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April 4, 2023
File No. 01.0172397.10

Mr. Stephen Johnson
Deputy Regional Director
Massachusetts Department of Environmental Protection
Northeast Regional Office
Bureau of Waste Site Cleanup
150 Presidential Way
Woburn, Massachusetts 01801

Re: Notification of Delay and Request for Extension of Deadlines
Release Tracking Number (RTN) 3-32792
284 Winter Street, Haverhill, Massachusetts
ACO 00009941NT

Dear Mr. Johnson:

On behalf of Boston Gas Company d/b/a National Grid (National Grid), GZA Environmental, Inc. (GZA) has prepared this Notification of Delay in Compliance with Deadlines for Tier Classified Disposal Sites (Notification of Delay) for the 284 Winter Street Site in Haverhill, Massachusetts per 310 CMR 40.0560 (5) of the Massachusetts Contingency Plan (MCP). In particular, this letter provides a Notification of Delay (NOD) in submitting the Phase IV Remedy Implementation Plan (RIP) by June 15, 2023 and the Permanent or Temporary Solution by September 12, 2025, which are the deadlines that were established by Administrative Consent Order (ACO) 00009941NT issued by the Massachusetts Department of Environmental Protection (MassDEP) on October 2, 2020. This letter is also intended to request a formal extension to some of the deadlines established by the ACO.

The delay in the submittal of the Phase IV RIP and Permanent or Temporary Solution is a result of four recent Site updates and schedule constraints:

- The 284 Winter Street property was recently transferred to a new owner, HEG 284 Winter Street LLC (HEG), who has plans for extensive redevelopment of the Site. Based on our understanding of the scope and timing of that redevelopment, the planned remedial work will need to be closely coordinated with the property owner's activities.
- Concentrations of the key constituents of concern and seepage rate measurements in the Little River from pre-design investigation (PDI) studies were higher than anticipated during the Phase III Remedial Action Plan (RAP) evaluation and require additional site-specific treatability studies.
- Non-aqueous phase liquid (NAPL) was observed along a portion of the existing retaining wall during the geotechnical investigation of the wall and adjacent upland investigations, prompting the need for supplemental evaluation of a potential preferential migration pathway.
- The recommended schedule for work in the Little River is during the low flow stream conditions (i.e., July 1 through October 31), which will impose constraints on the remedial program.

These issues are described in additional detail in a subsequent section of this letter.



REGULATORY BACKGROUND

In November 2014, volatile petroleum hydrocarbons (VPH) and polycyclic aromatic hydrocarbons (PAHs) were detected at concentrations above the relevant MCP Reportable Concentrations (RCs) in soil and groundwater samples from the property. Based on these data, Haffner Realty Trust (Haffner - the owner of the 284 Winter Street property at the time) submitted a Release Notification Form (RNF) to MassDEP on March 30, 2015, and Release Tracking Number (RTN) 3-32792 was assigned to the release. On May 12, 2015, while conducting Response Actions on behalf of Haffner under RTN 3-32792, Ramboll US Corporation of Westford, Massachusetts (Ramboll) observed a sheen in the Little River emanating from the base of the retaining wall along the western edge of the Property. Upon oral notification of this 2-hour reporting condition, MassDEP assigned RTN 3-32875 to the release and approved an Immediate Response Action (IRA). In April 2016, Ramboll filed a Phase I Initial Site Investigation and Tier Classification Report, based on which the Site was classified as Tier I, and linked RTN 3-32875 to the primary Site RTN 3-32792. Ramboll on behalf of Haffner subsequently submitted a series of IRA status reports between September 2015 and September 2019.

On October 11, 2019, MassDEP issued a Notice of Noncompliance (NON) to Haffner for failure to submit a Phase II Comprehensive Site Assessment (CSA) within three years of the Phase I/ Tier Classification (TC) submittal. The NON established an April 6, 2020, deadline for submittal of a Phase II report and, if applicable a Phase III RAP and Phase IV RIP. On November 7, 2019, Haffner's Licensed Site Professional- (LSP)-of-Record submitted an NOD accompanied by a letter of resignation in anticipation of the transfer of responsibility from Haffner to National Grid, the successor company to a former owner of the property.

