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SUPPLEMENTAL PHASE II ENVIRONMENTAL SITE ASSESSMENT AND ANALYSIS OF BROWNFIELDS CLEANUP ALTERNATIVES / REMEDIAL ACTION PLAN

Central Plating Site
12 Westminster Street
Walpole, New Hampshire

NH DES Site #: 199806071
Project Type: HAZWASTE
Project Number: 32266

Prepared For:

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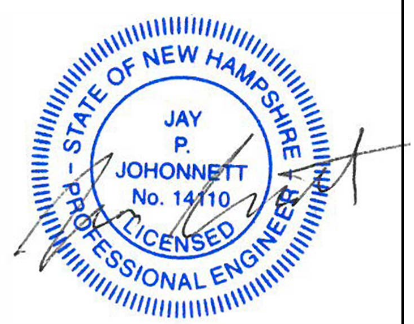

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April 25, 2018

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AND
ANALYSIS OF BROWNFIELDS CLEANUP ALTERNATIVES / REMEDIAL ACTION PLAN

CENTRAL PLATING SITE
NH DES SITE #199806071
12 WESTMINSTER STREET
WALPOLE, NEW HAMPSHIRE

Prepared for:

Southwest Region Planning Commission
Brownfields Program
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EXECUTIVE SUMMARY

The following report presents the findings of a Supplemental Phase II Environmental Site Assessment (ESA) and Analysis of Brownfields Alternatives (ABCA) / Remedial Action Plan (RAP) performed by Ransom Consulting, Inc. (Ransom) for the Southwest Region Planning Commission (SWRPC). The Phase II ESA was performed for the Central Plating Site located at 12 Westminster Street in the Town of Walpole, New Hampshire (the "Site"). Please note that based on an initial reporting of the results of this work to the New Hampshire Department of Environmental Services (NH DES) and to other stakeholders, two additional investigations were conducted: one contracted through the NH DES, one contracted through the Site owner. The additional investigation findings are summarized in this report as results addenda. The report should be read in its entirety to understand the conclusions and recommendations presented here-in.

The Central Plating Site consists of two adjoining land-locked parcels within the center of Walpole village. The parcels are designated as Lots 65 and 66 on the Town of Walpole Tax Map 20, and are approximately 0.089 and 0.190 acres, respectively. Access to the site is obtained via a right-of-way from Westminster Street. Lot 65 is improved with a 1,008 square foot garage-style, single-story building herein identified as the Wastewater Pre-Treatment Building. A single-story, slab-on-grade, masonry light industrial building, herein identified as the Former Industrial Building, was located on Lot 66 prior to demolition in 2012. Currently, other than the noted remaining building, the Site is vacant and asphalt-paved surfaces and the sparsely vegetated footprint of the former building cover much of the remaining area. Land use in the vicinity of the Site is primarily commercial and residential. The Former Tole's Sunoco, a listed NH DES Leaking Underground Storage Tank (LUST) Site and gasoline service station is located southeast of the Site.

Municipal water service is available to the Site and to the neighborhood. A review of NH DES OneStop Web Geographic Information System records and an inquiry with the Town of Walpole Assessor's Office identified no public or private potable water supply wells within 1,000 feet of the Site. However, a dug residential well used for garden irrigation is located in proximity to the Site at 69 Main Street (Tax Map 20, Lot 51), approximately 175 feet to the north. Site topography is relatively flat, regional topography slopes down to the west towards the Connecticut River 1,750 feet away, and there is a northwest-draining tributary 500 feet north of the Site.

According to environmental due diligence reports prepared by Stantec (2006) and Sanborn, Head and Associates, Inc. (SHA, 2013), Central Plating conducted electroplating of metal parts at the Site from 1963 until circa 2006. Wastewater from the operations of Central Plating was directed to the municipal sewer system since the start of operations circa 1963. Central Plating's metal finishing processes included anodizing of aluminum parts; chrome electroplating; nickel electroplating; chromate electropolishing; black oxide finishing; passivation; and a lacquer dip tank used to coat racks used in nickel plating. The process areas and layout were presented on a 1990 process schematic and included plating lines and a floor drain located in the south end of the Former Industrial Building. Sumps to receive wastewater piped underground from the Former Industrial Building were shown in the north end of the Wastewater Pre-Treatment Building. Based on records contained in the SHA report, chrome fume suppressant(s) were reportedly used to control hazardous emission of hexavalent chrome fumes in the early 2000 and perhaps the late 1990s. Fume suppressants used in this era commonly contained per- and poly-fluorinated alkyl substances (PFAS).

Notable findings in a 2013 Phase II ESA conducted by SHA include chromium in soil at a concentration above the 1,000 milligrams per kilogram (mg/kg) NH DES Env-Or 600 Soil Remediation Standard (SRS) for trivalent chromium for a sample collected over a depth interval of 5.9 to 10 feet below grade in the chromium plating line area of the Former Industrial Building. The report also documented Ambient

Groundwater Quality Standards (AGQSs) exceedances for the petroleum constituents' benzene, naphthalene, 1,2,4-trimethylbenzene, methyl-t-butyl ether (MTBE), and tertiary butyl alcohol (TBA); the solvent 1,2-dichloroethane (1,2-DCA); and the dissolved metal, arsenic. Groundwater was inferred to flow to the west. An off-site source was inferred to be the source for the petroleum constituents; mobilization of arsenic was believed to be associated with the petroleum plume geochemistry and 1,2-DCA may have been related to on-site solvent use.

The NH DES was notified of the SHA findings and required additional characterization to delineate the chromium distribution in Site soils and develop a remedial approach, and to delineate the extent of groundwater impacts for Site dissolved contaminants. The NH DES also requested a water use assessment to confirm the absence of active residential water supply wells in the neighborhood.

Through the Southwest Region Planning Commission United States Environmental Protection Agency (U.S. EPA) Brownfields Assessment Program, Ransom conducted a Phase II ESA to address the NH DES information needs and to collect further information to aid the eventual development of a remedial action plan to aid in the redevelopment and productive reuse of the Site property. The work did not include off-Site characterization requirements for properties located downgradient of Lots 65 and 66.

Based on Stantec's and SHA's investigations and findings, recognized environmental conditions (RECs) identified to be further evaluated by Ransom included the following:

1. Reported and documented releases of wastes associated with the former plating facility operations in the Former Industrial Building to Site soils and possibly to Site groundwater.

2. Reported and documented releases of wastes from the vicinity of the Wastewater Pre-Treatment Building to Site groundwater.

3. Possible releases of petroleum to Site groundwater from a potential former on-Site source (No. 2 fuel oil underground storage tank (UST)).

4. Documented releases of petroleum, possibly from an upgradient source.

Although not strictly a REC, Ransom also recommended characterization of hazardous building materials and evaluation of wastes within the existing Site building sump. To evaluate the RECs, eight areas of concern (AOC) were identified on the Site:

AOC 1—Chromium Impacted Soil (above SRS);

AOC 2—Former Industrial Building, Floor Drains;

AOC 3—Stained Soils, Off Northern End of Former Industrial Building;

AOC 4—Former Industrial Building, Spray Paint Area;

AOC 5—Former Heating Oil UST;

AOC 6—Downgradient of Former Industrial Building and Wastewater Pre-Treatment Building;

AOC 7—Upgradient Portion of Site (downgradient of neighboring LUST property); and

AOC 8—Hazardous Building Materials.

Ransom's Phase II ESA included the advancement of soil borings, the collection and field screening of soil samples for the presence of metals using a x-ray fluorescence (XRF) analyzer and PICs using a photoionization detector (PID), the selection and laboratory analyses of soil samples for the presence of selected metals, polynuclear aromatic hydrocarbons (PAHs), total cyanide, volatile organic compounds (VOCs) and/or total petroleum hydrocarbons (TPH) -diesel range organics (DRO), the installation of five additional monitoring wells and the collection and laboratory analyses of groundwater samples from the new and existing wells for the presence of dissolved metals, total cyanide, and VOCs according to U.S. EPA methods.

As documented in Ransom's Phase II ESA, depth to groundwater ranged from 13.07 to 22.56 feet below grade, which probably reflects a seasonally lower water table. The depth to groundwater is deepest along the western edge of the property and shallowest along the eastern slope of the property. Based on the measured depth to groundwater across the Site, groundwater was inferred to flow to the west, towards the Connecticut River. Bedrock was not encountered to a depth of 30 feet below grade (depth of the deepest site boring).

The following results were found through the Ransom Phase II ESA completed at the site for each AOC:

AOC 1—Chromium Impacted Soil (above SRS)

Both trivalent and hexavalent chromium contaminated soils were documented in the area of the Former Industrial Building chromium plating line at concentrations exceeding SRSs. Contaminant concentrations of chromium were generally highest near the ground surface and are a human exposure risk through direct contact, including dust inhalation (if disturbed), dermal contact and ingestion. The soil contamination in excess of SRSs was observed to extend to 13 feet below grade, slightly penetrating into a clay and silt unit and into the groundwater table. The chromium release in this area is documented to have impacted the groundwater quality based on elevated concentrations of dissolved chromium detected in groundwater samples collected from about 30 feet west (downgradient with respect to groundwater flow) of the inferred release area. The volume of impacted soils above SRSs is estimated at 250 tons although additional sampling locations would be necessary to confirm this.

AOC 2—Former Industrial Building, Floor Drains

Other than arsenic which slightly exceeded its SRS, no other metals were detected at concentrations above the SRS, and no total cyanide or VOCs were detected for soil samples from borings advanced near the floor drains in the former plating area and the former anodizing area of the Former Industrial Building.

Analyses of groundwater samples collected from monitoring well MW102 located downgradient of the former plating line area documented dissolved chromium and nickel at concentrations exceeding their AGQSs by a factor of 57 and 11, respectively, cadmium exceeding its AGQS by a factor of 4, and arsenic slightly exceeding its AGQS. The presence of metals in the groundwater downgradient of the plating lines appears to be associated with the documented mass of chromium impacted soils, and a possible inferred mass of nickel impacted soils likely in the area of the former nickel plating line, which, based on a 1990 facility process diagram was located immediately (approximately 10 feet) west of the chrome plating line.

The downgradient extent of groundwater with metals impacts exceeding AGQSs was not able to be determined and may extend off-Site to the west.

AOC 3—Stained Soils, Off Northern End of Former Industrial Building

Evidence of coal combustion wastes were noted in near-surface soils in shallow borings advanced in this AOC's area of dark soils and may account for a portion of the staining observed by SHA in an area off of the northern end of the Former Industrial Building. Contaminants detected in these shallow soils at concentrations above SRS were arsenic and PAHs, both of which are likely associated with the observed coal slag and cinders. In addition, trichloroethene (TCE) was detected, but at a concentration below its SRS.

No AGQS violations for VOCs, total cyanide and dissolved metals were documented in the groundwater sample collected from monitoring well SH-3, located down and slightly cross-gradient of the area of dark soils.

AOC 4—Former Industrial Building, Spray Paint Area

Although field screening data for B107 suggested that arsenic and lead might be present at concentrations exceeding SRSs in shallow soils from beneath the former spray paint area, no VOCs, total cyanide or metals were detected above SRSs in the shallow soil sample submitted for laboratory analyses.

In addition, no AGQS violations for VOCs, total cyanide, or metals were documented in the groundwater sample collected from monitoring well MW103, located downgradient of this area.

AOC 5—Former Heating Oil Underground Storage Tank

No PAHs or TPH-DRO were detected in soil samples collected from this AOC at concentrations exceeding SRS, and no VOCs were detected in the soil sample collected from 10 to 12.5 feet below grade in this area.

In addition, no VOCs were detected in groundwater samples collected from monitoring wells MW102 and SH-2, located down and slightly cross-gradient of this area, that would indicate evidence of a significant release of fuel oil.

AOC 6—Downgradient of Former Industrial Building and Wastewater Pre-Treatment Building

Other than arsenic detected at a concentration slightly exceeding its SRS in a sample collected from 20 to 22.5 feet below grade, no metals were detected in soil samples collected from borings advanced adjacent to and west (downgradient) of the Wastewater Pre-Treatment Building and the Former Industrial Building. No VOCs and no total cyanide were detected above laboratory detection limits for samples from the three borings.

Nickel and cadmium were detected in groundwater samples at concentrations slightly exceeding their respective AGQSs in the vicinity of the sumps and associated wastewater piping for the Wastewater Pre-Treatment Building and suggest a modest ongoing source to groundwater in that area. Higher concentration dissolved contaminants indicative of releases of metals wastes (namely chromium and nickel, and to a lesser extent cadmium and arsenic) were detected in groundwater downgradient of the Former Industrial Building plating lines and appear to be associated with areas of known (chromium) or suspected (nickel) contaminated soils.

MTBE and other gasoline constituents were detected in groundwater samples from multiple locations downgradient of the Site building and former building, including MTBE above its AGQS at one location. The source of these impacts is inferred to be located off-site to the east as noted in AOC 7, below.

No cyanide was detected at concentrations above its AGQS for the groundwater samples collected to address AOC 6.

AOC 7—Upgradient Portion of Site (downgradient of neighboring LUST property)

Elevated field readings for PICs (up to 1,610 parts per million by volume (ppmv)) were measured for soil samples collected from depths within the upper portion of the seasonal groundwater table for borings advanced on the upgradient portions of the property. Naphthalene was detected at a concentration above its SRS in a soil sample from boring B101 collected from the depth interval with the highest concentration field screening readings.

Benzene, MTBE, naphthalene, and 1,2,4-trimethylbenzene were detected in groundwater samples collected from upgradient monitoring wells MW101 and SH-1 and indicate an upgradient gasoline source for these contaminants. The MTBE plume may extend beyond the Site to the west in a hydraulically downgradient direction.

AOC 8—Hazardous Building Materials

Hazardous building materials were identified and include small quantities of asbestos-containing window glazing or presumed asbestos containing materials, presumed polychlorinated biphenyls (PCB)-containing fluorescent light ballasts, mercury containing light bulbs, and one thermostat switch that may contain mercury. In addition, waste solids with high concentrations of metals and cyanide were identified in the wastewater pre-treatment sumps; these remaining wastes are likely hazardous wastes and the sumps will need to be properly decommissioned and their wastes property disposed of.

The status of RECs identified above are listed below, based on the findings for the noted investigated AOCs:

1. Reported and documented releases of wastes associated with the former plating facility operations from the Former Industrial Building to Site soils and possibly to Site groundwater. This REC was confirmed and partially quantified for releases of chromium, nickel and other metals near the plating lines areas located in the Former Industrial Building. However, this REC can be generally dismissed for the spray paint area, the anodizing line area, and former storage areas of the Former Industrial Building and for the area of reportedly stained soils off the north end of that building.

2. Reported and documented releases of wastes from the vicinity of the Wastewater Pre-Treatment Building to Site groundwater. This REC was confirmed for the sumps and/or wastewater lines proximal to the northwest corner of the Wastewater Pre-Treatment Building, albeit at concentrations that were slightly exceeding AGQSs. Because these AGQS violations have lingered since termination of operations in 2006, it is possible that a modest source of the contaminants to groundwater is present in Site soils in that area.

3. Possible releases of petroleum to Site groundwater from a possible former onsite source (No. 2 fuel oil UST). This REC can be dismissed as no impacts above regulatory standards for contaminants associated with fuel oil were documented in soils or groundwater.

4. Documented releases of petroleum possibly from an upgradient source. This REC was confirmed based on the observed range, nature, and spatial distribution of dissolved contaminants.

Based on these findings, additional investigation and remedial planning were recommended:

1. Assessment of the chromium impacted soils area to determine the approximate volume of impacted soils that (1) could exceed allowable upper concentration limits (for example, for hexavalent chromium), (2) is likely to require disposal as a hazardous waste if excavated, and/or (3) is likely to act as an ongoing source to groundwater impacts; as well as the approximate volume of soils that could require disposal as a non-hazardous waste, or perhaps be allowed to be left in place under an Activity and Use Restriction (AUR) if approved by the NH DES. The investigation would include delineation of the inferred nickel-impacted soils in the former nickel plating area. Additionally, because the integrity of the wastewater piping between the Former Industrial Building and the Wastewater Pre-Treatment Building is unknown the investigation should include the advancement of a boring and the installation of a monitoring well midway between the two building footprints and just downgradient of the subsurface piping to assess for impacts from potential waste water piping leaks. Finally, the additional investigation would include the installation of off-site wells to determine the limits of the Groundwater Management Zone (GMZ).

2. An Analysis of Brownfields Cleanup Alternatives/Remedial Action Plan (ABCA/RAP) should be prepared and include an evaluation of potential remedial alternatives including the following possible strategies, or an assemblage of strategies, that meet projected land use and NH DES regulatory clean-up requirements:

   a. Evaluation of the efficacy of a "monitoring only" approach;
   b. Removal and disposal of all soils with regulated contaminants exceeding SRS;
   c. Removal and off-site disposal of high-concentration (i.e., exceeding upper concentration limits (UCLs) having demonstrated leaching potential, or likely hazardous waste) chromium impacted soils, and management of selected impacted soils (i.e. with concentrations exceeding SRS but shown to have limited leaching potential through synthetic precipitation leaching procedure analyses) in place beneath an appropriate cap and under an AUR which could ultimately allow the Site to achieve regulatory closure, perhaps at a reduced cost; and
   d. Stabilization of moderate to low-impacted (i.e., exceeding SRS but below UCLs, with limited leaching potential based on Synthetic Precipitation Leaching Procedure (SPLP) analyses or with concentrations less than leaching based Risk Characterization and Management Policy (RCMP) standards) nickel and cadmium impacted soils as an alternative to soils removal for the Wastewater Pre-Treatment Building sump area, likely using apatite (or similar) slurry injected to stabilize metals in place and thereby mitigate future groundwater impacts for the purposes of comparing remediation costs as part of an integrated remedial approach for multiple source areas, if shown to be technically feasible.

This recommended scope of work was implemented as part of the work reported herein to develop the ABCA/RAP; however, the NH DES was unsupportive of the metals stabilization approach noted above under item "2. d.", above, so that was struck from consideration. Furthermore, the NH DES requested analyses of an emerging suite of regulated contaminants known as PFAS. As such, the scope of work was modified to include PFAS analyses for selected groundwater samples for perfluorooctonoic acid (PFOA) and perfluorooctane sulfonate (PFOS). In addition to an on-Site probable PFAS source related to fume suppressants, the Walpole Fire Department identified probable use 30 years ago of Aqueous Film-Forming Foam (AFFF) used in fire-fighting (also a known likely PFAS source) at a nearby petroleum storage tank fire that reportedly occurred at a bulk petroleum storage facility adjoining the Site to the east.

The purpose of this Supplemental Phase II ESA (the previously recommended remedial investigations) is to collect the additional information that will form the basis for an ABCA/RAP (also detailed herein) to aid in the redevelopment/and productive reuse of the Site property.

RESULTS

Supplemental Phase II Environmental Site Assessment

The Site is generally underlain by layers of fine to medium and fine to coarse sands, overlying silts and clays. The sand/clay interface is shallowest along the east edge of the property, at approximately 12 feet below grade and dips down steeply to the west and the southwest corner of the property to 25 feet below grade. Beneath the chromium source area (south end of the Former Industrial Building), the sand/clay interface ranges from approximately 12 to 17 feet below grade, sloping east to west. The depth to the clay interface beneath the inferred chromium soil contaminant maxima is about 12.5 feet below grade. Bedrock was not encountered to a depth of 30 feet below grade (depth of the deepest Site boring) and has not been determined as part of this assessment.

For the two groundwater sampling events conducted by Ransom in September 2015, and July 2017, the depth to groundwater ranged from as shallow as 12.57 to as deep as 22.56 feet below grade at the Site. The depth to groundwater is deepest along the western edge of the study area and shallowest along the eastern edge of the property. Based on the measured depth to groundwater across the Site, for the July 17, 2017 monitoring date the hydraulic gradient was a steep 0.14 feet/foot but flattened dramatically on the western abutting Lot 63 parcel to 0.002 feet/foot. The hydraulic gradient from east to west appears to correlate fairly well with the depth of clays and silts which likely act as an aquitard to groundwater.

The following results are indicated for each AOC that was further assessed as part of this investigation:

AOC 1—Chromium Impacted Soil (above SRS)

The scope of this Supplemental Phase II ESA included investigations to: (1) better estimate the mass of chromium-impacted soils with contaminant concentrations above SRS; (2) identify a potential source mass of nickel (and cadmium) impacted soils in the area of the former nickel plating line; and (3) assess groundwater for plating area impacts, including for PFAS.

Both trivalent and hexavalent chromium contaminated soils were documented in the area of the Former Industrial Building chromium plating line at concentrations exceeding SRSs. Neither nickel nor cadmium were detected at concentrations above their SRSs, and samples with the highest XRF field screening readings were selectively submitted for analyses. No source mass was identified for these contaminants of concern is Site soils.

XRF field screening results provided a good indication of the vertical distribution of chromium in each boring. In addition, XRF field screening data correlated well to total chromium laboratory data ($Y = 0.64X$, with a goodness of fit (R^2) of 0.84). Based on the distribution of the elevated chromium, the plating line area at the ground surface in the southeast corner of the former building footprint appears to be the primary source. The long axis of the chromium plating line was oriented north-south and so, too, was the evidence of shallow soil impacts. Records on file at the NH DES (SHA Phase I ESA) document that liquids from the chrome plating line were allowed to overflow onto the floor and drained to a floor drain that reportedly was routed to the municipal sewer from 1963 through the early 1980s and later was routed from the floor drain to the Wastewater Pre-Treatment Building and, after treatment, to the municipal sewer. In addition to the chrome plating line area, chromium impacts were noted in shallow soils collected from boring B211 near the general area of a former chromium mist condensate shed that housed collection equipment for condensate stack emissions from the plating lines. This wood-floored shed was located off of the south end of the Former Industrial Building and was reportedly underlain by pavement. Two soil samples were collected in the late 1990s to document soil conditions in this area and no significant impacts were detected. The samples were collected from two 45 degree angled borings advanced 4 feet; the location of these shallow borings is not known precisely.

Based on the mapped distribution of chromium, elevated contaminant concentrations extend about a foot downward into a silty clay unit encountered about 12 feet below grade beneath the east edge of the Former Industrial Building footprint area sloping down to about 17 feet below grade beneath the west edge of the Former Industrial Building. The volume of impacted soils above SRSs, and therefore targeted for remediation/removal, is estimated at 380 cubic yards.

SPLP analyses for chromium, nickel, and cadmium were conducted on selected soil samples within the saturated zone to assess the likely leaching potential for moderate to low-concentration metals-impacted soils that might be left in place following source removal, particularly within groundwater saturated soils. Concentrations of detected SPLP metals were generally low. Of the samples analyzed, the sample with the highest XRF reading (1,235 parts per million (ppm)) also had the highest SPLP laboratory result (2.26 mg/L) but met the SRS for both hexavalent and trivalent chromium. Detected SPLP nickel and cadmium were typically lower than chromium concentrations and were below quantitative detection limits at the downgradient extent of the area of impacted soils proposed for removal. In general, SPLP chromium detections were lowest laterally away from the concentration hot spot and decreased by a factor of 2 at the downgradient extent of the mass targeted for removal. Taken together, the SPLP data supports that removal of soils to concentrations meeting SRS will generally result in a significant decrease in the likelihood that remaining soils will act as an ongoing source to groundwater impacts. For the available Site data, there was a poor correlation between XRF chromium concentrations and SPLP chromium concentrations. Establishing an XRF threshold value to use real-time data as a decision tool to determine limits of excavation and to allow some soils to be left in place and not act as an ongoing source for some screening value higher than the SRS does not appear to be supported.

Setting a precise XRF screening concentration at which soils are hazardous with respect to chromium is not supported by the limited data, as well as the uncertainty inherent in attempting to quantify a relationship between SPLP results for Site soils and probable waste characterization chromium results (i.e. toxicity characteristic leaching procedure (TCLP) results below 5 milligrams per liter for chromium). Even with additional data, predicting TCLP results may not be feasible considering that small changes in soil types spatially, and the different solubilities of different chromium valence states and chromium compounds that may be present will likely affect leachable concentrations. Therefore, Ransom proposes a 1,500 ppm XRF field screening value as a threshold above which excavated soils will be segregated and assumed to fail the hazardous characteristic for chromium. This proposed value is inferred to be conservative considering that for Site soils and regressed XRF and laboratory data for total chromium (for which there is a good correlation for Site data) the proposed 1,500 ppm XRF value corresponds to an actual (i.e. laboratory determined) total chromium concentration of 1,000 mg/kg, the SRS for trivalent chromium. Qualitatively, this value is consistent with Site data that documents limited leaching potential (albeit for the SPLP chromium analyses) for soils approaching the 1,500 ppm XRF value.

<u>AOC 2—Former Industrial Building</u>

The scope of this Supplemental Phase II ESA included investigations to identify a potential source mass of nickel (and cadmium) impacted soils in the area of the former nickel plating line (as noted in AOC 1, above), confirm groundwater quality downgradient of the current and former building source areas and assess for potential PFAS impacts to groundwater, and assess soil and groundwater quality downgradient of the industrial wastewater lines buried between the Former Industrial Building and the Wastewater Pre-Treatment Building for metals impacts.

As noted above neither nickel nor cadmium were detected at concentrations above their SRSs in soils samples collected and analyzed from potential residual source area; therefore, no quantifiable source mass has been identified for these contaminants of concern. Metals concentrations detected in soils samples from boring B209 advanced adjacent to industrial wastewater lines buried between the Former Industrial Building and the Wastewater Pre-Treatment Building identified minor evidence of a release of metals in those soils but did not identify contaminant concentrations that would indicate a local source that would be likely to contribute to ongoing impacts to groundwater. Specifically, metals concentration that were detected with the XRF did indicate a slight increase in chromium concentrations at 10 to 12 feet below grade, and a more pronounced increase at the groundwater table 20 to 22 feet below grade. Laboratory results for the sample from 20 to 22 feet below grade documented total chromium at 257 mg/kg, well below the trivalent chromium SRS and unlikely to exceed the hexavalent chromium SRS, based on the ratio of hexavalent to trivalent chromium for most site soils with SRS exceedances.

Groundwater quality for the samples collected from wells downgradient of the Former Industrial Building and the Wastewater Pre-Treatment Building confirmed results from 2015 with the highest concentration in dissolved metals located downgradient of the former plating lines (chromium at 5,270 micrograms per liter (µg/L), nickel at 1,390 µg/L and cadmium at 31.52 µg/L exceeding SRS of 100, 100 and 5 µg/L, respectively), with lesser concentrations proximal to the Wastewater Pre-Treatment Building sumps (nickel at 301 µg/L and cadmium at 5.32 µg/L). Groundwater quality for the sample collected from the well installed proximal to the waste water lines was consistent with Site-wide spatial dissolved contaminant gradients and did not support a secondary source in that immediate area.

PFAS telomeres PFOS and PFOA were detected at concentrations (as high as 7.08 µg/L and 0.0802 µg/L, respectively) above their AGQS (0.070 µg/L for total PFAS and for each telomere, individually). The highest concentrations of PFAS were detected in the groundwater sample collected from the monitoring well located downgradient of the plating line area and lesser concentrations were detected in the sample collected from the monitoring well located downgradient of the Wastewater Pre-Treatment Building sumps. Because the former off-site fire where AFFF was likely used was located upgradient of the plating lines, the PFAS contaminant distribution could be consistent with a fume suppressant release source, a fire-fighting foam source, or a combination of the two.

<u>AOC 6—Downgradient of Former Industrial Building and Wastewater Pre-Treatment Building</u>

The scope of this Supplemental Phase II ESA included additional investigations to confirm groundwater quality downgradient of the Former Industrial Building and the Wastewater Pre-Treatment Building (as noted under AOC 2), and to evaluate downgradient and off-site groundwater quality (with exception that the downgradient property owner has declined authorization to assess for PFAS).

Groundwater quality for the sample collected from monitoring well MW202 installed on Tax Map 20 Lot 63, located approximately 55 feet west (downgradient) of the Site, in line with the inferred dissolved contaminant maxima, did not document AGQS violations for metals and for Site contaminants of concerns (COCs), only cadmium was detected at a very low concentration (0.09 µg/L, estimated). The sample was not analyzed for PFAS, per requirement of that property owner.

Per the request of a nearby homeowner, a groundwater sample was collected from a dug well used for irrigation water located in the basement of 69 Main Street (Tax Map 20 Lot 51), 175 feet to the north of the Site. Lead was detected at a concentration (31 µg/L) above its AGQSs) (15 µg/L). Other than nickel and barium at very low concentrations (3 µg/L estimated, and 47 µg/L), no other RCRA metals were detected. Lead has not been detected at elevated concentrations in soils or groundwater at the Site. The sample was not analyzed for PFAS.

RESULTS ADDENDA

Based on an initial reporting of the results of this work to the NH DES and to other stakeholders, two additional investigations were conducted:

1. Groundwater samples were collected from selected wells (MW102, MW105, SH-3, and MW202) and analyzed for the presence of PFAS. Two of the wells were selected based on NH DES information that an above ground storage tank for storing Teflon (coating) was located in the northwest corner of the Former Industrial Building. The sampling, conducted by Sanborn Head & Associates, Inc., under contract to the NH DES, confirmed PFAS compounds above AGQSs and a likely second source of PFAS associated with the Teflon tank.

2. Two offsite monitoring wells were installed, and groundwater samples were collected from selected wells (MW103, and new wells MW301 and MW302,) and analyzed for the presence of PFAS. The two new wells were installed to assess the down gradient extent of PFAS impacts above AGQSs in a northwesterly direction (MW301) and to assess for possible impacts associated with the use of AFFF to suppress a fire on the east adjoin property (MW302). Although PFAS compounds were detected in the two newly installed wells the concentrations of the regulated PFAS analytes did not exceed AGQSs. An exceedance of PFOS was documented in the sample from MW103. The results of the additional investigation conducted by Ransom on behalf of the Subject Property owner do not adversely affect the recommendations contained in this RAP but do help to define the limits of the GMZ. It should be noted that the static groundwater level data collected as part of this work appears to suggest a localized steep southwesterly gradient to the southwest of the Former Industrial Building, which if further substantiated, could necessitate an additional monitoring well to the southwest to confirm the limits of the GMZ (AGQS attainment) in that direction.

ABCA/RAP

Three alternatives were considered to remediate soils at the Site contaminated by plating processes, and to remediate groundwater at the Site, including: “Monitored Natural Attenuation” (Alternative 1); “Excavate and Dispose of Soils with SRS Exceedances” (Alternative 2); and “Excavate and Dispose of Soils to Reduce Leaching Potential, Manage Soils in Place” (Alternative 3). These alternatives were evaluated using the following criteria: Overall Protection of Human Health and the Environment; Technical Practicality; Ability to Implement; Reduction of Toxicity, Mobility, and Volume; Short Term Effectiveness; Resiliency to Climate Change Conditions; and Preliminary Cost.

These remedial alternatives are proposed with the understanding and consideration that the community’s preferred future use of the Site is as a parking lot in support of the Village.

All of the remedial alternatives evaluated include the removal of the Wastewater Pre-Treatment Building, including abatement of hazardous building materials and hazardous substances associated with inactive waste water sumps within the building. Although not part of “remediation” under Alternative 1, removal of the building is necessary to construct the planned parking lot. Removal of the building is also necessary for remediation purposes for Alternatives 2 and 3, to access soils beneath the sumps, in addition to construction of the parking lot.

The Monitored Natural Attenuation (MNA) alternative includes removal of near-surface (upper 1.5 feet) soils over a portion of the Site in order to construct the parking lot but did not include removal of soils inferred to be an ongoing source of groundwater impacts. Remaining soils would be managed under an AUR. This alternative reduces risk of human exposure to contaminated soils through the removal of near-surface soils and through paving but requires long-term (50 years assumed) groundwater monitoring because Site contaminants are likely to attenuate over time through dilution only and, for the most part, do not degrade. The lack of “source” mass reduction, which leaves in place subsurface chromium, and likely PFAS-impacted soils is a critical shortcoming of this alternative which was not selected.

The Excavate and Dispose of Soils to Reduce Leaching Potential, Manage Soils in Place alternative includes removal of the most contaminated soils including soils likely to leach contaminants into groundwater in the area of the former plating lines and from beneath the sumps. Near-surface impacted soils would then be used as deep (but above the water table) backfill, reducing human exposure risk. Remaining soils would be managed under an AUR. This approach provides the benefits of source mass and reduced cost due to reduced soil disposal volume. Significant uncertainty is inherent in this approach because no reliable leaching-based standard and no definitive correlation between the lower limit of acceptable leaching potential and XRF field measurements and SPLP laboratory results was supported by the data. Therefore, the uncertainty in the successful implementation of this alternative, i.e. whether the leachable source was truly being removed during remedial excavations, was a shortcoming of this alternative which was not selected, and insufficient source removal would lead to a longer period of groundwater monitoring.

The “Excavate and Dispose of Soils with SRS Exceedances” alternative includes the removal of all accessible soils with regulated contaminants present at concentrations above the SRS which is both protective of human health and most proactive in terms of source reduction to promote attainment of AGQSs. It has the added benefit of removing a probable PFAS source area and possible residual nickel and cadmium source areas by addressing the broader chromium impacts in the plating line area and in soils beneath the sumps. No AUR is anticipated as an outcome of this approach. This alternative is proven to protect human health and the environment; is effective, technically feasible, and practical; and, although is the most expensive option considered, it is also the most cost-effective.

CONCLUSIONS AND RECOMMENDATIONS

Environmental investigations conducted at the Site identified contamination associated with historic Site operations, including the presence of hazardous building materials, hazardous substances within the building (sumps contents), and metals (notably hexavalent and trivalent chromium, and possibly PFAS) contaminated soil, and/or groundwater (chromium, nickel, cadmium, and PFAS). To address the impacted media on-site, three remediation alternatives were evaluated, including a “Monitored Natural Attenuation” alternative, an “Excavate and Dispose of Soils with SRS Exceedances” alternative, and a “Excavate and Dispose of Soils to Reduce Leaching Potential, Manage Soils in Place” alternative. These alternatives also included additional remedial work including the full removal and abatement of hazardous building materials and demolition of the building as well as soils excavation to prepare for a proposed parking lot.

The MNA alternative was determined to be unacceptable because it did not meet threshold criteria of the overall protection of human health and the environment. Alternative 3 – Excavate and Dispose of Soils to Reduce Leaching Potential, Manage Soils in Place suffered from the lack of supporting technical documentation to arrive at an appropriate leaching based standard to be protective of future groundwater impacts and also would be less aggressive at remediating suspect PFAS impacted soils.

Alternative 2 – Excavate and Dispose of Soils with SRS Exceedances protects human health and the environment and is effective, technically feasible, practical, and provides a construction site ready for redevelopment as a proposed parking lot in support of the Walpole Village needs. Because this alternative meets the evaluation criteria and could be largely funded through a U.S. EPA Clean-up Grant, if awarded, this is the recommended remedial alternative. It should be noted that since the preparation of the initial draft of this RAP, regional soil disposal facilities have a heightening awareness of the possible increased costs of accepting PFAS contaminated soils. These increased costs are associated with the expense of treating landfill leachate to meet possible future landfill leachate discharge limits. As such, some facilities have decided not to accept additional soils with known PFAS contamination. Therefore, the cost estimates provided in this report have been updated and may increase (or decrease); the extent of that possible change in cost is presently unknown. Management options for PFAS-contaminated soils and their costs should come into better focus as experience and regulations associated with this emerging suite of contaminants evolve.

Because possible/probable uses of PFAS on the Site associated with past facility operations were highly likely to be co-located with the plating and waste management processes that are also driving the clean-up proposed herein, the recommended remedial action is anticipated to mitigate probable PFAS source soils that could be present on Site. However, the NH DES is likely to require additional investigations to: (1) address the spatial extent of PFAS groundwater impacts; (2) assess whether a possible upgradient source (the reported likely use of AFFF by the Walpole Fire Department) is contributing to PFAS groundwater impacts; and (3) assess whether stack emissions from the Central Plating facility may have impacted nearby surface soils. While the proposed remediation is a proactive remedial approach that will probably mitigate PFAS impacts, the presence of PFAS, and the limited spatial data pertaining to PFAS groundwater impacts and no laboratory data on PFAS soils impacts does add uncertainty relative to possible additional required investigations, remediation, liability, disposal costs, and duration of GMP-required groundwater monitoring, which are not fully factored into this ABCA/RAP. In addition, based on the recent findings of a second on-Site probable source (area of the former Teflon tank), in an area not previously targeted for soil excavation, removal of an additional PFAS source in that area may be warranted at some point in the future, if and when leaching-based soils standards are established by the NH DES. Although PFAS impacts to soils have not been verified, nor has the extent of residual soils contamination been defined (soil standards have yet to be established), for perspective, at current rates, the excavation, disposal and backfill of 100 tons of PFAS-impacted, non-hazardous soils, is on the order of $30,000.

The recent investigations on the Site and adjoining properties have helped to define the limits of the GMZ, which has largely been constrained, and the laboratory data support that contaminant concentrations attenuate to meet AGQSs within the study area. If a localized southwesterly component of groundwater flow is further substantiated, then an additional monitoring well may be needed to the southwest to assess groundwater quality in that direction. Off-site monitoring wells currently proposed by Nobis Engineering, Inc. for installation for the neighboring Toles Sunoco LUST site may meet that need.

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1.0 INTRODUCTION

Ransom Consulting, Inc. (Ransom) is pleased to present this report documenting a Supplemental Phase II Environmental Site Assessment (ESA) for the Central Plating Site located at 12 Westminster Street in the Town of Walpole, Cheshire County, New Hampshire (Site) as well as an Analysis of Brownfields Cleanup Alternatives/Remedial Action Plan (ABCA/RAP). This report was prepared for the Southwest Region Planning Commission (SWRPC), who received a United States Environmental Protection Agency (U.S. EPA) Brownfields Assessment Grant to conduct site assessments and investigations at properties within the region with the intent to revitalize underutilized properties. Please note that based on an initial reporting of the results of this work to the New Hampshire Department of Environmental Services (NH DES) and to other stakeholders, two additional investigations were conducted: one contracted through the NH DES, one through the Site owner. The additional investigation findings are summarized in this report as results addenda. The report should be read in its entirety to understand the conclusions and recommendations presented here-in.

The Site consists of two land-locked adjoining parcels within the center of Walpole village designated as Lots 65 and 66 on the Town of Walpole Tax Map 20, and comprise approximately 0.089 and 0.190 acres of land, respectively. Lot 65 is improved with a 1,008 square foot garage-style, single-story building identified herein as the Wastewater Pre-Treatment Building. A single-story, slab-on-grade, masonry light industrial building, herein identified as the Former Industrial Building, was located on Lot 66 prior to demolition in 2012. The currently vacant Site was most recently occupied by Central Plating Inc. which conducted electroplating of metal parts from 1963 until circa 2006. The Site is a listed Hazardous Waste Site Project with the NH DES; having been assigned Site number 199806071 and Project number 0032266.

The work was completed in accordance with Ransom's Site-Specific Quality Assurance Project Plan (SSQAPP) for the Central Plating Site, dated June 23, 2017. The SSQAPP was reviewed and approved by the NH DES and the U.S. EPA prior to implementation of the field activities.

1.1 Purpose

The objective of this Supplemental Phase II ESA is to further investigate and characterize the contaminant source areas identified during SHA and Associates, Inc. (SHA) and Ransom's Phase II ESAs. The purpose of this Supplemental Phase II Remedial Investigation is to collect information that will allow for the development of an ABCA/RAP to protect human health and the environment from impacts associated with known or suspected releases of hazardous substances from the Central Plating, Inc. operations, which when implemented will aid in the redevelopment/and productive reuse of the Site property. Current re-use plans for the property incorporate the parcel into a larger multi-lot plan to redevelop an underutilized commercial hub within the village of Walpole at the corner of Westminster and Main Streets.

1.2 Special Terms and Conditions

This Supplemental Phase II ESA and ABCA/RAP was conducted in accordance with our Scope of Work, executed on May 5, 2017. Authorization to perform the work was provided by SWRPC.

Ransom did not conduct a Phase I ESA; therefore, the recognized environmental conditions (RECs) or potential RECs investigated as part of this Supplemental Phase II ESA and the overall scope of work are based on the results of previous investigations conducted by Ransom and by others as further detailed in this report and upon specific requests for additional investigations made by the NH DES.

The services and the contents of any project reports and associated documents provided by Ransom are solely for the benefit of SWRPC and its Brownfields Program, and the Town of Walpole, their affiliates and subsidiaries, and their successors, assigns, and grantees. Reliance or use by any such third party without explicit authorization in the report does not make said third party a third party beneficiary to Ransom's contract with SWRPC. Any such unauthorized reliance on or use of this report, including any of its information or conclusions, will be at the third party's risk. For the same reasons, no warranties or representations, expressed or implied in this report, are made to any such third party.

1.3 Limitations and Exceptions of Assessment

The Supplemental Phase II ESA was executed in general accordance with the scope of work proposed in the SSQAPP. Minor revisions to the proposed scope of work and methodologies were implemented based on conditions encountered in the field, namely the distribution of metals detected during real-time field screening for metals led the to the advancement of an additional boring for source delineation and to analyses of selected additional metals for certain soils samples, again based on field screening results. Any revisions to the scope of work or methodologies outlined in the SSQAPP are discussed in Section 2.0 (Investigation Methodology).

1.4 Site Description and Setting

The Site is located at 12 Westminster Street in the Town of Walpole, Cheshire County, New Hampshire. The Site consists of two land-locked adjoining parcels within the center of Walpole village. The parcels are designated as Lots 65 and 66 on the Town of Walpole Tax Map 20, and are approximately 0.089 and 0.190 acres, respectively. Access to the site is obtained via a right-of-way from Westminster Street. Lot 65 is improved with the 1,008 square foot garage-style, single-story Wastewater Pre-Treatment Building. A single-story, slab-on-grade, masonry Former Industrial Building previously was located on Lot 66 and was reportedly demolished in 2012. Asphalt-paved surfaces cover about 50 percent of the site area.

Land use in Walpole village is primarily residential and commercial; properties adjoining the Site include a residential apartment building to the west, residences to the north and northeast, parking lots and commercial/residential properties to the east, and a restaurant to the south. Although Ransom has not conducted a Phase I ESA for the property, current or past land uses of potential environmental concern have been identified in locations that have the potential to impact the property including the former Tole's Sunoco (a listed NH DES Leaking Underground Storage Tank (LUST) Site and gasoline service station), a former fire department station (eastern adjoiner to Lot 65, currently a commercial/residential property), and a former bulk fuel distributor (eastern adjoiner to Lot 66, currently a parking lot).

The topography of the Site is relatively flat; regional topography slopes down to the west and northwest from a topographic high to the east. On a more localized scale, topography north of the Site slopes towards a northwest-flowing drainage. The closest surface water body to the Site is Mad Brook located 500 feet to the north-northwest and the Connecticut River is located 1,750 feet to the west. Refer to the attached Site Location Map (Figure 1) to view the general location of the Site on a 7.5-minute topographic quadrangle. Figure 2 shows the Site and nearby properties discussed in this report.

Based on water use assessment inquiries made by Ransom with the Town of Walpole Assessor's Office, and through queries at the NH DES OneStop, the Site neighborhood is serviced by municipal water and no private or public potable water supplies wells were identified within 1,000 feet of the Site. The sources for the municipal water supply are bedrock and gravel-packed overburden wells, located more than 1,000 feet from the property. As shown on the NH DES OneStop Web Geographic Information System, the site is not located in a Wellhead Protection Area, but the entire region located east of the Connecticut River is located within a Drinking Water Source Protection Area, presumably because the "Cheshire County Nursing Home / Maplewood" located 7 miles downriver of the Site in the Town of Westmoreland relies in part on a Connecticut River source for potable water. Mapped water supply wells shown on the GIS Map generated by the OneStop are located greater than 1,000 feet from the Site. Based on this information, no potable water potential receptors were identified within 1,000 feet of the Site. It is Ransom's understanding that a NH DES August 2017 review of potential consumptive-use water supply well users within 2,000 feet of the subject property identified one commercial parcel located about 1,600 feet west-southwest of the property near the Connecticut River that is not serviced by municipal water and may rely on an on-site water supply well. In addition, as a result of public outreach associated with this project, a dug well located in the basement of a residence was identified that is used for garden irrigation at 69 Main Street (Map 20, Lot 51).

As of 2013, the year of the recent SHA Phase I and II ESAs, the Site was most recently occupied by Central Plating. Reportedly, Central Plating conducted electroplating of metal parts at the site from 1963 until circa 2006. Major process operations included: anodizing of aluminum parts (using nitric and sulfuric acids); chrome electroplating (generally of stainless steel parts); nickel electroplating; chromate electropolishing; black oxide finishing; passivation (using nitrate with dichromate); and a lacquer dip tank used to coat racks used in nickel plating. Supporting/ancillary activities also included solvent degreasing operations, on-site industrial wastewater treatment, and combustion of fuel oil for process and space heating. The industrial building formerly located on the northern portion of the Site (Lot 66) housed the production operations of Central Plating. The structure remaining on the south portion of the Site (Lot 65) housed the wastewater pretreatment of process-derived wastewaters from the electroplating operations; with the pretreated wastewater directed to the municipal sewer for which effluent is conveyed by the Town of Walpole to a wastewater treatment facility located in Rockingham, Vermont. According to a SHA Phase I ESA, wastewater from the operation of Central Plating was directed to the municipal sewer system since the start of operations circa 1963; originally the wastewater was untreated prior to entering the municipal system, which historically was piped directly to the Connecticut River. Reportedly, pretreatment of process-derived wastewater began circa 1982, with subsequent upgrades in the 1990s, to comply with more stringent state and/or federal regulations. The Town of Walpole marked the Site sewer line as wrapping around the north side of the Wastewater Pre-Treatment Building and then south to Westminster Street along the west side of that building; however, an old process schematic shows the sewer line routed to the east of the Wastewater Pre-Treatment Building.

Previous investigations have been completed for the Site and are summarized in Section 1.6.

A property boundary survey was not completed as part of this investigation. The property boundaries shown on the attached figures are approximate based on Town of Walpole tax maps, as well as Site plans for adjoining properties.

Refer to the attached Site Plan (Figure 3) for a layout of the Site and the locations of key Site features.

1.5 Potential Future Site Use

Current re-use plans for the property incorporate the Site parcels into a larger multi-lot plan to redevelop an underutilized commercial hub within the village of Walpole at the corner of Westminster and Main Streets. The Site parcels will augment the current limited parking in support of street-front redevelopment initiatives and business expansion that will expand upon and reinvigorate the village character of this classic New England town. Parking will consist of asphalt paving over an appropriate base.

1.6 Previous Environmental Investigations

The Phase I ESA was conducted by SHA in 2013 to evaluate the Site for evidence of RECs using the procedures set forth in the requirements of ASTM International Standard Practice E 1527-05. Based on the findings of the Phase I ESA, SHA completed a Phase II ESA at the Site to investigate the previously identified RECs. The Phase I and Phase II ESAs were conducted in the summer and fall of 2013. SHA was contracted for this work by a prospective buyer who was considering the Site for redevelopment, primarily for commercial use. The SHA Phase II ESA was followed by additional investigations through the SWRPC U.S. EPA Brownfields Assessment Grant. At the time of SHA's ESA work, the Site was owned by Nils A. M. Westberg of Walpole, New Hampshire and Fort Lauderdale, Florida. Since that time, Mr. Westberg has passed away and the property was inherited by Ms. Marianne Westberg.

The following provides a summary of some of the key findings presented in these reports as well as NH DES responses.

Phase I Environmental Site Assessment, 12 Westminster Street, Walpole, New Hampshire; Sanborn, Head and Associates, Inc., dated December 2013

SHA's 2013 Phase I ESA was conducted after the industrial building was demolished; however, a previous Phase I ESA was conducted by Stantec in 2006, after the operations of Central Plating had ceased, but prior to the demolition of the industrial building, and is summarized in the SHA report. At the time of Stantec's site reconnaissance, some of the equipment related to the operations of Central Plating remained within the industrial building and some had been sold and removed for reuse by an electroplating company in Vermont. Stantec interviewed persons familiar with the operations of Central Plating and also personnel from the company which purchased the Central Plating equipment. According to these interviews, waste derived from Site operations was directed to a floor drain within the industrial building which was, at that time, directed to the waste water pretreatment building currently located on the Site. Personnel from the company purchasing the equipment reportedly were told by an operator of the Central Plating pretreatment wastewater system, that when valves were open in a certain way, untreated process derived wastewater would be released into soils beneath the treatment building. Additional observations by Stantec in 2006 pertinent to RECs included extensive staining of the floors and walls within the industrial building due to apparent spills and releases related to the operations of Central Plating; and an area of extensively stained soils off the northern end of the industrial building, apparently originating from a vent on the northern wall of the industrial building. At the time of Stantec's 2006 ESA report, an underground storage tank (UST) was located off the southern end of the industrial building, in close proximity to the boiler room. This UST was reportedly utilized for the storage of heating oil and was installed on the Site in 1963. Stantec recommended the removal of this UST. According to SHA's 2013 ESA report, the UST had been removed from the Site and no release was reportedly observed. No formal UST closure documentation was prepared at the time of removal because closure documentation was not a requirement of the NH DES for the size of that UST, reportedly a 500 to

600-gallon tank. Site observations and recommendations pertaining to the industrial building and detailed in Stantec's 2006 report were incorporated into the findings of SHA's 2013 Phase I ESA report for the Site.

It was SHA's opinion that the Site exhibited the potential for RECs, primarily related to past uses of the property as an electroplating facility with hazardous chemicals regularly stored and treated at the Site. SHA's review of environmental records indicated that multiple inspections by the NH DES, U.S. EPA, and/or Occupational Safety and Health Administration (OSHA) in the late 1990s and the 2000s found sub-standard operating procedures, improper handling and storage of hazardous wastes, and/or conditions that generally posed a threat to human health and the environment. SHA concluded that releases of hazardous substances from past site operations to soil and groundwater could not be ruled out.

SHA also noted the presence of a LUST site, the former Toles Sunoco Station (still an active gasoline retailer), approximately 200 feet east-southeast from the Site and in an upgradient position relative to the Site. Given the upgradient location, adverse impacts to the Site from this neighboring LUST site were inferred to be possible.

Given the conclusions of the Phase I ESA, SHA recommended the completion of a Phase II ESA to further assess the potential impacts to Site soils and/or groundwater from former Site uses and/or neighboring properties of concern.

Phase II Environmental Site Assessment, 12 Westminster Street, Walpole, New Hampshire; Sanborn, Head and Associates, Inc., dated December 2013

In October 2013 SHA completed the field work associated with the Phase II ESA at the Site; including the advancement of six soil borings utilizing push-probe methodology (Geoprobe®); identified as GP-1, GP-2, and SH-1 through SH-4 (Figure 2). The borings were advanced to depths of approximately 15 to 25 feet below ground surface (bgs). Four of the borings, SH-1 through SH-4, were completed as groundwater monitoring wells. During the boring activities soil samples were field screened for the presence of photoionizable compounds (PICs), with select soil samples submitted for laboratory analysis. Based on field screening and observation, soil samples were analyzed for the presence of volatile organic compounds (VOCs), polycyclic aromatic hydrocarbons (PAHs), total petroleum hydrocarbons (TPHs), select metals, polychlorinated biphenyls (PCBs, for soil samples collected from GP-1, SH-1, and SH-3 only), and total cyanide (for a soil sample from SH-2 only). Groundwater samples were collected at a later date from the newly installed monitoring wells and submitted for laboratory analysis for the presence of VOCs, dissolved select metals, and total cyanide.

Laboratory analysis of soil samples documented elevated concentrations (as compared to typical "background" values) of certain metals, most notably chromium and copper, in the samples collected from borings GP-1 and SH-2. Detectable concentrations of VOCs (GP-1 and SH-1), PAHs (GP-1), and TPH (GP-1 and GP-2) were also present in these samples. Concentrations of target analytes were below applicable New Hampshire Code of Administrative Rules Chapter Env-Or 600 Soil Remedial Standard (SRSs), with one exception: the reported concentration of total chromium in the sample collected from boring GP-1 (2,400 milligrams per kilogram (mg/kg)), located in the vicinity of the former chrome plating line, exceeded the SRSs for trivalent chromium (1,000 mg/kg), as well as hexavalent chromium (130 mg/kg). To further assess the implications the chromium exceedance, SHA requested that the laboratory also analyze the sample for hexavalent chromium. Hexavalent chromium was detected in the soils sample from GP-1 at a concentration of 40.4 mg/kg. Although the concentration was below the applicable SRS for hexavalent chromium, it was SHA's opinion that the levels of both trivalent and hexavalent chromium may pose a health risk in a direct exposure scenario.

NH DES Ambient Groundwater Quality Standards (AGQS) were exceeded for groundwater samples collected from monitoring wells

1. SH-1 (benzene, naphthalene, 1,2,4-trimethylbenzene, methyl-t-butyl ether (MTBE), and arsenic), and

2. SH-2 (benzene, 1,2-dicholoroethane (DCA), MTBE, tertiary butyl alcohol (TBA), and nickel). VOCs were not generally detected in groundwater samples collected from monitoring locations SH-3 and SH-4 (low level-acetone was detected in the SH-4 sample).

Total cyanide was not detected in samples collected from any of the monitoring locations.

Based on the measured depth to groundwater across the Site, which ranged from 12 to 20 feet below grade, groundwater was inferred to flow to the west towards the Connecticut River, located approximately 1,700 feet west of the Site. The relatively steep downward gradient from east to west appears to correlate to the depth of clays and silts which likely act as a confining layer. The groundwater flow direction mapped by SHA does not coincide precisely with the north-northwesterly flow interpreted by others for the neighboring Toles Sunoco LUST site located approximately 200 feet east-southeast of the Site.

As summarized in the conclusions and recommendations portion of SHA's Phase II ESA report, soil and groundwater analytical results document the presence of metals and petroleum-impacted environmental media on-site.

The presence of chromium in soil at concentrations exceeding applicable SRSs at boring location GP-1 suggest that process materials may have been released to the environment as a result of the former site operations. Similarly, concentrations of nickel in groundwater exceeding the applicable AGQS and chromium concentrations above typical background values, but below AGQS in samples collected from monitoring well location SH-2 suggest that process liquids may have been released to the subsurface in this area via a sump and/or associated subsurface piping.

SHA noted that the elevated concentration of arsenic in groundwater at SH-1 may be related to the geochemical effects of the petroleum/VOC-impacted groundwater in this area which was inferred to be, at least in part, from an off-site up-hydraulic gradient source (the aforementioned gasoline station).

SHA recommended that their client inform the property owner of the NH DES SRS and AGQS exceedances; in accordance with the New Hampshire Code of Administrative Rules for Contaminated Site Management Chapter Env-Or 600, which requires the "responsible party" (typically the property owner or operator) to notify the NH DES of the AGQS violations within 60 days. Mr. Westberg, the owner of the Site, provided the NH DES with copies of the Phase I ESA and Phase II ESA reports.

In a letter dated March 28, 2014, the NH DES responded to Mr. Westberg regarding the department's review of these environmental reports. The NH DES correspondence summarized the findings of the Phase I ESA and Phase II ESA reports and provided comments related to the SRS exceedances detected in soil; the AGQS exceedances detected in groundwater; and the potential for off-site groundwater impacts.

NH DES Response to Phase II ESA Findings

The NH DES summarized SHA's Phase II ESA findings, offered comments, and provided the discussion summarized below.

Relative to the presence of chromium in soil above SRS, NH DES noted that the proximity to the chrome plating line, coupled with documented findings of past regulatory inspections, indicates that regulated contaminants were released to the environment and that the release(s) were likely associated with past electroplating operations. The NH DES concluded that, in accordance with Env-Or 600, remedial measures are required to mitigate the presence of chromium in soil at concentrations exceeding SRS. Because the lateral and vertical extent of the soil contamination in the vicinity of boring GP-1 has not been fully characterized, additional subsurface explorations are necessary to develop an accurate remedial approach.

The NH DES stated that the notification of groundwater quality violation presented in the Phase II ESA satisfies the reporting requirements of Env-Or 604.02, Notification of Groundwater Quality Violation; in accordance with Env-Or 600, continued groundwater monitoring under a groundwater management permit will be required to address the presence of Site related contaminants (primarily 1,2-DCA and nickel) at concentrations exceeding their respective AGQS.

The NH DES concluded that the concentrations of nickel and 1,2-DCA above AGQS at monitoring well SH-2 coupled with the inferred direction of groundwater flow, indicated the limits of the groundwater contaminant plume have not been established; therefore, an appropriate groundwater management zone cannot be established in support of a groundwater management permit. The NH DES stated that additional groundwater monitoring wells are necessary to define the extent of the groundwater contamination, and that some of these wells may need to be located on abutting properties to the west of SH-2. The NH DES went on to state that the source of arsenic in monitoring well SH-1 is not apparent; and acknowledged the conclusion presented by SHA that the level of arsenic may be attributable to mobilization of naturally occurring arsenic in soils associated with petroleum/VOC impacted groundwater, and not related to former Site activity. The NH DES stated that a review and evaluation of current and additional data is needed to evaluate this concept.

Related to the possibility of off-site impacts to site groundwater quality, the NH DES concurred with SHA's conclusion that the presence of the petroleum-related VOCs exceeding AGQS in Site groundwater (benzene, naphthalene, 1,2,4-trimethylbenzene, MTBE, and TBA) may be attributable, in part, to the gasoline station located approximately 200 feet from the Site. The NH DES also concurred that the Phase II ESA soil quality data did not suggest the presence of an on-Site petroleum source and the information contained within the NH DES file for the former Walpole Sunoco (NH DES LUST Site #199402012) documents the presence of similar petroleum-related VOCs in groundwater at an apparent hydraulically upgradient location from the Site.

The NH DES noted that additional information was necessary to further characterize the areas of documented releases prior to Site redevelopment and prior to the approval of a remedial action plan and groundwater management permit by the NH DES for the Site:

1. Conduct additional subsurface investigation in the vicinity of soil boring GP-1. To fully define the extent of chromium contamination in soil above the SRS.

2. Install additional monitoring wells to support the establishment of a groundwater management zone.

3. Following installation and stabilization of the new monitoring wells, collect an additional round of groundwater samples from the entire monitoring well network. The samples are to be analyzed for the NH DES Waste Management Full List of Analytes for Volatile Organics, select metals (arsenic, chromium (total & hexavalent), copper, lead, nickel, and zinc), and total cyanide.

4. Perform a water use assessment for the immediate Site vicinity to confirm the absence of active residential water supply wells.

The NH DES requested that the Site owner submit the above-mentioned scope of work for additional investigation for Department approval by April 30, 2014. The owner did not undertake additional subsurface investigations as requested by the NH DES.

Phase II Environmental Site Assessment, 12 Westminster Street, Walpole, New Hampshire, Ransom Consulting, Inc., dated January 19, 2016

Through the Southwest Region Planning Commission U.S. EPA Brownfields Assessment Program, Ransom conducted a Phase II ESA to collect further information to aid the eventual development of a remedial action plan to protect human health and the environment from impacts associated with documented petroleum and/or hazardous substances, which when implemented will aid in the redevelopment/and productive reuse of the Site property. The specific objectives of the Phase II ESA were to further evaluate and investigate the subsurface contaminants detected in Site soils and/or groundwater during the previous investigations conducted by SHA and as documented above; and to further investigate the RECs and/or conditions of environmental concern identified in the Phase I ESA, also conducted by SHA.

The work also conformed with the on-Site characterization requirements stipulated by the NH DES in correspondence dated March 28, 2014 but did not fulfill off-Site characterization requirements for properties located downgradient of Lots 65 and 66.

Based on Stantec's and SHA's investigations and findings, RECs identified to be further evaluated by Ransom included the following:

1. Reported and documented releases of wastes associated with the former plating facility operations in the Former Industrial Building to Site soils and possibly to Site groundwater.

2. Reported and documented releases of wastes from the vicinity of the Wastewater Pre-Treatment Building to Site groundwater.

3. Possible releases of petroleum to Site groundwater from a potential former on-Site source (No. 2 fuel oil UST).

4. Documented releases of petroleum, possibly from an upgradient source.

Although not strictly a REC, Ransom also recommended characterization of hazardous building materials and wastes within the existing Site building sump be further evaluated. To evaluate the RECs, eight areas of concern (AOC) were identified on the Site and included the following:

AOC 1—Chromium Impacted Soil (above SRS);

AOC 2—Former Industrial Building, Floor Drains;

AOC 3—Stained Soils, Off Northern End of Former Industrial Building;

AOC 4—Former Industrial Building, Spray Paint Area;

AOC 5—Former Heating Oil Underground Storage Tank;

AOC 6—Downgradient of Former Industrial Building and Wastewater Pre-Treatment Building;

AOC 7—Upgradient Portion of Site (downgradient of neighboring LUST property); and

AOC 8—Hazardous Building Materials.

Ransom's Phase II ESA included the advancement of soils borings, the collection and analyses of soil samples for field screening for the presence of metals using a x-ray fluorescence (XRF) analyzer and PICs using a photoionization detector (PID), the selection and laboratory analyses of soil samples for the presence of selected metals, PAHs, total cyanide, VOCs and/or TPH-diesel range organics (DRO), the installation of five additional monitoring wells and the collection and laboratory analyses of groundwater samples from the new and existing wells for the presence of dissolved metals, total cyanide, and VOCs according to U.S. EPA methods.

As documented in Ransom's Phase II ESA, depth to groundwater ranged from 13.07 to 22.56 feet below grade, which probably reflects a seasonally lower water table. The depth to groundwater is deepest along the western edge of the property and shallowest along the eastern slope of the property. Based on the measured depth to groundwater across the Site, groundwater was inferred to flow to the west, towards the Connecticut River. The hydraulic gradient for the September 1, 2015 monitoring date was a steep 0.28 feet/foot. The relatively steep downward gradient from east to west appears to correlate fairly well with the depth of clays and silts which likely act as an aquitard to groundwater. Groundwater elevation data for the nearby and upgradient LUST site suggest there is a more northerly component to groundwater flow in the area which is consistent with local surface water drainage towards Mad Brook to the north. However, as noted above, for Site groundwater the westerly flow direction is supported by subsurface groundwater elevations and the apparent dip to the west of the underlying silt and clay layer. Bedrock was not encountered to a depth of 30 feet below grade (depth of the deepest site boring) and has not been determined as part of this assessment.

The following results were found through the Ransom Phase II ESA completed at the site:

<u>AOC 1—Chromium Impacted Soil (above SRS)</u>

Both trivalent and hexavalent chromium contaminated soils were documented in the area of the Former Industrial Building chromium plating line at concentrations exceeding SRSs. Contaminant concentrations of chromium were generally highest near the ground surface and are a human exposure risk through direct contact, including dust inhalation (if disturbed), dermal contact and ingestion. The soil contamination in excess of SRSs was observed to extend to 13 feet below grade, slightly penetrating into a clay and silt unit and into the groundwater table. The chromium release in this area is documented to have impacted the groundwater quality based on elevated concentrations of dissolved chromium detected in groundwater samples collected from about 30 feet west (down gradient with respect to groundwater flow) of the inferred release area. The volume of impacted soils above SRSs is estimated at 250 tons although additional sampling locations would be necessary to confirm this.

