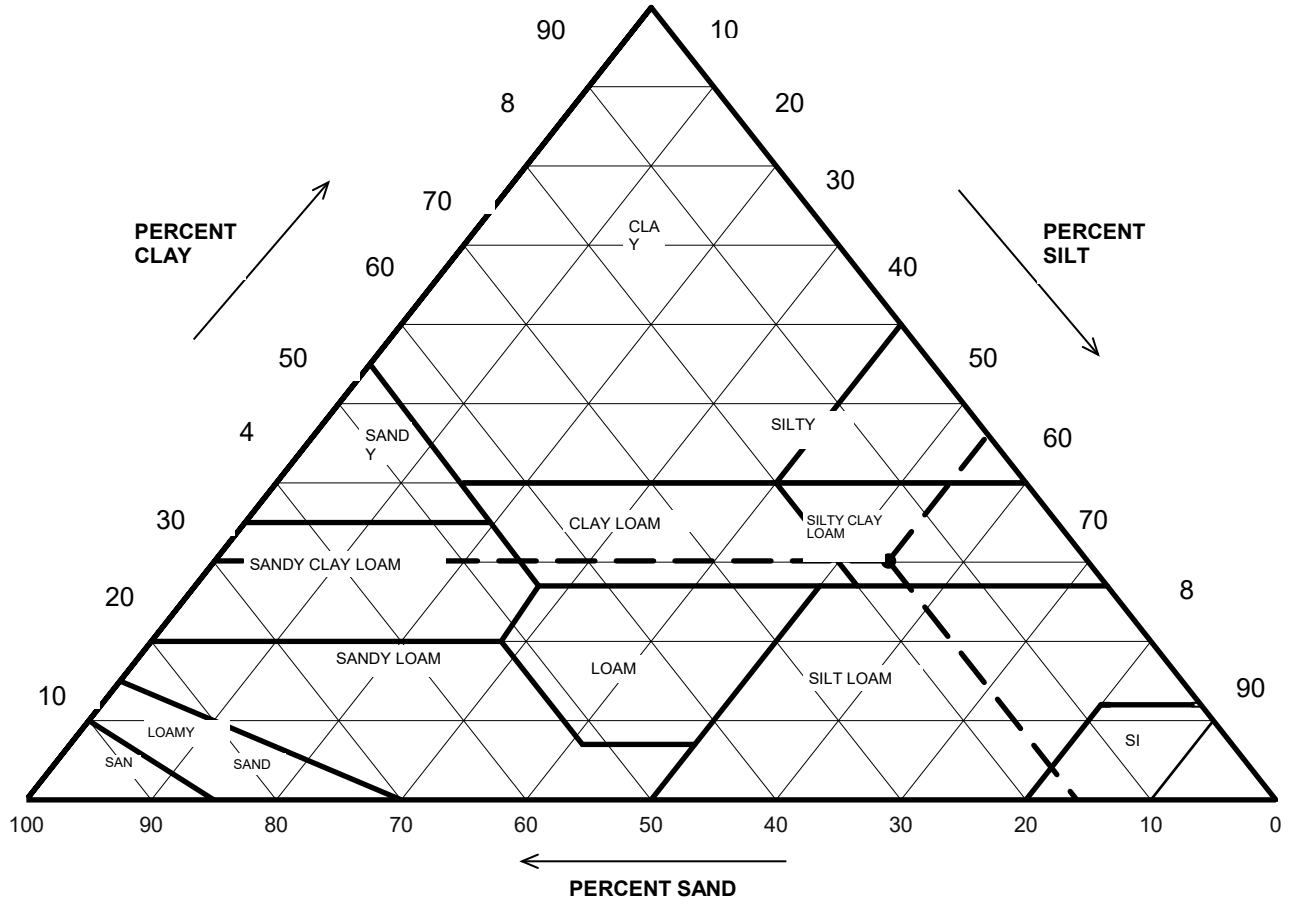
DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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USDA Classification Chart

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-014	Sample No.:	C-091825-8
Lab ID:	2025-173-014-010	Soil Color:	Brown



Particle Size (mm)	Percent Finer	USDA Summary	Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classification
		Gravel	15.82	**0.00**
2	84.18	*Sand*	13.41	**15.93**
0.05	70.77	*Silt*	45.38	**53.92**
0.002	25.38	*Clay*	25.38	**30.16**

USDA Classification ***SILTY CLAY LOAM***

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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WASH SIEVE ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-014	Sample No.:	C-091825-8
Lab ID:	2025-173-014-010	Soil Color:	Brown

Moisture Content of Passing 3/4" Material		Moisture Content of Retained 3/4" Material	
Tare No.:	1562	Tare No.:	3198
Wt. of Tare & Wet Sample (g):	966.24	Weight of Tare & Wet Sample (g):	119.79
Wt. of Tare & Dry Sample (g):	938.84	Weight of Tare & Dry Sample (g):	118.98
Weight of Tare (g):	177.49	Weight of Tare (g):	8.15
Weight of Water (g):	27.4	Weight of Water (g):	0.81
Weight of Dry Soil (g):	761.35	Weight of Dry Soil (g):	110.83
Moisture Content (%):	**3.6**	**Moisture Content (%):**	**0.7**

Wet Weight of -3/4" Sample (g):	6850.00	Weight of the Dry Sample (g):	761.35
Dry Weight of - 3/4" Sample (g):	6612.04	Weight of minus #200 Material (g):	566.78
Wet Weight of +3/4" Sample (g):	111.00	Weight of plus #200 Material (g):	194.57
Dry Weight of +3/4" Sample (g):	110.19		
Total Dry Weight of Sample (g):	6722.24	**J - Factor (Percent Finer than 3/4")**	**98.36%**

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)		Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00		0.00	0.00	100.00	**100.00**
6"	150	0.00		0.00	0.00	100.00	**100.00**
3"	75	0.00		0.00	0.00	100.00	**100.00**
2"	50	0.00	(*)	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00		0.00	0.00	100.00	**100.00**
1"	25	0.00		0.00	0.00	100.00	**100.00**
3/4"	19	111.00		1.64	1.64	98.36	**98.36**
1/2"	12.5	41.40		5.44	5.44	94.56	**93.01**
3/8"	9.5	12.63		1.66	7.10	92.90	**91.38**
#4	4.75	26.05		3.42	10.52	89.48	**88.02**
#10	2	29.72		3.90	14.42	85.58	**84.18**
#20	0.85	24.63	(**)	3.24	17.66	82.34	**80.99**
#40	0.425	16.41		2.16	19.81	80.19	**78.87**
#60	0.25	13.90		1.83	21.64	78.36	**77.08**
#140	0.106	21.05		2.76	24.40	75.60	**74.36**
#200	0.075	8.78		1.15	25.56	74.44	**73.22**
Pan	-	566.78		74.44	100.00	-	**-**

NOTES: *(*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample*
*(**) The - 3/4" sieve analysis is based on the Weight of the Dry Sample*

Tested By	DF	Date	9/25/25	Checked By	EG	Date	10/1/25

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-014	Sample No.:	C-091825-8
Lab ID:	2025-173-014-010	Soil Color:	Brown

Elapsed Time		R Measured	Temp.	Composite Correction	R Corrected	N	K Factor	Diameter	N'
(min)			(°C)			(%)		(mm)	(%)
0		NA	NA	NA	NA	NA	NA	NA	NA
2		49.5	22.4	5.0	44.5	91.4	0.01307	0.0264	**66.9**
5		47.5	22.4	5.0	42.5	87.3	0.01307	0.0170	**63.9**
15		42.0	22.4	5.0	37.0	76.0	0.01307	0.0103	**55.6**
30		39.0	22.4	5.0	34.0	69.8	0.01307	0.0075	**51.1**
61		33.5	22.4	5.0	28.5	58.5	0.01307	0.0055	**42.9**
250		24.5	22.6	4.9	19.6	40.2	0.01303	0.0029	**29.4**
1440		18.5	22.3	5.0	13.5	27.7	0.01308	0.0013	**20.3**

Soil Specimen Data		**Other Corrections**		
Tare No.	958			
Wt. of Tare & Dry Material (g):	146.25	a - Factor	0.993	
Weight of Tare (g):	92.87			
Weight of Deflocculant (g):	5.0	Percent Finer than # 200	73.22	
Weight of Dry Material (g):	48.38			
		Specific Gravity	2.70	Assumed

Note: *Hydrometer test is performed on - # 200 sieve material.*

Tested By TO Date 9/29/25 Checked By EG Date 10/1/25

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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Moisture, Ash, and Organic Matter (Loss on Ignition)

ASTM D 2974-20e1

Client:	GAI Consultants, Inc.
Client Reference:	Cheswick Closure R220960.00
Project No.:	2025-173-014

Method B (To 0.1%)

Moisture Content

ASTM D2216

Lab ID:	010
Boring No.:	Final Closure
Depth (ft):	In Place Soil
Sample No.:	C-091825-8
Tare Number	CC
Weight of Tare & Wet Sample (g)	340.30
Weight of Tare & Dry Sample (g)	332.75
Weight of Tare (g)	130.57
Weight of Water (g)	7.55
Weight of Dry Sample (g)	202.18
Moisture Content	**3.7%**

Method A

Ash Content, Organic Matter

Furnace Temperature (°C)	440
Weight of Tare & Ash (g)	328.30
Weight of Volatiles (g)	4.45
Weight of Ash (g)	197.73
Ash Content (%)	**97.8%**
Organic Matter (%)	**2.2%**

Tested By JW *Date* 9/23/25 *Checked By* EG *Date* 9/25/25

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PERMEABILITY TEST

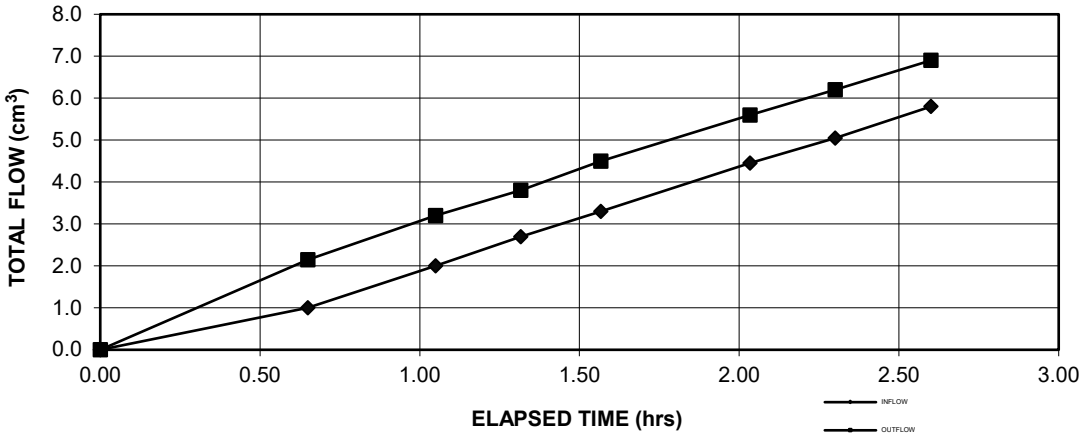
ASTM D 5084-16a Method C

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Project:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-014	Sample No.:	C-091825-8
Lab ID No.:	2025-173-014-010	Avg. Effective Consol. Pressure (psi):	6.25

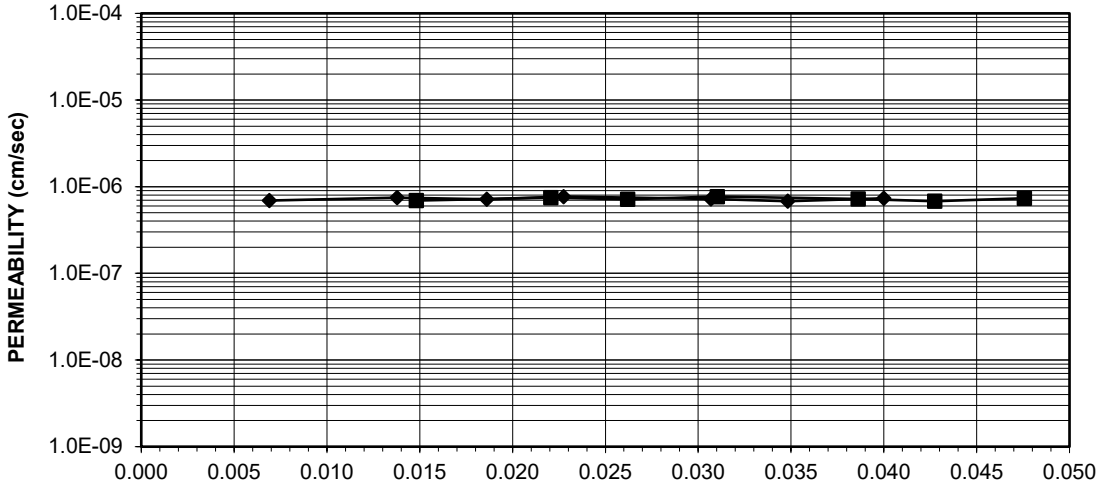
AVERAGE PERMEABILITY = 7.3E-07 cm/sec @ 20°C

AVERAGE PERMEABILITY = 7.3E-09 m/sec @ 20°C

TOTAL FLOW vs. ELAPSED TIME



PORE VOLUMES EXCHANGED vs. PERMEABILITY



Tested By: DP Date: 9/30/25 Checked By: JLK Date: 10/3/25

DCN: CT-22 DATE: 1/1/17 REVISION: 11

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PERMEABILITY TEST

ASTM D 5084-16a Method C

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Project:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-014	Sample No.:	C-091825-8
Lab ID No.:	2025-173-014-010	Avg. Effective Consol. Pressure (psi):	6.25

Specific Gravity: 2.70 Assumed
Sample Condition: Remolded

Visual Description: Reddish Brown Clay with Rock

Permeant Type: Deaired Water

MOISTURE CONTENT:	BEFORE TEST	AFTER TEST
Tare Number	3323	1720
Weight of Tare & Wet Sample (g)	156.16	846.16
Weight of Tare & Dry Sample (g)	136.82	710.28
Weight of Tare (g)	7.17	81.44
Weight of Water (g)	19.34	135.88
Weight of Dry Sample (g)	129.65	628.84
Moisture Content (%)	**14.9**	**21.6**

SPECIMEN:	BEFORE TEST	AFTER TEST
Weight of Tube & Wet Sample (g)	1642.43	NA
Weight of Tube (g)	917.30	NA
Weight of Wet Sample (g)	725.13	767.35
Length 1 (in)	3.490	3.493
Length 2 (in)	3.490	3.581
Length 3 (in)	3.490	3.506
Top Diameter (in)	2.870	2.889
Middle Diameter (in)	2.870	2.890
Bottom Diameter (in)	2.870	2.887
Average Length (in)	3.49	3.53
Average Area (in^2)	6.47	6.55
Sample Volume (cm^3)	369.98	378.75
Unit Wet Weight (g/cm^3)	1.96	2.03
Unit Wet Weight (pcf)	122.3	126.5
Unit Dry Weight (pcf)	106.5	104.0
Unit Dry Weight (g/cm^3)	1.71	1.67
Void Ratio, e	0.58	0.62
Porosity, n	0.37	0.38
Pore Volume (cm^3)	136.3	145.0
Total Weight of Sample After Test (g)		765.63

Tested By: DP Date: 9/30/25 Checked By: JLK Date: 10/3/25

DCN: CT-22 DATE: 1/1/17 REVISION: 11

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PERMEABILITY TEST

ASTM D 5084-16a Method C

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Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Project:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-014	Sample No.:	C-091825-8
Lab ID No.:	2025-173-014-010	Avg. Effective Consol. Pressure (psi):	6.25

Pressure Heads (Constant)	
Top Cap (psi)	67.5
Bottom Cap (psi)	70.0
Cell (psi)	75.0
Total Pressure Head (cm)	175.8
Hydraulic Gradient	19.62

Final Sample Dimensions	
Sample Length (cm), L	8.96
Sample Diameter (cm)	7.34
Sample Area (cm^2), A	42.28
Inflow Burette Area (cm^2), a-in	0.936
Outflow Burette Area (cm^2), a-out	0.972
B Parameter (%)	96

AVERAGE PERMEABILITY = 7.3E-07 cm/sec @ 20°C

AVERAGE PERMEABILITY = 7.3E-09 m/sec @ 20°C

DATE	TIME		ELAPSED TIME t	TOTAL INFLOW	TOTAL OUTFLOW	TOTAL HEAD h	FLOW (0 flow)	TEMP.	INCREMENTAL PERMEABILITY @ 20°C
(mm/dd/yy)	(hr)	(min)	(hr)	(cm^3)	(cm^3)	(cm)	(1 stop)	(°C)	(cm/sec)
10/2/2025	12	20	0.000	0.0	0.0	196.2	0	21.9	NA
10/2/2025	12	59	0.650	1.0	2.2	192.9	0	22.0	6.9E-07
10/2/2025	13	23	1.050	2.0	3.2	190.7	0	22.0	7.5E-07
10/2/2025	13	39	1.317	2.7	3.8	189.4	0	22.0	7.2E-07
10/2/2025	13	54	1.567	3.3	4.5	188.0	0	22.0	7.7E-07
10/2/2025	14	22	2.033	4.5	5.6	185.7	0	22.0	7.2E-07
10/2/2025	14	38	2.300	5.1	6.2	184.4	0	22.0	6.8E-07
10/2/2025	14	56	2.600	5.8	6.9	182.9	1	22.0	7.4E-07

