

**Waste Management Division
PO Box 95, 29 Hazen Drive
Concord, NH 03302**

Type of Submittal (Check One-Most Applicable)

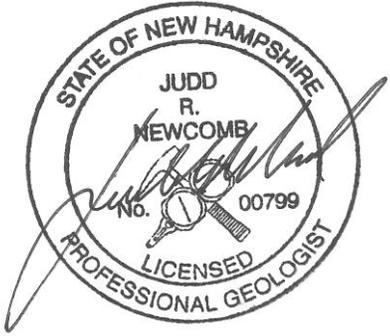
<input type="checkbox"/> Work Scope <input type="checkbox"/> Reimbursement Request	<input type="checkbox"/> Remedial Action <ul style="list-style-type: none"> • Remedial Action Plan • Bid Plans and Specifications • Remedial Action Implementation Report
<input type="checkbox"/> UST Facility Report <input type="checkbox"/> AST Facility Report	<input type="checkbox"/> Treatment System and POE O&M <input type="checkbox"/> Activity and Use Restriction
<input type="checkbox"/> Emergency/Initial Response Action <input type="checkbox"/> Groundwater Quality Assessment	<input type="checkbox"/> Temporary Surface Water Discharge Permit
<input type="checkbox"/> Initial Site Characterization <input type="checkbox"/> Site Investigation <ul style="list-style-type: none"> • Site Investigation Report • Supplemental Site Investigation Report • GMZ Delineation • Source Area Investigation • Data Submittal • Annual Summary Report <input checked="" type="checkbox"/> Unsolicited Brownfields Submittal <input type="checkbox"/> Closure Documentation	<input type="checkbox"/> Groundwater Management Permit <ul style="list-style-type: none"> • Permit Application • Renewal Application • Deed Recordation Documentation • Abutter Notification Documentation • Release of Recordation <input type="checkbox"/> Data Submittal <input type="checkbox"/> Annual Summary Report

SITE-SPECIFIC QAPP ADDENDUM
 Dagostino Rose Farm Property (a.k.a. Exeter Rose Farm)
 Oak Street Extension
 Exeter, New Hampshire
 NHDES # 201203003

Prepared For:
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November 7, 2012



Recommended Risk Category (check one)		
<input type="checkbox"/> 1. Immediate Human Health Risk (Impacted water supply well, etc.) <input type="checkbox"/> 2. Potential Human Health Risk (Water supply well within 1,000' or Site within SWPA) <input type="checkbox"/> 3. Free Product or Source Hazard	<input type="checkbox"/> 4. Surface Water Impact <input type="checkbox"/> 5. No Alternate Water Available/No Existing Wells in Area <input type="checkbox"/> 6. Alternate Water Available/High Level Groundwater Contamination (>1,000 X AGQS)	<input type="checkbox"/> 7. Alternate Water Available/Low Level Groundwater Contamination (<1,000 X AGQS) <input type="checkbox"/> 8. No AGQS Violation/No Source Remaining <input type="checkbox"/> Closure Recommended

1. TITLE AND APPROVAL PAGE

SITE-SPECIFIC QUALITY ASSURANCE PROJECT PLAN (SSQAPP) ADDENDUM TO GENERIC QAPP RFA #08166 AND #09036

PROPERTY:

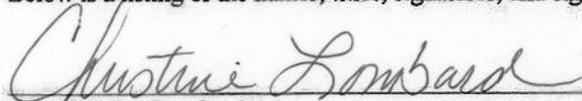
Dagostino Rose Farm Property (a.k.a. Exeter Rose Farm)
Oak Street Extension
Exeter, New Hampshire
Rockingham Planning Commission Brownfields Assessment Program
EPA Brownfields Grant # BF-96131001
NHDES # 201203003

Prepared By:

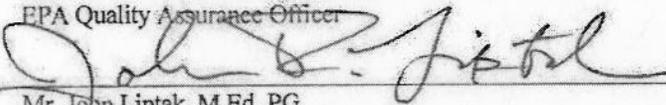
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November 7, 2012

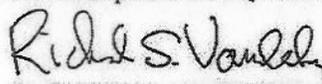
Below is a listing of the names, titles, signatures, and signature dates of officials approving this SSQAPP:


Ms. Christine Lombard
EPA Brownfields Project Officer
11/15/12
Date


Robert Reinhart, EPA QA Officer
EPA Quality Assurance Officer
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Date


Mr. John Liptak, M.Ed, PG
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2. INTRODUCTION

The Rockingham Planning Commission (RPC) received a United States Environmental Protection Agency (EPA) Brownfield Assessment Grant to conduct environmental assessments at sites within its member communities. The assessments provide a basis for reuse planning specific to each site's community needs. The assessment of each site will typically include the completion of Phase I and Phase II Environmental Site Assessments (ESAs) in accordance with applicable ASTM International (ASTM) standards, and may also potentially include the development of cleanup and reuse options for select sites.

On behalf of RPC's Brownfields Assessment Program, this document is a Site-Specific Quality Assurance Project Plan (SSQAPP) Addendum for the Dagostino Rose Farm (a.k.a. Exeter Rose Farm) property located on Oak Street Extension in Exeter, New Hampshire (the Site).

The Phase I ESA for the Site was completed using hazardous substance funds; however, RPC's hazardous substance funds have been expended. The Site was recently determined to be eligible to use petroleum Brownfields grant funds to assess the petroleum related recognized environmental conditions (RECs) that were previously identified. RPC or a private party will complete the assessment of the identified hazardous substance RECs when funding becomes available.

This SSQAPP presents the following information:

1. A summary of the pertinent findings of the previously completed Phase I ESA
2. The potential redevelopment scenario for the Site
3. A Conceptual Site Model
4. The proposed sampling technique and rationale
5. Site-specific sampling methodology including proposed locations and analytical methods
6. Regulatory standards applicable to the Site
7. A proposed project schedule

This SSQAPP was prepared to be used in concert with Credere Associates, LLC's (Credere's) Generic Quality Assurance Project Plan (QAPP), EPA RFA#08166 and #09036, that was prepared for all of Credere's EPA work in New Hampshire. The quality assurance and quality control (QA/QC) procedures outlined in Credere's Generic QAPP will be followed for this investigation program including sample collection, handling, and analysis, chain-of-custody, data management and documentation, data validation, and data usability assessments.

Figure 1 shows the general location of the Site in Exeter, New Hampshire, and **Figure 2** presents the proposed sample locations and pertinent Site features. **Figure 3** is Credere's organization chart for the project team.

3. FINDINGS OF THE PHASE I ESA

Credeire completed a Phase I ESA for the Site on April 23, 2012, in accordance with ASTM Standard Practice E 1527-05. These activities included performing reconnaissance of the Site; reviewing available local, state, and federal regulatory documents; reviewing available historical documents (e.g. Sanborn Fire Insurance maps, city directories, historical topographic maps, and historical aerial photographs); and conducting interviews with individuals knowledgeable with historical Site operations to identify evidence of recognized environmental conditions (RECs) in connection with the Site.

The following includes pertinent details from Credeire's Phase I ESA:

3.1 SITE DESCRIPTION

The Site comprises three parcels of land totaling 41.07 acres that are accessed by Oak Street Extension (**Figure 1**). The Site is currently used only for residential purposes, but was formerly occupied by a wholesale greenhouse facility that cultivated roses. No commercial or industrial operations are currently ongoing at the Site. The greenhouses were demolished and removed from the site in the late 1980's.

Subsequent to the Site's initial development for residential purposes, Exeter Rose Farms purchased the property in 1939. Historical records indicate that by 1943 large greenhouses and a boiler house had been constructed. The Site operated as a wholesale rose growing facility until the late 1980s when the facility was forced to close due to declining market conditions and rising operating costs. The greenhouses and boiler house were subsequently razed by 1998, and with the exception of occupied residential areas, the Site is becoming overgrown and returning to a natural state. Several structures remain on the Site including:

- Four (4) permanent residences with detached sheds and/or garages that are occupied by the Dagostino family and a tenant.
- Two (2) mobile homes, one of which is owned by the Dagostinos and leased, the other is privately owned and occupied.
- One (1) abandoned residence.
- One (1) abandoned mobile home.
- One (1) three bay garage that is used for storage by a leaser.
- One (1) abandoned concrete building known as the Packing House.
- One outdoor concrete former oil change pit located near the Packing House.

As can be seen on **Figure 2**, the central portion of the Site was the primary area of development activities. There is a large field between the residences where the greenhouses once stood. The remainder of the Site is wooded or overgrown, and is characterized by hummocky land

interwoven with streams and wet areas. Additional undeveloped land abuts the property to the northeast, and the Exeter Town Forest is located to the north of the Site. A natural gas pipeline is located to the north of the Site that crosses the Town Forest, and a railroad corridor abuts the Site to the east. The Site is bordered to the west by a commercial/light industrial park and a residential condominium complex and to the south by residential properties. Sanitary waste water at the Site is discharged to individual septic systems for each building. Drinking water to the permanent residences is pumped from a natural spring located on the Site. Drinking water for the two occupied mobile homes on the Site is supplied by an on-site bedrock well.

3.2 IDENTIFIED RECOGNIZED ENVIRONMENTAL CONDITIONS

The following RECs were identified during the Phase I ESA:

- REC-1 – The documented historical use of a pesticide, specifically a miticide called Pentac, on the Site represents a REC because the mixing, application, and subsequent drainage or tracking of these materials may have resulted in releases to environmental media including soil at mixing locations (including where a wooden spray tank was discovered during the Site reconnaissance) and areas where excess pesticide may have been applied and/or accumulated (including planting beds, the greenhouse under drain systems, and the pond to the west of the Packing House where the under drain systems discharged to).
- REC-2 – The former presence of a Boiler House with 30,000 gallons of No. 6 fuel oil storage represents a REC because undocumented releases of petroleum or hazardous materials associated with the former operation of this facility may have occurred and impacted soil and/or groundwater in the vicinity of the building.
- REC-3 – Coal ash and clinker dumping and/or filling was observed to the west of the former Boiler House. This represents a REC because environmental media in contact with the ash/clinker may have impacted soil and groundwater at the Site.
- REC-4 – The former use of the open-ended oil change pit represents a REC because undocumented releases of petroleum (waste oil) and associated hazardous materials may have impacted environmental media, such as soil and groundwater, in the area of the pit.
- REC-5 – The historical presence of a 100-gallon gasoline UST to the southeast of the Packing House represents a REC because undocumented spills or releases may have impacted environmental media including soil and groundwater near the tank.
- REC-6 – The observed dumping of solid waste and other refuse to the west of the Packing House represents a REC because, if present, petroleum and/or hazardous materials in the waste may have impacted environmental media in its vicinity.
- REC-7 – The historical use of the three bay garage in the central portion of the Site as an automotive maintenance and/or repair facility represents a REC because undocumented releases of petroleum and/or hazardous materials used in connection with this building may have occurred and impacted environmental media in its vicinity.

