Union Pacific Railroad

Environmental Management Group
9451 Atkinson Street, Suite 100 ▯ Roseville, California 95747

Lauren A. Mancuso
Manager Environmental Site Remediation

(916) 789-5184
Facsimile (402) 501-2396

October 24, 2014

Ms. Karel Detterman
Alameda County Health Care Services Agency
Environmental Health Services
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577

Subject: Submittal of the Revised Surface Improvement Work Plan, 744 and 758 High Street, Oakland, California, Fuel Leak Case No. RO1135 and GeoTracker Global ID T0600101305

Dear Ms. Detterman:

On behalf of Union Pacific Railroad (UPRR), enclosed is the Revised Surface Improvement Work Plan (work plan), which describes the plan to conduct surface improvements at the 744 and 758 High Street site in Oakland, California. This work plan was revised in response to September 26, 2014 comments from the Alameda County Health Care Services Agency; these comments and responses to comments are enclosed.

I declare, under penalty of perjury, that the information and recommendations contained in the attached document is true and correct to the best of my knowledge.

If you have any questions or comments after reviewing this material, please feel free to contact me by email at LAMANCUS@up.com or by phone at (916) 789-5184.

Sincerely,

Lauren A. Mancuso
Manager of Site Remediation
Union Pacific Railroad Company

C: David Hodson/CH2M HILL

Enclosure: Response to Comments and above mentioned work plan

Response to Comments Regarding the

Submittal of the Surface Improvement Work Plan, 744 and 758 High Street, Oakland, California, Fuel Leak Case No. RO1135 and GeoTracker Global ID T0600101305,

dated July 25, 2014

from

Department of Toxic Substances Control (DTSC)

No.	Comments	Responses
Karel Detterman **Alameda County Environmental Health Comments, dated September 26, 2014**		
SPECIFIC COMMENTS		
1.	Please describe preparation of the existing soil/aggregate prior to the application of the Soil-cement Surface Treatment, including, but not limited to: a) Figure 2 indicates that the Surface Improvement Area will extend beneath lumber racks and piles; will the entire area be cleared of obstacles prior to application of the Soil-cement Surface Treatment? b) Please take the opportunity to attempt to locate missing well MW-C-2 and MW-C-5 after clearance of the area;	The work plan has been revised to describe preparation of the existing soil/aggregate, including removal of all surface features and obstacles (e.g., lumber racks and piles). Attempts to locate missing wells MW-C-2 and MW-C-5 after clearance of the area will be conducted.
2.	What dust control measures will be used during the application of the Soil-cement Surface Treatment?	A typical primary dust control measure for a construction project is application of water during soil disruption. During soil-cement surface treatment application, specific quantities of water will be required and applied to the treatment area. This water will serve as the primary dust control measure. The need for additional dust control measure is not anticipated.
3.	Will the Soil-cement Surface Treatment be able to withstand truck and fork lift traffic associated with the lumber yard operations?	The design was based on selecting the most economical and implementable solution to provide a better or equivalent surface within the unpaved area as compared to the other surfaces at the lumber yard. The soil-cement surface is expected to achieve a design strength value of 300 pounds per square inch, which should be sufficient for the intended use of the treatment area and withstand truck and fork lift traffic.

CH2M HILL
155 Grand Avenue
Suite 800
Oakland, CA 94612
Tel 510.251.2888
Fax 510.622.9000

October 24, 2014

Ms. Karel Detterman
Alameda County Health Care Services Agency
Environmental Health Services
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

Subject: Revised Surface Improvement Work Plan, 744 and 758 High Street, Oakland, California
Fuel Leak Case No. RO1135 and GeoTracker Global ID T0600101305

Dear Ms. Detterman:

On behalf of Union Pacific Railroad Company (UPRR), CH2M HILL has prepared this work plan to describe the plan for proposed surface improvements for the former UPRR property located within the property currently located at 750 High Street, Oakland, California (the site). A site location map is presented on Figure 1, enclosed with this letter report. This work plan was revised in response to Alameda County Health Care Services Agency Environmental Health Services (ACEH) comments (ACEH, 2014) on the original version (CH2M HILL, 2014) of this work plan.

The *Site Conceptual Model Update and Soil and Groundwater Investigation Report* (Site Investigation Report) (CH2M HILL, 2013) presented the recommendation to pave the unpaved area south of the building supply warehouse to limit potential worker exposure to chemicals of potential concern in shallow soil. As presented in this work plan, soil-cement surface treatment is recommended as an alternative to paving the unpaved area with asphalt concrete. Soil-cement surface treatment is the preferred solution for the unpaved area, because it limits disturbance of the existing soil/aggregate within the unpaved area, and after constructed, it creates an even ground surface with the surrounding area. Constructing asphalt paving on the unpaved area would require an uneven transition from the existing asphalt to the new asphalt. This uneven transition may create unwanted challenges for continued utilization of the area as a portion of an existing lumber yard.

