



HALEY & ALDRICH, INC.
100 Corporate Place
Suite 105
Rocky Hill, CT 06067
860.282.9400

August 27, 2020
File No. 131638-010

Connecticut Department of Energy and Environmental Protection
Remediation Division
Bureau of Water Protection and Land Reuse
79 Elm Street
Hartford, Connecticut 06106-5127

Attention: John Duff, Environmental Analyst

Subject: Chapel Street Former Manufactured Gas Plant Site
Mill River Interim Remedial Measure (IRM)
347 Chapel Street
New Haven, Connecticut 06511

Dear Mr. Duff:

On behalf of The Southern Connecticut Gas Company (SCG), Haley & Aldrich, Inc. (Haley & Aldrich) is pleased to present this summary of a proposed Interim Remedial Measure (IRM) in the Mill River at the Chapel Street Former Manufactured Gas Plant (MGP) Site in New Haven, Connecticut for your review and approval.

REGULATORY SETTING

A Consent Order between SCG and the Connecticut Department of Energy and Environmental Protection (CT DEEP) was executed on January 5, 2018 (SRD-231, referred to herein as the Consent Order) which requires SCG to investigate and remediate the Chapel Street Former Manufactured Gas Plant (MGP) Site. The Consent Order incorporates by reference the CT DEEP-approved "Investigation and Remediation Work Scope and Schedule, Chapel Street Former MGP Site" (Haley & Aldrich, 2017) and the approved Scope of Study (Haley & Aldrich, 2018, revised 2019).

On March 31, 2020, Haley & Aldrich, on behalf of SCG, submitted the OU-A Investigation Report (Haley & Aldrich, 2020) in accordance with Section B.2.e(1) of the Consent Order summarizing the results of Site Investigation work performed on the waterfront portion of the Site and Mill River. Investigation of the upland portion of the Site is ongoing and the upland investigation report will be submitted in the second quarter of 2022, per the schedule in the Scope of Study. Following CT DEEP review and approval of the OU-A and Upland Investigation reports, SCG will submit project deliverables, such as an alternatives analysis followed by a Remedial Action Plan (RAP), proposing a remedial approach for site-related impacts.

The focus of the IRM proposed herein is intended to enhance the current controls in place to reduce and control intermittent sheen related to the Site that appears along the southeastern & northeastern shoreline until a site-wide remedial action plan is approved. We are seeking CT DEEP approval for the IRM under the September 2017 approved Scope and Schedule, which is also approved under Consent Order, Section B.2.a.

SITE SETTING

The Site is a 14.6-acre former manufactured gas plant (MGP) that operated for approximately 100 years supplying the surrounding residential and industrial communities with manufactured gas for lighting and heat. The former MGP Site is comprised of two parcels (347 Chapel Street and 259 East Street) located east of downtown New Haven, Connecticut, as depicted on the Site Locus (Figure 1). The Site layout is depicted on Figure 2.

The 347 Chapel Street property is bounded by Chapel Street to the south, the Mill River to the east and north, and a north/south railroad right-of-way to the west. The eastern and northeastern Site boundary is a retaining wall, comprised primarily of stone blocks (large granite and sandstone blocks) and concrete separating the 347 Chapel Street property from the Mill River. The elevation of the top of the retaining wall is approximately 7.5 to 8.5 feet (ft) above mean sea level (NGVD 1929), which is approximately 2 to 3 ft above the typical high tide level in the Mill River.

The 259 East Street property is located west of the railroad right-of-way, north of Chapel Street, east of East Street, and south of Ives Place.

Coal tar residual and MGP-related sheen were observed in the Mill River in 2008 and 2014 as a result of storm line damage. SCG worked with CT DEEP emergency response personnel and the Coast Guard to contain, monitor and identify the source. Since the 2008 event, booms have been in place on the eastern side of the Site within the Mill River. In the summer of 2018 the boom system was expanded to contain intermittent sheen observed on the northern shoreline of the Site. The boom system is maintained by one of SCG's licensed contractors. In November 2019 and June and July 2020, on behalf of SCG, Haley & Aldrich and True Blue Environmental Services removed the top portion (i.e., above the sediment) of approximately 80 wood piles along the shoreline, remnants of a former wharf in various states of decay, to enhance boom deployment and effectiveness.

