290 Elwood Davis Road, Suite 340
Liverpool, New York 13088
315.453.9009

Memorandum

May 6, 2019

To: Laurie Scheuing, General Electric Company

From: Madison Bell-Rosof, Anchor QEA, LLC

cc: Bob Gibson, General Electric Company;
Jennifer Benaman, Jim Rhea, Mark LaRue, and Chris Yates, Anchor QEA, LLC

Re: Annual Summary Report for the 2018 Post-Construction Remnant Deposits Monitoring Program

Introduction

This technical memorandum has been prepared to satisfy the annual reporting requirements specified for the Post-Construction Remnant Deposits Monitoring Program (PCRDMP). The PCRDMP was developed in accordance with the 1990 remnant deposits Consent Decree (1990 Consent Decree) and was initiated in 1991 following completion of the containment of the remnant deposits in the fall of 1990. This annual monitoring program continued to be performed through 2018.

Background

Over approximately 30 years, ending in 1977, polychlorinated biphenyls (PCBs) were released into the Upper Hudson River at two General Electric Company (GE) capacitor manufacturing facilities in Fort Edward and Hudson Falls, New York (Figure 1). Many of the PCBs were contained in sediment deposited in the pool behind the former location of the Fort Edward Dam located at river mile 194.9 (Figure 1). Removal of the 100-year-old dam in 1973 by Niagara Mohawk Power Corporation (acquired by National Grid in 2002) dropped water levels in the pool. As a result, an estimated 1.5-million cubic yards of sediment deposits (referred to as the remnant deposits) were left along the banks of the river up to 1.5 miles upstream of Fort Edward (NUS 1984).

The in-place containment of the remnant deposits was completed in the fall of 1990 by GE (O'Brien & Gere 1996; J.L. Engineering 1992). The objectives of this containment were to control the release of PCBs from the remnant deposits to the Hudson River and minimize potential human exposure to PCBs as a result of direct contact or volatilization (1990 Consent Decree).

When the PCRDMP began in 1991, the water column of the Hudson River was monitored for PCBs, using capillary column analytical techniques with a total PCB method detection limit (MDL) of 11 nanograms per liter (ng/L; O'Brien & Gere 1992a, 1992b). Beginning in June 2004, and continuing through May 2009, GE performed the Baseline Monitoring Program (BMP), in accordance with the Administrative Order on Consent for Hudson River Remedial Design and Cost Recovery for the

Hudson River Dredging Project (EPA and GE 2003). The water column monitoring associated with the PCRDMP was incorporated into the BMP and, in accordance with the BMP *Quality Assurance Project Plan* (BMP QAPP; QEA and ESI 2004), the PCB MDL was reduced to approximately 1.1 ng/L at the PCRDMP monitoring locations. Because the PCRDMP water column monitoring requirements were included in the BMP, the reporting activities performed to comply with the 1990 Consent Decree were also conducted as part of the BMP data summary reports.

Beginning in May 2009, GE initiated the Remedial Action Monitoring Program (RAMP). This program was performed from May 2009 through May 2011 in accordance with the *Phase 1 Remedial Action Monitoring Program Quality Assurance Project Plan* (Anchor QEA et al. 2009). From May 2011 until May 2012, the RAMP was performed in accordance with the *2011 Remedial Action Monitoring Program Quality Assurance Project Plan* (Anchor QEA and ESI 2011). Since May 2012, the RAMP has been conducted in accordance with the *2012 Phase 2 Remedial Action Monitoring Program Quality Assurance Project Plan* (Phase 2 RAMP QAPP; Anchor QEA and ESI 2012). The PCRDMP will continue to be performed as specified in the Phase 2 RAMP QAPP until the operations, maintenance, and monitoring (OMM) work plan is approved.

The PCB analytical method (modified Green Bay Method; mGBM) used at the PCRDMP monitoring locations during the RAMP through the end of 2016 was generally consistent with the BMP and provided an MDL of approximately 1.1 ng/L. As of the end of 2016, the mGBM was no longer offered by a commercial laboratory. Therefore, a new PCB analytical method was selected (EPA Method 1668C), as described in corrective action memorandum (CAM) 14 (ESI 2017). EPA Method 1668C is more sensitive than the mGBM; therefore, PCBs can be detected at lower concentrations.

