

**COMMITMENT & INTEGRITY
DRIVE RESULTS**

35 New England Business Center
Suite 180
Andover, Massachusetts 01810
www.woodardcurran.com

T 866.702.6371
T 978.557.8150
F 978.557.7948

February 26, 2010



Ms. Carolyn J. Casey
RCRA Facility Manager
United States Environmental Protection Agency
5 Post Office Square, Suite 100
OSRR 07-3
Boston, MA 02109-3912

Re: Stewardship Permit Submittal – DEP/HWM/CS-034-006
Off-Property Investigation Work Plan
Former Risdon Facility - 15 Old Newtown Road, Danbury, CT
USEPA ID CTD001168558

Dear Ms. Casey:

This letter and document submittal have been prepared for the property located at 15 Old Newtown Road in Danbury, Connecticut (Site) in accordance with Condition II.B.2(b)(i) of the Stewardship Permit for CR USA, Inc. (Permit) dated September 29, 2009 and the November 25, 2009 approved Schedule for Scope of Work.

The attached *Off-Property Investigation Work Plan* (Work Plan) includes the consolidation of off-property information required under the Stewardship Permit, including a list of all known Areas of Concern (AOCs) emanating from the facility but not on the property, a summary of off-property investigation and mitigation activities conducted to-date by CR USA, Inc., and a list of remaining activities to be performed as part of the off-property investigation. A phased investigation approach is proposed to evaluate off-property subsurface conditions in the vicinity of the Site. The submittal certification required in accordance with Section I.E.15 of the Permit and 40 CFR 270.11(d)(1), is attached to this letter.

If you have any questions or require additional information, please contact me or Kenny Gullede (CR USA, Inc) at 843-320-1171.

Sincerely,

Woodard & Curran, Inc.

Jeffrey Hamel, LSP, LEP
Senior Project Manager

Enclosure: Submittal Certification
Off-Property Investigation Work Plan

cc: Lauren Kostiuk, CTDEP
Kenny Gullede, CR USA, Inc.



Submittal Certification

In accordance with Section I.E.15 of the Permit and 40 CFR 270.11(d)(1), the following certification is provided:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision according to a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Signed: 
Michael Antry, Corporate Director of EH&S, CR USA, Inc.



DRAFT OFF-PROPERTY INVESTIGATION WORK PLAN

15 Old Newtown Road
Danbury, CT



1.866.702.6371
35 New England Business Center
Andover, MA

97001.01
CR USA Inc.
February 2010

TABLE OF CONTENTS

SECTION	PAGE NO.
1. INTRODUCTION	1-1
2. BACKGROUND	2-1
2.1 Site Location.....	2-1
2.2 Property Usage	2-1
2.3 Waste Management History	2-1
2.4 On-site Regulatory History	2-2
2.5 Surrounding Area	2-3
2.6 Topography and Surface Hydrology	2-4
2.7 Still River	2-4
2.8 Geology and Hydrogeology	2-4
2.9 Groundwater Use and Classification	2-5
2.10 Conceptual Site Model	2-5
3. PREVIOUS OFF-PROPERTY INVESTIGATION AND MITIGATION ACTIVITIES	3-1
3.1 Summary of Off-property Investigations and Mitigation Activities.....	3-1
3.1.1 Previous Investigations.....	3-1
3.1.1.1 Groundwater and Soil Vapor Investigation - 2001	3-1
3.1.1.2 Off-property Soil Vapor, Indoor Air and Groundwater Investigation – March 2003.....	3-2
3.1.1.3 Groundwater Migration and Interaction with Surface Water – 2006	3-3
3.1.1.4 Routine Off-property Groundwater Monitoring.....	3-3
3.1.2 Mitigation Activities	3-3
3.1.2.1 Groundwater Migration Control System	3-4
3.1.2.2 Residential Sub-slab Depressurization Systems	3-4
3.2 Off-property Investigations Conducted by Others.....	3-4
3.2.1 11 Augusta Drive – GAR Electroforming	3-5
3.2.2 4 Old Newton Road – Current Amphenol RF Facility (formerly Medsource and Tenax)	3-5
3.2.3 Finance Drive – Toppan Photomasks, Inc. (Dupont).....	3-6
4. PROPOSED OFF-PROPERTY INVESTIGATION	4-1
4.1 Off-property AOC Investigation – Drain line from the Former Lagoon Area	4-1
4.2 Still River Investigation	4-2
4.3 Augusta Drive Investigation	4-2
4.3.1 Bedrock Evaluation and Monitoring Well Installation	4-3
4.3.2 Groundwater Sampling.....	4-3
4.4 Adjacent Wetlands.....	4-3
4.4.1 Monitoring Well Installation.....	4-4
4.4.2 Groundwater Sampling.....	4-4
4.5 Reporting.....	4-4
5. PROPOSED SCHEDULE.....	5-1
6. REFERENCES	6-1