- REC-8 – The out-of-service 275-gallon fuel oil AST located to the rear of the abandoned mobile home represents a REC because there is a potential that undocumented leaks to have occurred from its buried supply line and impacted soil and/or groundwater in its vicinity.

It should be noted however, that due to funding eligibility constraints, RECs 1, 3, and 6, which concern hazardous materials cannot be assessed at this time. Therefore, only the petroleum-related RECs (RECs 2, 4, 5, 7, and 8) will be assessed during this proposed Phase II ESA

4. POTENTIAL REDEVELOPMENT SCENARIO

The prospective purchaser is considering purchasing at least a portion of the Site and protecting the land under a conservation easement. It is unclear what the fate of the remaining buildings will be.

5. CONCEPTUAL SITE MODEL

The conceptual site model (CSM) describes the physical setting of the Site, the identified RECs and potential contaminant source areas, the potential contaminants of concern (COCs) associated with each REC, migration pathways, impacted media, exposure pathways, and potential human and environmental receptors.

5.1 PHYSICAL SETTING

According to topography shown on **Figure 1**, the Site is located between 10 and 14 feet above mean sea level (MSL). Topography in the central portion of the Site is generally flat, with a slight slope toward the southeast. The remainder of the Site is hummocky with crests and valleys created by stormwater erosion and stream channels. The Site generally drains through infiltration or sheet flow to nearby surface water features. Regional topography within a 0.5-mile radius of the Site is similarly hummocky with ridges rising to 30 feet above MSL, and contains stream valleys and wet areas that drain toward the Squamscott River.

According to United States Geological Survey (USGS) documents, the surficial geology at and in the vicinity of the Site consists of glacial till over bedrock, which has been mapped as the Exeter Diorite. No Site-specific exploration information was available for the vicinity of the Site; however, according to the USGS, the average depth to bedrock in southeastern New Hampshire ranges from 0 to 120 feet below ground surface (bgs). Credere did not observe any bedrock outcrops at the Site during the Phase I ESA reconnaissance.

In general, local groundwater flow is expected to mimic regional topography, but may be acutely affected by surface water features on the Site. Considering this, groundwater at the Site is expected to either discharge to the observed streams, ponds, or wet areas on the Site, and/or based on area topography, flow southeast toward the Squamscott River.

5.2 CONTAMINANTS OF CONCERN

Considering the petroleum related RECs identified in the Phase I ESA, the COCs identified for the Site are listed in the table below. See **Appendix A** for tables of the specific analytes included in the COC list correlated with the associated laboratory practical quantitation limits (PQLs) and applicable state and/or federal standards.

Potential COCs		
REC	Potential Source	COCs
REC-2: Former presence of the Boiler House with 30,000-gallons of No. 6 fuel oil storage.	Releases may have occurred to Site surficial or subsurface soil and/or groundwater from the use and storage of fuel oil. In addition, chemical additives and cleaning agents may have been used in the operation of the boiler plant. Products released may have contained petroleum (light and heavy oils) and cleaning solvents.	Volatile Organic Compounds (VOCs) Semi-volatile Organic Compounds (SVOCs) Total Petroleum Hydrocarbons (TPH) [as Diesel Range Organics (DRO)] RCRA 8 Metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium and silver)
REC-4: Former use of an oil change pit.	Spills or releases of waste oil may have occurred during the use of the oil change pit. Due to the open-ended nature of this structure, spills may have affected surficial soil, subsurface soil, and/or groundwater.	VOCs Polycyclic Aromatic Hydrocarbons (PAHs) TPH as DRO RCRA 8 Metals Polychlorinated biphenyls (PCBs)
REC-5: The historical presence of a 100-gallon gasoline UST.	Spills, overfills, and/or releases of gasoline may have occurred during the use of this UST. Releases may have occurred to Site surficial or subsurface soil and/or groundwater in the vicinity of this tank.	VOCs TPH as Gasoline Range Organics (GRO) Lead
REC-7: The historical use of the 3-bay garage as an automotive maintenance and/or repair facility.	Spills of petroleum including gasoline, diesel, lubricants, and waste oil, or vehicle maintenance related substances including degreasers or other cleaners may have occurred during the historical use of this building and impacted soil and/or groundwater in the vicinity of the building.	VOCs TPH as GRO TPH as DRO SVOCs RCRA 8 Metals PCBs
REC-8: An out-of-service 275-gallon fuel oil AST with a buried supply line.	Fuel oil may have been released to subsurface soil and/or groundwater because the fuel supply line from this out-of-service AST is buried.	VOCs TPH as DRO PAHs

5.3 DEFINITIONS OF EXPOSURE PATHWAYS AND POTENTIAL RECEPTORS

To aid in a thorough understanding of the environmental concerns present at the Site, a graphical presentation of the identified COCs and potential migration pathways to receptors is included as **Figure 4**. Exposure Pathways and Potential Receptors depicted on the CSM figure are defined below.

Exposure pathways describe how a human or environmental receptor comes into contact with contaminants that may be present at the Site. Exposure pathways presented in the CSM include the following:

- Inhalation:** This pathway is primarily associated with groundwater contamination within 30 feet of an occupied structure when groundwater elevation is less than 15 feet below surface grade, or when depth to groundwater is unknown. This pathway is applicable when receptors may inhale impacted media in the form of soil vapor.
- Dermal Absorption:** Exposure via dermal absorption occurs when receptors are exposed to chemical concentrations present in soil, groundwater, or surface water through direct contact with the skin.
- Active Ingestion:** The active ingestion pathway represents exposure which may occur through the active ingestion of contaminant concentrations via a drinking water supply well or through agricultural products.
- Incidental Uptake:** This pathway is applicable when receptors may incidentally ingest impacted media in the form of dust or airborne particulates.

Potential Receptors are categorized by duration of exposure and intensity of use at the Site. The receptor categories described in the CSM include the following:

- Resident:** The residential receptor is defined by high durational exposure and high intensity usage, which may occur through gardening, digging, and recreational sports. This group includes the occupants of a residential property or a residential neighborhood.
- Commercial:** Commercial receptors are those which are present at the Site for long durations but with low intensity exposure such as indoor office workers.
- Site Worker:** Site workers are present at the Site for short durations though intensity of use is high, such as during non-routine activities including construction or utility work. Examples include outdoor commercial workers and construction workers.
- Visitor:** Visitors are characterized by low duration, i.e. less than two hours per day, and low intensity usage such as activities similar to walking, shopping, and bird watching.
- Terrestrial and Aquatic Biota:** These receptors include flora and fauna which may be exposed to contaminants in their respective land-based or aquatic environments.

5.4 SUMMARY OF POTENTIAL COC IMPACTS AND POTENTIAL RECEPTORS

Based on knowledge of the Site and the identified COCs, it is possible that releases associated with the identified RECs have occurred at the Site. Spills or releases associated with current and/or historical operations at the Site that have impacted surficial soil could eventually impact

subsurface soil through leaching due to infiltration from precipitation. Continued leaching and infiltration could further downward migration and may eventually impact the shallow groundwater system. Depending on the depth to bedrock in the release location, the fractured bedrock aquifer could be at risk. Migrating shallow groundwater impacted with Site contaminants could also enter the shallow streams or ponds noted on the Site resulting in impacts to sediment and/or surface water.

Human receptors identified for the Site include current residents, and potential future construction workers. Current and future potential environmental receptors include terrestrial and aquatic biota. Terrestrial biota may be exposed through dermal absorption and incidental uptake associated with impacted surficial soil, and if determined to be a receptor, aquatic biota may be exposed through dermal absorption or active ingestion of contaminated groundwater discharging to on-site surface water bodies.

6. SAMPLING DESIGN

The following section describes the rationale and nature of the proposed samples to be collected during the Phase II ESA sampling program. The objective of this Phase II ESA, which will be conducted in accordance with ASTM Standard Practice E 1903-11 for Phase II ESAs, is to confirm or dismiss the petroleum related RECs identified during the Phase I ESA. Proposed sample locations are depicted on **Figure 2**, and sampling methodologies are described in **Section 7**.

REC-2: This REC will be assessed by advancing three soil borings (CA-SB-1, CA-SB-4, and CA-SB-5) in the vicinity of the former Boiler House. One boring will be advanced in the approximate location of the former boilers, one boring will be advanced in the approximately location of the former fuel oil storage tank, and one boring will be advanced downgradient of the former boiler house. Borings CA-SB-1 and CA-SB-4 will be completed as monitoring wells to determine if impacts from the former Boiler House are affecting groundwater. A surficial soil sample (0-2 feet bgs) will be collected from CA-SB-4 to assess impacts to surface soil in this area and one (1) subsurface soil sample will be collected from each boring exhibiting the highest field screening result or visual evidence of contamination. All samples will be submitted for laboratory analysis of VOCs, SVOCs, TPH as DRO, and RCRA 8 metals. Groundwater samples will be collected from CA-MW-1 and CA-MW-4 and submitted for laboratory analysis of VOCs, SVOCs, and dissolved RCRA 8 metals.

REC-4: This REC will be assessed by performing one (1) soil boring (CA-SB-2) adjacent to the open end of the oil change pit where spills or releases in this area would have been most likely to have impacted environmental media. This soil boring will be completed as monitoring well CA-MW-2. One (1) surficial soil sample and one (1) subsurface soil sample exhibiting the highest field screening result or visual evidence of contamination will be selected for laboratory analysis. Each soil sample will be submitted for laboratory analysis of VOCs, PAHs, TPH as DRO, RCRA 8 metals, and PCBs. Groundwater from CA-MW-2 will be analyzed for VOCs, PAHs, and RCRA 8 metals.

Due to the steep slope and limited access of this area, it had not yet been determined if this boring will be completed using a motorized drill rig, handheld equipment (portable geoprobe), or hand tools (e.g. hand auger).

REC-5: This REC will be assessed by first performing a ground penetrating radar (GPR) and metal detector survey of the area shown on **Figure 2** to locate the historical 100-gallon gasoline UST or any other potential undocumented USTs in the historical vehicle fueling area of the Site.