Site background information is presented in the Site Investigation Report (CH2M HILL, 2013).

Scope of Work

This work plan proposes soil-cement surface treatment of the approximate 0.35-acre unpaved area within the southern portion of the site (Figure 2). Soil-cement surface treatment, also referred to as cement-stabilized base or cement-treated aggregate base, is a highly compacted mixture of soil/aggregate, cement, and water. Soil-cement surface treatment will be constructed at the site by mixing cement and water with existing soil/aggregate to create strong, impermeable, and solid surface to replace the unpaved area of the site. The purpose of the soil-cement surface treatment is to limit potential worker exposure to chemicals of potential concern in shallow soil and create a surface that allows for existing lumber-yard-related operations to continue at the site.

Geotechnical Sampling and Evaluation

To evaluate the technical effectiveness of soil-cement surface treatment at the site, a four-point composite soil sample was collected from the top 8 inches of the unpaved area and submitted for geotechnical analysis. Specifically, the soil sample was analyzed for the following laboratory test:

- Particle size analysis (ASTM D422)

- Liquid and plastic limits (Atterberg Limits) analysis (ASTM D4318)
- Proctor compaction analysis (ASTM D1557 Method C)
- Corrosivity analysis for sulfate (ASTM D4327)
- Unconfined compressive strength (ASTM D1633 Method B)

The soil sample was classified as dark brown, low plastic, poorly graded sand with silt and gravel (SP-SM) that contained hot-mix asphalt grindings. The particle size test results were used to determine which methods of the proctor compaction and the unconfined compressive strength tests should be run. Because the sample contains relatively uniform disturbed aggregates and soils from 2-inch to passing No.200 sieve, Method C of ASTM D1557 and Method B of ASTM D1633 were conducted for the proctor compaction and the unconfined compressive strength tests, respectively. The soil sample had a sulfate content of 426 milligrams per kilogram, which indicate that Type II cement can be used during soil-cement surface treatment. The proctor compaction test results indicate that when the soil is mixed with six percent cement, it will have an optimum moisture content of 6.4 percent and a maximum dry density of 134.8 pounds per cubic foot. The 7-day unconfined compressive strength of 495 pounds per square inch (psi) was achieved for the soil mixed with six percent cement and eight percent water. This unconfined compressive strength is above the minimum recommended unconfined compressive strength (300 psi) (Gaspard, 2000) for soil-cement surface treatment. The strength test also indicates that the proposed soil-cement surface treatment would provide a surface compatible with the intended future use of the area, as a materials staging area for an active lumber yard.

Geotechnical reports are included as Attachment 1.

Field Preparations

The following activities will be completed before fieldwork begins at the site:

- Update the site-specific health and safety plan
- Obtain entry approval from the property owner
- Contact UPRR's fiber optic hotline and complete UPRR fiber optic notifications
- Notify ACEH of the field investigation schedule
- Temporarily relocate surface features and obstacles, including lumber racks, material stockpiles, etc. from the unpaved area

Soil-cement Surface Treatment

The results of the geotechnical sampling and analysis were used to design the approach for the soil-cement surface treatment. Based on the geotechnical analysis results, the optimum cement and water ratios to achieve the unconfined compressive strength higher than the target value of 300 psi were determined to be six percent and eight percent, respectively. Six percent cement equates to 28.7 tons of Type II Portland cement (approximately six percent). Eight percent water equates to 6,081 gallons of water (approximately eight percent). Cement and water will be manually spread across the surface of the treatment area. The cement and water will be thoroughly mixed in situ with the top 8 inches of surface material to create a homogenous layer. Following mixing, the treatment area will be spread out with the mixture uniformly and compacted with a roller to a minimum of 95 percent of the maximum dry density, as determined from the proctor compaction test results. The addition of the cement will raise the grade of the surface treatment area approximately 0.5 inch. The interface between the existing asphalt and surface treatment area will be graded to create a smooth transition between the two areas. A minimum of four compaction tests will be conducted throughout the area to verify the level of the compaction achieved.

After the compaction levels have been achieved and the finished surface level has been verified, the completed cement-treated surface will be covered with an asphaltic emulsion curing seal to have a consistent appearance with the surrounding asphalt. The asphaltic emulsion curing seal will be applied on the same day as completion of final compaction and as soon after final compaction is practicable. The surface will be kept moist until the curing seal is applied. Traffic and equipment will not be allowed on the cement-treated surface for 72 hours after application of the curing seal.