Tested By: DP Date: 9/30/25 Checked By: JLK Date: 10/3/25

DCN: CT-22 DATE: 1/1/17 REVISION: 11

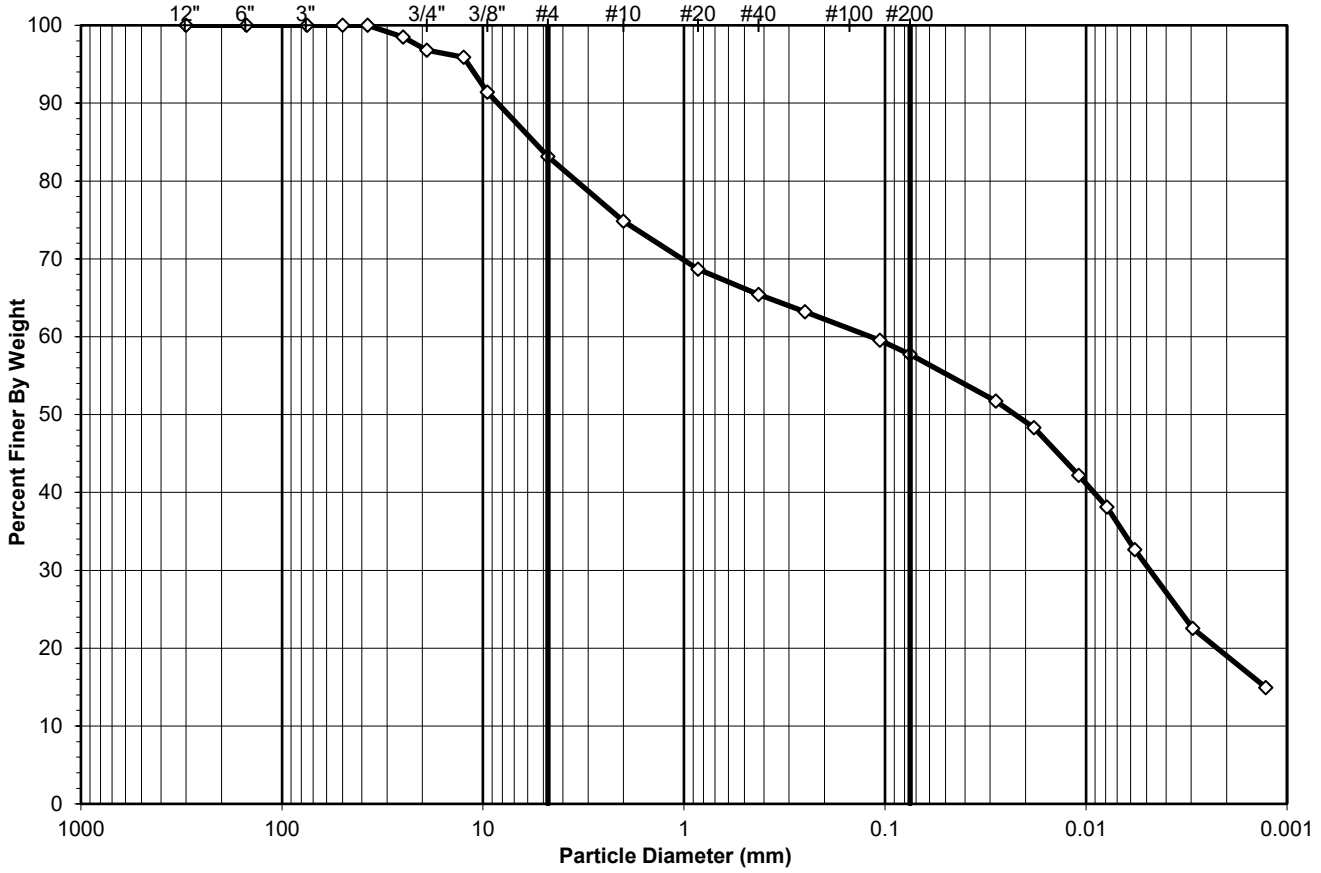
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SIEVE AND HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-014	Sample No.:	C-091825-9
Lab ID:	2025-173-014-011	Soil Color:	Brown

	SIEVE ANALYSIS			HYDROMETER	
USCS	cobbles	gravel	sand	silt and clay fraction	
USDA	cobbles	gravel	sand	silt	clay



USCS Summary

Sieve Size (mm)		Percentage (%)
Greater Than #4	*Gravel*	16.83
#4 to #200	*Sand*	25.42
Finer Than #200	*Silt & Clay*	57.75

USCS Symbol:
cl, ASSUMED

USCS Classification:
SANDY LEAN CLAY WITH GRAVEL

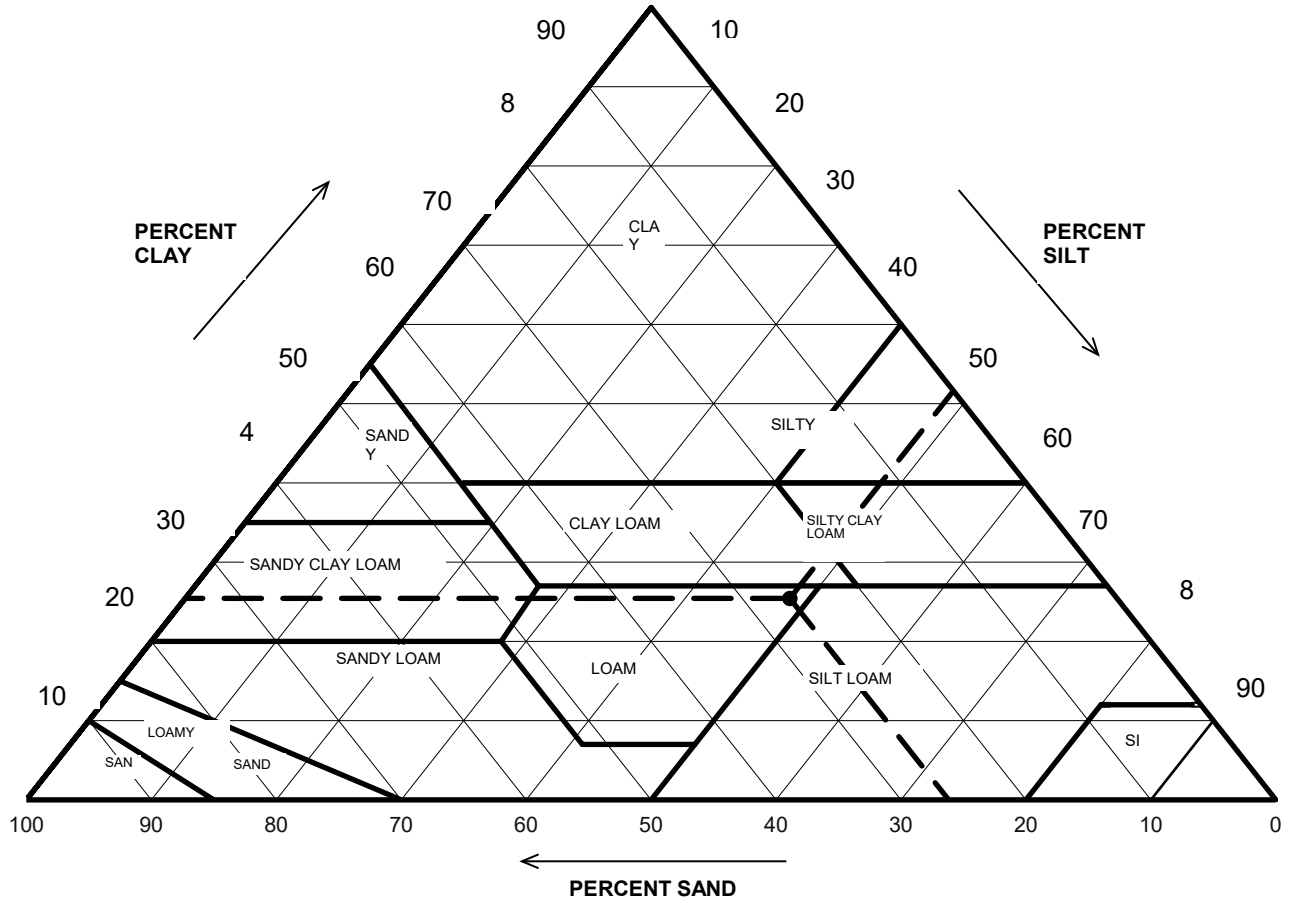
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USDA Classification Chart

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-014	Sample No.:	C-091825-9
Lab ID:	2025-173-014-011	Soil Color:	Brown



Particle Size (mm)	Percent Finer	USDA Summary	Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classification
		Gravel	25.14	**0.00**
2	74.86	*Sand*	19.60	**26.18**
0.05	55.26	*Silt*	36.22	**48.39**
0.002	19.04	*Clay*	19.04	**25.43**

USDA Classification ***LOAM***

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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WASH SIEVE ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-014	Sample No.:	C-091825-9
Lab ID:	2025-173-014-011	Soil Color:	Brown

Moisture Content of Passing 3/4" Material		Moisture Content of Retained 3/4" Material	
Tare No.:	1485	Tare No.:	3274
Wt. of Tare & Wet Sample (g):	988.6	Weight of Tare & Wet Sample (g):	271.21
Wt. of Tare & Dry Sample (g):	958.09	Weight of Tare & Dry Sample (g):	266.5
Weight of Tare (g):	175.33	Weight of Tare (g):	7.18
Weight of Water (g):	30.51	Weight of Water (g):	4.71
Weight of Dry Soil (g):	782.76	Weight of Dry Soil (g):	259.32
Moisture Content (%):	**3.9**	**Moisture Content (%):**	**1.8**

Wet Weight of -3/4" Sample (g):	8162.00	Weight of the Dry Sample (g):	782.76
Dry Weight of - 3/4" Sample (g):	7855.80	Weight of minus #200 Material (g):	466.89
Wet Weight of +3/4" Sample (g):	263.00	Weight of plus #200 Material (g):	315.87
Dry Weight of +3/4" Sample (g):	258.31		
Total Dry Weight of Sample (g):	8114.11	**J - Factor (Percent Finer than 3/4")**	**96.82%**

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)		Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00		0.00	0.00	100.00	**100.00**
6"	150	0.00		0.00	0.00	100.00	**100.00**
3"	75	0.00		0.00	0.00	100.00	**100.00**
2"	50	0.00	(*)	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00		0.00	0.00	100.00	**100.00**
1"	25	125.00		1.51	1.51	98.49	**98.49**
3/4"	19	138.00		1.67	3.18	96.82	**96.82**
1/2"	12.5	7.33		0.94	0.94	99.06	**95.91**
3/8"	9.5	36.43		4.65	5.59	94.41	**91.40**
#4	4.75	66.55		8.50	14.09	85.91	**83.17**
#10	2	67.20		8.59	22.68	77.32	**74.86**
#20	0.85	50.00	(**)	6.39	29.07	70.93	**68.68**
#40	0.425	26.24		3.35	32.42	67.58	**65.43**
#60	0.25	17.82		2.28	34.69	65.31	**63.23**
#140	0.106	29.80		3.81	38.50	61.50	**59.54**
#200	0.075	14.50		1.85	40.35	59.65	**57.75**
Pan	-	466.89		59.65	100.00	-	**-**

NOTES: *(*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample*
*(**) The - 3/4" sieve analysis is based on the Weight of the Dry Sample*

Tested By	DF	Date	9/25/25	Checked By	EG	Date	10/1/25

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-014	Sample No.:	C-091825-9
Lab ID:	2025-173-014-011	Soil Color:	Brown

Elapsed Time		R Measured	Temp.	Composite Correction	R Corrected	N	K Factor	Diameter	N'
(min)			(°C)			(%)		(mm)	(%)
0		NA	NA	NA	NA	NA	NA	NA	NA
2		43.0	22.4	5.0	38.0	89.6	0.01307	0.0281	**51.7**
5		40.5	22.4	5.0	35.5	83.7	0.01307	0.0182	**48.3**
15		36.0	22.4	5.0	31.0	73.1	0.01307	0.0109	**42.2**
30		33.0	22.4	5.0	28.0	66.0	0.01307	0.0079	**38.1**
60		29.0	22.4	5.0	24.0	56.6	0.01307	0.0057	**32.7**
250		21.5	22.6	4.9	16.6	39.0	0.01303	0.0029	**22.5**
1440		16.0	22.3	5.0	11.0	25.9	0.01308	0.0013	**15.0**

Soil Specimen Data		**Other Corrections**		
Tare No.	694			
Wt. of Tare & Dry Material (g):	141.79	a - Factor	0.993	
Weight of Tare (g):	94.64			
Weight of Deflocculant (g):	5.0	Percent Finer than # 200	57.75	
Weight of Dry Material (g):	42.15			
		Specific Gravity	2.70	Assumed

Note: *Hydrometer test is performed on - # 200 sieve material.*

Tested By TO Date 9/29/25 Checked By EG Date 10/1/25

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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Moisture, Ash, and Organic Matter (Loss on Ignition)

ASTM D 2974-20e1

Client:	GAI Consultants, Inc.
Client Reference:	Cheswick Closure R220960.00
Project No.:	2025-173-014

Method B (To 0.1%)

Moisture Content

ASTM D2216

Lab ID:	011
Boring No.:	Final Closure
Depth (ft):	In Place Soil
Sample No.:	C-091825-9
Tare Number	FF
Weight of Tare & Wet Sample (g)	355.30
Weight of Tare & Dry Sample (g)	346.75
Weight of Tare (g)	115.50
Weight of Water (g)	8.55
Weight of Dry Sample (g)	231.25
Moisture Content	**3.7%**

Method A

Ash Content, Organic Matter

Furnace Temperature (°C)	440
Weight of Tare & Ash (g)	339.48
Weight of Volatiles (g)	7.27
Weight of Ash (g)	223.98
Ash Content (%)	**96.9%**
Organic Matter (%)	**3.1%**

Tested By JW *Date* 9/23/25 *Checked By* EG *Date* 9/25/25

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PERMEABILITY TEST

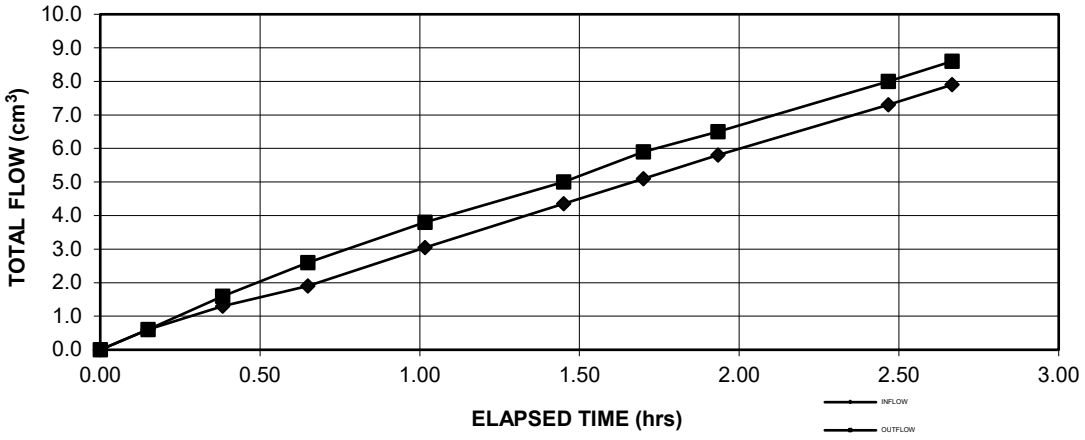
ASTM D 5084-16a Method C

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Project:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-014	Sample No.:	C-091825-9
Lab ID No.:	2025-173-014-011	Avg. Effective Consol. Pressure (psi):	6.25

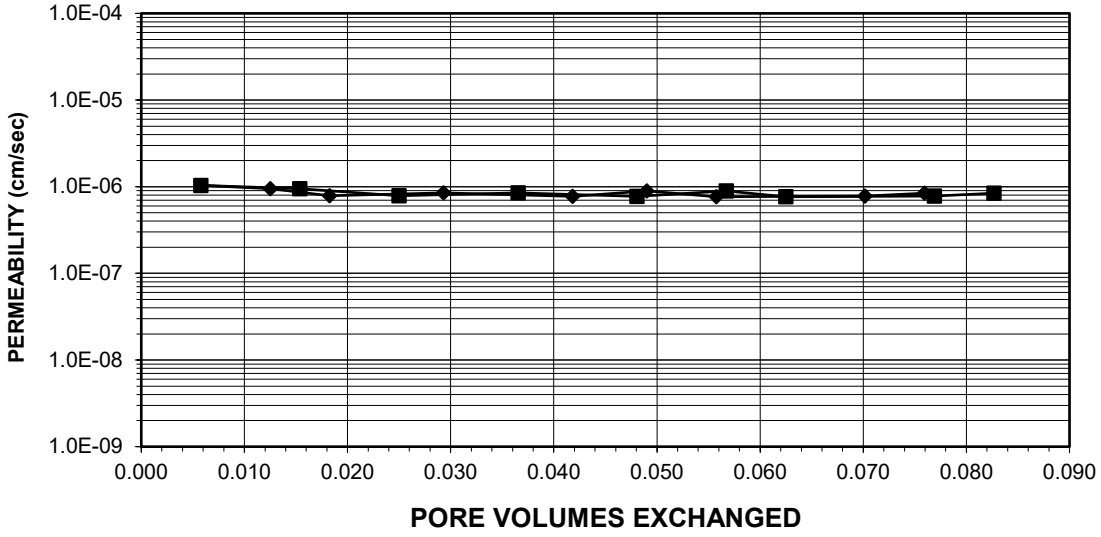
AVERAGE PERMEABILITY = 8.2E-07 cm/sec @ 20°C