If a UST is identified during the survey, the UST will be removed and registered in accordance with NHDES guidelines to facilitate the assessment of soil and groundwater quality beneath the tank. As such, soil samples from the tank grave fill material, sidewalls, and bottom will be field screened for the presence of gasoline. Based on field screening results, two (2) soil samples (CA-TG-1 and CA-TG-2) exhibiting the highest field screening results will be submitted for laboratory analysis of VOCs and TPH as GRO,. In addition, due to the vintage of this tank, there is the potential that leaded gasoline may have been historically stored in it; therefore, the samples will also be analyzed for total lead. Per NHDES guidelines, if evidence of contamination is noted in the tank grave and groundwater is observed during excavation, one grab groundwater sample (CA-TGW-1) will also be collected from the excavation and analyzed for VOCs and dissolved lead.

If a UST is not identified at the Site, the historical presence of this gasoline UST will be assessed by advancing one (1) soil boring (CA-SB-6) in the suspected location of the tank shown on **Figure 2**. Soil samples will be continuously screened during the boring and one (1) soil sample exhibiting the highest field screening result will be submitted for laboratory analysis of VOCs, TPH as GRO, and total lead. Due to the close proximity of the oil change pit to this area, groundwater in this area will be assessed utilizing monitoring well CA-MW-2 that is planned to be installed to assess REC-4 associated with the former oil change pit.

REC-7: This REC will be assessed by advancing two (2) soil borings (CA-SB-7 and CA-SB-8) and installing one (1) monitoring well (CA-MW-5) in the vicinity of the three bay garage. One boring will be advanced immediately outside of the garage bays, and one will be advanced at the perceived downgradient corner of the building. One (1) surficial soil sample and one (1) subsurface soil sample exhibiting the highest field screening result or visual evidence of contamination will be selected from each boring for laboratory analysis. Each soil sample will be submitted for laboratory analysis of VOCs, SVOCs, TPH as GRO, TPH as DRO, RCRA 8 metals, and PCBs. Groundwater will be collected and analyzed for VOCs, PAHs, and dissolved RCRA 8 metals.

REC-8: This REC will be assessed by advancing one (1) soil boring (CA-SB-3) and installing a groundwater monitoring well (CA-MW-3) immediately downgradient and adjacent to the out-of-service fuel oil AST. The surficial soil sample and one (1) subsurface soil sample will be selected from this boring based on the highest field screening result or visual evidence of contamination and submitted for laboratory analysis of VOCs, PAHs, and TPH as DRO. Due to this monitoring well's location downgradient of the three bay garage (REC-7) and the AST, one (1) groundwater sample will be collected and analyzed for VOCs, PAHs, and dissolved RCRA 8 metals.

All RECs: To determine if any of the RECs identified at the Site have affected the drinking water supply for the mobile homes at the Site, one (1) tap sample (DW-1) will be collected from #4 Oak Street Extension to assess the current well location. In addition, one (1) grab water sample (DW-2) will be collected from the natural spring overflow to assess the drinking water supply for the fixed residences at the Site. Based on the contaminants of concern, the sample will be submitted for laboratory analysis of VOCs, SVOCs, and RCRA 8 metals.

Tables 1 and 2 include the number and type of samples that are proposed to be collected, cross-referenced with the appropriate standard operating procedure (SOP) that will be used from Credere's Generic QAPP. Soil, groundwater, and drinking water samples are to be collected as part of this Phase II ESA and will be submitted to Absolute Resource Associates (ARA) of Portsmouth, New Hampshire.

It should be noted that the standard method 8260 reporting limits for VOCs in groundwater are above the New Hampshire Ambient Groundwater Quality Standards (AGQS) for 1,2 dibromoethane (EDB) and 1,4-dioxane. As a result, additional groundwater will be collected from each monitoring well/drinking water location and analyzed at the laboratory using EPA method 8260 Selected Ion Monitoring Method (SIM). The SOP for EPA Method 8260 SIM was previously included in the SSQAPP for the Timberlane Plate Glass Company, which was approved by the NHDES and EPA on July 18, 2012. Sample bottle and preservation methods are indicated in **Table 2**.

It should also be noted that per the request and general practice of the NHDES, groundwater samples to be analyzed for PAH analysis will be field filtered.

The data collected from these activities will serve as the basis for evaluating the Site conditions and will determine if any additional subsurface investigation and/or remedial actions are necessary. **Figure 2** shows the proposed locations where media will be collected. Requirements relative to Chain of Custody, Data Management and Documentation, Data Validation, and Data Usability Assessments contained in the Generic QAPP will be followed during the performance of the above Phase II ESA activities.

7. FIELD ACTIVITY METHODOLOGY

Field activity methodologies for assessing the RECs are summarized in the following subsections. Field activities will be conducted in accordance with the SOPs included in Credere's Generic QAPP Rev. 3 (EPA RFA #08166 and #09036) and the rationale for the collection of each sample is presented in **Section 6.0**.

Where field observations and/or field screening results indicate the presence of additional source areas or potentially impacted media, additional exploration locations, or samples may be added to determine the horizontal and/or vertical extent of contamination. The number and locations of these additional soil samples or exploration locations will be dependent on field data, Site constraints, and professional judgment. All decisions regarding delineation will be recorded in the field logbook, and all locations will be documented. All samples obtained for the purposes of contamination delineation will be collected and field-analyzed in accordance with Credere's SOPs outlined on **Tables 1 and 2**. If Credere determines these additional sample locations should be tested for analytes not described in **Tables 1 and 2**, the EPA Project Officer and EPA QA Officer/Manager will be contacted, and pending the outcome of the communication, an email update will be provided to the EPA describing the additional sample analysis, methods, and SOPs. **Table 3** is an SOP reference table detailing the version of each SOP that will be used during this field program.

7.1 GPR SURVEY

GPR will be used to locate former UST graves and subsurface anomalies that may be undocumented USTs in the vicinity of former boiler house, packing house, and oil change pit. The extent of the proposed GPR survey will be limited to the areas accessible to the GPR equipment, which are anticipated to be the hashed areas shown of **Figure 2**. Dig Smart of Maine, Inc. (Dig Smart) will conduct the survey and will perform the work in accordance with the SOP Credere-007 provided in the generic QAPP. A Credere representative will be present during GPR activities to survey the locations of the identified anomalies with a Trimble GeoXH handheld global positioning system (GPS) unit with sub-meter post-processed accuracy in accordance with SOP Credere-006.

7.2 SURFICIAL SOIL SAMPLING AND FIELD SCREENING

Surficial soil samples obtained during this Phase II ESA will be collected either during soil borings or with hand tools including a decontaminated shovel or hand auger. Any visible asphalt and base materials, landscaping materials, and other organic detritus will be removed prior to sampling. Samples will be collected from the 0 to 2-foot interval during soil borings, or the 0 to 1-foot bgs interval using hand tools. Each soil sample will be individually logged, and evidence of contamination will be noted. Soil samples will be split and field screened with a properly calibrated photoionization detector (PID). Each soil sample will be field screened for total VOCs using a PID calibrated with a 100 part per million by volume (ppm_v) isobutylene gas and a response factor of 1.0.

7.3 SUBSURFACE SOIL SAMPLING AND FIELD SCREENING

Soil borings will be completed using direct-push methodologies. During soil boring advancement, soil will be continuously collected in macrocore sampling sleeves. Each boring will be advanced to a depth of approximately 7 feet below the groundwater table or to the depth of refusal (bedrock), whichever is shallower. Based on the amount of soil recovered, where strata changes occur, and/or any observations of contamination, soil samples will be split from the macrocore and individually logged and field screened. Each soil sample will be individually logged, and evidence of contamination will be noted

Based on PID field screening results and visual and olfactory observations, soil samples from each soil boring will be selected for laboratory analysis based on which sample interval exhibits the highest field screening result/observation. In the absence of evidence of contamination, the sample collected from the water table interface zone will be selected for analysis. Each sample will be submitted to an off-site laboratory for analysis in accordance with **Table 1**.

7.4 MONITORING WELL INSTALLATION AND SURVEY

7.4.1 Monitoring Well Installation and Development

Specified soil borings will be completed as groundwater monitoring wells per EPA SOP EPASOP#2048. Unless Site conditions (e.g. shallow groundwater, shallow bedrock, or confining layers) warrant modified well construction, the monitoring well will be installed using 1.0-inch PVC well materials including a well point or cap, 10 feet of 0.010-inch slotted pipe, and solid pipe to grade. Washed No. 1 size silica sand will be placed around the slotted pipe to an elevation approximately 2-feet above the slotted pipe to establish a well annulus. At least 1-foot of bentonite chips will be placed on top of each well annulus to prevent stormwater infiltration into the wells. The well will then be completed to grade with a flush-mounted road box protected by a minimum of a 1-foot by 1-foot concrete pad. Each monitoring well will be developed by over pumping and agitation until the discharge is clear and free of sediment, and then allowed to equilibrate for at least two weeks prior to sampling.

7.4.2 Rod and Level Survey

Following installation, each monitoring well will be surveyed with a rod and level to determine the top of well and ground elevations at the location in accordance with ASTM E 1364-95. If readily available, the monitoring well network will be tied to a landmark with a known elevation (e.g. a utility manhole or USGS benchmark) to establish the regional datum. Otherwise, a temporary benchmark and an arbitrary datum will be established for the Site.

7.4.3 Groundwater Sampling

Prior to sampling, the depth to groundwater will be measured (and the presence of free floating product will be noted) in each groundwater monitoring well in accordance with SOP HWRB-1 to allow for the calculation of groundwater elevations and the determination of groundwater flow direction and gradients. Each monitoring well will then be sampled using low-flow sampling techniques and dedicated equipment in accordance with SOP HWRB-9. Each groundwater sample will be collected directly in laboratory glassware and will be submitted for off-site laboratory analysis in accordance with **Table 2**. Dissolved metals samples will be filtered in the field using in-line 0.45 micron filters.

7.5 DRINKING WATER WELL SAMPLING

One drinking water sample will be collected from the current well location (DW-1) in accordance with SOP HWRB-14 to assess the drinking water supply for the mobile homes at the Site. This sample is planned to be collected from the drinking water pressure tank within the mobile home located at 4 Oak Street Extension. After stabilization, the sample will be collected directly in laboratory glassware and will be submitted for off-site laboratory analysis in accordance with **Table 2**. In addition, one (1) sample (DW-2) will be collected from the natural spring to assess the drinking water supply for the fixed residences at the Site. Because this spring naturally is constantly flowing (i.e. is already at equilibrium with the aquifer) and an overflow pipe is located at the pump house, Credere will collect this sample as a grab sample directly in laboratory glassware in accordance with **Table 2**.

8. REGULATORY STANDARDS

Sample results will be compared to the applicable state and/or federal standards/guidelines described below.