AOC 2—Former Industrial Building, Floor Drains

Other than arsenic which slightly exceeded its SRS, no other metals were detected at concentrations above the SRS, and no total cyanide or VOCs were detected for soil samples from borings advanced near the floor drains in the former plating area and the former anodizing area of the Former Industrial Building.

Analyses of groundwater samples collected from monitoring well MW102 located downgradient of the former plating line area documented dissolved chromium and nickel at concentrations exceeding their AGQSs by a factor of 57 and 11, respectively, cadmium exceeding its AGQS by a factor of 4, and arsenic slightly exceeding its AGQS. The presence of metals in the groundwater downgradient of the plating lines appears to be associated with the documented mass of chromium impacted soils, and a possible inferred mass of nickel impacted soils likely in the area of the former nickel plating line, which, based on a 1990 facility process diagram was located immediately (approximately 10 feet) west of the chrome plating line.

The downgradient extent of groundwater with metals impacts exceeding AGQSs was not able to be determined and may extend off-Site to the west.

AOC 3—Stained Soils, Off Northern End of Former Industrial Building

Evidence of coal combustion wastes were noted in near-surface soils in shallow borings advanced in this AOC with areas of dark soils and may account for a portion of the staining observed by SHA in an area off of the northern end of the Former Industrial Building where a stained exhaust vent was noted in previous Phase I ESAs. Contaminants detected in these shallow soils at concentrations above SRS were arsenic and PAHs, both of which are likely associated with the observed coal slag and cinders. In addition, trichloroethene (TCE) was detected, but at a concentration below its SRS.

No AGQS violations for VOCs, total cyanide and dissolved metals were documented in the groundwater sample collected from monitoring well SH-3, located down and slightly cross-gradient of the area of dark soils.

AOC 4—Former Industrial Building, Spray Paint Area

Although field screening data for B107 suggested that arsenic and lead might be present at concentrations exceeding SRSs in shallow soils from beneath the former spray paint area, no VOCs, total cyanide or metals were detected above SRSs in the shallow soil sample submitted for laboratory analyses.

In addition, no AGQS violations for VOCs, total cyanide, or metals were documented in the groundwater sample collected from monitoring well MW103, located downgradient of this area.

AOC 5—Former Heating Oil Underground Storage Tank

No PAHs or TPH-DRO were detected in soil samples collected from this AOC at concentrations exceeding SRS, and no VOCs were detected in the soil sample collected from 10 to 12.5 feet below grade in this area.

In addition, no VOCs were detected in groundwater samples collected from monitoring wells MW102 and SH-2, located down and slightly cross-gradient of this area, that would indicate evidence of a significant release of fuel oil.

AOC 6—Downgradient of Former Industrial Building and Wastewater Pre-Treatment Building

Other than arsenic detected at a concentration slightly exceeding its SRS in a sample collected from 20 to 22.5 feet below grade, no metals were detected in soil samples collected from borings advanced adjacent to and west (downgradient) of the Wastewater Pre-Treatment Building and the Former Industrial Building. No VOCs and no total cyanide were detected above laboratory detection limits for samples from the three borings.

Dissolved contaminants indicative of releases of metals waste were detected in groundwater downgradient of the Wastewater Pre-Treatment Building and the Former Industrial Building. Nickel and cadmium were detected at concentrations slightly exceeding their respective AGQSs in the vicinity of the sumps and associated wastewater piping for the Wastewater Pre-Treatment Building and suggest a modest ongoing source to groundwater in that area. Higher concentration dissolved contaminants indicative of releases of metals wastes (namely chromium and nickel, and to a lesser extent cadmium and arsenic) were detected in groundwater downgradient of the Former Industrial Building plating lines and appear to be associated with areas of known (chromium) or suspected (nickel) contaminated soils.

MTBE and other gasoline constituents were detected in groundwater samples from multiple locations downgradient of the Site building and former building, including MTBE above its AGQS at one location. The source of these impacts is inferred to be located off-site to the east as noted in AOC 7, below.
No cyanide was detected at concentrations above its AGQS for the groundwater samples collected to address AOC 6.

AOC 7—Upgradient Portion of Site (downgradient of neighboring LUST property)

Elevated field readings for PICs (up to 1,610 parts per million by volume (ppmv)) were measured for soil samples collected from depths within the upper portion of the seasonal groundwater table for borings advanced on the eastern and southern (upgradient) portions of the property (borings B101 and B111). Naphthalene was detected at a concentration above its SRS in a soil sample from boring B101 collected from the depth interval with the highest concentration field screening readings, and at lesser concentrations (below SRS) for the soil sample from B111. The suite of petroleum-related contaminants were similar for each of the two soil samples that were analyzed, which likely indicates the same source.

Benzene, MTBE, naphthalene, and 1,2,4-trimethylbenzene were detected in groundwater samples collected from upgradient monitoring wells MW101 and SH-1 and indicate an upgradient gasoline source for these contaminants. The MTBE plume may extend beyond the Site to the west in a down hydraulic gradient direction.

AOC 8—Hazardous Building Materials

Hazardous building materials were identified in the Hazardous Material Inventory (HMI) report and include small quantities of asbestos-containing window glazing or presumed asbestos containing materials, presumed PCB-containing fluorescent light ballasts, mercury containing light bulbs, and one thermostat switch that may contain mercury. In addition, waste solids were identified in the wastewater pre-treatment sumps which will require proper decommissioning prior to demolition.

High concentrations of metals and cyanide were detected in the wastewater pre-treatment sumps; these wastes are likely hazardous wastes and the sumps will need to be properly decommissioned and their wastes property disposed of.

The status of RECs identified above are listed below, based on the findings for the noted AOCs:

1. Reported and documented releases of wastes associated with the former plating facility operations from the Former Industrial Building to Site soils and possibly to Site groundwater. This REC was confirmed and partially quantified for releases of chromium, nickel and other metals near the plating lines areas located in the Former Industrial Building. However, this REC can be generally dismissed for the spray paint area, the anodizing line area, and former storage areas of the Former Industrial Building and for the area of reportedly stained soils off the north end of that building.

2. Reported and documented releases of wastes from the vicinity of the Wastewater Pre-Treatment Building to Site groundwater. This REC was confirmed for the sumps and/or wastewater lines proximal to the northwest corner of the Wastewater Pre-Treatment Building, albeit at concentrations that were slightly exceeding AGQSs. Because these AGQS violations have lingered since termination of operations in 2006, it is possible that a modest source of contaminants to groundwater is present in Site soils in that area.

3. Possible releases of petroleum to Site groundwater from a possible former onsite source (No. 2 fuel oil UST). This REC can be dismissed as no impacts above regulatory standards for contaminants associated with fuel oil were documented in soils or groundwater.

4. Documented releases of petroleum possibly from an upgradient source. This REC was confirmed based on the observed range, nature, and spatial distribution of dissolved contaminants.

Based on the data collected during this investigation, additional investigation and remedial planning were recommended, as follows:

1. The prospective purchaser should complete a Phase I ESA to update site history, assess for known as well as possible additional RECs, and to meet the "all-appropriate inquiries standard" adopted by the U.S. EPA and as detailed in ASTM E1527-13. If this Phase I ESA identifies additional RECs, a Supplemental Phase II ESA may also be warranted.

2. The prospective purchaser should consider applying for eligibility for participation in the New Hampshire Brownfields Covenant Program (Program). From a practical and

eligibility perspective, this Phase II ESA report should meet the Program requirements for a Site Investigation.

3. A remedial investigation scope of work should be prepared for NH DES approval and. Upon receiving approval, this investigation should be completed. Using that additional information, an ABCA/RAP should be prepared.

   The additional remedial investigations are recommended to include an assessment of the chromium impacted soils area to determine the approximate volume of impacted soils that (1) could exceed allowable upper concentration limits (for example, for hexavalent chromium), (2) is likely to require disposal as a hazardous waste if excavated, and/or (3) is likely to act as an ongoing source to groundwater impacts; as well as the approximate volume of soils that could require disposal as a non-hazardous waste, or perhaps be allowed to be left in place under an Activity and Use Restriction (AUR) if approved by the NH DES. The investigation would include delineation of the inferred nickel-impacted soils in the former nickel plating area as warranted by the presence of elevated concentrations of nickel in groundwater downgradient of this area, as well as the collection of nickel-impacted soils to screen for parameters that could support a nickel stabilization approach to remediation. Additionally, because the integrity of the waste water piping between the Former Industrial Building and the Wastewater Pre-Treatment Building is unknown the investigation should include the advancement of a boring and the installation of a monitoring well midway between the two building footprints and just downgradient of the subsurface piping to assess for impacts from potential waste water piping leaks. Finally, the additional investigation would include the installation of off-site wells to determine the limits of the Groundwater Management Zone (GMZ).

   The ABCA/RAP will include an evaluation of remedial alternatives including the following possible strategies, or an assemblage of strategies, that meet projected land use and NH DES regulatory clean-up requirements:

   a. Evaluation of the efficacy of a “monitoring only” approach;
   b. Removal and disposal of all soils with regulated contaminants exceeding SRS;
   c. Removal and off-site disposal of high-concentration (i.e., exceeding upper concentration limits (UCLs), having demonstrated leaching potential, or likely hazardous waste) chromium impacted soils, and management of selected impacted soils (i.e. with concentrations exceeding SRS but shown to have limited leaching potential through synthetic precipitation leaching procedure analyses) in place beneath an appropriate cap and under an AUR which could ultimately allow the Site to achieve regulatory closure, perhaps at a reduced cost; and **[*The NH DES is reluctant to support this approach; however, the potential cost savings and the possibility of that metric being essential to moving the project forward make further consideration of this approach appropriate.*]**
   d. Stabilization of moderate to low-impacted (i.e., exceeding SRS but below UCLs, with limited leaching potential based on Synthetic Precipitation Leaching Procedure (SPLP) analyses or with concentrations less than leaching based Risk Characterization and Management Policy

(RCMP) standards) nickel and cadmium impacted soils as an alternative to soils removal for the Wastewater Pre-Treatment Building sump area, likely using apatite (or similar) slurry injected to stabilize metals in place and thereby mitigate future groundwater impacts for the purposes of comparing remediation costs as part of an integrated remedial approach for multiple source areas, if shown to be technically feasible. **[*The NH DES is unsupportive of this approach; therefore, it will not be considered further*.]**

4. Once a RAP has been approved by the NH DES, file an application for a Groundwater Management Permit (GMP) in accordance with New Hampshire Code of Administrative Rules Chapter Env-Or 607.01 to establish a GMZ, manage the use of contaminated groundwater, and monitor remedial progress.

5. Complete design documents for RAP implementation, submit the documents for NH DES review and approval, solicit bids for RAP implementation, and implement the RAP.

6. Monitor Site and, if warranted, adjoining property groundwater quality in compliance with the GMP.

On November 22, 2016, the NH DES corresponded with "Stakeholders" regarding the requested analyses of an emerging contaminant commonly known as per- and poly-fluorinated alkyl substances (PFAS). The PFAS perfluorooctonoic acid (PFOA) and perfluorooctane sulfonate (PFOS) have newly established AGQSs. This analysis has been requested for this Site by the NH DES. As such, the SSQAPP included sampling methods and analyses for PFAS.

1.7 Recognized Environmental Conditions/Areas of Concern Requiring Additional Investigations

Of the eight AOCs previously identified for the Site, three AOCs have RECs requiring additional investigation to provide information to support remedial planning. The three AOCs are briefly summarized below along with the scope of work to evaluate each AOC. Refer to Ransom's approved SSQAPP for this Supplemental Phase II ESA, dated June 23, 2017, for further details pertaining to these AOCs as well as the scope of work.

<u>AOC 1—Chromium Impacted Soil (above SRS) – Former Plating Lines Area</u>

The scope of this Supplemental Phase II ESA includes additional investigations to better estimate the mass of chromium-impacted soils with contaminant concentrations above SRS, to identify a potential source mass of nickel (and cadmium) impacted soils in the area of the former nickel plating line, and analyses of groundwater for PFAS, an emerging contaminant of concern, known to be used as a vapor suppressant for plating baths.

The scope of work to address this AOC was as follows:

Advance six test borings designated B201 through B205, and B211, into the clay/silt layer or until a marked decrease in field-measured chromium concentrations is noted within AOC 1. Collect soil samples, classify the soils types observed, and screen the samples with an XRF analyzer for the presence of Resource Conservation and Recovery Act (RCRA) metals and nickel, to characterize the likely extent of metals impacts (notably chromium, nickel and cadmium). Based on the field screening results and visual observations, submit soil samples from test borings advanced in this portion of AOC 1 for laboratory analysis for the presence of total chromium (four samples), or RCRA metals and nickel (two samples) as warranted by field screening, by U.S. EPA Method 3050B/6010C/7471C, hexavalent chromium (six samples) by U.S. EPA Method 7196A and SPLP chromium (three samples) by U.S. EPA Method 3005A/6010C.

Advance three test borings designated B206 through B208, into the clay/silt layer or until a marked decrease in field-measured metals concentrations is noted within the area of the former nickel plating line inferred to have been located in AOC 1 between Ransom borings B109, B102, and SHA boring GP-2. Collect soil samples, classify the soils types observed, and screen the samples with an XRF analyzer for the presence of RCRA metals and nickel, to characterize the likely extent of metals impacts (notably chromium, nickel and cadmium). Based on the field screening results and visual observations, submit soil samples from test borings advanced in this portion of AOC 1 for laboratory analysis for the presence of RCRA metals plus nickel (three samples), by U.S. EPA Method 3050B/6010C/7471C, hexavalent chromium (one sample based on high chromium field screening results) by U.S. EPA Method 7196A and SPLP cadmium and nickel (one sample) or SPLP cadmium, chromium, and nickel (two samples with chromium added based on high field screening results) by U.S. EPA Method 3005A/6010C.

The intent of these borings is to evaluate if a residual nickel (or cadmium) source is present in Site soils in this area as has been inferred based on moderate-level dissolved nickel (and dissolved cadmium) concentrations immediately downgradient of the area as documented in the groundwater sample from MW102.

The work plan, detailed above, was modified slightly from the SSQAPP to include chromium or RCRA metals plus nickel analyses (i.e. to be less targeted for a specific metal source) for selected soil samples to assess for a chromium or nickel source based on real-time XRF field screening results and the inference/interpretation that potential source areas could be overlapping in the plating lines area.

<u>AOC 2—Former Industrial Building – Former Waste Water Piping Area</u>

The scope of this Supplemental Phase II ESA includes additional investigations to identify a potential source mass of nickel (and cadmium) impacted soils in the area of the former nickel plating line (as noted in AOC 1, above), confirm groundwater quality downgradient of the current and former building source areas and assess for potential PFAS impacts to groundwater, and assess soil and groundwater quality downgradient of the industrial wastewater lines buried between the Former Industrial Building and the Wastewater Treatment Building for metals impacts.

The scope of work to address this AOC was as follows:

Advance three test borings designated B206 through B208 and analyze soil samples, as noted above, to better characterize the former nickel plating line area.

Advance one test boring designated B209 into the clay/silt layer or until a marked decrease in field-measured metals concentrations is noted immediately west (down-hydraulic gradient) of the inactive waste water piping between the Former Industrial Building and the Wastewater Pre-Treatment Building to assess for possible impacts to soils or groundwater related to potential wastewater piping leakage. Collect soil samples, classify the soils types observed, and screen the samples with an XRF analyzer for the presence of RCRA metals and nickel. Based on the field screening results and visual observations, select and submit a soil sample from the test boring for laboratory analysis for the presence of RCRA metals plus nickel, by U.S. EPA Method 3050B/6010C/7471C.

Install one water table monitoring well (designated MW201) adjacent to and downgradient of the waste water piping that leads from the Former Industrial Building to the Wastewater Pre-Treatment Building. At the time of installation, develop the monitoring well by surging and then purging groundwater from the well. Two weeks after installation, measure static water levels and collect groundwater samples using low-flow methodology for laboratory analyses, as further detailed below and in the SSQAPP.

<u>AOC 6—Downgradient of Former Industrial Building and Wastewater Pre-Treatment Building</u>

The scope of this Supplemental Phase II ESA includes additional investigations to confirm groundwater quality downgradient of the Former Industrial Building and the Wastewater Pre-Treatment Building (as noted under AOC 2), and to evaluate downgradient and off-site groundwater quality (with the exception that the downgradient property owner declined authorization to analyze groundwater for the presence of PFAS).

The scope of work to address this AOC was as follows:

Advance one test boring on Lot 63 to evaluate groundwater quality downgradient (west) of the Site with the intent to document the downgradient extent of groundwater impacts in excess of AGQSs for Site contaminants of concern. Collect soil samples, classify the soils types observed, and field screen the samples for the presence of PICs using a PID. No soil samples were submitted for laboratory analyses.

Install one water table monitoring well, designated MW202. At the time of installation, develop the monitoring well by surging and then purging groundwater from the well. Two weeks after installation measure static water levels and collect groundwater samples using low-flow methodology for laboratory analyses, as further detailed below and in the SSQAPP.

For all borings advanced and monitoring wells installed as part of this ESA, survey locations and elevations to a common datum; and include the elevation of the top of casing on the monitoring well for the purpose of calculating an inferred groundwater flow direction from measured static groundwater depths across the Site at the time of groundwater sample collection.

A minimum of two weeks after installation, measure static water levels and collect groundwater samples utilizing low flow sampling procedures using a peristaltic pump and dedicated low-density polyethylene tubing. Employ NH DES sampling protocols for PFAS sampling for the collection of groundwater samples from monitoring wells SH2 and MW102. Collect groundwater samples from the new monitoring well and selected existing Site monitoring wells (SH-2, MW102 and MW104). Field-filter groundwater samples collected for dissolved metals analysis and submit samples for laboratory analysis for the presence of dissolved RCRA 8 Metals plus nickel (SH2, MW104, MW102, MW201 and MW202) by U.S. EPA methods, and for PFAS (SH-2 and MW-102) by EPA Method 537 with Isotope Dilution and the EPA modification to quantitate branched isomers (9 isomers total).

Collect one duplicate sample for each analysis for quality assurance purposes. Consistent with the NH DES PFAS sampling protocol, collect a field blank for PFAS analyses. No equipment blanks were collected because the static water level meter was of stainless steel construction with no Teflon fittings and other sampling equipment was of NH DES-approved and monitoring well-dedicated disposable (single use) materials.

Coordinate with property owners Ms. Felicia Phillips and Ms. Jane Vesper of Map 20 Lot 51 and collect a groundwater sample from the dug irrigation water supply well for laboratory analyses for the presence of RCRA metals plus nickel by U.S. EPA methods after purging the well system (pressurization tank and piping) for a period of at least 10 minutes.

2.0 INVESTIGATION METHODOLOGY

As described above, a sampling program was developed to investigate the extent of documented and potential soil and groundwater contamination at the Site, and potential groundwater quality impacts at the downgradient Lot 63 parcel and the neighboring Lot 51 parcel at the request of that property owner.

Based on the previous work, contaminants of concerns (COCs) selected for evaluation as part of this Supplemental Phase II ESA include:

1. RCRA 8 metals; including arsenic (As), barium (Ba), cadmium (Cd), chromium (Cr), lead (Pb), mercury (Hg), selenium (Se), and silver (Ag). Additionally, metals analysis will include nickel (Ni) and analyses of hexavalent Cr to differentiate hexavalent from trivalent Cr (soil only).

2. PFAS in groundwater.

These COCs were selected based on the objectives of: (1) further delineating areas targeted for remediation in Ransom's 2015 Phase II ESA; (2) assessing whether potential releases from waste water piping between the former Site buildings may have impacted Site soils and groundwater; (3) assessing the impacts to groundwater in an inferred downgradient (with respect to groundwater flow) location on Lot 63 to assist in the establishment of a Groundwater Management Zone; and (4) to evaluate for potential groundwater quality impacts to a nearby irrigation well located on Map 20 Lot 51 located about 225 feet north of the Site source area; and (5) evaluate for PFAS groundwater impacts near identified probable former Site source area(s).

As noted in Section 1.7 in greater detail and as fully elaborated in the SSQAPP, the scope of work for the Phase II ESA included the advancement of soil borings, the collection of soil samples from the soil borings, the installation of monitoring wells, the collection of groundwater samples from selected existing and new monitoring wells and the collection of a groundwater sample from the nearby irrigation water supply well. Sample locations are shown on the attached Figure 2 (irrigation well is in the residence on Lot 51), and Figure 3.

On June 29 and 30, 2017, Ransom oversaw the advancement of 11 soil borings (B201 through B211), two of which were completed as groundwater monitoring wells (MW201 and MW202) by Eastern Analytical, Inc. (EAI) in order to collect soil samples for field screening and laboratory analysis and to install monitoring wells. Soil boring and monitoring well locations are shown on Figure 3. Soils encountered in the soil borings were classified using the Bermister Soil Classification System. Soil samples collected from the borings were screened in the field for total VOCs using a MiniRAE 2000 PID calibrated with 100 ppmv isobutylene, and corrected to read as benzene; in addition, the soil samples were field screened for metals using an XRF analyzer. Soil samples were collected from soil borings for laboratory analysis from locations and depth intervals selected based on visual observations and field screening results, as described in the SSQAPP. Soil boring logs documenting soil profiles, observations, and PID field screening results are included in Appendix C. Results of XRF screening of soil samples are provided in Table 1B (Table 1A, also included, documents 2015 soil screening results in support of RAP evaluations), samples selected for laboratory analyses are indicated in bold and italics. Soil samples were submitted for laboratory analysis for the specific parameters previously specified for each AOC. Soil laboratory analytical results for the selected samples are provided in Table 2, which also includes 2015 results in support of RAP evaluations. Table 2 also includes the 2015 HMI sump granular material sample results. Results are summarized in Section 3.0, below.

Groundwater sampling activities were conducted on July 17 and 18, 2017. Measurements of static water levels are summarized in Table 3. Groundwater samples were collected from the nine existing monitoring wells (SH-1 through SH-4 and MW101 through MW105) utilizing low-flow sampling procedures and dedicated disposal tubing per NH DES PFAS sampling protocol. Groundwater sampling logs documenting the field parameters recorded during the low-flow sampling activities are included in Appendix C. Measurements of selected low-flow parameters (pH, dissolved oxygen and specific conductivity) are also summarized in Table 3.

Groundwater samples were submitted for laboratory analysis of dissolved metals and PFAS. Groundwater samples collected for metals analysis were field-filtered. The locations of test borings and monitoring wells were surveyed to a common datum and are shown on the attached Site Plans.

Field duplicate samples were collected for each matrix/analysis and laboratory analyzed for quality assurance purposes (summarized in Section 5.0).

Soil and groundwater samples were collected directly from sampling equipment into laboratory-prepared sample containers and placed on ice. All samples collected for laboratory analysis during the Supplemental Phase II ESA were handled and transported under chain-of-custody procedures. Chain-of-custody documentation is included in the laboratory reports (Appendix D). The soil and groundwater samples were delivered to Alpha Analytical (Alpha) of Portsmouth, New Hampshire.

3.0 RESULTS

The following subsections document the results of the Supplemental Phase II ESA activities. XRF field screening measurements are summarized in Table 1B and groundwater field parameter measurements are summarized in Table 3. Analytical results are summarized by media in Table 2 (soil) and Table 4 (groundwater). A summary of duplicate soil sample analytical results is presented in Table 5. Groundwater sample duplicate results are included in Table 4. Certified laboratory analytical reports are included in Appendix D.

Analytical results were compared to regulatory guidelines presented in the SSQAPP. The regulatory guidelines include the following:

1. NH DES Env-Or 600 SRS;
2. U.S. EPA Regional Screening Levels (RSLs);
3. NH DES AGQS;
4. U.S. EPA Maximum Contaminant Levels (MCLs); and

Soil analytical results were compared to the NH DES SRS, and in addition, to NH DES RCMP Method 1 NH S-1, S-2 and S-3 standards. For detected contaminants that do not have an established SRS, the concentrations were compared to the corresponding U.S. EPA RSLs. Groundwater analytical results were compared to the NH DES AGQS and the U.S. EPA MCLs.

3.1 Geology and Hydrogeology

Based on observations made by Ransom during this Supplemental Phase II ESA and the 2015 Phase II ESA, and by SHA during the 2013 Phase II ESA, the Site is generally underlain by layers of fine to medium and fine to coarse sands, overlying silts and clays. The sand/clay interface is shallowest along the east edge of the property, at approximately 13 feet below grade and dips down steeply to the west and the southwest corner of the property to 25 feet below grade. Note that Site surface grades are relatively flat with a downward slope to the west of less than 1 foot across the Site.

In the general plating area (south portion of the Former Industrial Building) and as part of the 2015 Phase II ESA, a darker layer of sand was noted just above the clay at borings B109 and B112. A similar layer was noted in borings B206, B207, B209, and B211 as part of this investigation.

The occurrence of water saturated (“wet”) soils is noted in the boring logs and attached Table 1 summarizes the survey well elevations (relative to an assumed topographic datum), the depth to groundwater and the elevation of the water table. For the two groundwater sampling events conducted by Ransom in September 2015, and July 2017, the depth to groundwater ranged from as shallow as 12.57 to 13.07 and as deep as 19.84 to 22.56 feet below grade at the Site. The depth to groundwater is deepest along the western edge of the study area and shallowest along the eastern edge of the property. Figure 6 shows groundwater flow as interpreted from the static groundwater levels measured on July 17, 2017. Based on the measured depth to groundwater across the Site, groundwater was inferred to flow to the west, towards the Connecticut River. One anomalous reading for monitoring well MW102 indicates localized mounded groundwater conditions. Infiltration of spring and early summer heavy precipitation in the dirt footprint area of the Former Industrial Building likely running off from adjoin parking areas, may account for this aberration.

Based on the measured depth to groundwater across the Site, for the July 17, 2017 monitoring date the hydraulic gradient was a steep 0.14 feet/foot but flattened dramatically on the western abutting Lot 63 parcel to 0.002 feet/foot. The hydraulic gradient from east to west appears to correlate fairly well with the depth of clays and silts which likely act as an aquitard to groundwater.

The bedrock stratigraphic unit underlying the Site and vicinity is mapped on the Bedrock Geologic Map of New Hampshire (1997), as the Littleton formation (D1); detailed as gray metapelite and metawacke and subordinate metavolcanic rocks; generally, but not everywhere, conformable with underlying Fitch or Madrid Formations. Bedrock was not encountered to a depth of 30 feet below grade (depth of the deepest site boring advanced on site) and has not been determined as part of this assessment.

3.2 Soil

Soil samples were collected for laboratory analyses from each soil boring (B101 through B116) from the depth interval where evidence of contamination was identified based on field screening results and visual and olfactory observations. XRF field screening results of the soil samples are presented in the attached Table 1. Analytical results of soil samples are presented in the attached Table 2, an aerial-view interpretive distribution of documented soil sample SRS exceedances is presented on Figure 4, and a cross-sectional view of XRF chromium in soil measurements is shown on Figure 6.

A summary of observations, field screening results, and analytical results for each AOC follows:

<u>AOC 1— Chromium Impacted Soil (above SRS)</u>

Borings were advance in the former chromium, cadmium, and nickel plating areas within the approximate footprint of the Former Industrial Building to: (1) better estimate the mass of chromium-impacted soils with contaminant concentrations above SRS; (2) identify a potential source mass of nickel (and cadmium) impacted soils in the area of the former nickel plating line.

XRF field screening results provided a good indication of the vertical distribution of chromium in each boring and are reported in Table 1B (Table 1A shows XRF results from Ransom's 2015 work). Based on the distribution of the elevated chromium, the plating line area at the ground surface in the southeast corner of the former building footprint appears to be the primary source. The long axis of the chromium plating line was oriented north-south and so, too, was the evidence of shallow soil impacts. Records on file at the NH DES (SHA Phase I ESA) document that liquids from the chrome plating line were allowed to overflow onto the floor and drained to a floor drain that reportedly was routed to the municipal sewer from 1963 through the early 1980s and later was routed from the floor drain to the Wastewater Pre-Treatment Building and, after treatment, to the municipal sewer. In addition, to the chrome plating line area, shallow chromium impacts were noted in boring B211 soils near the general area of a former chromium mist condensate shed that housed collection equipment for condensate stack emissions from the plating lines. This former wood-floored shed was located off of the south end of the Former Industrial Building and was reportedly underlain by pavement. Two soil samples were collected in the late 1990s to document soil conditions in this area and no significant impacts were detected. The samples were collected from two 45 degree angled borings advanced 4 feet; the location of these shallow borings is not known precisely.

XRF field screening data correlate well to total chromium laboratory data (the relationship is described by a line Y = 0.64X, with a goodness of fit (R^2) of 0.84). Both trivalent and hexavalent chromium contaminated soils were documented in the area of the Former Industrial Building chromium plating line at concentrations exceeding SRSs. Soil laboratory results document chromium SRS exceedances for trivalent chromium (3 of 10 samples; concentrations ranging up to 3,470 mg/k in comparison to the 1,000 mg/kg SRS) and hexavalent chromium (5 of 7 samples; concentrations ranging up to 450 mg/kg in comparison to the 130 mg/kg SRS). Note that the borings advanced as part of this work were primarily intended to better define the margins of the mass of soils to help in remedial cost estimating. The relationship of hexavalent to total chromium was assessed to better understand whether the ratio of the valence states present could be related to soil type (sand vs clay), potential presence of organics (proximity to the petroleum plume migrating onto the Site), or occurrence within water saturated vs. unsaturated soils. If a relationship between hexavalent chromium and environmental factors (as noted above) could be identified, then this relationship could be used to guide and target soil removal actions. However, no acceptable correlation was identified with the noted factors to explain the variability in the ratio of hexavalent chromium to total chromium, which ranged from 0.03 to 0.45.

Neither nickel nor cadmium were detected at concentrations above their SRSs, and samples with the highest XRF field screening readings were selectively submitted for analyses. No source mass was identified for these contaminants of concern is Site soils.

In order to contour the limits of the SRS exceedance Ransom considered the ratio of laboratory hexavalent chromium results to XRF screening results and built in a 50% safety factor to account for the variability of hexavalent chrome. This resulted in a threshold (i.e. SRS) XRF screening value of 390 ppm. Based on the mapped distribution of chromium, elevated (i.e., above SRS) contaminant concentrations extend about a foot downward into a silty clay unit encountered about 12 feet below grade beneath the east edge of the Former Industrial Building footprint area sloping down to about 17 feet below grade beneath the west edge of the Former Industrial Building. The volume of impacted soils above SRSs, and therefore targeted for remediation/removal, is estimated at 380 cubic yards and is shown in pink and green on Figures 4 and 5.

As part of this investigation, SPLP analyses for chromium, nickel, and cadmium was conducted on selected soils samples within the saturated zone to assess the likely leaching potential for moderate to low-level metals-impacted soils that might be left in place following source removal, particularly within groundwater saturated soils. Concentrations of detected SPLP metals were generally low and ranged from less than 0.002 mg/L to 2.26 mg/L for chromium, from less than 0.001 mg/L to 0.008 mg/L for cadmium, and from less than 0.004 to 0.125 mg/L for nickel. Of the samples analyzed, the sample with the highest XRF chromium reading (1,235 parts per million) also had the highest SPLP chromium laboratory result (2.26 mg/L) but met the SRS for both hexavalent and trivalent chromium for the laboratory sample. In general, SPLP chromium detections were lowest laterally away from the concentration hot spot and decreased by a factor of 2 at the downgradient extent of the mass targeted for removal. Detected SPLP nickel and cadmium were typically lower than chromium concentrations and were below quantitative detection limits at the downgradient extent of the area of impacted soils proposed for removal. Taken together, the SPLP data supports that removal of soils to concentrations meeting SRS will generally result in a significant decrease in the likelihood that remaining soils will act as an ongoing source to groundwater impacts. Although a small data set (n=5, in this case) typically has limited statistical value, the available Site data also exhibited poor correlation between XRF chromium concentrations and SPLP chromium concentrations. Thus, establishing an XRF threshold value to use real-time data as a decision tool to determine limits of excavation at some screening value higher than the SRS does not appear to be supported. If there was a clear relationship between XRF data and SPLP concentration and if it could be shown that below certain XRF chromium concentrations there was little potential for chromium mobilization/leaching, then a contaminant threshold higher than the SRS could, potentially, have been supported and a customized remedial strategy could be developed.

Setting a precise XRF screening concentration at which soils are hazardous with respect to chromium is not supported by the limited data, as well as the uncertainty inherent in attempting to quantify a relationship between SPLP results for Site soils and probable waste characterization chromium results (i.e. toxicity characteristic leaching procedure (TCLP) results below 5 milligrams per liter for chromium). Even with additional data, predicting TCLP results may not be feasible considering that small changes in soil types spatially, and the different solubilities of different chromium valence states and chromium compounds that may be present will likely affect leachable concentrations. Therefore, Ransom proposes a 1,500 ppm XRF field screening value as a threshold above which excavated soils will be segregated and assumed to fail the hazardous characteristic for chromium. This proposed value is inferred to be conservative considering that for Site soils and regressed XRF and laboratory data for total chromium (for which there is a good correlation for Site data) the proposed 1,500 ppm XRF value corresponds to an actual (i.e. laboratory determined) total chromium concentration of 1,000 mg/kg, the SRS for trivalent chromium. Qualitatively, this value is consistent with Site data that documents limited leaching potential (albeit for the SPLP chromium analyses) for soils approaching the 1,500 ppm XRF value.

For volume and cost estimating purposes, soils above this XRF chromium concentration, i.e. the volume of chromium-impacted soils which have a reasonable likelihood to require disposal as hazardous waste once generated, is estimated at 114 cubic yards and is shown in green on Figures 4 and 5.

AOC 2— Former Industrial Building, Floor Drains

Borings were advanced to investigate a potential source mass of nickel (and cadmium) in the area of the former nickel plating line and floor drains in the south end of the Former Industrial Building and the results of those investigation were as noted in AOC 1, above.

In addition, boring B209 was advanced to assess soil downgradient of the industrial wastewater lines buried between the Former Industrial Building and the Wastewater Pre-Treatment Building for metals impacts and is discussed below.

Metals concentrations detected in soils samples from boring B209 advanced adjacent to industrial wastewater lines buried between the Former Industrial Building and the Wastewater Pre-Treatment Building identified minor evidence of a release of metals in those soils but did not identify contaminant concentrations that would indicate a local source that would be likely to contribute to ongoing impacts to groundwater. Specifically, metals concentration that were detected with the XRF did indicate a slight increase in chromium concentrations at 9 feet below grade (231 ppm), and a more pronounced increase at the groundwater table, 16 to 22 feet below grade (to up to 741 ppm). Laboratory results for the sample from 20 to 22 feet below grade documented total chromium at 257 mg/kg, well below the trivalent chromium SRS and unlikely to exceed the hexavalent chromium SRS, based on the ratio of hexavalent to trivalent chromium for most site soils with SRS exceedances.

3.3 Groundwater

Groundwater samples were collected from the three existing monitoring wells (SH-2, MW102, and MW104), the two monitoring wells installed as part of this investigation (MW201 and off-Site MW202), and the dug irrigation well located in the basement of the nearby residence on Map 51.

Monitoring well locations and groundwater detections exceeding AGQSs for chromium and nickel are shown on the attached Figures 7 and 8. Selected groundwater field parameters are summarized in Table 3, and groundwater analytical results (including results documenting AGQS exceedances for cadmium, chromium, lead, nickel and PFAS) are summarized in Table 4.

A summary of observations, field parameters and analytical results for each AOC follows:

<u>AOC 1—Chromium Impacted Soil (above SRS)</u>

Because chromium impacted soils extend into groundwater-saturated soils in the former chromium plating area within the footprint of the Former Industrial Building, groundwater quality impacts in AOC 1 are inferred, and have been documented in the nearby downgradient well MW102.

Groundwater quality downgradient of the Former Industrial Building is discussed under AOC 2 and AOC 6, below.

<u>AOC 2—Former Industrial Building, Floor Drains</u>

To assess for potential impacts to groundwater quality due to past discharges to floor drains, groundwater quality was evaluated by collecting groundwater samples from monitoring well MW102, located downgradient of the Former Industrial Building plating areas and an associated floor drain, MW201 installed adjacent to and downgradient the industrial wastewater lines buried between the Former Industrial Building and the Wastewater Pre-Treatment Building, as well as MW104 and SH-2 adjacent to and downgradient of the sumps in the Wastewater Pre-Treatment Building.

Measured pH ranged from 5.50 to 6.36 standard units, with the most acidic value recorded at MW102, adjoining the former plating lines area.

Groundwater quality for the samples from wells downgradient of the Former Industrial Building and the Wastewater Pre-Treatment Building confirmed results from 2015 with the highest concentration in dissolved metals located downgradient of the former plating lines (chromium at 5,270 µg/L, nickel at 1,390 µg/L and cadmium at 31.52 µg/L exceeding SRS of 100, 100 and 5 µg/L, respectively), with lesser concentrations proximal to the Wastewater Pre-Treatment Building sumps (nickel at 301 µg/L and cadmium at 5.32 µg/L). Groundwater quality for the sample collected from the well installed proximal to the wastewater lines was consistent with Site-wide spatial dissolved contaminant gradients and did not support a secondary source in that immediate area.

PFAS telomeres PFOS and PFOA were detected at concentrations (7.08 µg/L and 0.0802 µg/L, respectively) above their AGQS (0.070 µg/L for total PFOS and PFOA). The highest concentrations of PFAS were detected in the groundwater sample collected from the monitoring well located downgradient of the plating line area and lesser concentrations were detected in the sample collected from the monitoring well located downgradient of the Wastewater Pre-Treatment Building sumps.

Two potential sources of PFAS have been identified as part of this investigation and the spatial occurrence of the detected PFAS in Site groundwater is consistent with either source:

1. As documented in the 2013 SHA Phase I ESA, a 1997 U.S. EPA facility inspection identified the need for the use of a fume/mist suppressant to reduce health risks and possible air emissions associated with the chrome plating operation. A 2001 U.S. EPA

press release stated, “Central Plating has started using a fume suppressant to control chromium emissions from its chromium electroplating plating tank”. In that era, PFAS was known to be used as a fume suppressant. If Central Plating had acted promptly subsequent to the 1997 inspection, then use of PFAS could have occurred from shortly after inspection through approximately 2004 when operations ceased.

2. Walpole Fire Department Assistant Fire Chief Mark Houghton identified probable use 30 years ago of Aqueous Film-Forming Foam (AFFF), also a known likely PFAS source, at a nearby petroleum tank fire that reportedly occurred at a bulk petroleum storage facility adjoining the Site to the east. Reportedly, the Fire Department responded to a fire initiated as a result of a contractor cutting open an underground fuel oil storage tank during the tank cleaning and removal process. The Fire Department identified the approximate location of aboveground and underground storage tanks associated with the former bulk storage facility (Bridgefield and Grain Oil Co.) on the east-adjoining property, the westernmost extent of which are shown on Figures 3, 6, 7 and 8.

Because the former off-site fire where AFFF was likely used was located upgradient of the plating lines, the PFAS contaminant distribution could be consistent with a fume suppressant release source, a fire-fighting foam source or a combination of the two.

A third potential source (the second on-Site source) has been identified and is discussed in Section 4.0 Results Addenda, below.

<u>AOC 6—Downgradient of Former Industrial Building and Wastewater Pre-Treatment Building</u>

To confirm groundwater quality downgradient of the Former Industrial Building and the Wastewater Pre-Treatment Building (as noted under AOC 2, above), and to evaluate downgradient and off-site groundwater quality groundwater samples were collected from newly installed monitoring well MW202 and from the off-Site, cross-gradient, irrigation well on in the basement of the residence on Lot 51.

Groundwater quality for the sample collected from monitoring well MW202 installed on Tax Map 20 Lot 63, located approximately 55 feet west (downgradient) of the Site, in line with the inferred dissolved contaminant maxima, did not document AGQS violations for metals and for Site COCs, only cadmium was detected at a very low concentration (0.09 µg/L, estimated). The sample was not analyzed for PFAS, per requirement of that property owner.

Per the request of a nearby homeowner, a groundwater sample was collected from a dug well that is used as an irrigation water supply located in the basement of 69 Main Street (Tax Map 20 Lot 51). Lead was detected at a concentration (31 µg/L) above its AGQSs (15 µg/L). Other than nickel and barium at very low concentrations (3 µg/L estimated, and 47 µg/L), no other RCRA metals were detected. Lead has not been detected at elevated concentrations in soils or groundwater at the Site. The sample was not analyzed for PFAS.

The scope of this Supplemental Phase II ESA included additional investigations to confirm groundwater quality downgradient of the Former Industrial Building and the Wastewater Pre-Treatment Building (as noted under AOC 2), and to evaluate downgradient and off-site groundwater quality (with the exception that the downgradient property owner declined authorization to analyze groundwater for the presence of PFAS) as part of this investigation.

Note that additional downgradient and/or off-site groundwater sampling and analyses was conducted was part of subsequent investigations and is discussed in Section 4.0 Results Addenda, below.

4.0 RESULTS ADDENDA

Based on an initial reporting of the above results to the NH DES and to other stakeholders, two additional investigations were conducted and are summarized below:

1. Groundwater samples were collected from selected wells (MW102, MW105, SH-3, and MW202) and analyzed for the presence of PFAS. Two of the wells were selected based on NH DES information that an above ground storage tank for storing Teflon (coating) was located in the northwest corner of the Former Industrial Building. The sampling, conducted by Sanborn Head & Associates, Inc., under contract to the NH DES, confirmed PFAS compounds above AGQSs. The concentrations of specific PFAS compounds detected in the sample collected from SH-3 near the former Teflon tank location were present at unique ratios that indicate a likely additional source of PFAS, one associated with the Teflon tank. PFAS impacts detected in the groundwater samples collected from off-site downgradient monitoring well MW202 on Tax Map 20 Lot 63 documented concentrations of PFAS compounds below the AGQS for total PFOS and PFOA. The results are reported in the Sanborn Head & Associates report entitled *Data Transmittal for Groundwater Sampling Per- and Polyfluoroalkyl Substances (PFAS)*, dated October 13, 2017.

2. Two offsite monitoring wells were installed in December 2017 and groundwater samples were collected in January 2018 from selected wells (MW103, and new wells MW301 and MW302) and analyzed for the presence of PFAS. The two new wells were installed to assess the down gradient extent of PFAS impacts above AGQSs in a northwesterly direction (MW301) and to assess for possible impacts associated with the use of AFFF to suppress a fire on the east adjoining property (MW302). Although PFAS compounds were detected in the two newly installed wells, including in new downgradient well MW302, the concentrations of the regulated PFAS analytes did not exceed AGQSs. An exceedance of PFOS was documented in the sample from MW103. The results of the additional investigation conducted by Ransom on behalf of the Subject Property owner helped to define the limits of the GMZ. It should be noted that the static groundwater level data collected as part of this work appears to suggest a localized steep southwesterly gradient to the southwest of the Former Industrial Building. The figures included in this report have been updated to show the two new monitoring wells. The Summary of Groundwater Laboratory Analytical Results table (which includes results from this investigation as well as the two subsequent investigations noted herein) and the groundwater flow map from the February 23, 2018 Subsurface Investigation are included as Appendix C.

5.0 QUALITY ANALYSIS/QUALITY CONTROL

The contracted laboratory, Alpha, provided Level II analytical data according to U.S. EPA protocols and U.S. EPA laboratory data validation guidance included in Ransom's SSQAPP for Tier I Plus data review. Alpha provided the following information in analytical reports:

1. Data results sheets;
2. Method blank results;
3. Surrogate recoveries and acceptance limits;
4. Duplicate results/acceptance limits;
5. Spike/duplicate results/acceptance limits;
6. Laboratory control sample results;
7. Description of analytical methods and results; and
8. Other pertinent results/limits as deemed appropriate.

As outlined in the SSQAPP, at the completion of the field tasks and subsequent to receipt of the analytical results, a data usability analysis was conducted to document the precision, bias, accuracy, representativeness, comparability, and completeness of the results. The following sections present this analysis. A summary of duplicate sample analytical results are included in Tables 4 (for groundwater) and 5 (for soil and sump granular materials) under samples designated "GW-DUP1" for groundwater, "DUP-01" for soil SPLP cadmium, chromium and nickel analyses, "DUP-02" for soil metals analyses; and "DUP-03" for soil hexavalent chromium analyses.5.1

Precision

Precision measures the reproducibility of measurements. The precision measurement is established using the relative percent difference (RPD) between the duplicate sample results. Relative percent differences were calculated for samples where both sample and duplicate values were greater than five times the Practical Quantitation Limit (PQL) of the analyte. The RPD is calculated as follows:

$$RPD = \frac{(\text{Sample Result - Duplicate Result})}{\text{Mean of the Two Results}} \times 100$$

Precision of the sampling and analytical results is considered acceptable if the RPDs are less than or equal to 50% for soil samples or 35% for aqueous samples. Duplicate soil and groundwater were collected for laboratory analysis as part of the Supplemental Phase II ESA. Three duplicate soil samples (DUP-01, DUP-02, and DUP-03) were collected:

1. one for boring B206 submitted for SPLP cadmium, chromium, and nickel laboratory analyses,
2. one for boring B207 submitted for RCRA metals and nickel laboratory analysis, and

3. one for boring B205 for hexavalent chromium laboratory analyses.

One duplicate groundwater sample (GW-DUP1) was collected for RCRA metals plus nickel, and PFAS laboratory analyses.

B206-S6 / DUP-01

SPLP Chromium was detected at a concentration greater than five times the respective PQLs of that analyte. The RPD for this metal was 19.1%; therefore, the precision of the sample results is acceptable because the RPD is below 50%.

SPLP cadmium and nickel were not detected at a concentration above five times the PQL; therefore, no RPD calculation and assessment was applicable for these analyses.

B207-S6/S7 / DUP-02

Arsenic, barium, cadmium, total chromium, lead, and nickel were detected at concentrations greater than five times the respective PQLs of the analytes. The RPD for these metals ranged from 0.8% to 21.5%; therefore, the precision of the sample results is acceptable because the RPD is below 50%.

Mercury, selenium, and silver were not detected at a concentration above five times the PQL; therefore, no RPD calculation and assessment was applicable for these analyses.

B205-S5 / DUP-03

Hexavalent chromium was detected at a concentration greater than five times the respective PQLs of the analytes. The RPD for this metal was 30.8%; therefore, the precision of this sample result is acceptable because the RPD is below 50%.5.2

Bias

Bias is the systematic or persistent distortion of a measurement process that causes errors in one direction. Bias assessments are made using personnel, equipment, and spiking materials or reference materials as independent as possible from those used in the calibration of the measurement system. Bias assessments were based on the analysis of spiked samples so that the effect of the matrix on recovery is incorporated into the assessment. A documented spiking protocol and consistency in following that protocol are important to obtaining meaningful data quality estimates.

Matrix spike and matrix spike duplicate samples (MS/MSD) were used to assess bias as prescribed in the specified methods. Unless specified in the notes, below for each analytic method and media, acceptable recovery values were within the recoveries specified by each of the analysis methods. Control samples for assessing bias were analyzed at a rate as specified in the analytical SOPs and specified analytical methods.

The lab provides quality control non-conformance reports that indicate if Laboratory Control Samples/Laboratory Control Sample Duplicates (LCS/LCSD) and/or MS/MSD had low, failing, or high recoveries and if the sample result was affected. Likewise, the lab reports any compounds that had failing RPDs in the LCS/LCSD pair or the MS/MSD pair. This indicates the percent difference between the lab sample and its duplicate or the spike and its' duplicate. Specific comments from the laboratory and LCS/LCSD results meriting discussion are provided below for each analytical method and media.

5.2.1 Total/Dissolved Metals

<u>Soil</u>

The WG1020618-3 MS recovery for chromium (0%), performed on L1722996-01 (B201-S4), does not apply because the sample concentration is greater than four times the spike amount added.

The WG1020676-3 MS recovery for mercury (132%), performed on L1722943-01 (MS Sample), does not apply because the sample concentration is greater than four times the spike amount added.

The WG1020676-4 Laboratory Duplicate RPD for mercury (63%), performed on L1722943-013-13 (DUP Sample), is outside the acceptance criteria (20%). Mercury detections for Site soils were either below laboratory PQLs, or, when detected, were at least a factor of 10 below the SRS. Therefore, this duplicate RPD bias is inferred to have no adverse effect on the use of the data.

<u>Groundwater</u>

The WG1024994-3 MS recovery for cadmium (194%), performed on L1724792-01 (SH-2), is outside the acceptance criteria for cadmium (125%). A post digestion spike was performed and was within acceptance criteria. Overreporting of cadmium for this sample could result in an inaccurate reporting of an AGQS exceedance for that metal for this sample. It should be noted, however, that sample GW-DUP1 is a quality assurance/quality control (QA/QC) duplicate of sample SH-2 and the RPD between the results for these two samples is 3.64 percent. This strong RPD result indicates no likely adverse effect on the use of the data.

5.2.2 Hexavalent Chromium

For the analytical batch including samples L1722996-01 (B201-S4), 04 (B202-S5), 07 (B203-S6), 09 (B204-S4), 12 (B205-S5), 16 (B207-S6/S7), and 27 (DUP-03), the WG1020723-2 LCS recovery for hexavalent chromium (73%) was below the lower 80% acceptance limit. The analytical results for each of these samples were reviewed and modest under-biasing of the data for these samples has no substantive effect on the interpretation and use of each data result. This is because the detected hexavalent chromium concentrations for this sample batch far exceed the SRS.

5.2.3 Synthetic Precipitation Leaching Procedure

There were no bias issues identified by the laboratory for the soil sample extracts analyzed.

<u>Per- and Fluorinated Alkyl Substances</u>

For groundwater samples L1724792-01 (SH-2), 02 (MW102), 08 (GW-DUP2), and QA/QC batch WG1025422-4, the samples were re-analyzed on dilution in order to quantify the results within the calibration range. The results should be considered estimated, and are qualified with an E flag, for the compound PFOS that exceeded the calibration range in the initial analysis. The re-analysis was performed only for the compound that exceeded the calibration range. Data reported in this Supplemental Phase II ESA are for results within the appropriate dilution range for the detected compounds.

The extracted internal standard recovery on the following samples was below the acceptance criteria (50%) for surrogate perfluoro[13C4]butanic acid (MPFBA); however, re-analysis achieved similar results. The results of the original analysis are reported: L1724792-01 (SH-2): 41; L1724792-02 (MW102): 43%; L1724792-08 (GW-DUP2): 37%; L1724792-10 (Field Blank): 47%; and WG1025422-4 (QA/QC Batch): 48%. Note that possible underreporting of target analyte PFBA will not affect the usability of this data for this Supplemental Phase II ESA as no regulatory standard has been adopted for PFBA.

For sample L1724792-02 (MW102) and QA/QC batch sample WG1025422-4 the surrogate perfluoro[13C8]octanesulfonic acid (M8PFOS) recovery (46% and 49%, respectively) was below acceptance criteria (50%) for the undiluted sample. However, due to high concentrations of that compound present in MW102, the results for the associated analyte (PFOS) were reported from the diluted analysis; therefore, data quality was not affected.

For the field blank L1724792-10 (Field Blank), a concentration above the reporting limit was detected for PFOS. The result was confirmed by the laboratory. Note that the detections were three orders of magnitude below the PFOS detections for sample MW102 and SH-2 and the detections for MW102 and SH-2 were as much as two orders of magnitude above AGQS for total PFAS; therefore, regardless of the interfering source that caused trace impacts to the Field Blank, the level of uncertainty introduced by very low-level detections in the Field Blank is considered de minimis and does not affect the usability of the data.

For Batch Quality Control samples WG1025422-1 and WG1025422-3, the extracted internal standard recovery was below the acceptance criteria (50%) for perfluoro[13C8] octanesulfonamide (M8FOSA) at 0% and 2%, respectively; however, re-analysis achieved similar results. The results of the original analysis were reported. Note that FOSA is not included in the reported suite of PFAS for the requested analyses and possible underreporting of FOSA would not affect the usability of this data for this Supplemental Phase II ESA, in any event, because there is no AGQS for FOSA. Therefore, this internal standard recovery deficiency did not affect the use of the data.

For Batch Quality Control sample WG1025422-2 the extracted internal standard recoveries were below the acceptance criteria (50%) for MPFBA (46%) and M8FOSA (0%); however, re-analysis achieved similar results. The results of the original analysis were reported. Note that possible underreporting of target analyte PFBA will not affect the usability of this data for this Supplemental Phase II ESA as no regulatory standard has been adopted for PFBA. In addition, as noted above, FOSA is not included in the reported suite of PFAS. Therefore, data quality was not affected.

For Batch Quality Control sample WG1025422-4 the extracted internal standard recovery was out above the acceptance criteria (150%) for M8PFOS (155%); however, duplicate precision was within criteria; therefore, data quality was not affected.

5.3 Accuracy

Accuracy is a statistical measurement of correctness and includes components of random error (variability due to imprecision) and systemic error. It therefore reflects the total error associated with a measurement. A measurement is accurate when the value reported does not differ from the true value or known concentration of the spike or standard. For VOCs, surrogate compound recoveries are also used to assess accuracy and method performance for each sample analyzed. Analysis of performance evaluation samples will also be used to provide additional information for assessing the accuracy of the analytical data being produced. Both accuracy and precision are calculated for each analytical batch, and the associated sample results are interpreted by considering these specific measurements.

The laboratory provides a non-conformance summary that reports if all of the quality control criteria including initial calibration, calibration verification, surrogate recovery, holding time and method accuracy/precision for analysis were within acceptable limits. According to the laboratory, unless noted in the non-conformance summary, all of the quality control criteria for these analyses were within acceptable limits.

Estimated concentrations are reported with a “J” flag designation by the laboratory for analytes that are detected at concentrations below the PQL (also called the Reporting Limit) but above the method detection limit. J flagged results are noted in the summary tables of this Phase II ESA as well as in the laboratory reports.

5.4 Representativeness

Objectives for representativeness are defined for each sampling and analysis task and are a function of the investigative objectives. Representativeness was accomplished during this project through use of standard field, sampling, and analytical procedures.

All objectives for sampling and analytical representativeness, as specified in SSQAPP, were met.

5.5 Comparability

Comparability is the confidence with which one data set can be compared to another data set. The objective for this QA/QC program is to produce data with the greatest possible degree of comparability. Comparability was achieved by using standard methods for sampling and analysis, reporting data in standard units, normalizing results to standard conditions and using standard and comprehensive reporting formats. Complete field documentation was used, including standardized data collection forms to support the assessment of comparability. Historical comparability shall be achieved through consistent use of methods and documentation procedures throughout the project.

5.6 Completeness

Completeness is calculated by comparing the number of samples successfully analyzed to the number of samples collected. The goal for completeness is 95 percent. The completeness for this project was 100 percent, as there were no samples that could not be analyzed due to holding time violations, samples spilled or broken, or any other reason.

5.7 Project Quantitation Limits

Project specific PQLs were developed for the SSQAPP to ensure analytical results would meet relevant applicable standards. All PQLs did not exceed the applicable standards for soils and groundwater.

6.0 SITE CHARACTERIZATION AND CLEANUP GOALS

This Supplemental Phase II ESA and previous environmental investigations completed at the Site identified evidence of: metals impacted soils (most notably chromium) and groundwater (chromium, nickel, cadmium,) associated the Central Plating facility; PFAS impacted groundwater that is likely associated with the Central Plating facility but also could be at least partly from an adjoining former bulk petroleum storage facility where AFFF was likely used to extinguish a fire 30 years ago; and MtBE impacts to groundwater from a neighboring gasoline station. Background concentrations of PAHs (in some instances above SRS) were also documented for soils with coal combustion residuals in surface soils on the north edge of Lot 66.

In addition, fine-grained residual solids were previously identified in Wastewater Pre-Treatment Building sumps with high concentrations of metals and cyanide.

The identified contamination and appropriate cleanup goals are summarized below.

6.1 Impacted Soils

Soils with exceedances of the chromium SRS were identified in the footprint of the Former Industrial Building, specifically in the area of the former plating lines, in the southern quarter of that former building extending down to the water table. Dissolved metals in groundwater has supported the former plating lines area as a source area. Detailed spatial soil characterization has documented a volume of chromium contaminated soils inferred to exceed the SRS for hexavalent chromium of approximately 380 cubic yards. Some of these soils may be a characteristic hazardous waste based on high total chromium concentrations (no TCLP analyses has been conducted). The source of the chromium impacts is likely process "dumps" or "overflow" from plating line tanks. According to process schematics for the facility, cyanide solutions were not listed as being used on the chromium plating line, additionally the discharges are not inferred to have been comprised of sludges. Therefore, F-listed waste codes do not appear to apply for the chromium detected in Site soils.

Neither nickel nor cadmium has been identified in Site soils at concentrations above SRSs, despite collection and analyses of numerous soil samples from suspected source areas. If present, soils with nickel or cadmium concentrations above SRSs are very likely to be co-located with the impacted mass of chromium contaminated soils that has been targeted for remediation in the former plating line area. This inference is based on the proximity of the former plating lines and wastewaters management that are potential sources for nickel and cadmium impacts.

No Site soils have been analyzed for the presence of PFAS and there are presently no PFAS SRSs in New Hampshire. However, based on the presence of elevated (above AGQS) concentrations of PFAS detected in groundwater samples collected from monitoring wells downgradient of the Former Industrial Building and the Wastewater Pre-Treatment Building it is possible and perhaps probable that impacted soils are co-located with chromium impacts soils because PFAS was a known fume suppressant used in the chrome plating process. Remediation of chromium impacted soils is likely to mitigate soils impacted by possible PFAS releases.

Based on laboratory results for waste fine-grained residual solids in the three waste water treatment sumps located in the Wastewater Pre-Treatment Building, where cyanide, arsenic, barium, hexavalent and trivalent chromium, copper, lead, nickel and zinc were detected at elevated concentrations, and the presence of nickel, cadmium and PFAS detected above AGQS in groundwater samples from monitoring wells near the sumps it is possible that leakage of discharges from the sumps or from that vicinity are a secondary source of impacts (albeit at much lesser concentration) to soils (and groundwater). Residuals within the sumps would require remediation are likely an F-listed hazardous waste due to their probable association with wastewater plating sludges and with cyanide. Information provided in environmental due diligence interviews with facility employees conducted by others references the ability of the operator to discharge waste waters directly to soils in the sumps, bypassing treatment, although it was unclear if that was a past practice. Assuming the volume of soils beneath/adjacent to the sumps has been impacted to the depth of the groundwater table, Ransom estimates an inferred contaminated soil volume of 154 cubic yards. It is Ransom's understanding, based on NH DES preliminary input for the specific occurrence of these soils, that soils from beneath the sump would not be considered an F-listed waste, absent the presence of observable sludge.

The background concentrations of PAHs documented for soils with coal combustion residuals in surface soils on the north edge of Lot 66 have not impacted groundwater in that area and are inferred to be exempt from regulation under Env-Or 600 due to their association with coal residuals. No remediation volume has been assumed because the soils are not considered a regulated waste under the applicable rules, provided they remain on-Site. Although no clean-up is required, management of these surface soils could include use as remediation backfill above the groundwater table and beneath the proposed parking lot pavement and subgrade section for the planned redevelopment.

Proposed soil clean-up goals are as follows for two active remediation scenarios:

1. Remove regulated contaminated soil at concentrations above NH DES SRSs to reduce or eliminate the source of impacted groundwater and to eliminate long-term potential human exposure risks.

2. If contaminant leaching risk can be defined at Site-specific threshold soil concentrations for Site COCs, then a tiered remediation approach could be considered that would be protective of groundwater using Site-specific leaching based standards and NH DES RCMP Method 1 NH S-3 standards to reduce human exposure risk via engineering and institutional controls. Results of SPLP analyses for chromium (and other metals) did not support this approach as noted in Section 3.2. This clean-up standard uncertainty will factor into the *Ability to Implement* and *Reduction of Toxicity, Mobility and Volume* when evaluating and comparing remedial alternatives.

3. No PFAS SRSs have been established by the NH DES although it is possible and perhaps likely that SRSs will be established for both leaching-based considerations and for human contact exposures to soils.

6.2 Impacted Groundwater

Site impacts to groundwater from known on-Site sources include for chromium, nickel, cadmium.

Site impacts to groundwater from on-Site sources include PFOS and PFOA, two regulated PFAS compounds. An off-site contribution (fire-fighting foam likely used on and adjoining property) is also possible for these compounds.

Petroleum-impacted groundwater (notably MtBE) has been documented from an off-Site source and is monitored under a Groundwater Management Permit by that responsible party, the facility owner of nearby upgradient property Lot 69.

It is likely that Site contaminants (the noted metals) have migrated in groundwater onto the adjoining and downgradient Lot 63; however, no metals were detected in groundwater further downgradient on that lot in the samples collected from monitoring well MW202. The sample from this well was not analyzed for the presence of PFOS or PFOA so the downgradient extent of PFAS impacts is not known.

No Site COCs have been detected at concentrations above AGQSs in the groundwater sample collected from the irrigation well located on cross-gradient Lot 51. The sample from this well was not analyzed for the presence of PFOS or PFOA, so the crossgradient extent of PFAS impacts is not known.

Although no consumptive use of groundwater has been identified within the subject property neighborhood (with the possible exception of a commercial property located 1,600 feet west-southwest of the Site as identified by the NH DES), the clean-up goal for groundwater is the timely attainment of AGQSs in the Groundwater Management Zone.

6.3 Impacted Indoor Air Quality

No analytes have been detected at concentrations exceeding the RCMP GW-2 screening levels, which have been established to screen for risk to indoor air quality from potential contaminant vapors. No RCMP GW-2 standards have been established for Site COCs so compliance with GW-2 does not factor into remedial alternatives evaluation for this Site. Note that a GW-2 standard has been established for MtBE which is migrating onto the Site; however, the GW-2 standard is almost 50x higher than the concentrations detected in Site groundwater. Therefore, no Site indoor air quality risk is inferred, should an occupancy Site land use be developed at some point in the future.

The NH DES has not provided direction on PFAS soil vapor or groundwater concentrations that would pose a risk to indoor air quality. The relatively low volatility and high water solubility of PFAS may indicate a relatively low risk to indoor air quality from subsurface sources for this suite of compounds.

6.4 Hazardous Building Materials Considerations

Access to suspect impacted Site soils beneath the Wastewater Pre-Treatment Building sumps will require removal of the building.

Asbestos-containing material (ACM) was identified in this building, lead-based paint is inferred, universal wastes have been inventoried, and sump contents (residual solids) with elevated COCs have been documented, and wood and concrete adjoining the sumps will require cleaning, characterization, and proper disposal all to be coordinated with building demolition and disposal.

