March 12, 2013

EARTH ENGINEERING
CONSULTANTS, LLC

Asphalt Specialties Company
10100 Dallas Street
Henderson, Colorado 80640

Attn: Mr. Rob Laird (RobL@asphaltspecialties.com)

Re: Laboratory Test Results and Geotechnical Engineering Addendum Report
Turnpike Water Storage Reservoir – Evaluation of Shale Bedrock
Highway 52 and Weld County Road 1
Weld County, Colorado
EEC Project No. 1134011

Mr. Laird:

Enclosed, herewith, are the laboratory test results conducted on representative samples of the shale bedrock material stockpiled at the above referenced property, along with supplemental geotechnical engineering recommendations for future placement and compaction of this material. The excess/stockpiled shale bedrock material was generated during the excavation and construction phase of the recently completed Turnpike Water Storage Reservoir for the Town of Erie. The Turnpike Reservoir property is located northeast of the intersection of County Line Road/Weld County Road 1 and Highway 52 in Erie, Weld County, Colorado. More particularly the site is located within Section 31 and the South ½ of Section 30, Township 2 North, Range 68 West of 6th PM.

INTRODUCTION

Earth Engineering Consultants (EEC) conducted a series subsurface explorations in April and June of 2008 to evaluate the underlying subsurface profile conditions for design and construction recommendations, based on a geotechnical engineering viewpoint, for the Turnpike Water Storage Reservoir, and provided geotechnical engineering reports dated May 5, 2008, and July 2, 2008, EEC Project No. 1082030. These reports should be referenced for additional information, if necessary.

A representative from Asphalt Specialties Company, Inc. (ASCI) delivered nine (9) composite samples of the on-site stockpiled shale bedrock in February of 2013 for further laboratory evaluation. The purpose of our laboratory evaluation, which was performed in general accordance with ASTM testing procedures, was to assess the physical properties of the on-site stockpiled shale bedrock material for reuse as fill material and to validate that placement of the previously excavated

Turnpike Reservoir underlying Shale/Siltstone Bedrock (classified as a LEAN CLAY – CL), when placed and compacted as described herein, will, in essence, be relatively impermeable. An evaluation and laboratory test results of those samples are further discussed herein. For reference purposes we are also including herein a copy of our AMRL certificate for laboratory accreditation/qualification purposes.

ANALYSIS AND RECOMMENDATIONS

Moisture Density Relationship-Standard Proctor Density

All nine (9) composite samples were delivered to EEC by ASCI personnel and individual moisture contents were conducted on each individual sample. All samples were then combined together as a uniform composite sample and collectively representative samples were then subjected to the following testing procedures. Laboratory testing performed on the composite shale/siltstone (classified as LEAN CLAY) included an overall washed sieve analysis (ASTM C117 and C136), Atterberg limits (ASTM Specification D4318), Standard and Modified Proctor density (ASTM Specification D698 and D1557 respectively), and three (3) remolded falling head permeability (ASTM Specification D5856) tests.

The results of the in-situ moisture contents, soil classification and the Standard and Modified maximum dry density ASTM Specification D698 and D1557 for the composite samples are presented in the table below.

Stockpile ID	Sample No.	In-Situ Moisture Content, %	Liquid Limit (LL)	Plasticity Index (PI)	Percent Passing No. 200 Sieve	Standard PROCTOR Results		Modified PROCTOR Results	
						Optimum Moisture, %	Maximum Dry Density, PCF	Optimum Moisture, %	Maximum Dry Density, PCF
Small Stockpile	1	9.5	37	22	85	15.5	112.0	12.0	120.5
	2	10.3							
	3	10.4							
Big Stockpile	4	11.4							
	5	11.2							
	6	10.4							
Baur Stockpile	7	9.9							
	8	10.4							
	9	10.3							

Laboratory Falling Head Permeability Tests

EEC personnel also conducted three (3) falling head permeability tests on remolded composite samples of the shale/bedrock material to determine the coefficient of permeability (k-value) characteristics at varying compaction criteria. The 1st falling head permeability test was remolded basically at the delivered in-situ moisture content, and was placed/prepared and compacted in the ASTM Specification D4318 apparatus in a relatively "loose-state" to simulate a similar correlation as to the "means and methods" planned by ASCI personnel during the placement operations. The results, as presented in the table below, and at the conclusion of this report, revealed a k-value of approximately $1x10^{-6}$ cm/sec even at a relatively "loose-compactive-state" of only 88% of the material's Standard Proctor Density results with an initial moisture content of only 6.9%. The 2nd and 3rd samples were remolded at or near optimum moisture content and compacted to at least 95% of the material's Modified and Standard Proctor Density (ASTM D1557 and D698) laboratory test results. The laboratory test results are presented in the table below and charts are included with this report.

Summary of Laboratory Falling Head Permeability Test Results				
Sample ID	**Moisture Content, %**	**Dry Density, PCF**	**Percent Compaction**	**Falling Head Permeability (k-value), cm/sec**
1- Loosely Compacted	6.9	98.7	88	1×10^{-6}
2 – Modified Density	12.0	114.5	95	9.4×10^{-8}
3 – Standard Density	15.5	106.4	95	6.5×10^{-8}

The loosely compacted remolded samples, (i.e., shale/bedrock material which was gently placed in 3 lifts in the falling head permeability apparatus with minimal compactive efforts achieving only 88% of the material's Standard Proctor Density test results), still resulted with a coefficient of permeability of $1x10^{-6}$ cm/sec., indicating the material's relative impervious characteristics.