8.1 SOIL

Laboratory analytical results for soil samples will be compared to New Hampshire's Soil Remediation Standards specified in NHDES Env-Or 600: Contaminated Site Management. Where standards are not available, soil results will be compared to the EPA Region 9 Regional Screening Levels (RSL) for Chemical Contaminants at Superfund Sites and/or published background soil concentrations. If standards or guidelines do not exist, action levels will be triggered if the sample analytical results are above upgradient/background levels or naturally occurring ambient conditions.

8.2 GROUNDWATER

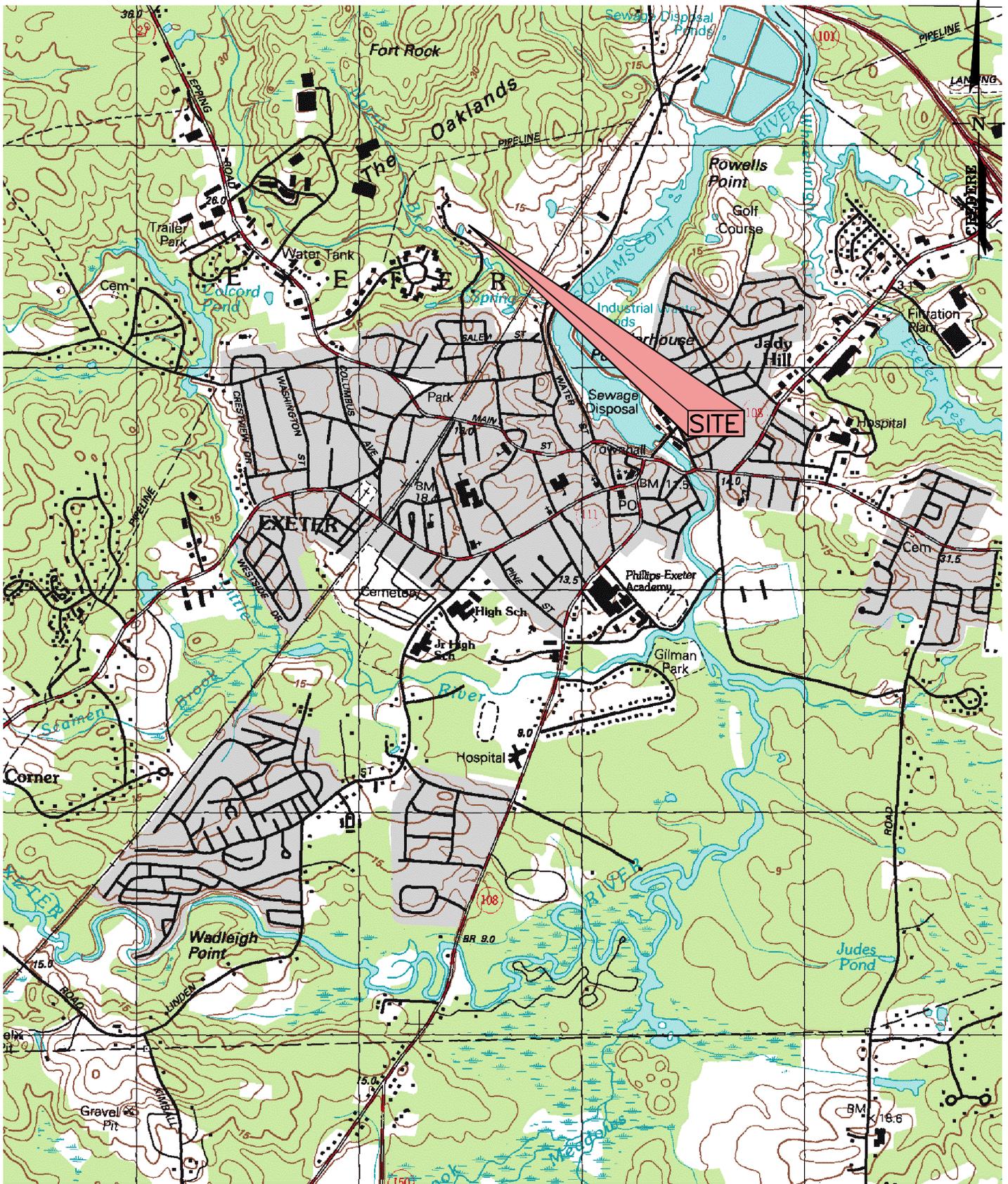
Groundwater sample results will be compared to the New Hampshire AGQS detailed in NHDES Env-Or 600 Contaminated Site Management and USEPA Maximum Contaminant Levels (MCLs) for Drinking Water. In the event that no AGQS or MCLs exist for a particular contaminant, results will be compared to the USEPA Region 9 RSLs.

9. PROPOSED PROJECT SCHEDULE

The following schedule is proposed for the Phase II ESA. It should be noted that this is a dynamic schedule and tasks may be performed earlier or later based on document regulatory review time, contractor availability, and laboratory sample turnaround time.

TENTATIVE DATE	ACTION
October 12, 2012	Finalize SSQAPP
October 15, 2012	Soil Boring, Monitoring Well Installation, Soil & Groundwater Sampling and Hazardous Building Materials Surveys
November 30, 2012	Submit Draft Phase II ESA Report
December 30, 2012	Submit Final Phase II ESA Report

FIGURES



USGS QUADRANGE INFORMATION: EXETER, NEW HAMPSHIRE 7.5X15 MINUTE SERIES

DRAWN BY: WTE DATE: 3/9/2012
 CHECKED BY: JSS/RSV PROJECT: 11001123

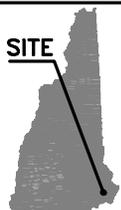
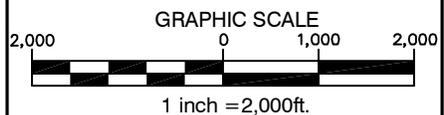
FIGURE 1 - SITE LOCATION PLAN

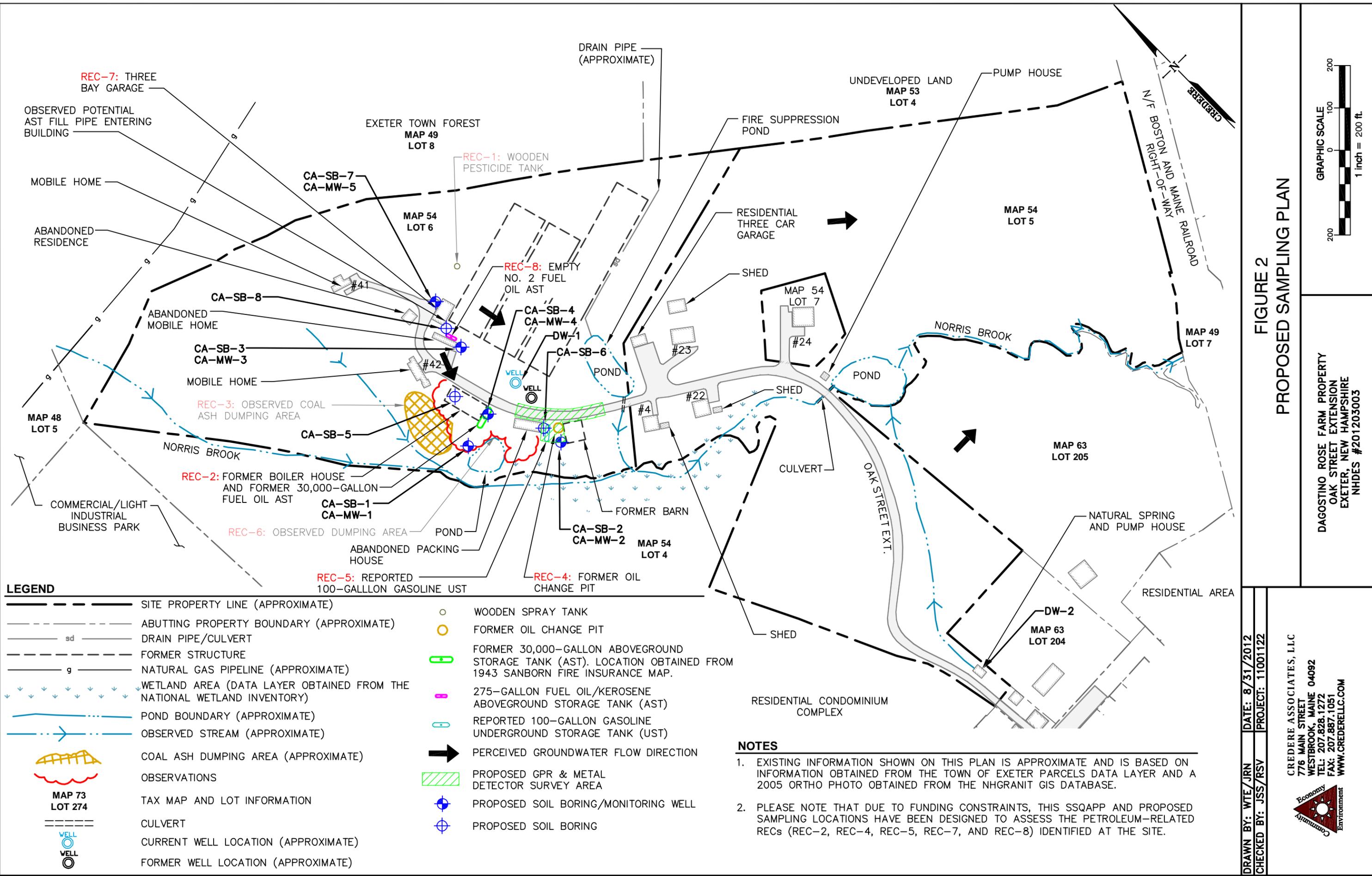
SITE



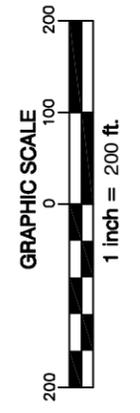
CREDERE ASSOCIATES, LLC
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PHASE I ESA REPORT
 DAGOSTINO ROSE FARM PROPERTY
 OAK STREET EXTENSION
 EXETER, NEW HAMPSHIRE
 NHDES# 201203003