The cleanup goal for the Site, pertaining to the ACM, is to eliminate the risk of human contact to ACM during renovation/demolition activities and future Site reuse. Cleanup actions including removal and/or long-term maintenance of ACM should be completed to meet U.S. EPA and NH DES regulatory requirements.

Handling of components coated with lead-containing paint *at any concentration* requires compliance with the OSHA lead standard (*Lead in Construction*, 29 CFR 1926.62). Under the existing conditions, contractors may perform demolition, renovation, abatement, stabilization, cleanup, and daily operations in buildings that have lead-based paint or lead-containing paint, provided that this regulatory requirement is met.

Universal waste is a general term used to describe hazardous wastes that are generated by a large, diverse population. This term is intended to be broad so that a wider range of wastes may be managed under the reduced requirements of the U.S. EPA’s Universal Waste Rule. U.S. EPA's universal waste regulations streamline hazardous waste management standards for federally designated "universal wastes," which include: batteries; pesticides; mercury-containing equipment; and lamps (bulbs). The State of New Hampshire has expanded the designation of universal waste to include, in addition to those items listed above, cathode-ray tubes and antifreeze. The regulations govern the collection and management of these widely generated wastes, thus facilitating environmentally sound collection and proper recycling or treatment.

Universal wastes and other hazardous/potentially hazardous materials/wastes present at the Site include, but are not limited to:

1. Potential PCB-containing fluorescent light ballasts;

2. Potential mercury-containing fluorescent light tubes, and thermostat switches; and

3. Sump contents and adjoining concrete and wood.

The clean-up goal for universal waste and other hazardous/potentially hazardous material/wastes is to prevent these wastes from entering the general waste stream through proper removal, storage, and transport to an appropriate off-Site recycling or disposal facility as universal waste or hazardous material/waste.

7.0 DESCRIPTION OF EVALUATION CRITERIA

The comparison of the remediation alternatives was conducted using the evaluation and threshold criteria discussed below.

7.1 Overall Protection of Human Health and the Environment

Alternatives must pass this threshold criterion to be considered for implementation as the recommended alternative. The goal of this criterion is to determine whether a remediation alternative provides adequate protection of human health and the environment. It also addresses how identified risks are eliminated, reduced, or controlled. Protection of human health is assessed by evaluating how Site risks from each exposure route are eliminated, reduced, or controlled through the specific alternative.

7.2 Technical Practicality

The focus of this evaluation criterion is to determine technical practicality of implementing the specific alternative. This criterion evaluates the likelihood that the alternative will meet project specifications.

7.3 Ability to Implement

This criterion analyzes technical feasibility and the availability of services and materials. Technical feasibility assesses the ability to implement and monitor the effectiveness of the alternative. Availability of services and materials evaluates the need for off-site treatment, storage or disposal services and the availability of such services. Necessary equipment, specialists and additional resources are also evaluated.

Considering the goals and public nature of the project, the "ability to implement" should also reflect the degree of public support for the remedial approach. In consideration of this aspect of the project, these criteria also factor in the value of the remedial outcome to the community from a redevelopment perspective. The basis for evaluating the remedial alternatives level of community support is described below.

Manufacturing operations at the Site were discontinued in 2006. Since that time little progress has been made to integrating the two parcels into productive re-use for the community. At present the Former Industrial building has been removed leaving behind sparsely vegetated soils in the building footprint, with known elevated concentrations of metals present in surface and near-surface soils. The Town of Walpole has conducted a series of public hearings to gauge community support and seek comment on the prospect of acquiring the property with the intent being to seek funding to remediate the Site and to incorporate these small land-locked parcels into a redevelopment plan for this portion of Walpole Village. The lots would be used to provide important off-street parking that would support street-front buildings and would reinvigorate the adjoining small commercial businesses in the Village. The community support for the project, to date, has been positive.

7.4 Reduction of Toxicity, Mobility, and Volume

This criterion evaluates the ability of the remediation alternative to significantly achieve reduction of the toxicity, mobility, and volume of the hazardous substances present at the Site. This analysis evaluates the quantity of contaminated soils to be removed, the degree of expected reduction in toxicity, the type and quantity of residuals to be reduced, and the manner in which the principle threat is addressed through the remediation alternative.

7.5 Short Term Effectiveness

This criterion addresses the period of time needed to complete the remediation, potential adverse impacts on human health and the environment that may exist until the cleanup goals are achieved, and the time frame for accomplishing the associated reduction in the identified environmental conditions.

7.6 Resiliency to Climate Change Conditions

This criterion evaluates the resilience of the remediation alternative to reasonably foreseeable changing climate conditions, such as increasing/decreasing temperatures, increasing/decreasing precipitation, extreme weather events, rising sea level, changing flood zones, and higher/lower groundwater tables, among others.

7.7 Preliminary Cost

The preliminary cost criterion for the remediation alternatives evaluates the estimated capital, operation, and maintenance costs of each alternative. Capital costs include direct capital costs, such as materials and equipment, and indirect capital costs, such as engineering, sampling contingencies, and licenses. Costs were developed as a balancing criterion for the remedial alternatives and should not be construed as bid costs or engineer's cost estimates. Cost may be used as a distinguishing factor in the selection of the remedial action. The preliminary costs developed should in no way be construed as a cost proposal, but rather a guide for selecting a remedial alternative.

8.0 EVALUATION OF REMEDIATION ALTERNATIVES

Based on the evaluation criteria outlined in the previous section and the potential exposure pathways identified for the Site, the remedial actions selected for the Site should accomplish the following objectives:

1. Remove the residual mass of chromium-impacted soil documented at the Site and suspect nickel, cadmium, and PFAS contaminated soils and reduce or eliminate the potential for human contact to surface or near-surface soils;

2. Reduce or remove the known Site source and inferred sources of contaminated groundwater;

3. Remove the Wastewater Pre-Treatment Building to minimize the potential for human exposure to hazardous building materials and former industrial process residuals and allow access to a suspect source (soils impacted from sump discharges); and

4. Reduce the toxicity, mobility, and volume of Hazardous Building Materials.

To achieve these objectives, three remedial options were considered and are discussed in the following subsections.

8.1 Considered Remediation Alternatives

Three remedial alternatives were considered for the Site to remediate soils contaminated by plating processes, and to remediate groundwater at the Site, including the "Monitored Natural Attenuation" alternative, the "Excavate and Dispose of Soils with SRS Exceedances" alternative, and the "Excavate and Dispose of Soils to Reduce Leaching Potential, Manage Soils in Place" alternative. These alternatives were evaluated using the criteria described in Section 7.0 and are summarized below. At this time, redevelopment plans have not yet been finalized; therefore, these remedial alternatives are proposed with the understanding and consideration that the community's preferred future use of the Site is as a parking lot in support of the Village. It should be noted that in addition to the selected alternative, abatement/removal of hazardous building materials is assumed to occur regardless of the alternative selected.

8.1.1 Monitored Natural Attenuation

A Monitored Natural Attenuation (MNA) alternative signifies that no remediation activities would be conducted at the Site, other than the removal (and proper disposal) of the upper 1.5 feet of soils over non-paved areas to construct a parking lot, but periodic sampling of the groundwater would be ongoing over a long time period as attenuation through mobilization and dilution slowly reduces the residual source(s) in contact with groundwater. Remaining soils would be managed in place under an AUR. The MNA alternative does not include an active means for mitigating long-term groundwater quality standard violations. The MNA alternative includes long-term groundwater monitoring activities that would be required with this approach. If no remedial action is taken, metal and PFAS-impacted groundwater would likely persist at the Site for a significantly longer time period than for remedial alternatives that actively reduce source(s); therefore, 50 years of monitoring is assumed.

The MNA alternative is not fully protective of human health and the environment and does not meet the threshold criteria because it does not address ongoing sources to groundwater impacts. The MNA alternative achieves some reduction of the toxicity, mobility, and volume of the hazardous substances present at the Site by removal of the building and associated wastes as well as surface soils to construct the parking lot.

The MNA alternative was not selected for implementation or further consideration because NH DES-required source reduction to mitigate ongoing risk of groundwater impacts would not be achieved. As such a detailed evaluation is not provide here-in, but criteria evaluations for this alternative and the logic for its elimination are presented in Tables 6, 7, and 10.

8.1.2 Excavate and Dispose of Soils with SRS Exceedances

The second remediation alternative evaluated in this ABCA is the “Excavate and Dispose of Soils with SRS Exceedances” alternative. As part of this alternative:

1. The building on-site would be abated of hazardous materials the sump’s contents removed and properly disposed of and the sumps and adjoining areas cleaned and tested, the building demolished and properly disposed of;

2. Regulated soils with impacts greater than SRS would be removed (from plating line area and from beneath the sumps);

3. Soils would be stockpiled into suspect hazardous soils, and suspect non-hazardous (from the plating area low-level impacts, or sump area contingent upon field screening results) soils;

4. Stockpiled soils would be tested for waste characterization parameters;

5. Stockpiled and characterized soils would be disposed of based on hazardous waste listing (beneath sumps soils) or characteristic (plating area soils);

6. Non-regulated soils with PAH SRS exceedances would be reused as backfill in remedial excavations on the lot of origin and beneath the paving section but above the groundwater table; and

7. A GMP application would be prepared and groundwater would be managed under a GMP for an assumed period of 15 years at a proposed initial frequency of five wells, two times per year for two years followed by five wells, one time per year for three years and at a subsequent frequency of five wells one time per year for five years; summary reports to be prepared two times every five years. Analyses is for RCRA metals, nickel and PFAS.

The “Excavate and Dispose of Soils with SRS Exceedances” alternative fulfills the evaluation criteria, as discussed below.

8.1.2.1 Overall Protection of Human Health and the Environment

This alternative provides adequate protection of human health and the environment through minimizing or eliminating the regulated mass of contaminated soils at the Site and reducing the accessibility of unregulated soil with PAH impacts at the Site, thereby reducing the risk of human exposure to future Site visitors and/or the ongoing source to groundwater impacts. The goal of reducing or eliminating the risk of human exposure and meeting soil and groundwater regulatory objectives could be achieved through this alternative.

8.1.2.2 Technical Practicality

Removal/demolition of the Site building and excavation/disposal of impacted soils at the Site is technically practical and could be completed utilizing accepted remediation and construction techniques. Contractors with experience with similar projects are readily available in the region.

8.1.2.3 Ability to Implement

Removal/demolition of the Site building and excavation/disposal of impacted soils at the Site is technically feasible and is an effective action for reducing the risk of human exposure to impacted soil and attainment of AGQSs over time. Services and materials necessary to conduct this alternative are readily available.

8.1.2.4 Reduction of Toxicity, Mobility, and Volume

This remediation alternative can achieve significant reduction of the residual volume of impacted soil at the Site, in-turn decreasing the duration of groundwater impacts above AGQSs. Removal of Site impacted soil and on-Site relocation and management of unregulated PAH-impacted soils would reduce or eliminate the risk of exposure by trespassers and potential workers associated with Site redevelopment or ongoing maintenance. Following removal of the source of groundwater impacts, significant reductions in overburden groundwater chromium and PFAS concentrations and possibly nickel and cadmium concentrations could be expected in the near term at the Site. However, it is anticipated that groundwater impacts will remain for a number of years since this alternative does not target remediation of the existing dissolved-contaminant groundwater plume, which has extended off-Site, and attenuation of impacts to groundwater as a result of the plume extending downward into low-permeability soils (clay/silt) will extend the period of natural attenuation.

8.1.2.5 Short Term Effectiveness

Potential adverse impacts to human health from exposure to impacted near-surface soils is ongoing in the area of the former plating lines and where coal combustion residuals are present, particularly to trespassers. Once the remediation is completed, the risk of human exposure to the near-surface contamination sources will be eliminated. Ransom anticipates that this remedial approach could be implemented within one year of funding and approval to proceed.

8.1.2.6 Resiliency to Climate Change Conditions

Based on the information contained in the SHA Phase I ESA, the Site is situated at an approximate elevation of 396 feet above Mean Sea Level (AMSL) and is not located within mapped 100-year or 500-year flood zones. Due to the upland setting and lack of potentially-threatening surface water features in the area, climate change effects from rising sea level and changing flood zones are not anticipated to represent a major threat. As such, the primary climate change concerns would be associated with extreme weather, increased rainfall, and rising groundwater tables. Due to the short time span estimated to complete the remedial soil excavation activities, this alternative should be timed with seasonal low groundwater table to reduce construction complexity (dewatering needs, excavation slope stability degradation, and backfill compaction difficulties), and would otherwise generally not be impacted by extreme weather conditions.

8.1.2.7 Preliminary Cost

The estimated costs associated with this remedial alternative are outlined in the attached Table 8 - Summary of Estimated Remediation Costs for “Excavate and Dispose of Soils with SRS Exceedances”. Capital costs include direct capital costs, such as materials and equipment, and indirect capital costs, such as engineering contingencies. The costs associated with this alternative are not prohibitive but are higher than the costs associated with Alternative 3 “Excavate and Dispose of Soils to Reduce Leaching Potential, Manage Soils in Place”.

8.1.3 Excavate and Dispose of Soils to Reduce Leaching Potential, Manage Soils in Place

The third remediation alternative evaluated in this ABCA is the “Excavate and Dispose of Soils to Reduce Leaching Potential, Manage Soils in Place” alternative. As part of this alternative:

1. The building on-site would be abated of hazardous materials the sump’s contents removed and properly disposed of and the sumps and adjoining areas cleaned and tested, the building demolished and properly disposed of;

2. Regulated soils with impacts greater than a leaching-based Site-specific standard would be removed from the plating line area and all soils from beneath the sumps would be removed;

3. Soils would be stockpiled into known hazardous (from beneath the sumps) soils, suspect hazardous (from the plating area of high-level impacts) soils;

4. Stockpiled soils would be tested for waste characterization parameters;

5. Stockpiled and characterized soils would be disposed of based on hazardous characteristic;

6. Soils exceeding SRS but meeting the Site-specific leaching based standard as well as non-regulated soils with PAH SRS exceedances would be reused as backfill in remedial excavations on the Lot of origin and beneath the paving

section but above the groundwater table and managed under an Activity and Use Restriction; and

7. A GMP application would be prepared and groundwater would be managed under a GMP for an assumed period of 25 years at a proposed initial frequency of five wells, two times per year for two years followed by five wells one time per year for three years and at a subsequent frequency of five wells one time per year for five years; summary reports to be prepared two times every five years. Analyses is for RCRA metals, nickel and PFAS.

The "Excavate and Dispose of Soils to Reduce Leaching Potential, Manage Soils in Place" alternative fulfills the evaluation criteria, as discussed below.

8.1.3.1 Overall Protection of Human Health and the Environment

This alternative provides adequate protection of human health and the environment through minimizing or eliminating the regulated mass of contaminated soils at the Site that is likely to contribute to groundwater impacts and reducing the accessibility of lower concentration soils above the SRS and unregulated soil with PAH impacts at the Site, thereby reducing the risk of human exposure to future Site visitors. The goal of reducing or eliminating the risk of human exposure and meeting soil and groundwater regulatory objectives could be achieved through this alternative.

However, the success of this approach is contingent upon being able to identify a Site-specific leaching based standard that is protective of groundwater and then being able to identify soils above that standard in "real time", during excavation.

8.1.3.2 Technical Practicality

Removal/demolition of the Site building and excavation/disposal of impacted soils at the Site is technically practical and could be completed utilizing accepted remediation and construction techniques. Contractors with experience with similar projects are readily available in the region.

SPLP data collected as part of this investigation did not identify a leaching-based standard at a concentration greater than the SRS that would provide confidence in reducing future impacts to groundwater, nor was the investigation able to develop a good correlation between SPLP data and real-time XRF field data. Therefore, although financially desirable, this alternative does not appear to be practical from a technical implementation perspective.

8.1.3.3 Ability to Implement

Removal/demolition of the Site building and excavation/disposal of impacted soils at the Site is technically feasible and is an effective action for reducing the risk of human exposure to impacted soil and attainment of AGQSs over time. Services and materials necessary to conduct this alternative are readily available.

8.1.3.4 Reduction of Toxicity, Mobility, and Volume

This remediation alternative can achieve significant reduction of the residual volume of impacted soil at the Site, in-turn decreasing the duration of groundwater impacts above AGQSs. Removal or on-Site relocation and management under an AUR of Site impacted soil with concentrations above the SRS would reduce or eliminate the risk of exposure to trespassers and potential workers associated with Site redevelopment or ongoing maintenance. Following removal of the source of groundwater impacts, significant reductions in overburden groundwater chromium and PFAS concentrations and possibly nickel and cadmium concentrations could be expected in the near term at the Site. However, it is anticipated that groundwater impacts will remain for a number of years since this alternative would leave in place marginally impacted soils at concentrations less than a Site-specific leaching-based standard, the reliability of the Site specific standard is suspect, the remediation would not mitigate the existing dissolved-contaminant groundwater plume which has extended off-Site, and attenuation of impacts to groundwater as a result of the plume extending downward into low-permeability soils (clay/silt) will extend the period of natural attenuation.

8.1.3.5 Short Term Effectiveness

Potential adverse impacts to human health from exposure to impacted near-surface soils is ongoing in the area of the former plating lines and where coal combustion residuals are present, particularly to trespassers. Once the remediation is completed, the risk of human exposure to the near-surface contamination sources will be eliminated. Ransom anticipates that this remedial approach could be implemented within one year of funding and approval to proceed.

8.1.3.6 Resiliency to Climate Change Conditions

Based on the information contained in the SHA Phase I ESA, the Site is situated at an approximate elevation of 396 feet AMSL and is not located within a mapped 100-year or 500-year flood zones. Due to the upland setting and lack of potentially-threatening surface water features in the area, climate change effects from rising sea level and changing flood zones are not anticipated to represent a major threat. As such, the primary climate change concerns would be associated with extreme weather, increased rainfall, and rising groundwater tables. Due to the short time span estimated to complete the remedial soil excavation activities, this alternative should be timed with seasonal low groundwater table to reduce construction complexity (dewatering needs, excavation slope stability degradation, and backfill compaction difficulties), and would otherwise generally not be impacted by extreme weather conditions.

8.1.3.7 Preliminary Cost

The estimated costs associated with this remedial alternative are outlined in the attached Table 8 - Summary of Estimated Remediation Costs for “Excavate and Dispose of Soils to Reduce Leaching Potential, Manage Soils in Place”. Capital costs include direct capital costs, such as materials and equipment, and indirect capital costs, such as engineering contingencies. The costs associated with this alternative are not prohibitive and are lower than the costs associated with Alternative 2 “Excavate and Dispose of Soils with SRS Exceedances”.

8.2 Selection of Proposed Remediation Alternative

After assessing each Alternative using the previously listed evaluation criteria, the Alternatives were compared using the decision matrix approach. The decision matrix technique allows both objective and subjective parameters to be evaluated quantitatively.

For each Alternative, a value was assigned to each of the seven criteria. The rationale for assignment of values is presented below:

1. *Overall Protection of Human Health and the Environment* – A value of 2 was assigned for Alternative 1 (MNA). This reflects that near surface soils (upper 1.5 feet) will be removed to prepare the Site for paving; therefore, a reduction in exposure risk will be achieved; however, because no effort will be made to reduce the sources of impacts to groundwater a long term requirement for monitoring of groundwater (50 years) has been assumed. Contaminated soils will remain in place and require continued management under an AUR. Alternative 2 (excavate soils above SRS) was assigned a value of 5 because inferred sources of contamination will be removed, and the remaining contaminated groundwater will attenuate following removal of the source of contamination. Alternative 3 (excavate soils above leaching based standard, with AUR for other soils) will reduce the risk of human exposure to soils, but the soils will remain in place and require continued management under an AUR. In addition, although the approach is intended to achieve the same objective of groundwater source removal as Alternative 2, the uncertainty of establishing a reliable leaching-based soils standard further erodes the certainty of this option. A value of 3 was assigned.

2. *Technical Practicality* – Alternative 1 (MNA) presented no significant challenges to technically practicality and was assigned a value of 5. Alternative 2 (excavate soils above SRS) presents standard potential excavation safety concerns and requires the removal of cover soils to access deeper soils and was assigned a value of 3. Alternative 3 (excavate soils above leaching based standard, with an AUR for other soils) has some of the excavation safety concerns of Alternative 2, but also the technical challenge of determining and meeting a leaching-based clean-up criteria. Furthermore, reduction in the volume of mass removal will reduce the likelihood that one PFAS source is removed. Therefore, it was assigned a value of 2.

3. *Ability to Implement* – There were no significant limiting technical factors or the materials or services availability affecting the ability to implement Alternatives 1, and 2. However Alternative 3 (excavate soils above leaching based standard, with AUR for other soils) will be difficult to implement because of the uncertainty surrounding selecting a reliable leaching-based standard for chromium and no evidence to support a clear correlation of laboratory data to XRF data for an acceptable lower-limit of chromium leachability for soils to be left in place, which make field implementation impractical. Based on these considerations Alternatives 1, 2, and 3 were assigned values of 5, 4 and 2, respectively.

4. *Reduction of Toxicity, Mobility, and Volume* – A value of 2 was assigned for Alternative 1 (MNA). This reflects a long time period for the process of contaminant attenuation (through dilution only) but a reduced risk of soils exposure while the source remains. Alternative 2 (excavate soils above SRS) was assigned a value of 5 because the known and inferred sources of metals contamination and one PFAS source will be removed and the remaining contaminated groundwater will attenuate following removal of the source of contamination. Alternative 3 (excavate soils above leaching based standard, with an AUR for other soils) was assigned a value of 3 because low-level impacted surficial soils will be relocated under a pavement section managed under an AUR, the most grossly impacted soils will be removed, and the remaining contaminated groundwater will attenuate following removal of the source of contamination.

5. *Short Term Effectiveness* – Alternative 1 (MNA) is expected to require many years for remediation due to the uncertainty of contaminant attenuation rates at this Site, but parking lot construction will remove surface soils, and an AUR for remaining soils will result in effective near-term reduction of human exposure risk to soils. A value of 3 was assigned. Alternative 2 (excavate soils above SRS) and 3 (excavate soils above leaching based standard, relocate shallow soils to deep excavation areas and manage those remaining soils under an AUR) will eliminate short-term exposure risks for metals impacted soils and eliminate or reduce source area contributions to groundwater impacts and therefore a value of 5 and 4, respectively, was assigned to each alternative.

6. *Resiliency to Climate Change Conditions* – None of the alternatives are directly affected by climate change and the duration of site disturbance for the excavation options is short-lived and is not inferred to present unmanageable risks resulting from severe storms. Therefore, each of these alternatives was assigned a value of 5.

7. *Preliminary Costs* – Alternative 1 (MNA) has no construction costs other than those to construct the parking lot, but the long duration of monitoring increases the life cycle cost and the removal and excavation and disposal of near-surface soils over a broad area to accommodate the paving section adds to this alternative's cost. Hence a value of 4 was assigned. Costs for Alternative 2 (excavate soils above SRS) are the highest and there is uncertainty relative to disposal costs for PFAS contaminated soils (at some point in the future regulations/facility acceptance criteria may change and increase disposal costs), therefore a value of 2 was assigned. Excavation and disposal costs for Alternative 3 are less than for 2; however, the possible increase in the groundwater monitoring time period at least partially offsets any short-term savings, therefore a value of 3 was assigned.

Weighting factors were then applied as noted below and a total score calculated for each alternative. Weighting factors are somewhat subjective, range from a high of 4 to a low of 1, and are used as a multiplier to reflect the significance of each criteria relative to project goals. The highest weighting factor, 4, was assigned to Overall Protection of Human Health and the Environment. The lowest weighting factor, 1, was assigned to Resiliency to Climate Change, because no issues were identified for this Site and the remedial alternatives considered. The remaining criteria (Technical Practicality, Ability to Implement, Reduction in Toxicity/Mobility/Volume, Short Term Effectiveness and Preliminary Costs) were equally weighted at a multiplier of 3 which acknowledges the importance of each of these factors in successful implementation of any corrective action.

Results of the decision matrix comparison are presented in Table 10. Based on the results of the Decision Matrix, Alternative 2: the “Excavate and Dispose of Soils with SRS Exceedances” has been selected as the preferred remediation alternative. This alternative is proven to protect human health and the environment; is effective, technically feasible, and practical; and is cost-effective.

9.0 CONCEPTUAL REMEDIAL ACTION PLAN

The "Excavate and Dispose of Soils with SRS Exceedances" Alternative protects human health and the environment and is effective, technically feasible, and practical. Because this alternative meets the evaluation criteria and is not cost-prohibitive, this alternative has been selected for implementation at the Site. Appendix C provides a breakdown of costs for remediation under this scenario, and also provides back-up for the costs presented in Tables 7, 8, and 9.

Note that the identification of PFAS in Site groundwater and the identification of past Site operations as one possible source of the PFAS introduces additional unknowns to this ABCA. Although no SRSs for regulated PFAS compounds have been established by the NH DES, that regulatory outcome is likely. It is also likely that if the Site plating operations were a source of the PFAS detected in Site groundwater and that the excavations proposed under this RAP/ABCA will mitigate a potential ongoing residual PFAS source that could be present in Site soils.

What is less certain is whether there have been PFAS impacts to surface soils away from planned excavation areas as a result of possible air emissions from the Central Plating Facility, what the extent of down- and cross-gradient impacts to groundwater is and how that might affect ongoing monitoring costs. Additional investigations likely to be required by the NH DES could include collection and analyses of groundwater samples from additional Site monitoring wells for PFAS, collection and analyses of soils samples to assess for nearby PFAS impacts to surface soils, and possible installation and sampling of additional monitoring wells if the limits of the PFAS plume require additional delineation based on the result of additional Site monitoring well sampling. It is also uncertain as to whether additional investigations will be required by the NH DES to assess a possible off-Site firefighting foam source and who the responsible party will be for that possible required work.

9.1 Remedial Soil Excavation

As noted in Section 8.1.2:

1. Regulated soils with impacts greater than SRS will be removed (from plating line area and from beneath the sumps). Soils to be removed are as shown in Figure 4 and Figure 5. An XRF analyzer will be used to screen soils during the excavation work to substantiate the limits of the excavation using criteria developed as part of this Supplemental Phase II ESA. To meet the SRS for hexavalent chromium an XRF screening standard of 390 ppm total chromium will be used; soils with XRF screening results greater than 1,500 ppm will be segregated (see Section 3.2 for screening standard rationale) as potential characteristic hazardous waste. The soils will be strategically removed leveraging off of the 3-dimensionally mapped concentration data to be as efficient as possible in segregating high-level impacted soils from low-level impacted soils for the former plating area. As a soil volume (and disposal cost) reduction measure Ransom proposes that a step-wise approach to soils excavation be implemented such that priority analyses of excavation endpoint samples for hexavalent and trivalent chromium be conducted when XRF screening results document concentrations at 50% of the 1,500 ppm field segregation value (which also corresponds to approximately 2x the SRS hexavalent screening standard). The same field screening criteria and excavation approach will be used for soils excavated from beneath the sumps in the Former Wastewater Pre-Treatment Building to determine probable SRS attainment as well as the potential for soils to be a characteristic waste. It is Ransom's understanding, based on NH DES

preliminary input for the specific occurrence of these soils, that soils from beneath the sump would not be considered an F-listed waste, absent the presence of observable sludge.

2. Endpoint sampling will be conducted for laboratory analyses for Site COCs (total chromium, hexavalent chromium, nickel, cadmium, and PFAS) to document contaminant concentrations remaining post-remediation. Discrete soil samples will be collected from shallow (0 to 2 feet bgs), mid-depth (8 to 10 feet bgs) and deep (0 to 2 feet above the sand/clay interface) excavation sidewall soils, as well as the excavation base for the plating line excavation. Discrete soil samples will be collected from mid-depth sidewall soils (8 to 10 feet bgs), as well as the base for the sump area excavation.

3. Soils will be stockpiled into suspect hazardous (plating area high-level impacted) soils, and suspect non-hazardous (plating area low-level impacted, and beneath sumps) soils. Stockpiled soils will be tested for waste characterization parameters, including for TCLP chromium.

4. Stockpiled and characterized soils will be disposed of based on characteristic;

5. Non-regulated soils with PAH SRS exceedances will be reused as backfill in remedial excavations on the Lot of origin and beneath the paving section, but above the groundwater table. No requirement for an AUR is anticipated, contingent upon excavations endpoint laboratory results.

6. Dewatering of one or both excavations may be required to provide stable excavation condition and safely remove deep soils, and/or to place and compact backfill. Groundwater removed from the excavation will require off-site disposal or treatment and discharge in accordance with necessary local, state, or federal permitting requirements if to the sewer system, to the ground, or to the stormwater drainage systems (i.e., ultimately surface water).

7. A GMP application would be prepared and groundwater would be managed under a GMP for an assumed period of 15 years (specifically until two consecutive sampling rounds meet AGQSs) at a proposed initial frequency of five wells, two times per year for two years followed by five wells one time per year for three years and at a subsequent frequency of five wells one time per year for five years; summary reports to be prepared two times every five years. Analyses is for RCRA metals, nickel and PFAS.

9.2 Former Wastewater Pre-Treatment Building Abatement and Demolition

In order to access one of two inferred sources of groundwater impacts at the Site, the Former Wastewater Pre-Treatment Building will require the abatement of hazardous building materials, the removal and proper disposal of hazardous substances from within the building, and demolition and disposal of the building.

9.2.1 Asbestos Abatement/Removal

The building on-site would be abated of hazardous materials, the sumps contents removed and properly disposed of, and the sumps and adjoining areas cleaned, tested, the building demolished and properly disposed of;

ACM abatement must be performed using approved methods in accordance with applicable regulations established by the U.S. EPA, OSHA, and the NH DES. ACM will be removed by a licensed asbestos abatement contractor in accordance with RSA 141-E and the NH Administrative Rules Env-A 1800, *Asbestos Management and Control*.

9.2.2 Hazardous Substances

The contents of the sumps will be removed, containerized, sampled, tested, and securely stored, in compliance with the Hazardous Waste Rules until properly disposed. Concrete sump walls, floor, adjoin slab, and wood in proximity to the sump will be cleaned/decontaminated with endpoint sampling conducted for COCs, and/or properly characterized and disposed of in accordance with the Solid Waste Rules and Hazardous Waste Rules, as appropriate.

9.2.3 Lead-Based Paint Abatement

Any lead-based paint present on the building will be abated in accordance with State and Federal regulations. Since the building is proposed to be demolished, LBP abatement conducted as part of this cleanup project will include demolition and off-site disposal of the lead-painted surfaces/materials as construction and demolition debris at an appropriate disposal facility.

Handling of components coated with lead-containing paint requires compliance with the OSHA lead standard ("Lead in Construction," 29 CFR 1926.62). Under the existing conditions, demolition contractors may perform demolition, renovation, abatement, stabilization, cleanup, and daily operations in buildings that have lead-based paint or lead-containing coatings, provided that the following regulatory requirements are met:

1. Demolition activities that disturb surfaces that contain lead must be conducted in accordance with the OSHA regulation 29 CFR 1926.62 "Lead Exposure in Construction: Interim Final Rule." This regulation requires that a Site-specific health and safety plan be prepared before conducting activities that create airborne lead emissions such as cutting, grinding, or sanding surfaces coated with lead-containing paint. Such a plan must include the identification of lead components, an exposure assessment, and, if applicable, the required work procedures and personal protective equipment to be used.

2. The U.S. EPA and NH DES regulate the disposal of potentially hazardous wastes. Such wastes include paint chips and residue generated during abatement or repainting work, or whole components, such as wood windows, doors, and trim coated with lead-containing paint and disposed of as a result of proposed demolition work. Metal components are not regulated if they will be recycled and not disposed of in a landfill.

3. To minimize exposure to airborne dust or fumes containing lead and avoid the requirement to implement a lead exposure assessment, torch burning, cutting, grinding, or similar high impact work on components covered by lead-containing paint should be avoided. Such work would need to be conducted by properly trained workers using appropriate worker protection and engineering controls. For work activities that may generate airborne lead, the employer should perform an initial exposure assessment (personal air monitoring) for each individual task (e.g. demolition, abrasive blasting, and painting) that has the potential for causing worker exposure to be at or above the OSHA Action Level (30 micrograms of lead per cubic meter of air). In lieu of monitoring, recent historical data from similar operations may be used to comply with OSHA requirements.

9.2.4 Universal Waste Removal

Universal and other identified wastes will be properly characterized, handled, transported, and disposed off-site in accordance with NH DES regulations. Trained individuals will package the waste in appropriate containers with proper labeling. Shipment of waste will be conducted in accordance with established New Hampshire Department of Transportation protocol.

9.3 Green Remediation Principals

The remediation will be implemented in accordance with the U.S. EPA's Clean and Greener Policy for Contaminated Sites, Revised February 2012 (Green Remediation Principals). As much as feasible, the demolition and remediation contractors will use well maintained, appropriate-sized machinery, which may reduce fuel consumption and emissions. When economically feasible, building materials of value will be salvaged for reuse. For example, durable building materials, such as concrete, and masonry debris from demolition of the existing building will be staged on-site for reuse as pavement subgrades as part of future site development, or recycled off-site for reuse as an aggregate. In addition, as noted in Section 9.1, the proposed remediation would require, to the extent practicable, re-use of proposed "cut" asphalt parking area subgrade soils as remediation excavation backfill (above the groundwater table) to minimize energy use of materials trucking, minimize virgin material (clean backfill of off-site origin) resource consumption, and to preserve landfill capacity otherwise needed for low-level contaminated soils disposal.

The remediation will be conducted in a manner which is ultimately protective of the air (via dust control and minimizing equipment idling emissions), nearby stormwater and surface water drainages (through stringent erosion and sedimentation control measures), and human receptors (via physical barriers and restrictions to prevent human contact with the impacted areas).

10.0 REPORTING

Following completion of the selected alternative, the following reporting requirements will be completed.

1. An independent industrial hygienist that performs any required asbestos abatement clearance air sampling shall provide copies of the air sampling results to NH DES per the applicable rules.

2. A remediation implementation report summarizing the field activities, confirmatory sampling results, and disposal documentation associated with the soils remediation will be submitted to NH DES.

11.0 CONCLUSIONS AND RECOMMENDATIONS

Environmental investigations conducted at the Site identified contamination associated with historic Site operations, including the presence of hazardous building materials, hazardous substances within the building (sumps contents), and metals (notably hexavalent and trivalent chromium, and possibly PFAS) contaminated soil, and/or groundwater (chromium, nickel, cadmium, and PFAS). To address the impacted media on-site, three remediation alternatives were evaluated, including a Monitored Natural Attenuation" alternative, an "Excavate and Dispose of Soils with SRS Exceedances" alternative, and a "Excavate and Dispose of Soils to Reduce Leaching Potential, Manage Soils in Place" alternative. These alternatives also included additional remedial work including the full removal and abatement of hazardous building materials and demolition of the building as well as soils excavation to prepare for a proposed parking lot.

Alternative 1 – the MNA alternative was determined to be unacceptable because it did not meet threshold criteria of the overall protection of human health and the environment.

Alternative 3 – Excavate and Dispose of Soils to Reduce Leaching Potential, Manage Soils in Place suffered from the lack of supporting technical documentation to arrive at an appropriate leaching-based standard to be protective of future groundwater impacts and also would be less aggressive at remediating suspect PFAS impacted soils.

Alternative 2 - Excavate and Dispose of Soils with SRS Exceedances protects human health and the environment and is effective, technically feasible, practical, and provides a construction site ready for redevelopment as a proposed parking lot in support to the Walpole Village needs. Because this alternative meets the evaluation criteria and could be largely funded through a U.S. EPA Clean-up Grant, if awarded, this is the recommended remedial alternative. It should be noted that since the preparation of the initial draft of this RAP, regional soil disposal facilities have a heightening awareness of the possible increased costs of accepting PFAS contaminated soils. These increased costs are associated with the expense of treating landfill leachate to meet possible future landfill leachate discharge limits. As such, some facilities have decided not to accept additional soils with known PFAS contamination. Therefore, the cost estimates provided in this report have been updated and may increase (or decrease); the extent of that possible change in cost is presently unknown. Management options for PFAS-contaminated soils and their costs should come into better focus as experience and regulations associated with this emerging suite of contaminants evolve.

Please note that because possible/probable uses of PFAS on the Site associated with past facility operations were highly likely to be co-located with the plating and waste management processes that are also driving the clean-up proposed herein, the recommended remedial action is anticipated to mitigate probable PFAS source soils that could be present on Site. The NH DES is likely to require additional investigations to: (1) address the spatial extent of PFAS groundwater impacts; (2) assess whether a possible upgradient source (the reported likely use of AFFF by the Walpole Fire Department) is contributing to PFAS groundwater impacts; and (3) assess whether stack emissions from the Central Plating facility may have impacted nearby surface soils. While the proposed remediation is a proactive remedial approach that will probably mitigate PFAS impacts, the presence of PFAS, and the limited spatial data pertaining to PFAS groundwater impacts and no laboratory data on PFAS soils impacts does add uncertainty relative to possible additional required investigations, remediation, liability, disposal costs, and the duration of GMP-required groundwater monitoring, which are not fully factored into this ABCA/RAP.

In addition, based on the recent findings of a second probable on-Site source (area of the former Teflon tank), in an area not previously targeted for soil excavation, removal of an additional PFAS source in that area may be warranted at some point in the future, if and when leaching-based soils standards are established by the NH DES. Although PFAS impacts to soils have not been verified, nor has the extent of residual soils contamination been defined (soil standards have yet to be established), for perspective, at current rates, the excavation, disposal and backfill of 100 tons of PFAS-impacted, non-hazardous soils, is on the order of $30,000.

The recent investigations on the Site and adjoining properties have helped to define the limits of the GMZ, which has largely been constrained, and the laboratory data support that contaminant concentrations attenuate to meet AGQSs within the study area. If a localized southwesterly component of groundwater flow is further substantiated, then an additional monitoring well may be needed to the southwest to assess groundwater quality in that direction. Off-site monitoring wells currently proposed by Nobis Engineering, Inc. for installation for the neighboring Toles Sunoco LUST site may meet that need.

12.0 REFERENCES

1. Sanborn, Head and Associates, Inc., December 2013; Phase I Environmental Site Assessment, 12 Westminster Street, Walpole, New Hampshire.

2. Sanborn, Head and Associates, Inc., December 2013; Phase II Environmental Site Assessment, 12 Westminster Street, Walpole, New Hampshire.

3. Stantec, July 20, 2006; Phase I Environmental Site Assessment, 12 Westminster Street, Walpole, New Hampshire.

4. NH DES Env-Or 600 Soil Remediation Standards and Ambient Groundwater Quality Standards, Updated June 1, 2016.

5. NH DES Risk Characterization and Management Policy, Method 1 Soil Standards, Updated February 2013.

6. U.S. EPA; May 2016; Maximum Contaminant Levels.

7. U.S. EPA; May 2016; Regional Screening Levels.

8. NH DES OneStop Database.

9. Ransom Consulting, Inc.; January 19, 2016; Phase II Environmental Site Assessment, 12 Westminster Street, Walpole, New Hampshire.

10. Ransom Consulting, Inc.; June 23, 2017; Site-Specific Quality Assurance Project Plan – Supplemental Phase II Environmental Site Assessment; Central Plating, Inc. Site, Walpole, New Hampshire RFA #17091 Central Plating Site, Addendum No. 3, Rev. 1 to the State of New Hampshire Brownfields Assessment Projects Generic Quality Assurance Project Plan.

11. Ransom Consulting, Inc.; February 23, 2018; Limited Subsurface Investigation, 12 Westminster Street, Walpole, New Hampshire.

12. Sanborn Head & Associates, Inc.; October 17, 2017; Data Transmittal for Groundwater Sampling Per- and Polyfluoroalkyl Substances (PFAS); Former Central Plating Site, Walpole, New Hampshire.

13.0 SIGNATURE(S) OF ENVIRONMENTAL PROFESSIONAL(S)

Ransom performed services in a manner consistent with the guidelines set forth in the ASTM E1903-11, and in accordance with the scope of work and standard operating procedures outlined in the Generic QAPP and SSQAPP.

The following Ransom personnel possess the sufficient training and experience necessary to conduct an Supplemental Phase II ESA and ABCA, and from the information generated by such activities, have the ability to develop opinions and conclusions regarding remediation alternatives and a Conceptual RAP, as presented herein, for the Site.

Project Professional Engineer:

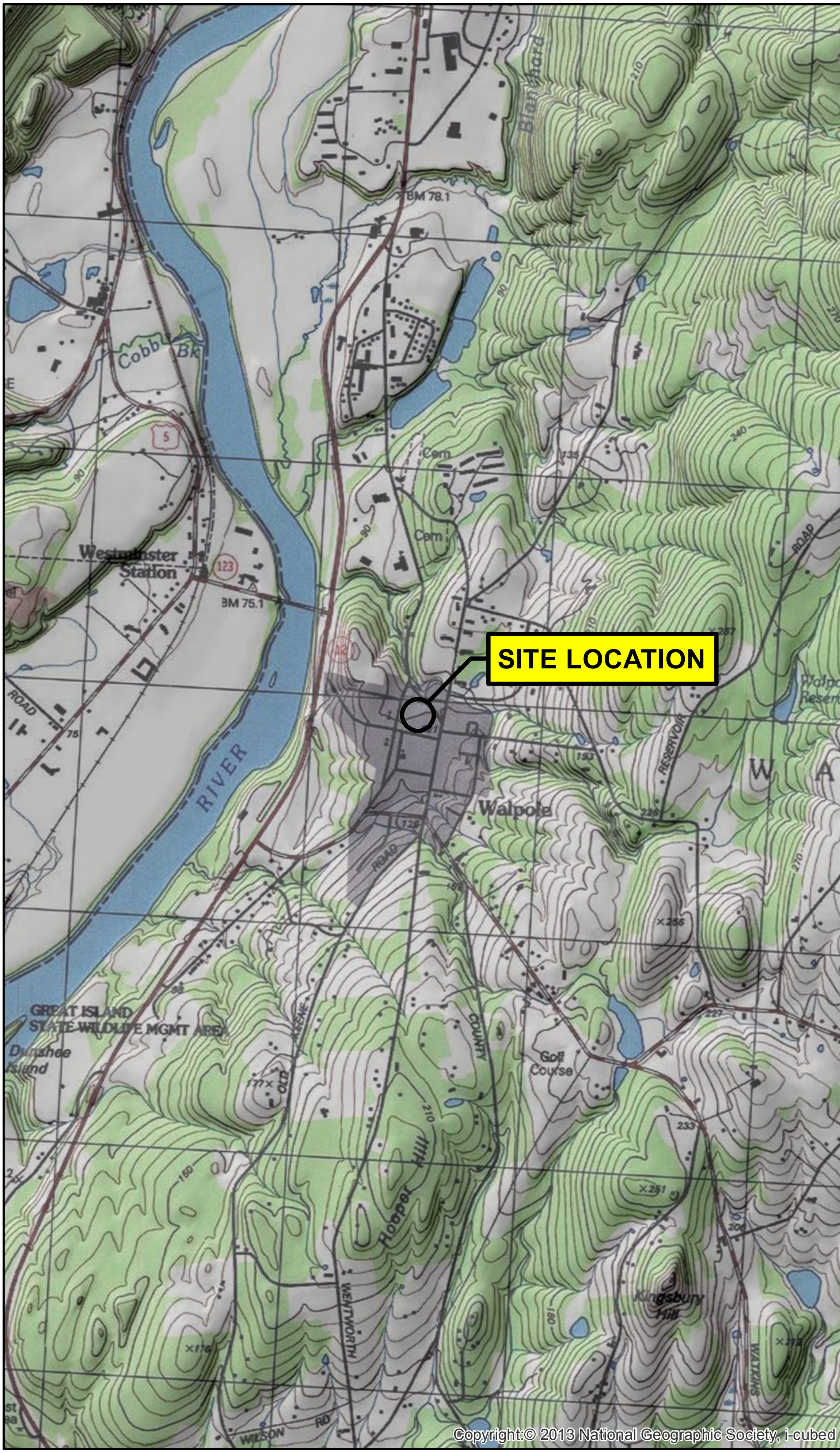
Jay P. Johonnett, P.E.
Project Engineer

Environmental Professionals:

Stephen J. Dyer, P.E.
Senior Project Manager

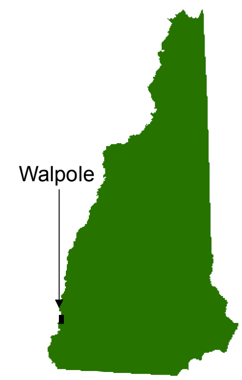
Steven F. Rickerich, P.G.
2018.04.25 12:05:24 -04'00'

Steven Rickerich, P.G.
Senior Project Manager / Principal-in-Charge



RANSOM Consulting Engineers and Scientists

Regional Locator Map



Notes

1. Data Source: USGS National Map Seamless Server, 24K DRG, 1/3" NED
2. USGS Quad Name: Walpole
3. Latitude: 43° 04' 48" N
   Longitude: 72° 25' 36" W
   UTM Northing: 4772913 mN
   UTM Easting: 709481 mE

Scale and Orientation

0 1,000 2,000

1 inch = 2,000 feet

Prepared For

Southwest Region
Planning Commission
37 Ashuelot Street
Keene, New Hampshire

Site Address

Central Plating Site
12 Westminster Street
Walpole, New Hampshire

141.05051 | Apr 2018

Figure 1

Site Location Map

RANSOM
Consulting Engineers and Scientists

Legend & Notes

Site Boundary

Parcel Boundary

61 Lot Number

Notes

1. Site Plan based on VCGI Orthophotography. Tax Map 20.
2. Some features are approximate in location and scale.
3. This plan has been prepared for Southwest Region Planning Commision. All other uses are not authorized unless written permission is obtained from Ransom Consulting, Inc.

Scale & Orientation

0 25 50

1 inch = 50 feet

Prepared For

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Planning Commission
37 Ashuelot Street
Keene, New Hampshire

Site Address

Central Plating Site
12 Westminster St.
Walpole, New Hampshire

141.05051 | Apr 2018

Figure 2
Site Neighborhood Plan

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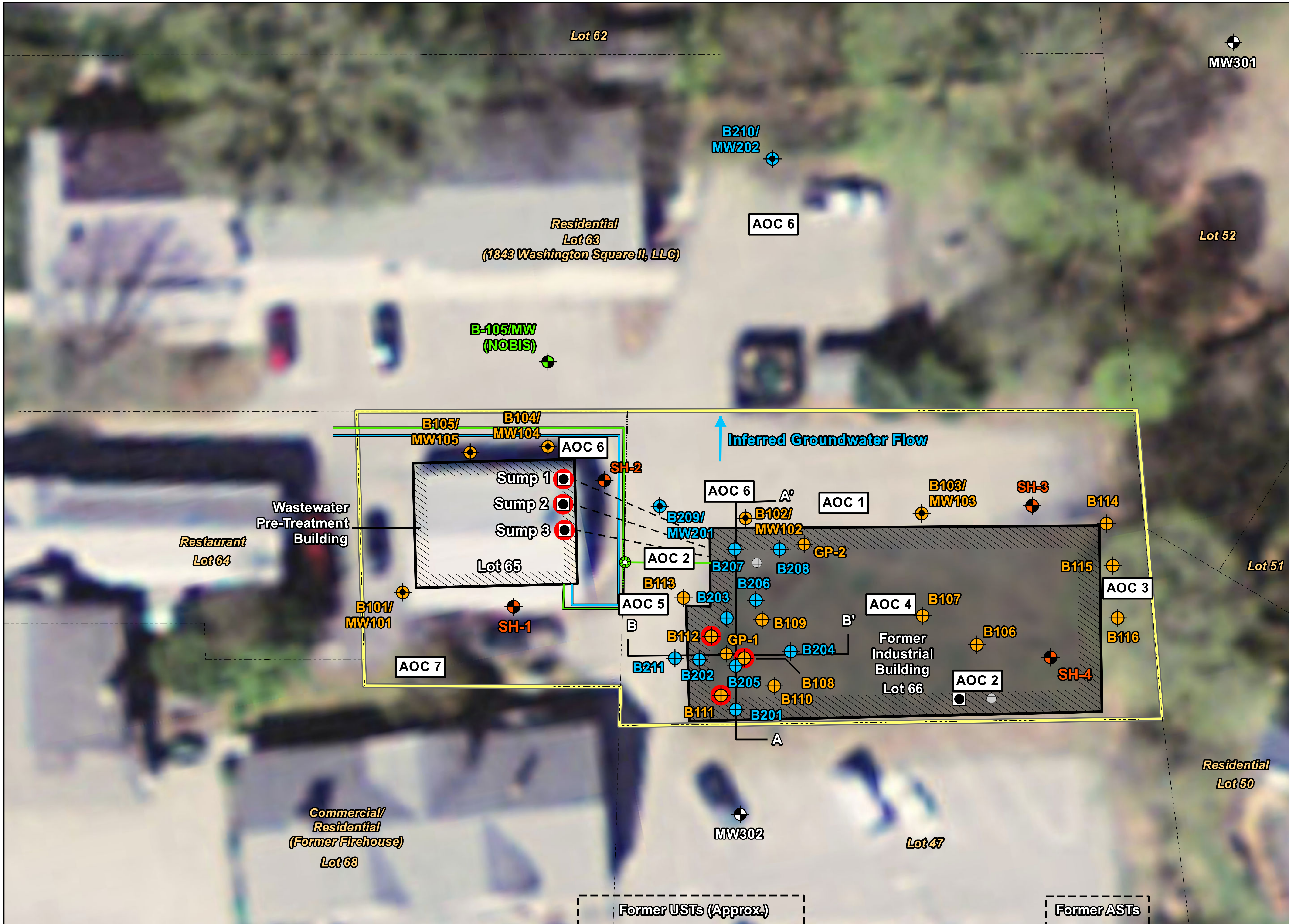

RANSOM
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Engineers
and Scientists

Legend & Notes

- Site Boundary
- 300 Series Monitoring Well
- 200 Series Soil Boring/ Monitoring Well
- 200 Series Soil Boring
- Monitoring Well (Sanborn Head & Associates, Inc.)
- 100 Series Soil Boring
- 100 Series Boring/ Monitoring Well
- AOC Area of Concern
- Former Sump
- Former Floor Drain
- Sewer Manhole
- Sewer Line
- Water Line
- Lot Line (Approximate)
- A—A' Cross-Section

Notes

1. Site Plan based on VCGI Orthophotography. Tax Map 20, and site surveyed plans for two adjoining properties.
2. Some features are approximate in location and scale.
3. This plan has been prepared for Southwest Region Planning Commision. All other uses are not authorized unless written permission is obtained from Ransom Consulting, Inc.
4. ENV-Or600 Soil Remediation Standard (SRS) for Cr III is 1,000 mg/kg and foor Cr VI is 130 m/kg. Red circle indicates a SRS exceedence for Cr.

Scale & Orientation

0 10 20

1 inch = 20 feet

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Planning Commission
37 Ashuelot Street
Keene, New Hampshire

Site Address

Central Plating Site
12 Westminster St.
Walpole, New Hampshire

141.05051 | Apr 2018

Figure 3
Site Plan

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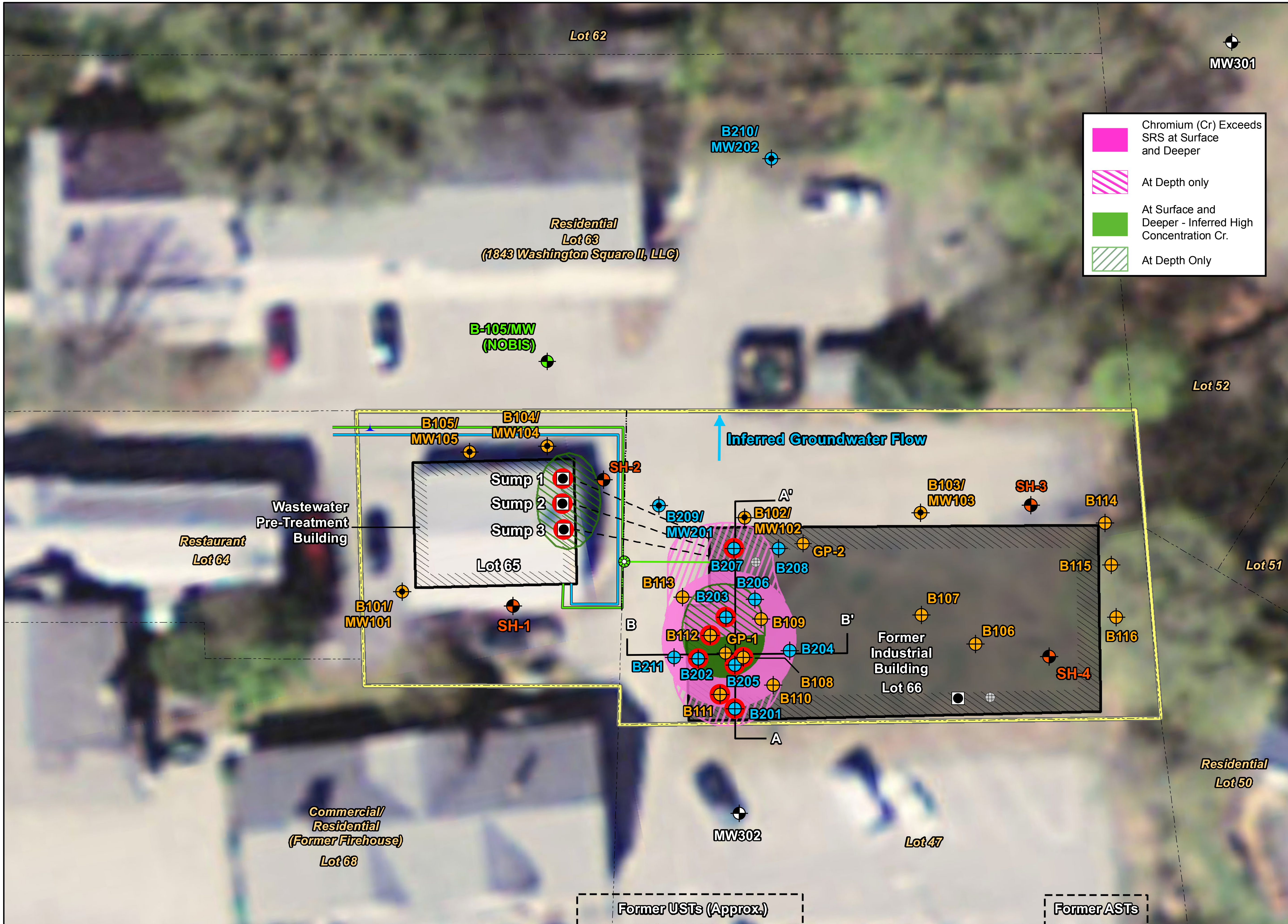

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Consulting Engineers and Scientists

Legend & Notes

- Site Boundary
- 300 Series Monitoring Well
- 200 Series Soil Boring/ Monitoring Well
- 200 Series Soil Boring
- Previously Existing Monitoring Well
- Soil Boring
- Boring/ Monitoring Well
- 1,400 (Cr Concentration mg/kg)
- (W) Waste Sample
- Former Sump
- Former Floor Drain
- Sewer Manhole
- Sewer Line
- Water Line
- Lot Line (Approximate)
- A—A' Cross-Section

Notes

1. Site Plan based on VCGI Orthophotography. Tax Map 20, and site surveyed plans for two adjoing properties.
2. Some features are approximate in location and scale.
3. This plan has been prepared for Southwest Region Planning Commision. All other uses are not authorized unless written permission is obtained from Ransom Consulting, Inc.
4. ENV-Or600 Soil Remediation Standard (SRS) for Cr III is 1,000 mg/kg and foor Cr VI is 130 m/kg. Red circle indicates a SRS exceedence for Cr.

Scale & Orientation

0 10 20

1 inch = 20 feet

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Southwest Region Planning Commission
37 Ashuelot Street
Keene, New Hampshire

Site Address

Central Plating Site
12 Westminster St.
Walpole, New Hampshire

141.05051 | Apr 2018

Figure 4
Chromium Distribution in Soils

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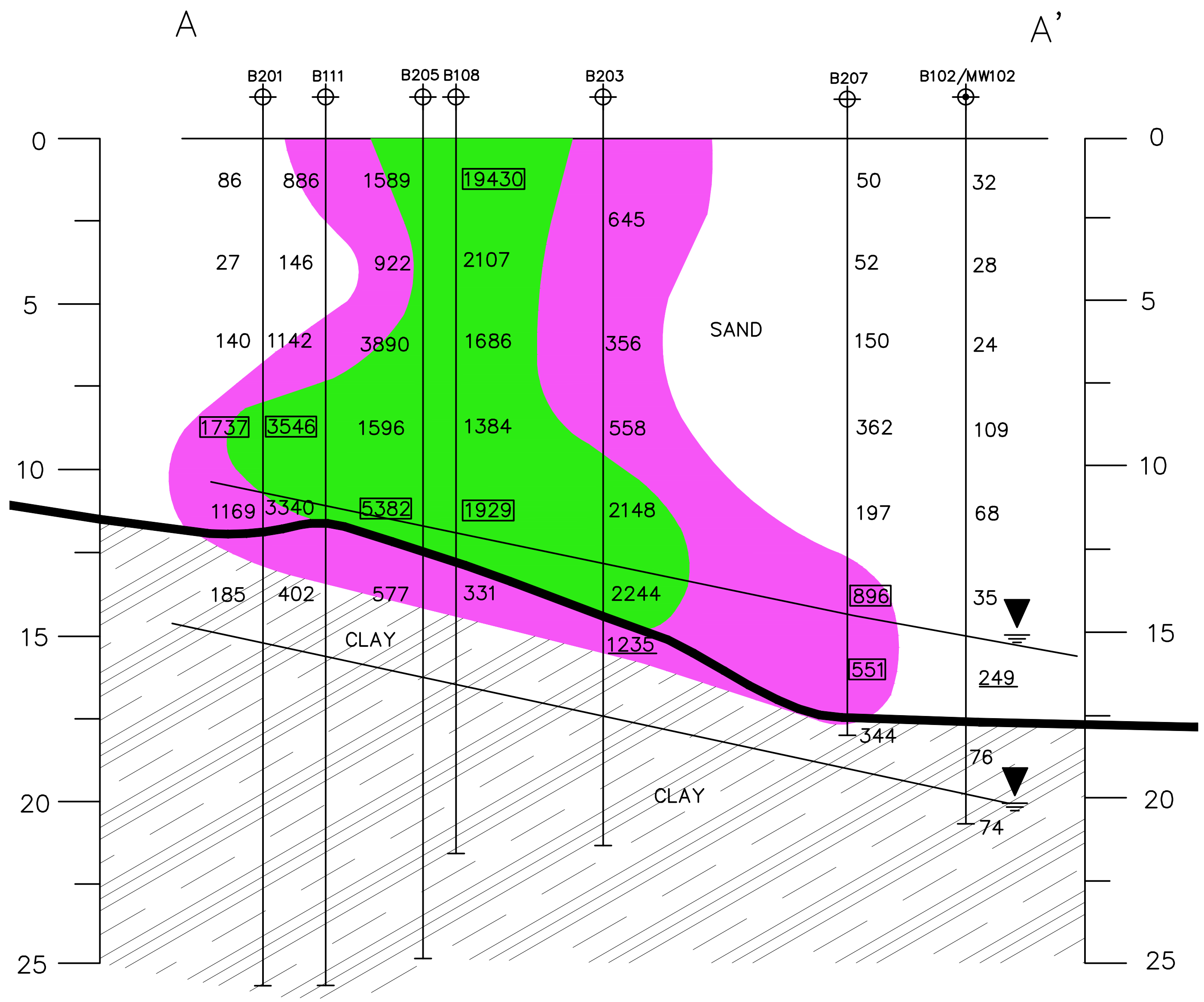
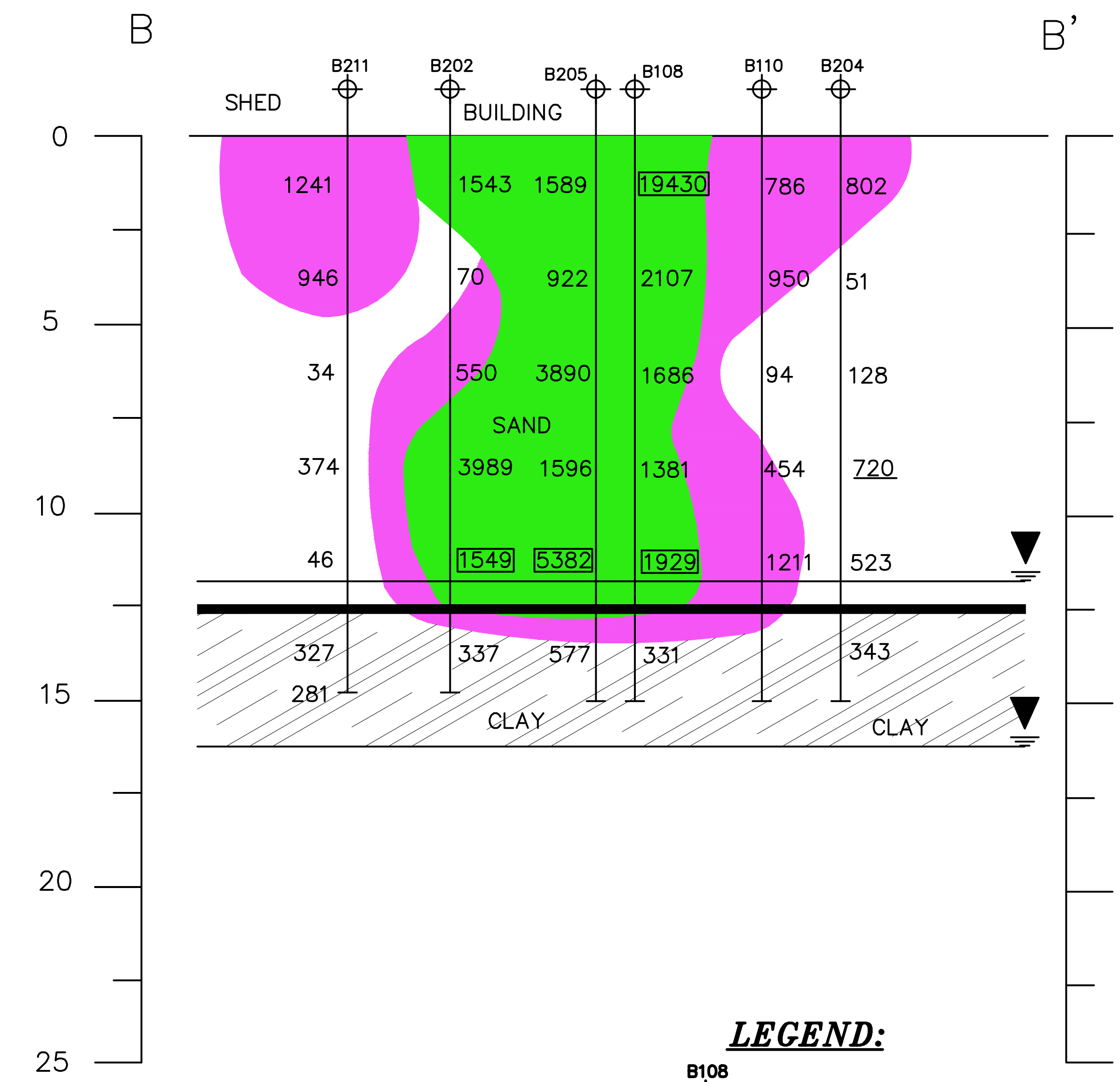
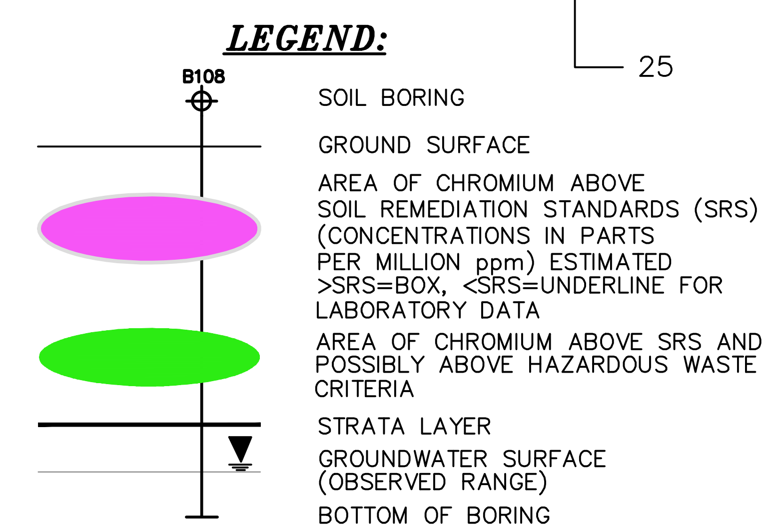






896 = LABORATORY RESULT >SRS

720 = LABORATORY RESULT <SRS

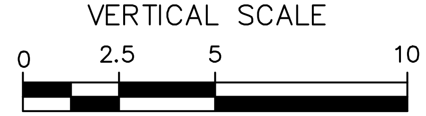
NOTES:

1. SITE PLAN BASED ON MEASUREMENTS AND OBSERVATIONS MADE BY RANSOM CONSULTING, INC.
2. SOME FEATURES ARE APPROXIMATE IN LOCATION AND SCALE.
3. THIS PLAN HAS BEEN PREPARED FOR SOUTHWEST REGION PLANNING COMMISSION. ALL OTHER USES ARE NOT AUTHORIZED, UNLESS WRITTEN PERMISSION IS OBTAINED FROM RANSOM CONSULTING, INC.
4. CRITERIA USED: XRF READING >390ppm (50% OF 781ppm FOR CrVI REGRESSED LABORATORY AND XRF CONCENTRATIONS) FOR SRS; XRF>1562ppm FOR AN ASSUMED 1000mg/kg LABORATORY CONCENTRATION FOR HIGH CONCENTRATION CHROMIUM.