Schedule and Reporting

The proposed work will be conducted within 4 weeks of receiving acceptance of this work plan. Work may be conducted on weekdays, weekends, or nights to limit any inconvenience to lumber-related operations at the site. Following completion of the proposed work, ACEH will be informed that the paving has been completed.

Works Cited

Alameda County Health Care Services Agency Environmental Health Services (ACEH). 2014. Email from Karel Detterman/ACEH to David Hodson/CH2M HILL. RE: Submittal of the Surface Improvement Work Plan, 744 and 758 High Street, Oakland, California, Fuel Leak Case No. RO1135 and GeoTracker Global ID T0600101305. September 26.

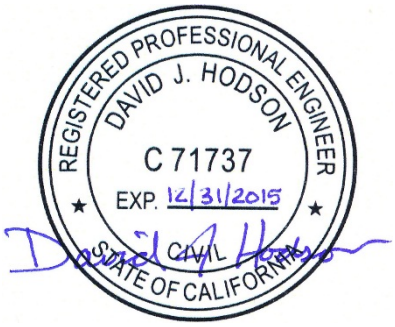
CH2M HILL. 2013. *Site Conceptual Model Update and Soil and Groundwater Investigation Report, 744 and 758 High Street, Oakland, California.* November 8.

CH2M HILL. 2014. Surface Improvement Work Plan, 744 and 758 High Street, Oakland, California Fuel Leak Case No. RO1135 and GeoTracker Global ID T0600101305. July 25.

Gaspard, Kevin J. 2000. Evaluation of Cement Treated Base Courses. Technical Assistance Report Number 00-1TA. December.

Please contact me at (510) 316-2323 if you have any questions.

