MINUTES

INSTALLATION RESTORATION PROGRAM

RESTORATION ADVISORY BOARD MEETING

ABERDEEN PROVING GROUND, MARYLAND

THURSDAY, 28 APRIL 2022

7:25 p.m. – 8:10 p.m.

VIRTUAL MEETING VIA MICROSOFT TEAMS

RESTORATION ADVISORY BOARD MEMBERS PRESENT AT THIS MEETING:

Mr. Russell Ashley (Maryland Department of the Environment [MDE])
Mr. Arlen Crabb
Ms. Andrea Barbieri (U.S. Environmental Protection Agency [USEPA])
Ms. Christine Grochowski (Community Co-Chair)
Ms. Linda Gustafson (MDE)
Ms. Sarina Howell (USEPA)
Mr. Rurik Loder (U.S. Army Co-Chair)

RESTORATION ADVISORY BOARD MEMBERS NOT PRESENT AT THIS MEETING:

Mr. Jim Billingslea (Community Member)
Mr. Forney Buchanan (Harford County Division of Emergency Operations)
Mr. Rich Gordon (Harford County Health Department)
Mr. Ira May (MDE)
Mr. John Letke (Community Member)
Ms. Ruth Ann Young (Community Member)

OTHER ATTENDEES:

Community Members: Mr. Isaac Fruchey
Environmental Chemical Corporation (ECC): Mr. Rob Wasserman, Ms. Jennifer Schaefer, Ms. Tara Weeks, Ms. Sarah Barr
Sovereign Consulting, Inc. (Sovereign): Mr. Jorge Montoy, Mr. Tom DeReamer
U.S. Army Aberdeen Proving Ground (APG) Directorate of Public Works – Environmental Division (DPW-ED): Mr. Paul Harvey, Mr. Lee Ackerman, Ms. Anna-Lisa Marcum
U.S. Army Environmental Command (USAEC): Mr. Scott Weber

ENCLOSURES TO THESE MINUTES:

1. Agenda
2. Project Update and Lauderick Creek Presentation Materials

I. OPENING REMARKS AND ADMINISTRATIVE COMMENTS

At 7:00 p.m., Mr. Rurik Loder (Directorate of Public Works – Environmental Division [DPW-ED]), welcomed everyone to the meeting and explained that the first portion of the meeting would include the Proposed Plan (PP) Public Meeting for the Fort Hoyle, Cluster 19 Site in the Other Edgewood Areas Study Area.

The April 2022 U.S. Army Garrison Aberdeen Proving Ground (APG) Installation Restoration Program (IRP) Restoration Advisory Board (RAB) meeting was called to order by Mr. Loder (Army Co-Chair) at 7:25 p.m. on Thursday, 28 April 2022. Due to COVID pandemic restrictions, the meeting was held virtually via Microsoft Teams with options to join by computer or phone. All meeting attendees received an agenda (**Enclosure 1**) and presentation materials (**Enclosure 2**). Mr. Loder displayed the 2022 RAB schedule, noting that the April meeting will include an update on recent fieldwork at the Lauderick Creek Study Area Cluster 13. The results from recent sampling in the Bush River Study Area will be presented during the June 2022 RAB Meeting.

Mr. Loder announced that Ms. Anna-Lisa Marcum has been hired as the new Directorate of Public Works (DPW) Environmental Restoration Branch Chief. Mr. Loder introduced Ms. Marcum, and she expressed her delight to be returning to the APG Installation Restoration Program (IRP), noting that she used to work with Ms. Ruth Golding on the Other Edgewood Areas Study Area projects. The Aberdeen Area Military Munitions Response Program (MMRP) PP public meeting was held on 31 March 2022. The public comment period ran from 21 March through 20 April 2022. No comments were received from the public. The next step will be submittal of the Draft Record of Decision (ROD) to regulators. Mr. Loder reported that permanent Warning Signs have been installed along the Blossom Point shoreline to advise boaters to keep out and warn of potential of unexploded ordnance (UXO).

Mr. Loder stated that the Canal Creek Groundwater Treatment Plant (GWTP) is scheduled for a week-long shut-down at the end of May. One of the transformers for the Ultraviolet Oxidizer (UVOX) at the Old O-Field GWTP went up in smoke. Mr. Loder noted that a more detailed discussion of the transformer incident will be presented by Mr. Lee Ackerman (DPW-ED) after opening remarks. Mr. Loder stated that the last carbon treatment vessels out of the bank of five at the Perryman Treatment Plant is scheduled to be completed in May 2022. The changeout of the remaining six vessels will follow after completion of the first five.