AVERAGE PERMEABILITY = 8.2E-09 m/sec @ 20°C

TOTAL FLOW vs. ELAPSED TIME



PORE VOLUMES EXCHANGED vs. PERMEABILITY



Tested By: DP Date: 9/30/25 Checked By: JLK Date: 10/3/25

DCN: CT-22 DATE: 1/1/17 REVISION: 11

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PERMEABILITY TEST

ASTM D 5084-16a Method C

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Project:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-014	Sample No.:	C-091825-9
Lab ID No.:	2025-173-014-011	Avg. Effective Consol. Pressure (psi):	6.25

Specific Gravity:	2.70	Assumed
Sample Condition:		Remolded

Visual Description: Reddish Brown Clay and Rock

Permeant Type: Deaired Water

MOISTURE CONTENT:	BEFORE TEST	AFTER TEST
Tare Number	2936	894
Weight of Tare & Wet Sample (g)	158.49	871.16
Weight of Tare & Dry Sample (g)	138.93	740.67
Weight of Tare (g)	7.37	109.51
Weight of Water (g)	19.56	130.49
Weight of Dry Sample (g)	131.56	631.16
Moisture Content (%)	**14.9**	**20.7**

SPECIMEN:	BEFORE TEST	AFTER TEST
Weight of Tube & Wet Sample (g)	1642.42	NA
Weight of Tube (g)	917.30	NA
Weight of Wet Sample (g)	725.12	761.78
Length 1 (in)	3.490	3.561
Length 2 (in)	3.490	3.484
Length 3 (in)	3.490	2.449
Top Diameter (in)	2.870	2.875
Middle Diameter (in)	2.870	2.877
Bottom Diameter (in)	2.870	2.888
Average Length (in)	3.49	3.16
Average Area (in^2)	6.47	6.51
Sample Volume (cm^3)	369.98	337.83
Unit Wet Weight (g/cm^3)	1.96	2.25
Unit Wet Weight (pcf)	122.3	140.8
Unit Dry Weight (pcf)	106.5	116.6
Unit Dry Weight (g/cm^3)	1.71	1.87
Void Ratio, e	0.58	0.44
Porosity, n	0.37	0.31
Pore Volume (cm^3)	136.2	104.0
Total Weight of Sample After Test (g)		762.95

Tested By: DP Date: 9/30/25 Checked By: JLK Date: 10/3/25

DCN: CT-22 DATE: 1/1/17 REVISION: 11

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PERMEABILITY TEST

ASTM D 5084-16a Method C

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Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Project:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-014	Sample No.:	C-091825-9
Lab ID No.:	2025-173-014-011	Avg. Effective Consol. Pressure (psi):	6.25

Pressure Heads (Constant)	
Top Cap (psi)	67.5
Bottom Cap (psi)	70.0
Cell (psi)	75.0
Total Pressure Head (cm)	175.8
Hydraulic Gradient	21.87

Final Sample Dimensions	
Sample Length (cm), L	8.04
Sample Diameter (cm)	7.32
Sample Area (cm^2), A	42.03
Inflow Burette Area (cm^2), a-in	0.961
Outflow Burette Area (cm^2), a-out	1.020
B Parameter (%)	97

AVERAGE PERMEABILITY = 8.2E-07 cm/sec @ 20°C

AVERAGE PERMEABILITY = 8.2E-09 m/sec @ 20°C

DATE	TIME		ELAPSED TIME t	TOTAL INFLOW	TOTAL OUTFLOW	TOTAL HEAD h	FLOW (0 flow)	TEMP.	INCREMENTAL PERMEABILITY @ 20°C
(mm/dd/yy)	(hr)	(min)	(hr)	(cm^3)	(cm^3)	(cm)	(1 stop)	(°C)	(cm/sec)
10/2/2025	11	57	0.000	0.0	0.0	196.1	0	21.9	NA
10/2/2025	12	6	0.150	0.6	0.6	194.8	0	21.9	1.0E-06
10/2/2025	12	20	0.383	1.3	1.6	193.1	0	21.9	9.5E-07
10/2/2025	12	36	0.650	1.9	2.6	191.5	0	21.9	7.8E-07
10/2/2025	12	58	1.017	3.1	3.8	189.2	0	22.0	8.5E-07
10/2/2025	13	24	1.450	4.4	5.0	186.6	0	22.0	7.8E-07
10/2/2025	13	39	1.700	5.1	5.9	185.0	0	22.0	8.9E-07
10/2/2025	13	53	1.933	5.8	6.5	183.7	0	22.0	7.7E-07
10/2/2025	14	25	2.467	7.3	8.0	180.6	0	22.0	7.8E-07
10/2/2025	14	37	2.667	7.9	8.6	179.4	1	22.0	8.4E-07

Tested By: DP Date: 9/30/25 Checked By: JLK Date: 10/3/25

DCN: CT-22 DATE: 1/1/17 REVISION: 11

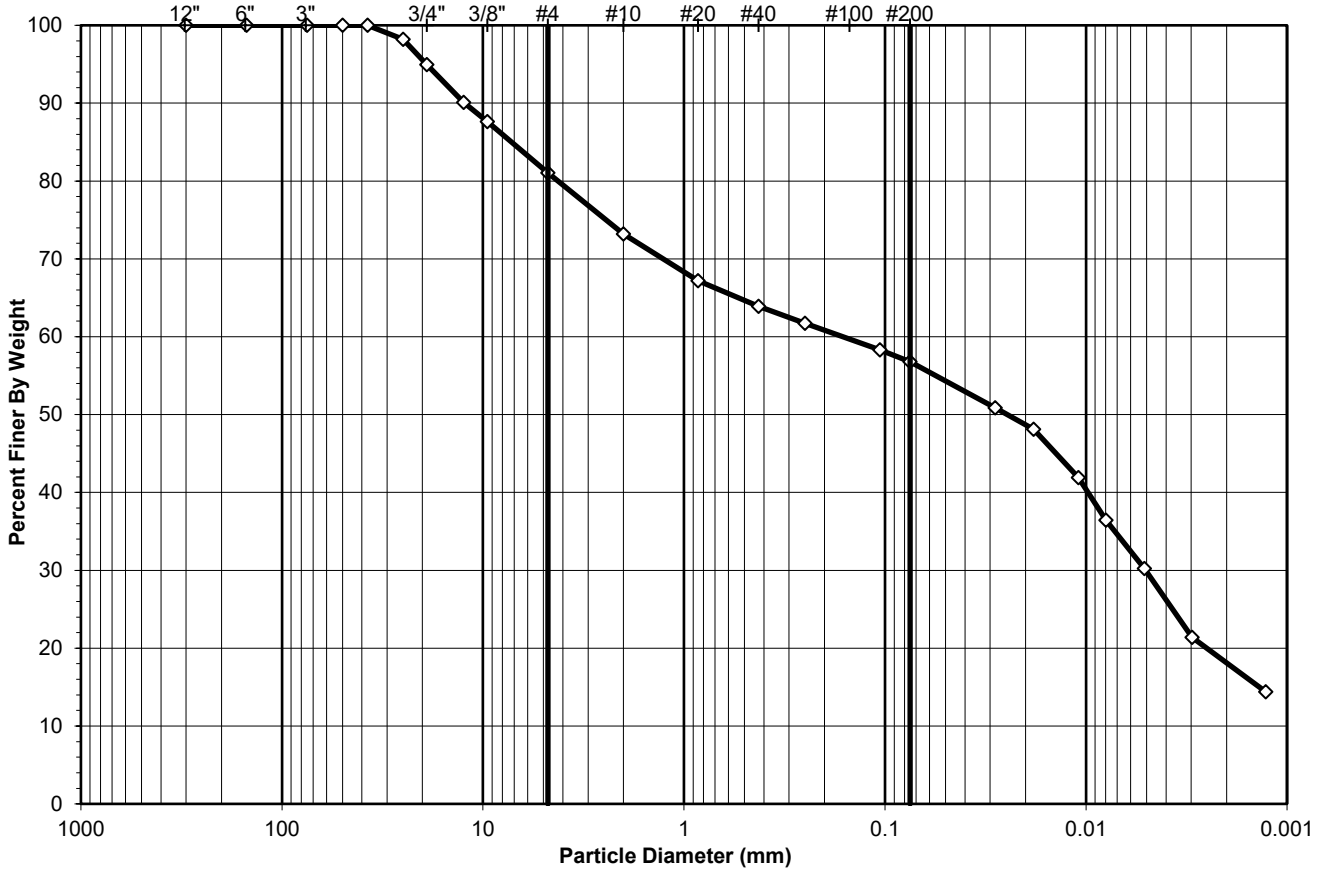
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SIEVE AND HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-014	Sample No.:	C-091825-10
Lab ID:	2025-173-014-012	Soil Color:	Brown

	SIEVE ANALYSIS			HYDROMETER	
USCS	cobbles	gravel	sand	silt and clay fraction	
USDA	cobbles	gravel	sand	silt	clay



USCS Summary

Sieve Size (mm)		Percentage (%)
Greater Than #4	*Gravel*	18.96
#4 to #200	*Sand*	24.23
Finer Than #200	*Silt & Clay*	56.81

USCS Symbol:
cl, ASSUMED

USCS Classification:
SANDY LEAN CLAY WITH GRAVEL

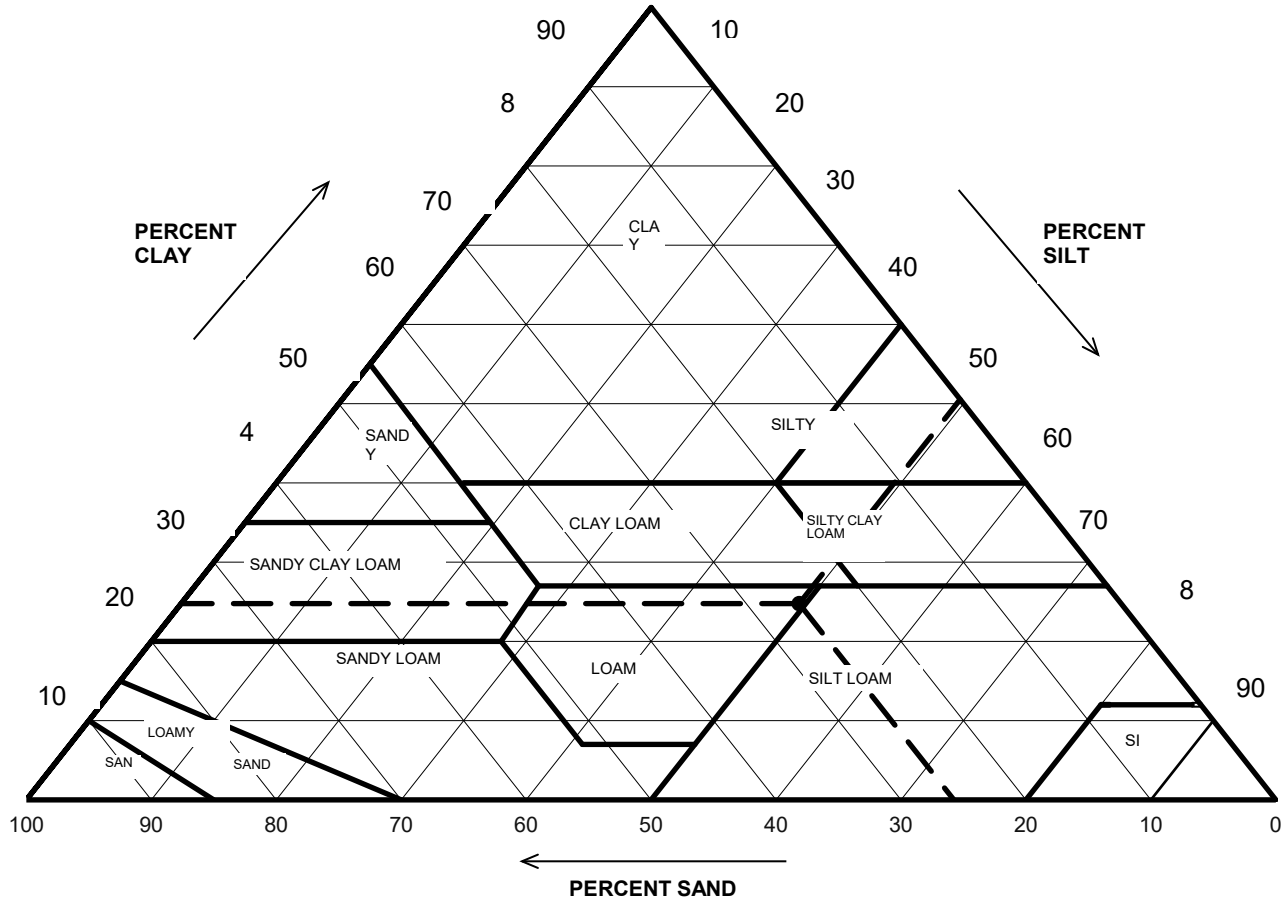
DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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USDA Classification Chart

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-014	Sample No.:	C-091825-10
Lab ID:	2025-173-014-012	Soil Color:	Brown



Particle Size (mm)	Percent Finer	USDA Summary	Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classification
		Gravel	26.81	**0.00**
2	73.19	*Sand*	18.86	**25.77**
0.05	54.33	*Silt*	36.20	**49.46**
0.002	18.13	*Clay*	18.13	**24.77**

USDA Classification ***LOAM***

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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WASH SIEVE ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-014	Sample No.:	C-091825-10
Lab ID:	2025-173-014-012	Soil Color:	Brown

Moisture Content of Passing 3/4" Material		Moisture Content of Retained 3/4" Material	
Tare No.:	1539	Tare No.:	2948
Wt. of Tare & Wet Sample (g):	995.37	Weight of Tare & Wet Sample (g):	409.54
Wt. of Tare & Dry Sample (g):	965.91	Weight of Tare & Dry Sample (g):	402.98
Weight of Tare (g):	176.09	Weight of Tare (g):	8.04
Weight of Water (g):	29.46	Weight of Water (g):	6.56
Weight of Dry Soil (g):	789.82	Weight of Dry Soil (g):	394.94
Moisture Content (%):	**3.7**	**Moisture Content (%):**	**1.7**

Wet Weight of -3/4" Sample (g):	7702.00	Weight of the Dry Sample (g):	789.82
Dry Weight of - 3/4" Sample (g):	7425.05	Weight of minus #200 Material (g):	472.48
Wet Weight of +3/4" Sample (g):	400.00	Weight of plus #200 Material (g):	317.34
Dry Weight of +3/4" Sample (g):	393.46		
Total Dry Weight of Sample (g):	7818.51	**J - Factor (Percent Finer than 3/4")**	**94.97%**

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)		Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00		0.00	0.00	100.00	**100.00**
6"	150	0.00		0.00	0.00	100.00	**100.00**
3"	75	0.00		0.00	0.00	100.00	**100.00**
2"	50	0.00	(*)	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00		0.00	0.00	100.00	**100.00**
1"	25	143.00		1.80	1.80	98.20	**98.20**
3/4"	19	257.00		3.23	5.03	94.97	**94.97**
1/2"	12.5	40.33		5.11	5.11	94.89	**90.12**
3/8"	9.5	20.51		2.60	7.70	92.30	**87.65**
#4	4.75	54.98		6.96	14.66	85.34	**81.04**
#10	2	65.30		8.27	22.93	77.07	**73.19**
#20	0.85	49.83	(**)	6.31	29.24	70.76	**67.20**
#40	0.425	27.29		3.46	32.70	67.30	**63.92**
#60	0.25	18.18		2.30	35.00	65.00	**61.73**
#140	0.106	28.32		3.59	38.58	61.42	**58.33**
#200	0.075	12.60		1.60	40.18	59.82	**56.81**
Pan	-	472.48		59.82	100.00	-	**-**

NOTES: *(*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample*
*(**) The - 3/4" sieve analysis is based on the Weight of the Dry Sample*

Tested By	DF	Date	9/25/25	Checked By	EG	Date	10/1/25

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-014	Sample No.:	C-091825-10
Lab ID:	2025-173-014-012	Soil Color:	Brown

Elapsed Time		R Measured	Temp.	Composite Correction	R Corrected	N	K Factor	Diameter	N'
(min)			(°C)			(%)		(mm)	(%)
0		NA	NA	NA	NA	NA	NA	NA	NA
2		42.0	22.4	5.0	37.0	89.5	0.01307	0.0283	**50.9**
5		40.0	22.4	5.0	35.0	84.7	0.01307	0.0182	**48.1**
15		35.5	22.4	5.0	30.5	73.8	0.01307	0.0109	**41.9**
30		31.5	22.4	5.0	26.5	64.1	0.01307	0.0080	**36.4**
77		27.0	22.4	5.0	22.0	53.2	0.01307	0.0051	**30.2**
250		20.5	22.6	4.9	15.6	37.7	0.01303	0.0030	**21.4**
1440		15.5	22.3	5.0	10.5	25.4	0.01308	0.0013	**14.4**