Sincerely,
CH2M HILL

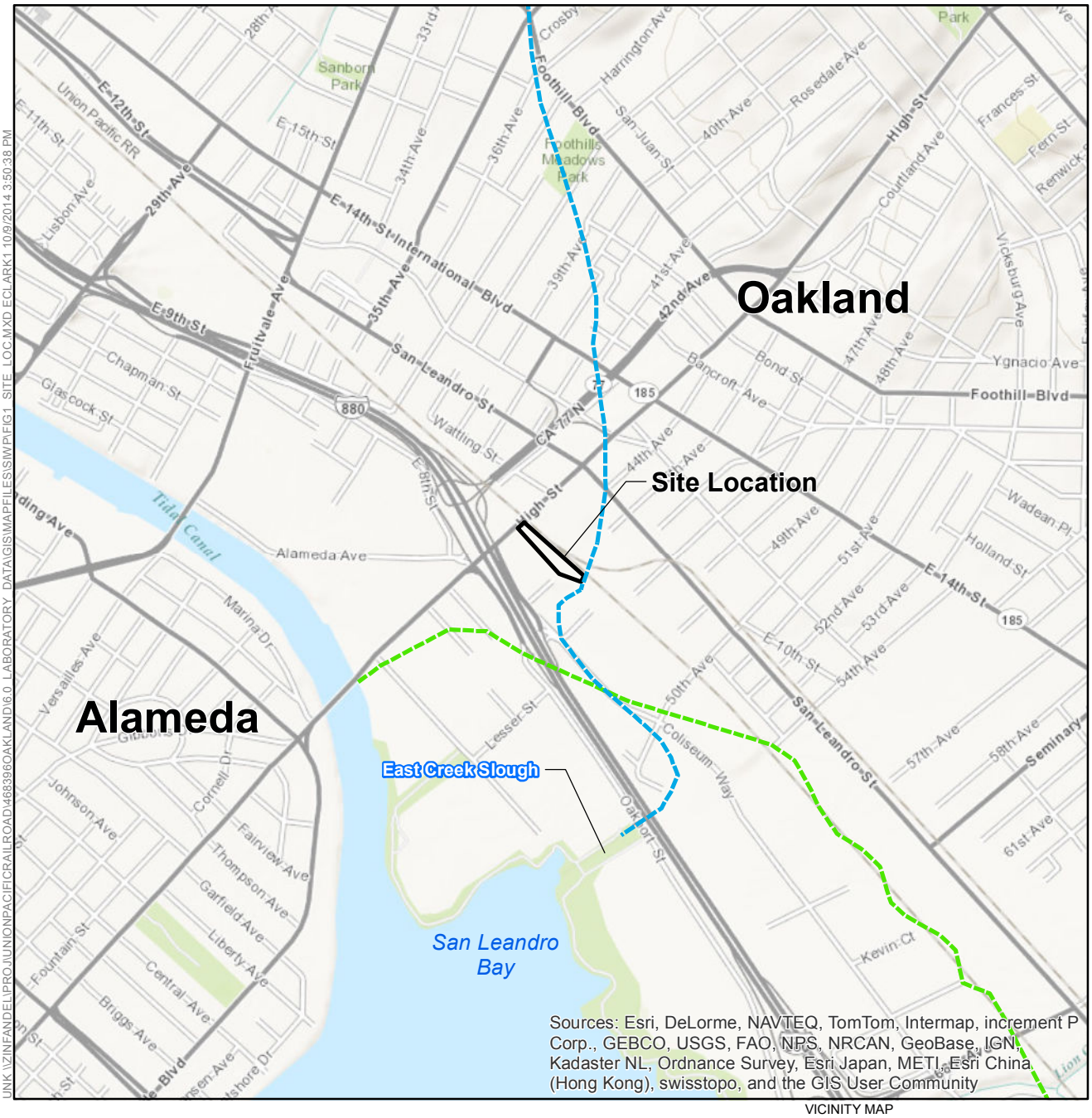


David Hodson, P.E.
Project Manager

Enclosures:

Figure 1	Site Location Map
Figure 2	Surface Improvement Map
Attachment 1	Geotechnical Reports

Figures



UNK \\ZINFANDEL\PROJ\UNIONPACIFICRAILROAD\468396OAKLAND\6.0 LABORATORY DATA\GIS\MAPFILES\SWP\FIG1 SITE LOC.MXD ECLARK1 10/9/2014 3:50:38 PM

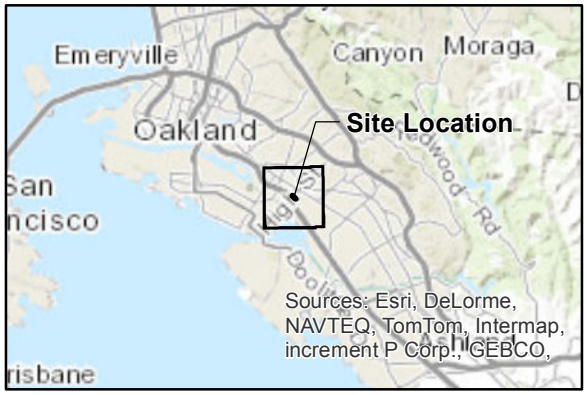
LEGEND

- Site Location
- Approximate Location of Peralta Creek
- Approximate Boundary of 1850 Tidal Marshes

Note:
Creek and historical shoreline features from Sowers and Richard (2009)

Reference:
Sowers, J.M., and C.M. Richard. 2009. Creek & Watershed Map of Oakland & Berkeley (Fourth Edition). Oakland Museum of California, Oakland, CA.
http://www.museumca.org/creeks/images/TitleBlockOak.gif.
Accessed on March 10, 2013.

VICINITY MAP



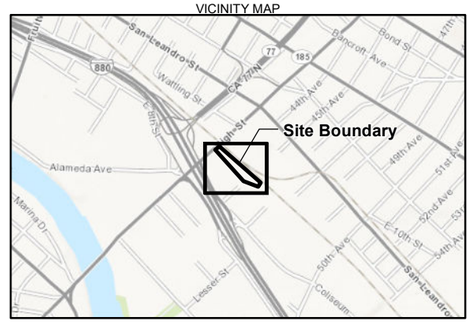
0 750 1,500
Feet

N

FIGURE 1
Site Location Map
Revised Surface Improvement Work Plan,
744 and 758 High Street, Oakland, California

CH2MHILL

VICINITY MAP



LEGEND

- Active Rail Line
- Site Boundary
- Unpaved Area (0.35 acres)

0 35 70
Feet

N

FIGURE 2
Surface Improvement Map
Revised Surface Improvement Work Plan,
744 and 758 High Street, Oakland, California