On November 26, 2019, GZA on behalf of National Grid submitted a TC transfer that took effect on December 26, 2019. In response, MassDEP issued a Notice of Responsibility (NOR) to National Grid under RTN 3-32792, which was followed on March 13, 2020, by a notice re-establishing response action deadlines for the Site. The re-established deadlines required submittal of a Phase II CSA, and if necessary, a Phase III RAP and a Phase IV RIP, by August 4, 2020, and a Permanent Solution Statement (PSS)/Temporary Solution Statement (TSS)/Remedy Operation Status (ROS) by April 6, 2021. MassDEP and National Grid subsequently negotiated the ACO referenced above that established a deadline of September 12, 2025, for the filing of a PSS, TSS, or ROS for the Site. The ACO also established a series of interim deadlines for IRA status reports, MCP Phase reports, and a TC Extension as further discussed in the following section. GZA and National Grid filed TC extensions on February 18, 2021 and February 17, 2023 in accordance with the MCP requirements.

STATUS OF RESPONSE ACTIONS

On behalf of National Grid, GZA initiated Phase II CSA activities in January 2020. Upland field activities included the drilling and sampling of nine additional borings (B101 through B104, and B106 through B110) and the installation of monitoring wells B102, B106 and B107 to further delineate the nature and extent of impact at the 284 Winter Street property. This subsurface investigation program was complemented by the February 2020 collection of soil gas samples SG-1 through SG-3, and was followed by the installation of three additional monitoring wells GZA-1, GZA-1A, and GZA-2 at 191 and 221 Essex Street to evaluate the potential for impacts to properties on the western side of the river (Figure 2). GZA also completed an evaluation of the feasibility of continuing NAPL recovery at the Site, conducted falling-head hydraulic conductivity (K) tests at four wells to estimate the hydraulic properties of the subsurface materials, and oversaw three shallow vacuum excavation probes in the central portion of the Site with the objective of assessing the condition of the wall of a former MGP relief gas holder.

Concurrent with these upland response actions, GZA collected and analyzed sediment samples from 14 hand-augered locations at multiple transects across the Little River adjacent to the Property. Subsequently, National Grid contracted Anchor QEA LLC (Anchor) of Amesbury, Massachusetts to complete an assessment of impacts to the Little River within the disposal Site boundary. Anchor's investigation included the collection of 22 vibracores to assess the nature and extent of visible oil and/or tar (VOT) in sediment, with selected samples submitted for chemical analysis. Two additional cores were collected for ultraviolet (UV) photography and NAPL mobility testing.



The Phase II CSA findings were documented in an April 2022 Phase II CSA report for RTN 3-32792, with a Phase II CSA report for the Little River prepared by Anchor included as an appendix. The report presented the following conclusions:

- Groundwater flow at the Site is generally toward the west/southwest, with the Little River as the main discharge point. The historical relief holder wall remains intact at depths below 3 feet below ground surface (bgs), resulting in a “perched” groundwater condition within the footprint of holder in the central portion of the Site.
- Petroleum and MGP-related constituents are present in soils throughout the Property, with the most significant impacts found at the 5-to-20-foot depth range. Constituent of concern (COC) concentrations in soil exceeded the MCP Method 1 cleanup standards at a number of locations but were generally below the Upper Concentration Limit (UCLs).
- The primary COCs detected in groundwater samples at levels above the Method 1 standards included naphthalene, C₉-C₁₀ aromatics and benzene, with the highest concentrations reported in the central, western, and southern portions of the Site. Significant impacts to groundwater were found to extend from the eastern portion of the Site to the Little River. Wells installed on the western side of the river to the southwest of the 284 Winter Street property did not indicate detectable levels of the primary Site COCs, indicating that the downgradient extent of the disposal Site has been defined.
- Concentrations of constituents detected in soil gas at the Site appeared to be primarily related to incidental emissions and spills associated with the active fuel storage and dispensing operations. GZA’s evaluation concluded that the reported concentrations did not indicate significant potential for vapor intrusion into occupied structures at the Site.
- NAPL was observed at several locations across the western, central, and southern portions of the Site, but significant accumulations of separate-phase materials were only observed at two locations in the upland area, one of which is within the historical relief gas holder. Evaluations of NAPL mobility and recoverability completed under MassDEP guidance concluded that these materials are not feasible to recover.
- A Method 3 Risk Characterization indicated that quantitative human health risk estimates were below the relevant MCP criteria except for one receptor group/exposure scenario (construction/utility workers excavating below the water table within the former holder area). The risk estimate for the one scenario which exceeded the limits were driven by benzene and naphthalene concentrations in the perched groundwater within the historical holder, where an active electrical line is present.
- NAPL from the former MGP has historically migrated to the Little River and has been observed seeping from the retaining wall at the edge of the Site under certain conditions.
- Significant impacts were observed to the sediments beneath the Little River adjacent to the Site, including elevated concentrations of Site COCs and the presence of VOT over a substantial area. Anchor reported that VOT attributable to the former MGP was observed in 25 of the 36 vibrocore and hand auger samples, resulting in a condition of Readily Apparent Harm (RAH) because the VOT extended over an area greater than 1,000 square feet in the upper 12 inches of sediment.
- Anchor concluded that the lateral extent of impacted shallow sediment in the in-river portion of the Site had been defined based on a comparison of Site samples to Local Conditions, and that additional Comprehensive Response Actions were needed to achieve a PSS for the in-water portion of the Site.



In July 2022, GZA and Anchor filed a Phase III RAP that selected the following Remedial Action Alternatives toward a PSS for the Site:

- Relocation of the electrical line that presently runs through the former relief holder;
- Implementation of an Activity and Use Limitation (AUL) that prohibits installation of new underground utility lines within the footprint of the relief holder and restricts residential and certain other future uses of the Site;
- Sealing/removal of historical piping and penetrations in the retaining wall that separates the upland portion of the Site from the Little River; and
- Focused dredging and capping of the sediments within the Little River adjacent to the Site.

Concurrent with Phase II through Phase IV response actions, National Grid continues to conduct IRA Response Actions at the Site, and to document that work in IRA status reports, the most recent of which was submitted in March 2023.

Phase IV RIP activities were initiated following submittal of the Phase III RAP in July 2022 and are ongoing. Supplemental assessment work to support the Phase IV design activities has included sediment sampling at two additional locations, pore water sampling at 10 locations, collection of a sheen net sample, installation of three piezometers, a supplemental geophysical survey of a portion of the upland area, advancement of 21 additional explorations in the upland portion of the site and installation of four additional monitoring wells and collection of additional groundwater and NAPL samples for laboratory analyses.

As noted in GZA's February 2023 TC Extension submittal, HEG acquired the 284 Winter Street property from Haffner in December 2022. HEG subsequently informed National Grid that they are planning to redevelop the property by demolishing the existing car wash and service station and constructing a new car wash, convenience store and service station facility. National Grid has also had several meetings in recent months with consultants for the City of Haverhill regarding the planned removal of the dam across the Little River located just upstream (north) of Winter Street in which coordination of activities for in-water work was discussed.

NOTIFICATION OF DELAY

Consistent with 310 CMR 40.056(5)a of the MCP, the following provides reasons for the delay, the measures to be taken to minimize the delay, and a proposed schedule for implementing those measures for the Site subject to this Notification of Delay.

Reasons for Delay

The delay in the submittal of the Phase IV Report and Permanent or Temporary Solution is a result of four recent Site updates and schedule constraints.

- The 284 Winter Street property was recently transferred to HEG, who has plans for redevelopment of the Site.
- Benzene, toluene, ethylbenzene, and xylene (BTEX) concentrations and seepage rate results in the Little River from pre-design investigation (PDI) studies were higher than anticipated during the Phase III RAP evaluation and require additional site-specific treatability studies.
- NAPL was observed along a portion of the existing retaining wall during the geotechnical investigation of the wall and adjacent upland investigations.
- The recommended schedule for work in the Little River is during the low flow stream conditions (i.e., July 1 through October 31).