Soil Specimen Data		**Other Corrections**		
Tare No.	975			
Wt. of Tare & Dry Material (g):	137.90	a - Factor	0.993	
Weight of Tare (g):	91.84			
Weight of Deflocculant (g):	5.0	Percent Finer than # 200	56.81	
Weight of Dry Material (g):	41.06			
		Specific Gravity	2.70	Assumed

Note: *Hydrometer test is performed on - # 200 sieve material.*

Tested By TO Date 9/29/25 Checked By EG Date 10/1/25

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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Moisture, Ash, and Organic Matter (Loss on Ignition)

ASTM D 2974-20e1

Client:	GAI Consultants, Inc.
Client Reference:	Cheswick Closure R220960.00
Project No.:	2025-173-014

Method B (To 0.1%)

Moisture Content

ASTM D2216

Lab ID:	012
Boring No.:	Final Closure
Depth (ft):	In Place Soil
Sample No.:	C-091825-10
Tare Number	HH
Weight of Tare & Wet Sample (g)	342.78
Weight of Tare & Dry Sample (g)	335.41
Weight of Tare (g)	133.91
Weight of Water (g)	7.37
Weight of Dry Sample (g)	201.50
Moisture Content	**3.7%**

Method A

Ash Content, Organic Matter

Furnace Temperature (°C)	440
Weight of Tare & Ash (g)	329.45
Weight of Volatiles (g)	5.96
Weight of Ash (g)	195.54
Ash Content (%)	**97.0%**
Organic Matter (%)	**3.0%**

Tested By JW *Date* 9/23/25 *Checked By* EG *Date* 9/25/25

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PERMEABILITY TEST

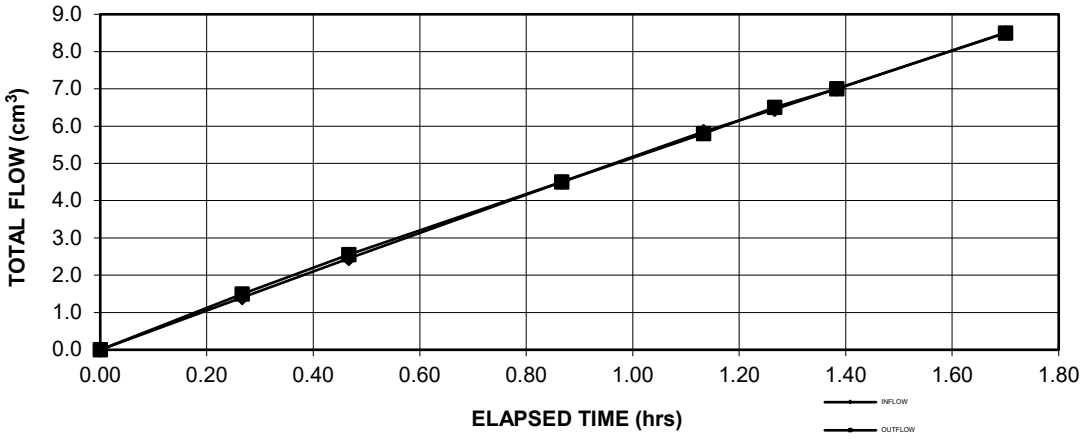
ASTM D 5084-16a Method C

Client:	GAI Consultants, Inc.	Boring No.:	Final closure
Client Project:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-014	Sample No.:	C-091825-10
Lab ID No.:	2025-173-014-012	Avg. Effective Consol. Pressure (psi):	6.25

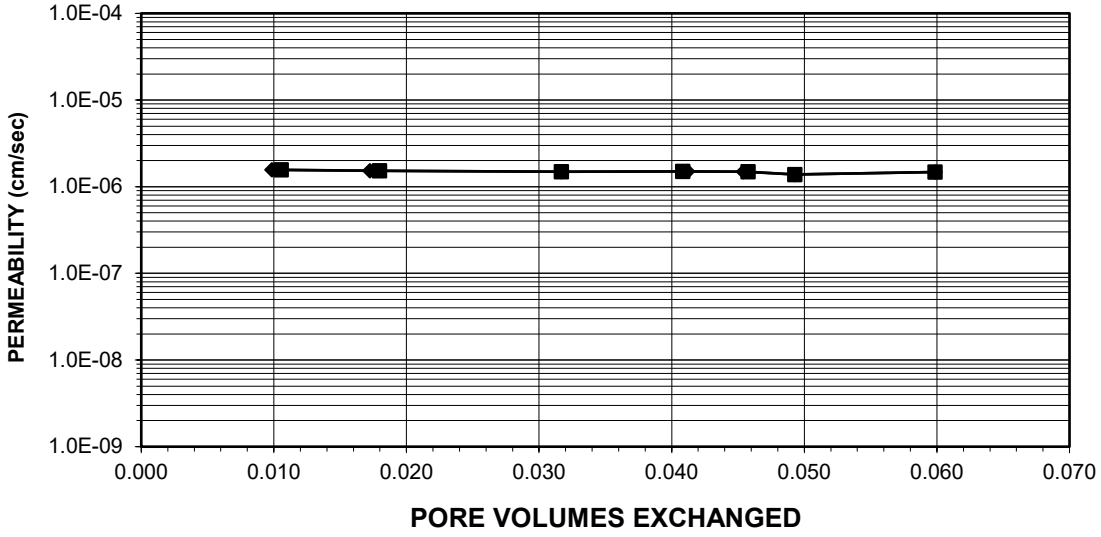
AVERAGE PERMEABILITY = 1.5E-06 cm/sec @ 20°C

AVERAGE PERMEABILITY = 1.5E-08 m/sec @ 20°C

TOTAL FLOW vs. ELAPSED TIME



PORE VOLUMES EXCHANGED vs. PERMEABILITY



Tested By: DP Date: 10/1/25 Checked By: JLK Date: 10/6/25

DCN: CT-22 DATE: 1/1/17 REVISION: 11

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PERMEABILITY TEST

ASTM D 5084-16a Method C

Client:	GAI Consultants, Inc.	Boring No.:	Final closure
Client Project:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-014	Sample No.:	C-091825-10
Lab ID No.:	2025-173-014-012	Avg. Effective Consol. Pressure (psi):	6.25

Specific Gravity:	2.70	Assumed
Sample Condition:		Remolded

Visual Description: Reddish Brown Clay with Rock

Permeant Type: Deaired Water

MOISTURE CONTENT:	BEFORE TEST	AFTER TEST
Tare Number	3171	871
Weight of Tare & Wet Sample (g)	165.69	871.95
Weight of Tare & Dry Sample (g)	145.60	739.28
Weight of Tare (g)	8.06	110.07
Weight of Water (g)	20.09	132.67
Weight of Dry Sample (g)	137.54	629.21
Moisture Content (%)	**14.6**	**21.1**

SPECIMEN:	BEFORE TEST	AFTER TEST
Weight of Tube & Wet Sample (g)	1640.53	NA
Weight of Tube (g)	917.30	NA
Weight of Wet Sample (g)	723.23	764.11
Length 1 (in)	3.490	3.477
Length 2 (in)	3.490	3.515
Length 3 (in)	3.490	3.543
Top Diameter (in)	2.870	2.878
Middle Diameter (in)	2.870	2.885
Bottom Diameter (in)	2.870	2.887
Average Length (in)	3.49	3.51
Average Area (in^2)	6.47	6.53
Sample Volume (cm^3)	369.98	375.75
Unit Wet Weight (g/cm^3)	1.95	2.03
Unit Wet Weight (pcf)	122.0	126.9
Unit Dry Weight (pcf)	106.5	104.8
Unit Dry Weight (g/cm^3)	1.71	1.68
Void Ratio, e	0.58	0.61
Porosity, n	0.37	0.38
Pore Volume (cm^3)	136.3	142.0
Total Weight of Sample After Test (g)		762.68

Tested By: DP Date: 10/1/25 Checked By: JLK Date: 10/6/25

DCN: CT-22 DATE: 1/1/17 REVISION: 11

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PERMEABILITY TEST

ASTM D 5084-16a Method C

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Client:	GAI Consultants, Inc.	Boring No.:	Final closure
Client Project:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-014	Sample No.:	C-091825-10
Lab ID No.:	2025-173-014-012	Avg. Effective Consol. Pressure (psi):	6.25

Pressure Heads (Constant)	
Top Cap (psi)	67.5
Bottom Cap (psi)	70.0
Cell (psi)	75.0
Total Pressure Head (cm)	175.8
Hydraulic Gradient	19.70

Final Sample Dimensions	
Sample Length (cm), L	8.92
Sample Diameter (cm)	7.32
Sample Area (cm^2), A	42.13
Inflow Burette Area (cm^2), a-in	0.961
Outflow Burette Area (cm^2), a-out	1.020
B Parameter (%)	96

AVERAGE PERMEABILITY = 1.5E-06 cm/sec @ 20°C

AVERAGE PERMEABILITY = 1.5E-08 m/sec @ 20°C

DATE	TIME		ELAPSED TIME t	TOTAL INFLOW	TOTAL OUTFLOW	TOTAL HEAD h	FLOW (0 flow)	TEMP.	INCREMENTAL PERMEABILITY @ 20°C
(mm/dd/yy)	(hr)	(min)	(hr)	(cm^3)	(cm^3)	(cm)	(1 stop)	(°C)	(cm/sec)
10/3/2025	11	20	0.000	0.0	0.0	196.1	0	21.9	NA
10/3/2025	11	36	0.267	1.4	1.5	193.1	0	21.9	1.6E-06
10/3/2025	11	48	0.467	2.5	2.6	191.0	0	21.9	1.5E-06
10/3/2025	12	12	0.867	4.5	4.5	187.0	0	21.9	1.5E-06
10/3/2025	12	28	1.133	5.9	5.8	184.3	0	21.9	1.5E-06
10/3/2025	12	36	1.267	6.5	6.5	183.0	0	21.9	1.5E-06
10/3/2025	12	43	1.383	7.0	7.0	181.9	0	21.9	1.4E-06
10/3/2025	13	2	1.700	8.5	8.5	178.9	1	21.9	1.5E-06

Tested By: DP Date: 10/1/25 Checked By: JLK Date: 10/6/25

DCN: CT-22 DATE: 1/1/17 REVISION: 11

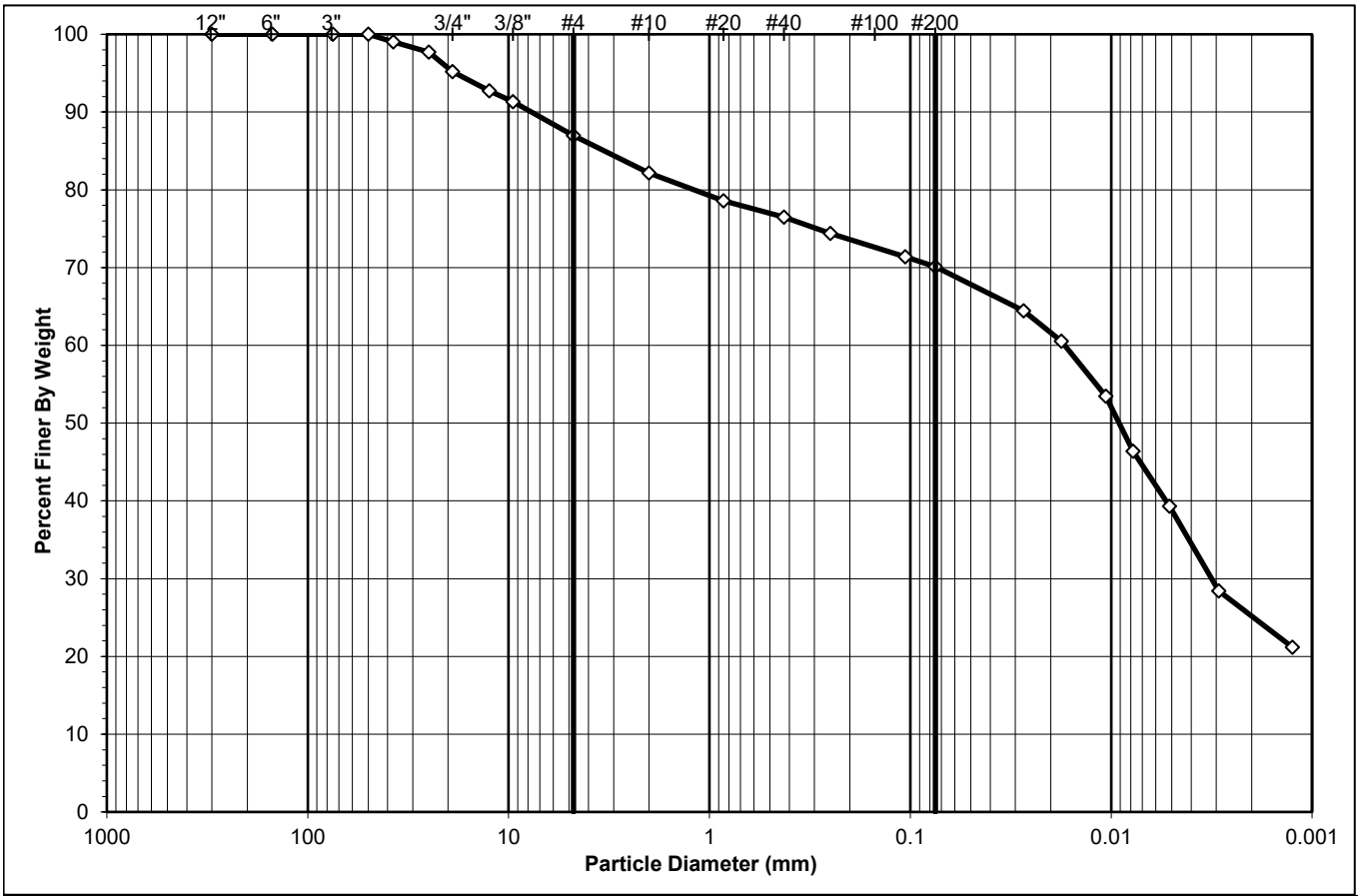
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SIEVE AND HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-014	Sample No.:	C-091825-11
Lab ID:	2025-173-014-013	Soil Color:	Brown

	SIEVE ANALYSIS			HYDROMETER	
USCS	cobbles	gravel	sand	silt and clay fraction	
USDA	cobbles	gravel	sand	silt	clay



USCS Summary

Sieve Size (mm)		Percentage (%)
Greater Than #4	*Gravel*	13.03
#4 to #200	*Sand*	16.84
Finer Than #200	*Silt & Clay*	70.12

USCS Symbol:
cl, ASSUMED

USCS Classification:
LEAN CLAY WITH SAND

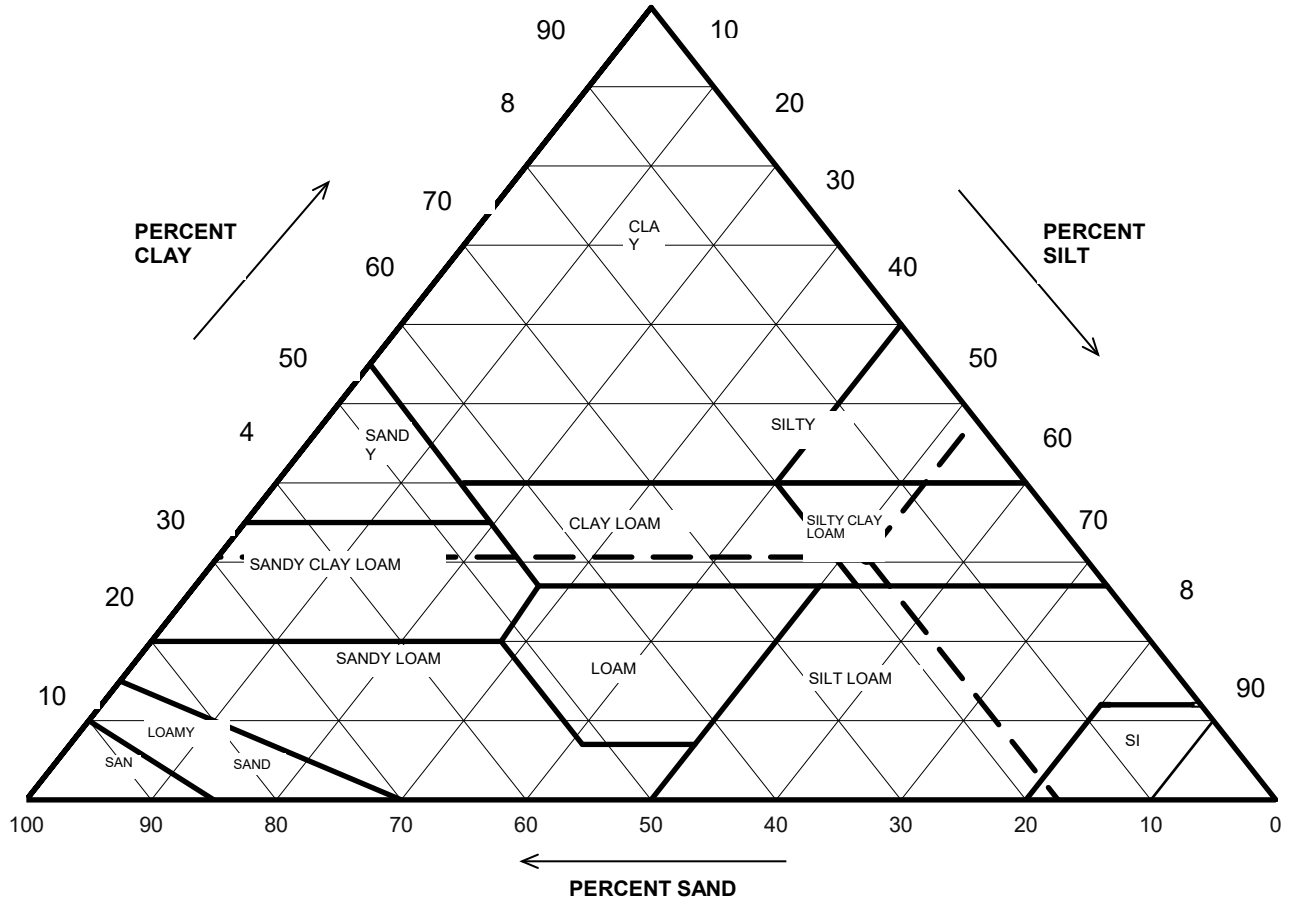
DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

