CES INC Engineers ◆ Environmental Scientists ◆ Surveyors

April 27, 2015

Mr. Nick Hodgkins
Maine Department of Environmental Protection
17 State House Station
Augusta, ME 04333-0017
nick.hodgkins@maine.gov

Re: Remediation Bench-Scale Test Summary | GAC Chemical | 34 Kidder Point Road, Searsport | Voluntary Response Action Program (VRAP)

Dear Mr. Hodgkins:

GAC Chemical (GAC) has completed a remediation bench-scale test (pilot test) requested by the Maine Department of Environmental Protection's (MDEP's) in a letter dated December 16, 2014, and attached memo dated December 10, 2014, that contained comments on the Investigation, Remedial Work Plan, and Public Communications Plan submitted as part of GAC's participation in VRAP.

On January 22, 2015 CES, on behalf of GAC Chemical, conducted two controlled pilot tests within GAC's laboratories utilizing soil and groundwater from the area of interest. The results of the two pilot tests indicated that the proposed remediation, including the removal of visible sulfur to the extent practicable and in-situ liming, will neutralize the low pH groundwater over time. The pilot test also showed that filtration of the neutralized groundwater will minimize staining. Natural filtration of the groundwater through soil should aid in this effort. Additionally GAC proposes to install a filter fabric at the toe of the slope stabilization to improve filtration. Field observations of the intertidal area, including the presence/absence of staining, will be documented as part of the proposed semi-annual environmental monitoring program.

Attached please find the pilot test procedures, photo log, and a pilot test summary.

GAC anticipates completing the proposed remediation and stabilization activities at their facility during 2015. In accordance with GAC's VRAP Public Communication Plan, the Town Manager will be notified prior to commencement of the work. We look forward to continued discussions with you regarding the pilot test findings and the proposed remediation once you have had an opportunity to review the documents provided.

Sincerely,
CES, Inc.

Andrea Dickinson, EI
Engineer

Denis St. Peter, PE
President

John Pond, Senior VP/Senior PM
Environmental Division Director

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Enc.

MDEP| 04.27.15 | 10060.007

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REMEDIATION DEMONSTRATION TEST
VOLUNTARY RESPONSE ACTION PROGRAM
34 KIDDER POINT ROAD
SEARSPORT, MAINE

As recommended by the Maine Department of Environmental Protection (MDEP), GAC Chemical (GAC) will conduct a remediation demonstration test (pilot test) prior to completing the full scale remediation effort as part of their participation in the Voluntary Response Action Program (VRAP). The proposed remediation will involve the removal of visible sulfur to the extent practicable and in-situ treatment (i.e. liming). This approach is anticipated to neutralize the low pH soil and groundwater over time (CES, 2014).

To ensure that the proposed remediation will have the desired effect with minimal impacts to the intertidal area, GAC will conduct a controlled pilot test within their laboratories utilizing soil and groundwater from the area of interest. The pilot test will seek to replicate the conditions within the area of interest and the proposed remediation. The steps for the pilot test are detailed below.

STEPS

1. Dig with hand tools to soil layer below sulfur. Test pH using deionized water to confirm representative level for pilot test (pH≤4).

2. Place soil in two 3 gallon plastic containers around slotted PVC and tubing to a level of ¾ full in each container. Label the containers as Pilot Test #1 and Pilot Test #2.

3. Place alkaline product as specified in remediation plan on top of soil.

4. Pump groundwater (low flow peristaltic pump) from representative well (2<pH≤4) directly into soil within container to minimize exposure to ambient air until ½ full.

5. Pump groundwater (low flow peristaltic pump) from representative well (2<pH≤4) and utilize an in-line 10 micron filter if turbidity ≥25 NTU. Collect a control sample exposed to ambient air (A) and document visual observations and the field parameters of pH, DO, turbidity, specific conductance, temperature, and salinity. Leave sample A exposed to ambient air and store under cover in a heated space (T≥40°).

6. Pump groundwater (low flow peristaltic pump) from representative well (2<pH≤4) and utilize an in-line 10 micron filter if turbidity ≥25 NTU. Collect a control sample minimizing exposure to ambient air (B) to the extent possible. Using a flow through cell document visual observations and the field parameters of pH, DO, turbidity, specific conductance, temperature, and salinity.