Sheen occurs intermittently on the water surface of the Mill River along the northern and eastern site boundaries, where MGP residuals have been identified in Mill River sediments. The predominant sheen formation mechanism is the release of hydrophobic compounds from the sediments at low tide. Sheen formation activity is more pronounced during warmer weather (i.e., July through September).

IRM OBJECTIVES

Since implementation of the overall Site remedy required through the Consent Order will not occur for several years, SCG is seeking to implement an IRM to address the sheen in the short term while the

Upland characterization work is completed (including supplemental investigations, as needed) and a plan for Site-wide remediation is developed and approved.

The IRM objectives are as follows:

- Reduce the amount of MGP-related sheen that occurs intermittently in the Mill River along the shoreline;
- Increase the effectiveness of the existing sorbent booms by decreasing the amount of sheen requiring containment; and,
- Provide a temporary control solution until a remedial design can be implemented.

CONCEPTUAL DESIGN

The IRM solution would be a **temporary** placement of sorbent materials (i.e., a reactive cap) on the river bottom to intercept contaminants prior to the generation of a sheen. The cap would be placed in areas of the shoreline that have been previously investigated and will likely require remedial action as part of the overall Site remedy. Data collected to date is sufficient to design and implement the proposed IRM and we propose that the IRM remain in place until performance of the site remedy.

Conceptual design drawings are enclosed with this submittal. We anticipate that the current conceptual design will be updated through the addition of technical details as well as changes based on feedback from Regulatory authorities during the permitting process. We currently anticipate that the IRM will consist of the following:

1. Removal of non-sediment surface material and debris that has accumulated in the proposed sediment cap placement area to the extent practicable. Removal of surface debris is necessary to provide a level surface for placement of the IRM, as practicable.
2. Placement of a geotextile fabric, permeable to gas and water flow, on top of the sediment surface to provide strength to the soft sediments to help support the capping materials.
3. Placement of a "leveling layer" of sand and a sorbent material, such as Aquagate + Organoclay® (a sorbent product manufactured by [Aquablok, Ltd.](#)) or similar material. The leveling layer is necessary to create a generally smooth surface for placement of the remaining cap layers. The purpose of the sorbent materials in the leveling layer is to adsorb sheen from the sediment surface and create confining pressure to contain the sheen. The composition of the leveling layer will vary across two IRM areas, focusing adsorptive materials in areas of active sheen generation to maximize adsorption. The thickness of the leveling layer will also vary to accommodate uneven surfaces and debris (including wood pile stubs) that cannot be removed. The leveling layer will increase in thickness at the base of the seawall at select locations to provide filtration of groundwater seepage at the base of the seawall.
4. Placement of a Cetco® Reactive Core Mat® (RCM; manufactured by [Cetco, Division of Minerals Technologies, Inc.](#)) or similar on top of the leveling layer at the two IRM locations. The RCM consists of two permeable geotextiles with an inner core of sorptive material; in this case, Organoclay® would be the sorptive material used.

5. Placement of materials on top of the RCM to act as a protective layer, prevent scouring and washout, and to hold the materials in place.

The debris removal and materials placement activities will be performed by workers and/or divers in the River, assisted by a piece or pieces of equipment (e.g., an excavator) positioned on the upland side of the seawall. We do not currently anticipate using barge-mounted equipment to install the IRM.

These types of reactive caps, both full-scale remedies and interim measures, have been demonstrated to be effective at other similar sites. Haley & Aldrich has designed and installed similar IRMs and full-scale remedies at several MGP Sites, achieving the objective of sheen containment. Provided with this submittal is a February 9, 2011 presentation to the Battelle Contaminated Sediments Conference summarizing the installation of an RCM IRM in the St. Mary's River in Fort Wayne, Indiana. Similar to the Chapel Street MGP Site, coal tar residuals were present in St. Mary's River sediments, which generated sheen at times of low water. An Organoclay® RCM was installed as an IRM in the St. Mary's River; the IRM provided effective sheen containment for approximately eight years until the final remedy was installed. Interim sampling of the RCM sorbent materials indicated that substantial sorptive capacity remained, suggesting it could have provided effective sheen containment over a longer period of time.