HORIZONTAL SCALE

SCALE in FEET
1"=10'

VERTICAL SCALE



SCALE in FEET
1"=5'

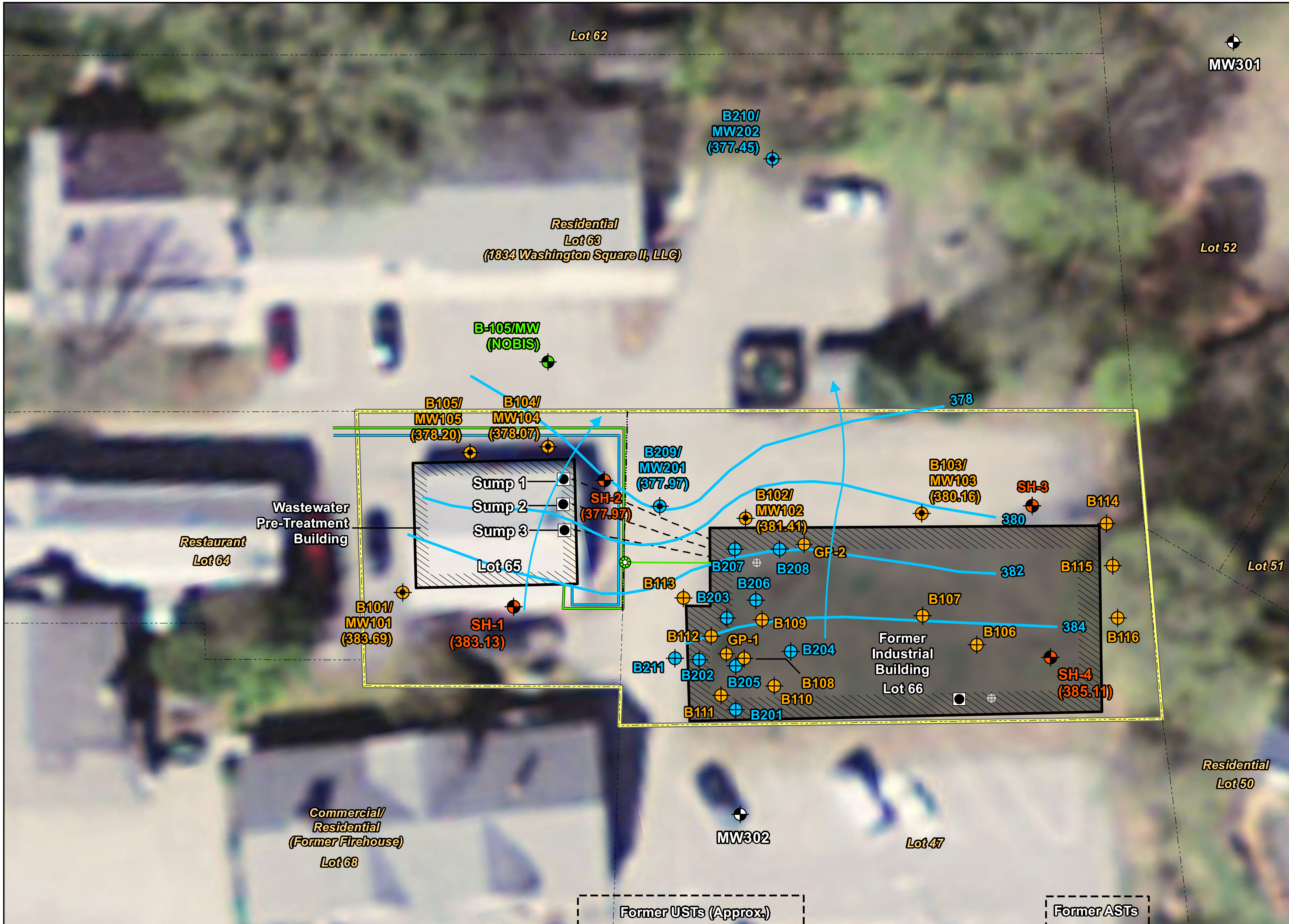
RANSOM Consulting, Inc.

PREPARED FOR:
SOUTHWEST REGION PLANNING COMMISSION
37 ASHUELOT STREET
KEENE, NEW HAMPSHIRE

SITE:
CENTRAL PLATING SITE
12 WESTMINSTER STREET
WALPOLE, NEW HAMPSHIRE

CROSS-SECTION OF XRF CHROMIUM MEASUREMENTS

DATE:	AUG 2017
PROJECT:	141.05051
FIGURE:	5



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Legend & Notes

- Site Boundary
- 300 Series Monitoring Well
- 200 Series Soil Boring/ Monitoring Well
- 200 Series Soil Boring
- Monitoring Well (Sanborn Head & Associates, Inc)
- 100 Series Soil Boring
- 100 Series Boring/ Monitoring Well
- Former Sump
- Former Floor Drain
- Sewer Manhole
- Sewer Line
- Water Line
- Lot Line (Approximate)
- Groundwater Contour
- Inferred Groundwater Flow
- 381.41 Groundwater Elevation

Notes

1. Site Plan based on VCGI Orthophotography. Tax Map 20, and site surveyed plans for two adjoing properties.
2. Some features are approximate in location and scale.
3. This plan has been prepared for Southwest Region Planning Commision. All other uses are not authorized unless written permission is obtained from Ransom Consulting, Inc.

Scale & Orientation

0 10 20

1 inch = 20 feet

Prepared For

Southwest Region
Planning Commission
37 Ashuelot Street
Keene, New Hampshire

Site Address

Central Plating Site
12 Westminster St.
Walpole, New Hampshire

141.05051 | Apr 2018

Figure 6
Groundwater Flow

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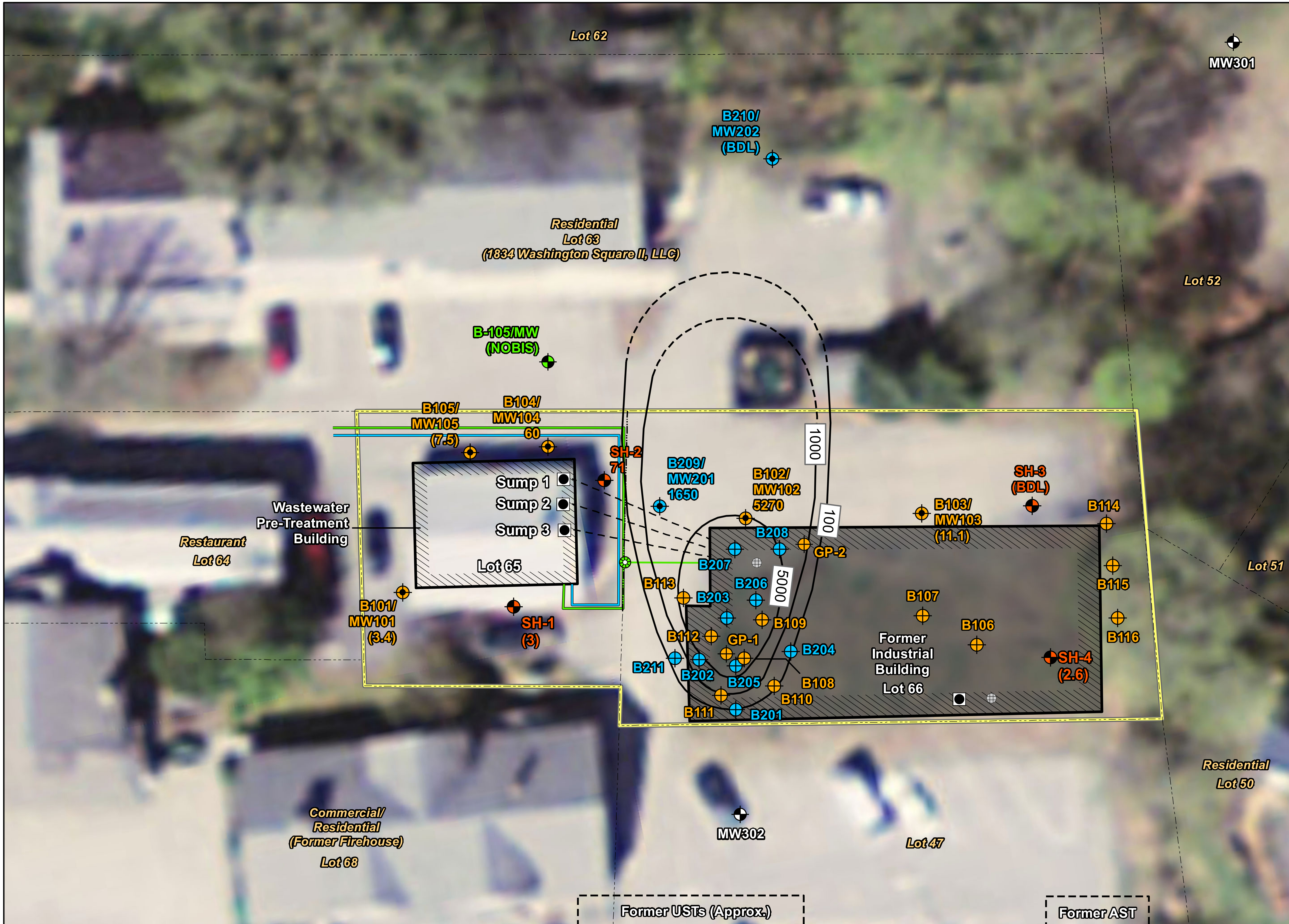

RANSOM
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Legend & Notes

- Site Boundary
- 300 Series Monitoring Well
- 200 Series Soil Boring/ Monitoring Well
- 200 Series Soil Boring
- Previously Existing Monitoring Well
- Soil Boring
- Boring/ Monitoring Well
- Former Sump
- Former Floor Drain
- Sewer Manhole
- Sewer Line
- Water Line
- Lot Line (Approximate)

Notes

1. Site Plan based on VCGI Orthophotography. Tax Map 20, and site surveyed plans for two adjoing properties.
2. Some features are approximate in location and scale.
3. This plan has been prepared for Southwest Region Planning Commision. All other uses are not authorized unless written permission is obtained from Ransom Consulting, Inc.
4. ENV-Or600 Ambient Groundwater Quality for Cr is 100 ug/L.

Scale & Orientation

0 10 20

1 inch = 20 feet

Prepared For

Southwest Region
Planning Commission
37 Ashuelot Street
Keene, New Hampshire

Site Address

Central Plating Site
12 Westminster St.
Walpole, New Hampshire

141.05051 | Apr 2018

Figure 7

Dissolved Groundwater
Chromium Distribution Map

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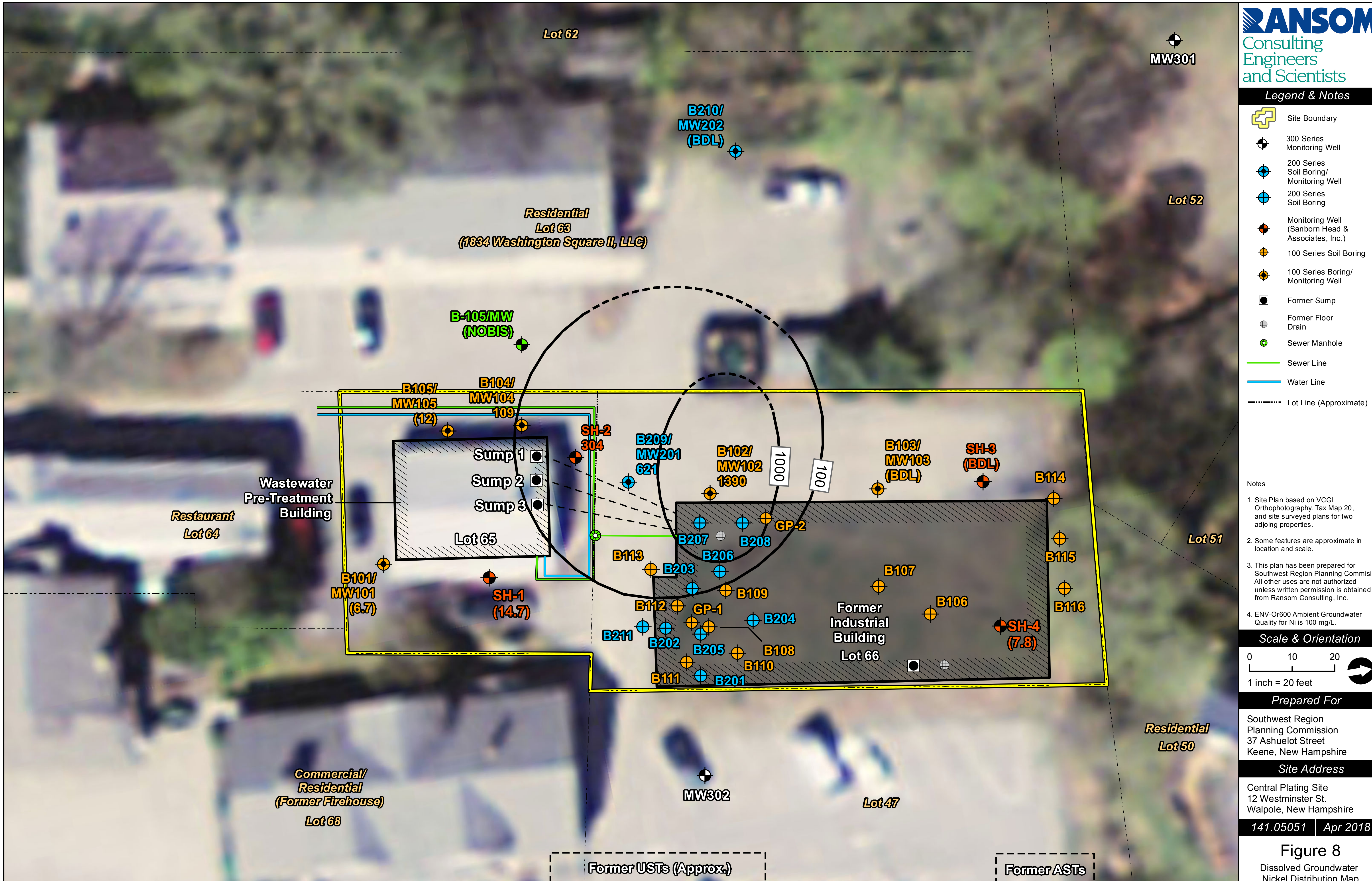

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TABLE 1A. SOIL SAMPLE XRF FIELD SCREENING RESULTS - 100 SERIES BORINGS
Central Plating Site
Walpole, New Hampshire

Date	Boring	Sample	Depth	As (Arsenic)	As +/-	Ba (Barium)	Ba +/-	Cd (Cadmium)	Cd +/-	Cr (Chromium)	Cr +/-	Cu (Copper)	Cu +/-	Pb (Lead)	Pb +/-	Hg (Mercury)	Hg +/-	Ni (Nickel)	Ni +/-	Se (Selenium)	Se +/-	Ag (Silver)	Ag +/-	Zn (Zinc)	Zn +/-
NH DES Env-Or 600 Soil Remediation Standard (SI				11		1,000		33		130/1,000		NE		400		7		400		180		89		1,000	
8/13/2015	B101	S1	0.0-2.5	<LOD	19	418	32	<LOD	16	58	5	54	4	572	7	5.3	1.7	30	4	<LOD	1.9	<LOD	13	226	5
		S2	2.5-5.0	<LOD	5	256	25	<LOD	16	53	4	<LOD	9	17.2	1.7	<LOD	4.5	20	4	<LOD	1.6	<LOD	13	30	2
		S3	5.0-7.5	<LOD	4.4	284	24	<LOD	15	29	4	<LOD	8	7.3	1.4	<LOD	4.2	16	4	<LOD	1.5	<LOD	12	22	2
		S4	7.5-10.0	<LOD	5.1	430	29	<LOD	16	52	4	<LOD	9	18.7	1.7	<LOD	4.5	20	4	<LOD	1.5	<LOD	13	41	2
		S5	***10.0-12.5***	***<LOD***	***6***	***416***	***35***	***<LOD***	***20***	***57***	***6***	***<LOD***	***11***	***18***	***2***	***<LOD***	***5.3***	***22***	***5***	***<LOD***	***1.9***	***<LOD***	***17***	***54***	***4***
		S6	12.5-15.0	<LOD	4.9	366	28	<LOD	15	31	4	<LOD	8	16.3	1.6	<LOD	4.1	18	4	<LOD	1.5	<LOD	12	27	2
		S7	15.0-17.5	<LOD	5	358	31	<LOD	16	37	5	15	3	14.7	1.6	<LOD	3.9	24	4	<LOD	1.6	<LOD	13	29	2
8/12/2015	B102	S1	0.0-2.5	<LOD	8	404	22	<LOD	12	32	3	33	2	162	2	<LOD	3.2	29	3	<LOD	1.2	<LOD	9	121	3
		S2	2.5-5.0	<LOD	4.9	382	23	<LOD	11	28	3	15	2	47.7	1.6	3.7	1.1	31	3	<LOD	1.1	<LOD	9	62	2
		S3	5.0-7.5	<LOD	4.6	290	22	<LOD	15	24	3	9	3	13.1	1.5	<LOD	4.3	21	4	<LOD	1.5	<LOD	12	19.3	2
		S4	7.5-10.0	<LOD	5.7	<LOD	307	<LOD	16	109	18	21	4	13.8	1.8	<LOD	5	37	5	<LOD	1.8	<LOD	13	33	3
		S5	10.0-12.5	<LOD	4.8	310	24	<LOD	16	68	4	23	3	12	1.6	5.6	1.5	30	4	<LOD	1.6	<LOD	13	48	3
		S6	12.5-15.0	<LOD	4.8	313	25	<LOD	16	35	4	18	3	14.2	1.6	<LOD	4.2	49	4	<LOD	1.5	<LOD	13	60	3
		S7	***15.0-17.5***	***<LOD***	***4.9***	***407***	***30***	***<LOD***	***16***	***249***	***7***	***52***	***4***	***15.2***	***1.6***	***<LOD***	***4.3***	***95***	***5***	***<LOD***	***1.5***	***<LOD***	***13***	***49***	***3***
		S8	17.5-20.0	<LOD	4.9	301	27	<LOD	16	76	4	25	3	14.1	1.6	<LOD	4.6	56	5	<LOD	1.5	<LOD	13	44	3
		S9	20.0-22.5	6.4	1.8	723	38	<LOD	16	74	6	30	3	14.8	1.7	<LOD	4.7	56	5	<LOD	1.6	<LOD	13	81	3
8/12/2015	B103	S1	0.0-2.5	17	3	406	32	<LOD	17	63	5	37	4	112	3	<LOD	4.8	61	5	<LOD	1.7	<LOD	14	126	4
		S2	2.5-5.0	<LOD	5.6	306	25	<LOD	16	26	4	11	3	27.1	1.8	<LOD	4.2	20	4	<LOD	1.5	<LOD	13	32	2
		S3	5.0-7.5	<LOD	5.4	338	29	<LOD	18	28	4	<LOD	9	12.9	1.7	<LOD	4.7	15	4	<LOD	1.6	<LOD	15	34	3
		S4	7.5-10.0	<LOD	5.2	451	34	<LOD	16	37	5	<LOD	9	15.2	1.7	<LOD	4.7	31	5	<LOD	1.6	<LOD	13	34	2
		S5	***10.0-12.5***	***<LOD***	***5.7***	***399***	***31***	***<LOD***	***18***	***161***	***7***	***<LOD***	***9***	***19.3***	***1.8***	***<LOD***	***4.8***	***56***	***5***	***<LOD***	***1.6***	***<LOD***	***14***	***25***	***2***
		S6	12.5-15.0	<LOD	4.7	381	28	<LOD	16	35	4	10	3	9.4	1.5	<LOD	4.6	15	4	<LOD	1.6	<LOD	13	28	2
		S7	***15.0-17.5***	***<LOD***	***4.6***	***405***	***31***	***<LOD***	***16***	***37***	***5***	***17***	***3***	***8.4***	***1.5***	***<LOD***	***4.5***	***72***	***5***	***<LOD***	***1.5***	***<LOD***	***13***	***29***	***2***
		S8	17.5-20.0	<LOD	5.2	798	39	<LOD	16	62	5	23	3	18.6	1.7	<LOD	4.2	43	5	<LOD	1.5	<LOD	13	66	3
		S9	20.0-22.5	<LOD	5.1	783	39	<LOD	16	76	6	21	3	13.1	1.7	<LOD	4.7	49	5	<LOD	1.7	<LOD	13	69	3
		S10	22.5-25.0	<LOD	5.1	736	38	<LOD	16	78	6	22	3	14.8	1.7	6.4	1.6	50	5	<LOD	1.6	<LOD	13	72	3
8/13/2015	B104	S1	0.0-2.5	<LOD	16	469	33	<LOD	16	50	5	23	3	388	5	<LOD	4.6	24	4	<LOD	1.8	<LOD	13	144	4
		S2	2.5-5.0	<LOD	4.8	272	26	<LOD	16	24	4	11	3	11.5	1.5	<LOD	4.3	19	4	<LOD	1.5	<LOD	13	38	2
		S3	5.0-7.5	<LOD	4.4	259	22	<LOD	15	28	3	11	3	9.7	1.5	<LOD	4.2	14	3	<LOD	1.6	<LOD	12	33	2
		S4	7.5-10.0	<LOD	4.4	260	24	<LOD	16	34	4	39	3	9.3	1.5	<LOD	4.2	19	4	<LOD	1.5	<LOD	13	41	2
		S5	10.0-12.5	<LOD	5.3	359	31	<LOD	16	52	5	18	3	16.9	1.8	<LOD	4.8	34	5	<LOD	1.6	<LOD	13	88	3
		S6	12.5-15.0	<LOD	4.8	354	26	<LOD	16	42	4	9	3	14.8	1.6	<LOD	4.4	28	4	<LOD	1.5	<LOD	13	39	2
		S7	15.0-17.5	<LOD	4.9	305	25	<LOD	16	36	4	15	3	14.6	1.6	<LOD	4.2	21	4	<LOD	1.5	<LOD	13	47	3
		S8	17.5-20.0	<LOD	5	429	29	<LOD	16	53	5	27	3	17.9	1.7	<LOD	4.3	36	4	<LOD	1.5	<LOD	13	52	3
		S9	***20.0-22.5***	***<LOD***	***4.7***	***410***	***31***	***<LOD***	***15***	***49***	***4***	***22***	***3***	***13.9***	***1.5***	***<LOD***	***4.2***	***42***	***4***	***<LOD***	***1.4***	***<LOD***	***12***	***27***	***2***
		S10	22.5-25.0	<LOD	4.9	305	28	<LOD	16	85	5	25	3	11.9	1.6	<LOD	4.5	38	4	<LOD	1.6	<LOD	13	21	2
8/13/2015	B105	S1	0.0-2.5	<LOD	7	445	40	<LOD	16	39	6	12	3	64	2	<LOD	4.4	20	4	<LOD	1.6	<LOD	13	78	3
		S2	2.5-5.0	<LOD	4.8	252	23	<LOD	15	32	4	13	3	16.7	1.6	<LOD	4.1	14	4	<LOD	1.4	<LOD	12	38	2
		S3	5.0-7.5	<LOD	4.6	330	31	<LOD	16	22	4	<LOD	8	12	1.6	<LOD	4.2	19	4	<LOD	1.6	<LOD	13	31	2
		S4	7.5-10.0	<LOD	4.6	293	22	<LOD	15	23	3	11	3	9.3	1.5	<LOD	4.2	15	4	<LOD	1.5	<LOD	12	41	2
		S5	10.0-12.5	<LOD	4.8	358	25	<LOD	16	47	4	11	3	15.3	1.6	<LOD	4.1	29	4	<LOD	1.5	<LOD	13	65	3
		S6	12.5-15.0	<LOD	4.9	286	27	<LOD	16	32	4	<LOD	9	12.5	1.6	<LOD	4.2	29	4	<LOD	1.6	<LOD	13	48	3
		S7	15.0-17.5	<LOD	4.9	358	28	<LOD	16	49	4	17	3	15	1.6	<LOD	4.4	24	4	<LOD	1.6	<LOD	13	30	2
		S8	17.5-20.0	<LOD	4.9	392	31	<LOD	16	34	4	10	3	11.5	1.6	<LOD	4.4	26	4	<LOD	1.6	<LOD	13	33	2
		S9	20.0-22.5	<LOD	4.5	355	24	<LOD	16	24	4	31	3	10.6	1.5	<LOD	4.2	43	4	<LOD	1.5	<LOD	13	33	2
		S10	***22.5-25.0***	***5.3***	***1.5***	***272***	***29***	***<LOD***	***16***	***31***	***4***	***10***	***3***	***7***	***1.4***	***<LOD***	***4.3***	***25***	***4***	***<LOD***	***1.5***	***<LOD***	***12***	***31***	***2***
8/12/2015	B106	S1	0.0-2.5	<LOD	6	458	35	<LOD	16	36	5	15	3	34.8	2	5.5	1.6	27	4	<LOD	1.6	<LOD	13	51	3
		S2	2.5-5.0	<LOD	4.4	349	25	<LOD	16	30	4	10	3	8.4	1.4	<LOD	4.2	21	4	<LOD	1.5	<LOD	13	25	2
		S3	5.0-7.5	<LOD	4.7	361	27	<LOD	16	32	4	18	3	10.1	1.5	<LOD	4.3	21	4	<LOD	1.5	<LOD	13	35	2
		S4	7.5-10.0	<LOD	5.1	411	30	<LOD	16	35	4	18	3	15.6	1.6	<LOD	4.4	12	4	<LOD	1.5	<LOD	13	29	2
		S5	10.0-12.5	<LOD	4.7	302	25	<LOD	15	47	4	30	3	12.8	1.5	<LOD	4.2	23	4	<LOD	1.5	<LOD	12	29	2
		S6	***12.5-15.0***	***<LOD***	***5.5***	***721***	***39***	***<LOD***	***17***	***82***	***6***	***18***	***3***	***19.4***	***1.8***	***<LOD***	***4.7***	***41***	***5***	***<LOD***	***1.6***	***<LOD***	***13***	***78***	***3***
8/12/2015	B107	***S1***	***0.0-2.5***	***41***	***7***	***435***	***32***	***<LOD***	***16***	***34***	***4***	***37***	***3***	***578***	***7***	***<LOD***	***4.9***	***26***	***4***	***<LOD***	***2.1***	***<LOD***	***13***	***165***	***4***
		S2	2.5-5.0	<LOD	4.6	467	27	<LOD	16	26	4	<LOD	8	10.8	1.5	5.8	1.5	16	4	<LOD	1.6	<LOD	13	26	2
		S3	5.0-7.5	<LOD	4.6	386	30	<LOD	16	25	4	<LOD	8	8.6	1.5	<LOD	4.4	19	4	<LOD	1.6	<LOD	13	22	2
		S4	7.5-10.0	<LOD	5.1	303	27	<LOD	16	30	4	16	3	14.6	1.6	<LOD	4.5	19	4	<LOD	1.6	<LOD	13	33	2
8/12/2015	B108	***S1***	***0.0-2.5***	***<LOD***	***10***	***<LOD***	***162***	***<LOD***	***16***	***19,430***	***271***	***209***	***6***	***126***	***3***	***<LOD***	***4.4***	***164***	***7***	***<LOD***	***1.8***	***<LOD***	***13***	***94***	***4***
		S2	2.5-5.0	5.1	1.6	342	31	<LOD	16	2,107	32	34	3	10.1	1.5	<LOD	4.4	24	4	<LOD	1.6	<LOD	13	23	2
		S3	5.0-7.5	<LOD	5.7	209	29	<LOD	16	1,686	26	30	3	28.1	1.8	<LOD	4.4	34	4	<LOD	1.6	<LOD	13	29	2
		S4	7.5-10.0	<LOD	5.3	291	33	<LOD	16	1,384	24	20	3	19.2	1.7	<LOD	4.4	31	4	<LOD	1.5	<LOD	13	35	2
		S5	***10.0-12.5***	***<LOD***	***4.8***	***291***	***31***	***<LOD***	***16***	***1,929***	***28***	***30***	***3***	***12.3***	***1.6***	***<LOD***	***4.5***	***34***	***4***	***<LOD***	***1.6***	***<LOD***	***13***	***29***	***2***
		S6	12.5-15.0	<LOD	5.7	802	40	<LOD	16	331	9	29	3	20.2	1.8	7.3	1.7	50	5	<LOD	1.7	<LOD	13	82	3
8/12/2015	B109	***S1***	***0.0-2.5***	***<LOD***	***10***	***354***	***31***	***<LOD***	***16***	***600***	***12***	***115***	***5***	***145***	***3***	***<LOD***	***4.6***	***180***	***7***	***<LOD***	***1.6***	***<LOD***	***13***	***74***	***3***
		S2	2.5-5.0	<LOD	4.8	302	24	<LOD	16	38	4	<LOD	9	13.9	1.6	<LOD	4.3	87	5	<LOD	1.6	<LOD	13	35	2
		S3	5.0-7.5	<LOD	5.9	307	26	<LOD	16	260	7	28	3	29.8	1.9	6	1.6	45	4	<LOD	1.6	<LOD	13	27	2
		S4	7.5-10.0	<LOD	5.1	278	27	<LOD	16	356	9	49	4	16.7	1.7	<LOD	4.5	33	4	<LOD	1.6	<LOD	13	29	2
		S5	10.0-12.5	<LOD	5.2	306	28	<LOD	16	911	17	248	6	22	1.7	<LOD	4.1	67	5	<LOD	1.5	<LOD	13	30	2
		S6	12.5-14.7	<LOD	4.8	410	30	<LOD	15	1,058	17	66	4	15.1	1.6	4.5	1.5	37	4	<LOD	1.5	<LOD	12	51	3
		S7	14.7-15.0	<LOD	5.3	722	38	<LOD	16	176	7	24	3	20.8	1.8	<LOD	4.6	45	5	<LOD	1.5	<LOD	13	75	3

TABLE 1A. SOIL SAMPLE XRF FIELD SCREENING RESULTS - 100 SERIES BORINGS
Central Plating Site
Walpole, New Hampshire

Date	Boring	Sample	Depth	As (Arsenic)	As +/-	Ba (Barium)	Ba +/-	Cd (Cadmium)	Cd +/-	Cr (Chromium)	Cr +/-	Cu (Copper)	Cu +/-	Pb (Lead)	Pb +/-	Hg (Mercury)	Hg +/-	Ni (Nickel)	Ni +/-	Se (Selenium)	Se +/-	Ag (Silver)	Ag +/-	Zn (Zinc)	Zn +/-
NH DES Env-Or 600 Soil Remediation Standard (SI				11		1,000		33		130/1,000		NE		400		7		400		180		89		1,000	
8/13/2015	B110	S1	0.0-2.5	<LOD	7	346	32	<LOD	17	768	14	79	4	62	2	<LOD	4.4	53	5	<LOD	1.6	<LOD	13	95	3
		S2	2.5-5.0	<LOD	5.6	282	31	<LOD	17	958	19	40	4	19.7	1.8	4.9	1.6	23	4	<LOD	1.6	<LOD	14	41	3
		S3	5.0-7.5	<LOD	4.9	313	26	<LOD	15	94	5	10	3	15.1	1.6	<LOD	4.3	17	4	<LOD	1.6	<LOD	12	24	2
		S4	7.5-10.0	<LOD	5	280	28	<LOD	16	454	10	49	4	11.8	1.6	<LOD	4.7	32	4	<LOD	1.6	<LOD	13	27	2
		S5	***10.0-12.5***	***<LOD***	***4.6***	***238***	***27***	***<LOD***	***16***	***1,211***	***20***	***41***	***3***	***10.6***	***1.5***	***<LOD***	***4***	***27***	***4***	***<LOD***	***1.5***	***<LOD***	***12***	***41***	***2***
		S6	12.5-15.0	<LOD	6	816	42	<LOD	16	565	12	44	4	24.6	1.9	<LOD	4.8	64	5	<LOD	1.7	<LOD	13	86	3
8/13/2015	B111	S1	0.0-2.5	<LOD	10	453	37	<LOD	16	882	16	93	4	118	3	<LOD	4.7	51	5	<LOD	1.7	<LOD	13	170	4
		S2	2.5-5.0	<LOD	5.7	347	28	<LOD	16	146	6	19	3	28.3	1.8	6.2	1.6	26	4	<LOD	1.6	<LOD	13	46	3
		S3	5.0-7.5	<LOD	6	373	31	<LOD	16	1,142	20	24	3	29.5	1.9	<LOD	4.6	18	4	<LOD	1.7	<LOD	13	63	3
		S4	***7.5-10.0***	***6.3***	***1.9***	***412***	***39***	***<LOD***	***16***	***3,546***	***51***	***15***	***3***	***27.1***	***1.8***	***<LOD***	***4.3***	***11***	***4***	***<LOD***	***1.6***	***<LOD***	***13***	***29***	***2***
		S5	***10.0-12.5***	***<LOD***	***5.4***	***414***	***41***	***<LOD***	***17***	***3,340***	***53***	***54***	***4***	***19.5***	***1.7***	***<LOD***	***4.3***	***26***	***4***	***<LOD***	***1.6***	***<LOD***	***13***	***54***	***3***
		S6	12.5-15.0	5.7	1.9	850	41	<LOD	16	402	10	34	4	17.8	1.8	<LOD	4.7	57	5	<LOD	1.7	<LOD	13	85	3
8/13/2015	B112	S1	0.0-2.5	<LOD	8	432	33	<LOD	16	321	8	48	4	75	2	<LOD	4.5	35	4	<LOD	1.6	<LOD	13	66	3
		S2	2.5-5.0	<LOD	10	368	32	<LOD	16	877	16	131	5	127	3	<LOD	4.6	165	6	<LOD	1.7	<LOD	12	213	5
		S3	5.0-7.5	<LOD	10	230	24	<LOD	15	651	12	88	4	146	3	<LOD	4	77	5	<LOD	1.5	<LOD	12	15.8	1.9
		S4	7.5-10.0	<LOD	8	327	33	<LOD	17	678	14	69	4	71	2	<LOD	4.6	38	5	<LOD	1.6	<LOD	14	28	2
		S5	10.0-12.5	<LOD	9	439	36	<LOD	15	1,970	31	313	7	99	3	<LOD	4.5	97	5	<LOD	1.6	<LOD	12	39	3
		S6	***12.5-14.7***	***<LOD***	***4.3***	***281***	***29***	***<LOD***	***16***	***1,544***	***23***	***26***	***3***	***7.7***	***1.4***	***<LOD***	***4.1***	***12***	***4***	***<LOD***	***1.5***	***<LOD***	***13***	***25***	***2***
		S7	14.7-15.0	<LOD	5.8	790	41	<LOD	17	496	11	30	4	22	1.9	<LOD	4.8	45	5	<LOD	1.7	<LOD	14	89	3
8/12/2015	B114	***S1***	***0.0-2.5***	***<LOD***	***16***	***515***	***37***	***<LOD***	***17***	***54***	***5***	***160***	***6***	***326***	***5***	***<LOD***	***5.3***	***169***	***7***	***<LOD***	***2***	***<LOD***	***13***	***439***	***7***
		S2	2.5-5.0	<LOD	4.7	341	27	<LOD	16	13	3	12	3	9.8	1.5	<LOD	4.3	22	4	<LOD	1.6	<LOD	13	69	3
8/12/2015	B115	***S1***	***0.0-2.5***	***<LOD***	***7***	***488***	***35***	***<LOD***	***16***	***44***	***5***	***45***	***4***	***45***	***2***	***<LOD***	***4.6***	***35***	***4***	***<LOD***	***1.6***	***<LOD***	***13***	***227***	***5***
		S2	2.5-5.0	<LOD	4.6	412	28	<LOD	16	16	4	<LOD	9	10.8	1.5	5.3	1.5	17	4	<LOD	1.5	<LOD	13	29	2
8/12/2015	B116	***S1***	***0.0-2.5***	***<LOD***	***8***	***548***	***36***	***<LOD***	***16***	***136***	***6***	***149***	***5***	***75***	***3***	***<LOD***	***4.5***	***44***	***5***	***<LOD***	***1.7***	***<LOD***	***13***	***572***	***8***
		S2	2.5-5.0	<LOD	4.6	333	32	<LOD	16	21	4	<LOD	8	11.8	1.5	<LOD	4.2	18	4	<LOD	1.6	<LOD	13	32	2

Notes:
1 - Concentrations and SRS are in parts per million (milligrams/ kilogram).
2 - LOD - Limit of Detection (lower limit); < = less than.
3 - Instrument degree of measurement accuracy indicated by +/- value by metal and sample.
4 - Sample depth is in feet below ground surface.
5 - Sampling indicate in bold and italics was submitted for laboratory analyses for one or more parameters.
6 - Values highlighted in yellow exceed the SRS for that metal.
7 - Cr SRS is 130 for hexavalent Cr and 1,000 for trivalent Cr; for exceedence designation, Cr is inferred to be trivalent.

TABLE 1B. SOIL SAMPLE XRF FIELD SCREENING RESULTS - 200 SERIES BORINGS
Central Plating Site
Walpole, New Hampshire

Date	Boring	Sample	Depth (ft.)	As (Arsenic)	As +/-	Ba (Barium)	Ba +/-	Cd (Cadmium)	Cd +/-	Cr (Chromium)	Cr +/-	Pb (Lead)	Pb +/-	Hg (Mercury)	Hg +/-	Ni (Nickel)	Ni +/-	Se (Selenium)	Se +/-	Ag (Silver)	Ag +/-
NH DES Env-Or 600 Soil Remediation Standard (SRS)				11		1,000		33		130/1,000		400		7		400		180		89	
6/29/2017	B201	S1	0.0-2.5	< LOD	12.65	215.78	76.84	< LOD	16.65	86.35	17.57	45.41	10.83	< LOD	11.76	< LOD	83.78	< LOD	5.08	< LOD	12.99
		S2	2.5-5.0	< LOD	8.59	254.41	63.22	< LOD	13.78	26.63	14.61	< LOD	11.51	< LOD	11.16	< LOD	80.21	< LOD	4.51	< LOD	10.8
		S3	5.0-7.5	< LOD	9.52	223.84	58.74	< LOD	12.84	140.27	34.85	< LOD	11.59	< LOD	11.7	< LOD	84.92	< LOD	4.49	< LOD	9.8
		S4	***7.5-10.0***	***< LOD***	***8.34***	***268.64***	***62.3***	***< LOD***	***13.22***	***1737.26***	***41.16***	***< LOD***	***10.45***	***< LOD***	***12.05***	***< LOD***	***85.38***	***< LOD***	***4.46***	***< LOD***	***10.48***
		S5	10.0-12.5	< LOD	8.44	372.92	58.01	< LOD	12.2	1168.95	34.63	< LOD	10.46	< LOD	12.17	< LOD	83.76	< LOD	4.72	< LOD	9.55
		S6	12.5-15.0	< LOD	9.12	519.91	50.21	< LOD	10.39	184.99	25.66	< LOD	12.22	< LOD	13.04	< LOD	89.88	< LOD	4.46	< LOD	7.96
6/29/2017	B202	S1	0.0-2.5	< LOD	18.07	171.15	55.87	< LOD	12.5	1542.9	37.65	117.24	14.86	< LOD	11.4	111.86	58.67	< LOD	4.56	< LOD	9.43
		S2	2.5-5.0	< LOD	7.76	223.81	62.53	< LOD	14.25	69.87	16.22	< LOD	10.17	< LOD	12.01	< LOD	84.56	< LOD	4.46	< LOD	10.52
		S3	5.0-7.5	< LOD	8.59	261.35	48.78	< LOD	10.9	549.95	49.59	< LOD	11.23	< LOD	11.48	< LOD	80.47	< LOD	4.09	< LOD	8.25
		S4	7.5-10.0	< LOD	9.62	145.68	77.95	< LOD	17.21	3988.65	114.87	13.1	8.32	< LOD	12.11	< LOD	84.02	< LOD	4.77	< LOD	12.63
		S5	***10.0-12.5***	***< LOD***	***8.66***	***350.04***	***80.72***	***< LOD***	***17.62***	***1548.53***	***71.06***	***< LOD***	***10.2***	***< LOD***	***13.47***	***< LOD***	***93.77***	***< LOD***	***5.39***	***< LOD***	***12.88***
		S6	***12.5-15.0***	***< LOD***	***10.08***	***612.39***	***62.71***	***< LOD***	***13.31***	***336.65***	***48.53***	***< LOD***	***12.6***	***< LOD***	***12.06***	***< LOD***	***90.87***	***< LOD***	***5.22***	***< LOD***	***9.9***
6/29/2017	B203	S1 & S2	0.0-5.0	< LOD	13.31	94.69	53.88	< LOD	12.09	645.13	24.85	52.21	11.13	< LOD	12.39	88.89	57.31	< LOD	4.07	< LOD	9.22
		S3	5.0-7.5	< LOD	11.31	150.99	58.05	< LOD	12.66	355.53	20.59	40.46	10.05	< LOD	11.34	< LOD	75.53	< LOD	4.26	< LOD	9.97
		S4	7.5-10.0	< LOD	14.28	333.72	65.48	< LOD	14.34	558.32	52.25	58.74	12.19	< LOD	12.44	108.42	63.45	< LOD	4.87	< LOD	10.17
		S5	10.0-12.5	< LOD	9.63	141.71	60.57	< LOD	13.75	2148.01	43.45	12.18	8.06	< LOD	11	122.88	60.86	< LOD	4.11	< LOD	10.3
		S6	***12.5-15.0***	***< LOD***	***9.18***	***133.32***	***63.05***	***< LOD***	***13.82***	***2243.85***	***47.16***	***< LOD***	***10.64***	***< LOD***	***12.04***	***< LOD***	***87.63***	***< LOD***	***4.36***	***< LOD***	***10.35***
		S7	***clay/silt @ 15.0***	***< LOD***	***10.19***	***349.15***	***79.11***	***< LOD***	***16.79***	***1234.59***	***65.11***	***16.18***	***8.89***	***< LOD***	***12.42***	***< LOD***	***94.91***	***< LOD***	***4.65***	***< LOD***	***12.91***
6/29/2017	B204	S1	0.0-2.5	< LOD	20.83	190.99	77.47	< LOD	16.76	802.44	57.23	161.63	17.3	< LOD	11.38	< LOD	88.88	< LOD	4.32	< LOD	13.19
		S2	2.5-5.0	< LOD	8.53	327.4	65.96	< LOD	14.26	51.32	14.6	< LOD	10.98	< LOD	12.17	< LOD	86.59	< LOD	4.98	< LOD	10.73
		S3	5.0-7.5	< LOD	7.87	345.56	57.34	< LOD	12.56	127.91	16.33	< LOD	9.91	< LOD	11.4	< LOD	82.46	< LOD	5.29	< LOD	9.36
		S4	***7.5-10.0***	***< LOD***	***9.28***	***185.82***	***65.21***	***< LOD***	***14.85***	***720.44***	***55.06***	***< LOD***	***12.68***	***< LOD***	***13.34***	***124.53***	***69.91***	***< LOD***	***4.93***	***< LOD***	***10.7***
		S5	**10.0-12.5**	**< LOD**	**8.26**	**308.18**	**55.8**	**< LOD**	**12.46**	**523.45**	**49.47**	**< LOD**	**10.47**	**< LOD**	**11.61**	**< LOD**	**89.47**	**< LOD**	**5.2**	**< LOD**	**9.51**
		S6	12.5-15.0	< LOD	9.98	430.11	63.95	< LOD	13.24	342.88	27.16	< LOD	12.35	< LOD	12.81	< LOD	98.63	< LOD	4.72	< LOD	10.33
6/29/2017	B205	S1	0.0-2.5	< LOD	9.45	157.91	62.45	< LOD	13.53	1588.79	72.97	< LOD	12.56	< LOD	13.24	< LOD	92.74	< LOD	4.86	< LOD	10.37
		S2	2.5-5.0	< LOD	8.27	174.24	48.07	< LOD	10.77	922.27	29.41	< LOD	10.92	< LOD	11.63	90.99	60.17	< LOD	4.37	< LOD	8.03
		S3	5.0-7.5	< LOD	9.59	339.7	62.7	< LOD	13.71	3890	57.48	< LOD	11.65	< LOD	13.79	< LOD	99.71	< LOD	5.22	< LOD	10.06
		S4	7.5-10.0	< LOD	8.39	324.41	48.99	< LOD	10.66	1595.92	38.67	< LOD	10.42	< LOD	11.45	< LOD	82.94	< LOD	4.06	< LOD	8.11
		S5	***10.0-12.5***	***< LOD***	***21.84***	***178.14***	***49.36***	***< LOD***	***10.68***	***5382.11***	***66.65***	***142.66***	***18.2***	***< LOD***	***14.47***	***418.72***	***88.1***	***< LOD***	***6.11***	***< LOD***	***8.2***
		S6	12.5-15.0	< LOD	9.8	492.56	64.6	< LOD	13.49	576.68	32.11	< LOD	11.91	< LOD	13.22	< LOD	96.98	< LOD	4.44	< LOD	10.04
6/29/2017	B206	S1	0.0-2.5	< LOD	16.98	226.22	57.5	< LOD	12.61	720.26	28.39	101.69	14.35	< LOD	11.88	< LOD	83.81	< LOD	4.8	< LOD	9.88
		S2	2.5-5.0	< LOD	9.34	199.33	60.93	< LOD	13.47	220.69	19.22	< LOD	11.32	< LOD	10.76	< LOD	85.19	< LOD	4.02	< LOD	10.65
		S3	***5.0-7.5***	***< LOD***	***9.45***	***233.79***	***77.02***	***< LOD***	***16.8***	***496.18***	***42.97***	***< LOD***	***11.82***	***< LOD***	***12.04***	***90.67***	***59.14***	***< LOD***	***4.11***	***< LOD***	***13.28***
		S4	7.5-10.0	< LOD	11.34	311.32	59.2	< LOD	12.75	400.43	24.73	18.9	9.28	< LOD	13.01	< LOD	96.52	< LOD	5.12	< LOD	9.78
		S5	10.0-12.5	< LOD	9.42	394.22	50.89	< LOD	11.22	771.08	30.12	< LOD	11.63	< LOD	12.18	< LOD	88.05	< LOD	4.92	< LOD	8.38
		S6	***12.5-15.0***	***< LOD***	***8.2***	***< LOD***	***91.87***	***< LOD***	***13.92***	***1126.64***	***33.15***	***< LOD***	***9.77***	***< LOD***	***12.15***	***< LOD***	***85.26***	***< LOD***	***4.51***	***< LOD***	***10.28***
			silt/clay @ 15.0	< LOD	9.56	264.21	49.77	< LOD	10.81	456.94	27.85	< LOD	11.35	< LOD	12.49	< LOD	89.96	< LOD	5.03	< LOD	8.29
6/29/2017	B207	S1	0.0-2.5	< LOD	14.11	287.84	62.61	< LOD	13.6	50.28	15.49	57.23	11.77	< LOD	12.48	< LOD	83.88	< LOD	4.83	< LOD	10.51
		S2	2.5-5.0	< LOD	8.45	305.92	48.85	< LOD	10.76	51.83	31.11	< LOD	10.9	12.32	7.89	108.77	61.82	< LOD	4.62	< LOD	8.01
		S3	5.0-7.5	< LOD	8.56	123.81	55.06	< LOD	12.07	149.95	18.5	< LOD	10.91	< LOD	12.28	< LOD	83.65	< LOD	4.51	< LOD	8.94
		S4	7.5-10.0	< LOD	8.39	280.01	74.67	< LOD	16.03	362.16	22.77	< LOD	11.22	< LOD	11.16	< LOD	79.69	< LOD	4.3	< LOD	12.93
		S5	10.0-12.5	< LOD	8.65	287.19	63.08	< LOD	13.83	197.01	18.89	< LOD	11.4	< LOD	12.63	< LOD	92.74	< LOD	4.65	< LOD	10.51
	Lab	***S6***	***12.5-15.0***	***< LOD***	***9.57***	***251.65***	***59.67***	***< LOD***	***12.4***	***895.61***	***30.96***	***< LOD***	***11.5***	***< LOD***	***11.98***	***131.37***	***61.55***	***< LOD***	***4.86***	***< LOD***	***9.41***
	13.5-16.0	***S7***	***15.0-17.5***	***< LOD***	***8.03***	***295.62***	***55.88***	***< LOD***	***11.98***	***551.03***	***26.5***	***< LOD***	***10.15***	***< LOD***	***11.24***	***130.33***	***57.95***	***< LOD***	***4.39***	***< LOD***	***8.81***
		S8	***17.5-20.0***	***< LOD***	***8.76***	***409.22***	***62.53***	***< LOD***	***13.48***	***344.32***	***27.74***	***< LOD***	***10.9***	***< LOD***	***12.01***	***98.69***	***62.79***	***< LOD***	***4.53***	***< LOD***	***9.64***
6/29/2017	B208	S1	0.0-2.5	< LOD	9.13	303.54	59.86	< LOD	13	107.12	35.15	15.48	8.15	< LOD	11.91	< LOD	81.53	< LOD	4.05	< LOD	9.83
		S2	2.5-5.0	< LOD	11.96	190.63	51.75	< LOD	11.24	43.91	15.85	37.58	10.09	< LOD	11.12	< LOD	86.25	< LOD	4.08	< LOD	8.63
		S3	5.0-7.5	< LOD	9.07	225.26	61.1	< LOD	13.34	106.11	16.71	< LOD	11.07	< LOD	11.95	< LOD	85.2	< LOD	4.78	< LOD	10.29
		S4	7.5-10.0	< LOD	10.17	266.05	55.8	< LOD	12.04	199.59	19.47	17.15	8.59	< LOD	12.26	< LOD	82.28	< LOD	5.13	< LOD	9.34
		S5	10.0-12.5	< LOD	9.79	215.3	61.67	< LOD	13.75	88.79	17.39	12.57	8.25	< LOD	12.04	< LOD	90.43	< LOD	4.65	< LOD	9.85
	Lab	***S6***	***12.5-15.0***	***< LOD***	***7.46***	***< LOD***	***68***	***< LOD***	***9.73***	***241.79***	***20.6***	***< LOD***	***10.09***	***< LOD***	***12.75***	***100.6***	***58.01***	***< LOD***	***4.5***	***< LOD***	***7.47***
	13.5-16.0	***S7***	***15.0-17.5***	***< LOD***	***8.76***	***346.15***	***78.38***	***< LOD***	***17.74***	***141.04***	***35.96***	***< LOD***	***10.73***	***< LOD***	***12.09***	***< LOD***	***86.26***	***< LOD***	***4.68***	***< LOD***	***13.71***
		S8	***17.5-20.0***	***< LOD***	***9.15***	***484.35***	***61.34***	***< LOD***	***12.9***	***256.02***	***27.47***	***< LOD***	***12.14***	***< LOD***	***11.48***	***< LOD***	***91.8***	***< LOD***	***4.34***	***< LOD***	***9.76***

TABLE 1B. SOIL SAMPLE XRF FIELD SCREENING RESULTS - 200 SERIES BORINGS
Central Plating Site
Walpole, New Hampshire

Date	Boring	Sample	Depth (ft.)	As (Arsenic)	As +/-	Ba (Barium)	Ba +/-	Cd (Cadmium)	Cd +/-	Cr (Chromium)	Cr +/-	Pb (Lead)	Pb +/-	Hg (Mercury)	Hg +/-	Ni (Nickel)	Ni +/-	Se (Selenium)	Se +/-	Ag (Silver)	Ag +/-
NH DES Env-Or 600 Soil Remediation Standard (SRS)				11		1,000		33		130/1,000		400		7		400		180		89	
6/29/2017	B209	S1	0.0-2.5	< LOD	13.32	118.44	57.69	< LOD	12.45	75.18	32.73	52.05	11.43	< LOD	12.47	< LOD	85.2	< LOD	4.71	< LOD	9.81
	MW201?	S2	2.5-5.0	< LOD	8.47	< LOD	110.2	< LOD	16.45	61.16	15.72	< LOD	10.77	< LOD	12.89	< LOD	91.37	< LOD	5.33	< LOD	12.64
		S3	5.0-7.5	< LOD	7.71	122.11	47.76	< LOD	10.72	57.99	29.85	< LOD	10.32	< LOD	11.56	< LOD	81.9	< LOD	4.49	< LOD	8.39
		S4	7.5-10.0	10.09	6.1	117.05	60.16	< LOD	12.89	124.05	17.05	< LOD	10.2	< LOD	13.51	< LOD	94.11	< LOD	4.81	< LOD	9.8
		@	8.5	< LOD	8.51	148.97	46.42	< LOD	10.11	75.97	31.94	< LOD	10.88	< LOD	12.08	94.36	60.13	< LOD	4.66	< LOD	7.94
		@	9.0	< LOD	10.38	99.18	50.72	< LOD	10.66	231.27	38.97	14.72	9.49	< LOD	14.26	< LOD	96.35	< LOD	5.77	< LOD	8.27
		S5	10.0-12.5	< LOD	8.36	210.85	57.6	< LOD	12.45	73.76	15.65	< LOD	10.32	< LOD	11.77	91.44	57.53	< LOD	4.7	< LOD	9.5
		S6	12.5-15.0	< LOD	8.54	114.22	60.32	< LOD	13.58	100.58	15.74	< LOD	11.4	< LOD	12.39	< LOD	86.26	< LOD	4.78	< LOD	10.32
		S7	15.0-17.5	< LOD	8.1	120.21	49.33	< LOD	10.8	400.7	22.7	< LOD	11.66	< LOD	13.17	104.09	62.24	< LOD	4.98	< LOD	8.09
		@	16.0	< LOD	9.69	233.14	51.25	< LOD	11.25	694.84	26.9	< LOD	12.52	< LOD	13.38	209.66	76.07	< LOD	5.19	< LOD	8.45
		S8	17.5-20.0	< LOD	7.94	< LOD	87.81	< LOD	12.7	283.95	20.43	< LOD	10.35	< LOD	12.25	< LOD	84.95	< LOD	5.19	< LOD	9.76
		S9	***20.0-22.0***	***< LOD***	***8.46***	***214.29***	***71.8***	***< LOD***	***15.16***	***740.99***	***58.28***	***< LOD***	***10.8***	***< LOD***	***11.2***	***89.07***	***58.06***	***< LOD***	***4.4***	***< LOD***	***11.8***
		S10	22.0-24.0	< LOD	8.83	372.92	56.62	< LOD	12.13	125.12	41.03	< LOD	11.86	< LOD	11.58	96.39	63.82	< LOD	4.83	< LOD	9.45
		@	21.0	< LOD	8.3	< LOD	76.4	< LOD	11.15	376.06	21.49	< LOD	11.81	< LOD	11.66	< LOD	75.71	< LOD	4.4	< LOD	8.93
		@	22.0	< LOD	9.51	337.12	60.17	< LOD	12.79	172.17	25	< LOD	11.16	< LOD	11.39	187.14	67.98	< LOD	5.02	< LOD	9.68
6/29/2017	B211	S1	0.0-2.5	< LOD	15.61	245.12	56.72	< LOD	12.95	1241.1	68.66	77.65	13.24	< LOD	12.5	< LOD	89.82	< LOD	4.95	< LOD	9.88
		S2	2.5-5.0	< LOD	12.9	254.36	58.85	< LOD	12.69	946.41	61.31	52.44	11.15	< LOD	11.84	< LOD	82.51	< LOD	4.52	< LOD	9.7
		S3	5.0-7.5	< LOD	8.61	86.4	56.16	< LOD	12.7	341.31	21.51	< LOD	10.88	< LOD	11.49	< LOD	79.82	< LOD	4.15	< LOD	9.38
		S4	7.5-10.0	< LOD	8.24	163.24	78.96	< LOD	17.48	374.13	22.15	< LOD	11.04	< LOD	11.65	< LOD	84.47	< LOD	4.41	< LOD	13.22
		S5	10.0-12.5	< LOD	7.95	289.18	57.18	< LOD	12.41	46.49	17.06	< LOD	10.22	< LOD	10.87	< LOD	80.45	< LOD	4.04	< LOD	9.32
		S6	12.5-15.0	< LOD	10.7	521.76	63.16	< LOD	13.26	326.91	47.63	< LOD	13.09	< LOD	12.63	< LOD	101.33	< LOD	4.68	< LOD	10.05

Notes:

1 - Concentrations and SRS are in parts per million (milligrams/ kilogram).

2 - LOD - Limit of Detection (lower limit); < = less than.

3 - Instrument degree of measurement accuracy indicated by +/- value by metal and sample.

4 - Sample depth is in feet below ground surface.

5 - Sampling indicate in bold and italics was submitted for laboratory analyses for one or more parameters.

6 - Values highlighted in yellow exceed the SRS for that metal.

7 - Cr SRS is 130 for hexavalent Cr and 1,000 for trivalent Cr; for exceedence designation, Cr is inferred to be trivalent.

8 - 100-series borings: Table included Copper (Cu) and Zinc (Zn); with no siginificantly elevated concentrations detected. The 200-series borings had detected levels of Cu ranging from 172.42 (+/-33.47) to <LOD (33.81-21.11), and Zn at 164.47 (+/-23.58) to <LOD (20.03-10.11).