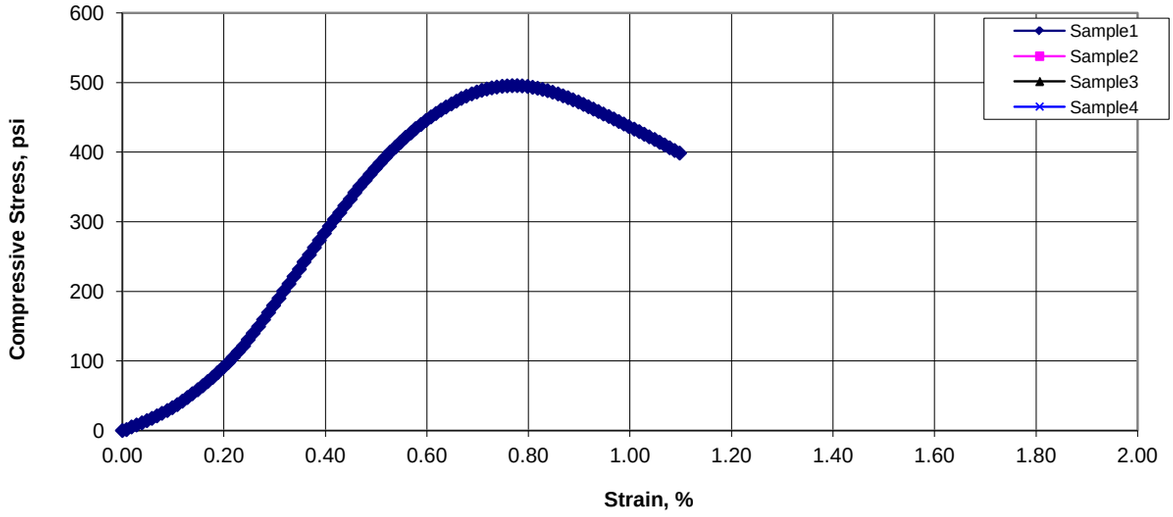
CH2MHILL

Attachment

Unconfined Compressive Strength of Molded Soil-Cement Cylinders (ASTM D1633 method B)

CTL No.:	095-029	**Project Number:**	468396.10.06.03		
Client:	CH2M Hill	**Date:**	5/21/2014	**By:**	MD/RU
Project Name:	750 High Street				

Compressive Stress vs. Strain



Sample No.:	1	2	3	4
Boring:	TP-1			
Sample:				
Depth, ft.:	0-0.7			
Visual Description:	Dark Brown Poorly Graded SAND w/ Silt & Gravel (Recycled Material-AC Grindings)			
Source of Cement Used:	Basalite			
Type of Cement Used:	Type II-V			
Designed Moisture Content, %:	8.4			
Designed Dry Density, pcf:	128.1			
Designed Cement Content, %:	6.0			
Diameter, in:	5.99			
Height, in:	12.19			
Cross Sectional Area, in^2:	28.19			
Height to Diameter Ratio:	2.0			
As Remolded Moisture Content, %:	10.1			
As Remolded Dry Density, pcf:	125.9			
At Test Moisture Content, %:	8.0			
At Test Dry Density, pcf:	128.3			
At Test Degree Of Saturation, %:	68.8%			
Age of Specimen, Days:	7			
Curing Temperature, °F:	69.0			
Curing Humidity, %:	96			
Max Load, lb:	13970			
Compressive Strength, psi:	495			
Remarks:	Water exuded out of the sample during remolding resulting in an at test moisture content lower than targeted.			

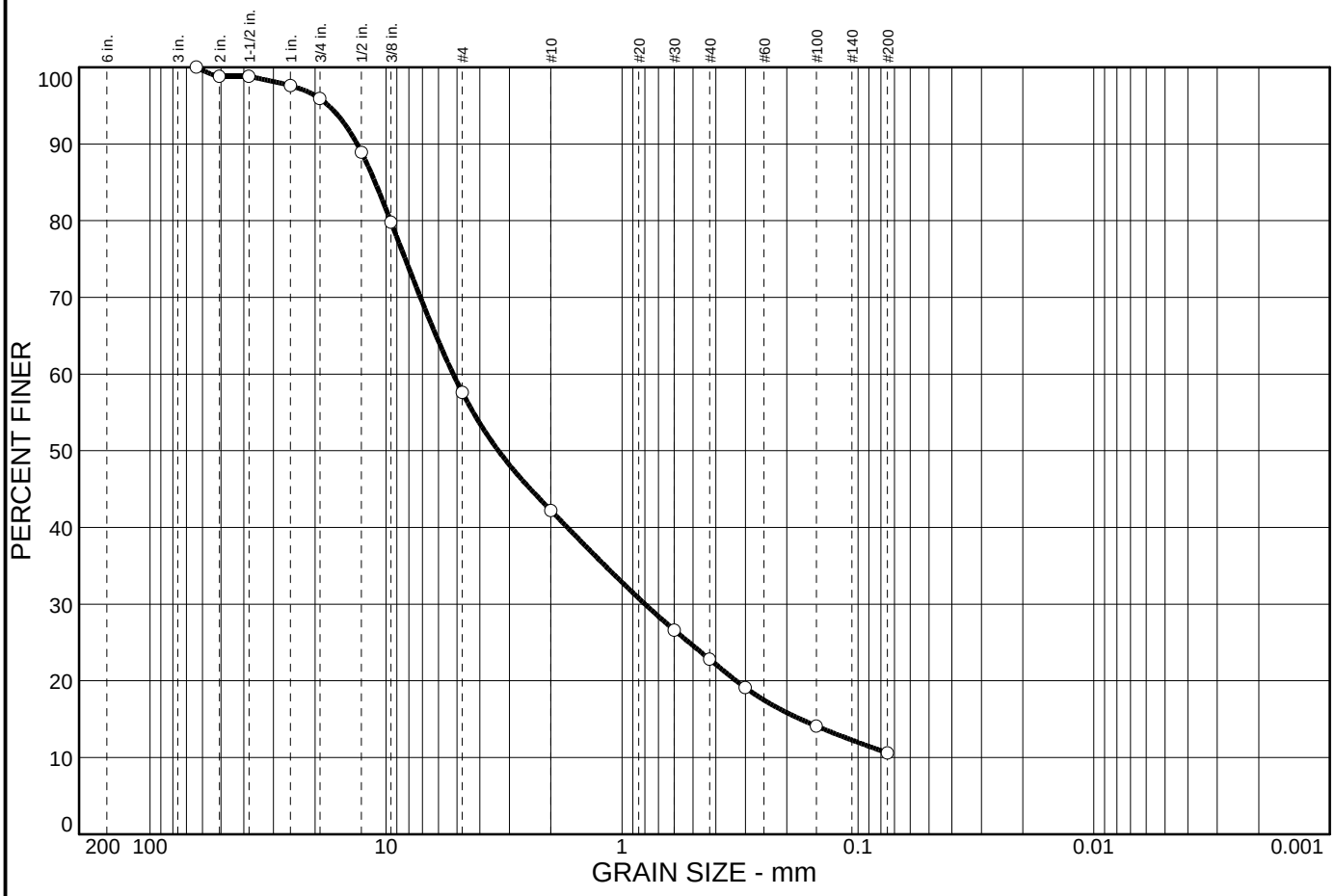
Additional water was added to the sample equal to 30% of the weight of cement to ensure hydration. The as remolded moisture content and dry density reported assume that no hydration has occured. The samples were not soaked prior to testing.