Backfill Placement and Compaction

Based on our understanding, ASCI intends on placing and compacting the on-site stockpiled shale/bedrock material in areas in which future sand and gravel mining activities are to take place. After the underlying sand and gravel reserves have been extracted from pre-determined locations

across the ASCI property, the currently stockpiled shale/bedrock material would then be placed and compacted accordingly.

We understand ASCI personnel intend on utilizing their own equipment to complete this process and have, in essence, implemented a means and method plan. We would suggest in conjunction with the ASCI backfill concept, that during the backfill operations that the shale/bedrock material be placed in uniform lifts, on the order of 2 to 3-feet maximum, using the heavy duty earthwork equipment, be wheel rolled in-place to simulate a relative percent compaction criteria of at least 90% of the material's Standard Proctor maximum dry density (ASTM D698) test results; which in essence correlates to the "loosely compacted" approach replicated in the laboratory, at native/in-situ moisture contents, (again assuming an in-situ/natural moisture content in excess of 6-1/2%, similar to that as the laboratory "loosely compacted" specimen), as discussed. Compaction in excess of the "loosely compacted" concept as described and verified in the laboratory further increases the material's impermeable characteristics. All earthwork/compaction activities should be field verified/approved by means of field density testing procedures and visual observations. When compacted to at least 90% of the materials' maximum dry density the in-situ compacted shale material should have a coefficient of permeability of 1×10^{-6} cm/sec or slower. Upon completion of the placement and compaction operations of the shale bedrock materials, periodic in-situ field permeability tests by means of the flex-wall permeameter procedures, "Hydraulic conductivity testing in general accordance with ASTM Specification D5084", should be performed to verify compliance. Please refer to the Contractor's Quality Control/Quality Assurance Plan (QC/QC) Plan presented below.

CONTRACTOR'S (ASCI) QUALITY CONTROL and QUALITY ASSURANCE PLAN

The following Quality Control/Quality Assurance Plan (QC/QA) Plan is outlined to establish and maintain control of materials through processes of testing of materials on behalf of Asphalt Specialties Company, Inc. (ASCI) during the shale bedrock backfill operations associated with the Turnpike Reservoir project in Erie, Colorado. For more specific information and details regarding the shale bedrock material please refer to Earth Engineering Consultants, LLC (EEC) laboratory testing evaluation report on the existing stockpiled shale/bedrock material generated during the earthwork phase of the Turnpike Reservoir, dated March 12, 2013. The backfill operation of the existing stockpiled shale bedrock materials in the future locations of sand and gravel mining areas is hereafter known as the "PROJECT". In general, field density/quality control test results will be

completed by qualified personnel, transmitted to the general contractor, (ASCI), hereafter known as the "CONTRACTOR" to assure acceptability of products and requirements and provide information to the GC and/or assignees, and to the project design team to establish and maintain quality control.

Earth Engineering Consultants, LLC (EEC), as the project's construction materials testing (CMT) and quality control/quality assurance (QC/QA) consultant, established in 1993, is a full service geotechnical engineering consulting firm and an accredited construction materials testing consulting firm. Our Windsor, Colorado office, which would provide services for this project, is accredited by AASHTO/CCRL in bituminous mixtures, soils, aggregate, and Portland cement concrete. EEC is accredited and complies with laboratories meeting ASTM E329 "Standard Specification for Agencies Engaged in the Testing and/or Inspection of Materials Used in Construction" criteria. R18 accreditation documentation is available upon request for your review or can be viewed by visiting their website at http://www.amrl.net for current accreditation status. For more detailed information on all of EEC's services please visit our web site at www.Earth-Engineering.com.

As your CMT/QC and QA consultant for the project, we would perform the required CMT/QC and observation services from our local office located at 4396 Greenfield Drive in Windsor, Colorado, approximately 1-mile from the I-25 and Crossroads Boulevard Interchange, office number (970) 545-3908, facsimile number (970) 663-0282, Website address www.Earth-Engineering.com, and electronic mail address for our Senior Principal Engineer lesterl@earth-engineering.com and our Senior Geotechnical Engineer daver@earth-engineering.com.

The QC/QA plan is provided as a guideline to follow to effectively establish and maintain quality of materials for the duration of the project. The QC/QA Plan is not intended to modify the contract requirements/project specifications prepared by others and highlighted/addressed herein, and does not provide any warranties, expressed or implied. Preparation of this plan is for the exclusive use for specific application to the project discussed.

EEC will provide the QC/QA testing for the referenced project in general accordance with the project specifications prepared by others and highlighted/addressed herein. QC/QA test results will be provided to ASCI, hereafter known as the CONTRACTOR and project team members, on a bi-monthly basis as results become available. This plan includes the required construction materials

testing and quality control elements and the personnel responsible for implementation of the QC/QA Plan.

Project Progress Schedule

A Project schedule is the responsibility of the Contractor and should be posted at the project and made available to EEC, the QC consultant and to the project team. The Project schedule should include a critical path, sequence of work activities and project duration. It is the responsibility of the Contractor to provide an updated progress schedule. It is the responsibility of the Contractor to develop and comply with the outlined schedule. It should be understood by all members that the progress schedule may change during the course of construction. If necessary the project schedule should be updated when changes occur.

Testing Schedules

EEC will perform required construction materials testing services during the backfill operations using the on-stockpiled shale bedrock materials utilizing qualified/certified field/laboratory trained technicians supervised by a State of Colorado license professional engineer. It is anticipated the requested materials testing services will be performed in EEC's main headquarters facility/laboratory located at 4396 Greenfield Drive in Windsor, Colorado. The frequency table at the conclusion of this QC/QA Plan provides a general list of the required tests, specifications, and general testing frequencies. Variations may occur during the construction phases and EEC will accommodate accordingly.