TABLE 2. SOIL SAMPLE ANALYTICAL RESULTS
Central Plating Site
Walpole, New Hampshire

Area of Concern	NH DES Soil Remediation Standards (SRS)	NH DES RCMP Method 1 NH S-1 Standards	NH DES RCMP Method 1 NH S-2 Standards	NH DES RCMP Method 1 NH S-3 Standards	US EPA Regional Screening Levels (RSLs) for Soil		AOC 1														
Sample Location							B108-S1	B108-S5	B109-S1	B110-S5	B111-S4	B112-S5	B201-S4	B202-S5	B202-S6	B203-S6	B203-S7	B204-S4	B204-S5	B205-S5	DUP-03
Sample Depth (feet bgs)							0-2.5 ft	10-12.5 ft	0-2.5 ft	10-12.5 ft	7.5-10 ft	10-12.5 ft	7.5-10 ft	10-12.5 ft	12.5-15 ft	12.5-15 ft	15 ft	7.5-10 ft	10-12.5 ft	10-12.5 ft	(B205-S5)
Sample Date					Residential	Industrial	8/12/2015	8/12/2015	8/12/2015	8/12/2015	8/12/2015	8/12/2015	6/30/2017	6/30/2017	6/30/2017	6/30/2017	6/30/2017	6/30/2017	6/30/2017	6/30/2017	
Volatile Organic Compounds (VOCs)			Concentrations in mg/kg												Concentrations in mg/kg						
Methylene chloride	0.1	0.1	0.1	0.1	11	53	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Toluene	100	100	100	100	5,000	45,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Ethylbenzene	120	120	140	140	5.4	27	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Trichloroethene	0.8	0.8	0.8	0.8	0.91	6.4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
p/m-Xylene	500	500	1,000	1,500	590	2,500	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
o-Xylene	500	500	1,000	1,500	690	3,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Xylenes, Total	500	500	1,000	1,500	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Acetone	75	75	75	75	61,000	630,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
n-Butylbenzene	110	110	110	110	3,900	51,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
sec-Butylbenzene	130	130	130	130	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Isopropylbenzene	330	330	330	330	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
p-Isopropyltoluene	NS	NS	NS	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Naphthalene	5	5	5	5	3.6	18	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
n-Propylbenzene	85	85	85	85	85	3,400	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
1,3,5-Trimethylbenzene	96	96	96	96	780	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
1,2,4-Trimethylbenzene	130	130	130	130	62	260	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
All other VOCs	Various	Various	Various	Various	Various	Various	NA	NA	NA	NA	NA	NA	NA					NA	NA	NA	
Polynuclear Aromatic Hydrocarbons (PAHs)			Concentrations in mg/kg												Concentrations in mg/kg						
Acenaphthene	340	340	340	340	3,400	33,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Acenaphthylene	490	490	490	490	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Fluorene	77	77	77	77	2,300	22,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Phenanthrene	NS	NS	NS	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Anthracene	1,000	1,000	2,500	5,000	17,000	170,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Fluoranthene	960	960	2,500	5,000	2,300	22,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Pyrene	720	720	2,500	5,000	1,700	17,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
1-Methylnapthalene	NS	NS	NS	NS	18	73	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Benzo(a)anthracene	1	1	4	52	0.15	2.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Chrysene	120	120	360	5,200	15	210	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Benzo[b]fluoranthene	1	1	4	52	0.15	2.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Benzo[k]fluoranthene	12	12	36	52	1.5	21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Benzo[a]pyrene	0.7	0.7	0.7	0.7	0.015	0.21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Benzo(g,h,i)perylene	NS	NS	NS	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Dibenzo[a,h]anthracene	0.7	0.7	0.7	0.7	0.015	0.21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Indeno[1,2,3-cd]pyrene	1	1	4	52	0.15	2.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
All other SVOCs	Various	Various	Various	Various	Various	Various	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Total Cyanide			Concentrations in mg/kg												Concentrations in mg/kg						
Cyanide	22	22	100	100	2.7	12	NA	NA	NA	NA	NA	NA	NA					NA	NA	NA	
Total Petroleum Hydrocarbons-Diesel Range Organics (TPH-DRO)			Concentrations in mg/kg												Concentrations in mg/kg						
TPH-DRO	10,000	10,000	10,000	10,000	NS	NS	NA	NA	NA	NA	NA	NA	NA					NA	NA	NA	
Metals			Concentrations in mg/kg												Concentrations in mg/kg						
Arsenic	11	11	11	47	0.39	1.6	**34**	9.7	10	6.5	11	8.3						3.19	NA	BDL(0.097)	
Barium	1,000	1,000	2,500	5,000	15,000	190,000	71	18	50	19	16	31						16.5	NA	53	
Cadmium	33	33	280	280	37	450	1.5	BDL (0.03)	0.9	0.06 J	BDL (0.03)	BDL (0.32)						3.15	NA	2.2	
Chromium, Total	NS	NS	NS	NS	NS	NS	17,000	2,000	440	450	2,500	1,400	939	1,560		456	239	415	NA	3,920	
Chromium, Hexavalent	130	130	130	130	0.29	5.6	**2,800**	**230**	80	14	**1,900**	**210**	**420**	**180**		**150**	72.5	100	NA	**450**	**330**
Chromium, Trivalent	1,000	1,000	2,500	5,000	120,000	1,800,000	**14,200**	**1,770**	360	436	600	**1,190**	519	**1,380**		306	167	315	NA	**3,470**	
Copper	NS	NS	NS	NS	3,100	41,000	220	37	120	43	20	280						NA	NA	NA	
Lead	400	400	400	400	400	800	160	BDL (0.09)	220	BDL (0.1)	6.7	44						6.54	NA	146	
Mercury	7	7	52	52	23	310	0.32	0.016 J	0.08	BDL (0.02)	BDL (0.02)	BDL (0.02)						BDL(0.02)	NA	0.41	
Nickel	400	400	2,500	3,100	1,500	20,000	75	20	120	18	7.4	40						50.3	NA	181	
Selenium	180	180	1,600	1,600	390	5,100	BDL (0.13)	BDL (0.13)	BDL (0.13)	BDL (0.15)	BDL (0.12)	BDL (0.13)						BDL(0.114)	NA	0.2	
Silver	89	89	690	690	390	5,100	BDL (0.09)	BDL (0.09)	BDL (0.09)	BDL (0.1)	BDL (0.08)	0.23 J						BDL(0.125)	NA	BDL(0.131)	
Zinc	1,000	1,000	2,500	2,500	23,000	310,000	98	27	56	30	14	38						NA	NA	NA	
SPLP Metals			Concentrations in mg/L												Concentrations in mg/L						
Cadmium	NS	NS	NS	NS	NS	NS	NA	NA	NA	NA	NA	NA									
Chromium	NS	NS	NS	NS	NS	NS	NA	NA	NA	NA	NA	NA			0.313		2.26	NA	BDL(0.002)	NA	
Nickel	NS	NS	NS	NS	NS	NS	NA	NA	NA	NA	NA	NA									

Legend:

AOC - Area of Concern (identified in report text)	bgs = Below Ground Surface
mg/kg = milligrams per kilogram	NS = No Standard
BDL( ) = Below laboratory detection limit shown in parenthesis	NA = Not Analyzed
J = estimated concentration detected above laboratory detection limit, but below laboratory reporting limit	

NOTES:
1 - Xylenes SRS listed are for total xylenes (mixed isomers).
2 - NH DES Env-Or 600 Soil Remediation Standards, updated June 1, 2015.
3 - NHDES Risk Characerization and Management Policy (RCMP) standards were updated February 2013.
4 - US EPA Regional Screening Levels, updated January 2015.
5 - Bold type font and boxed value indicates concentration exceeds the NH DES SRS.
6 - Concentration values shaded orange indicate RCMP Method 1, NH S-3 standard is exceeded.

TABLE 2. SOIL SAMPLE ANALYTICAL RESULTS
Central Plating Site
Walpole, New Hampshire

Area of Concern	NH DES Soil Remediation Standards (SRS)	NH DES RCMP Method 1 NH S-1 Standards	NH DES RCMP Method 1 NH S-2 Standards	NH DES RCMP Method 1 NH S-3 Standards	US EPA Regional Screening Levels (RSLs) for Soil									AOC 2			AOC 3			AOC 4
Sample Location							B206-S3	B206-S6	Dup-01	B207-S6/S7	DUP-02	B207-S8	B208-S6/S7	B102-S7	B106-S6	B209-S9	B114-S1	B115-S1	B116-S1	B107-S1
Sample Depth (feet bgs)							5-7.5 ft	12.5-15 ft	(B206-S6)	13.5-16 ft	(B207-S6/S7)	17.5- 20 ft	12.5-17.5 ft	15-17.5 ft	12.5-15 ft	20-22 ft	0-2.5 ft	0-2.5 ft	0-2.5 ft	0-2.5 ft
Sample Date					Residential	Industrial	6/30/2017	6/30/2017		6/30/2017		6/30/2017	6/30/2017	8/12/2015	8/12/2015	6/30/2017	8/12/2015	8/12/2015	8/12/2015	8/12/2015
Volatile Organic Compounds (VOCs)	Concentrations in mg/kg									Concentrations in mg/kg										
Methylene chloride	0.1	0.1	0.1	0.1	11	53	NA	NA		NA		NA	NA	BDL (0.05)	BDL (0.07)	NA	BDL (0.054)	BDL (0.052)	BDL (0.049)	BDL (0.051)
Toluene	100	100	100	100	5,000	45,000	NA	NA		NA		NA	NA	BDL (0.0082)	BDL (0.012)	NA	BDL (0.0096)	BDL (0.0092)	BDL (0.0087)	BDL (0.0091)
Ethylbenzene	120	120	140	140	5.4	27	NA	NA		NA		NA	NA	BDL (0.0058)	BDL (0.008)	NA	BDL (0.0062)	BDL (0.006)	BDL (0.0057)	BDL (0.0059)
Trichloroethene	0.8	0.8	0.8	0.8	0.91	6.4	NA	NA		NA		NA	NA	BDL (0.0057)	BDL (0.0079)	NA	0.5	BDL (0.0059)	BDL (0.0056)	0.044 J
p/m-Xylene	500	500	1,000	1,500	590	2,500	NA	NA		NA		NA	NA	BDL (0.009)	BDL (0.012)	NA	BDL (0.0097)	BDL (0.0093)	BDL (0.0088)	BDL (0.0092)
o-Xylene	500	500	1,000	1,500	690	3,000	NA	NA		NA		NA	NA	BDL (0.0078)	BDL (0.011)	NA	BDL (0.0084)	BDL (0.0081)	BDL (0.0077)	BDL (0.008)
Xylenes, Total	500	500	1,000	1,500	NS	NS	NA	NA		NA		NA	NA	BDL (0.0078)	BDL (0.011)	NA	BDL (0.0084)	BDL (0.0081)	BDL (0.0077)	BDL (0.008)
Acetone	75	75	75	75	61,000	630,000	NA	NA		NA		NA	NA	BDL (0.047)	BDL (0.065)	NA	BDL (0.051)	BDL (0.049)	BDL (0.046)	BDL (0.048)
n-Butylbenzene	110	110	110	110	3,900	51,000	NA	NA		NA		NA	NA	BDL (0.0052)	BDL (0.0072)	NA	BDL (0.0056)	BDL (0.0054)	BDL (0.0051)	BDL (0.0054)
sec-Butylbenzene	130	130	130	130	NS	NS	NA	NA		NA		NA	NA	BDL (0.0056)	BDL (0.0077)	NA	BDL (0.006)	BDL (0.0058)	BDL (0.0055)	BDL (0.0057)
Isopropylbenzene	330	330	330	330	NS	NS	NA	NA		NA		NA	NA	BDL (0.0047)	BDL (0.0065)	NA	BDL (0.0051)	BDL (0.0049)	BDL (0.0046)	BDL (0.0048)
p-Isopropyltoluene	NS	NS	NS	NS	NS	NS	NA	NA		NA		NA	NA	BDL (0.0057)	BDL (0.0079)	NA	BDL (0.0061)	BDL (0.0059)	BDL (0.0056)	BDL (0.0058)
Naphthalene	5	5	5	5	3.6	18	NA	NA		NA		NA	NA	BDL (0.0063)	BDL (0.0087)	NA	BDL (0.0068)	BDL (0.0065)	BDL (0.0062)	BDL (0.0064)
n-Propylbenzene	85	85	85	85	85	3,400	NA	NA		NA		NA	NA	BDL (0.005)	BDL (0.0069)	NA	BDL (0.0054)	BDL (0.0052)	BDL (0.0049)	BDL (0.0051)
1,3,5-Trimethylbenzene	96	96	96	96	780	10,000	NA	NA		NA		NA	NA	BDL (0.0065)	BDL (0.009)	NA	BDL (0.007)	BDL (0.0068)	BDL (0.0064)	BDL (0.0067)
1,2,4-Trimethylbenzene	130	130	130	130	62	260	NA	NA		NA		NA	NA	BDL (0.0064)	BDL (0.0089)	NA	BDL (0.0069)	BDL (0.0067)	BDL (0.0063)	BDL (0.0066)
All other VOCs	Various	Various	Various	Various	Various	Various	NA			NA			NA	BDL (Various)	BDL (Various)	NA	BDL (Various)	BDL (Various)	BDL (Various)	BDL (Various)
Polynuclear Aromatic Hydrocarbons (PAHs)	Concentrations in mg/kg									Concentrations in mg/kg										
Acenaphthene	340	340	340	340	3,400	33,000	NA	NA		NA		NA	NA	NA	NA	NA	0.089 J	BDL (0.036)	BDL (0.036)	NA
Acenaphthylene	490	490	490	490	NS	NS	NA	NA		NA		NA	NA	NA	NA	NA	0.2	0.16	0.13 J	NA
Fluorene	77	77	77	77	2,300	22,000	NA	NA		NA		NA	NA	NA	NA	NA	0.140 J	BDL (0.051)	BDL (0.050)	NA
Phenanthrene	NS	NS	NS	NS	NS	NS	NA	NA		NA		NA	NA	NA	NA	NA	1.9	0.14	0.12	NA
Anthracene	1,000	1,000	2,500	5,000	17,000	170,000	NA	NA		NA		NA	NA	NA	NA	NA	0.54	0.078 J	0.060 J	NA
Fluoranthene	960	960	2,500	5,000	2,300	22,000	NA	NA		NA		NA	NA	NA	NA	NA	4.3	0.330	0.27	NA
Pyrene	720	720	2,500	5,000	1,700	17,000	NA	NA		NA		NA	NA	NA	NA	NA	3.2	0.31	0.25	NA
1-Methylnapthalene	NS	NS	NS	NS	18	73	NA	NA		NA		NA	NA	NA	NA	NA	0.066 J	BDL (0.053)	BDL (0.052)	NA
Benzo(a)anthracene	1	1	4	52	0.15	2.1	NA	NA		NA		NA	NA	NA	NA	NA	***1.7***	0.15	0.1	NA
Chrysene	120	120	360	5,200	15	210	NA	NA		NA		NA	NA	NA	NA	NA	2	0.190	0.15	NA
Benzo[b]fluoranthene	1	1	4	52	0.15	2.1	NA	NA		NA		NA	NA	NA	NA	NA	***2.3***	*0.26*	*0.22*	NA
Benzo[k]fluoranthene	12	12	36	52	1.5	21	NA	NA		NA		NA	NA	NA	NA	NA	0.79	0.11	0.085 J	NA
Benzo[a]pyrene	0.7	0.7	0.7	0.7	0.015	0.21	NA	NA		NA		NA	NA	NA	NA	NA	***1.4***	*0.19*	*0.15*	NA
Benzo(g,h,i)perylene	NS	NS	NS	NS	NS	NS	NA	NA		NA		NA	NA	NA	NA	NA	1	0.15	0.12 J	NA
Dibenzo[a,h]anthracene	0.7	0.7	0.7	0.7	0.015	0.21	NA	NA		NA		NA	NA	NA	NA	NA	*0.31*	*0.08 J*	*0.072 J*	NA
Indeno[1,2,3-cd]pyrene	1	1	4	52	0.15	2.1	NA	NA		NA		NA	NA	NA	NA	NA	*0.94*	0.14	0.12 J	NA
All other SVOCs	Various	Various	Various	Various	Various	Various	NA	NA		NA		NA	NA	NA	NA	NA	BDL (Various)	BDL (Various)	BDL (Various)	NA
Total Cyanide	Concentrations in mg/kg									Concentrations in mg/kg										
Cyanide	22	22	100	100	2.7	12	NA	NA		NA		NA	NA	BDL (0.28)	BDL (0.3)	NA	NA	NA	NA	0.29 J
Total Petroleum Hydrocarbons-Diesel Range Organics (TPH-DRO)	Concentrations in mg/kg									Concentrations in mg/kg										
TPH-DRO	10,000	10,000	10,000	10,000	NS	NS	NA	NA		NA		NA	NA	NA	NA	NA	NA	NA	NA	NA
Metals	Concentrations in mg/kg									Concentrations in mg/kg										
Arsenic	11	11	11	47	0.39	1.6	3.36			2.58	2.6		4.4	7.2	**12**	3.81	**12**	7	8	10
Barium	1,000	1,000	2,500	5,000	15,000	190,000	13.3			16.6	20.6		34.4	13	93	34.5	52	50	37	67
Cadmium	33	33	280	280	37	450	0.38 J			1.72	2.12		0.734	0.84	BDL (0.04)	0.853	0.99	6.3	1.8	BDL (0.03)
Chromium, Total	NS	NS	NS	NS	NS	NS	217			711	786		79.6	210	38	257	44	23	26	17
Chromium, Hexavalent	130	130	130	130	0.29	5.6				**320**				80	BDL (0.22)		BDL (0.18)	BDL (0.17)	BDL (0.17)	BDL (0.18)
Chromium, Trivalent	1,000	1,000	2,500	5,000	120,000	1,800,000				391				130	38		44	23	26	17
Copper	NS	NS	NS	NS	3,100	41,000	NA			NA			NA	57	34	NA	84	120	140	33
Lead	400	400	400	400	400	800	14.4			12.6	15.4		11.8	BDL (0.47)	BDL (0.53)	5.44	280	60	69	130
Mercury	7	7	52	52	23	310	BDL (0.02)			BDL (0.02)	BDL (0.02)		BDL (0.02)	BDL (0.02)	BDL (0.02)	BDL (0.02)	0.15	0.15	0.16	0.24
Nickel	400	400	2,500	3,100	1,500	20,000	14.8			93.4	112		29.7	77	33	30	71	51	32	15
Selenium	180	180	1,600	1,600	390	5,100	BDL (0.111)			0.43	0.596		0.157	BDL (0.14)	BDL (0.16)	BDL (0.128)	BDL (0.12)	BDL (0.12)	BDL (0.12)	BDL (0.13)
Silver	89	89	690	690	390	5,100	BDL (0.122)			0.233	0.321		BDL (0.12)	BDL (0.09)	BDL (0.1)	BDL (0.140)	BDL (0.08)	0.13 J	0.28 J	BDL (0.9)
Zinc	1,000	1,000	2,500	2,500	23,000	310,000	NA			NA			NA	28	77	NA	240	490	360	94
SPLP Metals	Concentrations in mg/L									Concentrations in mg/kg										
Cadmium	NS	NS	NS	NS	NS	NS		0.002 J	0.008			BDL (0.001)	BDL (0.001)							
Chromium	NS	NS	NS	NS	NS	NS	NA	0.104	0.126	NA		1.3				NA				
Nickel	NS	NS	NS	NS	NS	NS		0.034	0.125			BDL (0.004)	0.004 J							

Legend:
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3 - NHDES Risk Characerization and Management Policy (RCMP) standards were updated February 2013.
4 - US EPA Regional Screening Levels, updated January 2015.
5 - Bold type font and boxed value indicates concentration exceeds the NH DES SRS.
6 - Concentration values shaded orange indicate RCMP Method 1, NH S-3 standard is exceeded.

TABLE 2. SOIL SAMPLE ANALYTICAL RESULTS
Central Plating Site
Walpole, New Hampshire

Area of Concern	NH DES Soil Remediation Standards (SRS)	NH DES RCMP Method 1 NH S-1 Standards	NH DES RCMP Method 1 NH S-2 Standards	NH DES RCMP Method 1 NH S-3 Standards	US EPA Regional Screening Levels (RSLs) for Soil		AOC 5	AOC 6				AOC 7		AOC 8		
Sample Location							B113-S5	B103-S5	B103-S7	B104-S9	B105-S10	B101-S5	B111-S5	Sump 1	Sump 2	Sump 3
Sample Depth (feet bgs)							10-12.5 ft	10-12.5 ft	15-17.5 ft	20-22.5 ft	22.5-25 ft	10-12.5 ft	10-12.5 ft	na	na	na
Sample Date					Residential	Industrial	8/13/2015	8/12/2015	8/12/2015	8/13/2015	8/13/2015	8/13/2015	8/12/2015	8/13/2015	8/13/2015	8/13/2015
Volatile Organic Compounds (VOCs)	Concentrations in mg/kg						Concentrations in mg/kg									
Methylene chloride	0.1	0.1	0.1	0.1	11	53	BDL (0.049)	NA	BDL (0.058)	BDL (0.069)	BDL (0.063)	BDL (1.2)	BDL (0.12)	*0.12 J*	BDL (0.14)	BDL (0.20)
Toluene	100	100	100	100	5,000	45,000	BDL (0.0087)	NA	BDL (0.01)	BDL (0.012)	BDL (0.011)	0.78 J	BDL (0.021)	BDL (0.019)	BDL (0.026)	BDL (0.036)
Ethylbenzene	120	120	140	140	5.4	27	BDL (0.0057)	NA	BDL (0.0067)	BDL (0.008)	BDL (0.0073)	*15*	0.75	BDL (0.012)	BDL (0.017)	BDL (0.024)
Trichloroethene	0.8	0.8	0.8	0.8	0.91	6.4	BDL (0.0056)	NA	BDL (0.0066)	BDL (0.0079)	BDL (0.0072)	BDL (0.13)	BDL (0.12)	BDL (0.012)	BDL (0.016)	BDL (0.023)
p/m-Xylene	500	500	1,000	1,500	590	2,500	BDL (0.0088)	NA	BDL (0.01)	BDL (0.012)	BDL (0.011)	51	BDL (0.021)	BDL (0.019)	BDL (0.026)	BDL (0.037)
o-Xylene	500	500	1,000	1,500	690	3,000	BDL (0.0077)	NA	BDL (0.009)	BDL (0.011)	BDL (0.0099)	9.8	BDL (0.018)	BDL (0.017)	BDL (0.023)	BDL (0.032)
Xylenes, Total	500	500	1,000	1,500	NS	NS	BDL (0.0077)	NA	BDL (0.009)	BDL (0.011)	BDL (0.0099)	61	BDL (0.018)	BDL (0.017)	BDL (0.023)	BDL (0.032)
Acetone	75	75	75	75	61,000	630,000	BDL (0.046)	NA	BDL (0.054)	BDL (0.065)	BDL (0.06)	BDL (1.1)	BDL(0.11)	0.69 J	BDL (0.14)	BDL (0.19)
n-Butylbenzene	110	110	110	110	3,900	51,000	BDL (0.0051)	NA	BDL (0.006)	BDL (0.0072)	BDL (0.0066)	3.9	0.44	BDL (0.011)	BDL (0.015)	BDL (0.021)
sec-Butylbenzene	130	130	130	130	NS	NS	BDL (0.0055)	NA	BDL (0.0064)	BDL (0.0077)	BDL (0.007)	1.8	0.3	BDL (0.012)	BDL (0.016)	BDL (0.023)
Isopropylbenzene	330	330	330	330	NS	NS	BDL (0.0046)	NA	BDL (0.0055)	BDL (0.0065)	BDL (0.006)	3.3	0.28	BDL (0.010)	BDL (0.014)	BDL (0.019)
p-Isopropyltoluene	NS	NS	NS	NS	NS	NS	BDL (0.0056)	NA	BDL (0.0066)	BDL (0.0079)	BDL (0.0072)	2.5	0.44	BDL (0.012)	BDL (0.016)	BDL (0.023)
Naphthalene	5	5	5	5	3.6	18	BDL (0.0062)	NA	BDL (0.0073)	BDL (0.0087)	BDL (0.008)	***8.3***	0.58	BDL (0.014)	BDL (0.018)	BDL (0.026)
n-Propylbenzene	85	85	85	85	85	3,400	BDL (0.0049)	NA	BDL (0.0058)	BDL (0.0069)	BDL (0.0063)	9.4	0.58	BDL (0.011)	BDL (0.014)	BDL (0.02)
1,3,5-Trimethylbenzene	96	96	96	96	780	10,000	BDL (0.0064)	NA	BDL (0.0076)	BDL (0.009)	BDL (0.0082)	21	0.25 J	BDL (0.014)	BDL (0.019)	BDL (0.027)
1,2,4-Trimethylbenzene	130	130	130	130	62	260	BDL (0.0063)	NA	BDL (0.0074)	BDL (0.0089)	BDL (0.0081)	69	4.4	BDL (0.014)	BDL (0.019)	BDL (0.026)
All other VOCs	Various	Various	Various	Various	Various	Various	BDL (Various)	NA	BDL (Various)	BDL (Various)	BDL (Various)	BDL (Various)	BDL (Various)	BDL (Various)	BDL (Various)	BDL (Various)
Polynuclear Aromatic Hydrocarbons (PAHs)	Concentrations in mg/kg						Concentrations in mg/kg									
Acenaphthene	340	340	340	340	3,400	33,000	BDL (0.038)	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthylene	490	490	490	490	NS	NS	BDL (0.035)	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluorene	77	77	77	77	2,300	22,000	BDL (0.053)	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	NS	NS	NS	NS	NS	NS	0.2	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	1,000	1,000	2,500	5,000	17,000	170,000	BDL (0.031)	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	960	960	2,500	5,000	2,300	22,000	0.37	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	720	720	2,500	5,000	1,700	17,000	0.33	NA	NA	NA	NA	NA	NA	NA	NA	NA
1-Methylnapthalene	NS	NS	NS	NS	18	73	BDL (0.055)	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	1	1	4	52	0.15	2.1	0.1 J	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	120	120	360	5,200	15	210	0.14	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo[b]fluoranthene	1	1	4	52	0.15	2.1	*0.16*	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo[k]fluoranthene	12	12	36	52	1.5	21	0.09 J	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo[a]pyrene	0.7	0.7	0.7	0.7	0.015	0.21	*0.12 J*	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	NS	NS	NS	NS	NS	NS	0.089 J	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzo[a,h]anthracene	0.7	0.7	0.7	0.7	0.015	0.21	*0.068 J*	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indeno[1,2,3-cd]pyrene	1	1	4	52	0.15	2.1	0.097 J	NA	NA	NA	NA	NA	NA	NA	NA	NA
All other SVOCs	Various	Various	Various	Various	Various	Various	BDL (Various)	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Cyanide	Concentrations in mg/kg						Concentrations in mg/kg									
Cyanide	22	22	100	100	2.7	12	NA	BDL (0.23)	NA	BDL (0.29)	BDL (0.3)	NA	NA	**79**	**780**	**48**
Total Petroleum Hydrocarbons-Diesel Range Organics (TPH-DRO)	Concentrations in mg/kg						Concentrations in mg/kg									
TPH-DRO	10,000	10,000	10,000	10,000	NS	NS	478	NA	NA	NA	NA	NA	NA	NA	NA	NA
Metals	Concentrations in mg/kg						Concentrations in mg/kg									
Arsenic	11	11	11	47	0.39	1.6	NA	6.6	NA	**13**	7	NA	NA	**110**	**100**	**190**
Barium	1,000	1,000	2,500	5,000	15,000	190,000	NA	25	NA	47	13	NA	NA	140	280	**2,500**
Cadmium	33	33	280	280	37	450	NA	BDL (0.03)	NA	0.95	BDL (0.04)	NA	NA	3.2	0.59	4
Chromium, Total	NS	NS	NS	NS	NS	NS	NA	13	NA	31	8.6	NA	NA	13,000	6,100	15,000
Chromium, Hexavalent	130	130	130	130	0.29	5.6	NA	BDL (0.17)	NA	3.1	BDL (0.22)	NA	NA	**330**	BDL (0.28)	**370**
Chromium, Trivalent	1,000	1,000	2,500	5,000	120,000	1,800,000	NC	13	NA	27.9	8.6	NA	NA	**12,670**	**6,100**	**14,630**
Copper	NS	NS	NS	NS	3,100	41,000	NA	13	NA	37	13	NA	NA	9,100	5,100	14,000
Lead	400	400	400	400	400	800	NA	BDL (0.42)	NA	BDL (0.5)	BDL (0.1)	NA	NA	**9,000**	**75,000**	**6,800**
Mercury	7	7	52	52	23	310	NA	BDL (0.02)	NA	BDL (0.02)	BDL (0.02)	NA	NA	0.8	0.56	0.96
Nickel	400	400	2,500	3,100	1,500	20,000	NA	14	NA	50	16	NA	NA	**13,000**	**4,400**	**18,000**
Selenium	180	180	1,600	1,600	390	5,100	NA	BDL (0.13)	NA	BDL (0.15)	BDL (0.16)	NA	NA	2.6	0.2	0.22
Silver	89	89	690	690	390	5,100	NA	BDL (0.08)	NA	BDL (0.1)	BDL (0.1)	NA	NA	4.9	2.4	1.8
Zinc	1,000	1,000	2,500	2,500	23,000	310,000	NA	30	NA	55	22	NA	NA	**1,300**	710	**1,200**
SPLP Metals	Concentrations in mg/L						Concentrations in mg/kg									
Cadmium	NS	NS	NS	NS	NS	NS	NA					NA	NA			
Chromium	NS	NS	NS	NS	NS	NS	NA					NA	NA			
Nickel	NS	NS	NS	NS	NS	NS	NA					NA	NA			

Legend:

AOC - Area of Concern (identified in report text)	bgs = Below Ground Surface
mg/kg = milligrams per kilogram	NS = No Standard
BDL( ) = Below laboratory detection limit shown in parenthesis	NA = Not Analyzed
J = estimated concentration detected above laboratory detection limit, but below laboratory reporting limit	

NOTES:
1 - Xylenes SRS listed are for total xylenes (mixed isomers).
2 - NH DES Env-Or 600 Soil Remediation Standards, updated June 1, 2015.
3 - NHDES Risk Characerization and Management Policy (RCMP) standards were updated February 2013.
4 - US EPA Regional Screening Levels, updated January 2015.
5 - Bold type font and boxed value indicates concentration exceeds the NH DES SRS.
6 - Concentration values shaded orange indicate RCMP Method 1, NH S-3 standard is exceeded.

TABLE 3. GROUNDWATER ELEVATION AND SELECTED FIELD PARAMETERS
Former Central Plating Site
Walpole, New Hampshire

Monitoring Well I.D.	Date	Reference Elevation (feet)	Depth to Water from Ref. Elev. (feet)	Ground Elevation (feet)	Depth to Water from Grade (feet)	Ground Water Elevation (feet)	pH (S.U.)	Dissolved Oxygen (ppm)	Specific Conductivity (mS/cm)	Notes
SH-1	1-Sep-15	397.95	13.12	398.25	13.42	384.83	6.51	0.34	1.977	Green purgewater, petroleum odor
	17-Jul-17		14.82		15.12	383.13				Not Sampled
SH-2	1-Sep-15	397.03	21.82	397.49	22.28	375.21	6.57	1.25	0.873	Slow Recharge
	17-Jul-17	397.01	19.04	397.49	19.52	377.97	6.08	0.65	1.943	
SH-3	1-Sep-15	397.20	18.63	397.44	18.87	378.57	6.78	6.61	0.592	Slow Recharge
	17-Jul-17									Not Sampled/Found
SH-4	1-Sep-15	397.28	12.67	397.68	13.07	384.61	7.12	2.99	2.607	Slow Recharge
	17-Jul-17		12.17		12.57	385.11				Not Sampled
MW101	1-Sep-15	397.77	16.10	398.24	16.57	381.67	6.14	3.34	2.176	Slow Recharge
	17-Jul-17		14.08		14.55	383.69				Not Sampled
MW102	1-Sep-15	397.45	18.91	397.73	19.19	378.54	6.01	6.46	1.615	Slow Recharge
	17-Jul-17		16.04		16.32	381.41	5.50	7.26	1.909	
MW103	1-Sep-15	397.54	18.74	397.78	18.98	378.80	7.03	3.82	0.671	Slow Recharge
	17-Jul-17		17.38		17.62	380.16				Not Sampled
MW104	1-Sep-15	397.26	22.17	397.61	22.52	375.09	6.69	0.51	0.966	
	17-Jul-17		19.19		19.54	378.07	6.36	2.66	1.099	
MW105	1-Sep-15	397.43	22.25	397.74	22.56	375.18	6.63	5.20	1.158	
	17-Jul-17		19.23		19.54	378.20				Not Sampled
MW201	1-Sep-15	NI	NI	NI	NI	NI	NI	NI	NI	
	17-Jul-17	397.43	19.53	397.74	19.84	377.90	5.60	4.87	1.815	
MW202	1-Sep-15	NI	NI	NI	NI	NI	NI	NI	NI	
	17-Jul-17	395.62	18.17	396.04	18.59	377.45	5.71	7.43	2.924	

NOTES:
1 - Reference elevation is the highest point of the PVC riser pipe at each location, relative to an assumed datum of 400 feet for the NW corner of the top of a transformer pad located east of the Wastewater Treatment Building.
2 - Depth to ground water measured using an electronic water level indicator.
3 - For pH, S.U. = Standard Units.
4 - For Dissolved Oxygen, ppm = parts per million.
5 - For Specific Conductivity, mS/cm = milliSiemens per centimeter.

TABLE 4. GROUNDWATER SAMPLE ANALYTICAL RESULTS
Central Plating Site
Walpole, New Hampshire

LOCATION	SAMPLING DATE	NH DES Ambient Groundwater Quality Standards (AGQS)	US EPA Maximum Contaminant Levels (MCLs)	AOC 2 MW102	AOC 2 SH-4	AOC 2 MW201	AOC 6 MW103	AOC 6 MW104	AOC 6 MW105	AOC 6 SH-2	AOC 6 GW-DUP1	AOC 6 SH-3	AOC 6 MW202	AOC 7 MW101	AOC 7 SH-1	IW-001	FIELD BLANK	QA/QC Between SH-2 and GW-DUP1 (Relative Percent Difference)
Volatile Organic Compounds (VOCs)				Concentrations in µg/L														%
Chloroform	9/1/2015	70	NS	BDL (0.16)	BDL (0.16)	NI	BDL (0.16)	0.56 J	BDL (0.16)	BDL (0.16)		BDL (0.16)	NI	BDL (4)	BDL (3.2)			
1,2-Dichloroethane	9/1/2015	5	5	BDL (0.16)	BDL (0.16)	NI	1.6	3.8	0.88	BDL (0.16)		BDL (0.16)	NI	BDL (3.3)	BDL (2.6)			
Benzene	9/1/2015	5	5	BDL (0.16)	BDL (0.16)	NI	4	4.4	4.1	BDL (0.16)		BDL (0.16)	NI	**20**	**15**			
Toluene	9/1/2015	1,000	1,000	BDL (0.16)	BDL (0.16)	NI	BDL (0.16)	BDL (0.16)	BDL (0.16)	BDL (0.16)		BDL (0.16)	NI	97	67			
Ethylbenzene	9/1/2015	700	700	BDL (0.17)	BDL (0.17)	NI	BDL (0.17)	BDL (0.17)	BDL (0.17)	BDL (0.17)		BDL (0.17)	NI	510	640			
Trichloroethene	9/1/2015	5	5	BDL (0.18)	BDL (0.18)	NI	BDL (0.18)	BDL (0.18)	0.33 J	BDL (0.18)		BDL (0.18)	NI	BDL (4.4)	BDL (3.5)			
Methyl tert butyl ether	9/1/2015	13	NS	2.5	BDL (0.16)	NI	5.8	**56**	8.3	12		BDL (0.16)	NI	**77**	**63**			
m,p-Xylene	9/1/2015	10,000 [1]	10,000 [1]	0.33 J	BDL (0.33)	NI	BDL (0.33)	BDL (0.33)	BDL (0.33)	BDL (0.33)		BDL (0.33)	NI	2,900	2,100			
o-Xylene	9/1/2015	10,000 [1]	10,000 [1]	BDL (0.33)	BDL (0.33)	NI	BDL (0.33)	BDL (0.33)	BDL (0.33)	BDL (0.33)		BDL (0.33)	NI	900	290			
Total Xylenes	9/1/2015	10,000	10,000	0.33 J	BDL (0.33)	NI	BDL (0.33)	BDL (0.33)	BDL (0.33)	BDL (0.33)		BDL (0.33)	NI	3,800	2,600			
Styrene	9/1/2015	100	100	BDL (0.36)	BDL (0.36)	NI	BDL (0.36)	BDL (0.36)	BDL (0.36)	BDL (0.36)		BDL (0.36)	NI	18 J	18 J			
Acetone	9/1/2015	6,000	NS	BDL (1.0)	BDL (1.0)	NI	BDL (1.5)	BDL (1.5)	BDL (1.5)	BDL (1.5)		3.4 J	NI	BDL (36)	BDL (29)			
2-Hexanone	9/1/2015	NS	NS	BDL (0.52)	BDL (0.52)	NI	BDL (0.52)	BDL (0.52)	BDL (0.52)	BDL (0.52)		0.77 J	NI	BDL (13)	BDL (10)			
n-Butylbenzene	9/1/2015	260	NS	BDL (0.19)	BDL (0.19)	NI	BDL (0.19)	BDL (0.19)	BDL (0.19)	BDL (0.19)		BDL (0.19)	NI	8.6 J	9 J			
Isopropylbenzene	9/1/2015	800	NS	BDL (0.19)	BDL (0.19)	NI	BDL (0.19)	0.31 J	BDL (0.19)	BDL (0.19)		BDL (0.19)	NI	20	30			
Napthalene	9/1/2015	20	NS	BDL (0.22)	BDL (0.22)	NI	BDL (0.22)	BDL (0.22)	BDL (0.22)	0.53 J		BDL (0.22)	NI	**40 J**	**280**			
n-Propylbenzene	9/1/2015	260	NS	BDL (0.17)	BDL (0.17)	NI	BDL (0.17)	BDL (0.17)	BDL (0.17)	BDL (0.17)		BDL (0.17)	NI	23	58			
1,3,5-Trimethylbenzene	9/1/2015	330	NS	BDL (0.17)	BDL (0.17)	NI	BDL (0.17)	BDL (0.17)	BDL (0.17)	BDL (0.17)		BDL (0.17)	NI	210	160			
1,2,4-Trimethylbenzene	9/1/2015	330	NS	BDL (0.19)	BDL (0.19)	NI	BDL (0.19)	BDL (0.19)	BDL (0.19)	BDL (0.19)		BDL (0.19)	NI	**720**	**650**			
Tert-Butyl-Alcohol	9/1/2015	49	NS	BDL (0.9)	BDL (0.9)	NI	BDL (0.9)	13	BDL (0.9)	BDL (0.9)		BDL (0.9)	NI	BDL (22)	BDL (18)			
Tertiary-Amyl Methyl Ether	9/1/2015	140	NS	BDL (0.28)	BDL (0.28)	NI	BDL (0.28)	0.82 J	BDL (0.28)	BDL (0.28)		BDL (0.28)	NI	BDL (7)	BDL (5.6)			
All Other VOCs	9/1/2015	Various	Various	BDL (Various)	BDL (Various)	NI	BDL (Various)	BDL (Various)	BDL (Various)	BDL (Various)		BDL (Various)	NI	BDL (Various)	BDL (Various)			
Total Cyanide				Concentrations in µg/L														%
Cyanide	9/1/2015	200	200	3 J	4 J	NI	1 J	3 J	4 J	2 J		2 J	NI	5	4 J			
Dissolved Metals				Concentrations in µg/L														%
Arsenic	9/1/2015	10	10	**11.2**	BDL (2)	NI	BDL (2)	BDL (2)	BDL (2)	3 J		BDL (2)	NI	BDL (2)	BDL (2)	NS		
	7/17&18/2017			BDL (2)	NS	BDL (2)	NS	3 J	NS	BDL (2)	BDL (2)	NS	BDL (2)	NS	NS	BDL (2)		NC
Barium	9/1/2015	2,000	2,000	111	106	NI	62.2	68.9	27.8	45.9		24.7	NI	188	132	NS		
	7/17&18/2017			9 J	NS	11	NS	23	NS	46	45	NS	396	NS	NS	47		2.2
Cadmium	9/1/2015	5	5	**19.3**	BDL (0.7)	NI	BDL (0.7)	**6.7**	BDL (0.7)	**7.3**		BDL (0.7)	NI	BDL (0.7)	BDL (0.7)	NS		
	7/17&18/2017			**31.52**	NS	12	NS	1.56	NS	**5.32**	**5.13**	NS	0.09 J	NS	NS	BDL (0.05)		3.64
Chromium	9/1/2015	100	100	**5,714**	2.6 J	NI	11.1	23.3	7.5	9.9 J		BDL (2)	NI	3.4 J	3 J	NS		
	7/17&18/2017			**5,270**	NS	**1,650**	NS	60	NS	21	21	NS	BDL (2)	NS	NS	BDL (2)		0.00
Copper	9/1/2015	1,300	1,300	3.4 J	11.3	NI	2 J	3.9 J	4.2 J	3.8 J		4.1 J	NI	2.5 J	2.8 J	NS		
	7/17&18/2017			NA	NS	NA	NS	NA	NS	NA	NA	NS	NA	NS	NS	NA		NA
Lead	9/1/2015	15	15	BDL (2)	BDL (2)	NI	BDL (2)	BDL (2)	BDL (2)	BDL (2)		BDL (2)	NI	4 J	BDL (2)	NS		
	7/17&18/2017			3 J	NS	3 J	NS	BDL (3)	NS	4 J	3 J	NS	3 J	NS	NS	**31**		NC
Mercury	9/1/2015	2	2	BDL (0.06)	BDL (0.06)	NI	BDL (0.06)	BDL (0.06)	BDL (0.06)	BDL (0.06)		BDL (0.06)	NI	BDL (0.06)	BDL (0.06)	NS		
	7/17&18/2017			BDL (0.06)	NS	BDL (0.06)	NS	BDL (0.06)	NS	BDL (0.06)	BDL (0.06)	NS	BDL (0.06)	NS	NS	BDL (0.06)		NC
Nickel	9/1/2015	100	NE	**1,120**	7.8 J	NI	BDL (4)	**106**	12	**148**		BDL (4)	NI	6.7 J	14.7 J	NS		
	7/17&18/2017			**1,390**	NS	**621**	NS	**109**	NS	**301**	**298**	NS	BDL (2)	NS	NS	3 J		1
Selenium	9/1/2015	50	50	BDL (3)	BDL (3)	NI	BDL (3)	BDL (3)	BDL (3)	8 J		BDL (10)	NI	BDL (3)	9.6 J	NS		
	7/17&18/2017			BDL (4)	NS	BDL (4)	NS	BDL (4)	NS	BDL (4)	BDL (4)	NS	BDL (4)	NS	NS	BDL (4)		NC
Silver	9/1/2015	100	100 [2]	BDL (2)	BDL (2)	NI	BDL (2)	BDL (2)	BDL (2)	BDL (2)		BDL (2)	NI	BDL (2)	BDL (2)	NS		
	7/17&18/2017			BDL (4)	NS	BDL (3)	NS	BDL (3)	NS	BDL (3)	BDL (3)	NS	BDL (3)	NS	NS	BDL (3)		NC
Zinc	9/1/2015	NE	5,000 [2]	BDL (7)	17.6 J	NI	BDL (7)	BDL (7)	BDL (7)	BDL (7)		7.3 J	NI	BDL (7)	10.6 J	NS		
	7/17&18/2017			NA	NS	NA	NS	NA	NS	NA		NS	NA	NS	NS	NA		NA
Per- and Poly-Fluorinated Alkyl Substances (PFAS)				Concentrations in µg/L														%
Perfluorobutanoic Acid (PFBA)	7/17&18/2017	NE	NE	0.00805	NA	NA	NA	NA	NA	0.00884	0.00695	NA	NA	NA	NA	NA	BDL (0.00185)	NC
Perfluoropentanoic Acid (PFPeA)	7/17&18/2017	NE	NE	0.0108	NA	NA	NA	NA	NA	0.00841	0.0088	NA	NA	NA	NA	NA	0.000144 J	NC
Perfluorobutanesulfonic Acid (PFBS)	7/17&18/2017	NE	NE	0.059	NA	NA	NA	NA	NA	0.0126	0.0138	NA	NA	NA	NA	NA	BDL (0.00185)	9.09
Perfluorohexanoic Acid (PFHxA)	7/17&18/2017	NE	NE	0.0491	NA	NA	NA	NA	NA	0.0262	0.0269	NA	NA	NA	NA	NA	0.000185 J	2.64
Perfluoroheptanoic Acid (PFHpA)	7/17&18/2017	NE	NE	0.00501	NA	NA	NA	NA	NA	0.0042	0.00444	NA	NA	NA	NA	NA	BDL (0.00185)	NC
Perfluorohexanesulfonic Acid (PFHxS)	7/17&18/2017	NE	NE	0.237	NA	NA	NA	NA	NA	0.234	0.246	NA	NA	NA	NA	NA	BDL (0.00185)	5
Perfluorooctanoic Acid (PFOA)	7/17&18/2017	0.070 [1]	NE	**0.0802**	NA	NA	NA	NA	NA	**0.07**	**0.0761**	NA	NA	NA	NA	NA	0.000096 J	8.35
Perfluorononanoic Acid (PFNA)	7/17&18/2017	NE	NE	0.00037	NA	NA	NA	NA	NA	0.0006	0.000718	NA	NA	NA	NA	NA	BDL (0.00185)	NC
Perfluorooctane sulfonate (PFOS)	7/17&18/2017	0.070 [1]	NE	**7.08**	NA	NA	NA	NA	NA	**1.62**	**1.24**	NA	NA	NA	NA	NA	0.00207	26.57

Legend:

AOC = Area of Concern (identified in report text)	QA/QC = quality assurance/quality control sample
µg/L = micrograms per liter	J = estimated concentration detected above laboratory detection limit, but below laboratory reporting limit
BDL( ) = Below laboratory detection limit shown in parenthesis	NS=No Standard NA=Not Analyzed NC=Not Calculated

Notes:
1 - AGQS is for total xylenes (mixed isomers); AGQS is for total PFOA and PFOS.
2 - MCL not established; value listed in table is the National Secondary Drinking Water Regulation (pertaining to cosmetic or aesthetic effects in drinking water).
3 - NH DES Env-Or 600 Ambient Groundwater Quality Standards (AGQSs), updated June 1, 2015.
4 - US EPA Maximum Contaminant Levels (MCLs), updated May 2009.
5 - **Bold** type font and boxed value indicates concentration exceeds the NH DES AGQS.
6 - Relative percent difference not calculated if the detected concentration is less than 5x the laboratory reporting limit.
7 - Sample IW-001, collected from a dug irrigation well located on Lot 51 was not field-filtered to remove particulates.

TABLE 5: SUMMARY OF DUPLICATE SOIL SAMPLE ANALYTICAL RESULTS
Central Plating Site
Walpole, New Hampshire

Sample Location / Sample Depth (feet bgs) / Sample Date	NH DES Soil Remediation Standards (SRS)	NH DES RCMP Method 1 NH S-1 Standards	NH DES RCMP Method 1 NH S-2 Standards	NH DES RCMP Method 1 NH S-2 Standards	US EPA Regional Screening Levels (RSLs) for Soil Residential	US EPA Regional Screening Levels (RSLs) for Soil Industrial	Samples: B205-S5 10-12.5 ft 6/30/2017	DUP-03 (B205-S5) 6/30/2017	B206-S6 15-17.5 ft 6/30/2017	DUP-01 (B206-S6) 6/30/2017	B207-S6/S7 15-20 ft 6/30/2017	DUP-02 (B207-S6/S7) 6/30/2017	Relative Percent Difference: Between B206-S6 & DUP-01	Between B207-S6/S7 & DUP-02	Between B205-S5 & DUP-03
Metals	Concentrations in mg/kg												%		
Arsenic	11	11	11	47	0.39	1.6	BDL(0.097)				2.58	2.6		0.8	
Barium	1,000	1,000	2,500	5,000	15,000	190,000	53				16.6	20.6		21.5	
Cadmium	33	33	280	280	37	450	2.2				1.72	2.12		20.8	
Chromium, Total	NS	NS	NS	NS	NS	NS	3,920				711	786		10.0	
Chromium, Hexavalent	130	130	130	130	0.29	5.6	**450**	**330**			**320**				30.8
Chromium, Trivalent	1,000	1,000	2,500	5,000	120,000	1,800,000	**3,470**				391				
Lead	400	400	400	400	400	800	146				12.6	15.4		20	
Mercury	7	7	52	52	23	310	0.41				BDL (0.02)	BDL (0.02)		NC	
Nickel	400	400	2,500	3,100	1,500	20,000	181				93.4	112		18.1	
Selenium	180	180	1,600	1,600	390	5,100	0.2				0.43	0.596		32.4	
Silver	89	89	690	690	390	5,100	BDL(0.131)				0.233	0.321		31.8	
Zinc	1,000	1,000	2,500	2,500	23,000	310,000	NA				NA				
SPLP Metals	Concentrations in mg/L														
Cadmium	NS	NS	NS	NS	NS	NS			0.002 J	0.008			NC		
Chromium	NS	NS	NS	NS	NS	NS			0.104	0.126			19.1		
Nickel	NS	NS	NS	NS	NS	NS			0.034	0.125			NC		

Notes:

1 - mg/kg = milligrams per kilogram; mg/L = milligrams per liter

2 - BDL( ) = Below method detection limit shown in parenthesis.

3 - Relative percent difference not calculated if the detected concentration is less than 5x the laboratory reporting limit.

TABLE 5: SUMMARY OF DUPLICATE SOIL SAMPLE ANALYTICAL RESULTS
Central Plating Site
Walpole, New Hampshire

Sample Location	NH DES Soil Remediation Standards (SRS)	NH DES RCMP Method 1 NH S-1 Standards	NH DES RCMP Method 1 NH S-2 Standards	NH DES RCMP Method 1 NH S-2 Standards	US EPA Regional Screening Levels (RSLs) for Soil		Samples						Relative Percent Difference		
							B205-S5	DUP-03	B206-S6	DUP-01	B207-S6/S7	DUP-02	Between B206-S6 & DUP-01	Between B207-S6/S7 & DUP-02	Between B205-S5 & DUP-03
Sample Depth (feet bgs)							10-12.5 ft	(B205-S5)	15-17.5 ft	(B206-S6)	15-20 ft	(B207-S6/S7)			
Sample Date					Residential	Industrial	6/30/2017	6/30/2017	6/30/2017	6/30/2017	6/30/2017	6/30/2017			
Metals	Concentrations in mg/kg												%		
Arsenic	11	11	11	47	0.39	1.6	BDL(0.097)				2.58	2.6		0.8	
Barium	1,000	1,000	2,500	5,000	15,000	190,000	53				16.6	20.6		21.5	
Cadmium	33	33	4.0 RESULTS	280	37	450	2.2				1.72	2.12		20.8	
Chromium, Total	NS	NS	NS	NS	NS	NS	3,920				711	786		10.0	
Chromium, Hexavalent	130	130	130	130	0.29	5.6	**450**	**330**			**320**				30.8
Chromium, Trivalent	1,000	1,000	2,500	5,000	120,000	1,800,000	**3,470**				391				
Lead	400	400	400	400	400	800	146				12.6	15.4		20	
Mercury	7	7	52	52	23	310	0.41				BDL (0.02)	BDL (0.02)		NC	
Nickel	400	400	2,500	3,100	1,500	20,000	181				93.4	112		18.1	
Selenium	180	180	1,600	1,600	390	5,100	0.2				0.43	0.596		32.4	
Silver	89	89	690	690	390	5,100	BDL(0.131)				0.233	0.321		31.8	
Zinc	1,000	1,000	2,500	2,500	23,000	310,000	NA				NA				
SPLP Metals	Concentrations in mg/L														
Cadmium	NS	NS	NS	NS	NS	NS			0.002 J	0.008			NC		
Chromium	NS	NS	NS	NS	NS	NS			0.104	0.126			19.1		
Nickel	NS	NS	NS	NS	NS	NS			0.034	0.125			NC		

Notes:
1 - mg/kg = milligrams per kilogram; mg/L = milligrams per liter
2 - BDL( ) = Below method detection limit shown in parenthesis.
3 - Relative percent difference not calculated if the detected concentration is less than 5x the laboratory reporting limit.

TABLE 6. SUMMARY OF THE EVALUATION AND COMPARISON OF REMEDIAL ALTERNATIVES
Central Plating Site
Walpole, New Hampshire

Remedial Action Alternative (RAA)	Overall Protection of Human Health and the Environment	Technical Practicability	Ability to Implement	Reduction of Toxicity, Mobility and Volume	Short Term Effectiveness	Resiliency to Climate Change	Estimated Cost[1]	Comments
1) Monitored Natural Attenuation	• Long-term risks to human health by exposure through direct contact, ingestion, and/or inhalation of chromium (and possible co-located nickel, cadmium and PFAS) contaminated soil will be mitigated by removal of 1.5 ft of soil and paving; remaining soils managed under an AUR. • No source reduction that would improve groundwater quality. No consumptive use of impacted groundwater identified. • Cleanup levels will not be met. • Risks to human health by direct contact, inhalation, and ingestion of hazardous building materials is significantly reduced or eliminated by removing the hazardous building materials from the Site and near-surface soils.	• No significant challenges.	• No significant challenges. • From a redevelopment and community support perspective, this approach does reduce human exposure risk and does not support planned redevelopment initiatives. • This option is unlikely to receive DES approval and would therefore not be a candidate for grant funding.	• Reduction in toxicity by removal of near-surface soils during parking lot construction. • No reduction in mobility or volume of the contaminated soils; no enhanced benefit to plume attenuation.	• Risk for human exposure to Site contamination will be immediately reduced or eliminated.	• This alternative is not directly affected by climate change.	• This alternative will require long-term groundwater monitoring and will cost approximately $182,452 over 50 years (present worth). • Costs for Full Hazardous Building Materials Abatement, materials removal/disposal and demolition/disposal is $62,500. • Cost for soils excavation, loading and disposal of upper 1.5 feet of soils over unpaved areas is $82,816. • Related engineering costs, including AUR preparation and recordation are $40,000. • These cost estimates are for remedial alternatives comparison purposes only and in no way should be construed as a cost proposal.	• This alternative does not fully address the key recognized environmental conditions at the property and is unlikely to receive DES approval due to little to no reduction in sources of groundwater impacts.
2) Excavate and Dispose of Soils with SRS Exceedances	• Protection of human health and the environment will be provided by excavation and off-site disposal of chromium (and possible co-located nickel, cadmium and PFAS) contaminated soil at the Site; therefore reducing the risk of human exposure to future Site visitors and/or occupants and off-Site water supply wells. • AGQSs will be attained sooner for groundwater. • Risks to human health by direct contact, inhalation, and ingestion of hazardous building materials or hazardous substances is significantly reduced or eliminated by removing the hazardous building materials and substance from the Site.	• Standard potential excavation safety concerns and requires the removal of cover soils to access some deeper soils. • No leaching-based soils standards have been established for PFAS; PFAS removal is solely focused on PFAS co-located with metals-impacted soils.	• The necessary services and materials to complete the remedial tasks are readily available, including the necessary equipment and contractors. • From a redevelopment and community support perspective, this approach is anticipated to garner modest to strong support, contingent upon managing expense.	• The known and inferred Site sources of contamination will be removed and unregulated surface soils with PAH concentrations above SRS will be relocated beneath the paving section; therefore, exposure risk will be eliminated. • The remaining contaminated groundwater will attenuate following removal of the Site sources of contamination. • No PFAS soils standards (leaching-based or exposure based) have been established. Leaving PFAS soils in place near the former Teflon tank will result in only modest potential for improved groundwater quality via reduction in infiltration when the parking lot is constructed.	• Risk for environmental impacts and human exposure to Site contamination will be immediately reduced or eliminated.	• This alternative is not directly affected by climate change and the duration of site disturbance for the excavation option is short-lived and is not inferred to present unmanageable risks resulting from severe storms.	• This alternative will require reduced long-term groundwater monitoring and will cost approximately $81,697 over 15 years (present worth). • Costs for Full Hazardous Building Materials Abatement, materials removal/disposal and demolition/disposal is $62,500. • Cost for soils excavation, loading and disposal of regulated soils exceeding SRS is approximately $211,350. • Related engineering costs are $62,516. • These cost estimates are for remedial alternatives comparison purposes only and in no way should be construed as a cost. proposal.	• Worst-case soil disposal costs are high (additional $156,000) and would be in addition to the costs noted under this option. This cost addition would be if all excavated soils tested as hazardous. This is partly due to disposal premiums resulting from the inferred presence of PFAS in soils. • Not shown are programmatic costs ($30,000) if grant funding is utilized. • Not shown are cost for PFAS investigation and/or additional limited soils removal (if and when soil remediation standards are established) that are estimated to range from $1,500 to upwards of $50,000. • This alternative meets the evaluation criteria, is cost-effective, and provides flexibility in the future Site redevelopment. Therefore, this alterative is the recommended remedial alternative.

[1] Costs to conduct additional PFAS investigations, conduct additional PFAS monitoring (other than 5 monitoring wells, periodically), or to remediate potentially PFAS-impacted surface soils or soils in the former Teflon tank area are not included.
All costs are engineering order-of-magnitude estimates for the purpose of alternatives comparison based on information available at the time of this report. Actual bid costs may deviate from the estimates provided herein.

TABLE 6. SUMMARY OF THE EVALUATION AND COMPARISON OF REMEDIAL ALTERNATIVES
Central Plating Site
Walpole, New Hampshire

Remedial Action Alternative (RAA)	Overall Protection of Human Health and the Environment	Technical Practicality	Ability to Implement	Reduction of Toxicity, Mobility and Volume	Short Term Effectiveness	Resiliency to Climate Change	Estimated Cost[1]	Comments
3) Excavate and Dispose of Soils to Reduce Leaching Potential, Manage Soils in Place	• Protection of human health and the environment will be provided by soils with a high potential to leach chromium (and possible co-located into groundwater at the Site and relocation use of impacted soils presenting and human exposure risk as deep backfill (above the groundwater table) isolated beneath paving and paving subgrade soils, managed under an AUR and therefore reducing the risk of human exposure to future Site visitors and/or occupants and off-Site water supply wells. • AGQSs will be attained sooner for groundwater, although. • Risks to human health by direct contact, inhalation, and ingestion of hazardous building materials or hazardous substances is significantly reduced or eliminated by removing the hazardous building materials and substance from the Site.	• Standard potential excavation safety concerns and requires the removal of cover soils to access some deeper soils. • Determining and meeting a leaching-based clean-up criteria for Site metals is a technical challenge. • No leaching-based soils standards have been established for PFAS; PFAS removal is solely focused on PFAS co-located with metals-impacted soils. • Reduction in the volume of mass removal will reduce the extent to which probable PFAS sources in the former planting line or sump areas are removed.	• The necessary services and materials to complete the remedial tasks are readily available, including the necessary equipment and contractors. • From a redevelopment and community support perspective, this approach is anticipated to garner modest to strong support, contingent upon managing expense.	• The low-level impacted surficial soils with contaminant concentrations above SRS will be relocated under a pavement section and managed under an AUR, the most grossly impacted soils that are likely to contribute to groundwater impacts will be removed; therefore, exposure risk will be controlled. • The remaining contaminated groundwater will attenuate following removal/reduction of the Site sources of groundwater contamination. • No PFAS soils standards (leaching-based or exposure based) have been established. Leaving PFAS soils in place near the former Teflon tank will result in only modest potential for improved groundwater quality via reduction in infiltration when the parking lot is constructed.	• Risk for environmental impacts and human exposure to Site contamination will be immediately reduced or eliminated.	• This alternative is not directly affected by climate change and the duration of site disturbance for the excavation option is short-lived and is not inferred to present unmanageable risks resulting from severe storms.	• This alternative will require reduced long-term groundwater monitoring and will cost approximately $117,768 over 25 years (present worth). • Costs for Full Hazardous Building Materials Abatement, materials removal/disposal and demolition/disposal is $62,500. • Cost for soils excavation, loading and disposal of regulated soils exceeding SRS is approximately $128,603. • Related engineering costs, including AUR preparation and recordation are $59,900. • These cost estimates are for remedial alternatives comparison purposes only and in no way should be construed as a cost proposal.	• Worst-case soil disposal costs for this limited soil removal option are high (additional $56,000) and would be in addition to the costs noted under this option. This cost addition would be if all excavated soils tested as hazardous. This is partly due to disposal premiums resulting from the inferred presence of PFAS in soils. • Not shown are programmatic costs ($30,000) if grant funding is utilized. • Not shown are cost for PFAS investigation and/or additional limited soils removal (if and when soil remediation standards are established) that are estimated to range from $1,500 to upwards of $50,000. • This alternative meets many of the evaluation criteria, and is cost-effective; however, there is considerable uncertainty relative to establishing and meeting leaching-based clean-up goals which is a critical component of successful implementation. Therefore, this alterative is not the recommended remedial alternative.

[1] Costs to conduct additional PFAS investigations, conduct additional PFAS monitoring (other than 5 monitoring wells, periodically), or to remediate potentially PFAS-impacted surface soils or soils in the former Teflon tank area are not included.
All costs are engineering order-of-magnitude estimates for the purpose of alternatives comparison based on information available at the time of this report. Actual bid costs may deviate from the estimates provided herein.

TABLE 7. SUMMARY OF ESTIMATED REMEDIATION COSTS FOR MONITORED NATURAL ATTENUATION ALTERNATIVE
Central Plating Site

Monitored Natural Attenuation Alternative	Number	Units	Unit Cost	Total
HBM Abatement & Demolition				
Design, abatement, materials removal/disposal, demolition, and oversight	1	LS	$62,500	$62,500
Surface Soils Removal/Disposal to Pave Site (assumes upper 1.5 feet of 6,900 ft^2)	1	LS	$82,816	$82,816
Monitoring				
Assumes 50 years of monitoring	1	LS	$182,452	$182,452
Engineering				
Design, oversight, RPI lab analyses and report, Groundwater Management Permit, AUR	1	LS	$40,000	$40,000
			Subtotal:	*$367,768*
			Contingency 20%:	$73,554
			TOTAL:	**$441,322**

Notes:

1. HBM = Hazardous Building Materials, LS = Lump Sum, RPI = Remedial Plan Implementation
2. Costs for Hazardous Building Materials Remediation assumes that all asbestos, lead-based paint, and universal wastes are abated and removed from the site. Sumps and area cleaned and wastes disposed of. Building demolished.
3. Costs to construct a parking lot are not included nor are costs for possible PFAS investigations and monitoring other than 5 wells, periodically, under "Monitoring".
4. See basis calculations in Appendix C for general assumptions. All costs are engineering order-of-magnitude estimates for the purpose of alternatives comparison based on information available at the time of this report. Actual bid costs may deviate from the estimates provided herein.
5. Cost shown for monitoring is a present-worth estimate assuming 3% inflation, 5% return on investment, and no permit fees (i.e., municipally owned).

TABLE 8. SUMMARY OF ESTIMATED REMEDIATION COSTS FOR EXCAVATE AND DISPOSE OF SOILS WITH SOIL REMEDIATION STANDARD EXCEEDANCES ALTERNATIVE
Central Plating Site
12 Westminster Street

Excavate and Dispose of Soils with SRS Exceedances	Number	Units	Unit Cost	Total
HBM Abatement & Demolition				
Design, abatement, materials removal/disposal, demolition, and oversight	1	LS	$62,500	$62,500
Soil Excavation				
Excavation, disposal, and backfilling	1	LS	$211,350	$211,350
Monitoring				
Assumes 15 years of monitoring (cannot be funded through EPA clean-up grants)	1	LS	$81,697	$81,697
Engineering				
Design, oversight, RPI lab analyses and closure report, Groundwater Management Permit	1	LS	$62,516	$62,516
Programmatic Costs for grant-funded projects, assuming two grants, if applicable.	1	LS	$30,000	$30,000
			Subtotal:	*$448,063*
			Contingency 20%:	$89,613
			TOTAL:	**$537,676**

Notes:
1. HBM = Hazardous Building Materials, LS = Lump Sum, RPI = Remedial Plan Implementation
2. Costs for Hazardous Building Materials Remediation assumes that all asbestos, lead-based paint, and universal wastes are abated and removed from the site. Sumps and area cleaned and wastes disposed of. Building demolished.
3. Costs to construct a parking lot are not included nor are costs for possible PFAS investigations, former Teflon tank areas soil excavation and disposal, and monitoring other than 5 wells, periodically, under "Monitoring".
4. See basis calculations in Appendix C for general assumptions. All costs are engineering order-of-magnitude estimates for the purpose of alternatives comparison based on information available at the time of this report. Actual bid costs may deviate from the estimates provided herein.
5. If all Site soils budgeted for excavation are disposed as hazardous and contain PFAS, then estimated disposal cost increases by $160,000.
6. Cost shown for monitoring is a present-worth estimate assuming 3% inflation, 5% return on investment, and no permit fees (i.e., municipally owned).