Corrosivity Tests Summary

CTL # 095-029 **Date:** 5/2/2014 **Tested By:** PJ **Checked:** PJ
Client: CH2M Hill **Project:** 750 High Street **Proj. No:** 468396.10.06.03
Remarks:

Sample Location or ID			Resistivity @ 15.5 °C (Ohm-cm)			Chloride	Sulfate		pH	ORP (Redox)		Sulfide	Moisture	Soil Visual Description
			As Rec.	Min	Sat.	mg/kg	mg/kg	%				Qualitative	At Test	
						Dry Wt.	Dry Wt.	Dry Wt.		E_H (mv)	At Test	by Lead	%	
Boring	Sample, No.	Depth, ft.	ASTM G57	Cal 643	ASTM G57	ASTM D4327	ASTM D4327	ASTM D4327	ASTM G51	ASTM G200	Temp °C	Acetate Paper	ASTM D2216	
TP-1	-	0-0.7	-	-	-	-	426	0.0426	-	-	-	-	1.0	Dark Bown Poorly Graded SAND w/ Silt & Gravel (Recycled Material-AC Grindings)

Particle Size Distribution Report



	% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY	USCS	AASHTO	PL	LL
○		42.4	47.0	10.6		SP-SM		20	22

SIEVE inches size	PERCENT FINER ○		
2.5	100.0		
2	98.8		
1.5"	98.8		
1"	97.6		
3/4"	95.9		
1/2"	88.9		
3/8"	79.8		
	GRAIN SIZE		
D_{60}	5.19		
D_{30}	0.799		
D_{10}			
	COEFFICIENTS		
C_c			
C_u			

SIEVE number size	PERCENT FINER ○		
#4	57.6		
#10	42.2		
#30	26.6		
#40	22.8		
#50	19.1		
#100	14.1		
#200	10.6		

SOIL DESCRIPTION

○ Dark Brown Poorly Graded SAND w/ Silt & Gravel (Recycled Material-AC Grindings)

REMARKS:

○

○ Source: TP-1 Elev./Depth: 0-0.7'