All sampling and testing procedures will be performed in general accordance with ASTM and AASHTO procedures referenced herein. Equipment used by EEC personnel for QC/QA testing has proper calibrations; those calibrations can be observed upon request in EEC's quality control manual and/or our AMRL Quality System Manual (QSM), which is updated every 6 months as part of our accreditation with AMRL. These manuals and our testing procedures are available for review at any time in our main/headquarters office in Windsor, Colorado. Equipment used for process/field backfill control operations can be observed upon request. As part of our accreditation with AMRL, EEC maintains an updated Quality System Manual (QSM) documenting our procedures, calibrations and certifications. The files may be reviewed upon request. For additional

information regarding our qualifications and accreditation status with AMRL please visit their website at http://www.amrl.net.

Daily test result reports will be provided to document project specification conformance or non-conformance as per the project specifications provided by others and highlighted/addressed herein. The main focus is to achieve a relatively low/impermeability zone using the on-site stockpiled shale-bedrock materials and achieve a permeability of coefficient (k-value) via Flex-Wall Permeameter apparatus of $1x10^{-6}$ cm/sec. or slower. The daily test results/reports will be generated throughout the project. The Contractor's supervisory personnel and/or assignees will receive observations and test results daily. For the Project, EEC will provide a summary report, weekly and/or bi-monthly reviewed by a State of Colorado licensed professional engineer. The summary reports will be submitted to the Contractor for distribution to the project team, electronically.

EEC will provide a sufficient number of technicians required to the project during each construction phase for material backfill placement and testing. Conformance of material to the QC/QA testing elements in the contract will be evaluated as a daily routine. Documentation of the test results will be provided daily to the Contractor for evaluation of quality level (QL). The specified QC/QA tests to be performed on the project material shall be selected at the appropriate frequency according to the project specifications on a random basis, and be representative of the process under evaluation, (please refer to the table below for frequencies, etc.).

<table>
<tr><th colspan="5">BACKFILL OPERATIONS – QC/QA Testing Summary</th></tr>
<tr><th>Test Type</th><th>Test Standard</th><th>Moisture Control</th><th>Compaction Control</th><th>Minimum Testing Frequency</th></tr>
<tr><td>Maximum Density and Optimum Moisture Content</td><td>Standard Proctor Density ASTM D698</td><td rowspan="3">Shale-Bedrock/Cohesive Soil: Moisture Content range between 7% to 18% of OMC, sufficient to achieve $1x10^{-6}$ cm/sec.</td><td rowspan="3">as per specification in excess of 90% of ASTM D698 (In excess of the Loosely Compacted as described in the Laboratory t est results section of this report)</td><td>1 per material type</td></tr>
<tr><td>In-Place Density and Moisture Content of Shale Bedrock in Backfill Zone</td><td>ASTM D6938 - Nuclear Densometer Device</td><td>Minimum of 3 tests per lift of placement by ASCI and/or as directed by the “engineer”</td></tr>
<tr><td>In-Place Hydraulic Conductivity</td><td>ASTM D5084</td><td>1 Flex-Wall Permeameter per lift of placement by ASCI and/or as directed by the “engineer”. Results should be in excess of $1x10^{-6}$ cm/sec</td></tr>
</table>

Records and Reporting

EEC will provide the Contractor with field test results as they become available. The Contractor shall provide test results to the Project Team and/or assignees. Electronic transmittals will be made available by EEC on a weekly/bi-monthly basis. ASCI will be provided daily field and laboratory tests results from all of our quality control technicians to maintain daily logs of all observations and test results as-needed.

Implementation of Control and Corrective Measures

Test results indicating non-compliance with project requirements, the following communication and follow-up action will be implemented

- Verbal Notification – to Contractor and project team members, as-needed
- Provide geotechnical engineering recommendations to address non-compliant issues
- Check calibration of testing equipment and start of retesting to verify if a problem exists.
- Retest and re-evaluate accordingly after all corrective actions have been implemented.

GENERAL COMMENTS

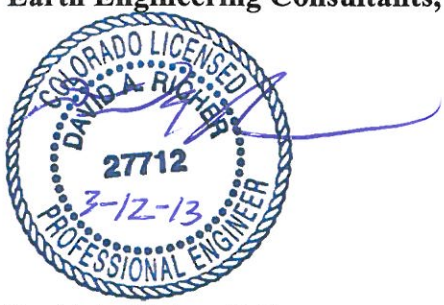
The analysis and recommendations presented in this report are based upon the data obtained from the composite shale/bedrock samples delivered to our laboratory by ASCI personnel and from any other information discussed in this report. This report does not reflect any variations in the shale/bedrock materials, which may occur across the site. Additional sampling and testing procedures as indicating in the Contractor's QC/QA will take precedence and control when variations occur. The nature and extent of such variations may not become evident until construction. If variations appear evident, it will be necessary to re-evaluate the recommendations of this report.

It is recommended that the geotechnical engineer be retained for testing and observations during earthwork construction phases to help determine that the design requirements are fulfilled. Should ASCI follow the materials testing and QC/QA plan as addressed herein, it is anticipated the resulting hydraulic conductivity for the backfilled area will be less than or equal to $1x10^{-6}$ cm/sec.

This report has been prepared for the exclusive use of Asphalt Specialties Company, Inc. for specific application to the project discussed and has been prepared in accordance with generally accepted geotechnical engineering practices. No warranty, express or implied, is made. In the event that any changes in the nature, design, or location of the project as outlined in this report are planned, the conclusions and recommendations contained in this report shall not be considered valid unless the changes are reviewed and the conclusions of this report are modified or verified in writing by the geotechnical engineer.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning this report, or if we can be of further service to you in any other way, please do not hesitate to contact us.