LIST OF TABLES

Table 1:	List of Surrounding Properties
Table 2:	Summary of Off-Property Investigation and Mitigation Activities
Table 3:	Proposed Investigation Summary
Table 4:	Analytical Testing Summary
Table 5:	Access Requirements for Proposed Off-Property Investigation

LIST OF FIGURES

Figure 1:	Site Location
Figure 2:	Site Plan
Figure 3:	Surrounding Area and Topographic Elevations
Figure 4:	Generalized Cross Section A – A'
Figure 5:	Inferred Groundwater Contours
Figure 6:	Groundwater Classification Map
Figure 7:	Proposed Investigation Locations

APPENDICES

Appendix A:	Still River Photographs
Appendix B:	Prior Investigation Results
Appendix C:	Off-Property Well Construction Details
Appendix D:	QAPP QA/QC Tables

1. INTRODUCTION

This Draft Off-Property Investigation Work Plan (Work Plan) has been developed to propose investigation activities to evaluate potential off-property impacts from the former Risdon Facility, located at 15 Old Newtown Road (Site) in Danbury, Connecticut. This Work Plan has been prepared by Woodard & Curran (W&C) on behalf of CR USA, Inc., the current owner of the property, in accordance with the Stewardship Permit (Permit Number DEP/HWM/CS-034-006) issued on September 29, 2009 for the Site.

In accordance with Conditions II.B.2(b)(i) of the Stewardship Permit and the November 25, 2009 approved Schedule for Scope of Work, this Work Plan includes the consolidation of off-property information required under the Stewardship Permit, including a list of known Areas of Concern (AOCs) emanating from the facility but not on the property (Section 4), a summary of off-property investigation and mitigation activities conducted to-date by CR USA, Inc. (Section 3.1), and a list of remaining activities to be performed as part of this off-property investigation (Section 4). Refer to Figures 1 and 2 for a Site Locus and Site Plan, respectively.

A phased investigation approach is proposed to evaluate off-property subsurface conditions in the vicinity of the Site. As described in the conceptual site model (Section 2.10), the presumed method of transport for contaminants of concern from the former Risdon facility is with groundwater flow. This initial investigation phase will evaluate the one off-property AOC associated with a drain-pipe from the closed Lagoon Area and the nature and extent of potential off-property groundwater impacts. The second phase will include supplemental environmental data, as needed, based on the results from the initial phase. This Work Plan has been prepared for this first investigation phase only; a supplemental work plan will be prepared for the second investigation, as needed.

This initial investigation will focus on three main off-property areas: the Still River; the bedrock valley along Augusta Drive; and the wetlands behind 4 Old Newtown Road to evaluate potential off-property groundwater impacts. The proposed investigation data will supplement the existing off-property data including monitoring wells, soil gas points, and stream piezometers installed by CR USA and soil borings and monitoring wells installed by other property owners on these properties. It is noted that several of the downgradient properties have documented use of hazardous materials in current and past operations, as well as reported releases to the subsurface and groundwater, including an abandoned waste oil UST, a former septic system, and former drum storage area at 4 Old Newtown Road; closed RCRA and Pumice Lagoons at 11 Augusta Drive; and a former machine shop and sludge drying bed at 9 Finance Drive. Consequently, the occurrence of these facilities further complicates the ability to decipher off-property subsurface impacts directly related to the former Risdon facility. Further discussion on the proposed investigation activities and conceptual site model is provided in the subsequent sections.

2. BACKGROUND

This section provides a summary of requisite site information used to support the development of the conceptual site model (CSM). In addition to a summary of both the operational and regulatory history of the facility, a description of the hydrogeology and the surrounding area is also presented, as this information is pertinent to the development of the CSM presented at the end of this section.