Each of these updates and schedule constraints are described in additional detail below.

BTEX Concentrations and Seepage Rates

As noted in the Phase III RAP, in addition to the risk posed by oil and/or hazardous material (OHM) concentrations in bulk sediment, there is the potential for risk to ecological receptors based on OHM concentrations in porewater. Groundwater from the upland portion of the Site can migrate via subsurface pathways into the pore space of shallow sediment in the in-river portion of the Site, where it is then referred to as sediment porewater. Groundwater migrates into the river with both horizontal and vertical velocity components, eventually discharging to the surface water. The migration of OHM-impacted groundwater through the sediment column may therefore result in elevated concentrations of OHM in the pore space of shallow sediment where biological activity occurs (i.e., the bioturbation zone, which is generally the top 6 inches of sediment) and has the potential to create a future porewater-based risk to benthic organisms. This potential applies even if shallow sediment is remediated because the porewater in shallow sediment that remains after remediation could potentially be impacted by the migration of deeper residual OHM to the shallow porewater.

Elevated concentrations of benzene were observed in bulk sediment and in upland groundwater samples at the Site. As such, the PDI to support the Phase IV RIP included porewater sampling at 10 locations within the Little River for BTEX and PAHs as well as assessing the seepage rates (i.e., groundwater flow through sediments) at three locations. Results of these investigations indicated both higher BTEX concentrations and larger seepage rates than were previously observed and estimated from upland data. Due to the combined higher BTEX concentrations and larger seepage rates, additional treatability studies (i.e., Freundlich adsorption isotherm study [isotherm study]) are necessary to design a permeable active cap that is protective of the dissolved phase contaminants. The isotherm study will describe the adsorption of BTEX in Site groundwater to granular activated carbon (GAC) and inform the necessary dosage of GAC within the permeable active cap. Additional groundwater investigations including sampling of the four new monitoring wells for BTEX and PAHs and the planning phase of the isotherm study are underway. The results of the isotherm study, which are necessary for the cap design, are anticipated to be completed by October 2023.

NAPL Observations along Portions of Retaining Wall

The Site is abutted to the south and west by the Little River, where an approximately 15-foot-high masonry retaining wall separates the Site from the river. No information about the construction of the retaining wall was located in a records search. However, based on historical photographs, at least part of the wall appears to have been constructed as part of the development of the Site. The full removal of impacted sediments is not currently feasible due to the depth of impacts along the retaining wall and wall's poor condition.

Pre-design investigations were performed near the retaining wall: 1) to provide additional information about the foundation and geotechnical condition of the existing retaining wall to inform sediment removal; and 2) to further evaluate the potential for preferential NAPL migration pathways from the upland portion of the Site to the Little River. Specifically, test pit excavations were performed along the base of the wall within the Little River to observe the bottom of the wall (as possible) and monitoring wells were installed adjacent to the wall to understand subsurface conditions and presence of NAPL. NAPL was observed in select test pits and monitoring wells near where elevated BTEX or PAH concentrations were present during porewater sampling in the Little River. Additional groundwater and NAPL investigations are necessary to understand where preferential migration pathways are located to address the NAPL and sheen. These follow-on investigations are anticipated to be completed by June 2023 and will be incorporated into the cap design along with the results of the isotherm study.

Redevelopment of the 284 Winter Street Upland Site

Access to the Little River, particularly the sediments, is significantly limited by the retaining wall on the east side of the Little River; the steep, heavily vegetated slope and developed properties on the west side; the Winter Street bridge and Little River dam upstream; and the Little River conduit, which limits access downstream. Further, room for a staging and sediment processing area is significantly limited. An active gas station and car wash is present on the upland portion of the Site to the east of the Little River. Active commercial properties owned by multiple entities are located on the west side. Because of the limited



access, National Grid had been working with the property owner, Haffner, on potential access options and a remedy implementation schedule.