**FIGURE 2
PROPOSED SAMPLING PLAN**



DAGOSTINO ROSE FARM PROPERTY
OAK STREET EXTENSION
EXETER, NEW HAMPSHIRE
NHDES #201203003

LEGEND	
	SITE PROPERTY LINE (APPROXIMATE)
	ABUTTING PROPERTY BOUNDARY (APPROXIMATE)
	DRAIN PIPE/CULVERT
	FORMER STRUCTURE
	NATURAL GAS PIPELINE (APPROXIMATE)
	WETLAND AREA (DATA LAYER OBTAINED FROM THE NATIONAL WETLAND INVENTORY)
	POND BOUNDARY (APPROXIMATE)
	OBSERVED STREAM (APPROXIMATE)
	COAL ASH DUMPING AREA (APPROXIMATE)
	OBSERVATIONS
	TAX MAP AND LOT INFORMATION
	CULVERT
	CURRENT WELL LOCATION (APPROXIMATE)
	FORMER WELL LOCATION (APPROXIMATE)
	WOODEN SPRAY TANK
	FORMER OIL CHANGE PIT
	FORMER 30,000-GALLON ABOVEGROUND STORAGE TANK (AST). LOCATION OBTAINED FROM 1943 SANBORN FIRE INSURANCE MAP.
	275-GALLON FUEL OIL/KEROSENE ABOVEGROUND STORAGE TANK (AST)
	REPORTED 100-GALLON GASOLINE UNDERGROUND STORAGE TANK (UST)
	PERCEIVED GROUNDWATER FLOW DIRECTION
	PROPOSED GPR & METAL DETECTOR SURVEY AREA
	PROPOSED SOIL BORING/MONITORING WELL
	PROPOSED SOIL BORING

NOTES

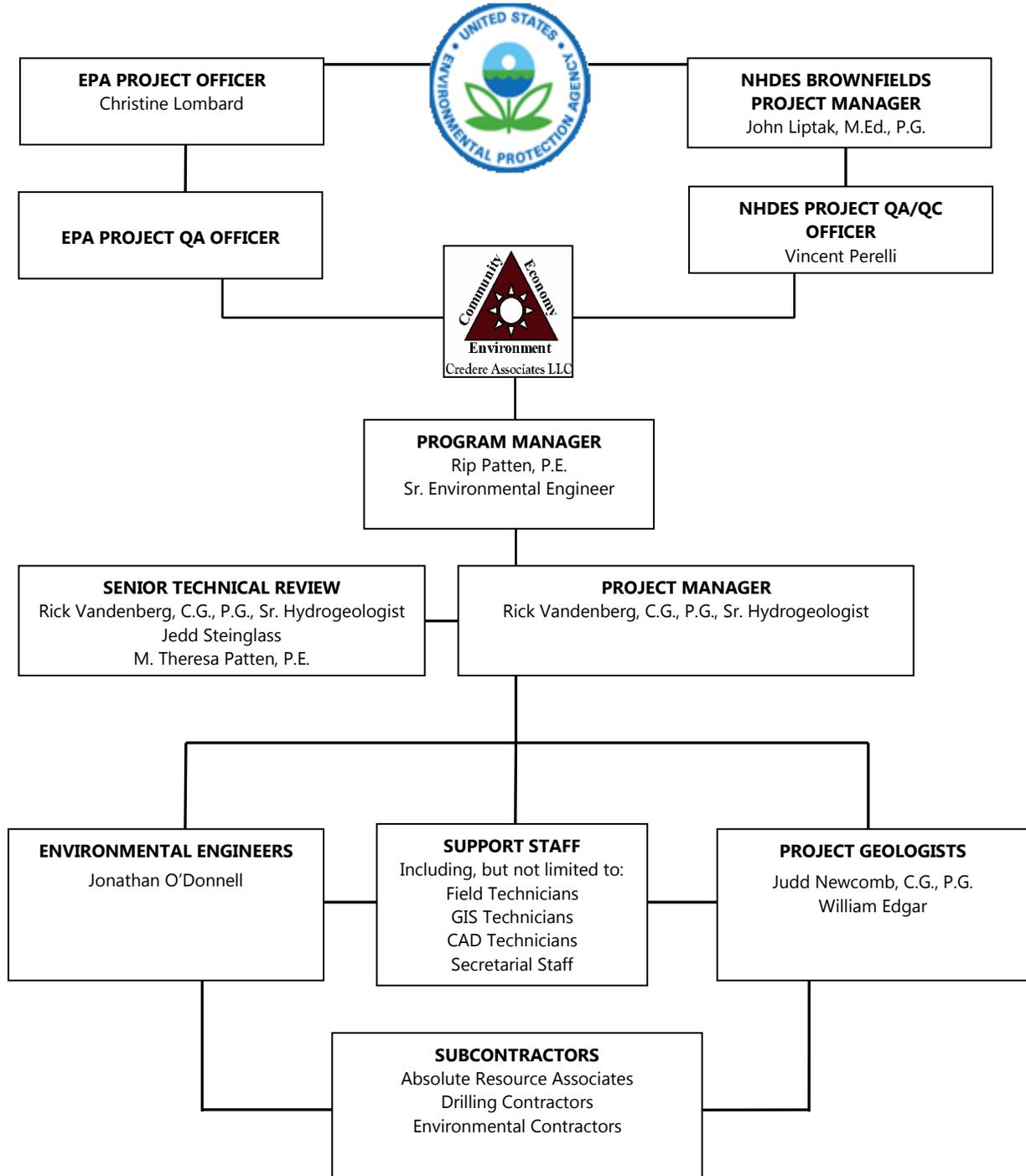
- EXISTING INFORMATION SHOWN ON THIS PLAN IS APPROXIMATE AND IS BASED ON INFORMATION OBTAINED FROM THE TOWN OF EXETER PARCELS DATA LAYER AND A 2005 ORTHO PHOTO OBTAINED FROM THE NHGRANIT GIS DATABASE.
- PLEASE NOTE THAT DUE TO FUNDING CONSTRAINTS, THIS SSQAPP AND PROPOSED SAMPLING LOCATIONS HAVE BEEN DESIGNED TO ASSESS THE PETROLEUM-RELATED RECs (REC-2, REC-4, REC-5, REC-7, AND REC-8) IDENTIFIED AT THE SITE.

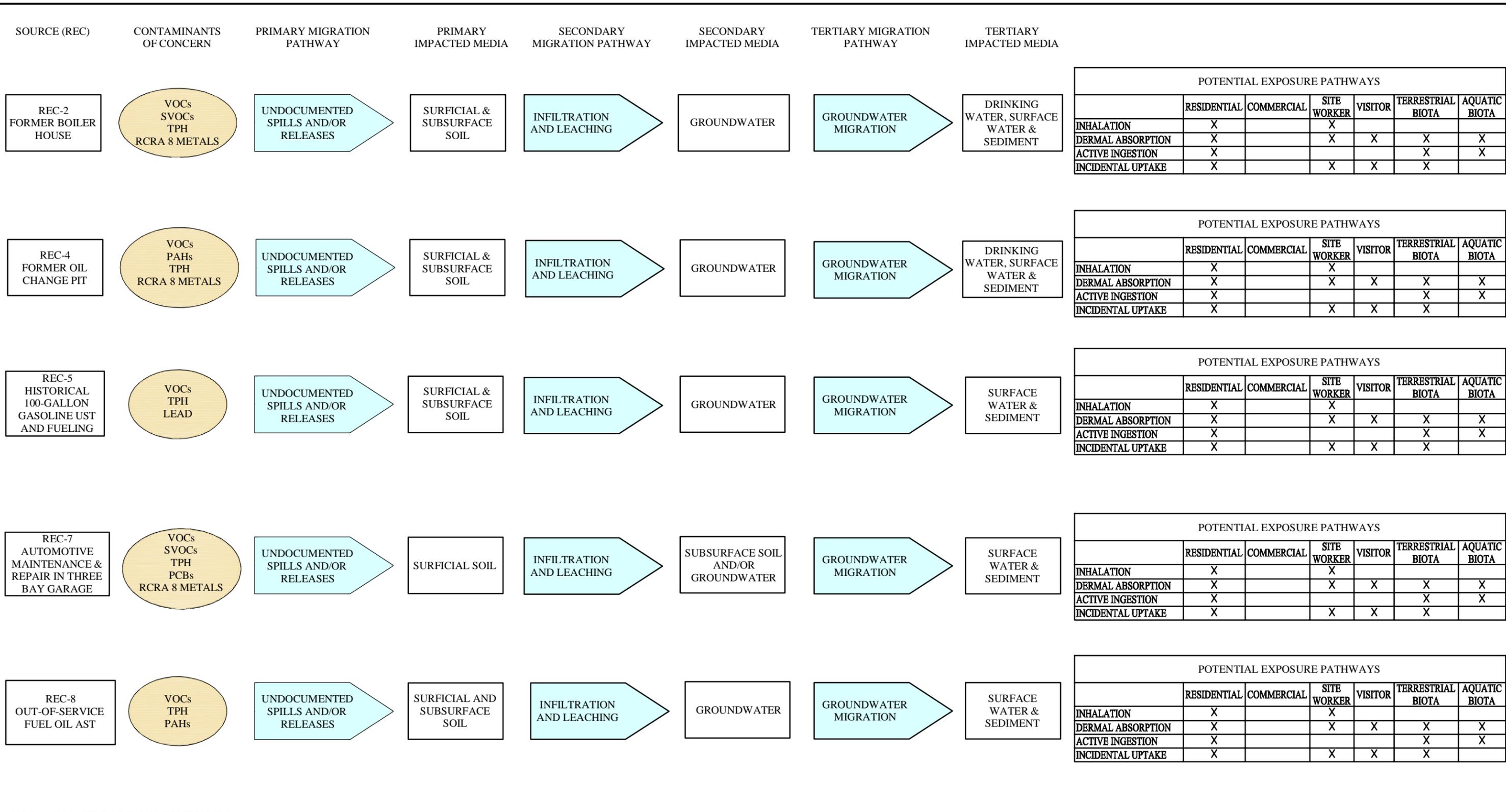
DRAWN BY: WTE/JRN DATE: 8/31/2012
CHECKED BY: JSS/RSV PROJECT: 11001122

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Figure 3: Project Organization Chart





POTENTIAL EXPOSURE PATHWAYS

	RESIDENTIAL	COMMERCIAL	SITE WORKER	VISITOR	TERRESTRIAL BIOTA	AQUATIC BIOTA
INHALATION	X		X			
DERMAL ABSORPTION	X		X	X	X	X
ACTIVE INGESTION	X				X	X
INCIDENTAL UPTAKE	X		X	X	X	

POTENTIAL EXPOSURE PATHWAYS

	RESIDENTIAL	COMMERCIAL	SITE WORKER	VISITOR	TERRESTRIAL BIOTA	AQUATIC BIOTA
INHALATION	X		X			
DERMAL ABSORPTION	X		X	X	X	X
ACTIVE INGESTION	X				X	X
INCIDENTAL UPTAKE	X		X	X	X	

POTENTIAL EXPOSURE PATHWAYS

	RESIDENTIAL	COMMERCIAL	SITE WORKER	VISITOR	TERRESTRIAL BIOTA	AQUATIC BIOTA
INHALATION	X		X			
DERMAL ABSORPTION	X		X	X	X	X
ACTIVE INGESTION	X				X	X
INCIDENTAL UPTAKE	X		X	X	X	

POTENTIAL EXPOSURE PATHWAYS

	RESIDENTIAL	COMMERCIAL	SITE WORKER	VISITOR	TERRESTRIAL BIOTA	AQUATIC BIOTA
INHALATION	X		X			
DERMAL ABSORPTION	X		X	X	X	X
ACTIVE INGESTION	X				X	X
INCIDENTAL UPTAKE	X		X	X	X	

POTENTIAL EXPOSURE PATHWAYS

	RESIDENTIAL	COMMERCIAL	SITE WORKER	VISITOR	TERRESTRIAL BIOTA	AQUATIC BIOTA
INHALATION	X		X			
DERMAL ABSORPTION	X		X	X	X	X
ACTIVE INGESTION	X				X	X
INCIDENTAL UPTAKE	X		X	X	X	

VOCs: VOLATILE ORGANIC COMPOUNDS
 SVOCs: SEMI-VOLATILE ORGANIC COMPOUNDS
 PAHs: POLYCYCLIC AROMATIC HYDROCARBONS
 TPH: TOTAL PETROLEUM HYDROCARBON
 PCBs: POLYCHLORINATED BIPHENYLS

NOTE: DUE TO FUNDING CONSTRAINTS, THIS SSQAPP HAS ONLY BEEN DESIGNED TO ADDRESS THE PETROLEUM RELATED RECs IDENTIFIED IN THE PHASE I ESA.