TABLE 9. SUMMARY OF ESTIMATED REMEDIATION COSTS FOR EXCAVATE AND DISPOSE OF SOILS TO REDUCE LEACHING POTENTIAL, MANAGE SOILS IN PLACE ALTERNATIVE
Central Plating Site
12 Westminster Street

Excavate and Dispose of Soils to Reduce Leaching Potential, Manage Soils in Place	Number	Units	Unit Cost	Total
HBM Abatement & Demolition				
Design, abatement, materials removal/disposal, demolition, and oversight	1	LS	$62,500	$62,500
Soil Excavation - Source Removal Limited to Soils with Leaching Risk				
Excavation, disposal, and backfilling	1	LS	$128,603	$128,603
Monitoring				
Assumes 25 years of monitoring	1	LS	$117,768	$117,768
Engineering				
Design, oversight, RPI lab analyses, and closure report, Groundwater Management Permit, AUR	1	LS	$59,500	$59,500
Programmatic Costs for grant-funded projects, assuming two grants, if applicable.	1	LS	$30,000	$30,000
			Subtotal:	*$398,371*
			Contingency 20%:	$79,674
			TOTAL:	**$478,045**

Notes:

1. HBM = Hazardous Building Materials, LS = Lump Sum, RPI = Remedial Plan Implementation
2. Costs for Hazardous Building Materials Remediation assumes that all asbestos, lead-based paint, and universal wastes are abated and removed from the site. Sumps and area cleaned and wastes disposed of. Building demolished.
3. Costs to construct a parking lot are not included nor are costs for possible PFAS investigations, former Teflon tank areas soil excavation and disposal, and monitoring other than 5 wells, periodically, under "Monitoring".
4. See basis calculations in Appendix C for general assumptions. All costs are engineering order-of-magnitude estimates for the purpose of alternatives comparison based on information available at the time of this report. Actual bid costs may deviate from the estimates provided herein.
5. If all Site soils budgeted for excavation are disposed as hazardous and contain PFAS, then estimated disposal cost increases by $60,000.
6. Cost shown for monitoring is a present-worth estimate assuming 3% inflation, 5% return on investment, and no permit fees (i.e., municipally owned).

TABLE 10. DECISION MATRIX FOR REMEDIAL ALTERNATIVES
Central Plating Site
12 Westminster Street
Walpole, New Hampshire

	ALTERNATIVES	DECISION CRITERIA							
		Overall Protection of Human Health and the Environmental	Technical Practicality	Ability to Implement	Reduction of Toxicity, Mobility, and Volume	Short Term Effectiveness	Resiliency to Climate Change Conditions	Preliminary Costs	
		DECISION CRITERIA WEIGHTING FACTOR							
		4	*3*	*3*	*3*	*3*	*1*	*3*	TOTALS
1.	Monitored Natural Attenuation (with surface soils removal for paving)	2	5	5	2	3	5	4	70
2.	Excavate and Dispose of Soils with SRS Exceedances	5	3	4	5	5	5	2	82
3.	Excavate and Dispose of Soils to Reduce Leaching Potential, Manage Soils in Place	3	2	2	3	4	5	3	59

APPENDIX A

Soil Boring/Monitoring Well Logs and Groundwater Sampling Logs

Supplemental Phase II Environmental Site Assessment and
Analyses of Brownfield Cleanup Alternatives/Remedial Action Plan
Central Plating Site
12 Westminster Street
Walpole, New Hampshire

Ransom Consulting, Inc.
Project 141.05051.001

RANSOM Consulting, Inc.

BORING LOG: B201

Reviewed By:	SFR	Total Depth:	15 Feet	Logged By:	BAB
Date Reviewed:	8/14/17	Boring Diameter:	2 1/2 Inches	Date Drilled:	6-29-17 to 6-29-17
GW Observed at:	10 Feet	Well Stickup:	NA	Driller:	EAI

DEPTH	DESCRIPTION (Based on a modified Burmister Soil Classification System)	SAMPLE	SAMPLE NUMBER	BLOW COUNTS (per 6 inches)	PENETRATION/ RECOVERY	PID (ppm)		DEPTH
	S1 (0-2.5') 4" TOPSOIL, over 10" brown to gray-brown, fine to medium SAND, trace silt.		S1			<1		
	S2 (2.5-5') Gray, fine to medium SAND, moist.		S2	NA	60/28	<1		
5	S3 (5-7.5') Gray, fine to medium SAND, moist.		S3			<1		5
	S4 (7.5-10') 2" Lens of gray SILT, over 9" gray-brown, fine to coarse SAND, trace fine to medium gravel, trace silt, over 4" brown, fine to medium SAND, some silt, little fine to medium gravel, moist, few red mottles.		S4	NA	60/30	<1		
10	S5 (10-12.5') 6" Brown, fine to medium SAND, some silt, little fine to medium gravel, over 14" gray, fine to medium SAND, trace silt, wet.		S5			104		10
	S6 (12.5-15') Stiff, gray CLAY, some silt, wet.		S6	NA	60/40	2		
15	End of boring 15'.							15

NOTES:
1. Boring advanced using push-probe methodology.
2. OVM measured utilizing a MiniRAE 2000 PID calibrated with 100 ppmv Isobutylene.
3. Sample indicate with solid fill submitted for laboratory analysis.
4. NA=Not applicable.

CLIENT:
SWRPC

SITE:
Former Central Plating
12 Westminster Street
Walpole, NH

Project No.: 141.05051

RANSOM Consulting, Inc.

BORING LOG: B202

Reviewed By:	SFR	Total Depth:	15 Feet	Logged By:	BAB
Date Reviewed:	8/14/17	Boring Diameter:	2 1/2 Inches	Date Drilled:	6-29-17 to 6-29-17
GW Observed at:	10 Feet	Well Stickup:	NA	Driller:	EAI

DEPTH	DESCRIPTION (Based on a modified Burmister Soil Classification System)	SAMPLE	SAMPLE NUMBER	BLOW COUNTS (per 6 inches)	PENETRATION/ RECOVERY	PID (ppm)		DEPTH
	S1 (0-2.5') 6" TOPSOIL, over 11" brown, fine to medium SAND, little silt, trace fine to medium gravel, moist.		S1			<1		
	S2 (2.5-5') Brown-gray to gray-brown, fine to medium SAND, moist.		S2	NA	60/34	<1		
5	S3 (5-7.5') Brown-gray to gray-brown, fine to medium SAND, moist.		S3			2		5
	S4 (7.5-10') Brown-red, fine to medium SAND, trace silt, moist.		S4	NA	60/38	2		
10	S5 (10-12.5') 4" Brown-red, fine to medium SAND, trace silt, over 10" gray, fine to medium SAND, little fine to medium gravel, little silt, over 9" gray-brown, fine to medium SAND, little silt, wet, strong petroleum odor.		S5			1,516		10
	S6 (12.5-15') Stiff, gray-brown CLAY, some silt, wet.		S6	NA	60/46	6		
15	End of boring 15'.							15

NOTES:
1. Boring advanced using push-probe methodology.
2. OVM measured utilizing a MiniRAE 2000 PID calibrated with 100 ppmv Isobutylene.
3. Sample indicate with solid fill submitted for laboratory analysis.
4. NA=Not applicable.

CLIENT:
SWRPC

SITE:
Former Central Plating
12 Westminster Street
Walpole, NH

Project No.: 141.05051

RANSOM Consulting, Inc.

BORING LOG: B203

Reviewed By: SFR	Total Depth: 15 Feet	Logged By: BAB
Date Reviewed: 8/14/17	Boring Diameter: 2 1/2 Inches	Date Drilled: 6-29-17 to 6-29-17
GW Observed at: 10 Feet	Well Stickup: NA	Driller: EAI

DEPTH	DESCRIPTION (Based on a modified Burmister Soil Classification System)	SAMPLE	SAMPLE NUMBER	BLOW COUNTS (per 6 inches)	PENETRATION/ RECOVERY	PID (ppm)		DEPTH
0	S1 & S2 (0-5') 4" TOPSOIL, over 11" gray, fine to medium SAND, dry.		S1	NA	60/15	<1		
			S2			<1		
5	S3 (5-7.5') 10" Gray, fine to medium SAND, over 9" gray, fine to medium SAND, little silt, moist.		S3	NA	60/38	<1		5
	S4 (7.5-10') 7" Gray, fine to medium SAND, little silt, over, 12" gray-brown, fine to coarse SAND, little fine to medium gravel, trace silt, 2" lens of silt at 7.5', moist to wet.		S4			<1		
10	S5 (10-12.5') 11" Brown-gray, fine to coarse SAND, trace fine to medium gravel, trace silt, over 8" black, fine to coarse SAND, trace fine to medium gravel, trace silt, wet, few red mottles.		S5	NA	60/38	54		10
	S6 (12.5-15') 9" Gray-brown, fine to medium SAND, little silt, over 10" gray brown CLAY, some silt, wet.		S6			3		
	S7 (15') Stiff, gray-brown CLAY and SILT.		S7					
15	End of boring 15'.							15

NOTES:
1. Boring advanced using push-probe methodology.
2. OVM measured utilizing a MiniRAE 2000 PID calibrated with 100 ppmv Isobutylene.
3. Sample indicate with solid fill submitted for laboratory analysis.
4. NA=Not applicable.

CLIENT:
SWRPC

SITE:
Former Central Plating
12 Westminster Street
Walpole, NH

Project No.: 141.05051

RANSOM Consulting, Inc.	BORING LOG:			B204
	Reviewed By: SFR	Total Depth: 15 Feet	Logged By: BAB	
	Date Reviewed: 8/14/17	Boring Diameter: 2 1/2 Inches	Date Drilled: 6-29-17 to 6-29-17	
	GW Observed at: 9.5 Feet	Well Stickup: NA	Driller: EAI	

DEPTH	DESCRIPTION (Based on a modified Burmister Soil Classification System)	SAMPLE	SAMPLE NUMBER	BLOW COUNTS (per 6 inches)	PENETRATION/ RECOVERY	PID (ppm)		DEPTH
	S1 (0-2.5') 4" TOPSOIL, over 6" brown, fine to medium SAND, little silt, over 10" gray-brown, fine to medium SAND, moist.		S1			<1		
	S2 (2.5-5') Gray-brown, fine to medium SAND, moist.		S2	NA	60/40	<1		
5	S3 (5-7.5') 10" Gray-brown, fine to medium SAND, over 10" brown gray, fine to medium SAND, with lenses of silt and clay, red mottles, moist.		S3			<1		5
	S4 (7.5-10') 6" Gray-brown, fine to medium SAND, over 14" brown to dark brown, fine to medium SAND, little fine to medium gravel, trace to little silt, moist to wet.		S4	NA	60/40	<1		
10	S5 (10-12.5') 12" Brown, fine to medium SAND, little fine to medium gravel, trace silt, over 4" gray SILT and fine SAND, over, 7" gray-brown, fine to coarse SAND, red mottles, wet.		S5			3		10
	S6 (12.5-15') Stiff, gray-brown, SILT and CLAY, wet.		S6	NA	60/46	<1		
15	End of boring 15'.							15

NOTES:
1. Boring advanced using push-probe methodology.
2. OVM measured utilizing a MiniRAE 2000 PID calibrated with 100 ppmv Isobutylene.
3. Sample indicate with solid fill submitted for laboratory analysis.
4. NA=Not applicable.

CLIENT:
SWRPC

SITE:
Former Central Plating
12 Westminster Street
Walpole, NH

Project No.: 141.05051

RANSOM Consulting, Inc.

BORING LOG: B205

Reviewed By:	SFC	Total Depth:	15 Feet	Logged By:	BAB
Date Reviewed:	8/14/17	Boring Diameter:	2 1/2 Inches	Date Drilled:	6-29-17 to 6-29-17
GW Observed at:	9.5 Feet	Well Stickup:	NA	Driller:	EAI

DEPTH	DESCRIPTION (Based on a modified Burmister Soil Classification System)	SAMPLE	SAMPLE NUMBER	BLOW COUNTS (per 6 inches)	PENETRATION/ RECOVERY	PID (ppm)		DEPTH
	S1 (0-2.5') 4" TOPSOIL, over 6" brown, fine to medium SAND, little silt, over 7" brown-gray, fine to medium SAND, moist.		S1			<1		
	S2 (2.5-5') Gray-brown, fine to medium SAND, moist.		S2	NA	60/32	<1		
5	S3 (5-7.5') Gray-brown, fine to medium SAND, moist, red brown mottles at 7'.		S3			<1		5
	S4 (7.5-10') 4" brown gray SILT and fine SAND, over 9" gray-brown, medium SAND, trace silt with red mottles, over 7" brown, fine to medium SAND, little to some fine to medium gravel, trace silt, moist to wet.		S4	NA	60/40	49		
10	S5 (10-12.5') 14" Brown, fine to medium SAND, little to some fine to medium gravel, trace silt, over 4" gray-brown, fine to medium SAND, trace silt, over 3" gray brown SILT and CLAY, wet, petroleum odor.		S5			700		10
	S6 (12.5-15') Stiff, gray-brown SILT and CLAY, wet.		S6	NA	60/42	4		
15	End of boring 15'.							15

NOTES:
1. Boring advanced using push-probe methodology.
2. OVM measured utilizing a MiniRAE 2000 PID calibrated with 100 ppmv Isobutylene.
3. Sample indicate with solid fill submitted for laboratory analysis.
4. NA=Not applicable.

CLIENT:
SWRPC

SITE:
Former Central Plating
12 Westminster Street
Walpole, NH

Project No.: 141.05051

BORING LOG: B206

RANSOM Consulting, Inc.

Reviewed By:	SFZ	Total Depth:	15 Feet	Logged By:	BAB
Date Reviewed:	8/14/17	Boring Diameter:	2 1/2 Inches	Date Drilled:	6-29-17 to 6-29-17
GW Observed at:	12 Feet	Well Stickup:	NA	Driller:	EAI

DEPTH	DESCRIPTION (Based on a modified Burmister Soil Classification System)	SAMPLE	SAMPLE NUMBER	BLOW COUNTS (per 6 inches)	PENETRATION/ RECOVERY	PID (ppm)		DEPTH
	S1 (0-2.5') 4" TOPSOIL, over 12" gray-brown, fine to medium SAND, trace silt, mosit.		S1			<1		
	S2 (2.5-5') Gray-brown, fine to medium SAND, red mottles at 5', moist.		S2	NA	60/32	<1		
5	S3 (5-7.5') 11" Gray-brown, fine to medium SAND, red mottles, over 6" gray-brown SILT with 2" lens of gray, fine to medium SAND, moist.		S3			<1		5
	S4 (7.5-10') 8" Gray-brown, fine to medium SAND with red mottles, over 9" gray brown, fine to medium SAND, little fine to medium gravel, trace silt, moist.		S4	NA	60/34	<1		
10	S5 (10-12.5') Gray, fine to coarse SAND, trace fine gravel, moist to wet.		S5			<1		10
	S6 (12.5-15') 5" black, fine to coarse SAND, trace fine gravel, over 9" gray, fine SAND, little silt, over 4" medium stiff, gray SILT and CLAY.		S6	NA	60/36	<1		
15	End of boring 15'.							15

NOTES:
1. Boring advanced using push-probe methodology.
2. OVM measured utilizing a MiniRAE 2000 PID calibrated with 100 ppmv Isobutylene.
3. Sample indicate with solid fill submitted for laboratory analysis.
4. NA=Not applicable.

CLIENT:
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SITE:
Former Central Plating
12 Westminster Street
Walpole, NH

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RANSOM Consulting, Inc.

BORING LOG: B207

Reviewed By:	SFR	Total Depth:	20 Feet	Logged By:	BAB
Date Reviewed:	8/14/17	Boring Diameter:	2 1/2 Inches	Date Drilled:	6-29-17 to 6-29-17
GW Observed at:	13.5 Feet	Well Stickup:	NA	Driller:	EAI

DEPTH	DESCRIPTION (Based on a modified Burmister Soil Classification System)	SAMPLE	SAMPLE NUMBER	BLOW COUNTS (per 6 inches)	PENETRATION/ RECOVERY	PID (ppm)		DEPTH
	S1 (0-2.5') Brown-gray, fine to medium SAND, little to trace silt, moist.		S1			<1		
	S2 (2.5-5') Gray-brown, fine to medium SAND, moist.		S2	NA	60/26	<1		
5	S3 (5-7.5') Gray-brown, fine to medium SAND, trace silt, moist.		S3			<1		5
	S4 (7.5-10') 3" gray SILT, over 8" gray-brown, fine to medium SAND, red mottles, trace silt, over 7" brown-gray, fine to medium SAND, little fine to meidum gravel, trace silt, moist.		S4	NA	60/36	<1		
10	S5 (10-12.5') Gray, fine to coarse SAND, little fine gravel, moist.		S5			<1		10
	S6 (12.5-15') 6" Gray, fine to coarse SAND, little fine gravel, over 8" black, fine to medium SAND, little fine to medium gravel, little silt, over 3" brown-gray, fine to medium SAND, little silt, moist to wet.		S6	NA	60/34	1		
15	S7 (15-17.5') Brown-gray, fine to medium SAND, litle silt, wet.		S7			2		15
	S8 (17.5-20') Stiff, gray-brown to gray SILT and CLAY.		S8	NA	60/44	2		
	End of boring 20'.							

NOTES:
1. Boring advanced using push-probe methodology.
2. OVM measured utilizing a MiniRAE 2000 PID calibrated with 100 ppmv Isobutylene.
3. Sample indicate with solid fill submitted for laboratory analysis.
4. NA=Not applicable.

CLIENT:
SWRPC

SITE:
Former Central Plating
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Walpole, NH

Project No.: 141.05051

Page: 1

RANSOM Consulting, Inc.

BORING LOG: B208

Reviewed By:	SFR	Total Depth:	20 Feet	Logged By:	BAB
Date Reviewed:	8/14/17	Boring Diameter:	2 1/2 Inches	Date Drilled:	6-29-17 to 6-29-17
GW Observed at:	14 Feet	Well Stickup:	NA	Driller:	EAI

DEPTH	DESCRIPTION (Based on a modified Burmister Soil Classification System)	SAMPLE	SAMPLE NUMBER	BLOW COUNTS (per 6 inches)	PENETRATION/ RECOVERY	PID (ppm)		DEPTH
	S1 (0-2.5') 6" TOPSOIL, over 7" brown, fine to medium SAND, little silt, moist.		S1			<1		
	S2 (2.5-5') Gray-brown, fine to medium SAND, trace silt, moist.		S2	NA	60/26	<1		
5	S3 (5-7.5') Gray-brown, fine to medium SAND, trace silt, 1" lens of gray SILT at 6.5', few red mottles at 6.5-7.5'.		S3			<1		5
	S4 (7.5-10') Gray, fine to medium SAND, little fine to medium gravel, trace silt, moist.		S4	NA	60/30	<1		
10	S5 (10-12.5') Gray, fine to medium SAND, some fine to medium gravel, moist.		S5			<1		10
	S6 (12.5-15') 16" Gray-brown to black, fine to coarse SAND, little fine gravel, over 7" dark brown to brown, fine to medium SAND, little silt, moist to wet.		S6	NA	60/46	<1		
15	S7 (15-17.5') 8" Dark brown to brown, fine to medium SAND, little silt, over 15" gray-brown, fine to medium SAND, some fine to medium gravel, over 7" brown, fine to medium SAND, little silt, wet.		S7			<1		15
	S8 (17.5-20') Stiff, gray-brown to brown SILT and CLAY.		S8	NA	60/60	2		
	End of boring 20'.							

NOTES:
1. Boring advanced using push-probe methodology.
2. OVM measured utilizing a MiniRAE 2000 PID calibrated with 100 ppmv Isobutylene.
3. Sample indicate with solid fill submitted for laboratory analysis.
4. NA=Not applicable.

CLIENT:
SWRPC

SITE:
Former Central Plating
12 Westminster Street
Walpole, NH

Project No.: 141.05051

RANSOM Consulting, Inc.

BORING AND MONITORING WELL LOG: B209/MW201

Reviewed by:	SFR	Total Depth:	24 Feet	Logged By:	BAB
Date Reviewed:	8/14/17	Boring Diameter:	4 1/2 Inches	Date Drilled:	6-30-17 to 6-30-17
GW Observed at:	16 Feet	Well Stickup:	Flush	Driller:	EAI

DEPTH	DESCRIPTION (Based on a modified Burmister Soil Classification System)	SAMPLE NUMBER	BLOW COUNTS (per 6 inches)	PENETRATION/ RECOVERY	PID (ppm)	DEPTH
0	S1 & S2 (0-5') 4" ASPHALT, over 12" brown, fine to medium SAND, some fine to medium gravel, trace silt, over 6" dark brown, fine to medium SAND, little silt, over 30" light brown, fine to medium SAND, moist.	S1			<1	
			NA	60/46		
		S2			<1	
5	S3 & S4 (5-10') 12" Gray-brown, fine to medium SAND, over 26" gray-brown, fine to medium SAND, trace silt, with 2" lens of gray SILT and CLAY, over 12" brown-gray, fine to medium SAND, little fine to medium gravel, trace silt, moist.	S3			<1	5
			NA	60/50		
		S4			<1	
10	S5 & S6 (10-15') 8" Brown-gray, fine to medium SAND, little fine to medium gravel, trace silt, over 40" gray-brown, fine to coarse SAND, little fine gravel, moist.	S5			<1	10
			NA	60/48		
		S6			1	
15	S7 & S8 (15-20') 3" Gray-brown, fine to coase SAND, little fine gravel, over 7" black-brown, fine to medium SAND, little silt, 1" silt and clay lens at 16', over 39" brown-gray to gray-brown, fine SAND, trace silt, moist to wet.	S7			<1	15
			NA	60/50		
		S8			1	

WELL CONSTRUCTION

LEGEND: Filter Sand, Native Fill, Bentonite, Bentonite Grout, Concrete, PVC Screen, Solid PVC Riser

NOTES:
1. Boring advanced using push-probe methodology.
2. OVM measured utilizing a MiniRAE 2000 PID calibrated with 100 ppmv Isobutylene.
3. Boring finished as a 2" PVC groundwater monitoring well equipped with a flush-mounted roadbox cemeneted into the pavement.
4. Sample indicated with solid fill submitted for laboratory analysis.
5. NA=Not applicable.

CLIENT:
SWRPC

SITE:
Former Central Plating
12 Westminster Street
Walpole, NH

Project No.: 141.05051

Page: 1

RANSOM Consulting, Inc.

BORING AND MONITORING WELL LOG: B209/MW201

Reviewed by: SFR	Total Depth: 24 Feet	Logged By: BAB
Date Reviewed: 8/14/17	Boring Diameter: 4 1/2 Inches	Date Drilled: 6-30-17 to 6-30-17
GW Observed at: 16 Feet	Well Stickup: Flush	Driller: EAI

DEPTH	DESCRIPTION (Based on a modified Burmister Soil Classification System)	SAMPLE	SAMPLE NUMBER	BLOW COUNTS (per 6 inches)	PENETRATION/ RECOVERY	PID (ppm)	DEPTH	WELL CONSTRUCTION
	S9 (20-22') 12" Brown-gray, fine to medium SAND, trace silt, over 12" stiff, gray-brown CLAY, some silt, wet.		S9			<1		
	S10 (22-24') Stiff to soft, gray-brown to gray CLAY, some silt, wet.		S10	NA	48/48	<1		
	End of boring 24'.							
25							25	
30							30	
35							35	

LEGEND: Filter Sand, Native Fill, Bentonite, Bentonite Grout, Concrete, PVC Screen, Solid PVC Riser

NOTES:
1. Boring advanced using push-probe methodology.
2. OVM measured utilizing a MiniRAE 2000 PID calibrated with 100 ppmv Isobutylene.
3. Boring finished as a 2" PVC groundwater monitoring well equipped with a flush-mounted roadbox cemeneted into the pavement.
4. Sample indicated with solid fill submitted for laboratory analysis.
5. NA=Not applicable.

CLIENT:
SWRPC

SITE:
Former Central Plating
12 Westminster Street
Walpole, NH

Project No.: 141.05051

RANSOM Consulting, Inc.

BORING AND MONITORING WELL LOG: B210/MW202

Reviewed by:	SRC	Total Depth:	25 Feet	Logged By:	BAB
Date Reviewed:	8/14/17	Boring Diameter:	4 1/2 Inches	Date Drilled:	6-30-17 to 6-30-17
GW Observed at:	19.5 Feet	Well Stickup:	Flush	Driller:	EAI

DEPTH	DESCRIPTION (Based on a modified Burmister Soil Classification System)	SAMPLE NUMBER	BLOW COUNTS (per 6 inches)	PENETRATION/ RECOVERY	PID (ppm)	DEPTH	WELL CONSTRUCTION
0	S1 & S2 (0-5') 8" TOPSOIL, over 14" fine to medium SAND, some fine to medium gravel and cobbles, trace silt, over 26" brown, fine SAND, little silt, moist.	S1	NA	60/48	<1		Native Fill
		S2			<1		Native Fill
5	S3 (5-7.5') Gray-brown, fine to medium SAND.	S3	NA	60/50	<1	5	Native Fill
	S4 (7.5-10') Brown, fine to medium SAND, little fine to medium gravel, trace silt, moist.	S4			<1		Native Fill / Bentonite
10	S5 & S6 (10-15') Gray-brown, fine to coarse SAND, moist.	S5	NA	60/48	1	10	Filter Sand / Solid PVC Riser
		S6			<1		Filter Sand / Solid PVC Riser
15	S7 (15-17.5') Gray-brown, fine to coarse SAND, moist.	S7	NA	60/50	1	15	Filter Sand / PVC Screen
	S8 (17.5-20') Brown, fine to medium SAND, trace silt, moist to wet.	S8			<1		Filter Sand / PVC Screen, Native Fill

LEGEND: Filter Sand, Native Fill, Bentonite, Bentonite Grout, Concrete, PVC Screen, Solid PVC Riser

NOTES:
1. Boring advanced using push-probe methodology.
2. OVM measured utilizing a MiniRAE 2000 PID calibrated with 100 ppmv Isobutylene.
3. Boring finished as a 2" PVC groundwater monitoring well equipped with a flush-mounted roadbox cemeneted into the pavement.
4. NA=Not applicable.

CLIENT:
SWRPC

SITE:
Former Central Plating
12 Westminster Street
Walpole, NH

Project No.: 141.05051

RANSOM Consulting, Inc.

BORING AND MONITORING WELL LOG: B210/MW202

Reviewed by:	SFR	Total Depth:	25 Feet	Logged By:	BAB
Date Reviewed:	8/14/17	Boring Diameter:	4 1/2 Inches	Date Drilled:	6-30-17 to 6-30-17
GW Observed at:	19.5 Feet	Well Stickup:	Flush	Driller:	EAI

DEPTH	DESCRIPTION (Based on a modified Burmister Soil Classification System)	SAMPLE	SAMPLE NUMBER	BLOW COUNTS (per 6 inches)	PENETRATION/ RECOVERY	PID (ppm)	DEPTH	WELL CONSTRUCTION
	S9 & S10 (20-25') Brown, fine to medium SAND, trace silt, wet.		S9			<1		
				NA	60/52			
			S10			<1		
25	End of boring 25'.						25	
30							30	
35							35	

LEGEND: Filter Sand, Native Fill, Bentonite, Bentonite Grout, Concrete, PVC Screen, Solid PVC Riser

NOTES:
1. Boring advanced using push-probe methodology.
2. OVM measured utilizing a MiniRAE 2000 PID calibrated with 100 ppmv Isobutylene.
3. Boring finished as a 2" PVC groundwater monitoring well equipped with a flush-mounted roadbox cemeneted into the pavement.
4. NA=Not applicable.

CLIENT:
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SITE:
Former Central Plating
12 Westminster Street
Walpole, NH

Project No.: 141.05051

RANSOM Consulting, Inc.

BORING LOG: B211

Reviewed By:	SFR	Total Depth:	15 Feet	Logged By:	BAB
Date Reviewed:	8/14/17	Boring Diameter:	2 1/2 Inches	Date Drilled:	6-30-17 to 6-30-17
GW Observed at:	10 Feet	Well Stickup:	NA	Driller:	EAI

DEPTH	DESCRIPTION (Based on a modified Burmister Soil Classification System)	SAMPLE	SAMPLE NUMBER	BLOW COUNTS (per 6 inches)	PENETRATION/ RECOVERY	PID (ppm)		DEPTH
	S1 (0-2.5') 2" ASPHALT, over 11" gray-brown, fine to medium SAND, some fine to medium gravel, trace silt.		S1			<1		
				NA	60/26			
	S2 (2.5-5') 4" Brown, fine to medium SAND, little silt, over 5" gray-brown, fine to medium SAND, moist.		S2			<1		
5	S3 (5-7.5') Gray-brown, fine to medium SAND, moist.		S3			1		5
	S4 (7.5-10') 7" Gray-brown, fine to medium SAND, over 6" brown, fine to medium SAND, little silt, moist.			NA	60/26			
			S4			1		
10	S5 (10-12.5') Gray-brown, fine SAND, little silt with 3" lens of black fine to coarse SAND, wet.		S5			412		10
	S6 (12.5-15') Gray-brown SILT and CLAY.			NA	60/42			
			S6			9		
15	End of boring 15'.							15

NOTES:
1. Boring advanced using push-probe methodology.
2. OVM measured utilizing a MiniRAE 2000 PID calibrated with 100 ppmv Isobutylene.
3. Sample indicate with solid fill submitted for laboratory analysis.
4. NA=Not applicable.

CLIENT:
SWRPC

SITE:
Former Central Plating
12 Westminster Street
Walpole, NH

Project No.: 141.05051

RANSOM
Consulting
Engineers
and Scientists

LOW-FLOW GROUNDWATER SAMPLING LOG

Project: Former Central Plating Project No.: 141.05051.001.07 Date: 7-17-17 Sampler(s): BAB/MKH
Site Location: Walpole, NH Well Identification: SH-2

WELL CONSTRUCTION DATA

Total Depth (feet): 23 Static Depth to Ground Water (feet): 19.04 Well Diameter (inches): 2
Measuring Point T-PVC Screened Interval: Well Stick-up (feet): Flush
Comments:

PURGING DATA

Purging Device: Peristaltic Pump Intake Set At (Feet): 21 Depth to GW after pump insertion:
Start Time: 11:02 Comments:

SAMPLE DATA

Sample Date/Time: 7/17/17/12:03 Sample Identification: SH-2 Laboratory: Alpha
Sample Analyses: ☐ EPH ☐ VPH ☐ TPH ☐ VOCs (Method ______) ☐ SVOCs ☒ Metals (Diss) ☐ PCBs ☑ Other PFCs
Comments: Metals sample is Field Filtered - SH-2 = GW-DUP@12:30

Signed by Sampler: [signature] Date: 7-17-17

~~MW~~ SH-2

RANSOM
Consulting Engineers and Scientists

3<0.5

3@5-10
3@<5

LOW-FLOW GROUNDWATER SAMPLING LOG

Time	Depth to Water (feet)	Pump Setting	Purge Rate (l/min)	Cumulative Volume Purged (liters)	Temperature ∀ 0.2 (°C)	Specific Conductivity ∀ 3% (mS/cm)	DO 10% or ∀ 0.10 (mg/L)	pH ∀ 0.1 (S.U.)	ORP ∀ 10 (mv)	Turbidity 10% (NTU)
11:02	19.04	NA	0.15		—	—	—	—	—	nm
11:18	19.25				14.80	2.390	1.91	6.00	84.1	5.1
11:23	—				14.85	2.285	1.53	6.05	67.2	5.2
11:28	19.28				15.04	2.230	1.35	6.05	57.2	5.6
11:33	—				15.01	2.138	1.08	6.06	44.0	6.0
11:38	—				15.13	2.101	1.01	6.07	33.9	5.7
11:43	19.28				14.79	2.066	0.91	6.08	29.8	5.9
11:48	19.28				14.90	2.022	0.81	6.07	25.0	5.8
11:53	19.28				14.91	1.991	0.75	6.08	20.9	5.5
11:58	19.29				14.86	1.965	0.70	6.08	17.3	5.6
12:03	19.29				14.77	1.943	0.65	6.08	15.2	5.6

Comments: NA = Not Applicable nm = Not Measured

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LOW-FLOW GROUNDWATER SAMPLING LOG

Project: Former Central Plating Project No.: 141.05051.001.07 Date: 7-17-17 Sampler(s): BAB/MKH
Site Location: Walpole, NH Well Identification: MW102

WELL CONSTRUCTION DATA

Total Depth (feet): 22 Static Depth to Ground Water (feet): *16.04/16.08 Well Diameter (inches): 2"
Measuring Point T-PVC Screened Interval: 12-22' Well Stick-up (feet): Flush
Comments: * = GW Elev Taken on 7-17: Use for Flow Calcs

PURGING DATA

Purging Device: Peristaltic Pump Intake Set At (Feet): 19½ Depth to GW after pump insertion: ______
Start Time: 13:04 Comments: ______

SAMPLE DATA

Sample Date/Time: 7-18-17/13:56 Sample Identification: MW102 Laboratory: Alpha
Sample Analyses: ☐ EPH ☐ VPH ☐ TPH ☐ VOCs (Method______) ☐ SVOCs ☒ Metals (Diss) ☐ PCBs ☒ Other PFCs + PFC-DUP
Comments: Metals sample is Field Filtered. Sample = GW-DUP2 @ 13:50 on 7-18-17

Signed by Sampler: [signature] Date: 7-18-17

MW 102

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LOW-FLOW GROUNDWATER SAMPLING LOG

Time	Depth to Water (feet)	Pump Setting	Purge Rate (l/min)	Cumulative Volume Purged (liters)	Temperature ∀ 0.2 (°C)	Specific Conductivity ∀ 3% (mS/cm)	DO 10% or ∀ 0.10 (mg/L)	pH ∀ 0.1 (S.U.)	ORP ∀ 10 (mv)	Turbidity 10% (NTU)
13:04	16.08	NA	0.15	—	—	—	—	—	—	~~NM~~
13:24	17.08				15.71	1.909	7.07	5.71	245	5.9
13:29	—				16.04	1.908	7.06	5.69	253	5.5
13:33	17.05				16.14	1.908	7.09	5.68	259	4.4
13:37	17.04				16.13	1.913	7.27	5.64	266	2.6
13:41	—				16.17	1.908	7.22	5.60	274	2.2
13:45	17.03				16.30	1.914	7.23	5.58	280	2.0
13:50					16.22	1.910	7.26	5.55	287	1.9
13:53					16.28	1.910	7.24	5.52	292	1.9
13:56					16.18	1.909	7.26	5.50	295	1.8

Comments: NA = Not Applicable NM = Not Measured

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LOW-FLOW GROUNDWATER SAMPLING LOG

Project: Former Central Plating Project No.: 141.05051.001.07 Date: 7-17-17 Sampler(s): BAB/MKH
Site Location: Walpole, NH Well Identification: MW104

WELL CONSTRUCTION DATA

Total Depth (feet): 30.0' Static Depth to Ground Water (feet): 19.19' Well Diameter (inches): 2"
Measuring Point T-PVC Screened Interval: 20 - 30' Well Stick-up (feet): Flush
Comments:

PURGING DATA

Purging Device: Peristaltic Pump Intake Set At (Feet): 25.0' Depth to GW after pump insertion: —
Start Time: 13:04 Comments:

SAMPLE DATA

Sample Date/Time: 7.17.17/14:04 Sample Identification: MW104 Laboratory: Alpha
Sample Analyses: ☐ EPH ☐ VPH ☐ TPH ☐ VOCs (Method ________) ☐ SVOCs ☒ Diss Metals ☐ PCBs ☐ Other
Comments: Metals sample is Field Filtered

Signed by Sampler: [signature] Date: 7-17-17

MW 104

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LOW-FLOW GROUNDWATER SAMPLING LOG

Time	Depth to Water (feet)	Pump Setting	Purge Rate (l/min)	Cumulative Volume Purged (liters)	Temperature ∀ 0.2 (°C)	Specific Conductivity ∀ 3% (mS/cm)	DO 10% or ∀ 0.10 (mg/L)	pH ∀ 0.1 (S.U.)	ORP ∀ 10 (mv)	Turbidity 10% (NTU)
13:04	19.19	NA			—	—	—	—	—	nm
13:36	19.23				17.64	1.014	2.95	6.42	21.4	1.71
13:40	19.23				18.11	1.008	2.41	6.41	27.4	0.83
13:44	19.24				18.46	1.014	2.38	6.42	29.4	0.82
13:48	19.24				18.82	1.024	2.38	6.42	33.5	1.49
13:52	19.24				19.29	1.035	2.41	6.40	36.5	0.80
13:56	19.24				19.07	1.070	2.67	6.37	40.3	0.77
14:00	19.25				18.68	1.094	2.78	6.36	44.3	1.01
14:04	19.25				18.95	1.099	2.66	6.36	47.3	2.83

Comments: NA = Not Applicable nm = Not Measured

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LOW-FLOW GROUNDWATER SAMPLING LOG

Project: Former Central Plating Project No.: 141.05051.001.07 Date: 7-17-17 Sampler(s): BAB/MKH
Site Location: Walpole, NH Well Identification: MW201

WELL CONSTRUCTION DATA

Total Depth (feet): 24 Static Depth to Ground Water (feet): 19.53 Well Diameter (inches): 2"
Measuring Point T-PVC Screened Interval: 24-14' Well Stick-up (feet): Flush
Comments:

PURGING DATA

Purging Device: Peristaltic Pump Intake Set At (Feet): 22' Depth to GW after pump insertion:
Start Time: 12:51 Comments:

SAMPLE DATA

Sample Date/Time: 7.17.17/1314 Sample Identification: MW201 Laboratory: Alpha
Sample Analyses: ☐EPH ☐VPH ☐TPH ☐VOCs (Method) ☐SVOCs ☒Diss Metals ☐PCBs ☐Other ~~PFCs~~ HOLD
Comments: Metals sample is Field Filtered

Signed by Sampler: [signature] Date: 7-17-17

MW 201

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*-Pump off for approx 35 min (battery)

**Due to Sun - Not GW Temp change

LOW-FLOW GROUNDWATER SAMPLING LOG

Time	Depth to Water (feet)	Pump Setting	Purge Rate (l/min)	Cumulative Volume Purged (liters)	Temperature ∀ 0.2 (ºC)	Specific Conductivity ∀ 3% (mS/cm)	DO 10% or ∀ 0.10 (mg/L)	pH ∀ 0.1 (S.U.)	ORP ∀ 10 (mv)	Turbidity 10% (NTU)
*12:51	19.53	NA	0.15		—	—	—	—	—	nm
13:26	19.62				16.12	1.783	4.95	5.80	175	3.0
13:31					16.21	1.787	4.92	5.68	186	2.7
13:36	19.62				16.29	1.776	4.82	5.62	192	3.8
13:41					**16.47	1.815	4.87	5.60	195	2.9

Comments: NA = Not Applicable nm = Not Measured

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LOW-FLOW GROUNDWATER SAMPLING LOG

Project: Former Central Plating Project No.: 141.05051.001.07 Date: 7-17-17 Sampler(s): BAB/MKH

Site Location: Walpole, NH Well Identification: MW202

WELL CONSTRUCTION DATA

Total Depth (feet): 24.55' Static Depth to Ground Water (feet): 18.17' Well Diameter (inches): 2"

Measuring Point T-PVC Screened Interval: 15-25' Well Stick-up (feet): Flush

Comments:

PURGING DATA

Purging Device: Peristaltic Pump Intake Set At (Feet): 21' Depth to GW after pump insertion: —

Start Time: 11:10 Comments:

SAMPLE DATA

Sample Date/Time: 7.17.17/12:11 Sample Identification: MW202 Laboratory: Alpha

Sample Analyses: ☐ EPH ☐ VPH ☐ TPH ☒ VOCs (Method ______) ☐ SVOCs ☒ Metals (Diss) ☐ PCBs ☐ Other

Comments: Metals sample is Field Filtered

Signed by Sampler: Megan Kreiger Date: 7-17-17

MW 202

RANSOM Consulting Engineers and Scientists

LOW-FLOW GROUNDWATER SAMPLING LOG

Time	Depth to Water (feet)	Pump Setting	Purge Rate (l/min)	Cumulative Volume Purged (liters)	Temperature ∀ 0.2 (ºC)	Specific Conductivity ∀ 3% (mS/cm)	DO 10% or ∀ 0.10 (mg/L)	pH ∀ 0.1 (S.U.)	ORP ∀ 10 (mv)	Turbidity 10% (NTU)
11:10		NA								nm
11:24	18.19				16.09	2.794	10.31	5.87	99.5	
11:28	18.19				15.31	2.777	8.42	5.35	118.7	
11:39	18.19				15.16	2.834	7.42	5.44	107.0	8.80
11:43	18.19				15.65	2.859	7.52	5.54	97.5	9.07
11:47	18.19				16.04	2.859	7.82	5.59	93.6	5.21
11:51	18.19				15.62	2.910	7.54	5.63	90.1	3.67
11:55	18.19				15.30	2.918	7.59	5.65	87.5	4.52
11:59	18.19				15.19	2.917	7.40	5.67	87.6	4.41
12:03	18.19				15.16	2.920	7.30	5.67	85.12	4.06
12:07	18.19				15.16	2.930	7.40	5.71	83.8	4.15
12:11	18.19				14.98	2.924	7.43	5.71	83.5	2.46

Comments: NA = Not Applicable nm = Not Measured

APPENDIX B

Laboratory Analytical Results

Supplemental Phase II Environmental Site Assessment and
Analyses of Brownfield Cleanup Alternatives/Remedial Action Plan
Central Plating Site
12 Westminster Street
Walpole, New Hampshire

ANALYTICAL REPORT

Lab Number:	L1722996
Client:	Ransom Consulting, Inc. 112 Corporate Drive Pease International Tradeport Portsmouth, NH 03801
ATTN:	Steve Rickerich
Phone:	(603) 436-1490
Project Name:	FORMER CENTRAL PLATING PROP.
Project Number:	141.05051.001.07
Report Date:	07/13/17

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), NJ NELAP (MA935), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-14-00197).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com

Project Name: FORMER CENTRAL PLATING PROP.
Project Number: 141.05051.001.07

Lab Number: L1722996
Report Date: 07/13/17

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1722996-01	B201-S4	SOIL	WALPOLE, NH	06/30/17 13:30	07/06/17
L1722996-02	B201-S6	SOIL	WALPOLE, NH	06/30/17 13:35	07/06/17
L1722996-03	B202-S4	SOIL	WALPOLE, NH	06/30/17 13:45	07/06/17
L1722996-04	B202-S5	SOIL	WALPOLE, NH	06/29/17 09:20	07/06/17
L1722996-05	B202-S6	SOIL	WALPOLE, NH	06/30/17 13:50	07/06/17
L1722996-06	B203-S5	SOIL	WALPOLE, NH	06/29/17 10:00	07/06/17
L1722996-07	B203-S6	SOIL	WALPOLE, NH	06/30/17 14:00	07/06/17
L1722996-08	B203-S7	SOIL	WALPOLE, NH	06/30/17 14:05	07/06/17
L1722996-09	B204-S4	SOIL	WALPOLE, NH	06/30/17 14:10	07/06/17
L1722996-10	B204-S5	SOIL	WALPOLE, NH	06/29/17 10:50	07/06/17
L1722996-11	B204-S6	SOIL	WALPOLE, NH	06/30/17 14:15	07/06/17
L1722996-12	B205-S5	SOIL	WALPOLE, NH	06/30/17 14:25	07/06/17
L1722996-13	B205-S6	SOIL	WALPOLE, NH	06/30/17 14:30	07/06/17
L1722996-14	B206-S3	SOIL	WALPOLE, NH	06/30/17 14:40	07/06/17
L1722996-15	B206-S6	SOIL	WALPOLE, NH	06/29/17 12:30	07/06/17
L1722996-16	B207-S6/S7	SOIL	WALPOLE, NH	06/29/17 13:10	07/06/17
L1722996-17	B207-S8	SOIL	WALPOLE, NH	06/30/17 14:50	07/06/17
L1722996-18	B208-S6/S7	SOIL	WALPOLE, NH	06/29/17 14:00	07/06/17
L1722996-19	B208-S8	SOIL	WALPOLE, NH	06/30/17 15:00	07/06/17
L1722996-20	B209-S5	SOIL	WALPOLE, NH	06/30/17 10:00	07/06/17
L1722996-21	B209-S9	SOIL	WALPOLE, NH	06/30/17 15:08	07/06/17
L1722996-22	B209-S10	SOIL	WALPOLE, NH	06/30/17 15:10	07/06/17
L1722996-23	B211-S1	SOIL	WALPOLE, NH	06/30/17 12:30	07/06/17
L1722996-24	B211-S6	SOIL	WALPOLE, NH	06/30/17 12:45	07/06/17

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1722996-25	DUP-01	SOIL	WALPOLE, NH	06/30/17 16:00	07/06/17
L1722996-26	DUP-02	SOIL	WALPOLE, NH	06/30/17 16:10	07/06/17
L1722996-27	DUP-03	SOIL	WALPOLE, NH	06/30/17 16:20	07/06/17
L1722996-28	DUP-04	SOIL	WALPOLE, NH	06/30/17 16:30	07/06/17

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. All specific QC information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications. Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances the specific failure is not narrated but noted in the associated QC table. The information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

HOLD POLICY

For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Client Service Representative and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Client Services at 800-624-9220 with any questions.

Project Name: FORMER CENTRAL PLATING PROP. **Lab Number:** L1722996
Project Number: 141.05051.001.07 **Report Date:** 07/13/17

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Total Metals

The WG1020618-3 MS recovery for chromium (0%), performed on L1722996-01, does not apply because the sample concentration is greater than four times the spike amount added.

Hexavalent Chromium

The WG1020723-2 LCS recovery (73%), associated with L1722996-01, -04, -07, -09, -12, -16 and -27, is below our in-house acceptance criteria, but within the vendor-certified acceptance limits. The results of the original analyses are reported.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Michelle M. Morris

Title: Technical Director/Representative Date: 07/13/17

METALS

Project Name:	FORMER CENTRAL PLATING PROP.	**Lab Number:**	L1722996
Project Number:	141.05051.001.07	**Report Date:**	07/13/17

SAMPLE RESULTS

Lab ID:	L1722996-01	Date Collected:	06/30/17 13:30
Client ID:	B201-S4	Date Received:	07/06/17
Sample Location:	WALPOLE, NH	Field Prep:	Not Specified
Matrix:	Soil		
Percent Solids:	91%		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Chromium, Total	939		mg/kg	0.434	0.042	1	07/07/17 21:25	07/10/17 19:22	EPA 3050B	1,6010C	MC

Project Name:	FORMER CENTRAL PLATING PROP.	**Lab Number:**	L1722996
Project Number:	141.05051.001.07	**Report Date:**	07/13/17

SAMPLE RESULTS

Lab ID:	L1722996-04	Date Collected:	06/29/17 09:20
Client ID:	B202-S5	Date Received:	07/06/17
Sample Location:	WALPOLE, NH	Field Prep:	Not Specified
Matrix:	Soil		
Percent Solids:	86%		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Chromium, Total	1560		mg/kg	0.446	0.043	1	07/07/17 21:25	07/10/17 19:38	EPA 3050B	1,6010C	MC

Project Name: FORMER CENTRAL PLATING PROP.
Lab Number: L1722996
Project Number: 141.05051.001.07
Report Date: 07/13/17

SAMPLE RESULTS

Lab ID: L1722996-05
Date Collected: 06/30/17 13:50
Client ID: B202-S6
Date Received: 07/06/17
Sample Location: WALPOLE, NH
Field Prep: Not Specified
Matrix: Soil
TCLP/SPLP Ext. Date: 07/07/17 16:06

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
SPLP Metals by EPA 1312 - Mansfield Lab											
Chromium, SPLP	0.313		mg/l	0.010	0.002	1	07/11/17 17:26	07/11/17 20:23	EPA 3005A	1,6010C	AB

Project Name:	FORMER CENTRAL PLATING PROP.	**Lab Number:**	L1722996
Project Number:	141.05051.001.07	**Report Date:**	07/13/17

SAMPLE RESULTS

Lab ID:	L1722996-07	Date Collected:	06/30/17 14:00
Client ID:	B203-S6	Date Received:	07/06/17
Sample Location:	WALPOLE, NH	Field Prep:	Not Specified
Matrix:	Soil		
Percent Solids:	74%		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Chromium, Total	456		mg/kg	0.536	0.052	1	07/07/17 21:25	07/10/17 19:42	EPA 3050B	1,6010C	MC

Project Name: FORMER CENTRAL PLATING PROP. **Lab Number:** L1722996
Project Number: 141.05051.001.07 **Report Date:** 07/13/17

SAMPLE RESULTS

Lab ID:	L1722996-08	Date Collected:	06/30/17 14:05
Client ID:	B203-S7	Date Received:	07/06/17
Sample Location:	WALPOLE, NH	Field Prep:	Not Specified
Matrix:	Soil	TCLP/SPLP Ext. Date:	07/07/17 16:06
Percent Solids:	73%		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
SPLP Metals by EPA 1312 - Mansfield Lab											
Chromium, SPLP	2.26		mg/l	0.010	0.002	1	07/11/17 17:26	07/11/17 20:58	EPA 3005A	1,6010C	AB

Project Name:	FORMER CENTRAL PLATING PROP.	**Lab Number:**	L1722996
Project Number:	141.05051.001.07	**Report Date:**	07/13/17

SAMPLE RESULTS

Lab ID:	L1722996-08	Date Collected:	06/30/17 14:05
Client ID:	B203-S7	Date Received:	07/06/17
Sample Location:	WALPOLE, NH	Field Prep:	Not Specified
Matrix:	Soil		
Percent Solids:	73%		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Chromium, Total	239		mg/kg	0.540	0.052	1	07/07/17 21:25	07/10/17 20:01	EPA 3050B	1,6010C	MC

Project Name:	FORMER CENTRAL PLATING PROP.	**Lab Number:**	L1722996
Project Number:	141.05051.001.07	**Report Date:**	07/13/17

SAMPLE RESULTS

Lab ID:	L1722996-09	Date Collected:	06/30/17 14:10
Client ID:	B204-S4	Date Received:	07/06/17
Sample Location:	WALPOLE, NH	Field Prep:	Not Specified
Matrix:	Soil		
Percent Solids:	88%		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	3.19		mg/kg	0.443	0.092	1	07/07/17 21:25	07/10/17 20:05	EPA 3050B	1,6010C	MC
Barium, Total	16.5		mg/kg	0.443	0.077	1	07/07/17 21:25	07/10/17 20:05	EPA 3050B	1,6010C	MC
Cadmium, Total	3.15		mg/kg	0.443	0.043	1	07/07/17 21:25	07/10/17 20:05	EPA 3050B	1,6010C	MC
Chromium, Total	415		mg/kg	0.443	0.043	1	07/07/17 21:25	07/10/17 20:05	EPA 3050B	1,6010C	MC
Lead, Total	6.54		mg/kg	2.21	0.119	1	07/07/17 21:25	07/10/17 20:05	EPA 3050B	1,6010C	MC
Mercury, Total	ND		mg/kg	0.08	0.02	1	07/08/17 09:00	07/10/17 13:48	EPA 7471B	1,7471B	MG
Nickel, Total	50.3		mg/kg	1.11	0.107	1	07/07/17 21:25	07/10/17 20:05	EPA 3050B	1,6010C	MC
Selenium, Total	ND		mg/kg	0.886	0.114	1	07/07/17 21:25	07/10/17 20:05	EPA 3050B	1,6010C	MC
Silver, Total	ND		mg/kg	0.443	0.125	1	07/07/17 21:25	07/10/17 20:05	EPA 3050B	1,6010C	MC

Project Name: FORMER CENTRAL PLATING PROP.
Lab Number: L1722996
Project Number: 141.05051.001.07
Report Date: 07/13/17

SAMPLE RESULTS

Lab ID: L1722996-10
Client ID: B204-S5
Sample Location: WALPOLE, NH
Matrix: Soil
Date Collected: 06/29/17 10:50
Date Received: 07/06/17
Field Prep: Not Specified
TCLP/SPLP Ext. Date: 07/07/17 16:06

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
SPLP Metals by EPA 1312 - Mansfield Lab											
Chromium, SPLP	ND		mg/l	0.010	0.002	1	07/11/17 17:26	07/11/17 21:03	EPA 3005A	1,6010C	AB

Project Name: FORMER CENTRAL PLATING PROP. **Lab Number:** L1722996

Project Number: 141.05051.001.07 **Report Date:** 07/13/17

SAMPLE RESULTS

Lab ID: L1722996-12
Client ID: B205-S5
Sample Location: WALPOLE, NH
Matrix: Soil
Percent Solids: 83%

Date Collected: 06/30/17 14:25
Date Received: 07/06/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	ND		mg/kg	0.464	0.097	1	07/07/17 21:25	07/10/17 20:09	EPA 3050B	1,6010C	MC
Barium, Total	53.0		mg/kg	0.464	0.081	1	07/07/17 21:25	07/10/17 20:09	EPA 3050B	1,6010C	MC
Cadmium, Total	2.20		mg/kg	0.464	0.046	1	07/07/17 21:25	07/10/17 20:09	EPA 3050B	1,6010C	MC
Chromium, Total	3920		mg/kg	4.64	0.446	10	07/07/17 21:25	07/10/17 23:31	EPA 3050B	1,6010C	MC
Lead, Total	146		mg/kg	2.32	0.124	1	07/07/17 21:25	07/10/17 20:09	EPA 3050B	1,6010C	MC
Mercury, Total	0.41		mg/kg	0.08	0.02	1	07/08/17 09:00	07/10/17 13:50	EPA 7471B	1,7471B	MG
Nickel, Total	181		mg/kg	1.16	0.112	1	07/07/17 21:25	07/10/17 20:09	EPA 3050B	1,6010C	MC
Selenium, Total	0.200	J	mg/kg	0.928	0.120	1	07/07/17 21:25	07/10/17 20:09	EPA 3050B	1,6010C	MC
Silver, Total	ND		mg/kg	0.464	0.131	1	07/07/17 21:25	07/10/17 20:09	EPA 3050B	1,6010C	MC

Project Name:	FORMER CENTRAL PLATING PROP.	**Lab Number:**	L1722996
Project Number:	141.05051.001.07	**Report Date:**	07/13/17

SAMPLE RESULTS

Lab ID:	L1722996-14	Date Collected:	06/30/17 14:40
Client ID:	B206-S3	Date Received:	07/06/17
Sample Location:	WALPOLE, NH	Field Prep:	Not Specified
Matrix:	Soil		
Percent Solids:	92%		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	3.36		mg/kg	0.432	0.090	1	07/07/17 21:25	07/10/17 20:13	EPA 3050B	1,6010C	MC
Barium, Total	13.3		mg/kg	0.432	0.075	1	07/07/17 21:25	07/10/17 20:13	EPA 3050B	1,6010C	MC
Cadmium, Total	0.380	J	mg/kg	0.432	0.042	1	07/07/17 21:25	07/10/17 20:13	EPA 3050B	1,6010C	MC
Chromium, Total	217		mg/kg	0.432	0.042	1	07/07/17 21:25	07/10/17 20:13	EPA 3050B	1,6010C	MC
Lead, Total	14.4		mg/kg	2.16	0.116	1	07/07/17 21:25	07/10/17 20:13	EPA 3050B	1,6010C	MC
Mercury, Total	ND		mg/kg	0.07	0.02	1	07/08/17 09:00	07/10/17 13:52	EPA 7471B	1,7471B	MG
Nickel, Total	14.8		mg/kg	1.08	0.104	1	07/07/17 21:25	07/10/17 20:13	EPA 3050B	1,6010C	MC
Selenium, Total	ND		mg/kg	0.864	0.111	1	07/07/17 21:25	07/10/17 20:13	EPA 3050B	1,6010C	MC
Silver, Total	ND		mg/kg	0.432	0.122	1	07/07/17 21:25	07/10/17 20:13	EPA 3050B	1,6010C	MC

Project Name:	FORMER CENTRAL PLATING PROP.	**Lab Number:**	L1722996
Project Number:	141.05051.001.07	**Report Date:**	07/13/17

SAMPLE RESULTS

Lab ID:	L1722996-15	Date Collected:	06/29/17 12:30
Client ID:	B206-S6	Date Received:	07/06/17
Sample Location:	WALPOLE, NH	Field Prep:	Not Specified
Matrix:	Soil	TCLP/SPLP Ext. Date:	07/07/17 16:06

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
SPLP Metals by EPA 1312 - Mansfield Lab											
Cadmium, SPLP	0.002	J	mg/l	0.005	0.001	1	07/11/17 17:26	07/11/17 21:08	EPA 3005A	1,6010C	AB
Chromium, SPLP	0.104		mg/l	0.010	0.002	1	07/11/17 17:26	07/11/17 21:08	EPA 3005A	1,6010C	AB
Nickel, SPLP	0.034		mg/l	0.025	0.004	1	07/11/17 17:26	07/11/17 21:08	EPA 3005A	1,6010C	AB

Project Name: FORMER CENTRAL PLATING PROP. **Lab Number:** L1722996
Project Number: 141.05051.001.07 **Report Date:** 07/13/17

SAMPLE RESULTS

Lab ID: L1722996-16
Client ID: B207-S6/S7
Sample Location: WALPOLE, NH
Matrix: Soil
Percent Solids: 87%

Date Collected: 06/29/17 13:10
Date Received: 07/06/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	2.58		mg/kg	0.439	0.091	1	07/07/17 21:25	07/10/17 20:17	EPA 3050B	1,6010C	MC
Barium, Total	16.6		mg/kg	0.439	0.076	1	07/07/17 21:25	07/10/17 20:17	EPA 3050B	1,6010C	MC
Cadmium, Total	1.72		mg/kg	0.439	0.043	1	07/07/17 21:25	07/10/17 20:17	EPA 3050B	1,6010C	MC
Chromium, Total	711		mg/kg	0.439	0.042	1	07/07/17 21:25	07/10/17 20:17	EPA 3050B	1,6010C	MC
Lead, Total	12.6		mg/kg	2.19	0.118	1	07/07/17 21:25	07/10/17 20:17	EPA 3050B	1,6010C	MC
Mercury, Total	ND		mg/kg	0.07	0.02	1	07/08/17 09:00	07/10/17 13:54	EPA 7471B	1,7471B	MG
Nickel, Total	93.4		mg/kg	1.10	0.106	1	07/07/17 21:25	07/10/17 20:17	EPA 3050B	1,6010C	MC
Selenium, Total	0.430	J	mg/kg	0.878	0.113	1	07/07/17 21:25	07/10/17 20:17	EPA 3050B	1,6010C	MC
Silver, Total	0.233	J	mg/kg	0.439	0.124	1	07/07/17 21:25	07/10/17 20:17	EPA 3050B	1,6010C	MC

Project Name: FORMER CENTRAL PLATING PROP. **Lab Number:** L1722996
Project Number: 141.05051.001.07 **Report Date:** 07/13/17

SAMPLE RESULTS

Lab ID:	L1722996-17	Date Collected:	06/30/17 14:50
Client ID:	B207-S8	Date Received:	07/06/17
Sample Location:	WALPOLE, NH	Field Prep:	Not Specified
Matrix:	Soil	TCLP/SPLP Ext. Date:	07/07/17 16:06

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
SPLP Metals by EPA 1312 - Mansfield Lab											
Cadmium, SPLP	ND		mg/l	0.005	0.001	1	07/11/17 17:26	07/11/17 21:13	EPA 3005A	1,6010C	AB
Chromium, SPLP	1.30		mg/l	0.010	0.002	1	07/11/17 17:26	07/11/17 21:13	EPA 3005A	1,6010C	AB
Nickel, SPLP	ND		mg/l	0.025	0.004	1	07/11/17 17:26	07/11/17 21:13	EPA 3005A	1,6010C	AB

Project Name:	FORMER CENTRAL PLATING PROP.	**Lab Number:**	L1722996
Project Number:	141.05051.001.07	**Report Date:**	07/13/17

SAMPLE RESULTS

Lab ID:	L1722996-18	Date Collected:	06/29/17 14:00
Client ID:	B208-S6/S7	Date Received:	07/06/17
Sample Location:	WALPOLE, NH	Field Prep:	Not Specified
Matrix:	Soil	TCLP/SPLP Ext. Date:	07/07/17 16:06
Percent Solids:	91%		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
SPLP Metals by EPA 1312 - Mansfield Lab											
Cadmium, SPLP	ND		mg/l	0.005	0.001	1	07/11/17 17:26	07/11/17 21:17	EPA 3005A	1,6010C	AB
Nickel, SPLP	0.004	J	mg/l	0.025	0.004	1	07/11/17 17:26	07/11/17 21:17	EPA 3005A	1,6010C	AB

Project Name:	FORMER CENTRAL PLATING PROP.	**Lab Number:**	L1722996
Project Number:	141.05051.001.07	**Report Date:**	07/13/17

SAMPLE RESULTS

Lab ID:	L1722996-18	Date Collected:	06/29/17 14:00
Client ID:	B208-S6/S7	Date Received:	07/06/17
Sample Location:	WALPOLE, NH	Field Prep:	Not Specified
Matrix:	Soil		
Percent Solids:	91%		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	4.40		mg/kg	0.424	0.088	1	07/07/17 21:25	07/10/17 20:21	EPA 3050B	1,6010C	MC
Barium, Total	34.4		mg/kg	0.424	0.074	1	07/07/17 21:25	07/10/17 20:21	EPA 3050B	1,6010C	MC
Cadmium, Total	0.734		mg/kg	0.424	0.042	1	07/07/17 21:25	07/10/17 20:21	EPA 3050B	1,6010C	MC
Chromium, Total	79.6		mg/kg	0.424	0.041	1	07/07/17 21:25	07/10/17 20:21	EPA 3050B	1,6010C	MC
Lead, Total	11.8		mg/kg	2.12	0.114	1	07/07/17 21:25	07/10/17 20:21	EPA 3050B	1,6010C	MC
Mercury, Total	ND		mg/kg	0.07	0.02	1	07/08/17 09:00	07/10/17 13:56	EPA 7471B	1,7471B	MG
Nickel, Total	29.7		mg/kg	1.06	0.103	1	07/07/17 21:25	07/10/17 20:21	EPA 3050B	1,6010C	MC
Selenium, Total	0.157	J	mg/kg	0.848	0.109	1	07/07/17 21:25	07/10/17 20:21	EPA 3050B	1,6010C	MC
Silver, Total	ND		mg/kg	0.424	0.120	1	07/07/17 21:25	07/10/17 20:21	EPA 3050B	1,6010C	MC

Project Name: FORMER CENTRAL PLATING PROP.
Lab Number: L1722996
Project Number: 141.05051.001.07
Report Date: 07/13/17

SAMPLE RESULTS

Lab ID: L1722996-21
Date Collected: 06/30/17 15:08
Client ID: B209-S9
Date Received: 07/06/17
Sample Location: WALPOLE, NH
Field Prep: Not Specified
Matrix: Soil
Percent Solids: 80%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	3.81		mg/kg	0.496	0.103	1	07/07/17 21:25	07/10/17 20:25	EPA 3050B	1,6010C	MC
Barium, Total	34.5		mg/kg	0.496	0.086	1	07/07/17 21:25	07/10/17 20:25	EPA 3050B	1,6010C	MC
Cadmium, Total	0.853		mg/kg	0.496	0.049	1	07/07/17 21:25	07/10/17 20:25	EPA 3050B	1,6010C	MC
Chromium, Total	257		mg/kg	0.496	0.048	1	07/07/17 21:25	07/10/17 20:25	EPA 3050B	1,6010C	MC
Lead, Total	5.44		mg/kg	2.48	0.133	1	07/07/17 21:25	07/10/17 20:25	EPA 3050B	1,6010C	MC
Mercury, Total	ND		mg/kg	0.08	0.02	1	07/08/17 09:00	07/10/17 13:58	EPA 7471B	1,7471B	MG
Nickel, Total	30.0		mg/kg	1.24	0.120	1	07/07/17 21:25	07/10/17 20:25	EPA 3050B	1,6010C	MC
Selenium, Total	ND		mg/kg	0.991	0.128	1	07/07/17 21:25	07/10/17 20:25	EPA 3050B	1,6010C	MC
Silver, Total	ND		mg/kg	0.496	0.140	1	07/07/17 21:25	07/10/17 20:25	EPA 3050B	1,6010C	MC

Project Name: FORMER CENTRAL PLATING PROP.
Lab Number: L1722996
Project Number: 141.05051.001.07
Report Date: 07/13/17

SAMPLE RESULTS

Lab ID: L1722996-25
Client ID: DUP-01
Sample Location: WALPOLE, NH
Matrix: Soil
Date Collected: 06/30/17 16:00
Date Received: 07/06/17
Field Prep: Not Specified
TCLP/SPLP Ext. Date: 07/07/17 16:06

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
SPLP Metals by EPA 1312 - Mansfield Lab											
Cadmium, SPLP	0.008		mg/l	0.005	0.001	1	07/11/17 17:26	07/11/17 21:22	EPA 3005A	1,6010C	AB
Chromium, SPLP	0.126		mg/l	0.010	0.002	1	07/11/17 17:26	07/11/17 21:22	EPA 3005A	1,6010C	AB
Nickel, SPLP	0.125		mg/l	0.025	0.004	1	07/11/17 17:26	07/11/17 21:22	EPA 3005A	1,6010C	AB

Project Name: FORMER CENTRAL PLATING PROP.
Lab Number: L1722996
Project Number: 141.05051.001.07
Report Date: 07/13/17

SAMPLE RESULTS

Lab ID: L1722996-26
Client ID: DUP-02
Sample Location: WALPOLE, NH
Matrix: Soil
Percent Solids: 87%

Date Collected: 06/30/17 16:10
Date Received: 07/06/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	2.60		mg/kg	0.458	0.095	1	07/07/17 21:25	07/10/17 20:29	EPA 3050B	1,6010C	MC
Barium, Total	20.6		mg/kg	0.458	0.080	1	07/07/17 21:25	07/10/17 20:29	EPA 3050B	1,6010C	MC
Cadmium, Total	2.12		mg/kg	0.458	0.045	1	07/07/17 21:25	07/10/17 20:29	EPA 3050B	1,6010C	MC
Chromium, Total	786		mg/kg	0.458	0.044	1	07/07/17 21:25	07/10/17 20:29	EPA 3050B	1,6010C	MC
Lead, Total	15.4		mg/kg	2.29	0.123	1	07/07/17 21:25	07/10/17 20:29	EPA 3050B	1,6010C	MC
Mercury, Total	ND		mg/kg	0.07	0.02	1	07/08/17 09:00	07/10/17 13:59	EPA 7471B	1,7471B	MG
Nickel, Total	112		mg/kg	1.14	0.111	1	07/07/17 21:25	07/10/17 20:29	EPA 3050B	1,6010C	MC
Selenium, Total	0.596	J	mg/kg	0.917	0.118	1	07/07/17 21:25	07/10/17 20:29	EPA 3050B	1,6010C	MC
Silver, Total	0.321	J	mg/kg	0.458	0.130	1	07/07/17 21:25	07/10/17 20:29	EPA 3050B	1,6010C	MC

Project Name: FORMER CENTRAL PLATING PROP. **Lab Number:** L1722996
Project Number: 141.05051.001.07 **Report Date:** 07/13/17

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01,04,07-09,12,14,16,18,21,26 Batch: WG1020618-1										
Arsenic, Total	0.184	J	mg/kg	0.400	0.083	1	07/07/17 21:25	07/10/17 19:10	1,6010C	AB
Barium, Total	ND		mg/kg	0.400	0.070	1	07/07/17 21:25	07/10/17 19:10	1,6010C	AB
Cadmium, Total	ND		mg/kg	0.400	0.039	1	07/07/17 21:25	07/10/17 19:10	1,6010C	AB
Chromium, Total	ND		mg/kg	0.400	0.038	1	07/07/17 21:25	07/10/17 19:10	1,6010C	AB
Lead, Total	ND		mg/kg	2.00	0.107	1	07/07/17 21:25	07/10/17 19:10	1,6010C	AB
Nickel, Total	ND		mg/kg	1.00	0.097	1	07/07/17 21:25	07/10/17 19:10	1,6010C	AB
Selenium, Total	ND		mg/kg	0.800	0.103	1	07/07/17 21:25	07/10/17 19:10	1,6010C	AB
Silver, Total	ND		mg/kg	0.400	0.113	1	07/07/17 21:25	07/10/17 19:10	1,6010C	AB

Prep Information

Digestion Method: EPA 3050B

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 09,12,14,16,18,21,26 Batch: WG1020676-1										
Mercury, Total	ND		mg/kg	0.08	0.02	1	07/08/17 09:00	07/10/17 12:58	1,7471B	MG

Prep Information

Digestion Method: EPA 7471B

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
SPLP Metals by EPA 1312 - Mansfield Lab for sample(s): 05,08,10,15,17-18,25 Batch: WG1021511-1										
Cadmium, SPLP	ND		mg/l	0.005	0.001	1	07/11/17 17:26	07/11/17 19:49	1,6010C	AB
Chromium, SPLP	ND		mg/l	0.010	0.002	1	07/11/17 17:26	07/11/17 19:49	1,6010C	AB
Nickel, SPLP	ND		mg/l	0.025	0.004	1	07/11/17 17:26	07/11/17 19:49	1,6010C	AB

Prep Information

Digestion Method: EPA 3005A

TCLP/SPLP Extraction Date: 07/07/17 16:06

Lab Control Sample Analysis
Batch Quality Control

Project Name: FORMER CENTRAL PLATING PROP.
Lab Number: L1722996
Project Number: 141.05051.001.07
Report Date: 07/13/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01,04,07-09,12,14,16,18,21,26 Batch: WG1020618-2 SRM Lot Number: D093-540								
Arsenic, Total	104		-		70-130	-		
Barium, Total	84		-		83-117	-		
Cadmium, Total	94		-		83-117	-		
Chromium, Total	92		-		80-120	-		
Lead, Total	94		-		82-117	-		
Nickel, Total	93		-		83-117	-		
Selenium, Total	92		-		78-122	-		
Silver, Total	91		-		76-124	-		
Total Metals - Mansfield Lab Associated sample(s): 09,12,14,16,18,21,26 Batch: WG1020676-2 SRM Lot Number: D093-540								
Mercury, Total	99		-		72-128	-		
SPLP Metals by EPA 1312 - Mansfield Lab Associated sample(s): 05,08,10,15,17-18,25 Batch: WG1021511-2								
Cadmium, SPLP	102		-		80-120	-		
Chromium, SPLP	102		-		80-120	-		
Nickel, SPLP	98		-		80-120	-		

Matrix Spike Analysis
Batch Quality Control

Project Name: FORMER CENTRAL PLATING PROP.
Project Number: 141.05051.001.07
Lab Number: L1722996
Report Date: 07/13/17

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01,04,07-09,12,14,16,18,21,26 QC Batch ID: WG1020618-3 QC Sample: L1722996-01 Client ID: B201-S4												
Arsenic, Total	2.58	10.2	11.9	92		-	-		75-125	-		20
Barium, Total	11.6	169	152	83		-	-		75-125	-		20
Cadmium, Total	0.576	4.32	4.19	84		-	-		75-125	-		20
Chromium, Total	939.	16.9	845	**0**	Q	-	-		75-125	-		20
Lead, Total	4.97	43.2	39.2	79		-	-		75-125	-		20
Nickel, Total	13.5	42.3	46.0	77		-	-		75-125	-		20
Selenium, Total	ND	10.2	9.07	89		-	-		75-125	-		20
Silver, Total	ND	25.4	21.9	86		-	-		75-125	-		20
Total Metals - Mansfield Lab Associated sample(s): 09,12,14,16,18,21,26 QC Batch ID: WG1020676-3 QC Sample: L1722943-01 Client ID: MS Sample												
Mercury, Total	1.1	0.151	1.3	**132**	Q	-	-		80-120	-		20
SPLP Metals by EPA 1312 - Mansfield Lab Associated sample(s): 05,08,10,15,17-18,25 QC Batch ID: WG1021511-3 QC Sample: L1722996-05 Client ID: B202-S6												
Cadmium, SPLP	ND	0.051	0.050	99		-	-		75-125	-		20
Chromium, SPLP	0.313	0.2	0.511	99		-	-		75-125	-		20
Nickel, SPLP	0.006J	0.5	0.480	96		-	-		75-125	-		20

Lab Duplicate Analysis

Batch Quality Control

Project Name: FORMER CENTRAL PLATING PROP.