S:Excel\Excel QA\Spreadsheets\SieveHydJ.xls

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USDA Classification Chart

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-014	Sample No.:	C-091825-11
Lab ID:	2025-173-014-013	Soil Color:	Brown



Particle Size (mm)	Percent Finer	USDA Summary	Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classification
		Gravel	17.83	**0.00**
2	82.17	*Sand*	14.32	**17.43**
0.05	67.85	*Silt*	42.67	**51.93**
0.002	25.18	*Clay*	25.18	**30.64**

USDA Classification ***SILTY CLAY LOAM***

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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WASH SIEVE ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-014	Sample No.:	C-091825-11
Lab ID:	2025-173-014-013	Soil Color:	Brown

Moisture Content of Passing 3/4" Material		Moisture Content of Retained 3/4" Material	
Tare No.:	1558	Tare No.:	3102
Wt. of Tare & Wet Sample (g):	987.75	Weight of Tare & Wet Sample (g):	367.94
Wt. of Tare & Dry Sample (g):	956.62	Weight of Tare & Dry Sample (g):	360.93
Weight of Tare (g):	175.12	Weight of Tare (g):	7.18
Weight of Water (g):	31.13	Weight of Water (g):	7.01
Weight of Dry Soil (g):	781.5	Weight of Dry Soil (g):	353.75
Moisture Content (%):	**4.0**	**Moisture Content (%):**	**2.0**

Wet Weight of -3/4" Sample (g):	7378.00	Weight of the Dry Sample (g):	781.50
Dry Weight of - 3/4" Sample (g):	7095.37	Weight of minus #200 Material (g):	575.59
Wet Weight of +3/4" Sample (g):	364.00	Weight of plus #200 Material (g):	205.91
Dry Weight of +3/4" Sample (g):	356.93		
Total Dry Weight of Sample (g):	7452.29	**J - Factor (Percent Finer than 3/4")**	**95.21%**

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)		Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00		0.00	0.00	100.00	**100.00**
6"	150	0.00		0.00	0.00	100.00	**100.00**
3"	75	0.00		0.00	0.00	100.00	**100.00**
2"	50	0.00	(*)	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	74.00		0.97	0.97	99.03	**99.03**
1"	25	100.00		1.32	2.29	97.71	**97.71**
3/4"	19	190.00		2.50	4.79	95.21	**95.21**
1/2"	12.5	20.33		2.60	2.60	97.40	**92.73**
3/8"	9.5	11.60		1.48	4.09	95.91	**91.32**
#4	4.75	35.72		4.57	8.66	91.34	**86.97**
#10	2	39.39		5.04	13.70	86.30	**82.17**
#20	0.85	29.53	(**)	3.78	17.48	82.52	**78.57**
#40	0.425	16.94		2.17	19.64	80.36	**76.51**
#60	0.25	17.23		2.20	21.85	78.15	**74.41**
#140	0.106	24.61		3.15	25.00	75.00	**71.41**
#200	0.075	10.56		1.35	26.35	73.65	**70.12**
Pan	-	575.59		73.65	100.00	-	**-**

NOTES: *(*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample*
*(**) The - 3/4" sieve analysis is based on the Weight of the Dry Sample*

Tested By	DF	Date	9/25/25	Checked By	EG	Date	10/1/25

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-014	Sample No.:	C-091825-11
Lab ID:	2025-173-014-013	Soil Color:	Brown

Elapsed Time		R Measured	Temp.	Composite Correction	R Corrected	N	K Factor	Diameter	N'
(min)			(°C)			(%)		(mm)	(%)
0		NA	NA	NA	NA	NA	NA	NA	NA
2		46.0	22.4	5.0	41.0	91.9	0.01307	0.0273	**64.5**
5		43.5	22.4	5.0	38.5	86.3	0.01307	0.0177	**60.5**
15		39.0	22.4	5.0	34.0	76.2	0.01307	0.0106	**53.5**
30		34.5	22.4	5.0	29.5	66.1	0.01307	0.0078	**46.4**
74		30.0	22.4	5.0	25.0	56.1	0.01307	0.0051	**39.3**
250		23.0	22.6	4.9	18.1	40.5	0.01303	0.0029	**28.4**
1440		18.5	22.3	5.0	13.5	30.2	0.01308	0.0013	**21.2**

Soil Specimen Data		**Other Corrections**		
Tare No.	932			
Wt. of Tare & Dry Material (g):	142.54	a - Factor	0.993	
Weight of Tare (g):	93.23			
Weight of Deflocculant (g):	5.0	Percent Finer than # 200	70.12	
Weight of Dry Material (g):	44.31			
		Specific Gravity	2.70	Assumed

Note: *Hydrometer test is performed on - # 200 sieve material.*

Tested By	TO	Date	9/29/25	Checked By	EG	Date	10/1/25

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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Moisture, Ash, and Organic Matter (Loss on Ignition)

ASTM D 2974-20e1

Client:	GAI Consultants, Inc.
Client Reference:	Cheswick Closure R220960.00
Project No.:	2025-173-014

Method B (To 0.1%)

Moisture Content

ASTM D2216

Lab ID:	013
Boring No.:	Final Closure
Depth (ft):	In Place Soil
Sample No.:	C-091825-11
Tare Number	BB
Weight of Tare & Wet Sample (g)	313.56
Weight of Tare & Dry Sample (g)	306.82
Weight of Tare (g)	123.81
Weight of Water (g)	6.74
Weight of Dry Sample (g)	183.01
Moisture Content	**3.7%**

Method A

Ash Content, Organic Matter

Furnace Temperature (°C)	440
Weight of Tare & Ash (g)	302.04
Weight of Volatiles (g)	4.78
Weight of Ash (g)	178.23
Ash Content (%)	**97.4%**
Organic Matter (%)	**2.6%**

Tested By JW *Date* 9/24/25 *Checked By* EG *Date* 9/25/25

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PERMEABILITY TEST

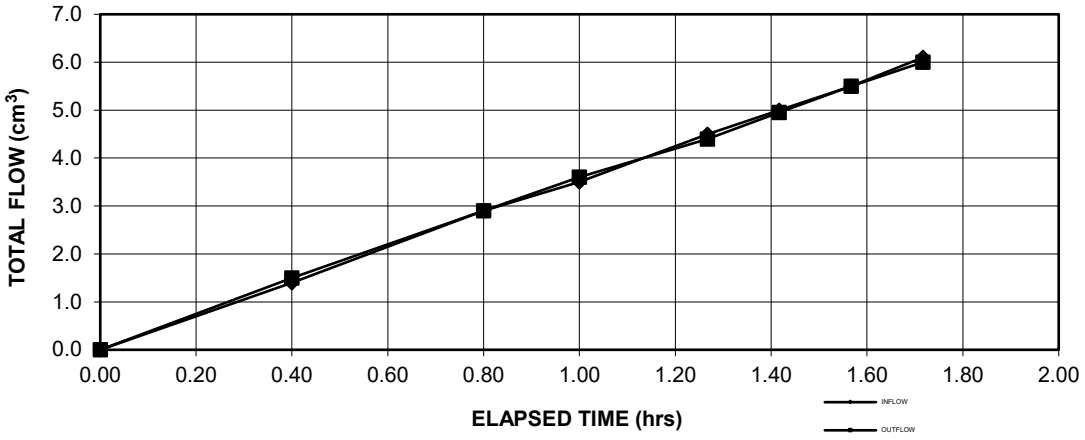
ASTM D 5084-16a Method C

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Project:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-014	Sample No.:	C-091825-11
Lab ID No.:	2025-173-014-013	Avg. Effective Consol. Pressure (psi):	6.25

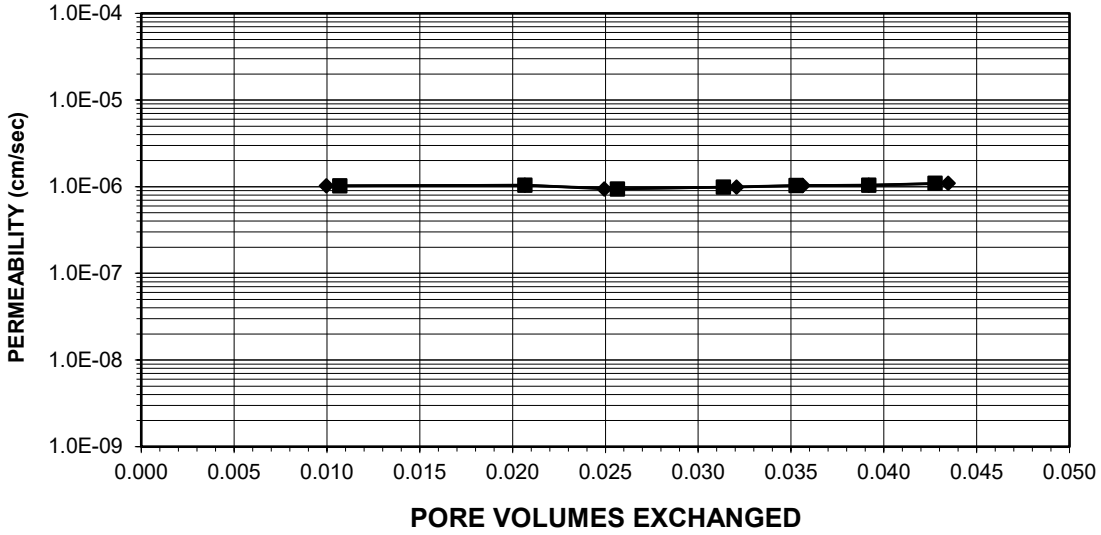
AVERAGE PERMEABILITY = 1.0E-06 cm/sec @ 20°C

AVERAGE PERMEABILITY = 1.0E-08 m/sec @ 20°C

TOTAL FLOW vs. ELAPSED TIME



PORE VOLUMES EXCHANGED vs. PERMEABILITY



Tested By: DP Date: 10/1/25 Checked By: JLK Date: 10/6/25

DCN: CT-22 DATE: 1/1/17 REVISION: 11

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PERMEABILITY TEST

ASTM D 5084-16a Method C

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Project:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-014	Sample No.:	C-091825-11
Lab ID No.:	2025-173-014-013	Avg. Effective Consol. Pressure (psi):	6.25

Specific Gravity:	2.70	Assumed
Sample Condition:		Remolded

Visual Description: Reddish Brown Clay with Rock

Permeant Type: Deaired Water

MOISTURE CONTENT:	BEFORE TEST	AFTER TEST
Tare Number	4028	Z10
Weight of Tare & Wet Sample (g)	144.38	848.71
Weight of Tare & Dry Sample (g)	126.45	716.10
Weight of Tare (g)	7.15	85.23
Weight of Water (g)	17.93	132.61
Weight of Dry Sample (g)	119.30	630.87
Moisture Content (%)	**15.0**	**21.0**

SPECIMEN:	BEFORE TEST	AFTER TEST
Weight of Tube & Wet Sample (g)	1643.12	NA
Weight of Tube (g)	917.30	NA
Weight of Wet Sample (g)	725.82	763.62
Length 1 (in)	3.490	3.527
Length 2 (in)	3.490	3.522
Length 3 (in)	3.490	3.489
Top Diameter (in)	2.870	2.875
Middle Diameter (in)	2.870	2.876
Bottom Diameter (in)	2.870	2.878
Average Length (in)	3.49	3.51
Average Area (in^2)	6.47	6.50
Sample Volume (cm^3)	369.98	374.03
Unit Wet Weight (g/cm^3)	1.96	2.04
Unit Wet Weight (pcf)	122.5	127.4
Unit Dry Weight (pcf)	106.5	105.3
Unit Dry Weight (g/cm^3)	1.71	1.69
Void Ratio, e	0.58	0.60
Porosity, n	0.37	0.38
Pore Volume (cm^3)	136.3	140.3
Total Weight of Sample After Test (g)		763.96

Tested By: DP Date: 10/1/25 Checked By: JLK Date: 10/6/25

DCN: CT-22 DATE: 1/1/17 REVISION: 11

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PERMEABILITY TEST

ASTM D 5084-16a Method C

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Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Project:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-014	Sample No.:	C-091825-11
Lab ID No.:	2025-173-014-013	Avg. Effective Consol. Pressure (psi):	6.25

Pressure Heads (Constant)	
Top Cap (psi)	67.5
Bottom Cap (psi)	70.0
Cell (psi)	75.0
Total Pressure Head (cm)	175.8
Hydraulic Gradient	19.70

Final Sample Dimensions	
Sample Length (cm), L	8.92
Sample Diameter (cm)	7.31
Sample Area (cm^2), A	41.92
Inflow Burette Area (cm^2), a-in	0.962
Outflow Burette Area (cm^2), a-out	0.962
B Parameter (%)	97

AVERAGE PERMEABILITY = 1.0E-06 cm/sec @ 20°C

AVERAGE PERMEABILITY = 1.0E-08 m/sec @ 20°C

DATE	TIME		ELAPSED TIME t	TOTAL INFLOW	TOTAL OUTFLOW	TOTAL HEAD h	FLOW (0 flow)	TEMP.	INCREMENTAL PERMEABILITY @ 20°C
(mm/dd/yy)	(hr)	(min)	(hr)	(cm^3)	(cm^3)	(cm)	(1 stop)	(°C)	(cm/sec)
10/3/2025	9	27	0.000	0.0	0.0	200.6	0	21.7	NA
10/3/2025	9	51	0.400	1.4	1.5	197.6	0	21.7	1.0E-06
10/3/2025	10	15	0.800	2.9	2.9	194.6	0	21.8	1.0E-06
10/3/2025	10	27	1.000	3.5	3.6	193.2	0	21.8	9.4E-07
10/3/2025	10	43	1.267	4.5	4.4	191.4	0	21.8	9.9E-07
10/3/2025	10	52	1.417	5.0	5.0	190.3	0	21.8	1.0E-06
10/3/2025	11	1	1.567	5.5	5.5	189.2	0	21.8	1.0E-06
10/3/2025	11	10	1.717	6.1	6.0	188.1	1	21.9	1.1E-06

Tested By: DP Date: 10/1/25 Checked By: JLK Date: 10/6/25

DCN: CT-22 DATE: 1/1/17 REVISION: 11

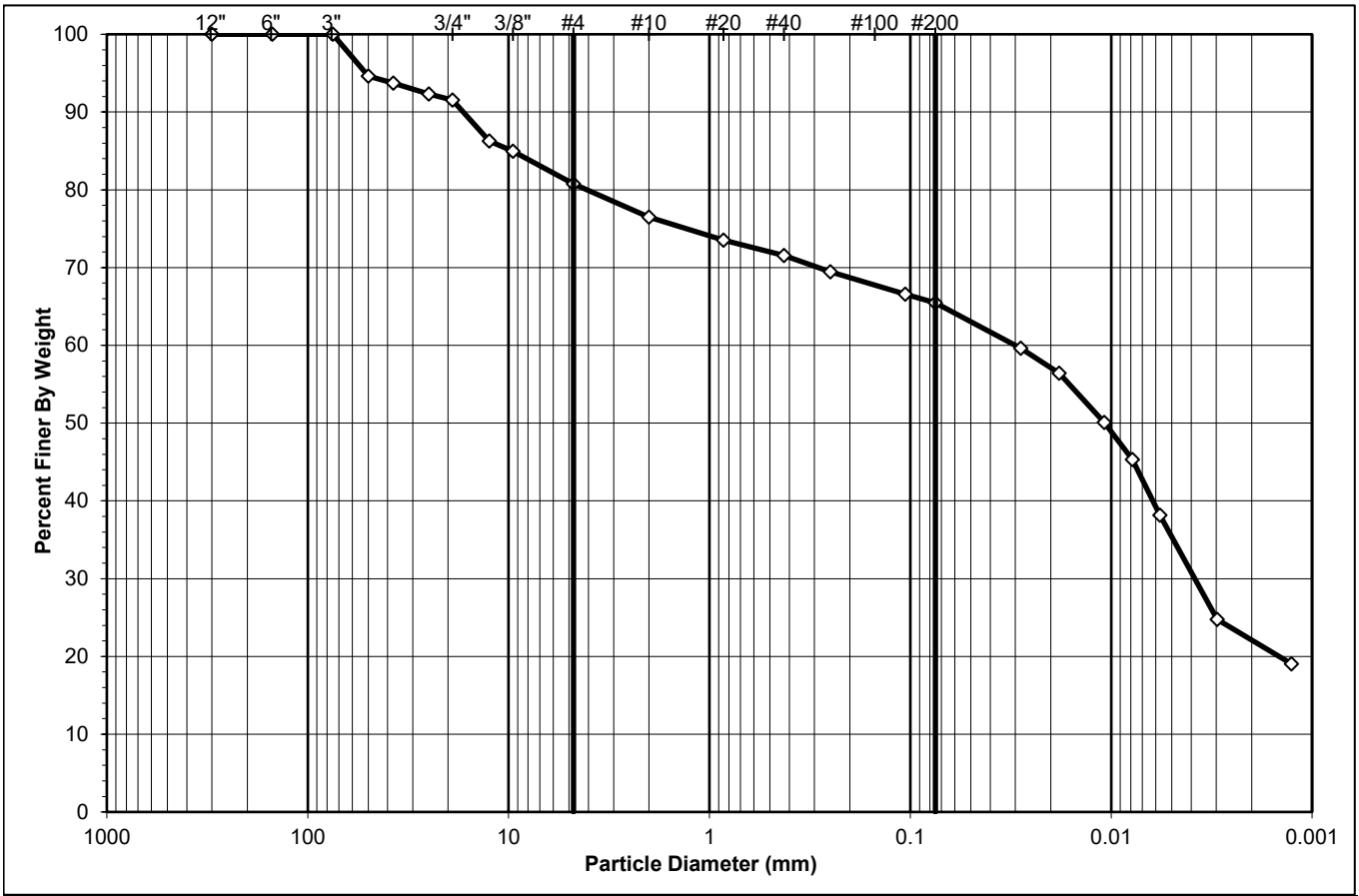
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SIEVE AND HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-014	Sample No.:	C-091825-12
Lab ID:	2025-173-014-014	Soil Color:	Brown