Action Item Updates

Mr. Loder stated that, during the 27 January 2022 RAB Meeting, Mr. Arlen Crabb (RAB Member) requested a map of the Beach Point Shoreline Project. Mr. Loder displayed a map and schematics that were included in the permit for the Beach Point Shoreline Project. A Technical Impracticability (TI) Waiver for groundwater was previously issued for the site. The shoreline stabilization project was initiated due to shoreline erosion encroaching on the site, in close proximity to existing wells. Mr. Loder noted that the shoreline was divided into revetments so that the best shoreline stabilization approach could be implemented within each section. Mr. Loder displayed a chart showing the variety in size of stones being used at the separate revetments to maximize shoreline stability. Mr. Crabb thanked Mr. Loder for the information.

Old O-Field GWTP UVOX Transformer Failure

Mr. Ackerman explained that the Old O-Field GWTP uses a series of three UVOX reactors in conjunction with a hydrogen peroxide injection to breakdown volatile organic compounds (VOCs). The transformer failure occurred in the 42 kilovolt-ampere (KVA) transformer for Reactor #2, on the morning of Sunday, 6 March 2022. The system was immediately shutdown, pending evaluation. Photographs were shown of an operational transformer, as well as the failed transformer.

Mr. Ackerman reported that the system vendor (Denora) was on-site 9 March 2022 to inspect the transformer and determine a cause of the failure. However, the vendor was unable to determine the cause of the failure. The other transformers were tested and determined to be in working order. Mr. Ackerman stated that the system is safe and capable of running with only two of the three UVOX lamps on-line. A review of historical data determined that system is capable of meeting discharge criteria with only two lamps. Mr. Ackerman explained that there is 63% removal of VOCs after the 1st lamp; 53% removal of VOCs after the 2nd lamp; and 9.4% removal of VOCs after 3rd lamp. As shown, the majority of VOC removal occurs after the first and second lamps. Therefore, a decision was made to continuing operating with two of the three lamps until a new transformer is acquired. It has yet to be determined if the two-lamp process will remain going forward. The current influent characteristics are below original design criteria. After the influent passes through the UVOX system, it goes through a tertiary carbon treatment which easily removes any remaining VOCs post-UVOX.

Mr. Ackerman reported that the system was restarted (using two UVOX lamps) on 10 March 2022 with an increased sampling frequency. The sample results, to date, showed effective VOC removal with only two lamps operating. The replacement transformer has been ordered and is expected to be delivered in four to six weeks. At that time the damaged transformer will be replaced, but pending sampling results evaluation, the system may continue to operate with only two lamps. Switching to two lamps may increase carbon usage slightly but will significantly reduce electrical usage to run the UVOX lamps. In addition, the change would reduce downtime due to lamp replacement and maintenance.

Mr. Crabb asked how often the UVOX lamps have to be replaced, and how much does each lamp cost. Mr. Ackerman stated that the life expectancy is approximately 3,000 hours but depends on the operation. Mr. Loder stated that he will look into the price of a UVOX lamp and confirm the life expectancy.

II. LAUDERICK CREEK CLUSTER 13 SURFICIAL GROUNDWATER UPDATE

Mr. Loder introduced Mr. Jorge Montoy (Sovereign Consulting, Inc. [Sovereign]) to provide the update on the Cluster 13 surficial aquifer. Mr. Montoy stated that he will present results of the 2021 sitewide groundwater sampling event, which is the first sampling conducted at the site since the 2012 and 2013 Electrical Resistance Heating (ERH) pilot test in primary source area. The presentation will also include a discussion of the updated conceptual site model (CSM), and path forward for completing the Feasibility Study (FS).

Mr. Montoy reported that a Technical Memorandum discussing the sitewide groundwater sampling was submitted to regulators in September 2021. The groundwater gauging and sampling event was completed from October through November 2021. The well integrity assessment identified 18 wells that need redevelopment. The wells were redeveloped prior to sampling. Mr. Montoy reiterated that the sampling event was the first time the site wells were sampled since 2013, and included a total of 75 wells.

Mr. Montoy stated that the Draft Data Report presenting the field work completed, along with the updated CSM, was submitted to regulators for review in April 2022. The report includes updated groundwater elevation contours and contaminant of concern (COC) isocontour maps. In addition, a 3-dimensional (3D) model was developed to provide visual representation of the CSM and allow for assessment of the relationship between the VOC plume and site geology.

2021 Sampling Summary

Mr. Montoy reported that the sampling results indicated that, overall, 1,1,2,2-tetrachloroethane (TeCA) and trichloroethene (TCE) concentrations in the source areas decreased significantly since 2013. The plume to south of primary source area decreased most significantly. A decrease of 58% was observed from 2011

levels in the dissolved phase sitewide TeCA mass, as well as a 51% decrease in sitewide TCE mass. Sampling results did indicate some spreading of a diffuse plume to the east. This occurred due to groundwater likely flowing over the clay ridge eastward during high elevation events. This spreading of the plume may warrant installation of additional direct push technology (DPT) borings/wells to the east.