7. Pour two liters of deionized (DI) water (pH≈neutral) on top of alkaline material and soil to simulate 1" rain event.

8. Let stabilize for 24 hours under cover in heated space (T≥40°).

9. After 24 hours, sample pH from slotted PVC using peristaltic pump. Continue to sample for pH every 24 hours until the pH≥6. Sample pH from control sample A and document visual observations every 24 hours.

10. Once the pH≥6, sample from slotted PVC using peristaltic pump, and utilize an in-line 10 micron filter if turbidity ≥25 NTU. Collect a treated sample exposed to ambient air (C) and document visual observations and the field parameters of pH, DO, turbidity, specific conductance, temperature, and salinity. Leave sample C exposed to ambient air and store under cover in a heated space (T≥40°).

11. Once the pH≥6 from the treatment system, sample from slotted PVC using peristaltic pump and utilize an in-line 10 micron filter if turbidity ≥25 NTU. Collect a treated sample minimizing exposure to ambient air (D) to the extent possible. Using a flow through cell document visual observations and the field parameters of pH, DO, turbidity, specific conductance, temperature, and salinity.

12. Continue to sample control sample A and treated sample C for pH every 24 hours and document visual observations.

13. In a third 3 gallon plastic container place only alkaline product as specified in the remediation plan. Label the container as Pilot Test #3. Pump groundwater from representative well directly over alkaline product and collect sample (E) from a hole in the bottom of the plastic container.

Based on the pH of the discharge, the alkaline product used or the proposed application rate may be adjusted to ensure the full scale implementation of the remediation is effective.

GAC CHEMICAL
VRAP PILOT TEST

Photo No. 1

Photo Date:
January 22, 2015

Site Location:
34 Kidder Point Road
Searsport, Maine

Description:
Pilot Test #1 setup with a three gallon plastic bucket, slotted PVC, and polyethylene tubing.

Photo By: AMD

Photo No. 2

Photo Date:
January 22, 2015

Site Location:
34 Kidder Point Road
Searsport, Maine

Description:
Pilot Test #1 filled ¾ full with representative soil from Site.

Photo By: AMD

Photo No. 3

Photo Date:
January 22, 2015

Site Location:
34 Kidder Point Road
Searsport, Maine

Description:
Pilot Test #1 with approximately three inches of crushed limestone placed over the representative soil layer.

Photo By: AMD

Photo No. 4

Photo Date:
January 22, 2015

Site Location:
34 Kidder Point Road
Searsport, Maine

Description:
Completed setup for Pilot Test #1 with approximately five inches of soil and three inches of crushed limestone.

Photo By: AMD

Photo No. 5

Photo Date:
January 22, 2015

Site Location:
34 Kidder Point Road
Searsport, Maine

Description:
Pumping groundwater from PZ-104 into Pilot Test #1 using a peristaltic pump.

Photo By: AMD

Photo No. 6

Photo Date:
January 22, 2015

Site Location:
34 Kidder Point Road
Searsport, Maine

Description:
Pilot Test #1 with approximately two inches of groundwater from PZ-104.

Photo By: AMD

Photo No. 7

Photo Date:
January 22, 2015

Site Location:
34 Kidder Point Road
Searsport, Maine

Description:
Simulating 1" rain event in the GAC Chemical lab using two liters of deionized water.