Very truly yours,
Earth Engineering Consultants, LLC



David A. Richer, P.E.
Senior Geotechnical Engineer

cc: Mr. Peter Wayland, P.E.: pwayland@weilandinc.com

American Association of State Highway and Transportation Officials

AASHTO Accreditation Program - Certificate of Accreditation

This is to signify that

Earth Engineering Consultants, Inc.

Fort Collins, Colorado

has demonstrated proficiency for the testing of construction materials
and has met the minimum requirements in AASHTO R18
set forth by the AASHTO Highway Subcommittee on Materials.

The scope of accreditation can be obtained by viewing
the AAP Directories of Accredited Laboratories (www.nist.gov/amrl)
or by contacting AMRL.

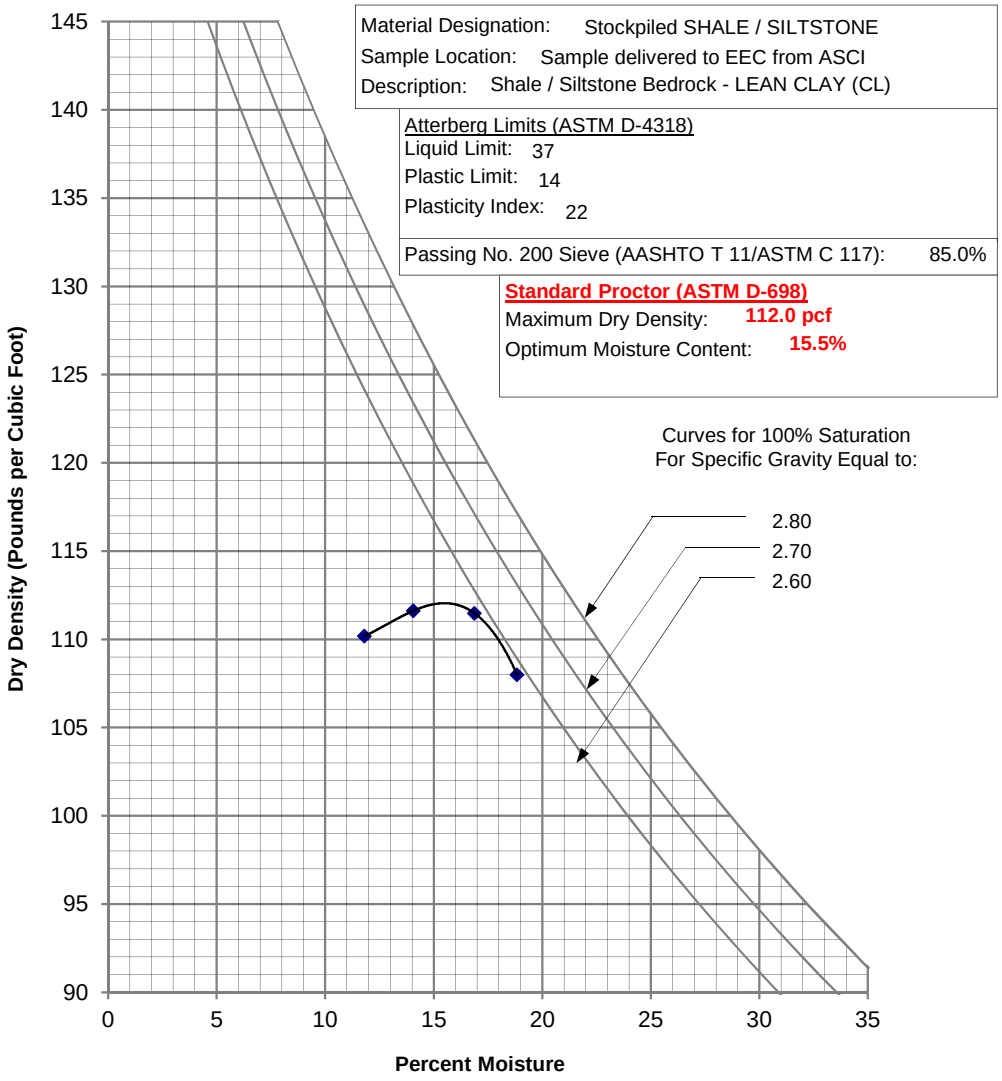
Executive Director

Chair, AASHTO Highway
Subcommittee on Materials

AASHTO R18

Earth Engineering Consultants, LLC

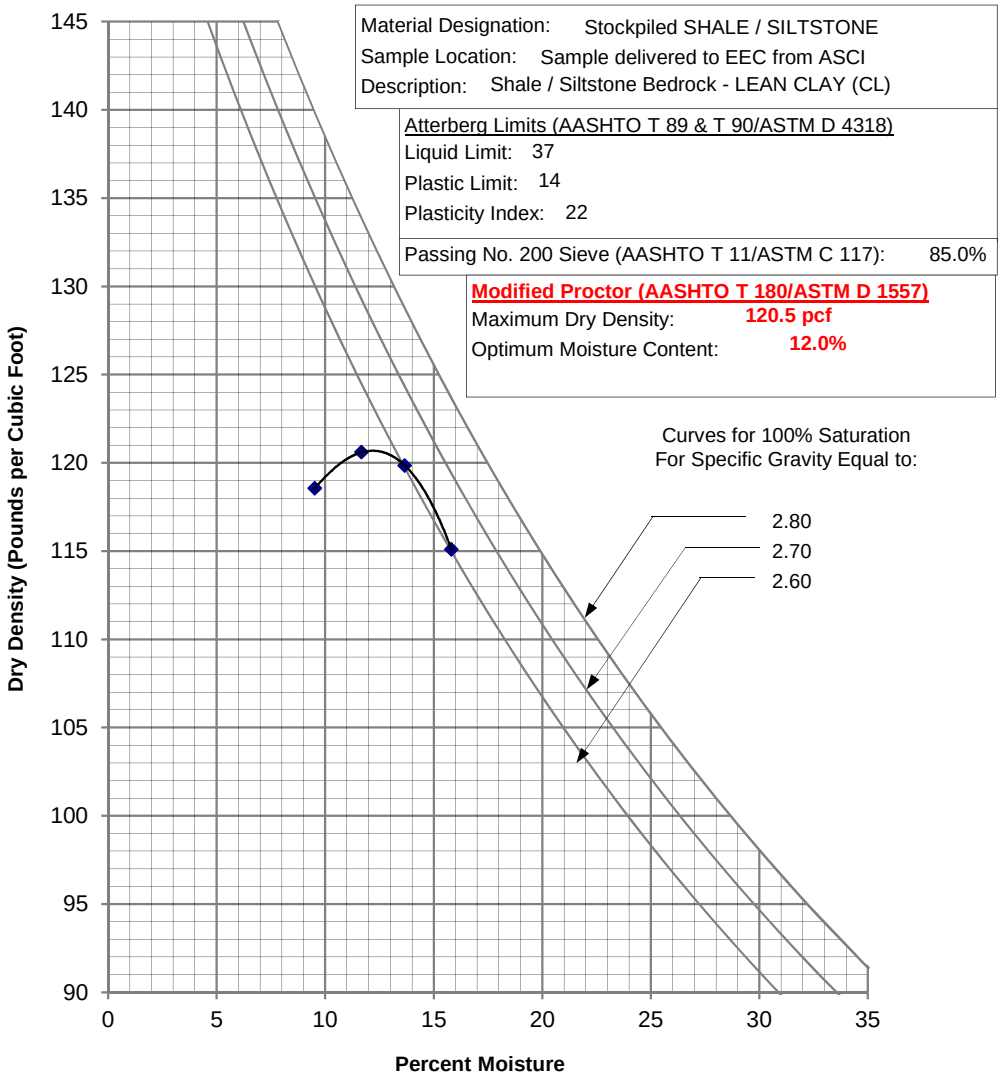