The PCRDMP water column monitoring requirements have continued as part of the RAMP and are anticipated to be included in the OMM program. Since the completion of the BMP, the PCRDMP reporting requirements have been addressed by annual technical memoranda. This technical memorandum provides a summary of the PCRDMP data collected in 2018.

Methods

Routine Water Sampling Program

Routine water sampling was performed monthly at Rogers Island and Bakers Falls whenever weather conditions allowed safe access. Sampling frequency was reduced from weekly to monthly at Bakers Falls in September 2008, in accordance with CAM 7 (QEA 2008), which was associated with the BMP QAPP (QEA and ESI 2004). Sampling frequency at Rogers Island was reduced to monthly in 2012 (Anchor QEA and ESI 2012). Due to weather-related safety concerns, sampling was not performed prior to May 15, 2018, or after November 14, 2018, at Rogers Island and Bakers Falls.

Sample Collection Procedures

During 2018, water column samples were collected at Bakers Falls and Rogers Island in accordance with the Standard Operating Procedures specified in the Phase 2 RAMP QAPP (Appendix 2.4-1; Anchor QEA and ESI 2012); however, sample volumes were modified due to the aforementioned changes in the analytical method. During 2018, three separate liters of water were collected at both locations. One liter was submitted for PCB analysis and a second liter was archived at the PCB laboratory as a backup in the event that a problem occurred with the analysis of the first sample. The third liter was submitted for total suspended solids (TSS) analysis.

Samples collected at Bakers Falls were taken at the approximate centroid of the river cross-section from the downstream side of Bakers Falls Bridge (County Route 27 Bridge) using a multiple-aliquot depth-integrating sampler (MADIS). The Rogers Island monitoring station is located in the center of the channel (Figure 1). Sample collection at this location consists of a surface grab because the water is generally only 2 feet to 3 feet deep.

Sample Analysis

Samples collected prior to 2017 were analyzed for PCBs using the mGBM, in accordance with the Phase 2 RAMP QAPP. As of the end of 2016, this method was no longer offered by a commercial laboratory. Therefore, samples collected in 2017 were archived until a new analytical method and laboratory could be identified, which resulted in a delay in data reporting. The PCB analytical method selected was EPA Method 1668C, with the analyses performed by Vista Analytical Laboratory, as described in CAM 14 (ESI 2017). TSS continued to be analyzed by Pace Analytical Services, LLC.

Results and Discussion

The PCB and TSS data generated by the 2018 PCRDMP are presented in Figure 2. A summary of these data is provided monthly to the New York State Department of Environmental Conservation and the U.S. Environmental Protection Agency in accordance with the PCRDMP reporting requirements. Additionally, available data are electronically transmitted monthly, as specified in the Phase 2 RAMP QAPP.

The results of the 2018 monitoring performed for the PCRDMP confirm the remedial action performed on the remnant deposits continues to be an effective measure for controlling the migration of PCBs to the Hudson River. Total PCB concentrations in water are less than 1 ng/L in all samples collected at Bakers Falls in 2018. With the exception of the June sampling event, increases in PCB concentrations in water between Bakers Falls and Rogers Island are approximately 2 ng/L or less throughout 2018, which is consistent with 2017. The PCB concentration at Fort Edward increased approximately 4 ng/L between the May and June sampling events. This reflected a short-term increase because concentrations steadily decreased to less than 2 ng/L in subsequent sampling

events. This indicates PCB contributions from the PCB sources in the remnants reach of the Hudson River (plant sites, any remaining in-river sediments, and the remnant deposits) are small. Both locations will continue to be monitored in order to address environmental and analytical variability that may cause fluctuations in concentrations.

Prior to 2017, PCB concentrations were commonly below the MDL at Bakers Falls and occasionally below at Rogers Island; however, PCBs were reported in all but one of the samples collected in 2018. This is due to use of the new analytical method, which is capable of detecting PCBs at lower concentrations than the previous analytical method.