Recently, HEG acquired the 284 Winter Street property from Haffner and notified National Grid that they intend to raze the current structures and redevelop the property. Although in conceptual design phase, the redeveloped property is anticipated to have new structures (e.g., convenience store) that will occupy a larger portion of the property, thus limiting access to the Little River. The desirable time for the sediment remedy would be after demolition of the buildings and site features but before construction of new buildings. HEG has indicated that they may demolish the buildings during winter 2024, which would provide access and a staging area for the remedy implementation in July 2025. National Grid will need to adjust the remedy implementation schedule if HEG's plans and/or schedule change.

Recommended Schedule for Work in Little River

The recommended schedule for work in the Little River is during the low flow stream conditions (i.e., July 1 through October 31). Under these low flow conditions, activities associated with the remedy implementation (i.e., sediment removal and permeable active cap placement) can be performed in relatively dry conditions and minimize water management during construction. Further, this proposed timeframe is also in accordance with the recommended time of year (TOY) restriction for in water work from March 1 to June 30 to minimize impacts to diadromous fish found in the adjacent Merrimack River from sedimentation and turbidity.

Summary of Schedule Constraints

The aforementioned schedule constraints that result in a Notification of Delay are summarized below:

- The results of the isotherm study, which are necessary for the cap design, are anticipated to be completed by October 2023.
- Follow-on groundwater and NAPL investigations are anticipated to be completed by June 2023 and will be incorporated into the cap design along with the results of the isotherm study.
- HEG has indicated that they may demolish the structures on the 284 Winter Street property during winter 2024, which would provide access and a staging area for the remedy implementation in July 2025.
- The preferred schedule for work in the Little River is July 1 through October 31, which is also in accordance with the TOY restriction (i.e., March 1 through June 30).

Measure or Measures to be Taken to Minimize Delay

Several measures are underway to minimize the delay of both the submittal of the Phase IV Report by June 15, 2023 and the Permanent or Temporary Solution by September 12, 2025. In particular, the following actions have been taken:

- National Grid continues to collect information to design a Permanent or Temporary Solution within the Little River.
 - Planning of an isotherm study to quantify the adsorption of BTEX to GAC is underway and collection of the necessary groundwater for the studies is targeted for April 2023.
 - Additional groundwater investigations have been performed to further describe the potential preferential pathways of groundwater and NAPL from the upland sources to the Little River. An assessment of further data needs is also underway such that site investigations would be complete by June 2023.
- National Grid continues to work with the property owner on the schedule of redevelopment activities as they correspond with a proposed remedy implementation schedule.



PROPOSED SCHEDULE AND DEADLINE EXTENSIONS

Given the timeframe for completing the follow-on investigations and treatability studies for the permeable active cap design (i.e., October 2023); the proposed construction schedule for demolition of structures on the property (i.e., winter 2024) which would allow for suitable staging and access to the Little River; and the preferred in-water work schedule (i.e., July 1 through October 31) that avoids the TOY restrictions, the proposed in-water remedy implementation schedule is anticipated to be July 1 through November 30, 2025. This schedule is dependent on the demolition schedule for the existing structures at the 284 Winter Street property.

Based on these developments, National Grid proposes to extend the deadline to submit the Phase IV Report by 6 months from June 15, 2023 to December 15, 2023 to allow for incorporation of the groundwater and NAPL investigations and isotherm study into the permeable active cap design. National Grid proposes to extend the deadline to submit a PSS, TSS or ROS by 15 months from September 12, 2025 to December 15, 2026 to allow for remedy implementation and confirmatory monitoring following planned demolition at the property. If the demolition/redevelopment schedule changes, the time frame for achievement of a PSS, TSS or ROS will need to be re-evaluated.

Very truly yours,

GZA GEOENVIRONMENTAL, INC.

A handwritten signature in blue ink that reads 'Charles A. Lindberg'.

Charles A. Lindberg, LSP
Senior Principal

cc: Jesse Edmands, National Grid
Elizabeth Greene, National Grid