Summary of Laboratory Classification/ Moisture-Density Relationship



Project: Turnpike Reservoir - Evaluation of Shale Bedrock
Erie, Colorado
Project No: 1134011
Date February 2013

Earth Engineering Consultants, LLC

Summary of Laboratory Classification/ Moisture-Density Relationship



Client: ASCI
Project: Turnpike Reservoir - Evaluation of Shale Bedrock
Erie, Colorado
Project No: 1134011
Date February 2013

EARTH ENGINEERING CONSULTANTS, LLC

SUMMARY OF LABORATORY TEST RESULTS

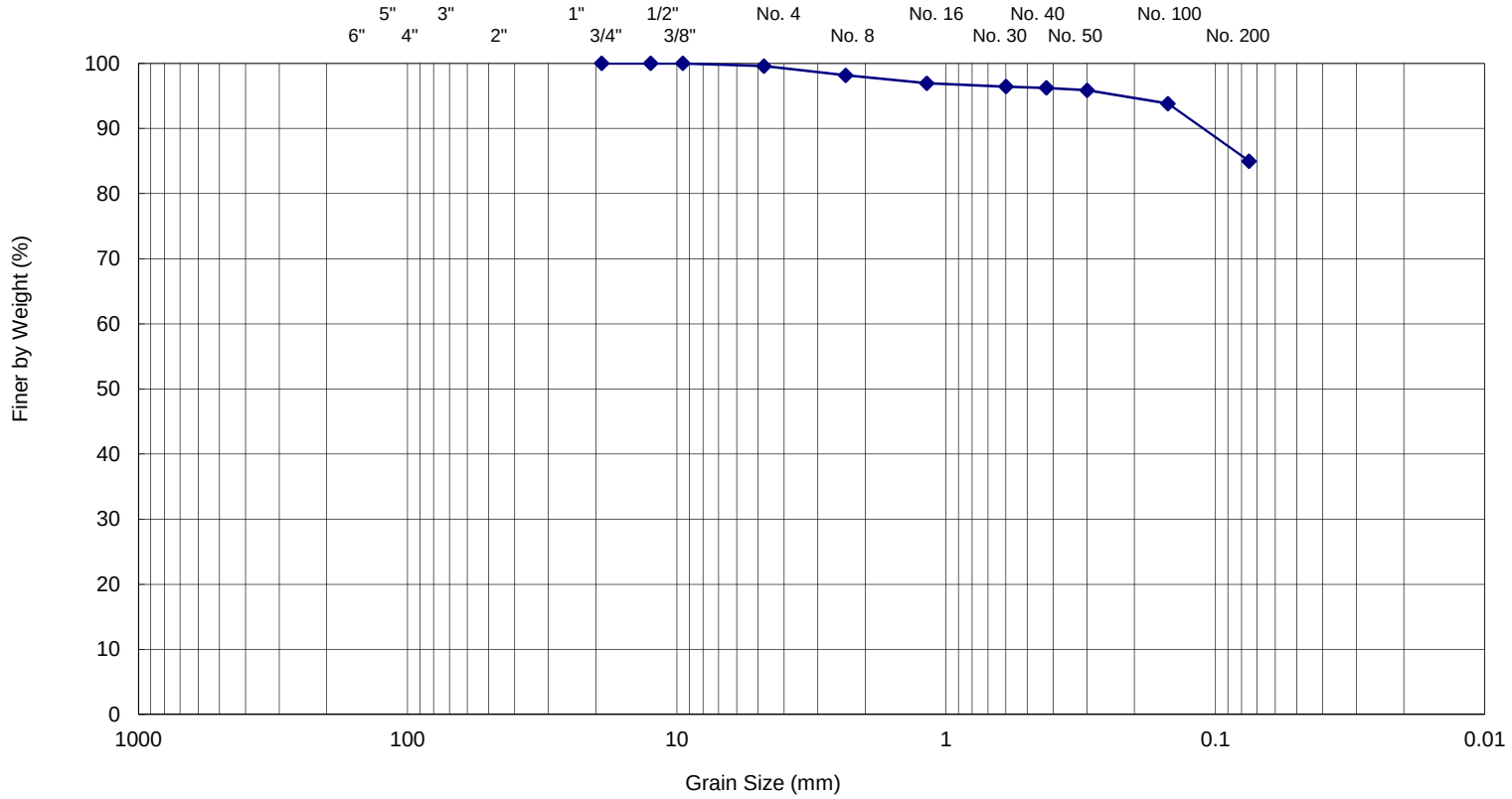
Sieve Analysis (AASHTO T 11 & T 27 / ASTM C 117 & C 136)		
Sieve Size		Percent Passing
2 1/2"	(63 mm)	100
2"	(50 mm)	100
1 1/2"	(37.5 mm)	100
1"	(25 mm)	100
3/4"	(19 mm)	100
1/2"	(12.5 mm)	100
3/8"	(9.5 mm)	100
No. 4	(4.75 mm)	100
No. 8	(2.36 mm)	98
No. 16	(1.18 mm)	97
No. 30	(600 μm)	96
No. 40	(425 μm)	96
No. 50	(300 μm)	96
No. 100	(150 μm)	94
No. 200	(75 μm)	85.0