References

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Figures

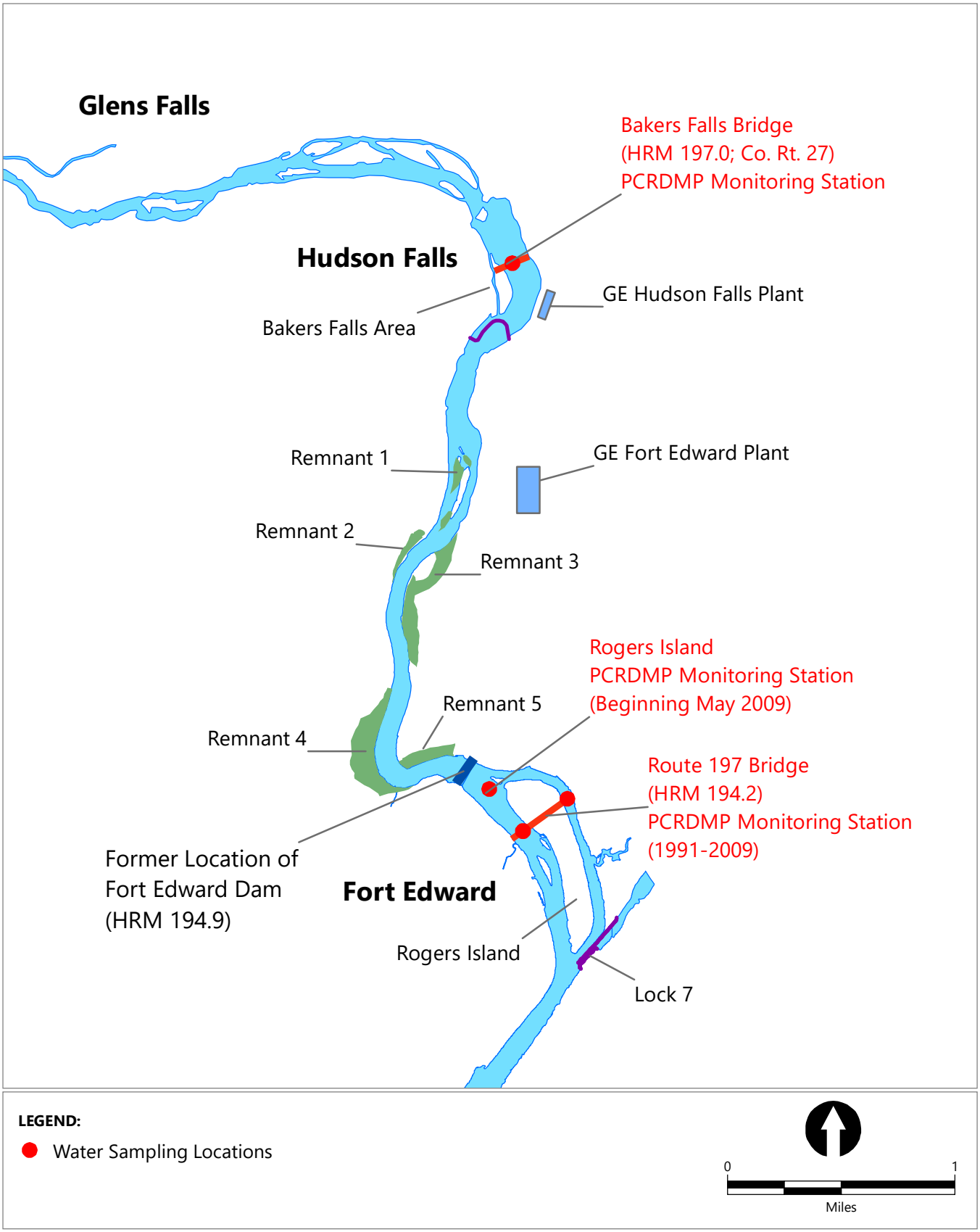

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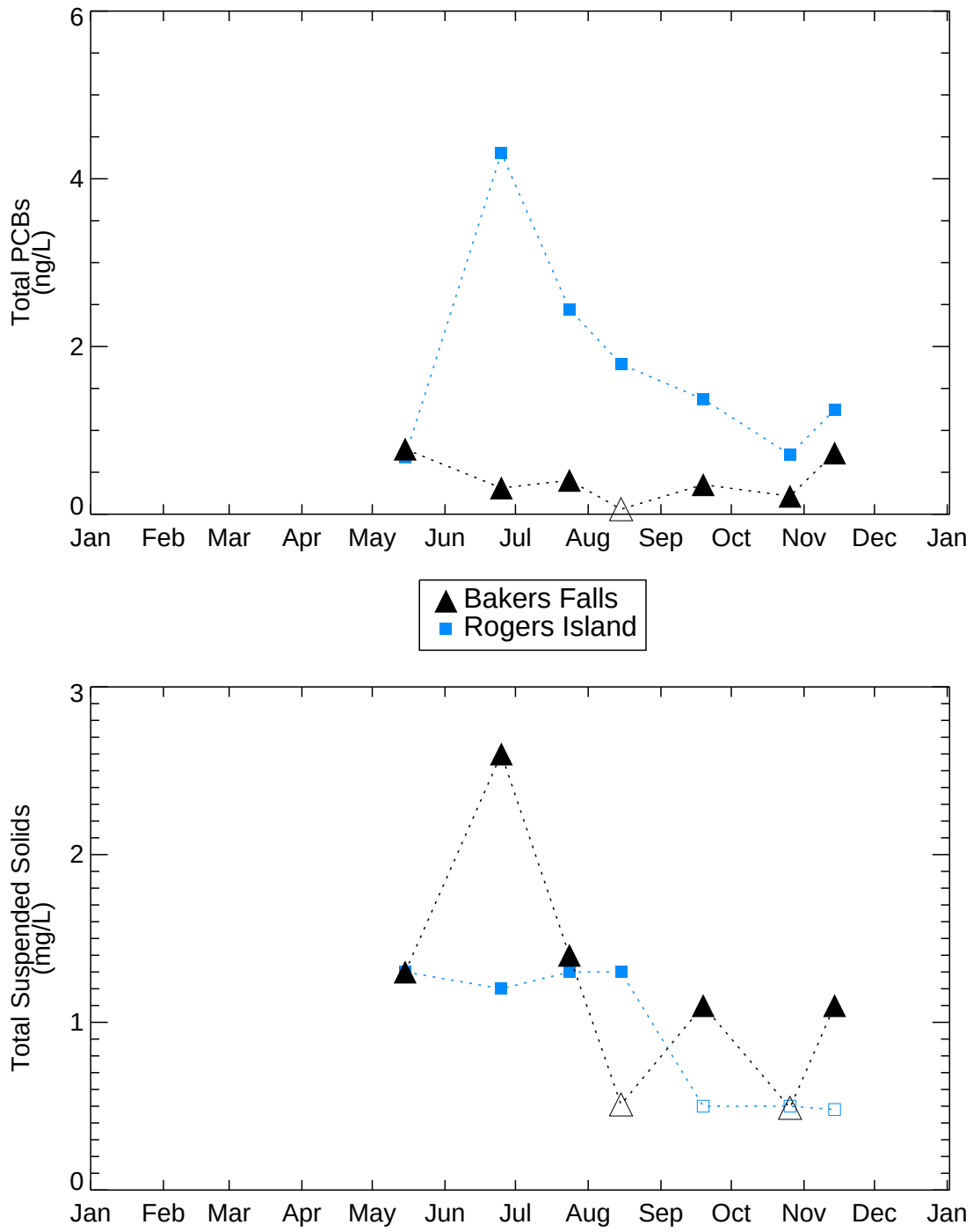
Figure 1
Water Monitoring Locations
2018 PCRDMP Annual Summary Memorandum
Prepared for the General Electric Company



Notes: Blind duplicate samples averaged. Non-detect total PCB samples are set to the MDL and are shown as open symbols.

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Figure 2

Temporal Profiles of 2018 Routine Monitoring Data Collected in the Vicinity of Hudson Falls

2018 PCRDMP Annual Summary Memorandum
Prepared for the General Electric Company