	SIEVE ANALYSIS			HYDROMETER	
USCS	cobbles	gravel	sand	silt and clay fraction	
USDA	cobbles	gravel	sand	silt	clay



USCS Summary

Sieve Size (mm)		Percentage (%)
Greater Than #4	*Gravel*	19.24
#4 to #200	*Sand*	15.28
Finer Than #200	*Silt & Clay*	65.49

USCS Symbol:
cl, ASSUMED

USCS Classification:
GRAVELLY LEAN CLAY WITH SAND

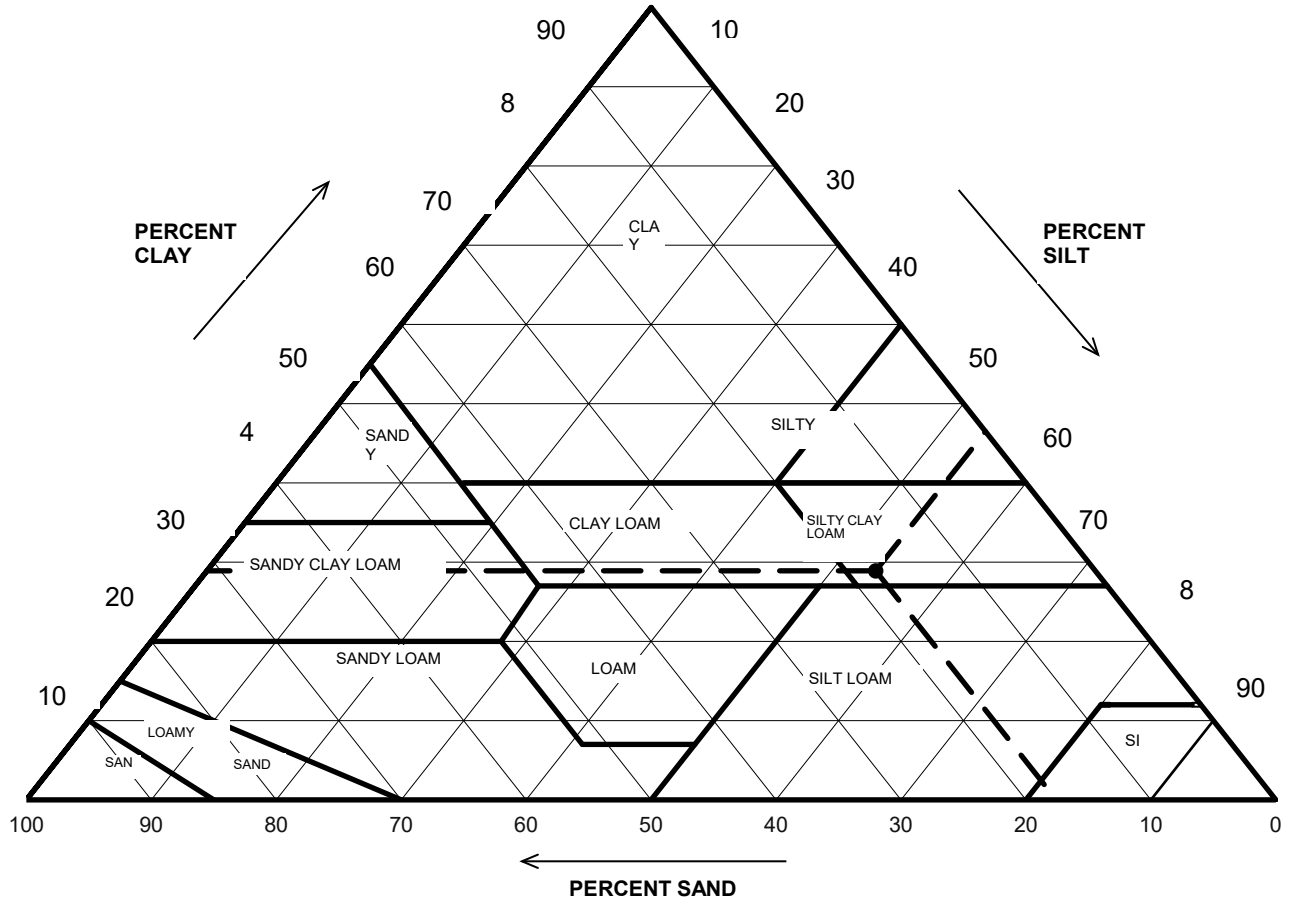
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USDA Classification Chart

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-014	Sample No.:	C-091825-12
Lab ID:	2025-173-014-014	Soil Color:	Brown



Particle Size (mm)	Percent Finer	USDA Summary	Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classification
		Gravel	23.50	**0.00**
2	76.50	*Sand*	13.44	**17.57**
0.05	63.06	*Silt*	40.94	**53.52**
0.002	22.11	*Clay*	22.11	**28.91**

USDA Classification ***SILTY CLAY LOAM***

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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WASH SIEVE ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-014	Sample No.:	C-091825-12
Lab ID:	2025-173-014-014	Soil Color:	Brown

Moisture Content of Passing 3/4" Material		Moisture Content of Retained 3/4" Material	
Tare No.:	1456	Tare No.:	3031
Wt. of Tare & Wet Sample (g):	951.7	Weight of Tare & Wet Sample (g):	265
Wt. of Tare & Dry Sample (g):	902.3	Weight of Tare & Dry Sample (g):	258.71
Weight of Tare (g):	130.17	Weight of Tare (g):	7.18
Weight of Water (g):	49.4	Weight of Water (g):	6.29
Weight of Dry Soil (g):	772.13	Weight of Dry Soil (g):	251.53
Moisture Content (%):	**6.4**	**Moisture Content (%):**	**2.5**

Wet Weight of -3/4" Sample (g):	8035.00	Weight of the Dry Sample (g):	772.13
Dry Weight of - 3/4" Sample (g):	7551.84	Weight of minus #200 Material (g):	552.30
Wet Weight of +3/4" Sample (g):	714.00	Weight of plus #200 Material (g):	219.83
Dry Weight of +3/4" Sample (g):	696.58		
Total Dry Weight of Sample (g):	8248.42	**J - Factor (Percent Finer than 3/4")**	**91.55%**

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)		Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00		0.00	0.00	100.00	**100.00**
6"	150	0.00		0.00	0.00	100.00	**100.00**
3"	75	0.00		0.00	0.00	100.00	**100.00**
2"	50	456.00	(*)	5.39	5.39	94.61	**94.61**
1 1/2"	37.5	74.00		0.88	6.27	93.73	**93.73**
1"	25	120.00		1.42	7.69	92.31	**92.31**
3/4"	19	64.00		0.76	8.45	91.55	**91.55**
1/2"	12.5	44.67		5.79	5.79	94.21	**86.26**
3/8"	9.5	10.76		1.39	7.18	92.82	**84.98**
#4	4.75	35.57		4.61	11.79	88.21	**80.76**
#10	2	36.00		4.66	16.45	83.55	**76.50**
#20	0.85	25.00	(**)	3.24	19.69	80.31	**73.53**
#40	0.425	16.61		2.15	21.84	78.16	**71.56**
#60	0.25	17.61		2.28	24.12	75.88	**69.47**
#140	0.106	24.40		3.16	27.28	72.72	**66.58**
#200	0.075	9.21		1.19	28.47	71.53	**65.49**
Pan	-	552.30		71.53	100.00	-	**-**

NOTES: *(*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample*
*(**) The - 3/4" sieve analysis is based on the Weight of the Dry Sample*

Tested By	DF	Date	9/25/25	Checked By	EG	Date	10/1/25

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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HYDROMETER ANALYSIS

ASTM D 422-63 (2007), AASHTO T88

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Reference:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-014	Sample No.:	C-091825-12
Lab ID:	2025-173-014-014	Soil Color:	Brown

Elapsed Time		R Measured	Temp.	Composite Correction	R Corrected	N	K Factor	Diameter	N'
(min)			(°C)			(%)		(mm)	(%)
0		NA	NA	NA	NA	NA	NA	NA	NA
2		42.5	22.4	5.0	37.5	91.0	0.01307	0.0282	**59.6**
5		40.5	22.4	5.0	35.5	86.2	0.01307	0.0182	**56.4**
15		36.5	22.4	5.0	31.5	76.5	0.01307	0.0108	**50.1**
30		33.5	22.4	5.0	28.5	69.2	0.01307	0.0078	**45.3**
60		29.0	22.4	5.0	24.0	58.3	0.01307	0.0057	**38.2**
250		20.5	22.6	4.9	15.6	37.8	0.01303	0.0030	**24.8**
1440		17.0	22.3	5.0	12.0	29.1	0.01308	0.0013	**19.1**

Soil Specimen Data		**Other Corrections**		
Tare No.	672			
Wt. of Tare & Dry Material (g):	138.34	a - Factor	0.993	
Weight of Tare (g):	92.42			
Weight of Deflocculant (g):	5.0	Percent Finer than # 200	65.49	
Weight of Dry Material (g):	40.92			
		Specific Gravity	2.70	Assumed

Note: *Hydrometer test is performed on - # 200 sieve material.*

Tested By TO Date 9/29/25 Checked By EG Date 10/1/25

DCN: CT-S3TW DATE: 10/29/20 REVISION: 1

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Moisture, Ash, and Organic Matter (Loss on Ignition)

ASTM D 2974-20e1

Client:	GAI Consultants, Inc.
Client Reference:	Cheswick Closure R220960.00
Project No.:	2025-173-014

Method B (To 0.1%)

Moisture Content

ASTM D2216

Lab ID:	014
Boring No.:	Final Closure
Depth (ft):	In Place Soil
Sample No.:	C-091825-12
Tare Number	HH
Weight of Tare & Wet Sample (g)	370.50
Weight of Tare & Dry Sample (g)	356.93
Weight of Tare (g)	133.98
Weight of Water (g)	13.57
Weight of Dry Sample (g)	222.95
Moisture Content	**6.1%**

Method A

Ash Content, Organic Matter

Furnace Temperature (°C)	440
Weight of Tare & Ash (g)	351.36
Weight of Volatiles (g)	5.57
Weight of Ash (g)	217.38
Ash Content (%)	**97.5%**
Organic Matter (%)	**2.5%**

Tested By JW *Date* 9/24/25 *Checked By* EG *Date* 9/25/25

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PERMEABILITY TEST

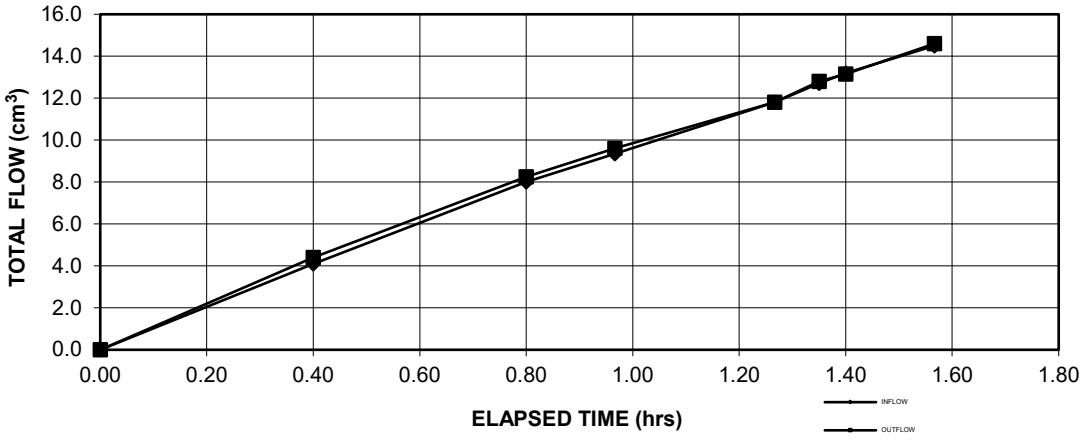
ASTM D 5084-16a Method C

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Project:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-014	Sample No.:	C-091825-12
Lab ID No.:	2025-173-014-014	Avg. Effective Consol. Pressure (psi):	6.25

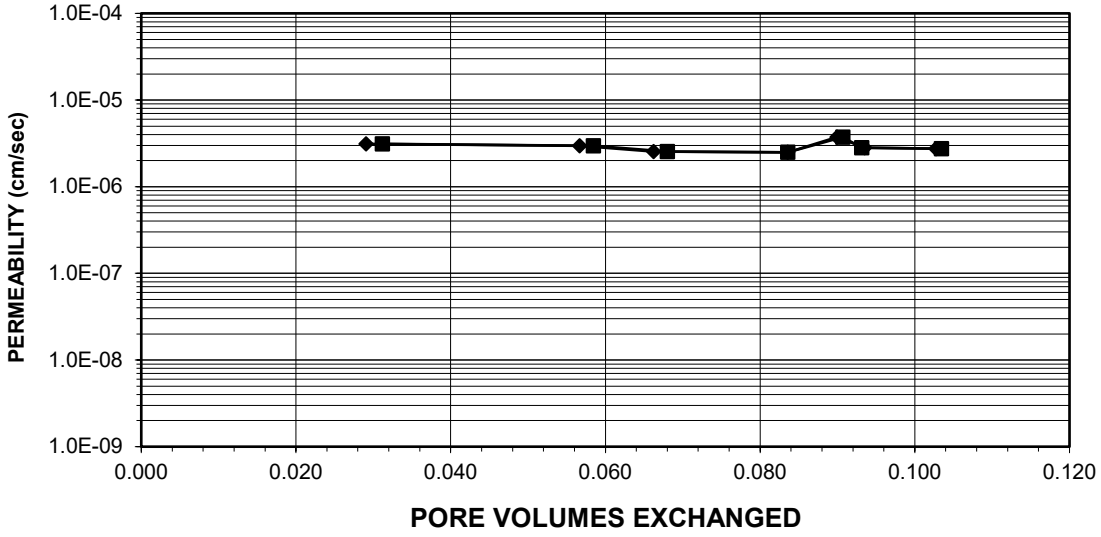
AVERAGE PERMEABILITY = 2.9E-06 cm/sec @ 20°C

AVERAGE PERMEABILITY = 2.9E-08 m/sec @ 20°C

TOTAL FLOW vs. ELAPSED TIME



PORE VOLUMES EXCHANGED vs. PERMEABILITY



Tested By: DP Date: 10/1/25 Checked By: JLK Date: 10/6/25

DCN: CT-22 DATE: 1/1/17 REVISION: 11

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PERMEABILITY TEST

ASTM D 5084-16a Method C

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Project:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-014	Sample No.:	C-091825-12
Lab ID No.:	2025-173-014-014	Avg. Effective Consol. Pressure (psi):	6.25

Specific Gravity:	2.70	Assumed
Sample Condition:		Remolded

Visual Description: Reddish Brown Clay with Rock

Permeant Type: Deaired Water

MOISTURE CONTENT:	BEFORE TEST	AFTER TEST
Tare Number	3081	599
Weight of Tare & Wet Sample (g)	151.32	847.55
Weight of Tare & Dry Sample (g)	132.70	713.19
Weight of Tare (g)	7.48	83.29
Weight of Water (g)	18.62	134.36
Weight of Dry Sample (g)	125.22	629.90
Moisture Content (%)	**14.9**	**21.3**