Mr. Montoy displayed maps showing the maximum TeCA concentrations in groundwater from 2010 through 2013 compared to TeCA maximum concentrations detected in groundwater during the 2021 sampling event. Mr. Montoy pointed out the plume area of greater than 5,000 micrograms per liter (µg/L) has shrunk considerably. Mr. Montoy also displayed maps showing maximum TCE concentrations in groundwater from 2010 through 2013 compared to TCE maximum concentrations detected in groundwater during the 2021 sampling event. Mr. Montoy noted that no TCE was detected above 5,000 µg/L during the 2021 event.

Mr. Crabb asked if the area was wooded. Mr. Montoy confirmed that the area is wooded, noting that site walks will be required prior to well installations to ensure the proposed well locations are acceptable. Mr. Loder agreed and pointed out the wooded area that historically used for National Guard training. Mr. Crabb asked if it is possible for the trees to absorb the TCE from the groundwater. Mr. Montoy stated no and explained that the groundwater aquifer is deep compared to the ground surface, with a very thin water bearing unit overlaying the clay unit. The clay unit is approximately 30 feet below ground surface.

Mr. Montoy reported that evidence of biodegradation was observed during the 2021 sampling, to include the presence of bacteria that degrade chloroethanes (*dehalobacter*) and chloroethenes (*dehalococcoides*). A decreased pH was detected in the area not buffered from the ERH pilot test. Anaerobic conditions were present and daughter products (dichloroethenes) were present but not accumulating. Vinyl chloride was not detected in any wells.

Conceptual Site Model

Mr. Montoy explained that the basal clay portion of the aquifer has features including a ridge east of the primary source area (with 2021 results showing impacted groundwater extending east of the ridge), and deeper channels present from the primary source area to the southeast. The sampling also identified thin lenses of silty clay throughout the sand primary water bearing zone. The dissolved-phase plume has reached its maximum possible extent. Groundwater discharges were observed to surface water after passing through organic silt/clay sediments.

Mr. Montoy reported that the ERH pilot test (conducted in 2012 and 2013 in the central primary source area) did not remove the mass expected or produce target VOC reductions one year post treatment but produced enhanced biodegradation for continued reduction. Hydrolysis converted TeCA to TCE and likely released VOCs from clay. Residual heat and pH buffering also helped release VOCs from the clay. Decreases in TeCA and TCE of over 95% were observed in the source area and to the south. The remaining VOCs are more diffuse and should be targeted via plume treatment methods. Enhanced biodegradation is promising in order to target the larger remaining plumes.

Mr. Montoy displayed a screen shot of the 3D visualization model developed to provide visualizations of the site geology and contaminant distribution. The model was developed to aid in decision-making.

Proposed Investigation

Mr. Montoy stated that a targeted investigation is proposed for the area east of clay ridge. The DPT borings will be used to determine where the aquifer is present and at what thickness. Based on results of the DPT borings, up to four monitoring wells will be installed and sampled to better delineate chlorinated VOC impacts.

Feasibility Study Presumptive Remedies

Mr. Montoy reported that remedies to be developed for inclusion in the FS will address current conditions in different plume areas. Enhanced biodegradation will likely be a major component of the remedy given remaining concentrations and success seen on site. The formulations and application methods would differ across plume areas. Consideration will also be given to pH buffering and heat application to drive degradation rates.

Path Forward

Mr. Montoy reiterated that the Draft Data Report was submitted to the regulators for review in April 2022. A regulatory alignment meeting discussing the results was held on the morning of 28 April 2022. Additional data collection is proposed for Summer 2022, with another regulatory alignment meeting following in late-Summer 2022. The Draft FS is anticipated to be complete in Fall 2022.

V. CLOSING REMARKS

Mr. Loder stated that he investigated the cost of the UVOX lamps for the Old O-Field GWTP. The lamps cost $1,000 per bulb, and the cost of a new transformer is slightly over $20,000.

Mr. Loder noted that he was recently assigned a 120-day detail to serve as Acting Chief for the DPW Environmental Division. A search is still ongoing for the position vacated by Mr. Jeff Aichroth upon his retirement. Mr. Loder explained that the June meeting will include an update on the recent Bush River Study Area groundwater sampling.

Mr. Crabb asked when the DPT effort is planned for the Cluster 13 Lauderick Creek Study Area. Mr. Loder stated that it will likely be planned for Summer, after the work plan is approved. Mr. Crabb suggested taking a field trip to the site. Mr. Loder agreed and noted that the trip could also include a visit to the Beach Point Shoreline project.

Mr. Loder displayed a photograph showing the warning signs installed at Blossom Point, as well as a photograph showing the installation of the poles on which the signs were attached. Mr. Loder asked if anyone had any further questions or concerns. No meeting attendees raised any questions or concerns.

Mr. Loder reiterated that the next APG IRP RAB Meeting will be held on Thursday, 23 June 2022, location to be determined based on COVID protocols, with the possibility of in-person and virtual options. The topic of discussion will be an update on field work as well as the Bush River Study Area groundwater sampling. At 8:10 p.m., after confirming that no one present had any further questions or comments, Mr. Loder adjourned the meeting.