Liquid Limit, Plastic Limit and Plasticity Index of Soils (AASHTO T 89 & T90/ASTM D 4318)	
Liquid Limit	37
Plastic Limit	14
Plasticity Index	22

Project: Turnpike Reservoir - Evaluation of Shale Bedrock
Location: Erie, Colorado
Project No: 1134011
Sample ID: Material A
Sample Desc.: Bedrock Shale
Date: February 2013

EARTH ENGINEERING CONSULTANTS, LLC

Summary of Washed Sieve Analysis Tests (ASTM C117 & C136)



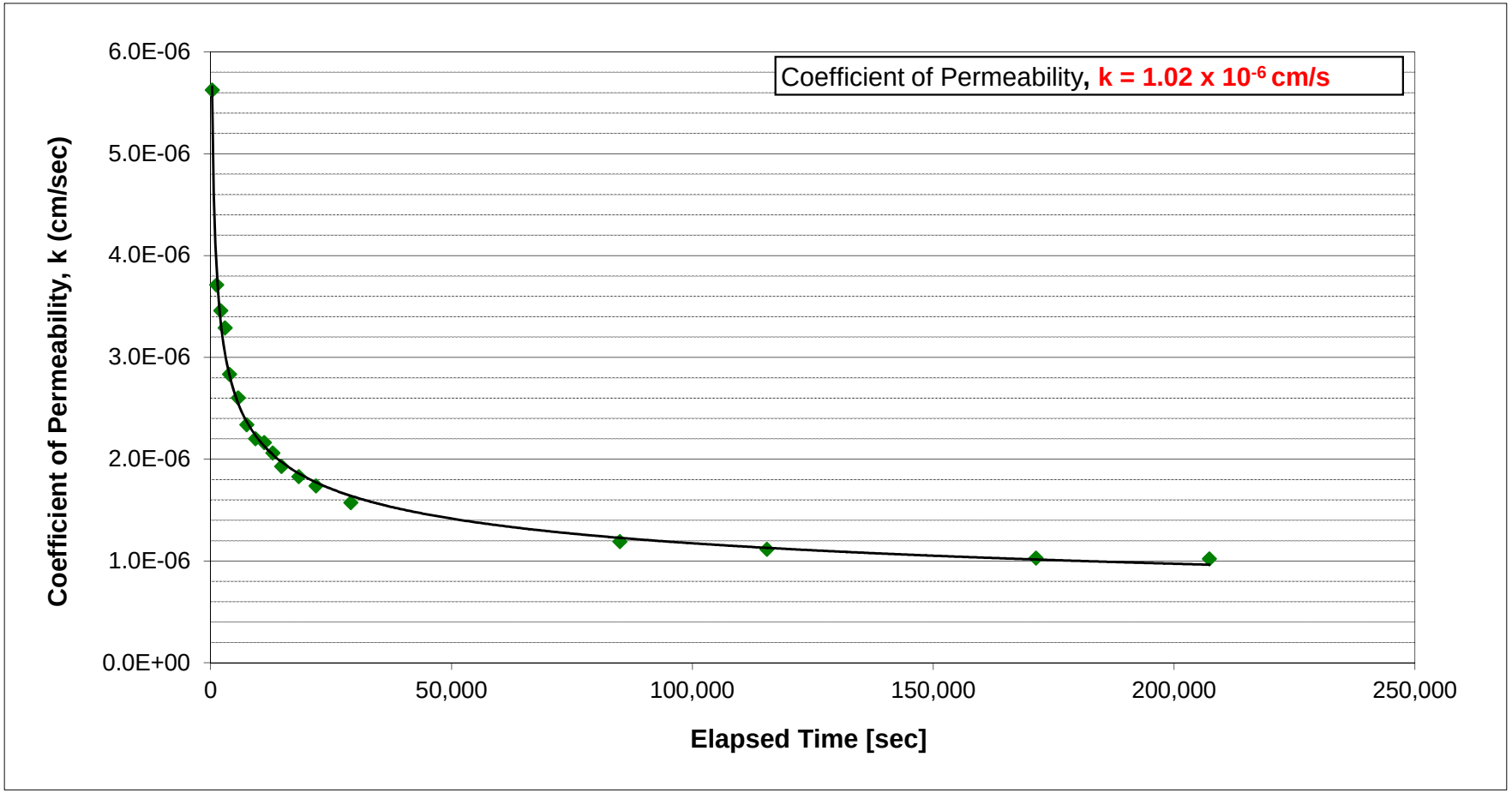
Cobble	Gravel		Sand			Silt or Clay
	Coarse	Fine	Coarse	Medium	Fine	