SPECIMEN:	BEFORE TEST	AFTER TEST
Weight of Tube & Wet Sample (g)	1642.49	NA
Weight of Tube (g)	917.30	NA
Weight of Wet Sample (g)	725.19	765.98
Length 1 (in)	3.490	3.536
Length 2 (in)	3.490	3.579
Length 3 (in)	3.490	3.541
Top Diameter (in)	2.870	2.859
Middle Diameter (in)	2.870	2.858
Bottom Diameter (in)	2.870	2.875
Average Length (in)	3.49	3.55
Average Area (in^2)	6.47	6.44
Sample Volume (cm^3)	369.98	374.98
Unit Wet Weight (g/cm^3)	1.96	2.04
Unit Wet Weight (pcf)	122.4	127.5
Unit Dry Weight (pcf)	106.5	105.1
Unit Dry Weight (g/cm^3)	1.71	1.68
Void Ratio, e	0.58	0.60
Porosity, n	0.37	0.38
Pore Volume (cm^3)	136.2	141.2
Total Weight of Sample After Test (g)		764.68

Tested By: DP Date: 10/1/25 Checked By: JLK Date: 10/6/25

DCN: CT-22 DATE: 1/1/17 REVISION: 11

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PERMEABILITY TEST

ASTM D 5084-16a Method C

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Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Project:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-014	Sample No.:	C-091825-12
Lab ID No.:	2025-173-014-014	Avg. Effective Consol. Pressure (psi):	6.25

Pressure Heads (Constant)	
Top Cap (psi)	67.5
Bottom Cap (psi)	70.0
Cell (psi)	75.0
Total Pressure Head (cm)	175.8
Hydraulic Gradient	19.48

Final Sample Dimensions	
Sample Length (cm), L	9.02
Sample Diameter (cm)	7.27
Sample Area (cm^2), A	41.56
Inflow Burette Area (cm^2), a-in	0.962
Outflow Burette Area (cm^2), a-out	0.962
B Parameter (%)	96

AVERAGE PERMEABILITY = 2.9E-06 cm/sec @ 20°C

AVERAGE PERMEABILITY = 2.9E-08 m/sec @ 20°C

DATE	TIME		ELAPSED TIME t	TOTAL INFLOW	TOTAL OUTFLOW	TOTAL HEAD h	FLOW (0 flow)	TEMP.	INCREMENTAL PERMEABILITY @ 20°C
(mm/dd/yy)	(hr)	(min)	(hr)	(cm^3)	(cm^3)	(cm)	(1 stop)	(°C)	(cm/sec)
10/3/2025	9	27	0.000	0.0	0.0	200.6	0	21.7	NA
10/3/2025	9	51	0.400	4.1	4.4	191.8	0	21.7	3.1E-06
10/3/2025	10	15	0.800	8.0	8.3	183.8	0	21.8	3.0E-06
10/3/2025	10	25	0.967	9.4	9.6	181.0	0	21.8	2.6E-06
10/3/2025	10	43	1.267	11.8	11.8	176.2	0	21.8	2.5E-06
10/3/2025	10	48	1.350	12.7	12.8	174.2	0	21.8	3.7E-06
10/3/2025	10	51	1.400	13.2	13.2	173.3	0	21.8	2.8E-06
10/3/2025	11	1	1.567	14.5	14.6	170.5	1	21.8	2.8E-06

Tested By: DP Date: 10/1/25 Checked By: JLK Date: 10/6/25

DCN: CT-22 DATE: 1/1/17 REVISION: 11

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Moisture, Ash, and Organic Matter (Loss on Ignition)

ASTM D 2974-20e1

Client:	GAI Consultants, Inc.
Client Reference:	Cheswick Closure R220960.00
Project No.:	2025-173-014

Method B (To 0.1%)

Moisture Content

ASTM D2216

Lab ID:	015
Boring No.:	Final Closure
Depth (ft):	In Place Soil
Sample No.:	C-091825-13
Tare Number	CC
Weight of Tare & Wet Sample (g)	357.96
Weight of Tare & Dry Sample (g)	325.53
Weight of Tare (g)	130.54
Weight of Water (g)	32.43
Weight of Dry Sample (g)	194.99
Moisture Content	**16.6%**

Method A

Ash Content, Organic Matter

Furnace Temperature (°C)	440
Weight of Tare & Ash (g)	321.09
Weight of Volatiles (g)	4.44
Weight of Ash (g)	190.55
Ash Content (%)	**97.7%**
Organic Matter (%)	**2.3%**

Tested By JW *Date* 9/24/25 *Checked By* EG *Date* 9/25/25

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Moisture, Ash, and Organic Matter (Loss on Ignition)

ASTM D 2974-20e1

Client:	GAI Consultants, Inc.
Client Reference:	Cheswick Closure R220960.00
Project No.:	2025-173-014

Method B (To 0.1%)

Moisture Content

ASTM D2216

Lab ID:	016
Boring No.:	Final Closure
Depth (ft):	In Place Soil
Sample No.:	C-091825-14
Tare Number	EE
Weight of Tare & Wet Sample (g)	318.90
Weight of Tare & Dry Sample (g)	290.39
Weight of Tare (g)	126.90
Weight of Water (g)	28.51
Weight of Dry Sample (g)	163.49
Moisture Content	**17.4%**

Method A

Ash Content, Organic Matter

Furnace Temperature (°C)	440
Weight of Tare & Ash (g)	286.79
Weight of Volatiles (g)	3.60
Weight of Ash (g)	159.89
Ash Content (%)	**97.8%**
Organic Matter (%)	**2.2%**

Tested By JW *Date* 9/24/25 *Checked By* EG *Date* 9/25/25

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Moisture, Ash, and Organic Matter (Loss on Ignition)

ASTM D 2974-20e1

Client:	GAI Consultants, Inc.
Client Reference:	Cheswick Closure R220960.00
Project No.:	2025-173-014

Method B (To 0.1%)

Moisture Content

ASTM D2216

Lab ID:	017
Boring No.:	Final Closure
Depth (ft):	In Place Soil
Sample No.:	C-091825-15
Tare Number	FF
Weight of Tare & Wet Sample (g)	316.11
Weight of Tare & Dry Sample (g)	283.25
Weight of Tare (g)	115.46
Weight of Water (g)	32.86
Weight of Dry Sample (g)	167.79
Moisture Content	**19.6%**

Method A

Ash Content, Organic Matter

Furnace Temperature (°C)	440
Weight of Tare & Ash (g)	279.35
Weight of Volatiles (g)	3.90
Weight of Ash (g)	163.89
Ash Content (%)	**97.7%**
Organic Matter (%)	**2.3%**

Tested By JW *Date* 9/24/25 *Checked By* EG *Date* 9/25/25

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Moisture, Ash, and Organic Matter (Loss on Ignition)

ASTM D 2974-20e1

Client:	GAI Consultants, Inc.
Client Reference:	Cheswick Closure R220960.00
Project No.:	2025-173-014

Method B (To 0.1%)

Moisture Content

ASTM D2216

Lab ID:	018
Boring No.:	Final Closure
Depth (ft):	In Place Soil
Sample No.:	C-091825-16
Tare Number	BB
Weight of Tare & Wet Sample (g)	330.63
Weight of Tare & Dry Sample (g)	307.31
Weight of Tare (g)	123.81
Weight of Water (g)	23.32
Weight of Dry Sample (g)	183.50
Moisture Content	**12.7%**

Method A

Ash Content, Organic Matter

Furnace Temperature (°C)	440
Weight of Tare & Ash (g)	302.77
Weight of Volatiles (g)	4.54
Weight of Ash (g)	178.96
Ash Content (%)	**97.5%**
Organic Matter (%)	**2.5%**

Tested By JW *Date* 9/25/25 *Checked By* EG *Date* 9/29/25

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Moisture, Ash, and Organic Matter (Loss on Ignition)

ASTM D 2974-20e1

Client:	GAI Consultants, Inc.
Client Reference:	Cheswick Closure R220960.00
Project No.:	2025-173-014

Method B (To 0.1%)

Moisture Content

ASTM D2216

Lab ID:	019
Boring No.:	Final Closure
Depth (ft):	In Place Soil
Sample No.:	C-091825-17
Tare Number	EE
Weight of Tare & Wet Sample (g)	347.99
Weight of Tare & Dry Sample (g)	314.80
Weight of Tare (g)	126.93
Weight of Water (g)	33.19
Weight of Dry Sample (g)	187.87
Moisture Content	**17.7%**

Method A

Ash Content, Organic Matter

Furnace Temperature (°C)	440
Weight of Tare & Ash (g)	310.53
Weight of Volatiles (g)	4.27
Weight of Ash (g)	183.60
Ash Content (%)	**97.7%**
Organic Matter (%)	**2.3%**

Tested By JW *Date* 9/25/25 *Checked By* EG *Date* 9/29/25

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Moisture, Ash, and Organic Matter (Loss on Ignition)

ASTM D 2974-20e1

Client:	GAI Consultants, Inc.
Client Reference:	Cheswick Closure R220960.00
Project No.:	2025-173-014

Method B (To 0.1%)

Moisture Content

ASTM D2216

Lab ID:	020
Boring No.:	Final Closure
Depth (ft):	In Place Soil
Sample No.:	C-091825-18
Tare Number	CC
Weight of Tare & Wet Sample (g)	401.64
Weight of Tare & Dry Sample (g)	388.80
Weight of Tare (g)	130.57
Weight of Water (g)	12.84
Weight of Dry Sample (g)	258.23
Moisture Content	**5.0%**

Method A

Ash Content, Organic Matter

Furnace Temperature (°C)	440
Weight of Tare & Ash (g)	382.88
Weight of Volatiles (g)	5.92
Weight of Ash (g)	252.31
Ash Content (%)	**97.7%**
Organic Matter (%)	**2.3%**

Tested By JW *Date* 9/25/25 *Checked By* EG *Date* 9/29/25

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Moisture, Ash, and Organic Matter (Loss on Ignition)

ASTM D 2974-20e1

Client:	GAI Consultants, Inc.
Client Reference:	Cheswick Closure R220960.00
Project No.:	2025-173-014

Method B (To 0.1%)

Moisture Content

ASTM D2216

Lab ID:	021
Boring No.:	Final Closure
Depth (ft):	In Place Soil
Sample No.:	C-091825-19
Tare Number	FF
Weight of Tare & Wet Sample (g)	327.31
Weight of Tare & Dry Sample (g)	320.73
Weight of Tare (g)	115.49
Weight of Water (g)	6.58
Weight of Dry Sample (g)	205.24
Moisture Content	**3.2%**

Method A

Ash Content, Organic Matter

Furnace Temperature (°C)	440
Weight of Tare & Ash (g)	313.53
Weight of Volatiles (g)	7.20
Weight of Ash (g)	198.04
Ash Content (%)	**96.5%**
Organic Matter (%)	**3.5%**

Tested By JW *Date* 9/25/25 *Checked By* EG *Date* 9/29/25

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Moisture, Ash, and Organic Matter (Loss on Ignition)

ASTM D 2974-20e1

Client:	GAI Consultants, Inc.
Client Reference:	Cheswick Closure R220960.00
Project No.:	2025-173-014

Method B (To 0.1%)

Moisture Content

ASTM D2216

Lab ID:	022
Boring No.:	Final Closure
Depth (ft):	In Place Soil
Sample No.:	C-091825-20
Tare Number	HH
Weight of Tare & Wet Sample (g)	422.45
Weight of Tare & Dry Sample (g)	407.50
Weight of Tare (g)	134.00
Weight of Water (g)	14.95
Weight of Dry Sample (g)	273.50
Moisture Content	**5.5%**

Method A

Ash Content, Organic Matter

Furnace Temperature (°C)	440
Weight of Tare & Ash (g)	402.20
Weight of Volatiles (g)	5.30
Weight of Ash (g)	268.20
Ash Content (%)	**98.1%**
Organic Matter (%)	**1.9%**

Tested By JW *Date* 9/25/25 *Checked By* EG *Date* 9/29/25

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Moisture, Ash, and Organic Matter (Loss on Ignition)

ASTM D 2974-20e1

Client:	GAI Consultants, Inc.
Client Reference:	Cheswick Closure R220960.00
Project No.:	2025-173-014

Method B (To 0.1%)

Moisture Content

ASTM D2216

Lab ID:	023
Boring No.:	Final Closure
Depth (ft):	In Place Soil
Sample No.:	C-091825-21
Tare Number	HH
Weight of Tare & Wet Sample (g)	352.88
Weight of Tare & Dry Sample (g)	344.50
Weight of Tare (g)	133.94
Weight of Water (g)	8.38
Weight of Dry Sample (g)	210.56
Moisture Content	**4.0%**

Method A

Ash Content, Organic Matter

Furnace Temperature (°C)	440
Weight of Tare & Ash (g)	337.84
Weight of Volatiles (g)	6.66
Weight of Ash (g)	203.90
Ash Content (%)	**96.8%**
Organic Matter (%)	**3.2%**

Tested By JW *Date* 9/26/25 *Checked By* EG *Date* 9/30/25

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Moisture, Ash, and Organic Matter (Loss on Ignition)

ASTM D 2974-20e1

Client:	GAI Consultants, Inc.
Client Reference:	Cheswick Closure R220960.00
Project No.:	2025-173-014

Method B (To 0.1%)

Moisture Content

ASTM D2216

Lab ID:	024
Boring No.:	Final Closure
Depth (ft):	In Place Soil
Sample No.:	C-091825-22
Tare Number	BB
Weight of Tare & Wet Sample (g)	325.73
Weight of Tare & Dry Sample (g)	320.52
Weight of Tare (g)	123.76
Weight of Water (g)	5.21
Weight of Dry Sample (g)	196.76
Moisture Content	**2.6%**

Method A

Ash Content, Organic Matter

Furnace Temperature (°C)	440
Weight of Tare & Ash (g)	316.91
Weight of Volatiles (g)	3.61
Weight of Ash (g)	193.15
Ash Content (%)	**98.2%**
Organic Matter (%)	**1.8%**

Tested By JW *Date* 9/26/25 *Checked By* EG *Date* 9/30/25

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Moisture, Ash, and Organic Matter (Loss on Ignition)

ASTM D 2974-20e1

Client:	GAI Consultants, Inc.
Client Reference:	Cheswick Closure R220960.00
Project No.:	2025-173-014

Method B (To 0.1%)

Moisture Content

ASTM D2216

Lab ID:	025
Boring No.:	Final Closure
Depth (ft):	In Place Soil
Sample No.:	C-091825-23
Tare Number	EE
Weight of Tare & Wet Sample (g)	370.52
Weight of Tare & Dry Sample (g)	361.52
Weight of Tare (g)	126.83
Weight of Water (g)	9.00
Weight of Dry Sample (g)	234.69
Moisture Content	**3.8%**

Method A

Ash Content, Organic Matter

Furnace Temperature (°C)	440
Weight of Tare & Ash (g)	357.84
Weight of Volatiles (g)	3.68
Weight of Ash (g)	231.01
Ash Content (%)	**98.4%**
Organic Matter (%)	**1.6%**

Tested By JW *Date* 9/26/25 *Checked By* EG *Date* 9/30/25

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October 10, 2025

Project No. 2025-173-015

Cory White
GAI Consultants, Inc.
385 East Waterfront Drive
Homestead, PA 15120

Transmittal
Laboratory Test Results
Cheswick Closure R220960.00

Please find attached the laboratory test results for the above referenced project. The tests were outlined on the Project Verification Form that was transmitted to your firm prior to the testing. The testing was performed in general accordance with the methods listed on the enclosed data sheets. The test results are believed to be representative of the samples that were submitted for testing and are indicative only of the specimens that were evaluated. We have no direct knowledge of the origin of the samples and imply no position with regard to the nature of the test results, i.e. pass/fail and no claims as to the suitability of the material for its intended use.

The test data and all associated project information provided shall be held in strict confidence and disclosed to other parties only with authorization by our Client. The test data submitted herein is considered integral with this report and is not to be reproduced except in whole and only with the authorization of the Client and Geotechnics. The remaining sample materials for this project will be retained for a minimum of 90 days as directed by the Geotechnics' Quality Program.

We are pleased to provide these testing services. Should you have any questions or if we may be of further assistance, please contact our office.

Respectfully submitted,
Geotechnics, Inc.

Nathan Melaro
Director of Operations

We understand that you have a choice in your laboratory services and we thank you for choosing Geotechnics.