Project Number: 141.05051.001.07

Lab Number: L1722996

Report Date: 07/13/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01,04,07-09,12,14,16,18,21,26 QC Batch ID: WG1020618-4 QC Sample: L1722996-01 Client ID: B201-S4						
Chromium, Total	939.	852	mg/kg	10		20
Total Metals - Mansfield Lab Associated sample(s): 09,12,14,16,18,21,26 QC Batch ID: WG1020676-4 QC Sample: L1722943-01 Client ID: DUP Sample						
Mercury, Total	1.1	2.1	mg/kg	**63**	Q	20
SPLP Metals by EPA 1312 - Mansfield Lab Associated sample(s): 05,08,10,15,17-18,25 QC Batch ID: WG1021511-4 QC Sample: L1722996-05 Client ID: B202-S6						
Chromium, SPLP	0.313	0.320	mg/l	2		20

INORGANICS
&
MISCELLANEOUS

Project Name: FORMER CENTRAL PLATING PROP.
Lab Number: L1722996
Project Number: 141.05051.001.07
Report Date: 07/13/17

SAMPLE RESULTS

Lab ID: L1722996-01
Client ID: B201-S4
Sample Location: WALPOLE, NH
Matrix: Soil
Date Collected: 06/30/17 13:30
Date Received: 07/06/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	91.1		%	0.100	NA	1	-	07/07/17 12:15	121,2540G	RI
Chromium, Hexavalent	420		mg/kg	22	4.4	25	07/08/17 07:26	07/09/17 20:16	1,7196A	RP

Project Name: FORMER CENTRAL PLATING PROP.
Lab Number: L1722996
Project Number: 141.05051.001.07
Report Date: 07/13/17

SAMPLE RESULTS

Lab ID: L1722996-04
Client ID: B202-S5
Sample Location: WALPOLE, NH
Matrix: Soil

Date Collected: 06/29/17 09:20
Date Received: 07/06/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	86.2		%	0.100	NA	1	-	07/07/17 12:15	121,2540G	RI
Chromium, Hexavalent	180		mg/kg	23	4.6	25	07/08/17 07:26	07/09/17 20:17	1,7196A	RP

Project Name: FORMER CENTRAL PLATING PROP.
Lab Number: L1722996
Project Number: 141.05051.001.07
Report Date: 07/13/17

SAMPLE RESULTS

Lab ID: L1722996-07
Client ID: B203-S6
Sample Location: WALPOLE, NH
Matrix: Soil
Date Collected: 06/30/17 14:00
Date Received: 07/06/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	73.7		%	0.100	NA	1	-	07/07/17 12:15	121,2540G	RI
Chromium, Hexavalent	150		mg/kg	11	2.2	10	07/08/17 07:26	07/09/17 20:17	1,7196A	RP

Project Name: FORMER CENTRAL PLATING PROP.
Lab Number: L1722996
Project Number: 141.05051.001.07
Report Date: 07/13/17

SAMPLE RESULTS

Lab ID: L1722996-08
Client ID: B203-S7
Sample Location: WALPOLE, NH
Matrix: Soil
Date Collected: 06/30/17 14:05
Date Received: 07/06/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	72.5		%	0.100	NA	1	-	07/07/17 12:15	121,2540G	RI

Project Name: FORMER CENTRAL PLATING PROP. **Lab Number:** L1722996
Project Number: 141.05051.001.07 **Report Date:** 07/13/17

SAMPLE RESULTS

Lab ID: L1722996-09
Client ID: B204-S4
Sample Location: WALPOLE, NH
Matrix: Soil

Date Collected: 06/30/17 14:10
Date Received: 07/06/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	87.6		%	0.100	NA	1	-	07/07/17 12:15	121,2540G	RI
Chromium, Hexavalent	100		mg/kg	9.1	1.8	10	07/08/17 07:26	07/09/17 20:18	1,7196A	RP

Project Name: FORMER CENTRAL PLATING PROP. **Lab Number:** L1722996
Project Number: 141.05051.001.07 **Report Date:** 07/13/17

SAMPLE RESULTS

Lab ID: L1722996-12
Client ID: B205-S5
Sample Location: WALPOLE, NH
Matrix: Soil
Date Collected: 06/30/17 14:25
Date Received: 07/06/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.1		%	0.100	NA	1	-	07/07/17 12:15	121,2540G	RI
Chromium, Hexavalent	450		mg/kg	48	9.6	50	07/08/17 07:26	07/09/17 20:18	1,7196A	RP

Project Name: FORMER CENTRAL PLATING PROP.
Lab Number: L1722996
Project Number: 141.05051.001.07
Report Date: 07/13/17

SAMPLE RESULTS

Lab ID: L1722996-14
Client ID: B206-S3
Sample Location: WALPOLE, NH
Matrix: Soil
Date Collected: 06/30/17 14:40
Date Received: 07/06/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	92.3		%	0.100	NA	1	-	07/07/17 12:15	121,2540G	RI

Project Name: FORMER CENTRAL PLATING PROP.
Lab Number: L1722996
Project Number: 141.05051.001.07
Report Date: 07/13/17

SAMPLE RESULTS

Lab ID: L1722996-16
Client ID: B207-S6/S7
Sample Location: WALPOLE, NH
Matrix: Soil
Date Collected: 06/29/17 13:10
Date Received: 07/06/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	87.3		%	0.100	NA	1	-	07/07/17 12:15	121,2540G	RI
Chromium, Hexavalent	320		mg/kg	23	4.6	25	07/08/17 07:26	07/09/17 20:18	1,7196A	RP

Project Name: FORMER CENTRAL PLATING PROP.
Lab Number: L1722996
Project Number: 141.05051.001.07
Report Date: 07/13/17

SAMPLE RESULTS

Lab ID: L1722996-18
Client ID: B208-S6/S7
Sample Location: WALPOLE, NH
Matrix: Soil
Date Collected: 06/29/17 14:00
Date Received: 07/06/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	91.0		%	0.100	NA	1	-	07/07/17 12:15	121,2540G	RI

Project Name: FORMER CENTRAL PLATING PROP.
Lab Number: L1722996
Project Number: 141.05051.001.07
Report Date: 07/13/17

SAMPLE RESULTS

Lab ID: L1722996-21
Client ID: B209-S9
Sample Location: WALPOLE, NH
Matrix: Soil
Date Collected: 06/30/17 15:08
Date Received: 07/06/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	79.8		%	0.100	NA	1	-	07/07/17 12:15	121,2540G	RI

Project Name: FORMER CENTRAL PLATING PROP. **Lab Number:** L1722996
Project Number: 141.05051.001.07 **Report Date:** 07/13/17

SAMPLE RESULTS

Lab ID: L1722996-26
Client ID: DUP-02
Sample Location: WALPOLE, NH
Matrix: Soil

Date Collected: 06/30/17 16:10
Date Received: 07/06/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	87.2		%	0.100	NA	1	-	07/11/17 13:02	121,2540G	RI

Project Name: FORMER CENTRAL PLATING PROP.
Lab Number: L1722996
Project Number: 141.05051.001.07
Report Date: 07/13/17

SAMPLE RESULTS

Lab ID: L1722996-27
Client ID: DUP-03
Sample Location: WALPOLE, NH
Matrix: Soil

Date Collected: 06/30/17 16:20
Date Received: 07/06/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	89.0		%	0.100	NA	1	-	07/07/17 12:15	121,2540G	RI
Chromium, Hexavalent	330		mg/kg	45	9.0	50	07/08/17 07:26	07/09/17 20:19	1,7196A	RP

Project Name: FORMER CENTRAL PLATING PROP. **Lab Number:** L1722996

Project Number: 141.05051.001.07 **Report Date:** 07/13/17

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab for sample(s): 01,04,07,09,12,16,27 Batch: WG1020723-1										
Chromium, Hexavalent	ND		mg/kg	0.80	0.16	1	07/08/17 07:26	07/09/17 20:08	1,7196A	RP

Lab Control Sample Analysis
Batch Quality Control

Project Name: FORMER CENTRAL PLATING PROP.
Project Number: 141.05051.001.07
Lab Number: L1722996
Report Date: 07/13/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01,04,07,09,12,16,27 Batch: WG1020723-2								
Chromium, Hexavalent	**73**	Q	-		80-120	-		20

Matrix Spike Analysis
Batch Quality Control

Project Name: FORMER CENTRAL PLATING PROP.
Project Number: 141.05051.001.07
Lab Number: L1722996
Report Date: 07/13/17

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01,04,07,09,12,16,27 QC Batch ID: WG1020723-4 QC Sample: L1722996-01 Client ID: B201-S4												
Chromium, Hexavalent	420	1090	1300	81		-	-		75-125	-		20

Lab Duplicate Analysis
Batch Quality Control

Project Name: FORMER CENTRAL PLATING PROP.
Project Number: 141.05051.001.07
Lab Number: L1722996
Report Date: 07/13/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01,04,07-09,12,14,16,18,21,27 QC Batch ID: WG1020472-1 QC Sample: L1722924-01 Client ID: DUP Sample						
Solids, Total	92.3	92.0	%	0		20
General Chemistry - Westborough Lab Associated sample(s): 01,04,07,09,12,16,27 QC Batch ID: WG1020723-6 QC Sample: L1722996-01 Client ID: B201-S4						
Chromium, Hexavalent	420	380	mg/kg	10		20
General Chemistry - Westborough Lab Associated sample(s): 26 QC Batch ID: WG1021417-1 QC Sample: L1723427-01 Client ID: DUP Sample						
Solids, Total	85.6	88.6	%	3		20

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1722996-01A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		5.2	Y	Absent		CR-TI(180)
L1722996-01B	Glass 120ml/4oz unpreserved	A	NA		5.2	Y	Absent		TS(7),HEXCR-7196(30)
L1722996-02A	Glass 250ml/8oz unpreserved	A	NA		5.2	Y	Absent		HOLD-WETCHEM(),HOLD-METAL(180)
L1722996-03A	Glass 60mL/2oz unpreserved	A	NA		5.2	Y	Absent		HOLD-METAL(180)
L1722996-03B	Glass 120ml/4oz unpreserved	A	NA		5.2	Y	Absent		HOLD-WETCHEM()
L1722996-04A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		5.2	Y	Absent		CR-TI(180)
L1722996-04B	Glass 120ml/4oz unpreserved	A	NA		5.2	Y	Absent		HEXCR-7196(30)
L1722996-04C	Plastic 2oz unpreserved for TS	A	NA		5.2	Y	Absent		TS(7)
L1722996-04D	Vial MeOH preserved	A	NA		5.2	Y	Absent		HOLD-8260(14)
L1722996-05A	Glass 120ml/4oz unpreserved	A	NA		5.2	Y	Absent		-
L1722996-05B	Glass 250ml/8oz unpreserved	A	NA		5.2	Y	Absent		-
L1722996-05X	Plastic 250ml HNO3 preserved Extracts	A	NA		5.2	Y	Absent		CR-PI(180)
L1722996-05X9	Tumble Vessel	A	NA		5.2	Y	Absent		-
L1722996-06A	Glass 250ml/8oz unpreserved	A	NA		5.2	Y	Absent		HOLD-WETCHEM(),HOLD-METAL(180)
L1722996-07A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		5.2	Y	Absent		CR-TI(180)
L1722996-07B	Glass 120ml/4oz unpreserved	A	NA		5.2	Y	Absent		TS(7),HEXCR-7196(30)
L1722996-08A	Glass 250ml/8oz unpreserved	A	NA		5.2	Y	Absent		TS(7)
L1722996-08B	Metals Only-Glass 60mL/2oz unpreserved	A	NA		5.2	Y	Absent		CR-TI(180)
L1722996-08X	Plastic 250ml HNO3 preserved Extracts	A	NA		5.2	Y	Absent		CR-PI(180)
L1722996-08X9	Tumble Vessel	A	NA		5.2	Y	Absent		-
L1722996-09A	Glass 120ml/4oz unpreserved	A	NA		5.2	Y	Absent		TS(7),HEXCR-7196(30)
L1722996-09B	Metals Only-Glass 60mL/2oz unpreserved	A	NA		5.2	Y	Absent		AS-TI(180),BA-TI(180),AG-TI(180),CR-TI(180),NI-TI(180),PB-TI(180),SE-TI(180),HG-T(28),CD-TI(180)

*Values in parentheses indicate holding time in days

Project Name: FORMER CENTRAL PLATING PROP.
Project Number: 141.05051.001.07

Lab Number: L1722996
Report Date: 07/13/17

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1722996-10A	Glass 250ml/8oz unpreserved	A	NA		5.2	Y	Absent		-
L1722996-10X	Plastic 250ml HNO3 preserved Extracts	A	NA		5.2	Y	Absent		CR-PI(180)
L1722996-10X9	Tumble Vessel	A	NA		5.2	Y	Absent		-
L1722996-11A	Glass 250ml/8oz unpreserved	A	NA		5.2	Y	Absent		HOLD-WETCHEM(),HOLD-METAL(180)
L1722996-12A	Glass 120ml/4oz unpreserved	A	NA		5.2	Y	Absent		HEXCR-7196(30)
L1722996-12B	Metals Only-Glass 60mL/2oz unpreserved	A	NA		5.2	Y	Absent		AS-TI(180),BA-TI(180),AG-TI(180),CR-TI(180),NI-TI(180),PB-TI(180),SE-TI(180),HG-T(28),CD-TI(180)
L1722996-12C	Plastic 2oz unpreserved for TS	A	NA		5.2	Y	Absent		TS(7)
L1722996-12D	Vial MeOH preserved	A	NA		5.2	Y	Absent		HOLD-8260(14)
L1722996-13A	Glass 250ml/8oz unpreserved	A	NA		5.2	Y	Absent		HOLD-WETCHEM()
L1722996-13B	Glass 250ml/8oz unpreserved	A	NA		5.2	Y	Absent		HOLD-METAL(180)
L1722996-14A	Plastic 2oz unpreserved for TS	A	NA		5.2	Y	Absent		TS(7)
L1722996-14B	Metals Only-Glass 60mL/2oz unpreserved	A	NA		5.2	Y	Absent		AS-TI(180),BA-TI(180),AG-TI(180),CR-TI(180),NI-TI(180),PB-TI(180),SE-TI(180),HG-T(28),CD-TI(180)
L1722996-15A	Glass 60mL/2oz unpreserved	A	NA		5.2	Y	Absent		-
L1722996-15B	Glass 250ml/8oz unpreserved	A	NA		5.2	Y	Absent		-
L1722996-15X	Plastic 250ml HNO3 preserved Extracts	A	NA		5.2	Y	Absent		NI-PI(180),CR-PI(180),CD-PI(180)
L1722996-15X9	Tumble Vessel	A	NA		5.2	Y	Absent		-
L1722996-16A	Glass 120ml/4oz unpreserved	A	NA		5.2	Y	Absent		TS(7),HEXCR-7196(30)
L1722996-16B	Metals Only-Glass 60mL/2oz unpreserved	A	NA		5.2	Y	Absent		AS-TI(180),BA-TI(180),AG-TI(180),CR-TI(180),NI-TI(180),PB-TI(180),SE-TI(180),HG-T(28),CD-TI(180)
L1722996-17A	Glass 60mL/2oz unpreserved	A	NA		5.2	Y	Absent		-
L1722996-17B	Glass 250ml/8oz unpreserved	A	NA		5.2	Y	Absent		-
L1722996-17X	Plastic 250ml HNO3 preserved Extracts	A	NA		5.2	Y	Absent		NI-PI(180),CR-PI(180),CD-PI(180)
L1722996-17X9	Tumble Vessel	A	NA		5.2	Y	Absent		-
L1722996-18A	Glass 250ml/8oz unpreserved	A	NA		5.2	Y	Absent		TS(7)
L1722996-18B	Glass 60ml unpreserved split	A	NA		5.2	Y	Absent		AS-TI(180),BA-TI(180),AG-TI(180),CR-TI(180),NI-TI(180),PB-TI(180),SE-TI(180),HG-T(28),CD-TI(180)
L1722996-18X	Plastic 250ml HNO3 preserved Extracts	A	NA		5.2	Y	Absent		NI-PI(180),CD-PI(180)

*Values in parentheses indicate holding time in days

Container Information

Container ID	***Container Type***	***Cooler***	***Initial pH***	***Final pH***	***Temp deg C***	***Pres***	***Seal***	***Frozen Date/Time***	***Analysis(*)***
L1722996-18X9	Tumble Vessel	A	NA		5.2	Y	Absent		-
L1722996-19A	Glass 60mL/2oz unpreserved	A	NA		5.2	Y	Absent		HOLD-METAL(180)
L1722996-19B	Glass 250ml/8oz unpreserved	A	NA		5.2	Y	Absent		HOLD-WETCHEM()
L1722996-20A	Glass 250ml/8oz unpreserved	A	NA		5.2	Y	Absent		HOLD-WETCHEM(),HOLD-METAL(180)
L1722996-21A	Plastic 2oz unpreserved for TS	A	NA		5.2	Y	Absent		TS(7)
L1722996-21B	Metals Only-Glass 60mL/2oz unpreserved	A	NA		5.2	Y	Absent		AS-TI(180),BA-TI(180),AG-TI(180),CR-TI(180),NI-TI(180),PB-TI(180),SE-TI(180),HG-T(28),CD-TI(180)
L1722996-22A	Glass 250ml/8oz unpreserved	A	NA		5.2	Y	Absent		HOLD-WETCHEM(),HOLD-METAL(180)
L1722996-23A	Glass 60mL/2oz unpreserved	A	NA		5.2	Y	Absent		HOLD-METAL(180)
L1722996-23B	Glass 120ml/4oz unpreserved	A	NA		5.2	Y	Absent		HOLD-WETCHEM()
L1722996-24A	Glass 60mL/2oz unpreserved	A	NA		5.2	Y	Absent		HOLD-METAL(180)
L1722996-24B	Glass 120ml/4oz unpreserved	A	NA		5.2	Y	Absent		HOLD-WETCHEM()
L1722996-24C	Glass 250ml/8oz unpreserved	A	NA		5.2	Y	Absent		HOLD-WETCHEM()
L1722996-25A	Glass 250ml/8oz unpreserved	A	NA		5.2	Y	Absent		-
L1722996-25X	Plastic 250ml HNO3 preserved Extracts	A	NA		5.2	Y	Absent		NI-PI(180),CR-PI(180),CD-PI(180)
L1722996-25X9	Tumble Vessel	A	NA		5.2	Y	Absent		-
L1722996-26A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		5.2	Y	Absent		AS-TI(180),BA-TI(180),AG-TI(180),CR-TI(180),NI-TI(180),TS(7),PB-TI(180),SE-TI(180),HG-T(28),CD-TI(180)
L1722996-27A	Glass 120ml/4oz unpreserved	A	NA		5.2	Y	Absent		TS(7),HEXCR-7196(30)
L1722996-28A	Glass 250ml/8oz unpreserved	A	NA		5.2	Y	Absent		HOLD-WETCHEM(),HOLD-METAL(180)

*Values in parentheses indicate holding time in days

Project Name: FORMER CENTRAL PLATING PROP. **Lab Number:** L1722996
Project Number: 141.05051.001.07 **Report Date:** 07/13/17

GLOSSARY

Acronyms

EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensation Product".

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related

Data Qualifiers

projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

J - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

ND - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

Project Name: FORMER CENTRAL PLATING PROP. **Lab Number:** L1722996
Project Number: 141.05051.001.07 **Report Date:** 07/13/17

REFERENCES

1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - IV, 2007.

121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624: m/p-xylene, o-xylene
EPA 8260C: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), Methyl methacrylate, 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
EPA 300: DW: Bromide
EPA 6860: NPW and SCM: Perchlorate
EPA 9010: NPW and SCM: Amenable Cyanide Distillation
EPA 9012B: NPW: Total Cyanide
EPA 9050A: NPW: Specific Conductance
SM3500: NPW: Ferrous Iron
SM4500: NPW: Amenable Cyanide, Dissolved Oxygen; SCM: Total Phosphorus, TKN, NO2, NO3.
SM5310C: DW: Dissolved Organic Carbon

Mansfield Facility
SM 2540D: TSS
EPA 3005A NPW
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **SM4500NO3-F, EPA 353.2**: Nitrate-N**, EPA 351.1, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D.**
EPA 624: Volatile Halocarbons & Aromatics,
EPA 608: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E.**

Mansfield Facility:

Drinking Water
EPA 200.7: Ba, Be, Cd, Cr, Cu, Ni, Na, Ca. **EPA 200.8:** Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Ni, Se, TL. **EPA 245.1** Hg.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

CHAIN OF CUSTODY

PAGE 1 OF 3

Alpha Analytical — World Class Chemistry

8 Walkup Drive, Westboro, MA 01581, Tel: 508-898-9220
320 Forbes Blvd, Mansfield, MA 02048, Tel: 508-822-9300

Date Rec'd in Lab: 7/6/17

ALPHA Job #: L1722996

Client Information

Client: Ransom Consulting, Inc.
Address: 112 Corporate Drive, Portsmouth, NH 03801
Phone: 603-436-1490
Email: Eric.Kerich@ransomenv.com, Dan.Tobest@ransomenv.com
* = HOLD Sample

Project Information

Project Name: Former Central Plating Property
Project Location: Walpole, NH
Project #: 141.05057.001.071
Project Manager: Steven Rizkerich
ALPHA Quote #:

Turn-Around Time

☒ Standard ☐ RUSH (only confirmed if pre-approved!)

Date Due:

Report Information - Data Deliverables

☒ ADEx ☒ EMAIL

Billing Information

☒ Same as Client info PO #: 10172

Regulatory Requirements & Project Information Requirements

☐ Yes ☐ No MA MCP Analytical Methods
☐ Yes ☐ No CT RCP Analytical Methods
☐ Yes ☐ No Matrix Spike Required on this SDG? (Required for MCP Inorganics)
☐ Yes ☐ No GW1 Standards (Info Required for Metals & EPH with Targets)
☐ Yes ☐ No NPDES RGP
☒ Other State /Fed Program USEPA/NHDES Brownfield Program SSQAPP Criteria S-1

Additional Project Information:
Analytical Level = Level II
Data Evaluation Tier = Tier I Plus

ANALYSIS: VOC: ☐ 8260 ☐ 624 ☐ 524.2; SVOC: ☐ ABN ☐ PAH; METALS: ☐ MCP 13 ☐ MCP 14 ☐ RCP 15; METALS: ☐ RCRA5 ☐ RCRA8 ☐ PP13; EPH: ☐ Ranges & Targets ☐ Ranges Only; VPH: ☐ Ranges & Targets ☐ Ranges Only; ☐ PCB ☐ PEST; TPH: ☐ Quant Only ☐ Fingerprint; Hexavalent Chromium 7196; Total Chromium; RCRA8 Plus Nickle; SPLP-Cr; SPLP-Ni + Cd; SPLP-Ni, Cd + Cr

SAMPLE INFO — Filtration: ☐ Field ☐ Lab to do; Preservation: ☐ Lab to do

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler Initials	VOC	SVOC	METALS	METALS	EPH	VPH	PCB/PEST	TPH	Hexavalent Chromium 7196	Total Chromium	RCRA8 Plus Nickle	SPLP-Cr	SPLP-Ni + Cd	SPLP-Ni, Cd + Cr	Sample Comments	TOTAL # BOTTLES
22996-01	*B201-S4	6/30/17	13:30	S	BAB									✓	✓						
02	*B201-S6	↓	13:35																		
03	*B202-S4	↓	13:45																		
04	B202-S5	6/29/17	9:20											✓	✓						
05	B202-S6	6/30/17	~~14:00~~ 13:50														✓				
06	*B203-S5	6/29/17	10:00																		
07	B203-S6	6/30/17	14:00											✓	✓						
08	B203-S7	↓	14:05												✓		✓				
09	B204-S4	↓	14:10											✓		✓					
10	B204-S5	6/29/17	10:50														✓				
	Container Type													A	A	A	A				
	Preservative													A	A	A	A				

Container Type
P= Plastic
A= Amber glass
V= Vial
G= Glass
B= Bacteria cup
C= Cube
O= Other
E= Encore
D= BOD Bottle

Preservative
A= None
B= HCl
C= HNO_3
D= H_2SO_4
E= NaOH
F= MeOH
G= $NaHSO_4$
H = $Na_2S_2O_3$
I= Ascorbic Acid
J = NH_4Cl
K= Zn Acetate
O= Other

Relinquished By:	Date/Time	Received By:	Date/Time
[signature]	7/6/17 15:15	[signature] AAL 7/6/17	15:15
[signature] AAL 7/6/17	18:15	[signature]	7/6/17 18:15

All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

FORM NO: 01-01 (rev. 12-Mar-2012)

Serial_No:07131711:25

CHAIN OF CUSTODY

ALPHA ANALYTICAL — World Class Chemistry

8 Walkup Drive, Westboro, MA 01581, Tel: 508-898-9220
320 Forbes Blvd, Mansfield, MA 02048, Tel: 508-822-9300

Date Rec'd in Lab: 7/6/17

ALPHA Job #: L1722996

Client Information

Client: Ransom Consulting Inc.
Address: 112 Corporate Drive, Portsmouth, NH 03801
Phone: 603-436-1490
Email: erickerich@ransomenv.com, bonnie.pest@ransomenv.com

*= HOLD Sample

Additional Project Information:
Analytical Level = Level II
Data Evaluation Tier = Tier I Plus

Project Information

Project Name: Former Central Plating Property
Project Location: Walpole, NH
Project #: 141.05051.001.07
Project Manager: Steven Rickerich
ALPHA Quote #:

Turn-Around Time

☒ Standard ☐ RUSH (only confirmed if pre-approved!)
Date Due:

Report Information - Data Deliverables

☒ ADEx ☒ EMAIL

Billing Information

☒ Same as Client info PO #: 10172

Regulatory Requirements & Project Information Requirements

☐ Yes ☐ No MA MCP Analytical Methods
☐ Yes ☐ No CT RCP Analytical Methods
☐ Yes ☐ No Matrix Spike Required on this SDG? (Required for MCP Inorganics)
☐ Yes ☐ No GW1 Standards (Info Required for Metals & EPH with Targets)
☐ Yes ☐ No NPDES RGP
☒ Other State /Fed Program USEPA/NHDES Criteria Brownfields per SSQAPP S-1

Analysis

VOC: ☐ 8260 ☐ 624 ☐ 524.2; SVOC: ☐ ABN ☐ PAH; METALS: ☐ MCP 13 ☐ MCP 14 ☐ RCP 15; METALS: ☐ RCRA5 ☐ RCRA8 ☐ PP13; EPH: ☐ Ranges & Targets ☐ Ranges Only; VPH: ☐ Ranges & Targets ☐ Ranges Only; ☐ PCB ☐ PEST; TPH: ☐ Quant Only ☐ Fingerprint; Hexavalent Chromium; Total Chromium; RCRA8 plus Nickle; SPLP-Cr; SPLP-Ni+Cd; SPLP-Ni, Cd+Cr

SAMPLE INFO — Filtration: ☐ Field ☐ Lab to do; Preservation: ☐ Lab to do

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler Initials	VOC	SVOC	METALS (MCP)	METALS (RCRA)	EPH	VPH	PCB/PEST	TPH	Hexavalent Chromium	Total Chromium	RCRA8 plus Nickle	SPLP-Cr	SPLP-Ni+Cd	SPLP-Ni, Cd+Cr	Sample Comments	Total # Bottles
22996-11	*B204-S6	6-30-17	14:15	S	BAB																
12	B205-S5	↓	14:25											✓		✓					
13	*B205-S6		14:30																		
14	B206-S3	↓	14:40													✓					
15	B206-S6	6-29-17	12:30																✓		
16	B207-S6/S7	↓	13:10											✓		✓					
17	B207-S8	6-30-17	14:50																✓		
18	B208-S6/S7	6-29-17	14:00													✓		✓			
19	*B208-S8	6-30-17	15:00																		
20	*B209-S5	↓	10:00																		
	Container Type													A	A	A	A	A	A		
	Preservative													A	A	A	A	A	A		

Container Type
P= Plastic
A= Amber glass
V= Vial
G= Glass
B= Bacteria cup
C= Cube
O= Other
E= Encore
D= BOD Bottle

Preservative
A= None
B= HCl
C= HNO_3
D= H_2SO_4
E= NaOH
F= MeOH
G= $NaHSO_4$
H = $Na_2S_2O_3$
I= Ascorbic Acid
J = NH_4Cl
K= Zn Acetate
O= Other

Relinquished By:	Date/Time	Received By:	Date/Time
[signature]	7/6/17 15:15	[signature] AAL	7/6/17 15:15
[signature] AAL	7/6/17 18:15	[signature]	7/6/17 18:15

All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

FORM NO: 01-01 (rev. 12-Mar-2012)

CHAIN OF CUSTODY

PAGE 3 OF 3

Date Rec'd in Lab: 7/6/17

ALPHA Job #: L1722996

ALPHA ANALYTICAL
World Class Chemistry
8 Walkup Drive, Westboro, MA 01581, Tel: 508-898-9220
320 Forbes Blvd, Mansfield, MA 02048, Tel: 508-822-9300

Project Information

Project Name: Former Central Plating Property
Project Location: Walpole, NH
Project #: 141.05051.001.07
Project Manager: Steven Rickerich
ALPHA Quote #:

Report Information - Data Deliverables

☑ ADEx ☑ EMAIL

Billing Information

☑ Same as Client info
PO #: 10172

Client Information

Client: Ransom Consulting, Inc.
Address: 112 Corporate Dr. Portsmouth, NH 03801
Phone: 603-436-1490
Email: srickerich@ransomenv.com, bonnie.best@ransomenv.com

* = HOLD Sample

Regulatory Requirements & Project Information Requirements

☐ Yes ☐ No MA MCP Analytical Methods
☐ Yes ☐ No CT RCP Analytical Methods
☐ Yes ☐ No Matrix Spike Required on this SDG? (Required for MCP Inorganics)
☐ Yes ☐ No GW1 Standards (Info Required for Metals & EPH with Targets)
☐ Yes ☐ No NPDES RGP
☑ Other State /Fed Program: NHDES/USEPA Brownfields
Criteria: S-1 / per SSQAPP

Turn-Around Time

☑ Standard ☐ RUSH (only confirmed if pre-approved!)

Date Due:

Additional Project Information:

Analytical Level = Level III
Data Evaluation Tier = Tier I Plus

Analysis

VOC: ☐ 8260 ☐ 624 ☐ 524.2
SVOC: ☐ ABN ☐ PAH
METALS: ☐ MCP 13 ☐ MCP 14 ☐ RCP 15
METALS: ☐ RCRA5 ☐ RCRA8 ☐ PP13
EPH: ☐ Ranges & Targets ☐ Ranges Only
VPH: ☐ Ranges & Targets ☐ Ranges Only
☐ PCB ☐ PEST
TPH: ☐ Quant Only ☐ Fingerprint

SAMPLE INFO
Filtration: ☐ Field ☐ Lab to do
Preservation: ☐ Lab to do

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler Initials	Hexavalent Chromium	Total Chromium	RCRA 8 Plus Nickle	SPLP-Cr	SPLP-Ni + Cd	SPLP-Ni, Cd + Cr	Sample Comments	Total # Bottles
22996-21	B209-S9	063017	15:08	S	BAB			✓					
22	* B209-S10	↓	15:10	↓	↓								
23	* B211-S1	↓	12:30	↓	↓								
24	* B211-S6	↓	12:45	↓	↓								
25	DUP-01	063017	16:00	S	BAB						✓		
26	DUP-02	↓	16:10	↓	↓			✓					
27	DUP-03	↓	16:20	↓	↓	✓							
28	* DUP-04	↓	16:30	↓	↓		*						
	Container Type					A	A	A	A	A	A		
	Preservative					A	A	A	A	A	A		

Container Type
P= Plastic
A= Amber glass
V= Vial
G= Glass
B= Bacteria cup
C= Cube
O= Other
E= Encore
D= BOD Bottle

Preservative
A= None
B= HCl
C= HNO_3
D= H_2SO_4
E= NaOH
F= MeOH
G= $NaHSO_4$
H = $Na_2S_2O_3$
I= Ascorbic Acid
J = NH_4Cl
K= Zn Acetate
O= Other

Relinquished By:	Date/Time	Received By:	Date/Time
[signature]	7-6-17 15:15	[signature] AAL	7/6/17 15:15
[signature] AAL	7/6/17 18:15	[signature]	7/6/17 18:15

FORM NO: 01-01 (rev. 12-Mar-2012)

ANALYTICAL REPORT

Lab Number:	L1724792
Client:	Ransom Consulting, Inc. 112 Corporate Drive Pease International Tradeport Portsmouth, NH 03801
ATTN:	Steve Rickerich
Phone:	(603) 436-1490
Project Name:	FORMER CENTRAL PLATING
Project Number:	141.05051
Report Date:	07/31/17

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), NJ NELAP (MA935), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-14-00197).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com

Project Name: FORMER CENTRAL PLATING
Project Number: 141.05051

Lab Number: L1724792
Report Date: 07/31/17

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1724792-01	SH-2	WATER	WALPOLE, NH	07/17/17 12:03	07/19/17
L1724792-02	MW102	WATER	WALPOLE, NH	07/18/17 13:56	07/19/17
L1724792-03	MW104	WATER	WALPOLE, NH	07/17/17 14:04	07/19/17
L1724792-04	MW201	WATER	WALPOLE, NH	07/17/17 13:41	07/19/17
L1724792-05	MW202	WATER	WALPOLE, NH	07/17/17 12:11	07/19/17
L1724792-06	IW-001	WATER	WALPOLE, NH	07/17/17 14:20	07/19/17
L1724792-07	IW-DUP	WATER	WALPOLE, NH	07/17/17 14:25	07/19/17
L1724792-08	GW-DUP1	WATER	WALPOLE, NH	07/17/17 12:30	07/19/17
L1724792-09	GW-DUP2	WATER	WALPOLE, NH	07/18/17 13:50	07/19/17
L1724792-10	FIELD BLANK	WATER	WALPOLE, NH	07/17/17 14:50	07/19/17

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. All specific QC information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications. Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances the specific failure is not narrated but noted in the associated QC table. The information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

HOLD POLICY

For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Client Service Representative and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Client Services at 800-624-9220 with any questions.

Case Narrative (continued)

Report Submission

This final report replaces the partial report issued July 27, 2017, and includes the results of all requested analyses.

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Perfluorinated Alkyl Acids by Isotope Dilution

L1724792-01, -02, -08, and WG1025422-4: The samples were re-analyzed on dilution in order to quantify the results within the calibration range. The result(s) should be considered estimated, and are qualified with an E flag, for any compound(s) that exceeded the calibration range in the initial analysis. The re-analysis was performed only for the compound(s) that exceeded the calibration range.

The extracted internal standard recovery on the following samples was outside the acceptance criteria for MFPBA; however, re-analysis achieved similar results. The results of the original analysis are reported:

L1724792-01: 41%

L1724792-02: 43%

L1724792-08: 37%

L1724792-10: 47%

WG1025422-4: 48%

L1724792-02 and WG1025422-4 The M8PFOS recovery was below acceptance criteria (46% and 49%, respectively), however the results for the associated analyte (PFOS) were reported from the diluted analysis; therefore, data quality was not affected.

L1724792-10: The Field Blank has a concentration above the reporting limit for PFOS. The result was confirmed.

WG1025422-1 and WG1025422-3: The extracted internal standard recovery was outside the acceptance criteria for M8FOSA (0% and 2%, respectively); however, re-analysis achieved similar results. The results of the original analysis are reported.

Case Narrative (continued)

WG1025422-2: The extracted internal standard recoveries were outside the acceptance criteria for MFPBA (46%) and M8FOSA (0%); however, re-analysis achieved similar results. The results of the original analysis are reported.
WG1025422-4: The extracted internal standard recovery was outside the acceptance criteria for M8PFOS (155%); however, duplicate precision was within criteria; therefore, data quality was not affected.

Dissolved Metals
The WG1024994-3 MS recovery, performed on L1724792-01, is outside the acceptance criteria for cadmium (194%). A post digestion spike was performed and was within acceptance criteria.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Kelly Stenstrom

Title: Technical Director/Representative Date: 07/31/17

ORGANICS

SEMIVOLATILES

Project Name: FORMER CENTRAL PLATING
Lab Number: L1724792
Project Number: 141.05051
Report Date: 07/31/17

SAMPLE RESULTS

Lab ID: L1724792-01
Client ID: SH-2
Sample Location: WALPOLE, NH

Date Collected: 07/17/17 12:03
Date Received: 07/19/17
Field Prep: Field Filtered (Dissolved Metals)
Extraction Method: EPA 537
Extraction Date: 07/25/17 06:00

Matrix: Water
Analytical Method: 122,537(M)
Analytical Date: 07/28/17 09:04
Analyst: AR

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	8.84		ng/l	1.85	0.121	1
Perfluoropentanoic Acid (PFPeA)	8.41		ng/l	1.85	0.079	1
Perfluorobutanesulfonic Acid (PFBS)	12.6		ng/l	1.85	0.102	1
Perfluorohexanoic Acid (PFHxA)	26.2		ng/l	1.85	0.117	1
Perfluoroheptanoic Acid (PFHpA)	4.20		ng/l	1.85	0.086	1
Perfluorohexanesulfonic Acid (PFHxS)	234		ng/l	1.85	0.100	1
Perfluorooctanoic Acid (PFOA)	70.0		ng/l	1.85	0.047	1
Perfluorononanoic Acid (PFNA)	0.600	J	ng/l	1.85	0.093	1
Perfluorooctanesulfonic Acid (PFOS)	2410	E	ng/l	1.85	0.103	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	**41**	Q	50-150
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	95		50-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	109		50-150
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	97		50-150
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	100		50-150
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	90		50-150
Perfluoro[13C8]Octanoic Acid (M8PFOA)	102		50-150
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	89		50-150
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	67		50-150

Project Name: FORMER CENTRAL PLATING
Lab Number: L1724792
Project Number: 141.05051
Report Date: 07/31/17

SAMPLE RESULTS

Lab ID:	L1724792-01 D	Date Collected:	07/17/17 12:03
Client ID:	SH-2	Date Received:	07/19/17
Sample Location:	WALPOLE, NH	Field Prep:	Field Filtered (Dissolved Metals)
		Extraction Method:	EPA 537
Matrix:	Water	Extraction Date:	07/25/17 06:00
Analytical Method:	122,537(M)		
Analytical Date:	07/28/17 07:12		
Analyst:	AR		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctanesulfonic Acid (PFOS)	1620		ng/l	185	10.3	100

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	138		50-150

Project Name: FORMER CENTRAL PLATING
Lab Number: L1724792
Project Number: 141.05051
Report Date: 07/31/17

SAMPLE RESULTS

Lab ID: L1724792-02
Client ID: MW102
Sample Location: WALPOLE, NH

Date Collected: 07/18/17 13:56
Date Received: 07/19/17
Field Prep: Field Filtered (Dissolved Metals)
Extraction Method: EPA 537
Extraction Date: 07/25/17 06:00

Matrix: Water
Analytical Method: 122,537(M)
Analytical Date: 07/28/17 09:13
Analyst: AR

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	8.05		ng/l	1.85	0.121	1
Perfluoropentanoic Acid (PFPeA)	10.8		ng/l	1.85	0.079	1
Perfluorobutanesulfonic Acid (PFBS)	59.0		ng/l	1.85	0.102	1
Perfluorohexanoic Acid (PFHxA)	49.1		ng/l	1.85	0.117	1
Perfluoroheptanoic Acid (PFHpA)	5.01		ng/l	1.85	0.086	1
Perfluorohexanesulfonic Acid (PFHxS)	237		ng/l	1.85	0.100	1
Perfluorooctanoic Acid (PFOA)	80.2		ng/l	1.85	0.047	1
Perfluorononanoic Acid (PFNA)	0.370	J	ng/l	1.85	0.093	1
Perfluorooctanesulfonic Acid (PFOS)	11500	E	ng/l	1.85	0.103	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	**43**	Q	50-150
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	97		50-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	97		50-150
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	96		50-150
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	92		50-150
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	88		50-150
Perfluoro[13C8]Octanoic Acid (M8PFOA)	102		50-150
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	90		50-150
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	**46**	Q	50-150

Project Name: FORMER CENTRAL PLATING **Lab Number:** L1724792
Project Number: 141.05051 **Report Date:** 07/31/17

SAMPLE RESULTS

Lab ID: L1724792-02 D
Client ID: MW102
Sample Location: WALPOLE, NH

Date Collected: 07/18/17 13:56
Date Received: 07/19/17
Field Prep: Field Filtered (Dissolved Metals)
Extraction Method: EPA 537
Extraction Date: 07/25/17 06:00

Matrix: Water
Analytical Method: 122,537(M)
Analytical Date: 07/28/17 07:21
Analyst: AR

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctanesulfonic Acid (PFOS)	7080		ng/l	185	10.3	100

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	137		50-150

Project Name: FORMER CENTRAL PLATING **Lab Number:** L1724792

Project Number: 141.05051 **Report Date:** 07/31/17

SAMPLE RESULTS

Lab ID: L1724792-08
Client ID: GW-DUP1
Sample Location: WALPOLE, NH

Date Collected: 07/17/17 12:30
Date Received: 07/19/17
Field Prep: Field Filtered (Dissolved Metals)
Extraction Method: EPA 537
Extraction Date: 07/25/17 06:00

Matrix: Water
Analytical Method: 122,537(M)
Analytical Date: 07/28/17 09:51
Analyst: AR

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	6.95		ng/l	1.85	0.121	1
Perfluoropentanoic Acid (PFPeA)	8.80		ng/l	1.85	0.079	1
Perfluorobutanesulfonic Acid (PFBS)	13.8		ng/l	1.85	0.102	1
Perfluorohexanoic Acid (PFHxA)	26.9		ng/l	1.85	0.117	1
Perfluoroheptanoic Acid (PFHpA)	4.44		ng/l	1.85	0.086	1
Perfluorohexanesulfonic Acid (PFHxS)	246		ng/l	1.85	0.100	1
Perfluorooctanoic Acid (PFOA)	76.1		ng/l	1.85	0.047	1
Perfluorononanoic Acid (PFNA)	0.718	J	ng/l	1.85	0.093	1
Perfluorooctanesulfonic Acid (PFOS)	2280	E	ng/l	1.85	0.103	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	**37**	Q	50-150
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	85		50-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	96		50-150
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	87		50-150
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	89		50-150
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	82		50-150
Perfluoro[13C8]Octanoic Acid (M8PFOA)	92		50-150
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	76		50-150
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	62		50-150

Project Name: FORMER CENTRAL PLATING
Lab Number: L1724792
Project Number: 141.05051
Report Date: 07/31/17

SAMPLE RESULTS

Lab ID: L1724792-08 D
Client ID: GW-DUP1
Sample Location: WALPOLE, NH

Date Collected: 07/17/17 12:30
Date Received: 07/19/17
Field Prep: Field Filtered (Dissolved Metals)
Extraction Method: EPA 537
Extraction Date: 07/25/17 06:00

Matrix: Water
Analytical Method: 122,537(M)
Analytical Date: 07/28/17 07:59
Analyst: AR

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctanesulfonic Acid (PFOS)	1240		ng/l	185	10.3	100

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	142		50-150

Project Name: FORMER CENTRAL PLATING **Lab Number:** L1724792

Project Number: 141.05051 **Report Date:** 07/31/17

SAMPLE RESULTS

Lab ID: L1724792-10
Client ID: FIELD BLANK
Sample Location: WALPOLE, NH

Date Collected: 07/17/17 14:50
Date Received: 07/19/17
Field Prep: Not Specified
Extraction Method: EPA 537
Extraction Date: 07/25/17 06:00

Matrix: Water
Analytical Method: 122,537(M)
Analytical Date: 07/28/17 00:07
Analyst: AR

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.85	0.121	1
Perfluoropentanoic Acid (PFPeA)	0.144	J	ng/l	1.85	0.079	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.85	0.102	1
Perfluorohexanoic Acid (PFHxA)	0.185	J	ng/l	1.85	0.117	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.85	0.086	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.85	0.100	1
Perfluorooctanoic Acid (PFOA)	0.096	J	ng/l	1.85	0.047	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.85	0.093	1
Perfluorooctanesulfonic Acid (PFOS)	2.07		ng/l	1.85	0.103	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	**47**	Q	50-150
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	119		50-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	126		50-150
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	113		50-150
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	117		50-150
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	120		50-150
Perfluoro[13C8]Octanoic Acid (M8PFOA)	118		50-150
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	109		50-150
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	105		50-150

Project Name: FORMER CENTRAL PLATING
Lab Number: L1724792
Project Number: 141.05051
Report Date: 07/31/17

Method Blank Analysis
Batch Quality Control

Analytical Method: 122,537(M)
Analytical Date: 07/27/17 23:39
Analyst: AR
Extraction Method: EPA 537
Extraction Date: 07/25/17 06:00

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-02,08,10 Batch: WG1025422-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.131
Perfluoropentanoic Acid (PFPeA)	0.112	J	ng/l	2.00	0.086
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.110
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.00	0.488
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.126
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.089
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.092
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.108
Perfluorooctanoic Acid (PFOA)	0.096	J	ng/l	2.00	0.050
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	0.194
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.155
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.101
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.112
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.190
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	0.291
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	0.304
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.250
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.191
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.222
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.227
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.373
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.092
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.090
Perfluorotetradecanoic Acid (PFTA)	0.072	J	ng/l	2.00	0.072

Project Name: FORMER CENTRAL PLATING
Lab Number: L1724792
Project Number: 141.05051
Report Date: 07/31/17

Method Blank Analysis
Batch Quality Control

Analytical Method: 122,537(M)
Analytical Date: 07/27/17 23:39
Analyst: AR

Extraction Method: EPA 537
Extraction Date: 07/25/17 06:00

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-02,08,10 Batch: WG1025422-1					

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	53		50-150
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	117		50-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	125		50-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	127		50-150
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	112		50-150
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	114		50-150
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	123		50-150
Perfluoro[13C8]Octanoic Acid (M8PFOA)	119		50-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	111		50-150
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	110		50-150
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	110		50-150
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	109		50-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	119		50-150
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	92		50-150
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	109		50-150
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	**0**	Q	50-150
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	102		50-150
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	101		50-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	96		50-150

Lab Control Sample Analysis
Batch Quality Control

Project Name: FORMER CENTRAL PLATING
Project Number: 141.05051
Lab Number: L1724792
Report Date: 07/31/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-02,08,10 Batch: WG1025422-2 WG1025422-3								
Perfluorobutanoic Acid (PFBA)	117		109		50-150	7		30
Perfluoropentanoic Acid (PFPeA)	117		109		50-150	7		30
Perfluorobutanesulfonic Acid (PFBS)	115		106		50-150	8		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	110		98		50-150	12		30
Perfluorohexanoic Acid (PFHxA)	114		106		50-150	7		30
Perfluoropentanesulfonic Acid (PFPeS)	114		106		50-150	7		30
Perfluoroheptanoic Acid (PFHpA)	114		108		50-150	5		30
Perfluorohexanesulfonic Acid (PFHxS)	112		105		50-150	6		30
Perfluorooctanoic Acid (PFOA)	120		102		50-150	16		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	116		104		50-150	11		30
Perfluoroheptanesulfonic Acid (PFHpS)	129		114		50-150	12		30
Perfluorononanoic Acid (PFNA)	119		108		50-150	10		30
Perfluorooctanesulfonic Acid (PFOS)	115		110		50-150	4		30
Perfluorodecanoic Acid (PFDA)	113		100		50-150	12		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	97		100		50-150	3		30
Perfluorononanesulfonic Acid (PFNS)	89		96		50-150	8		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	110		105		50-150	5		30
Perfluoroundecanoic Acid (PFUnA)	110		109		50-150	1		30
Perfluorodecanesulfonic Acid (PFDS)	91		90		50-150	1		30
Perfluorooctanesulfonamide (FOSA)	81		98		50-150	19		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	116		105		50-150	10		30
Perfluorododecanoic Acid (PFDoA)	115		91		50-150	23		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: FORMER CENTRAL PLATING
Project Number: 141.05051
Lab Number: L1724792
Report Date: 07/31/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-02,08,10 Batch: WG1025422-2 WG1025422-3								
Perfluorotridecanoic Acid (PFTrDA)	122		101		50-150	19		30
Perfluorotetradecanoic Acid (PFTA)	122		107		50-150	13		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	**46**	Q	54		50-150
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	104		108		50-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	110		115		50-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	114		122		50-150
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	100		107		50-150
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	103		103		50-150
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	109		113		50-150
Perfluoro[13C8]Octanoic Acid (M8PFOA)	98		106		50-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	106		110		50-150
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	94		105		50-150
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	95		99		50-150
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	94		98		50-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	120		103		50-150
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	88		86		50-150
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	104		99		50-150
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	**0**	Q	**2**	Q	50-150
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	86		89		50-150
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	94		97		50-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	92		99		50-150

Lab Duplicate Analysis
Batch Quality Control

Project Name: FORMER CENTRAL PLATING
Project Number: 141.05051
Lab Number: L1724792
Report Date: 07/31/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-02,08,10 QC Batch ID: WG1025422-4 QC Sample: L1724792-02 Client ID: MW102						
Perfluorooctanesulfonic Acid (PFOS)	7080	9180	ng/l	22		30

Surrogate	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	**137**		**155**	Q	50-150

Lab Duplicate Analysis
Batch Quality Control

Project Name: FORMER CENTRAL PLATING
Project Number: 141.05051
Lab Number: L1724792
Report Date: 07/31/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-02,08,10 QC Batch ID: WG1025422-4 QC Sample: L1724792-02 Client ID: MW102						
Perfluorobutanoic Acid (PFBA)	8.05	8.10	ng/l	1		30
Perfluoropentanoic Acid (PFPeA)	10.8	11.3	ng/l	5		30
Perfluorobutanesulfonic Acid (PFBS)	59.0	60.5	ng/l	3		30
Perfluorohexanoic Acid (PFHxA)	49.1	51.6	ng/l	5		30
Perfluoroheptanoic Acid (PFHpA)	5.01	5.20	ng/l	4		30
Perfluorohexanesulfonic Acid (PFHxS)	237	240	ng/l	1		30
Perfluorooctanoic Acid (PFOA)	80.2	76.2	ng/l	5		30
Perfluorononanoic Acid (PFNA)	0.370J	0.426J	ng/l	NC		30
Perfluorooctanesulfonic Acid (PFOS)	11500E	13000E	ng/l	**59**	Q	30

Surrogate	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	**43**	Q	**48**	Q	50-150
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	97		103		50-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	97		106		50-150
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	96		105		50-150
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	92		115		50-150
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	88		106		50-150
Perfluoro[13C8]Octanoic Acid (M8PFOA)	102		125		50-150
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	90		102		50-150
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	**46**	Q	**49**	Q	50-150

METALS

Project Name: FORMER CENTRAL PLATING | **Lab Number:** L1724792
Project Number: 141.05051 | **Report Date:** 07/31/17

SAMPLE RESULTS

Lab ID: L1724792-01 | Date Collected: 07/17/17 12:03
Client ID: SH-2 | Date Received: 07/19/17
Sample Location: WALPOLE, NH | Field Prep: Field Filtered (Dissolved Metals)
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Dissolved Metals - Mansfield Lab											
Arsenic, Dissolved	ND		mg/l	0.005	0.002	1	07/22/17 14:33	07/25/17 14:16	EPA 3005A	1,6010C	PS
Barium, Dissolved	0.046		mg/l	0.010	0.002	1	07/22/17 14:33	07/25/17 14:16	EPA 3005A	1,6010C	PS
Cadmium, Dissolved	0.00532		mg/l	0.00020	0.00005	1	07/22/17 14:33	07/26/17 11:14	EPA 3005A	1,6020A	AM
Chromium, Dissolved	0.021		mg/l	0.010	0.002	1	07/22/17 14:33	07/25/17 14:16	EPA 3005A	1,6010C	PS
Lead, Dissolved	0.004	J	mg/l	0.010	0.003	1	07/22/17 14:33	07/25/17 14:16	EPA 3005A	1,6010C	PS
Mercury, Dissolved	ND		mg/l	0.00020	0.00006	1	07/20/17 14:06	07/20/17 19:21	EPA 7470A	1,7470A	EA
Nickel, Dissolved	0.301		mg/l	0.025	0.002	1	07/22/17 14:33	07/25/17 14:16	EPA 3005A	1,6010C	PS
Selenium, Dissolved	ND		mg/l	0.010	0.004	1	07/22/17 14:33	07/25/17 14:16	EPA 3005A	1,6010C	PS
Silver, Dissolved	ND		mg/l	0.007	0.003	1	07/22/17 14:33	07/25/17 14:16	EPA 3005A	1,6010C	PS

Project Name: FORMER CENTRAL PLATING
Lab Number: L1724792
Project Number: 141.05051
Report Date: 07/31/17

SAMPLE RESULTS

Lab ID: L1724792-02
Client ID: MW102
Sample Location: WALPOLE, NH
Matrix: Water
Date Collected: 07/18/17 13:56
Date Received: 07/19/17
Field Prep: Field Filtered (Dissolved Metals)