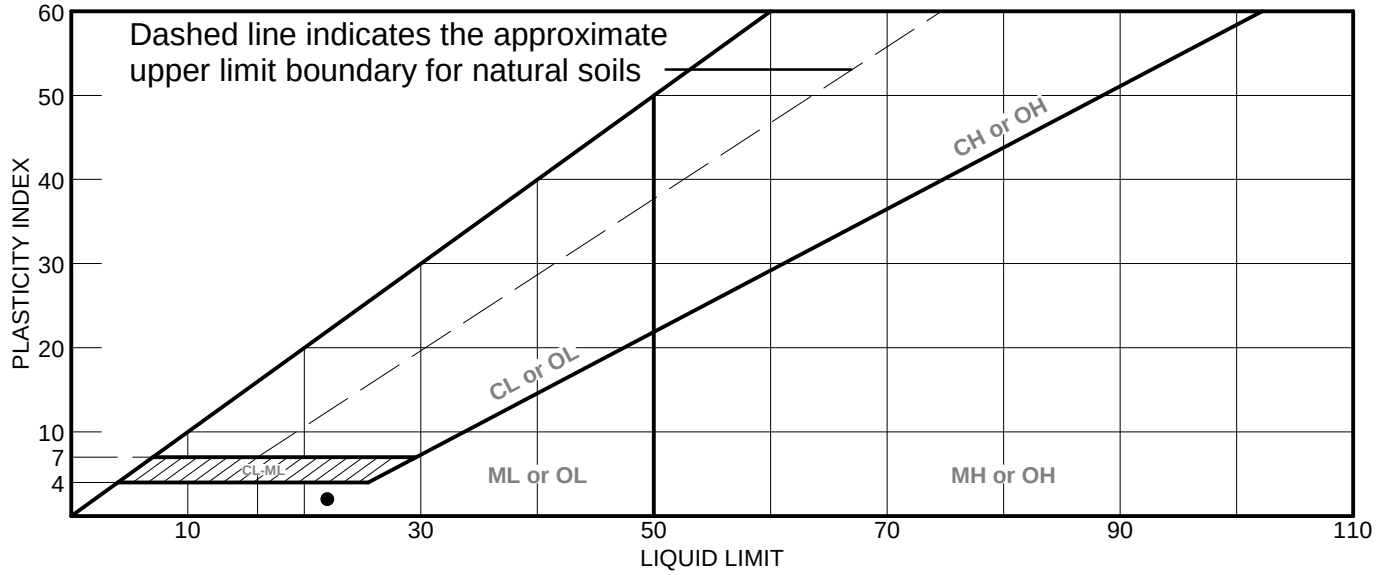
COOPER TESTING LABORATORY

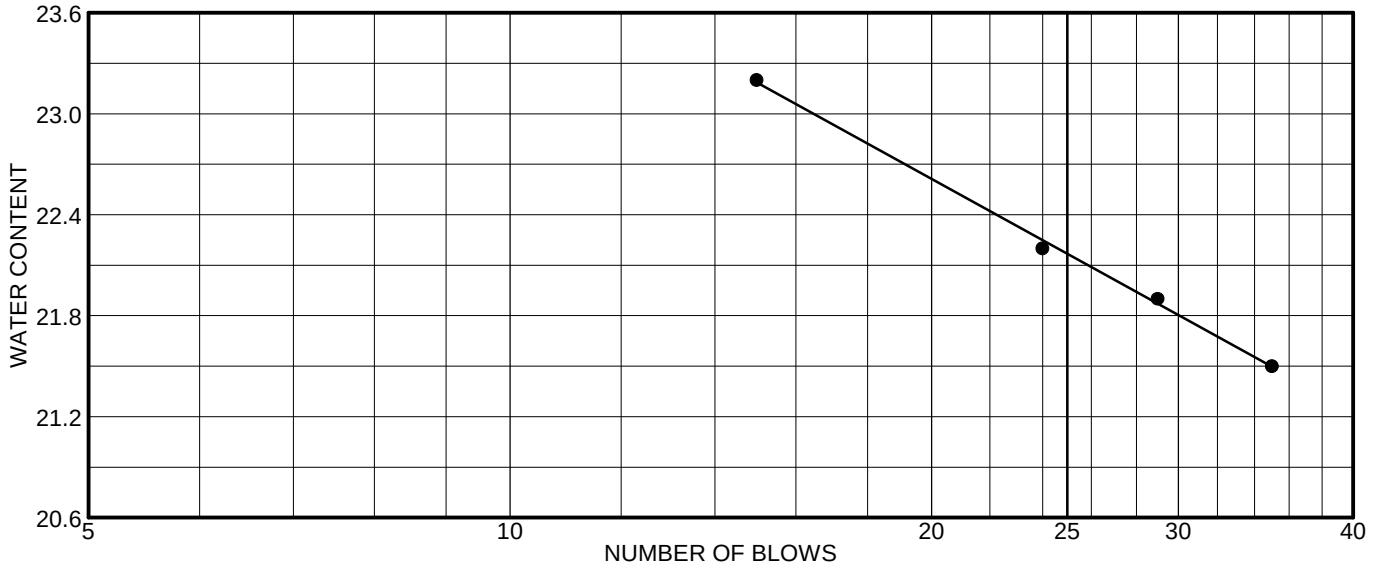
Client: CH2M Hill

Project: 750 High Street - 468396.10.06.03

Project No.: 095-029 Figure

LIQUID AND PLASTIC LIMITS TEST REPORT





	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Dark Brown Poorly Graded SAND w/ Silt & Gravel (Recycled Material-AC Grindings)	22	20	2	22.8	10.6	SP-SM