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PERMEABILITY TEST

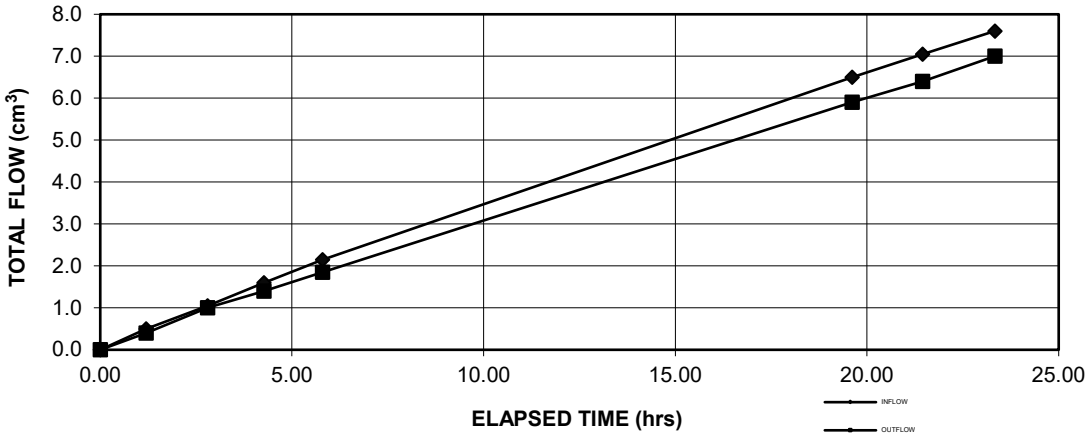
ASTM D 5084-16a Method C

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Project:	Cheswick Closure R220960.00	Depth (ft):	Stockpile
Project No.:	2025-173-015	Sample No.:	C-093025-1
Lab ID No.:	2025-173-015-001	Avg. Effective Consol. Pressure (psi):	6.25

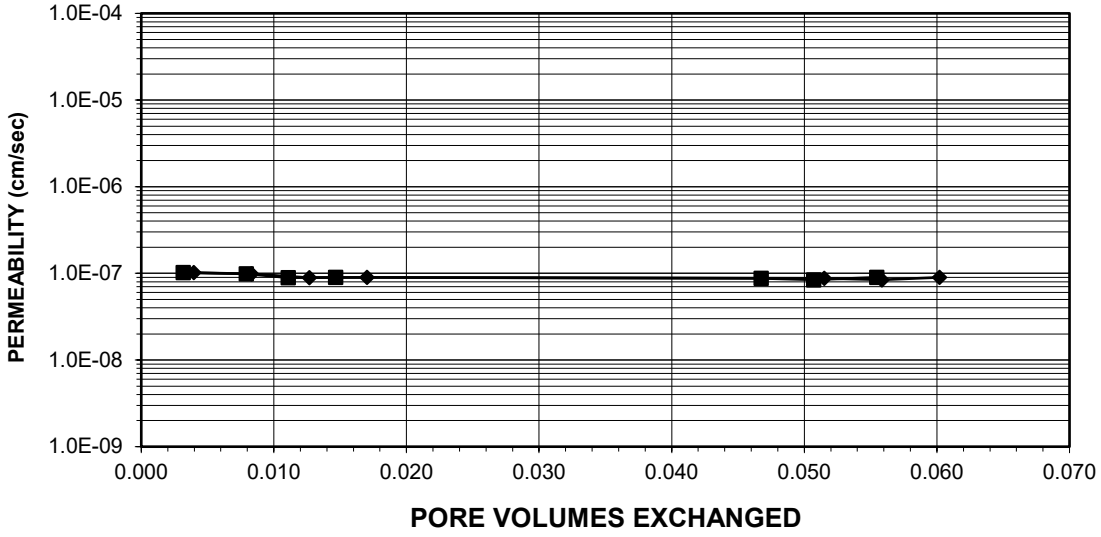
AVERAGE PERMEABILITY = 8.8E-08 cm/sec @ 20°C

AVERAGE PERMEABILITY = 8.8E-10 m/sec @ 20°C

TOTAL FLOW vs. ELAPSED TIME



PORE VOLUMES EXCHANGED vs. PERMEABILITY



Tested By: WT Date: 10/7/25 Checked By: JLK Date: 10/10/25

DCN: CT-22 DATE: 1/1/17 REVISION: 11

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PERMEABILITY TEST

ASTM D 5084-16a Method C

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Project:	Cheswick Closure R220960.00	Depth (ft):	Stockpile
Project No.:	2025-173-015	Sample No.:	C-093025-1
Lab ID No.:	2025-173-015-001	Avg. Effective Consol. Pressure (psi):	6.25

Specific Gravity: 2.70 Assumed
Sample Condition: Remolded

Visual Description: Brown Clay with Rock

Permeant Type: Deaired Water

MOISTURE CONTENT:	BEFORE TEST	AFTER TEST
Tare Number	3112	1706
Weight of Tare & Wet Sample (g)	167.12	922.62
Weight of Tare & Dry Sample (g)	150.97	797.65
Weight of Tare (g)	8.18	82.47
Weight of Water (g)	16.15	124.97
Weight of Dry Sample (g)	142.79	715.18
Moisture Content (%)	**11.3**	**17.5**

SPECIMEN:	BEFORE TEST	AFTER TEST
Weight of Tube & Wet Sample (g)	1716.85	NA
Weight of Tube (g)	917.30	NA
Weight of Wet Sample (g)	799.55	843.82
Length 1 (in)	3.490	3.574
Length 2 (in)	3.490	3.555
Length 3 (in)	3.490	3.585
Top Diameter (in)	2.870	2.908
Middle Diameter (in)	2.870	2.932
Bottom Diameter (in)	2.870	2.924
Average Length (in)	3.49	3.57
Average Area (in^2)	6.47	6.70
Sample Volume (cm^3)	369.98	392.27
Unit Wet Weight (g/cm^3)	2.16	2.15
Unit Wet Weight (pcf)	134.9	134.3
Unit Dry Weight (pcf)	121.2	114.3
Unit Dry Weight (g/cm^3)	1.94	1.83
Void Ratio, e	0.39	0.47
Porosity, n	0.28	0.32
Pore Volume (cm^3)	103.9	126.2
Total Weight of Sample After Test (g)		840.36

Tested By: WT Date: 10/7/25 Checked By: JLK Date: 10/10/25

DCN: CT-22 DATE: 1/1/17 REVISION: 11

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PERMEABILITY TEST

ASTM D 5084-16a Method C

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Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Project:	Cheswick Closure R220960.00	Depth (ft):	Stockpile
Project No.:	2025-173-015	Sample No.:	C-093025-1
Lab ID No.:	2025-173-015-001	Avg. Effective Consol. Pressure (psi):	6.25

Pressure Heads (Constant)	
Top Cap (psi)	67.5
Bottom Cap (psi)	70.0
Cell (psi)	75.0
Total Pressure Head (cm)	175.8
Hydraulic Gradient	19.38

Final Sample Dimensions	
Sample Length (cm), L	9.07
Sample Diameter (cm)	7.42
Sample Area (cm^2), A	43.24
Inflow Burette Area (cm^2), a-in	0.945
Outflow Burette Area (cm^2), a-out	0.915
B Parameter (%)	97

AVERAGE PERMEABILITY = 8.8E-08 cm/sec @ 20°C

AVERAGE PERMEABILITY = 8.8E-10 m/sec @ 20°C

DATE	TIME		ELAPSED TIME t	TOTAL INFLOW	TOTAL OUTFLOW	TOTAL HEAD h	FLOW (0 flow)	TEMP.	INCREMENTAL PERMEABILITY @ 20°C
(mm/dd/yy)	(hr)	(min)	(hr)	(cm^3)	(cm^3)	(cm)	(1 stop)	(°C)	(cm/sec)
10/8/2025	10	45	0.000	0.0	0.0	201.0	0	21.8	NA
10/8/2025	11	57	1.200	0.5	0.4	200.0	0	21.9	1.0E-07
10/8/2025	13	33	2.800	1.1	1.0	198.8	0	21.9	9.9E-08
10/8/2025	15	1	4.267	1.6	1.4	197.8	0	21.9	8.9E-08
10/8/2025	16	33	5.800	2.2	1.9	196.7	0	21.9	9.0E-08
10/9/2025	6	22	19.617	6.5	5.9	187.9	0	21.4	8.7E-08
10/9/2025	8	12	21.450	7.1	6.4	186.8	0	21.5	8.4E-08
10/9/2025	10	5	23.333	7.6	7.0	185.6	1	21.7	9.0E-08

Tested By: WT Date: 10/7/25 Checked By: JLK Date: 10/10/25

DCN: CT-22 DATE: 1/1/17 REVISION: 11

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PERMEABILITY TEST

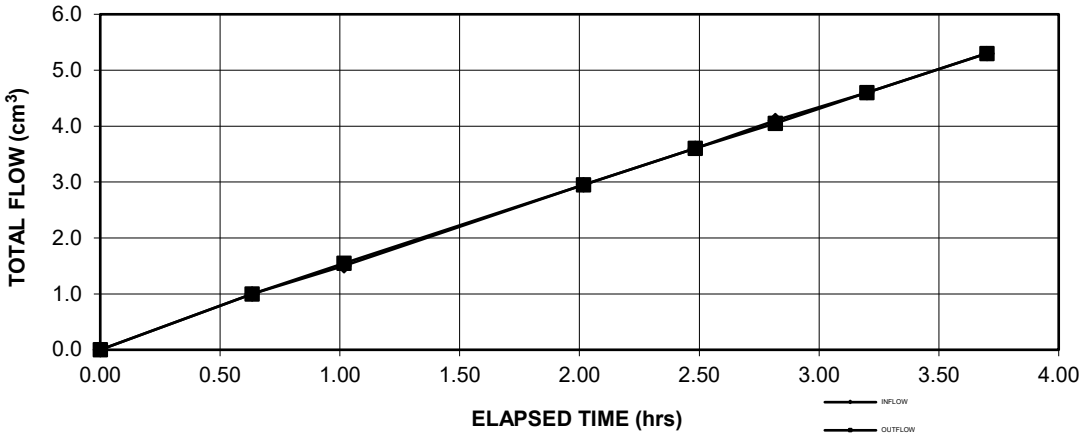
ASTM D 5084-16a Method C

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Project:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-015	Sample No.:	C-093025-2
Lab ID No.:	2025-173-015-002	Avg. Effective Consol. Pressure (psi):	6.25

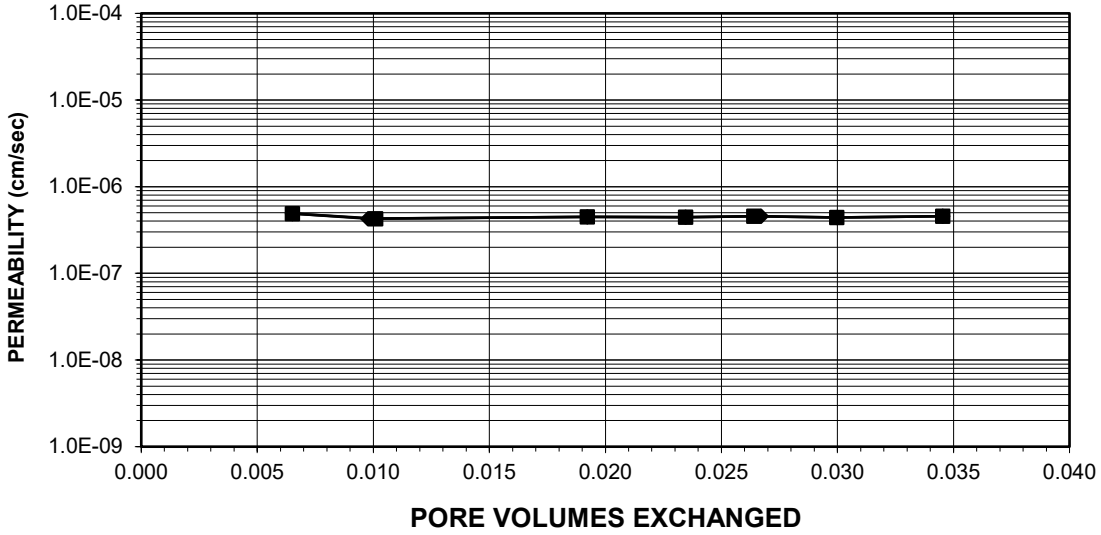
AVERAGE PERMEABILITY = 4.5E-07 cm/sec @ 20°C

AVERAGE PERMEABILITY = 4.5E-09 m/sec @ 20°C

TOTAL FLOW vs. ELAPSED TIME



PORE VOLUMES EXCHANGED vs. PERMEABILITY



Tested By: DP Date: 10/7/25 Checked By: JLK Date: 10/10/25

DCN: CT-22 DATE: 1/1/17 REVISION: 11

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PERMEABILITY TEST

ASTM D 5084-16a Method C

Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Project:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-015	Sample No.:	C-093025-2
Lab ID No.:	2025-173-015-002	Avg. Effective Consol. Pressure (psi):	6.25

Specific Gravity: 2.70 Assumed
Sample Condition: Remolded

Visual Description: Brown Clay with Rock

Permeant Type: Deaired Water

MOISTURE CONTENT:	BEFORE TEST	AFTER TEST
Tare Number	2949	1122
Weight of Tare & Wet Sample (g)	190.84	1048.37
Weight of Tare & Dry Sample (g)	171.85	903.52
Weight of Tare (g)	7.25	83.81
Weight of Water (g)	18.99	144.85
Weight of Dry Sample (g)	164.60	819.71
Moisture Content (%)	**11.5**	**17.7**

SPECIMEN:	BEFORE TEST	AFTER TEST
Weight of Tube & Wet Sample (g)	2230.17	NA
Weight of Tube (g)	1315.30	NA
Weight of Wet Sample (g)	914.87	965.18
Length 1 (in)	3.970	4.059
Length 2 (in)	3.970	4.075
Length 3 (in)	3.970	4.075
Top Diameter (in)	2.877	2.952
Middle Diameter (in)	2.877	2.956
Bottom Diameter (in)	2.877	2.956
Average Length (in)	3.97	4.07
Average Area (in^2)	6.50	6.86
Sample Volume (cm^3)	422.92	457.26
Unit Wet Weight (g/cm^3)	2.16	2.11
Unit Wet Weight (pcf)	135.0	131.8
Unit Dry Weight (pcf)	121.1	112.0
Unit Dry Weight (g/cm^3)	1.94	1.79
Void Ratio, e	0.39	0.51
Porosity, n	0.28	0.34
Pore Volume (cm^3)	119.1	153.5
Total Weight of Sample After Test (g)		964.80

Tested By: DP Date: 10/7/25 Checked By: JLK Date: 10/10/25

DCN: CT-22 DATE: 1/1/17 REVISION: 11

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PERMEABILITY TEST

ASTM D 5084-16a Method C

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Client:	GAI Consultants, Inc.	Boring No.:	Final Closure
Client Project:	Cheswick Closure R220960.00	Depth (ft):	In Place Soil
Project No.:	2025-173-015	Sample No.:	C-093025-2
Lab ID No.:	2025-173-015-002	Avg. Effective Consol. Pressure (psi):	6.25

Pressure Heads (Constant)	
Top Cap (psi)	67.5
Bottom Cap (psi)	70.0
Cell (psi)	75.0
Total Pressure Head (cm)	175.8
Hydraulic Gradient	17.00

Final Sample Dimensions	
Sample Length (cm), L	10.34
Sample Diameter (cm)	7.50
Sample Area (cm^2), A	44.24
Inflow Burette Area (cm^2), a-in	0.936
Outflow Burette Area (cm^2), a-out	0.972
B Parameter (%)	99

AVERAGE PERMEABILITY = 4.5E-07 cm/sec @ 20°C

AVERAGE PERMEABILITY = 4.5E-09 m/sec @ 20°C

DATE	TIME		ELAPSED TIME t	TOTAL INFLOW	TOTAL OUTFLOW	TOTAL HEAD h	FLOW (0 flow)	TEMP.	INCREMENTAL PERMEABILITY @ 20°C
(mm/dd/yy)	(hr)	(min)	(hr)	(cm^3)	(cm^3)	(cm)	(1 stop)	(°C)	(cm/sec)
10/9/2025	10	48	0.000	0.0	0.0	200.9	0	21.7	NA
10/9/2025	11	26	0.633	1.0	1.0	198.8	0	21.8	4.9E-07
10/9/2025	11	49	1.017	1.5	1.6	197.7	0	21.8	4.3E-07
10/9/2025	12	49	2.017	3.0	3.0	194.7	0	21.9	4.5E-07
10/9/2025	13	17	2.483	3.6	3.6	193.3	0	21.9	4.4E-07
10/9/2025	13	37	2.817	4.1	4.1	192.3	0	21.9	4.6E-07
10/9/2025	14	0	3.200	4.6	4.6	191.2	0	21.9	4.4E-07
10/9/2025	14	30	3.700	5.3	5.3	189.8	1	21.9	4.5E-07

Tested By: DP Date: 10/7/25 Checked By: JLK Date: 10/10/25

DCN: CT-22 DATE: 1/1/17 REVISION: 11

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APPENDIX D
Seed Mixes

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Seed Title:

Lot Number: 55202602S

BMI Olympus Seed Mix

Sell By: 8/1/2026

Test Date	Contains		Germ %	Hard Seed%	Dormant%	Total Viability	Origin
Mar-26	Tall Fescue-Cowgirl 46.1% Coating	24.92%	90%				OR
Oct-25	Tetraploid Perennial Ryegrass-Tetragain SLT	24.34%	95%				OR
Nov-25	Annual Ryegrass-Gulf	19.97%	90%				OR
May-25	White Clover-Dutch 51.24% Coating	9.99%	90%	4%		94%	OR
Mar-26	Birdsfoot Trefoil-VNS 50% Coating	9.97%	80%	5%		85%	CAN
Sep-25	White Clover-Ladino 52.68% Coating	9.91%	61%	29%		90%	OR

Other Crop Seeds: 0.51%

Inert Matter: 0.39%

Weed Seeds: 0.01%

Noxious Weed Seeds: None

Labeler Permit Number 94502

50 lb Net Weight

Coating material Pure Coat

Belmont Mills Inc.
400 South Jefferson Street
Belmont OH, 43718

Notice to Buyer: We warrant that seeds we sell will conform to the label description required under state and federal laws, within recognized tolerances. We make no warranties, expressed or implied, of merchantability, fitness for purpose, or otherwise, which would extend beyond such descriptions, and in any event our liability for breach of any warranty or contract with respect to such seed is limited to the purchase price of such seeds