Project: Turnpike Reservoir - Evaluation of Shale Bedrock
Location: Erie, Colorado
Project Number: 1134011
Sample Desc.: Material A
Date: February 2013

PERMEABILITY TEST RESULTS - LOOSELY COMPACTED BEDROCK

ASCI - Turnpike Reservoir - Evaluation of On-Site Stockpiled Shale/Siltstone Bedrock Material

Material Description:	SHALE / SILTSTONE Bedrock - Classified as LEAN CLAY (CL)				
Liquid Limit:	37	Plasticity Index:	22	% Passing No. 200	85
Beginning Moisture:	**6.9%**	Dry Density, PCF:	**98.7**	Percent Compaction	**88%**



EEC Client: Asphalt Specialties Company, Inc. (ASCI) EEC Project Number: 1134011

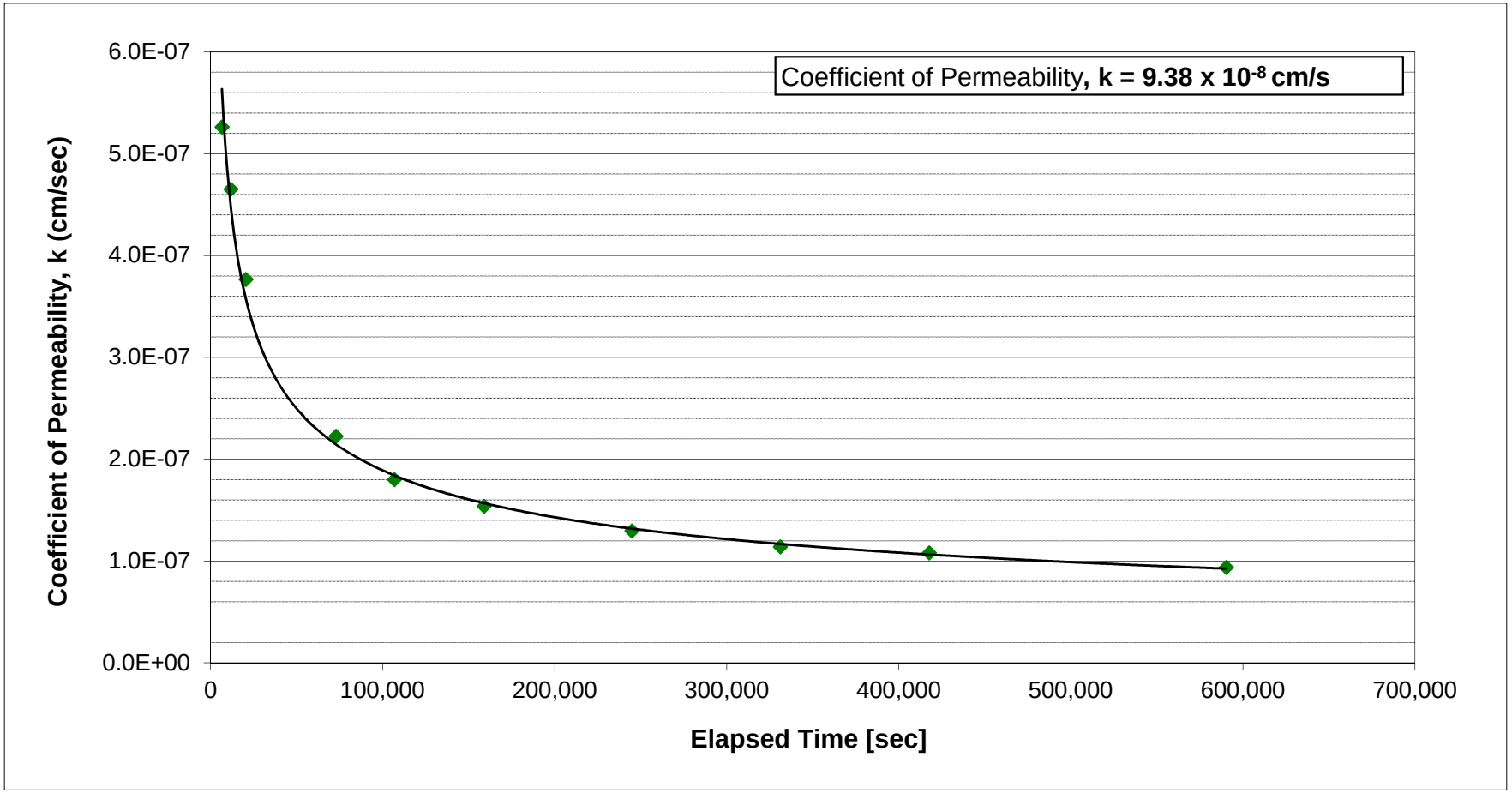
Material Designation: SHALE / SILTSTONE Bedrock - Classified as LEAN CLAY (CL)