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Dissolved Metals - Mansfield Lab											
Arsenic, Dissolved	ND		mg/l	0.005	0.002	1	07/22/17 14:33	07/25/17 14:31	EPA 3005A	1,6010C	PS
Barium, Dissolved	0.009	J	mg/l	0.010	0.002	1	07/22/17 14:33	07/25/17 14:31	EPA 3005A	1,6010C	PS
Cadmium, Dissolved	0.03152		mg/l	0.00020	0.00005	1	07/22/17 14:33	07/26/17 11:18	EPA 3005A	1,6020A	AM
Chromium, Dissolved	5.27		mg/l	0.010	0.002	1	07/22/17 14:33	07/25/17 14:31	EPA 3005A	1,6010C	PS
Lead, Dissolved	0.003	J	mg/l	0.010	0.003	1	07/22/17 14:33	07/25/17 14:31	EPA 3005A	1,6010C	PS
Mercury, Dissolved	ND		mg/l	0.00020	0.00006	1	07/20/17 14:06	07/20/17 19:29	EPA 7470A	1,7470A	EA
Nickel, Dissolved	1.39		mg/l	0.025	0.002	1	07/22/17 14:33	07/25/17 14:31	EPA 3005A	1,6010C	PS
Selenium, Dissolved	ND		mg/l	0.010	0.004	1	07/22/17 14:33	07/25/17 14:31	EPA 3005A	1,6010C	PS
Silver, Dissolved	ND		mg/l	0.007	0.003	1	07/22/17 14:33	07/25/17 14:31	EPA 3005A	1,6010C	PS

Project Name: FORMER CENTRAL PLATING
Lab Number: L1724792
Project Number: 141.05051
Report Date: 07/31/17

SAMPLE RESULTS

Lab ID: L1724792-03
Client ID: MW104
Sample Location: WALPOLE, NH
Matrix: Water
Date Collected: 07/17/17 14:04
Date Received: 07/19/17
Field Prep: Field Filtered (Dissolved Metals)

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Dissolved Metals - Mansfield Lab											
Arsenic, Dissolved	0.003	J	mg/l	0.005	0.002	1	07/22/17 14:33	07/25/17 14:36	EPA 3005A	1,6010C	PS
Barium, Dissolved	0.023		mg/l	0.010	0.002	1	07/22/17 14:33	07/25/17 14:36	EPA 3005A	1,6010C	PS
Cadmium, Dissolved	0.00156		mg/l	0.00020	0.00005	1	07/22/17 14:33	07/26/17 11:21	EPA 3005A	1,6020A	AM
Chromium, Dissolved	0.060		mg/l	0.010	0.002	1	07/22/17 14:33	07/25/17 14:36	EPA 3005A	1,6010C	PS
Lead, Dissolved	ND		mg/l	0.010	0.003	1	07/22/17 14:33	07/25/17 14:36	EPA 3005A	1,6010C	PS
Mercury, Dissolved	ND		mg/l	0.00020	0.00006	1	07/20/17 14:06	07/20/17 19:31	EPA 7470A	1,7470A	EA
Nickel, Dissolved	0.109		mg/l	0.025	0.002	1	07/22/17 14:33	07/25/17 14:36	EPA 3005A	1,6010C	PS
Selenium, Dissolved	ND		mg/l	0.010	0.004	1	07/22/17 14:33	07/25/17 14:36	EPA 3005A	1,6010C	PS
Silver, Dissolved	ND		mg/l	0.007	0.003	1	07/22/17 14:33	07/25/17 14:36	EPA 3005A	1,6010C	PS

Project Name:	FORMER CENTRAL PLATING	**Lab Number:**	L1724792
Project Number:	141.05051	**Report Date:**	07/31/17

SAMPLE RESULTS

Lab ID:	L1724792-04	Date Collected:	07/17/17 13:41
Client ID:	MW201	Date Received:	07/19/17
Sample Location:	WALPOLE, NH	Field Prep:	Field Filtered (Dissolved Metals)
Matrix:	Water		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Dissolved Metals - Mansfield Lab											
Arsenic, Dissolved	ND		mg/l	0.005	0.002	1	07/22/17 14:33	07/25/17 14:41	EPA 3005A	1,6010C	PS
Barium, Dissolved	0.011		mg/l	0.010	0.002	1	07/22/17 14:33	07/25/17 14:41	EPA 3005A	1,6010C	PS
Cadmium, Dissolved	0.01200		mg/l	0.00020	0.00005	1	07/22/17 14:33	07/26/17 11:25	EPA 3005A	1,6020A	AM
Chromium, Dissolved	1.65		mg/l	0.010	0.002	1	07/22/17 14:33	07/25/17 14:41	EPA 3005A	1,6010C	PS
Lead, Dissolved	0.003	J	mg/l	0.010	0.003	1	07/22/17 14:33	07/25/17 14:41	EPA 3005A	1,6010C	PS
Mercury, Dissolved	ND		mg/l	0.00020	0.00006	1	07/20/17 14:06	07/20/17 19:33	EPA 7470A	1,7470A	EA
Nickel, Dissolved	0.621		mg/l	0.025	0.002	1	07/22/17 14:33	07/25/17 14:41	EPA 3005A	1,6010C	PS
Selenium, Dissolved	ND		mg/l	0.010	0.004	1	07/22/17 14:33	07/25/17 14:41	EPA 3005A	1,6010C	PS
Silver, Dissolved	ND		mg/l	0.007	0.003	1	07/22/17 14:33	07/25/17 14:41	EPA 3005A	1,6010C	PS

Project Name: FORMER CENTRAL PLATING
Lab Number: L1724792
Project Number: 141.05051
Report Date: 07/31/17

SAMPLE RESULTS

Lab ID: L1724792-05
Client ID: MW202
Sample Location: WALPOLE, NH
Matrix: Water
Date Collected: 07/17/17 12:11
Date Received: 07/19/17
Field Prep: Field Filtered (Dissolved Metals)

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Dissolved Metals - Mansfield Lab											
Arsenic, Dissolved	ND		mg/l	0.005	0.002	1	07/22/17 14:33	07/25/17 14:46	EPA 3005A	1,6010C	PS
Barium, Dissolved	0.396		mg/l	0.010	0.002	1	07/22/17 14:33	07/25/17 14:46	EPA 3005A	1,6010C	PS
Cadmium, Dissolved	0.00009	J	mg/l	0.00020	0.00005	1	07/22/17 14:33	07/26/17 11:28	EPA 3005A	1,6020A	AM
Chromium, Dissolved	ND		mg/l	0.010	0.002	1	07/22/17 14:33	07/25/17 14:46	EPA 3005A	1,6010C	PS
Lead, Dissolved	0.003	J	mg/l	0.010	0.003	1	07/22/17 14:33	07/25/17 14:46	EPA 3005A	1,6010C	PS
Mercury, Dissolved	ND		mg/l	0.00020	0.00006	1	07/20/17 14:06	07/20/17 19:35	EPA 7470A	1,7470A	EA
Nickel, Dissolved	ND		mg/l	0.025	0.002	1	07/22/17 14:33	07/25/17 14:46	EPA 3005A	1,6010C	PS
Selenium, Dissolved	ND		mg/l	0.010	0.004	1	07/22/17 14:33	07/25/17 14:46	EPA 3005A	1,6010C	PS
Silver, Dissolved	ND		mg/l	0.007	0.003	1	07/22/17 14:33	07/25/17 14:46	EPA 3005A	1,6010C	PS

Project Name:	FORMER CENTRAL PLATING	**Lab Number:**	L1724792
Project Number:	141.05051	**Report Date:**	07/31/17

SAMPLE RESULTS

Lab ID:	L1724792-06	Date Collected:	07/17/17 14:20
Client ID:	IW-001	Date Received:	07/19/17
Sample Location:	WALPOLE, NH	Field Prep:	Field Filtered (Dissolved Metals)
Matrix:	Water		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Dissolved Metals - Mansfield Lab											
Arsenic, Dissolved	ND		mg/l	0.005	0.002	1	07/22/17 14:33	07/25/17 14:51	EPA 3005A	1,6010C	PS
Barium, Dissolved	0.047		mg/l	0.010	0.002	1	07/22/17 14:33	07/25/17 14:51	EPA 3005A	1,6010C	PS
Cadmium, Dissolved	ND		mg/l	0.00020	0.00005	1	07/22/17 14:33	07/26/17 11:32	EPA 3005A	1,6020A	AM
Chromium, Dissolved	ND		mg/l	0.010	0.002	1	07/22/17 14:33	07/25/17 14:51	EPA 3005A	1,6010C	PS
Lead, Dissolved	0.031		mg/l	0.010	0.003	1	07/22/17 14:33	07/25/17 14:51	EPA 3005A	1,6010C	PS
Mercury, Dissolved	ND		mg/l	0.00020	0.00006	1	07/20/17 14:06	07/20/17 19:36	EPA 7470A	1,7470A	EA
Nickel, Dissolved	0.003	J	mg/l	0.025	0.002	1	07/22/17 14:33	07/25/17 14:51	EPA 3005A	1,6010C	PS
Selenium, Dissolved	ND		mg/l	0.010	0.004	1	07/22/17 14:33	07/25/17 14:51	EPA 3005A	1,6010C	PS
Silver, Dissolved	ND		mg/l	0.007	0.003	1	07/22/17 14:33	07/25/17 14:51	EPA 3005A	1,6010C	PS

Project Name:	FORMER CENTRAL PLATING	**Lab Number:**	L1724792
Project Number:	141.05051	**Report Date:**	07/31/17

SAMPLE RESULTS

Lab ID:	L1724792-08	Date Collected:	07/17/17 12:30
Client ID:	GW-DUP1	Date Received:	07/19/17
Sample Location:	WALPOLE, NH	Field Prep:	Field Filtered (Dissolved Metals)
Matrix:	Water		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Dissolved Metals - Mansfield Lab											
Arsenic, Dissolved	ND		mg/l	0.005	0.002	1	07/22/17 14:33	07/25/17 14:56	EPA 3005A	1,6010C	PS
Barium, Dissolved	0.045		mg/l	0.010	0.002	1	07/22/17 14:33	07/25/17 14:56	EPA 3005A	1,6010C	PS
Cadmium, Dissolved	0.00513		mg/l	0.00020	0.00005	1	07/22/17 14:33	07/26/17 11:35	EPA 3005A	1,6020A	AM
Chromium, Dissolved	0.021		mg/l	0.010	0.002	1	07/22/17 14:33	07/25/17 14:56	EPA 3005A	1,6010C	PS
Lead, Dissolved	0.003	J	mg/l	0.010	0.003	1	07/22/17 14:33	07/25/17 14:56	EPA 3005A	1,6010C	PS
Mercury, Dissolved	ND		mg/l	0.00020	0.00006	1	07/20/17 14:06	07/20/17 19:38	EPA 7470A	1,7470A	EA
Nickel, Dissolved	0.298		mg/l	0.025	0.002	1	07/22/17 14:33	07/25/17 14:56	EPA 3005A	1,6010C	PS
Selenium, Dissolved	ND		mg/l	0.010	0.004	1	07/22/17 14:33	07/25/17 14:56	EPA 3005A	1,6010C	PS
Silver, Dissolved	ND		mg/l	0.007	0.003	1	07/22/17 14:33	07/25/17 14:56	EPA 3005A	1,6010C	PS

Project Name: FORMER CENTRAL PLATING **Lab Number:** L1724792
Project Number: 141.05051 **Report Date:** 07/31/17

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Dissolved Metals - Mansfield Lab for sample(s): 01-06,08 Batch: WG1024299-1										
Mercury, Dissolved	ND		mg/l	0.00020	0.00006	1	07/20/17 14:06	07/20/17 19:17	1,7470A	EA

Prep Information

Digestion Method: EPA 7470A

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Dissolved Metals - Mansfield Lab for sample(s): 01-06,08 Batch: WG1024994-1										
Cadmium, Dissolved	ND		mg/l	0.00020	0.00005	1	07/22/17 14:33	07/26/17 10:30	1,6020A	AM

Prep Information

Digestion Method: EPA 3005A

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Dissolved Metals - Mansfield Lab for sample(s): 01-06,08 Batch: WG1025245-1										
Arsenic, Dissolved	ND		mg/l	0.005	0.002	1	07/22/17 14:33	07/25/17 14:11	1,6010C	PS
Barium, Dissolved	ND		mg/l	0.010	0.002	1	07/22/17 14:33	07/25/17 14:11	1,6010C	PS
Chromium, Dissolved	ND		mg/l	0.010	0.002	1	07/22/17 14:33	07/25/17 14:11	1,6010C	PS
Lead, Dissolved	0.004	J	mg/l	0.010	0.003	1	07/22/17 14:33	07/25/17 14:11	1,6010C	PS
Nickel, Dissolved	ND		mg/l	0.025	0.002	1	07/22/17 14:33	07/25/17 14:11	1,6010C	PS
Selenium, Dissolved	ND		mg/l	0.010	0.004	1	07/22/17 14:33	07/25/17 14:11	1,6010C	PS
Silver, Dissolved	ND		mg/l	0.007	0.003	1	07/22/17 14:33	07/25/17 14:11	1,6010C	PS

Prep Information

Digestion Method: EPA 3005A

Lab Control Sample Analysis
Batch Quality Control

Project Name: FORMER CENTRAL PLATING
Project Number: 141.05051

Lab Number: L1724792
Report Date: 07/31/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Dissolved Metals - Mansfield Lab Associated sample(s): 01-06,08 Batch: WG1024299-2								
Mercury, Dissolved	105		-		80-120	-		
Dissolved Metals - Mansfield Lab Associated sample(s): 01-06,08 Batch: WG1024994-2								
Cadmium, Dissolved	102		-		80-120	-		
Dissolved Metals - Mansfield Lab Associated sample(s): 01-06,08 Batch: WG1025245-2								
Arsenic, Dissolved	102		-		80-120	-		
Barium, Dissolved	102		-		80-120	-		
Chromium, Dissolved	102		-		80-120	-		
Lead, Dissolved	106		-		80-120	-		
Nickel, Dissolved	98		-		80-120	-		
Selenium, Dissolved	110		-		80-120	-		
Silver, Dissolved	101		-		80-120	-		

Matrix Spike Analysis
Batch Quality Control

Project Name: FORMER CENTRAL PLATING
Project Number: 141.05051
Lab Number: L1724792
Report Date: 07/31/17

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Dissolved Metals - Mansfield Lab Associated sample(s): 01-06,08 QC Batch ID: WG1024299-3 QC Sample: L1724792-01 Client ID: SH-2												
Mercury, Dissolved	ND	0.005	0.00463	93		-	-		75-125	-		20
Dissolved Metals - Mansfield Lab Associated sample(s): 01-06,08 QC Batch ID: WG1024994-3 QC Sample: L1724792-01 Client ID: SH-2												
Cadmium, Dissolved	0.00532	0.051	0.1043	**194**	Q	-	-		75-125	-		20
Dissolved Metals - Mansfield Lab Associated sample(s): 01-06,08 QC Batch ID: WG1025245-3 QC Sample: L1724792-01 Client ID: SH-2												
Arsenic, Dissolved	ND	0.12	0.121	101		-	-		75-125	-		20
Barium, Dissolved	0.046	4	3.89	96		-	-		75-125	-		20
Chromium, Dissolved	0.021	0.4	0.415	99		-	-		75-125	-		20
Lead, Dissolved	0.004J	0.51	0.516	101		-	-		75-125	-		20
Nickel, Dissolved	0.301	1	1.24	94		-	-		75-125	-		20
Selenium, Dissolved	ND	0.12	0.129	108		-	-		75-125	-		20
Silver, Dissolved	ND	0.1	0.103	103		-	-		75-125	-		20

Lab Duplicate Analysis
Batch Quality Control

Project Name: FORMER CENTRAL PLATING
Project Number: 141.05051

Lab Number: L1724792
Report Date: 07/31/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Dissolved Metals - Mansfield Lab Associated sample(s): 01-06,08 QC Batch ID: WG1024299-4 QC Sample: L1724792-01 Client ID: SH-2						
Mercury, Dissolved	ND	ND	mg/l	NC		20
Dissolved Metals - Mansfield Lab Associated sample(s): 01-06,08 QC Batch ID: WG1024994-4 QC Sample: L1724792-01 Client ID: SH-2						
Cadmium, Dissolved	0.00532	0.00554	mg/l	4		20
Dissolved Metals - Mansfield Lab Associated sample(s): 01-06,08 QC Batch ID: WG1025245-4 QC Sample: L1724792-01 Client ID: SH-2						
Arsenic, Dissolved	ND	ND	mg/l	NC		20
Barium, Dissolved	0.046	0.047	mg/l	1		20
Chromium, Dissolved	0.021	0.022	mg/l	1		20
Lead, Dissolved	0.004J	0.004J	mg/l	NC		20
Nickel, Dissolved	0.301	0.300	mg/l	0		20
Selenium, Dissolved	ND	ND	mg/l	NC		20
Silver, Dissolved	ND	ND	mg/l	NC		20

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1724792-01A	Plastic 250ml HNO3 preserved	A	<2	<2	2.5	Y	Absent		PB-SI(180),BA-SI(180),AG-SI(180),AS-SI(180),NI-SI(180),CR-SI(180),CD-6020S(180),HG-S(28),SE-SI(180)
L1724792-01B	Plastic 250ml Trizma preserved	A	NA		2.5	Y	Absent		A2-NH-537-ISOTOPE(14)
L1724792-01C	Plastic 250ml Trizma preserved	A	NA		2.5	Y	Absent		A2-NH-537-ISOTOPE(14)
L1724792-01D	Plastic 250ml Trizma preserved	A	NA		2.5	Y	Absent		A2-NH-537-ISOTOPE(14)
L1724792-02A	Plastic 250ml HNO3 preserved	A	<2	<2	2.5	Y	Absent		PB-SI(180),BA-SI(180),AG-SI(180),AS-SI(180),NI-SI(180),CR-SI(180),CD-6020S(180),HG-S(28),SE-SI(180)
L1724792-02B	Plastic 250ml Trizma preserved	A	NA		2.5	Y	Absent		A2-NH-537-ISOTOPE(14)
L1724792-02C	Plastic 250ml Trizma preserved	A	NA		2.5	Y	Absent		A2-NH-537-ISOTOPE(14)
L1724792-02D	Plastic 250ml Trizma preserved	A	NA		2.5	Y	Absent		A2-NH-537-ISOTOPE(14)
L1724792-03A	Plastic 250ml HNO3 preserved	A	<2	<2	2.5	Y	Absent		PB-SI(180),BA-SI(180),AG-SI(180),AS-SI(180),NI-SI(180),CR-SI(180),CD-6020S(180),HG-S(28),SE-SI(180)
L1724792-04A	Plastic 250ml HNO3 preserved	A	<2	<2	2.5	Y	Absent		PB-SI(180),BA-SI(180),AG-SI(180),AS-SI(180),NI-SI(180),CR-SI(180),CD-6020S(180),HG-S(28),SE-SI(180)
L1724792-04B	Plastic 250ml Trizma preserved	A	7	7	2.5	Y	Absent		HOLD-537(14)
L1724792-04C	Plastic 250ml Trizma preserved	A	7	7	2.5	Y	Absent		HOLD-537(14)
L1724792-04D	Plastic 250ml Trizma preserved	A	7	7	2.5	Y	Absent		HOLD-537(14)
L1724792-05A	Plastic 250ml HNO3 preserved	A	<2	<2	2.5	Y	Absent		PB-SI(180),BA-SI(180),AG-SI(180),AS-SI(180),NI-SI(180),CR-SI(180),CD-6020S(180),HG-S(28),SE-SI(180)
L1724792-06A	Plastic 250ml HNO3 preserved	A	<2	<2	2.5	Y	Absent		PB-SI(180),BA-SI(180),AG-SI(180),AS-SI(180),NI-SI(180),CR-SI(180),CD-6020S(180),HG-S(28),SE-SI(180)
L1724792-07A	Plastic 250ml HNO3 preserved	A	<2	<2	2.5	Y	Absent		HOLD-METAL-DISSOLVED(180)
L1724792-08A	Plastic 250ml HNO3 preserved	A	<2	<2	2.5	Y	Absent		PB-SI(180),BA-SI(180),AG-SI(180),AS-SI(180),NI-SI(180),CR-SI(180),CD-6020S(180),HG-S(28),SE-SI(180)

*Values in parentheses indicate holding time in days

Project Name: FORMER CENTRAL PLATING
Project Number: 141.05051

Lab Number: L1724792
Report Date: 07/31/17

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1724792-08B	Plastic 250ml Trizma preserved	A	NA		2.5	Y	Absent		A2-NH-537-ISOTOPE(14)
L1724792-08C	Plastic 250ml Trizma preserved	A	NA		2.5	Y	Absent		A2-NH-537-ISOTOPE(14)
L1724792-08D	Plastic 250ml Trizma preserved	A	NA		2.5	Y	Absent		A2-NH-537-ISOTOPE(14)
L1724792-09A	Plastic 250ml Trizma preserved	A	7	7	2.5	Y	Absent		HOLD-537(14)
L1724792-09B	Plastic 250ml Trizma preserved	A	7	7	2.5	Y	Absent		HOLD-537(14)
L1724792-09C	Plastic 250ml Trizma preserved	A	7	7	2.5	Y	Absent		HOLD-537(14)
L1724792-10A	Plastic 250ml Trizma preserved	A	NA		2.5	Y	Absent		A2-NH-537-ISOTOPE(14)

*Values in parentheses indicate holding time in days

GLOSSARY

Acronyms

EDL - Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).

EPA - Environmental Protection Agency.

LCS - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LCSD - Laboratory Control Sample Duplicate: Refer to LCS.

LFB - Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

MDL - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

MS - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.

MSD - Matrix Spike Sample Duplicate: Refer to MS.

NA - Not Applicable.

NC - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

NDPA/DPA - N-Nitrosodiphenylamine/Diphenylamine.

NI - Not Ignitable.

NP - Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.

RL - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

RPD - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

SRM - Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

STLP - Semi-dynamic Tank Leaching Procedure per EPA Method 1315.

TIC - Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensation Product".

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related

Data Qualifiers

projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

J - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

ND - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

Report Format: DU Report with 'J' Qualifiers

REFERENCES

1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - IV, 2007.

122 Determination of Selected Perfluorintated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS). EPA Method 537, EPA/600/R-08/092. Version 1.1, September 2009.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624: m/p-xylene, o-xylene
EPA 8260C: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), Methyl methacrylate, 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
EPA 300: DW: Bromide
EPA 6860: NPW and SCM: Perchlorate
EPA 9010: NPW and SCM: Amenable Cyanide Distillation
EPA 9012B: NPW: Total Cyanide
EPA 9050A: NPW: Specific Conductance
SM3500: NPW: Ferrous Iron
SM4500: NPW: Amenable Cyanide, Dissolved Oxygen; SCM: Total Phosphorus, TKN, NO2, NO3.
SM5310C: DW: Dissolved Organic Carbon

Mansfield Facility
SM 2540D: TSS
EPA 3005A NPW
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **SM4500NO3-F, EPA 353.2**: Nitrate-N**, EPA 351.1, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D.**
EPA 624: Volatile Halocarbons & Aromatics,
EPA 608: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E.**

Mansfield Facility:

Drinking Water
EPA 200.7: Ba, Be, Cd, Cr, Cu, Ni, Na, Ca. **EPA 200.8:** Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Ni, Se, TL. **EPA 245.1** Hg.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

KANSOM

Serial_No:07311717:48

MANSFIELD CHAIN OF CUSTODY

PAGE 1 OF 1

Date Rec'd in Lab: 7/19/17

ALPHA Job #: L1724792

ALPHA ANALYTICAL

WESTBORO, MA TEL: 508-898-9220 FAX: 508-898-9193

MANSFIELD, MA TEL: 508-822-9300 FAX: 508-822-3288

Client Information

Client: Ransom Consulting, Inc.

Address: 112 Corporate Drive Portsmouth, NH 03801

Phone: 603-436-1490

Fax: 603-436-6039

Email: sriekevich@ransomenv.com bonnie.best@ransomenv.com

☐ These samples have been previously analyzed by Alpha

Project Information

Project Name: Former Central Plating

Project Location: Walpole, NH

Project #: 141.05051

Project Manager: Steven Riekevich

ALPHA Quote #:

Turn-Around Time

☒ Standard ☐ RUSH (only confirmed if pre-approved!)

Date Due: Time:

Report Information - Data Deliverables

☐ FAX ☒ EMAIL

☒ ADEx ☐ Add'l Deliverables

Billing Information

☒ Same as Client info PO #: ~~10172~~ BAS 7-19-17 PO# 10217

Regulatory Requirements/Report Limits

State /Fed Program: USEPA/NHDES Criteria: Brownfield per SSQAPP/AGQS

Analytical Level = Level II Data Eval. = Tier I Plus

Other Project Specific Requirements/Comments/Detection Limits:

* = HOLD Sample

Dissolved Metals Samples are field filtered

PLEASE NOTE

MS/MSD (at unit cost) will be omitted unless you check here: ☐

ANALYSIS: RCRA 8 + Ni: 6010 (Diss); PFCs: 537 Isotope Dilution

SAMPLE HANDLING

Filtration ☐ Done ☐ Not needed ☐ Lab to do

Preservation ☐ Lab to do (Please specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	RCRA 8 + Ni (Diss)	PFCs 537	Sample Specific Comments	TOTAL # BOTTLES
24792-01	SH-2	7-17-17	12:03	GW	BAS PRH	✓	✓		
02	MW102	7-18-17	13:56		BAS	✓	✓		
03	MW104	7-17-17	14:04			✓			
04	MW201	7-17-17	13:41		BAS	✓	*		
05	MW202	7-17-17	12:11			✓			
06	IW-001	7-17-17	14:20			✓			
07	IW-DUP	7-17-17	14:25			*			
08	GW-DUP1	7-17-17	12:30		BAS	✓	✓		
09	GW-DUP2	7-18-17	13:50		BAS		*		
10	Field Blank	7-17-17	14:50	↓	BAS		✓		

Container Type

Preservative

Relinquished By:	Date/Time	Received By:	Date/Time
[signature]	7-19-17/1530	Jessica J. Wagner AAL	7/19/17 1530
Jessica J. Wagner	7/19/17 1710	Rob Manto AAL	7/19/17 1710
Rob Manto	7/19/17 1920	[signature]	7/19/17 19:20

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

FORM NO: 101-09 (rev. 27-SEP-10)

APPENDIX C

Remedial Cost Estimates Supporting Calculations

Supplemental Phase II Environmental Site Assessment and
Analyses of Brownfield Cleanup Alternatives/Remedial Action Plan
Central Plating Site
12 Westminster Street
Walpole, New Hampshire

Ransom Consulting, Inc.
Project 141.05051.001

Central Plating Site

Order of Magnitude Preliminary Cost Estimate - Brownfields Cleanup Project - Alternative: Excavate and Dispose of Soils to Reduce Leaching Potential

	Estimate	Lot 65	Lot 66	Notes
Additional Investigations? Excavations? (PFAS? PFAS Soils Excavation at Teflon Tank?)	?	$?	$?	Costs are unknown: additional GW sampling, downgradient well installation and sampling, local surficial soils sampling, remediation (Reasonable range: $1,500 to $6,000 assuming sampling or installing and sampling one additional well) installing 5+/- additional wells and sampling for PFAS). Additional remediation *could* be limited to monitoring only. Investigation & excavation at Teflon tank ($12,000 investigation; $30,500 to excavate/disp/backfill an assumed 100 tons) **Reasonable range: $1,500 to $50,000**
EPA Clean-up Grant Proposal or Revolving Loan Fund (RLF) Application Preparation	$ -			
Brownfields Programmatic Costs	$ 30,000	$ 15,000	$ 15,000	
Asbestos Abatement	$ 2,500			Addresses Hazardous Building Materials - Lot 65
Hazardous Materials Removal (Sump pits, selected concrete, wood)	$ 20,000			Clean sumps and dispose (some concrete, wood, sump contents)
Demolition	$ 40,000			35x28 ft one story garage building & conc. floor/foundation
Total	$ 62,500	$ 62,500		
Lot 66 Cr (+ PFAS) Soils Remediation (Plating Line Release) Calculated Costs add 15%	+ 15%			Adds 15% to caculated volumes to account for excavation slough, etc.
Lot 66				
164 Tons $335 per Ton (portion as hazardous waste)	$ 63,094			Addresses plating lines hot spots
Tons $110 per ton (portion as solid waste)	$ -			(Lot 66)
Total	$ 63,094		$ 63,094	
If all soil is hazardous, then add:	$ -			If TCLP Cr fails (i.e. hazardous waste) or if evolving PFAS disposal regulations are promulgated (this cost adjustment is not included in "Totals" and is provided for consideration and planning)
Excavation				
300 Cubic Yards $35 per CY *(no allowance for sloping)*	$ 12,075		$ 12,075	
Loading				
164 Cubic Yards $12 per CY	$ 2,263		$ 2,263	
Backfill (placed & compacted)				
164 Tons $30 per Ton	$ 5,658		$ 5,658	
Tons $15 per Ton *(Without benching/sloping tonnage)*	$ -		$ -	
Lot 65 - Metals (+ PFAS) Soils Remediation (Under Sumps) Calculated Costs add 15%	+15%			Addresses inferred sump hot spots
Disposal				(Lot 65)
216 Tons $110 per Ton	$ 27,287	$ 27,287		
If soil is hazardous, then add:	***$ 55,813***	$?		
Excavation				
193 Cubic Yards $35 per CY *(no allowance for sloping)*	$ 7,752	$ 7,752		
Loading				
154 Cubic Yards $12 per CY	$ 2,126	$ 2,126		
Backfill (placed & compacted)				
215 Tons $30 per Ton	$ 7,418	$ 7,418		
54 Tons $15 per Ton	$ 930	$ 930		
Subtotal		$ 123,012	$ 98,090	
Engineering (assumed 16% of RPI + AUR related costs + $9,500 lab costs) (RPI=remedial plan implementation costs)	$ 55,000	$ 27,500	$ 27,750	Includes specification prep, bid docs/management, field oversight/sampling, reporting
Groundwater Management Permit Application (assumes town-owned; no st. applic. fee)	$ 2,900	$ 1,450	$ 1,450	
Recordation/notification (for GMZ Lots)	$ 1,500	$ 750	$ 750	
Totals $ by Lot		**$152,712**	**$128,040**	
Total plus 20% contingency:		**$183,255**	**$153,648**	
Possible EPA Clean-up Grant Award per Lot:		$200,000	$200,000	If eligible entity (such as the Town) takes ownership and grants are awarded for each lot
Grant Recipient Match (assuming grant is awarded for $200,000 ea Lot):	20%	$40,000	$40,000	
Estimated Ongoing Costs:				**These are additional estimated costs for groundwater monitoring:**
Permit Monitoring (years 1-5)				
(assumes 5 wells, 2x per year for 1st two years, RCRA metals + Ni + PFAS)	$ 17,460			
(assumes 5 wells, 1x per year for three years, RCRA metals + Ni + PFAS)	$ 13,095			
(assumes 2 Summary Reports)	$ 4,600	$ 7,031	cost/yr	
Permit Monitoring (years 6-10 and subsequent 5 yr permits, if needed)				
(permit renewal, assumes town-owned)	$ 1,750			
(assumes 5 wells, 1x per year for five years, RCRA metals + Ni + PFAS)	$ 21,825			
(assumes 2 Summary Reports)	$ 4,600	$ 5,635	cost/yr	
		$ 6,000		One Time Monitoring Well Decomissioning Cost

Central Plating Site

Order of Magnitude Preliminary Cost Estimate - Brownfields Cleanup Project - Alternative: Excavate and Dispose of Soils with Remediation Standard Exceedances

Item	Estimate	Lot 65	Lot 66	Notes
Additional Investigations? Excavations? (PFAS? PFAS Soils Excavation at Teflon Tank?)	?	$?	$?	Costs are unknown: additional GW sampling, downgradient well installation and sampling, local surficial soils sampling, remediation (Reasonable range: $1,500 to $6,000 assuming sampling or installing and sampling one additional well) installing 5+/- additional wells and sampling for PFAS). Additional remediation *could* be limited to monitoring only. Investigation & excavation at Teflon tank ($12,000 investigation; $30,500 to excavate/disp/backfill an assumed 100 tons) **Reasonable range: $1,500 to $50,000**
EPA Clean-up Grant Proposal or Revolving Loan Fund (RLF) Application Preparation	$ -			
Brownfields Programmatic Costs	$ 30,000	$ 15,000	$ 15,000	
Asbestos Abatement	$ 2,500			Addresses Hazardous Building Materials - Lot 65
Hazardous Materials Removal (Sump pits, selected concrete, wood)	$ 20,000			Clean sumps and dispose (some concrete, wood, sump contents)
Demolition	$ 40,000			35x28 ft one story garage building & conc. floor/foundation
Total	$ 62,500	$ 62,500		
Lot 66 Cr (+ PFAS) Soils Remediation (Plating Line Release) — Calculated Costs add 15%	+ 15%			Adds 15% to caculated volumes to account for excavation slough, etc.
Lot 66				
164 Tons — $335 per Ton — (portion as hazardous waste)	$ 63,094			Addresses plating lines hot spots
387 Tons — $110 per ton — (portion as solid waste)	$ 48,920			(Lot 66)
Total	$ 112,014		$ 112,014	
If all soil is hazardous, then add:	***$ 100,065***		$?	If TCLP Cr fails (i.e. hazardous waste) or if evolving PFAS disposal regulations are promulgated (this cost adjustment is not included in "Totals" and is provided for consideration and planning)
Excavation				
602 Cubic Yards — $35 per CY	$ 24,235		$ 24,235	
(no allowance for sloping)				
Loading				
381 Cubic Yards — $12 per CY	$ 5,259		$ 5,259	
Backfill (placed & compacted)				
550 Tons — $30 per Ton	$ 18,992		$ 18,992	
309 Tons — $15 per Ton — *(Without benching/sloping tonnage)*	$ 5,338		$ 5,338	
Lot 65 - Metals (+PFAS) Soils Remediation (Under Sumps) — Calculated Costs add 15%	+15%			Addresses inferred sump hot spots
Disposal				(Lot 65)
216 Tons — $110 per Ton — (assumed soil is not hazardous waste)	$ 27,270	$ 27,270		
If soil is hazardous, then add:	***$ 55,779***	$?		
Excavation				
193 Cubic Yards — $35 per CY	$ 7,768	$ 7,768		
(no allowance for sloping)				
Loading				
154 Cubic Yards — $12 per CY	$ 2,125	$ 2,125		
Backfill (placed & compacted)				
215 Tons — $30 per Ton	$ 7,418	$ 7,418		
54 Tons — $15 per Ton	$ 932	$ 932		
Subtotal		$ 123,012	$ 180,837	This Subtotal ***does not*** assume all soil is hazardous (potential add-on costs are shown in orange)
Engineering (assumed 16% of RPI + $9,500 lab costs) (RPI=remedial plan implementation costs)	$ 58,116	$ 24,432	$ 33,684	Includes specification prep, bid docs/management, field oversight/sampling, reporting
Groundwater Management Permit Application (assumes town-owned; no st. applic. fee)	$ 2,900	$ 1,450	$ 1,450	
Recordation/notification (for GMZ Lots)	$ 1,500	$ 750	$ 750	
Totals $ by Lot		**$149,644**	**$216,721**	
Total plus 20% contingency:		**$179,572**	**$260,066**	
Possible EPA Clean-up Grant Award per Lot:		$200,000	$200,000	If eligible entity (such as the Town) takes ownership and grants are awarded for each lot
Grant Recipient Match (assuming grant is awarded for $200,000 ea Lot):	20%	$40,000	$40,000	
Estimated Ongoing Costs:				**These are additional estimated costs for groundwater monitoring:**
Permit Monitoring (years 1-5)				
(assumes 5 wells, 2x per year for 1st two years, RCRA metals + Ni + PFAS)	$ 17,460			
(assumes 5 wells, 1x per year for three years, RCRA metals + Ni + PFAS)	$ 13,095			
(assumes 2 Summary Reports)	$ 4,600	$ 7,031	cost/yr	
Permit Monitoring (years 6-10 and subsequent 5 yr permits, if needed)				
(permit renewal, assumes town-owned)	$ 1,750			
(assumes 5 wells, 1x per year for five years, RCRA metals + Ni + PFAS)	$ 21,825			
(assumes 2 Summary Reports)	$ 4,600	$ 5,635	cost/yr	
		$ 6,000		One Time Monitoring Well Decomissioning Cost

Central Plating Site

Present Woth Cost Calculation for Long-Term Monitoring

Year	Present Worth Cost Factor (P/F)	Annual Groundwater Management Permit Monitoring	Annual Subtotals		Totals	
0	1	$ 7,031	$ 7,031			
1	0.9524	$7,242	$6,897.21			
2	0.9070	$7,459	$6,765.48			
3	0.8638	$7,683	$6,636.54			
4	0.8227	$7,913	$6,510.40			
5	0.7835	$ 5,218	$4,088.12	(Adjust permit monitoring frequency @ Year 5)		
6	0.7462	$5,374	$4,010.30			
7	0.7107	$5,536	$3,934.10			
8	0.6768	$5,702	$3,858.84			
9	0.6446	$5,873	$3,785.50			
10	0.6139	$6,049	$3,713.37			
11	0.5847	$6,230	$3,642.64			
12	0.5568	$6,417	$3,573.25			
13	0.5303	$6,610	$3,505.19			
14	0.6139	$6,808	$4,179.46	At 15 years	Decomissioning	Total
15	0.5847	$7,012	$4,099.85	$76,231	$5,465	$81,697
16	0.5568	$7,223	$4,021.76			
17	0.5303	$7,439	$3,945.16			
18	0.5051	$7,662	$3,870.01			
19	0.4810	$7,892	$3,796.30			
20	0.4581	$8,129	$3,723.98			
21	0.4363	$8,373	$3,653.05			
22	0.4155	$8,624	$3,583.47			
23	0.3957	$8,883	$3,515.21			
24	0.3769	$9,149	$3,448.26	At 25 years	Decomissioning	Total
25	0.3589	$9,424	$3,382.58	$113,171	$4,597	$117,768
26	0.3418	$9,707	$3,318.15			
27	0.3256	$9,998	$3,255			
28	0.3101	$10,298	$3,193			
29	0.2953	$10,607	$3,132			
30	0.2812	$10,925	$3,072			
31	0.2678	$11,253	$3,014			
32	0.2551	$11,590	$2,957			
33	0.2429	$11,938	$2,900			
34	0.2314	$12,296	$2,845			
35	0.2204	$12,665	$2,791			
36	0.2099	$13,045	$2,738			
37	0.1999	$13,436	$2,685			
38	0.1904	$13,839	$2,634			
39	0.1813	$14,254	$2,584			
40	0.1727	$14,682	$2,535			
41	0.1644	$15,123	$2,487			
42	0.1566	$15,576	$2,439			
43	0.1491	$16,043	$2,393			
44	0.1420	$16,525	$2,347			
45	0.1353	$17,021	$2,303			
46	0.1288	$17,531	$2,259			
47	0.1227	$18,057	$2,216			
48	0.1169	$18,599	$2,173			
49	0.1113	$19,157	$2,132	At 50 Years	Decomissioning	Total
50	0.1060	$19,731	$2,091	$179,664	$2,788	$182,452

NOTES:

1. Present worth cost factors for rate-of-return of 5%.
2. Inflation assumed at 3%.
2. Assumes no NH DES permit fees (municipally owned).

APPENDIX D

Selected NH DES OneStop Report Excerpts,
from Limited Subsurface Investigation dated February 23, 2018

Supplemental Phase II Environmental Site Assessment and
Analyses of Brownfield Cleanup Alternatives/Remedial Action Plan
Central Plating Site
12 Westminster Street
Walpole, New Hampshire

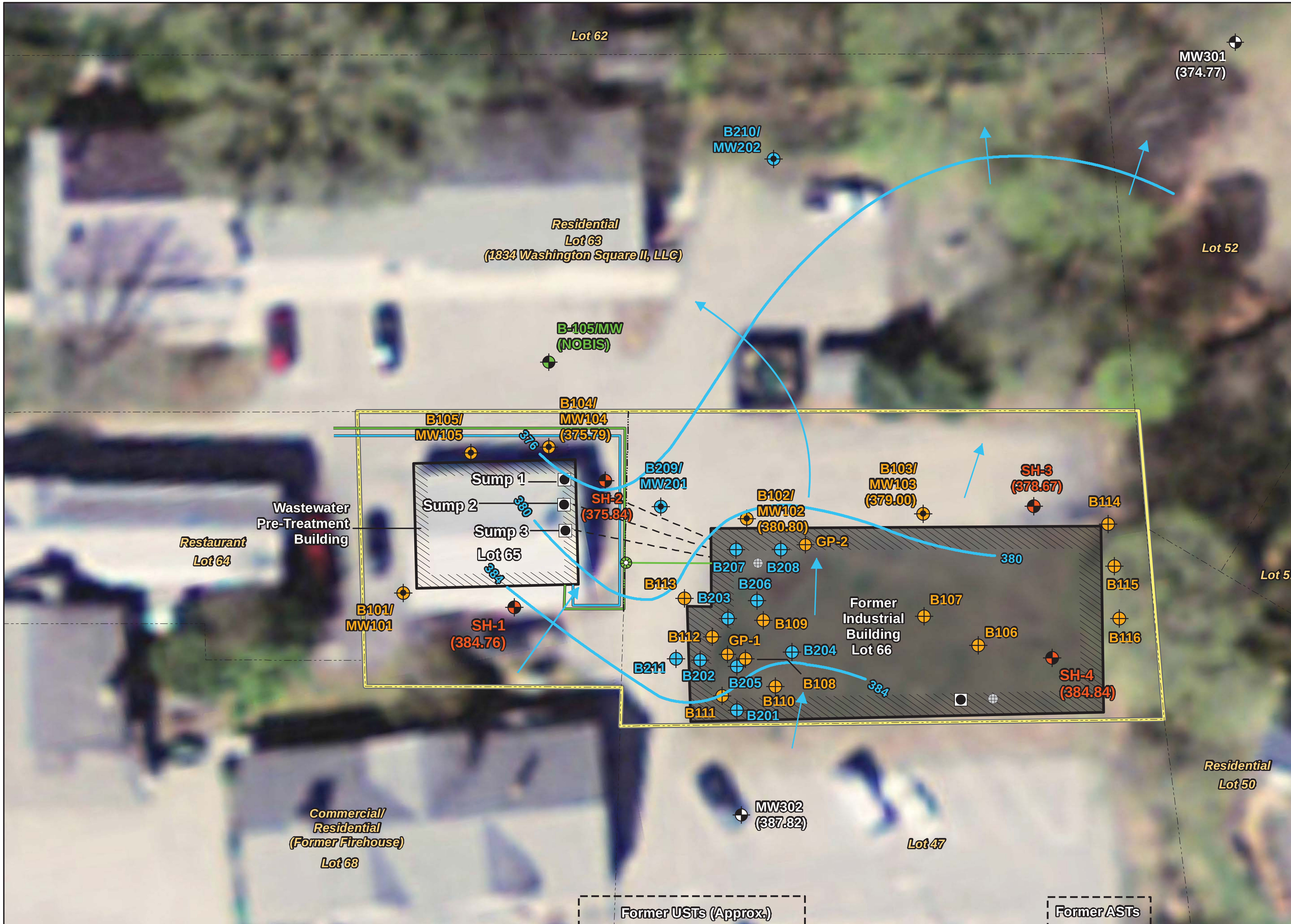
TABLE 2. SUMMARY OF GROUNDWATER LABORATORY ANALYTICAL RESULTS
Former Central Plating Site
Walpole, New Hampshire

				AOC 2			AOC 6							AOC 7		LOT 51	LOT 52	LOT 47	
LOCATION	SAMPLING DATE	NH DES Ambient Groundwater Quality Standards (AGQS)	US EPA Maximum Contaminant Levels (MCLs)	MW102	SH-4	MW201	MW103	MW104	MW105	SH-2	GW-DUP1	SH-3	MW202	MW101	SH-1	IW-001	MW301	MW302	FIELD BLANK
Volatile Organic Compounds (VOCs)								Concentrations in µg/L									NI	NI	
Chloroform	9/1/2015	70	NS	BDL (0.16)	BDL (0.16)	NI	BDL (0.16)	0.56 J	BDL (0.16)	BDL (0.16)		BDL (0.16)	NI	BDL (4)	BDL (3.2)		NI	NI	
1,2-Dichloroethane	9/1/2015	5	5	BDL (0.16)	BDL (0.16)	NI	1.6	3.8	0.88	BDL (0.16)		BDL (0.16)	NI	BDL (3.3)	BDL (2.6)		NI	NI	
Benzene	9/1/2015	5	5	BDL (0.16)	BDL (0.16)	NI	4	4.4	4.1	BDL (0.16)		BDL (0.16)	NI	**20**	**15**		NI	NI	
Toluene	9/1/2015	1,000	1,000	BDL (0.16)	BDL (0.16)	NI	BDL (0.16)	BDL (0.16)	BDL (0.16)	BDL (0.16)		BDL (0.16)	NI	97	67		NI	NI	
Ethylbenzene	9/1/2015	700	700	BDL (0.17)	BDL (0.17)	NI	BDL (0.17)	BDL (0.17)	BDL (0.17)	BDL (0.17)		BDL (0.17)	NI	510	640		NI	NI	
Trichloroethene	9/1/2015	5	5	BDL (0.18)	BDL (0.18)	NI	BDL (0.18)	BDL (0.18)	0.33 J	BDL (0.18)		BDL (0.18)	NI	BDL (4.4)	BDL (3.5)		NI	NI	
Methyl tert butyl ether	9/1/2015	13	NS	2.5	BDL (0.16)	NI	5.8	**56**	8.3	12		BDL (0.16)	NI	**77**	**63**		NI	NI	
m,p-Xylene	9/1/2015	10,000 (1)	10,000 (1)	0.33 J	BDL (0.33)	NI	BDL (0.33)	BDL (0.33)	BDL (0.33)	BDL (0.33)		BDL (0.33)	NI	2,900	2,100		NI	NI	
o-Xylene	9/1/2015	10,000 (1)	10,000 (1)	BDL (0.33)	BDL (0.33)	NI	BDL (0.33)	BDL (0.33)	BDL (0.33)	BDL (0.33)		BDL (0.33)	NI	900	290		NI	NI	
Total Xylenes	9/1/2015	10,000	10,000	0.33 J	BDL (0.33)	NI	BDL (0.33)	BDL (0.33)	BDL (0.33)	BDL (0.33)		BDL (0.33)	NI	3,800	2,600		NI	NI	
Styrene	9/1/2015	100	100	BDL (0.36)	BDL (0.36)	NI	BDL (0.36)	BDL (0.36)	BDL (0.36)	BDL (0.36)		BDL (0.36)	NI	18 J	18 J		NI	NI	
Acetone	9/1/2015	6,000	NS	BDL (1.0)	BDL (1.0)	NI	BDL (1.5)	BDL (1.5)	BDL (1.5)	BDL (1.5)		3.4 J	NI	BDL (36)	BDL (29)		NI	NI	
2-Hexanone	9/1/2015	NS	NS	BDL (0.52)	BDL (0.52)	NI	BDL (0.52)	BDL (0.52)	BDL (0.52)	BDL (0.52)		0.77 J	NI	BDL (13)	BDL (10)		NI	NI	
n-Butylbenzene	9/1/2015	260	NS	BDL (0.19)	BDL (0.19)	NI	BDL (0.19)	BDL (0.19)	BDL (0.19)	BDL (0.19)		BDL (0.19)	NI	8.6 J	9 J		NI	NI	
Isopropylbenzene	9/1/2015	800	NS	BDL (0.19)	BDL (0.19)	NI	BDL (0.19)	0.31 J	BDL (0.19)	BDL (0.19)		BDL (0.19)	NI	20	30		NI	NI	
Naphthalene	9/1/2015	20	NS	BDL (0.22)	BDL (0.22)	NI	BDL (0.22)	BDL (0.22)	BDL (0.22)	0.53 J		BDL (0.22)	NI	**40 J**	**280**		NI	NI	
n-Propylbenzene	9/1/2015	260	NS	BDL (0.17)	BDL (0.17)	NI	BDL (0.17)	BDL (0.17)	BDL (0.17)	BDL (0.17)		BDL (0.17)	NI	23	58		NI	NI	
1,3,5-Trimethylbenzene	9/1/2015	330	NS	BDL (0.17)	BDL (0.17)	NI	BDL (0.17)	BDL (0.17)	BDL (0.17)	BDL (0.17)		BDL (0.17)	NI	210	160		NI	NI	
1,2,4-Trimethylbenzene	9/1/2015	330	NS	BDL (0.19)	BDL (0.19)	NI	BDL (0.19)	BDL (0.19)	BDL (0.19)	BDL (0.19)		BDL (0.19)	NI	**720**	**650**		NI	NI	
Tert-Butyl-Alcohol	9/1/2015	49	NS	BDL (0.9)	BDL (0.9)	NI	BDL (0.9)	13	BDL (0.9)	BDL (0.9)		BDL (0.9)	NI	BDL (22)	BDL (18)		NI	NI	
Tertiary-Amyl Methyl Ether	9/1/2015	140	NS	BDL (0.28)	BDL (0.28)	NI	BDL (0.28)	0.82 J	BDL (0.28)	BDL (0.28)		BDL (0.28)	NI	BDL (7)	BDL (5.6)		NI	NI	
All Other VOCs	9/1/2015	Various	Various	BDL (Various)	BDL (Various)	NI	BDL (Various)	BDL (Various)	BDL (Various)	BDL (Various)		BDL (Various)	NI	BDL (Various)	BDL (Various)		NI	NI	
Total Cyanide								Concentrations in µg/L											
Cyanide	9/1/2015	200	200	3 J	4 J	NI	1 J	3 J	4 J	2 J		2 J	NI	5	4 J				
Dissolved Metals								Concentrations in µg/L									NI	NI	
Arsenic	9/1/2015	10	10	**11.2**	BDL (2)	NI	BDL (2)	BDL (2)	BDL (2)	3 J		BDL (2)	NI	BDL (2)	BDL (2)	NS	NI	NI	
	7/17&18/2017			BDL (2)	NS	BDL (2)	NS	3 J	NS	BDL (2)	BDL (2)	NS	BDL (2)	NS	NS	BDL (2)	NI	NI	
Barium	9/1/2015	2,000	2,000	111	106	NI	62.2	68.9	27.8	45.9		24.7	NI	188	132	NS	NI	NI	
	7/17&18/2017			9 J	NS	11	NS	23	NS	46	45	NS	396	NS	NS	47	NI	NI	
Cadmium	9/1/2015	5	5	**19.3**	BDL (0.7)	NI	BDL (0.7)	**6.7**	BDL (0.7)	**7.3**		BDL (0.7)	NI	BDL (0.7)	BDL (0.7)	NS	NI	NI	
	7/17&18/2017			**31.52**	NS	12	NS	1.56	NS	**5.32**	**5.13**	NS	0.09 J	NS	NS	BDL (0.05)	NI	NI	
Chromium	9/1/2015	100	100	**5,714**	2.6 J	NI	11.1	23.3	7.5	9.9 J		BDL (2)	NI	3.4 J	3 J	NS	NI	NI	
	7/17&18/2017			**5,270**	NS	**1,650**	NS	60	NS	21	21	NS	BDL (2)	NS	NS	BDL (2)	NI	NI	
Copper	9/1/2015	1,300	1,300	3.4 J	11.3	NI	2 J	3.9 J	4.2 J	3.8 J		4.1 J	NI	2.5 J	2.8 J	NS	NI	NI	
	7/17&18/2017			NA	NS	NA	NS	NA	NS	NA	NA	NS	NA	NS	NS	NA	NI	NI	
Lead	9/1/2015	15	15	BDL (2)	BDL (2)	NI	BDL (2)	BDL (2)	BDL (2)	BDL (2)		BDL (2)	NI	4 J	BDL (2)	NS	NI	NI	
	7/17&18/2017			3 J	NS	3 J	NS	BDL (3)	NS	4 J	3 J	NS	3 J	NS	NS	**31**	NI	NI	
Mercury	9/1/2015	2	2	BDL (0.06)	BDL (0.06)	NI	BDL (0.06)	BDL (0.06)	BDL (0.06)	BDL (0.06)		BDL (0.06)	NI	BDL (0.06)	BDL (0.06)	NS	NI	NI	
	7/17&18/2017			BDL (0.06)	NS	BDL (0.06)	NS	BDL (0.06)	NS	BDL (0.06)	BDL (0.06)	NS	BDL (0.06)	NS	NS	BDL (0.06)	NI	NI	
Nickel	9/1/2015	100	NE	**1,120**	7.8 J	NI	BDL (4)	**106**	12	**148**		BDL (4)	NI	6.7 J	14.7 J	NS	NI	NI	
	7/17&18/2017			**1,390**	NS	**621**	NS	**109**	NS	**301**	**298**	NS	BDL (2)	NS	NS	3 J	NI	NI	
Selenium	9/1/2015	50	50	BDL (3)	BDL (3)	NI	BDL (3)	BDL (3)	BDL (3)	8 J		BDL (10)	NI	BDL (3)	9.6 J	NS	NI	NI	
	7/17&18/2017			BDL (4)	NS	BDL (4)	NS	BDL (4)	NS	BDL (4)	BDL (4)	NS	BDL (4)	NS	NS	BDL (4)	NI	NI	
Silver	9/1/2015	100	100 (2)	BDL (2)	BDL (2)	NI	BDL (2)	BDL (2)	BDL (2)	BDL (2)		BDL (2)	NI	BDL (2)	BDL (2)	NS	NI	NI	
	7/17&18/2017			BDL (4)	NS	BDL (3)	NS	BDL (3)	NS	BDL (3)	BDL (3)	NS	BDL (3)	NS	NS	BDL (3)	NI	NI	
Zinc	9/1/2015	NE	5,000 (2)	BDL (7)	17.6 J	NI	BDL (7)	BDL (7)	BDL (7)	BDL (7)		7.3 J	NI	BDL (7)	10.6 J	NS	NI	NI	
	7/17&18/2017			NA	NS	NA	NS	NA	NS	NA		NS	NA	NS	NS	NA	NI	NI	
Per- and Poly-Fluorinated Alkyl Substances (PFAS)								Concentrations in µg/L											
Perfluorobutanoic Acid (PFBA)	7/17&18/2017	NE	NE	0.00805	NA	NA	NA	NA	NA	0.00884	0.00695	NA	NA	NA	NA	NA	NI	NI	nd (0.00185)
	9/21/2017			0.00812	NA	NA	NA	NA	0.00358	NA	NA	0.0675	0.00438	NA	NA	NA	NI	NI	nd (0.00185)
	1/3/2018			NA	NA	NA	0.00812	NA	NA	NA	NA	NA	NA	NA	NA	NA	nd (0.00178)	0.0103	nd (0.00178)
Perfluoropentanoic Acid (PFPeA)	7/17&18/2017	NE	NE	0.0108	NA	NA	NA	NA	NA	0.00841	0.0088	NA	NA	NA	NA	NA	NI	NI	0.000144 J
	9/21/2017			0.00842	NA	NA	NA	NA	0.00331	NA	NA	0.106	0.00744	NA	NA	NA	NI	NI	nd (0.00185)
	1/3/2018			NA	NA	NA	0.00783	NA	NA	NA	NA	NA	NA	NA	NA	NA	nd (0.00178)	0.00452	nd (0.00178)
Perfluorobutanesulfonic Acid (PFBS)	7/17&18/2017	NE	NE	0.059	NA	NA	NA	NA	NA	0.0126	0.0138	NA	NA	NA	NA	NA	NI	NI	nd (0.00185)
	9/21/2017			0.0350	NA	NA	NA	NA	0.0116	NA	NA	0.245	0.00532	NA	NA	NA	NI	NI	nd (0.00185)
	1/3/2018			NA	NA	NA	0.0195	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00217	0.0190	nd (0.00178)
Perfluorohexanoic Acid (PFHxA)	7/17&18/2017	NE	NE	0.0491	NA	NA	NA	NA	NA	0.0262	0.0269	NA	NA	NA	NA	NA	NI	NI	0.000185 J
	9/21/2017			0.0359	NA	NA	NA	NA	0.0207	NA	NA	0.651	0.0108	NA	NA	NA	NI	NI	nd (0.00185)
	1/3/2018			NA	NA	NA	0.0341	NA	NA	NA	NA	NA	NA	NA	NA	NA	nd (0.00178)	0.0174	nd (0.00178)
Perfluoroheptanoic Acid (PFHpA)	7/17&18/2017	NE	NE	0.00501	NA	NA	NA	NA	NA	0.0042	0.00444	NA	NA	NA	NA	NA	NI	NI	nd (0.00185)
	9/21/2017			0.00400	NA	NA	NA	NA	0.00275	NA	NA	0.139	0.0128	NA	NA	NA	NI	NI	nd (0.00185)
	1/3/2018			NA	NA	NA	0.00792	NA	NA	NA	NA	NA	NA	NA	NA	NA	nd (0.00178)	0.00196	nd (0.00178)
Perfluorohexanesulfonic Acid (PFHxS)	7/17&18/2017	NE	NE	0.237	NA	NA	NA	NA	NA	0.234	0.246	NA	NA	NA	NA	NA	NI	NI	nd (0.00185)
	9/21/2017			0.140	NA	NA	NA	NA	0.196	NA	NA	0.806	0.00255	NA	NA	NA	NI	NI	nd (0.00185)
	1/3/2018			NA	NA	NA	0.165	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00278	0.0576	nd (0.00178)
Perfluorooctanoic Acid (PFOA)	7/17&18/2017	0.070 (1)	NE	**0.0802**	NA	NA	NA	NA	NA	**0.07**	**0.0761**	NA	NA	NA	NA	NA	NI	NI	0.000096 J
	9/21/2017			0.0444	NA	NA	NA	NA	0.0368	NA	NA	**1.070**	0.0258	NA	NA	NA	NI	NI	nd (0.00185)
	1/3/2018			NA	NA	NA	0.0662	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00413	0.00816	nd (0.00178)
Perfluorononanoic Acid (PFNA)	7/17&18/2017	NE	NE	0.00037	NA	NA	NA	NA	NA	0.0006	0.000718	NA	NA	NA	NA	NA	NI	NI	nd (0.00185)
	9/21/2017			nd (0.00172)	NA	NA	NA	NA	nd (0.00178)	NA	NA	nd (0.00454)	nd (0.00178)	NA	NA	NA	NI	NI	nd (0.00185)
	1/3/2018			NA	NA	NA	nd (0.00185)	NA	NA	NA	NA	NA	NA	NA	NA	NA	nd (0.00178)	nd (0.00185)	nd (0.00178)
Perfluorooctane sulfonate (PFOS)	7/17&18/2017	0.070 (1)	NE	**7.08**	NA	NA	NA	NA	NA	**1.62**	**1.24**	NA	NA	NA	NA	NA	NI	NI	0.00207
	9/21/2017			**3.130**	NA	NA	NA	NA	0.0274	NA	NA	**0.0904**	0.00582	NA	NA	NA	NI	NI	nd (0.00185)
	1/3/2018			NA	NA	NA	**0.915**	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00357	nd (0.00185)	nd (0.00178)
Perfluoropentanesulfonic Acid (PFPeS)	7/17&18/2017	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NI	NI	NA
	9/21/2017			0.0148	NA	NA	NA	NA	0.00728	NA	NA	0.225	nd (0.00178)	NA	NA	NA	NI	NI	nd (0.00185)
	1/3/2018			NA	NA	NA	0.00729	NA	NA	NA	NA	NA	NA	NA	NA	NA	nd (0.00178)	0.00916	nd (0.00178)
Perfluoroheptanesulfonic Acid (PFHpS)	7/17&18/2017	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NI	NI	NA
	9/21/2017			0.0147	NA	NA	NA	NA	nd (0.00178)	NA	NA	0.00813	nd (0.00178)	NA	NA	NA	NI	NI	nd (0.00185)
	1/3/2018			NA	NA	NA	0.00771	NA	NA	NA	NA	NA	NA	NA	NA	NA	nd (0.00178)	nd (0.00185)	nd (0.00178)
Perfluorononanesulfonic Acid (PFNS)	7/17&18/2017	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NI	NI	NA
	9/21/2017			0.00186	NA	NA	NA	NA	nd (0.00178)	NA	NA	nd (0.00454)	nd(0.00178)	NA	NA	NA	NI	NI	nd (0.00185)
	1/3/2018			NA	NA	NA	nd (0.00185)	NA	NA	NA	NA	NA	NA	NA	NA	NA	nd (0.00178)	nd (0.00185)	nd (0.00178)
Perfluorooctanesulfonamide (FOSA)	7/17&18/2017	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NI	NI	NA
	9/21/2017			nd (0.00172)	NA	NA	NA	NA	nd (0.00178)	NA	NA	0.0532	0.00421	NA	NA	NA	NI	NI	nd (0.00185)
	1/3/2018			NA	NA	NA	0.171	NA	NA	NA	NA	NA	NA	NA	NA	NA	nd (0.00178)	nd (0.00185)	nd (0.00178)

Legend:

AOC = Area of Concern (identified in report text)	QA/QC = quality assurance/quality control sample
µg/L = micrograms per liter	J = estimated concentration detected above laboratory detection limit, but below laboratory reporting limit
BDL( ) = Below laboratory detection limit shown in parenthesis	NS=No Standard NA=Not Analyzed NC=Not Calculated

Notes:
1. AGQS is for total xylenes (mixed isomers); AGQS is for total PFOA and PFOS.
2. MCL not established; value listed in table is the National Secondary Drinking Water Regulation (pertaining to cosmetic or aesthetic effects in drinking water).
3. NH DES Env-Or 600 Ambient Groundwater Quality Standards (AGQSs), updated June 1, 2015.
4. US EPA Maximum Contaminant Levels (MCLs), updated May 2009.
5. **Bold** type font and boxed value indicates concentration exceeds the NH DES AGQS.
6. Sample IW-001, collected from a dug irrigation well located on Lot 51 was not field-filtered to remove particulates.
7. Samples collected on 9/21/2017 by personel of Sanborn Head and Associates.



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Legend & Notes

- Site Boundary
- 200 Series Soil Boring/ Monitoring Well
- 200 Series Soil Boring
- 300 Series Monitoring Well
- Monitoring Well (Sanborn Head & Associates, Inc)
- 100 Series Soil Boring
- 100 Series Boring/ Monitoring Well
- Former Sump
- Former Floor Drain
- Sewer Manhole
- Sewer Line
- Water Line
- Lot Line (Approximate)
- Groundwater Contour
- Inferred Groundwater Flow
- (381.41) Groundwater Elevation

Notes

1. Site Plan based on VCGI Orthophotography. Tax Map 20, and site surveyed plans for two adjoining properties.
2. Some features are approximate in location and scale.
3. This plan has been prepared for Ms. Mariane Westberg. All other uses are not authorized unless written permission is obtained from Ransom Consulting, Inc.

Scale & Orientation

0 10 20

1 inch = 20 feet

Prepared For

Ms. Marianne Westberg
P.O. Box 1045
Old Saybrook, Connecticut

Site Address

Central Plating Site
12 Westminster St.
Walpole, New Hampshire

171.05040 | Feb 2018

Figure 1
Groundwater Flow
January 3, 2018

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