Photo By: AMD

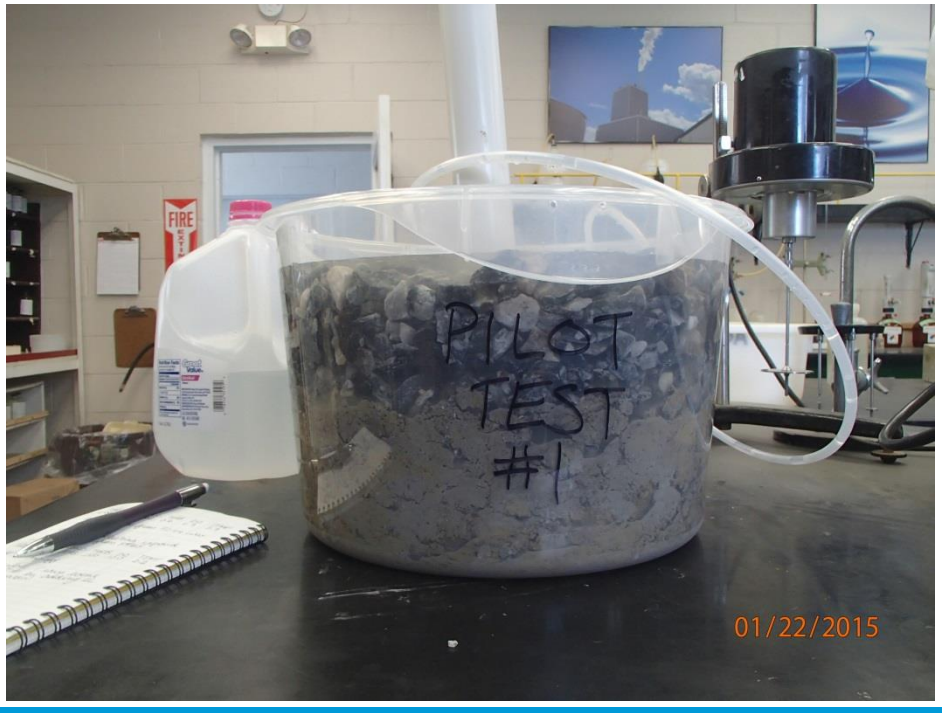

Photo No. 8

Photo Date:
January 22, 2015

Site Location:
34 Kidder Point Road
Searsport, Maine

Description:
Pilot Test #1 with representative soil, crushed limestone, representative groundwater from PZ-104, and deionized water.

Photo By: AMD

Photo No. 9

Photo Date:
January 22, 2015

Site Location:
34 Kidder Point Road
Searsport, Maine

Description:
Pilot Test #2 setup complete with representative soil, crushed limestone, and approximately 1.5" of groundwater from PZ-104.

Photo By: AMD

Photo No. 10

Photo Date:
January 22, 2015

Site Location:
34 Kidder Point Road
Searsport, Maine

Description:
Pilot Test #3 with approximately four to five inches of crushed limestone.

Photo By: AMD

Photo No. 11

Photo Date:
January 22, 2015

Site Location:
34 Kidder Point Road
Searsport, Maine

Description:
Pilot Test #3 with groundwater from PZ-104 being pumped into the top of the crushed limestone.

Photo By: AMD

Photo No. 12

Photo Date:
January 22, 2015

Site Location:
34 Kidder Point Road
Searsport, Maine

Description:
Sample 3E immediately after being collected from Pilot Test #3.

Photo By: AMD

Photo No. 13

Photo Date:
January 22, 2015

Site Location:
34 Kidder Point Road
Searsport, Maine

Description:
Pilot Test #1, Pilot Test #2, Sample 1A, Sample 2A, and Sample 3E left in lab to stabilize and to simulate exposure to ambient air.

Photo By: AMD

Photo No. 14

Photo Date:
January 26, 2015

Site Location:
34 Kidder Point Road
Searsport, Maine

Description:
Pilot Test #1 and Pilot Test #2 after stabilization in lab. Sample 1A, Sample 2A, and Sample 3E after approximately 96 hours of exposure to ambient air.

Photo By: AMD

Photo No. 15

Photo Date:
January 26, 2015

Site Location:
34 Kidder Point Road
Searsport, Maine

Description:
Sample 3E after approximately 96 hours of exposure to ambient air. Sparging with oxygen in the CES lab. Dissolved oxygen stabilized at 6 mg/L.

Photo By: AMD

Photo No. 16

Photo Date:
January 26, 2015

Site Location:
34 Kidder Point Road
Searsport, Maine

Description:
Sample 3E after filtration through 0.45 micron filter.

Photo By: AMD

Photo No. 17

Photo Date:
January 28, 2015

Site Location:
34 Kidder Point Road
Searsport, Maine

Description:
Sample 1C and Sample 2C after approximately 48 hours of exposure to ambient air. Sample 3E after approximately 144 hours of exposure to ambient air and filtered through a 0.45 micron filter.

Photo By: AMD

PILOT TEST SUMMARY
VOLUNTARY RESPONSE ACTION PROGRAM
34 KIDDER POINT ROAD, SEARSPORT, MAINE

Pilot Test #1	Initial Groundwater pH = 2.59	Crushed Limestone over soil - 1" rain	Water after 24 hours pH = 5.99	Water after 96 hours pH = 6.10
Pilot Test #2	Initial Groundwater pH = 2.62	Crushed Limestone over soil - 1" rain	Water after 24 hours pH = 6.18	Water after 96 hours pH = 6.24