Sample Location: Composite Sample Delivered to EEC by ASCI Personnel - Loosely Compacted

PERMEABILITY TEST RESULTS - MODIFIED RESULTS

ASCI - Turnpike Reservoir - Evaluation of On-Site Stockpiled Shale/Siltstone Bedrock Material

Material Description:	SHALE / SILTSTONE Bedrock - Classified as LEAN CLAY (CL)				
Liquid Limit:	37	Plasticity Index:	22	% Passing No. 200	85
Beginning Moisture:	**12.0%**	Dry Density, PCF:	**114.5**	Percent Compaction	**95%**



EEC Client: Asphalt Specialties Company, Inc. (ASCI) EEC Project Number: 1134011

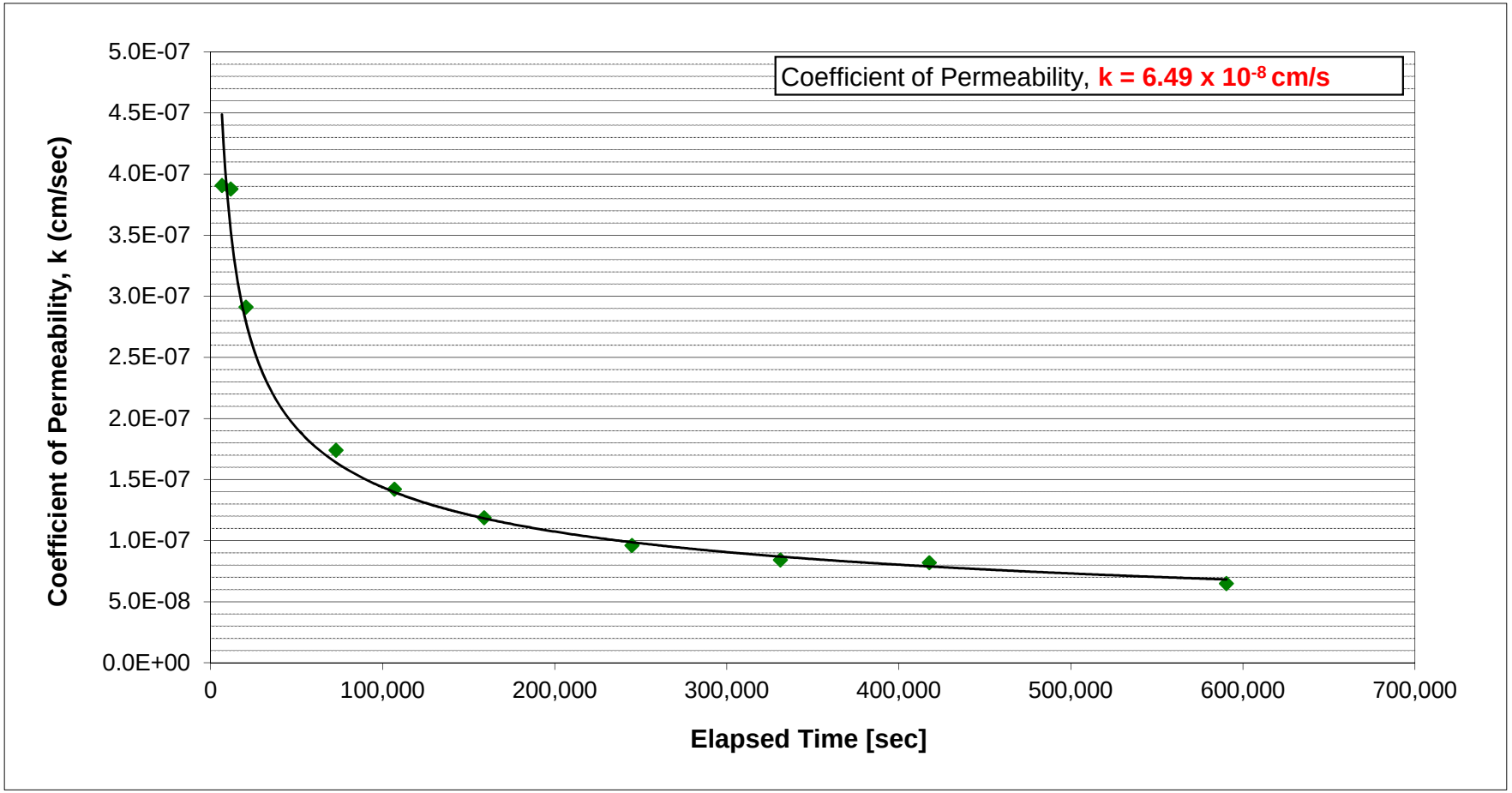
Material Designation: SHALE / SILTSTONE Bedrock - Classified as LEAN CLAY (CL)

Sample Location: Composite Sample Delivered to EEC by ASCI Personnel - MODIFIED Proctor Results

PERMEABILITY TEST RESULTS - STANDARD PROCTOR TEST RESULTS

ASCI - Turnpike Reservoir - Evaluation of On-Site Stockpiled Shale/Siltstone Bedrock Material

Material Description:	SHALE / SILTSTONE Bedrock - Classified as LEAN CLAY (CL)				
Liquid Limit:	37	Plasticity Index:	22	% Passing No. 200	85
Beginning Moisture:	**15.5%**	Dry Density, PCF:	**106.4**	Percent Compaction	**95%**



EEC Client: Asphalt Specialties Company, Inc. (ASCI) EEC Project Number: 1134011

Material Designation: SHALE / SILTSTONE Bedrock - Classified as LEAN CLAY (CL)

Sample Location: Composite Sample Delivered to EEC by ASCI Personnel - STANDARD Proctor Results