DRAWN BY: WTE DATE: 8/31/12
 CHECKED BY: JRN/JSS PROJECT: 11001122



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FIGURE 4
 CONCEPTUAL SITE MODEL

DAGOSTINO ROSE FARM PROPERTY
 OAK STREET EXTENSION
 EXETER, NEW HAMPSHIRE
 NHDES #201203003

TABLES

Table 1: Solid Sample Reference Table
Dagostino Rose Farm Property
Oak Street Extension
Exeter, New Hampshire
NHDES # 201203003

Media to be Collected	Proposed Sample IDs	Associated RECs	Sample Design	Sample Depth (ft bgs)	Field SOPs to be Used	Field Analysis/ Observations	No. of Samples for Analysis	No. of Field Dups	Analytical Method	Sample Container Information & Preservative (per location)	Lab SOPs	Laboratory To be Used
Surficial and Subsurface Soil	CA-SB-1 CA-SB-4 CA-SB-5	REC-2	Two (2) soil borings will be installed in the vicinity of the former Boiler House boilers and the 30,000-gallon fuel oil AST, and one soil boring will be advanced downgradient of the former Boiler House to determine if historical operation has impacted environmental media. One (1) surficial and one (1) subsurface soil sample will also be collected from CA-SB-4 to assess potential impacts from the boiler house.				4		VOCs by EPA Method 8260 SVOCs by EPA Method 8270 TPH as DRO by EPA Method 8015 RCRA 8 Metals* by EPA Method 6010 and 7470A	VOCs - (1) 40 ml VOA w/5 ml methanol, (1) 40 ml VOA for % solids SVOCs - 4 oz. amber glass TPH - 4 oz. amber glass Metals* - 4 oz. glass with Teflon-lined cap	RL-5 RL-6 RL-7 RL-9 RL-13	Absolute Resource Associates, Portsmouth, NH
	CA-SB-2	REC-4	One (1) soil boring will be advanced immediately outside the open end of the oil change pit to assess if spills or releases in this area have affected environmental media. One (1) surficial soil sample will be collected to assess potential surface runoff from the pit, and one subsurface sample will be collected to assess the subsurface soil.	Soil collected in disposable macrocore sleeves and field screened as appropriate based on soil recovery and observed strata. Laboratory samples collected from intervals with visual/olfactory indicators of contamination, the highest field screening detection, or at the water table interface.	Credere-002 Credere-004 HWRB-11 HWRB-12 HWRB-15 HWRB-17 VOCs/SOIL-2000	Visual & Olfactory PID Headspace	2	Solid samples will be duplicated at a rate of 5% per the generic QAPP for a total of one (1) based on the proposed total number of samples indicated in this Table.	VOCs by EPA Method 8260 PAHs by EPA Method 8270 TPH as DRO by EPA Method 8015 RCRA 8 Metals* by EPA Method 6010 and 7470A PCBs by EPA Method 8082	VOCs - (1) 40 ml VOA w/5 ml methanol, (1) 40 ml VOA for % solids PAHs - 4 oz. amber glass TPH - 4 oz. amber glass Metals* - 4 oz. glass with Teflon-lined cap PCBs - 4 oz. glass with Teflon-lined cap	RL-4 RL-5 RL-6 RL-7 RL-9 RL-13	
	If UST is located: CA-TG-1 CA-TG-2 If no UST is located: CA-SB-6	REC-5	Pending the results of the GPR and metal detector survey, the historical 100-gallon gasoline UST will be assessed by removal. If encountered and removed, two (2) soil samples will be collected from the UST grave to meet the NHDES UST closure assessment guidelines. If no UST is encountered, one (1) soil boring will be advanced and one (1) soil sample will be collected in the approximate former tank area to assess whether historical releases of gasoline have occurred at the Site.	If a UST is assessed by removal, soil samples will be selected based on the highest PID field screening result per NHDES UST closure assessment guidelines.		Up to 2	VOCs by EPA Method 8260 TPH as GRO by EPA Method 8015 Lead by EPA Method 6010		VOCs - (1) 40 ml VOA w/5 ml methanol, (1) 40 ml VOA for % solids TPH - 4 oz. amber glass Lead - 4 oz. glass with Teflon-lined cap	RL-5 RL-7 RL-9		
	CA-SB-7 CA-SB-8	REC-7	One (1) soil boring will be advanced immediately outside of the three bay garage bays and one (1) soil boring will be advanced at the perceived downgradient corner of the building to determine if historical automotive repair activities have impacted environmental media in the vicinity of the building. One (1) surficial and one (1) subsurface soil sample will be collected from each boring.			4	VOCs by EPA Method 8260 SVOCs by EPA Method 8270 TPH as DRO by EPA Method 8015 TPH as GRO by EPA Method 8015 RCRA 8 Metals* by EPA Method 6010 and 7470A PCBs by EPA Method 8082		VOCs - (1) 40 ml VOA w/5 ml methanol, (1) 40 ml VOA for % solids SVOCs - 4 oz. amber glass TPH - 4 oz. amber glass Metals* - 4 oz. glass with Teflon-lined cap PCBs - 4 oz. glass with Teflon-lined cap	RL-4 RL-5 RL-6 RL-7 RL-9 RL-13		
	CA-SB-3	REC-8	One (1) soil boring will be advanced immediately adjacent to, and downgradient of, the out-of-service fuel oil AST with a buried supply line to determine if leaks have occurred in this area. One (1) surficial and one (1) subsurface soil sample will be collected from each boring.			2	VOCs by EPA Method 8260 PAHs by EPA Method 8270 TPH as DRO by EPA Method 8015		VOCs - (1) 40 ml VOA w/5 ml methanol, (1) 40 ml VOA for % solids PAHs - 4 oz. amber glass TPH - 4 oz. amber glass	RL-7 RL-9 RL-13		

Notes:

Metals* = RCRA 8 (arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver).

**Table 2: Aqueous Sample Reference Table
Dagostino Rose Farm Property
Oak Street Extension
Exeter, New Hampshire
NHDES # 201203003**

Media to be Collected	Proposed Sample IDs	Associated RECs	Sample Design	Field SOPs to be Used	Field Analysis/ Observations	No. of Samples for Analysis	No. of Field Dups	No. of Trip Blanks	Analytical Method	Sample Container Information & Preservative (per location)	Lab SOPs	Laboratory To be Used
Groundwater	CA-MW-1 CA-MW-4	REC-2	Two (2) groundwater monitoring wells will be installed and sampled in a location downgradient of the former Boiler House to assess potential impacts from the operation of this facility.	Credere-004 HWRB-1 HWRB-3 HWRB-9 HWRB-15 HWRB-17 DR#012	Visual & Olfactory Field Parameters: Temperature, pH, Dissolved Oxygen, Turbidity, Conductivity, Oxidation-Reduction Potential	2	Aqueous samples will be duplicated at a rate of 5% per the generic QAPP for a total of one (1) based on the proposed total number of samples indicated in this table.	1	VOCs by EPA Method 8260 EDB ¹ & 1,4 Dioxane by EPA Method 8260 SIM SVOCs by EPA Method 8270 (Sub-samples for PAHs to be field filtered) Dissolved RCRA 8 Metals* by EPA Method 6010 and 7470A	VOCs - (2) 40 ml VOA with HCL EDB - (2) 40 ml VOA unpreserved 1,4 Dioxane - (2) 40 ml VOA unpreserved SVOCs - 1 Liter amber bottle unpreserved Dissolved RCRA 8 Metals - 250 mL plastic with nitric acid - filtered in the field	RL-5 RL-6 RL-9 ² RL-13	Absolute Resource Associates, Portsmouth, NH
	CA-MW-2	REC-4 REC-5	One (1) groundwater monitoring well will be installed and sampled to assess potential groundwater impacts from the oil change pit and historical 100-gallon gasoline UST.			1		1	VOCs by EPA Method 8260 EDB ¹ & 1,4 Dioxane by EPA Method 8260 SIM PAHs by EPA Method 8270 (To be field filtered) Dissolved RCRA 8 Metals* by EPA Method 6010 and 7470A	VOCs - (2) 40 ml VOA with HCL EDB - (2) 40 ml VOA unpreserved 1,4 Dioxane - (2) 40 ml VOA unpreserved PAHs - 1 Liter amber bottle unpreserved Dissolved RCRA 8 Metals - 250 mL plastic with nitric acid - filtered in the field	RL-5 RL-6 RL-9 ² RL-13	
	CA-MW-3 CA-MW-5	REC-7 REC-8	Two (2) groundwater monitoring wells will be installed and sampled to assess potential groundwater impacts from the three bay garage and the out-of-service fuel oil tank with a buried supply line.			2		2	VOCs by EPA Method 8260 EDB ¹ & 1,4 Dioxane by EPA Method 8260 SIM SVOCs by EPA Method 8270 (Sub-samples for PAHs to be field filtered) Total RCRA 8 Metals* by EPA Method 6010 and 7470A	VOCs - (2) 40 ml VOA with HCL EDB - (2) 40 ml VOA unpreserved 1,4 Dioxane - (2) 40 ml VOA unpreserved SVOCs - 1 Liter amber bottle unpreserved Dissolved RCRA 8 Metals - 250 mL plastic with nitric acid - filtered in the field	RL-5 RL-6 RL-9 ² RL-13	
	DW-1 DW-2	REC-2 REC-4 REC-5 REC-7 REC-8	One (1) sample will be collected from the current well location and one (1) sample will be collected from the natural spring to determine if historical Site activities have affected drinking water.			2		1	VOCs by EPA Method 524.2 EDB ¹ & 1,4 Dioxane by EPA Method 524.2 SVOCs by EPA Method 8270 (unfiltered) Total RCRA 8 Metals* by EPA Method 6010 and 7470A	VOCs - (2) 40 ml VOA with HCL EDB - (2) 40 ml VOA unpreserved 1,4 Dioxane - (2) 40 ml VOA unpreserved SVOCs - 1 Liter amber bottle unpreserved RCRA 8 Metals - 250 mL plastic with nitric acid - filtered in the field	RL-5 RL-6 RL-9 ² RL-13 RL-17	
	<u>If the historical 100-gallon gasoline UST is identified and removed:</u> CA-TGW-1	REC-5	Per the NHDES UST closure guidelines, if a UST is removed from the Site, contamination is observed, and groundwater is encountered within the excavation, one (1) grab groundwater sample will be collected for laboratory analysis prior to excavation backfilling.			1		1	VOCs by EPA Method 8260 EDB ¹ & 1,4 Dioxane by EPA Method 8260 SIM Dissolved Lead** by EPA Method 6010 and 7470A	VOCs - (2) 40 ml VOA with HCL EDB - (2) 40 ml VOA unpreserved 1,4 Dioxane - (2) 40 ml VOA unpreserved Dissolved Lead - 250 mL plastic with nitric acid - filtered in the field	RL-5 RL-9 ²	