Unlike other environmental remediation applications such as groundwater treatment systems or flow-through permeable reactive barriers, in which calculations can be performed to predict contaminant loading over time, straight-forward methods do not exist to predict loading for a reactive cap system to address sheen. However, based on previous Haley & Aldrich experience installing and monitoring similar IRMs in river environments at other MGP sites and on what we currently know about the Mill River sediments, it is our professional opinion that the amount of sorbent material included in the proposed IRM will provide adequate capacity to address sheen for the proposed period of up to ten years. Fundamentally, sheen itself is a very thin layer on the water surface, and contains very little actual contaminant mass. Sheen activity is currently intermittent, occurring only at certain times (i.e., low tides during warmer months). Therefore, contaminant loading is expected to be relatively low. The placement of bulk organoclay (via Aquagate + Organoclay® or a similar product), which provides significant sorptive capacity, underneath the continuous RCM layer provides two layers of sorption and sheen sequestration. Additionally, the increased confining pressure provided by the cap is expected to decrease sheen generation activity, reducing the contaminant loading.

The proposed IRM is anticipated to mitigate sheen activity in areas where it is installed, as shown in the attached conceptual design documents. The proposed placement area encompasses the majority of the observed sheen formation; however, due to the nature of an interim measure and the limitations discussed below, the IRM cannot cover all sediments that contain shallow MGP impacts (and therefore may release sheen). Therefore, while we anticipate that the IRM will significantly reduce sheen activity, it is not expected to eliminate sheen altogether and SCG is prepared to continue to deploy and maintain the containment booms as needed to contain sheen that does form on the Mill River after the IRM is installed.

DESIGN CONSTRAINTS

As part of the conceptual design process, SCG and Haley & Aldrich consulted with the USACE Regulatory and Navigation Divisions and the CT DEEP Land and Water Resources Division (LWRD) to understand regulatory constraints for this project. These entities expressed support for the project and provided an overview of their requirements for the project, in order to comply with existing regulations. The following constraints were identified and have been considered during development of the conceptual design:

- Fill material cannot be placed within the USACE navigable channel;
- The amount of fill placed in the Mill River should be minimized (USACE has not yet provided a maximum allowable fill amount); and,
- Sheen generated during the work will need to be contained.

PERMITTING

Haley & Aldrich, on behalf of SCG, will apply for the following regulatory reviews and permits for the work:

- CT DEEP National Diversity Data Base review;
- CT DEEP General Permit for Coastal Maintenance (DEEP-OLISP-GP-2015-02);
- USACE Navigation Division Section 408 review; and,
- USACE Regulatory Division Section 10 and Section 404 Connecticut General Permit (GP) 13.

We currently anticipate that Section 401 Water Quality Certification will be waived under USACE GP 13.

ANTICIPATED SCHEDULE

We have attached to this letter our anticipated schedule for the proposed IRM. Please note that we have assumed expedited review periods by CT DEEP and USACE, because we have already presented and discussed the project details with the appropriate individuals and incorporated preliminary comments into the current design documents. If these agencies require longer periods for review, the project schedule will be updated and provided as necessary.

MONITORING

SCG will conduct regular monitoring of the completed IRM on a monthly basis. At a minimum, visual monitoring will be conducted by Haley & Aldrich at low tide times on a monthly basis to check for sheen generation activity and assess containment needs. The frequency of monitoring may be adjusted based on field observations and seasonal changes in sheen activity. In addition to the IRM monitoring by Haley & Aldrich, SCG will continue to deploy and maintain the containment and sorbent boom system to

contain shewn as needed as noted in the Mill River Pollution Prevention Plan. SCG's licensed boom maintenance contractor will also visually inspect the IRM area to monitor for unforeseen situations.

REQUEST FOR APPROVAL

SCG and Haley & Aldrich hereby request written approval of the IRM proposed herein by the CT DEEP Remediation Division under Consent Order SRD-231. This Approval will be provided to the CT DEEP LWRD and USACE in support of project permitting requirements.

Sincerely yours,
HALEY & ALDRICH, INC.



Sean M. Carroll, LEP
Program Manager

Enclosures

c: The Southern Connecticut Gas Company; Attn: Shawn Crosbie

E:\Remediation Projects\SCG Chapel Street\IRM\CTDEEP\2020-0825-HAI-Chapel St-Mill River IRM Memo-F.CLEAN.docx