Project No. 095-029 **Client:** CH2M Hill

Project: 750 High Street - 468396.10.06.03

● **Source:** TP-1 **Elev./Depth:** 0-0.7'

Remarks:

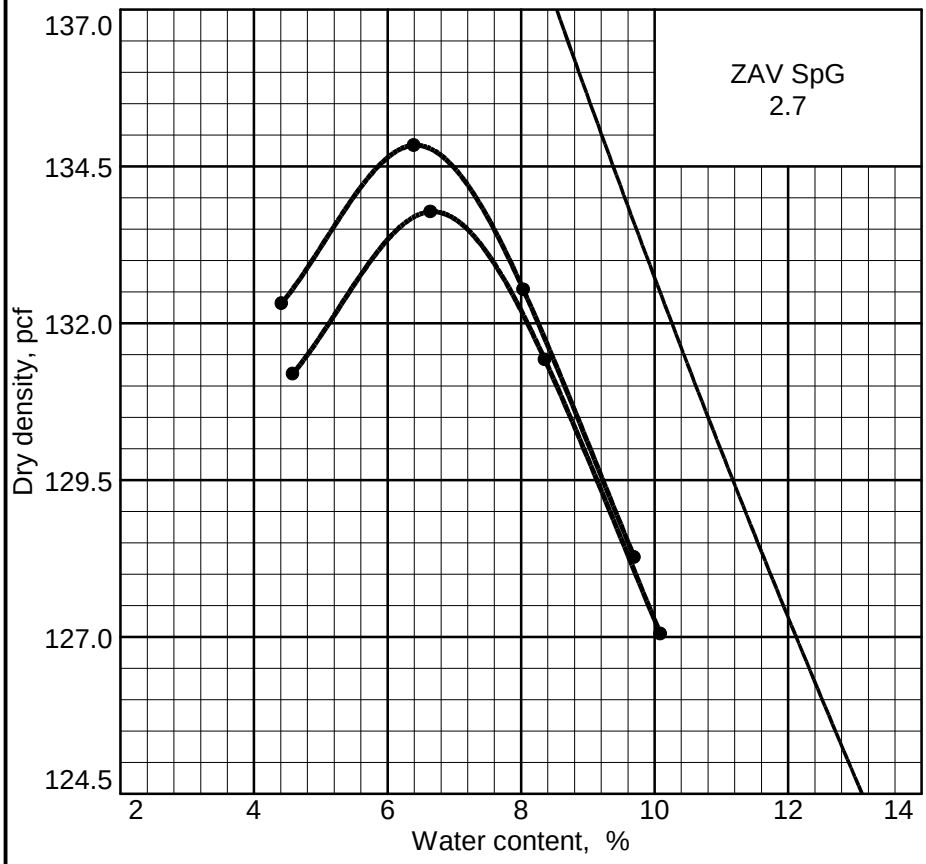
●

LIQUID AND PLASTIC LIMITS TEST REPORT

COOPER TESTING LABORATORY

Figure

COMPACTION TEST REPORT



Curve No.

Test Specification:
ASTM D 1557-00 Method C Modified
Oversize correction applied to each point

Hammer Wt.: 10 lb.
Hammer Drop: 18 in.
Number of Layers: five
Blows per Layer: 56
Mold Size: .075 cu.ft.

Test Performed on Material Passing 3/4 in. **Sieve**

Soil Data

NM _____ **Sp.G.** 2.7
LL 22 **PI** 2
%>3/4 in. 4.1 **%<#200** 10.6
USCS SP-SM **AASHTO** _____

TESTING DATA

	1	2	3	4	5	6
WM + WS	16.75	16.73	16.34	16.54		
WM	6.05	6.05	6.05	6.05		
WW + T #1	1240.90	1133.10	1089.70	1329.20		
WD + T #1	1184.00	1068.60	1055.00	1237.90		
TARE #1	327.50	296.40	297.00	332.60		
WW + T #2						
WD + T #2						
TARE #2						
MOISTURE	6.4	8.0	4.4	9.7		
DRY DENSITY	134.8	132.5	132.3	128.3		

ROCK CORRECTED TEST RESULTS	UNCORRECTED	Material Description
Maximum dry density = 134.8 pcf	133.8 pcf	Dark Brown Poorly Graded SAND w/ Silt & Gravel (Recycled Material-AC Grindings)(treated w/ 6% Cement)
Optimum moisture = 6.4 %	6.7 %	

Project No. 095-029 **Client:** CH2M Hill
Project: 750 High Street - 468396.10.06.03

● **Source:** TP-1 **Elev./Depth:** 0-0.7'

Remarks:

COMPACTION TEST REPORT

COOPER TESTING LABORATORY

Figure