Notes:
* Dissolved Metals = arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver
** In accordance with NHDES policy, this sample will be filtered

¹ 1, 2-Dibromoethane (EDB)
² The SOP for this laboratory method includes a provision to analyze groundwater for low level EDB and 1,4 Dioxane using the 8260 Selected Ion Monitoring Method (SIM)

**Table 3: Standard Operating Procedure (SOP) Reference Table
Dagostino Rose Farm Property
Oak Street Extension
Exeter, New Hampshire
NHDES # 201203003**

Field SOPs

SOP	SOP Description	Date
Credere-002	SOP for Geoprobe Sampling	October 2006
Credere-004	SOP for log book entries	October 2006
DR#12	Chain of Custody Protocol	April 3, 2009
HWRB-1	Measuring Static Water Level	November 1995
HWRB-3	A Method for Determining Aquifer Stabilization	November 1995
HWRB-9	Groundwater Sampling using Low-Flow Purging and Sampling Protocol	May 2007
HWRB-10	Surface Water Sampling	January 2009
HWRB-11	Soil Sampling Procedure	September 2001
HWRB-12	Jar headspace Technique for Field Screening Soil Samples	September 2001
HWRB-13	Sediment Sampling	January 2009
HWRB-14	Residential Water Sampling Procedure	September 2001
HWRB-15	Decontamination Procedure	March 2007
HWRB-17	Calibration of Field Instruments	July 2007
VOCs/Soil-2000	Preservation of VOCs in Soil Samples	March 2000

Laboratory SOPs

SOP	SOP Description	Date
RL-4	Analysis of Polychlorinated Biphenyls in Soil and Water Extracts by EPA 8082, SOP 5303	December 2010
RL-5	Trace Metals Analysis ICP-AES Using EPA Method 200.7/6010-SOP 5603	August 2007
RL-6	Mercury analysis by Cold Vapor Extraction Methods 245.1, 7470A	September 2007
RL-7	Method for Determining TPH by SW846 Method 8015, SOP 5501	November 2008
RL-9	VOCs by EPA Method 8260	June 2012
RL-13	PAHs, Base/Neutrals, and Acids by EPA Method 8270D	May 2009
RL-17	Analysis of VOCs in Drinking Water by EPA Method 524.2	September 2007

APPENDIX A

Analytical Sensitivity and Project Criteria Tables

As of the date of this Site Specific Quality Assurance Project Plan Addendum, the current state and/or federal standards have been reviewed for accuracy.

VOCs in Solids by EPA Method 8260

Analyte	Laboratory Practical Quantitation Limit	Regulatory Standard ¹
dichlorodifluoromethane	0.1	1,000
chloromethane	0.1	3
vinyl chloride	0.1	1
bromomethane	0.1	0.3
chloroethane	0.1	NE
trichlorofluoromethane	0.1	1,000
diethyl ether	0.1	3,900
acetone	2	75
1,1-dichloroethene	0.1	2
methylene chloride	0.1	0.1
carbon disulfide	0.1	460
methyl t-butyl ether (MTBE)	0.1	0.2
trans-1,2-dichloroethene	0.1	9
diisopropyl ether (DIPE)	0.1	10
ethyl t-butyl ether (ETBE)	0.1	0.7
1,1-dichloroethane	0.1	3
t-butanol (TBA)	2	2
2-butanone (MEK)	0.3	51
2,2-dichloropropane	0.1	NE
cis-1,2-dichloroethene	0.1	NE
chloroform	0.1	3
bromochloromethane	0.1	160*
tetrahydrofuran (THF)	0.5	200
1,1,1-trichloroethane	0.1	78
1,1-dichloropropene	0.1	NE
t-amyl-methyl ether (TAME)	0.1	3
carbon tetrachloride	0.1	12
1,2-dichloroethane	0.1	0.1
benzene	0.1	0.3
trichloroethene	0.1	5
1,2-dichloropropane	0.1	0.1
bromodichloromethane	0.1	0.1
1,4-dioxane	2	0.3
dibromomethane	0.1	25*
4-methyl-2-pentanone (MIBK)	0.4	29
cis-1,3-dichloropropene	0.1	NE
toluene	0.1	100
trans-1,3-dichloropropene	0.1	NE
2-hexanone	0.5	210*
1,1,2-trichloroethane	0.1	0.1
1,3-dichloropropane	0.1	1,600*
tetrachloroethene	0.1	2
dibromochloromethane	0.1	1
1,2-dibromoethane (EDB)	0.1	0.1
chlorobenzene	0.1	6
1,1,1,2-tetrachloroethane	0.1	0.8
ethylbenzene	0.1	140
m&p-xylenes	0.1	500**
o-xylene	0.1	500**
styrene	0.1	17

VOCs in Solids by EPA Method 8260

Analyte	Laboratory Practical Quantitation Limit	Regulatory Standard ¹
bromoform	0.1	0.1
isopropylbenzene	0.1	330
1,1,2,2-tetrachloroethane	0.1	4
1,2,3-trichloropropane	0.1	0.2
n-propylbenzene	0.1	85
bromobenzene	0.1	300*
1,3,5-trimethylbenzene	0.1	96
2-chlorotoluene	0.1	15
4-chlorotoluene	0.1	2,400
tert-butylbenzene	0.1	100
1,2,4-trimethylbenzene	0.1	130
sec-butylbenzene	0.1	130
1,3-dichlorobenzene	0.1	150
4-isopropyltoluene	0.1	3,400
1,4-dichlorobenzene	0.1	7
1,2-dichlorobenzene	0.1	88
n-butylbenzene	0.1	110
1,2-dibromo-3-chloropropane (DBCP)	0.1	0.1
1,2,4-trichlorobenzene	0.1	19
1,3,5-trichlorobenzene	0.1	340
hexachlorobutadiene	0.1	7
naphthalene	0.1	5
1,2,3-trichlorobenzene	0.1	49*

Notes:

All values are in mg/kg.

1 - New Hampshire Department of Environmental Services (NHDES) Chapter 600 Soil Remediation Standards unless marked with an *.

* - United States Environmental Protection Agency Regions 3, 6, and 9. (accessed 4/12/12). Regional Screening Levels for Chemical Contaminants at Superfund Sites (Residential Soil). http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/index.htm

** NDHES mixed isomer standard.

NE = Regulatory guideline not established

VOCs in Water by EPA Method 8260

Analyte	Laboratory Practical Quantitation Limit	Regulatory Standard ¹
dichlorodifluoromethane	2	1,000
chloromethane	2	30
vinyl chloride	2	2
bromomethane	2	10
chloroethane	2	21,000*
trichlorofluoromethane	2	2,000
diethyl ether	5	1,400
acetone	50	6,000
1,1-dichloroethene	1	7
methylene chloride	5	5
carbon disulfide	2	70
methyl t-butyl ether (MTBE)	2	13
trans-1,2-dichloroethene	2	100
isopropyl ether (DIPE)	2	120
ethyl t-butyl ether (ETBE)	2	40
1,1-dichloroethane	2	81
t-butanol (TBA)	30	40
2-butanone (MEK)	10	4,000
2,2-dichloropropane	2	NE
cis-1,2-dichloroethene	2	2
chloroform	2	70
bromochloromethane	2	83*
tetrahydrofuran (THF)	10	154
1,1,1-trichloroethane	2	200
1,1-dichloropropene	2	NE
t-amyl-methyl ether (TAME)	2	140
carbon tetrachloride	2	5
1,2-dichloroethane	2	5
benzene	2	5
trichloroethene	2	5
1,2-dichloropropane	2	5
bromodichloromethane	0.6	0.6
1,4-dioxane	0.25***	3
dibromomethane	2	7.9*
4-methyl-2-pentanone (MIBK)	10	2,000
cis-1,3-dichloropropene	2	NE
toluene	2	1,000
trans-1,3-dichloropropene	2	NE
2-hexanone	10	34*
1,1,2-trichloroethane	2	5
1,3-dichloropropane	2	290*
tetrachloroethene	2	5
dibromochloromethane	2	60
1,2-dibromoethane (EDB)	0.05***	0.05
chlorobenzene	2	100
1,1,1,2-tetrachloroethane	2	70
ethylbenzene	2	700
m&p-xylenes	2	10,000**
o-xylene	2	10,000**
styrene	2	100
bromoform	2	4
isopropylbenzene	2	800

VOCs in Water by EPA Method 8260

Analyte	Laboratory Practical Quantitation Limit	Regulatory Standard ¹
1,1,2,2-tetrachloroethane	2	2
1,2,3-trichloropropane	2	40
n-propylbenzene	2	260
bromobenzene	2	54*
1,3,5-trimethylbenzene	2	330
2-chlorotoluene	2	100
4-chlorotoluene	2	190*
tert-butylbenzene	2	260
1,2,4-trimethylbenzene	2	330
sec-butylbenzene	2	260
1,3-dichlorobenzene	2	600
4-isopropyltoluene	2	260
1,4-dichlorobenzene	2	75
1,2-dichlorobenzene	2	600
n-butylbenzene	2	260
1,2-dibromo-3-chloropropane (DBCP)	0.2***	0.2
1,2,4-trichlorobenzene	2	70
1,3,5-trichlorobenzene	2	40
hexachlorobutadiene	0.5	0.5
naphthalene	5	20
1,2,3-trichlorobenzene	2	5.2*

Notes:

All values are in ug/L.

1 - New Hampshire Department of Environmental Services (NHDES) Chapter 600 Ambient Groundwater Quality Standards for groundwater, unless marked with an *.

* - United States Environmental Protection Agency Regions 3, 6, and 9. (accessed 4/12/12). Regional Screening Levels for Chemical Contaminants at Superfund Sites. http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/index.htm

***- Reporting limit utilizing EPA Method 8260 SIM.

NHDES mixed isomer standard.

NE = Regulatory guideline not established.

TPH in Solids by EPA Method 8100

Analyte	Laboratory Practical Quantitation Limit	Regulatory Standard¹
Total Petroleum Hydrocarbons	200	10,000

Notes:
All values are in mg/kg.
1 - New Hampshire Department of Environmental Services (NHDES) Chapter 600 Soil Remediation Standards.

SVOC in Solids by EPA Method 8270

Analyte	Laboratory Practical Quantitation Limit	Regulatory Standard ¹
N-nitrosodimethylamine	0.2	0.0023*
aniline	0.2	85*
phenol	0.2	56
2-chlorophenol	0.5	2
bis(2-chloroethyl)ether	0.2	0.7
1,3-dichlorobenzene	0.2	150
1,4-dichlorobenzene	0.2	7
1,2-dichlorobenzene	0.2	88
benzyl alcohol	0.2	6,100*
2-methylphenol	0.2	0.9
bis(2-chloroisopropyl) ether	0.2	5
hexachloroethane	0.2	0.7
N-nitroso-di-N-propylamine	0.2	0.069*
4-methylphenol	0.2	0.7
nitrobenzene	0.2	4.8*
isophorone	0.5	1
2-nitrophenol	0.2	NE
2,4-dimethylphenol	0.2	4
bis(2-chloroethoxy)methane	0.2	180*
2,4-dichlorophenol	0.5	0.7
1,2,4-trichlorobenzene	0.5	19
naphthalene	0.05	5
benzoic acid	5	350
4-chloroaniline	0.2	1.3
hexachlorobutadiene	0.2	7
4-chloro-3-methylphenol	0.2	6,100*
2-methylnaphthalene	0.05	96
hexachlorocyclopentadiene	1	200
2,4,6-trichlorophenol	0.2	0.7
2,4,5-trichlorophenol	0.2	24
2-chloronaphthalene	0.5	NE
2-nitroaniline	0.2	610*
acenaphthylene	0.05	490
dimethylphthalate	0.5	700
2,6-dinitrotoluene	0.2	61*
2,4-dinitrotoluene	0.2	0.7
acenaphthene	0.05	340
3-nitroaniline	0.2	NE
2,4-dinitrophenol	5	0.7
dibenzofuran	0.05	78*
4-nitrophenol	2	NE
fluorene	0.05	77
diethyl phthalate	0.5	1000
4-chlorophenyl phenyl ether	0.5	NE
4-nitroaniline	0.5	24*
4,6-dinitro-2-methylphenol	2	4.9*
azobenzene	0.2	5.1*
N-nitrosodiphenylamine	0.2	99*
4-bromophenyl phenyl ether	0.2	NE
hexachlorobenzene	0.2	0.8

SVOC in Solids by EPA Method 8270

Analyte	Laboratory Practical Quantitation Limit	Regulatory Standard ¹
pentachlorophenol	1	3
phenanthrene	0.05	960
anthracene	0.05	1000
carbazole	0.2	NE
di-n-butylphthalate	0.5	2,600
fluoranthene	0.05	960
benzidine	3	0.004
pyrene	0.05	720
butyl benzyl phthalate	0.5	260*
benzo(a)anthracene	0.05	1
chrysene	0.05	120
3,3'-dichlorobenzidine	3	0.7
bis(2-ethylhexyl)phthalate	0.5	72
di-n-octyl phthalate	0.5	NE
benzo(b)fluoranthene	0.05	1
benzo(k)fluoranthene	0.05	12
benzo(a)pyrene	0.05	0.7
indeno(1,2,3-cd)pyrene	0.05	1
dibenzo(a,h)anthracene	0.05	0.7
benzo(g,h,i)perylene	0.05	960

Notes:

All values are in mg/kg.

1 - New Hampshire Department of Environmental Services (NHDES) Chapter 600 Soil Remediation Standards, unless marked with an *.

NE = Regulatory guideline not established

* - United States Environmental Protection Agency Regions 3, 6, and 9. (accessed 4/12/12). Regional Screening Levels for Chemical Contaminants at Superfund Sites. http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/index.htm

SVOC in Water by EPA Method 8270

Analyte	Laboratory Practical Quantitation Limit	Regulatory Standard ¹
N-nitrosodimethylamine	2	0.00042*
aniline	2	12*
phenol	2	4000
2-chlorophenol	5	35
bis(2-chloroethyl)ether	2	10
1,3-dichlorobenzene	2	600
1,4-dichlorobenzene	2	75
1,2-dichlorobenzene	2	600
benzyl alcohol	2	1,500*
2-methylphenol	2	40
bis(2-chloroisopropyl) ether	2	300
hexachloroethane	2	1
N-nitroso-di-N-propylamine	2	0.0093*
4-methylphenol	2	40
nitrobenzene	2	0.12*
isophorone	5	100
2-nitrophenol	2	NE
2,4-dimethylphenol	2	140
bis(2-chloroethoxy)methane	5	47*
2,4-dichlorophenol	5	21
1,2,4-trichlorobenzene	5	70
naphthalene	0.5	20
benzoic acid	50	28,000
4-chloroaniline	2	28
hexachlorobutadiene	2	0.5
4-chloro-3-methylphenol	2	1,100*
2-methylnaphthalene	0.5	280
hexachlorocyclopentadiene	10	50
2,4,6-trichlorophenol	2	5
2,4,5-trichlorophenol	2	700
2-chloronaphthalene	5	550*
2-nitroaniline	2	150*
acenaphthylene	0.5	420
dimethylphthalate	5	50,000
2,6-dinitrotoluene	2	15*
2,4-dinitrotoluene	2	10
acenaphthene	0.5	420
3-nitroaniline	2	NE
2,4-dinitrophenol	50	14
dibenzofuran	0.5	5.8*
4-nitrophenol	10	NE
fluorene	0.5	280
diethyl phthalate	5	1,000
4-chlorophenyl phenyl ether	5	NE
4-nitroaniline	5	3.3*
4,6-dinitro-2-methylphenol	20	1.2*
azobenzene	2	0.10*
N-nitrosodiphenylamine	2	10*
4-bromophenyl phenyl ether	2	NE
hexachlorobenzene	2	1
pentachlorophenol	10	1
phenanthrene	0.5	210

SVOC in Water by EPA Method 8270

Analyte	Laboratory Practical Quantitation Limit	Regulatory Standard ¹
anthracene	0.5	2100
carbazole	2	NE
di-n-butylphthalate	5	2,600
fluoranthene	0.5	280
benzidine	30	0.8
pyrene	0.5	210
butyl benzyl phthalate	5	14*
benzo(a)anthracene	0.5	0.1
chrysene	0.5	5
3,3'-dichlorobenzidine	30	1.3
bis(2-ethylhexyl)phthalate	5	6
di-n-octyl phthalate	2	NE
benzo(b)fluoranthene	0.5	0.1
benzo(k)fluoranthene	0.5	0.5
benzo(a)pyrene	0.2	0.2
indeno(1,2,3-cd)pyrene	0.5	0.1
dibenzo(a,h)anthracene	0.5	0.1
benzo(g,h,i)perylene	0.5	210

Notes:

All values are in ug/L.

1 - New Hampshire Department of Environmental Services (NHDES) Chapter 600 Ambient Groundwater Quality Standards for groundwater, unless marked with an *.

* United States Environmental Protection Agency Regions 3, 6, and 9. (accessed 4/12/12). Regional Screening Levels for Chemical Contaminants at Superfund Sites. http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/index.htm

PCBs in Solids by EPA Method 8082

Analyte	Laboratory Practical Quantitation Limit	Regulatory Standard ¹
PCB-1016	0.2	1 (Total)
PCB-1221	0.2	
PCB-1232	0.2	
PCB-1242	0.2	
PCB-1248	0.2	
PCB-1260	0.2	

Notes:

1 - New Hampshire Department of Environmental Services (NHDES) Chapter 600 Soil Remediation Standards.

All concentrations in mg/kg

NE = Regulatory guideline not established

PCBs in Building Materials by EPA Method 8082

Analyte	Laboratory Practical Quantitation Limit	Regulatory Standard (40 CFR 761.3)
PCB-1016	0.2	50 (Total)
PCB-1221	0.2	
PCB-1232	0.2	
PCB-1242	0.2	
PCB-1248	0.2	
PCB-1254	0.2	
PCB-1260	0.2	

Notes:
All values are in mg/kg.

Metals in Solids by EPA Methods 6010 and 7471

Analyte	Laboratory Practical Quantitation Limit	Regulatory Standard ¹
Arsenic	0.5	11
Barium	2	1,000
Cadmium	0.2	33
Chromium	2	130
Lead	0.5	400
Mercury	0.06	6
Selenium	2	180
Silver	0.4	89

Notes:

All values are in mg/kg.

1 - New Hampshire Department of Environmental Services (NHDES) Chapter 600 Soil Remediation Standards unless marked with an *.

* - United States Environmental Protection Agency Regions 3, 6, and 9. (accessed 4/12/12). Regional Screening Levels for Chemical Contaminants at Superfund Sites (Residential Soil). http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/index.htm

** - The chromium VI standard was used because it is the lowest and most conservative standard.

Metals in Water by EPA Methods 6010 and 7471

Analyte	Laboratory Practical Quantitation Limit	Regulatory Standard ¹
Arsenic	8	10
Barium	50	2,000
Cadmium	4	5
Chromium	50	100
Lead	8	15
Mercury	0.2	2
Selenium	50	50
Silver	7	100

Notes:

All values are in ug/L.

1 - New Hampshire Department of Environmental Services (NHDES) Chapter 600 Ambient Groundwater Quality Standards for groundwater, unless marked with an *.

* - United States Environmental Protection Agency Regions 3, 6, and 9. (accessed 4/12/12). Regional Screening Levels for Chemical Contaminants at Superfund Sites.

http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/index.htm

** - The chromium VI standard was used because it is the lowest and most conservative chromium standard.