2.1 SITE LOCATION

The Site consists of a former industrial facility located on approximately 8-acres of land at 15 Old Newtown Road in the City of Danbury, Connecticut. The facility is located near the intersection of Old Newtown Road and Newtown Road and is bordered to the north by Old Newtown Road and to the east by Newtown Road. The facility is bordered to the south by commercial property and to the west by a business and private residences. The perimeter of the property is fenced with one gate to the east providing access and one to the west providing egress, both by means of coded cards. The surrounding area is generally industrial/commercial with a few scattered residences. The Still River is located approximately 100 feet northwest of the facility and flows northward past the site. A large wetland area is located approximately 700 feet northeast of the facility. Refer to Figures 1 through 3 for the Site Locus and a depiction of the Site and surrounding area.

2.2 PROPERTY USAGE

The former Risdon facility was utilized for the manufacturing of cosmetics containers from 1956 to 2005. The primary manufacturing processes included electroplating, chromating, acid/solvent stripping, degreasing, silver plating, pickling, buffing, polishing, lacquering, hot stamping, silk screening, and assembly (SIC Code 3469). The metal finishing operations consisted of silver plating, pickling, degreasing, and lacquering. These operations were restricted to the southeastern portion of the facility, referred to as the metal finishing area (MFA). The buffing operations were located adjacent to the MFA in the southwestern portion of the facility. The remainder of the building was used for assembly, product storage, packing, shipping, and office space. Operations ceased in 2005 and the building is currently vacant.

The remaining areas of the property surrounding the building include paved parking and driveways (to the rear and sides of the building) and a vegetated landscape area (front of the building). The former surface impoundments (former Lagoon Area) were located in the open area west of the building (current paved parking lot).

2.3 WASTE MANAGEMENT HISTORY

Thirty AOCs were identified throughout the facility based on their historical material and waste management operations. A list of these AOCs, including a description of the AOC, waste managed, and period of operation was presented in the March 2008 *Remedial Action Plan* (RAP). More recently, in January 2010, a summary of all known AOCs at the facility and the investigation and mitigation activities conducted to date was submitted to the EPA and CTDEP as part of a Stewardship Permit submittal.

The facility formerly operated two sludge lagoons, a sludge drying bed, and an incinerator under RCRA Interim Status (a RCRA Part A permit application was submitted in November 1980). The lagoons and drying bed were certified closed in 1983 and the incinerator was certified closed in 1985. A Part B Permit Application was submitted on November 2, 1990. A permit was recently issued on September 29, 2009 under a Stewardship Permit (No. CS-034-006) jointly administered by the Connecticut Department of Environmental Protection (CTDEP) and the United States Environmental Protection Agency (EPA), thereby terminating the interim status of the facility.

2.4 ON-SITE REGULATORY HISTORY

Investigation and remediation activities have been on-going at the site since 1981 with the most recent activities being conducted in accordance with the RCRA Corrective Action program under EPA oversight. Investigations completed to-date include numerous soil samples, 37 groundwater monitoring wells, 29 years of groundwater quality data (1981 to 2009), soil vapor surveys, and a combination of 19 years of active groundwater and soil vapor remediation. These investigations concluded that subsurface soils, soil vapor, and groundwater have been impacted by past releases of volatile organic compounds (VOCs) and metals at two separate areas on the facility, the former MFA and the Lagoon Area AOCs.

The Lagoon Area is the location of two former surface impoundments, which were located on the western portion of the facility and used for the dewatering of metal hydroxide process wastes from approximately 1956 to 1982. The impoundments were closed by sludge/soil excavation and off-site disposal in 1982-1983. In 1990, an Interim Corrective Measure (ICM), consisting of groundwater extraction and treatment to hydraulically contain VOC contaminated groundwater from the Lagoon Area in conjunction with air sparge/vapor extraction (AS/VE) to remove adsorbed-phase VOCs from saturated soils, was implemented in this area. The groundwater extraction system, operational since 1990, was upgraded in 2005 to its current status, extracting groundwater from six on-property recovery wells (RW-1 through RW-6) at a design flow rate of 25 to 30 gallons per minute (gpm). The AS component of the ICM did not effectively operate in accordance with its design capacity and ceased operation in 1995.

The second area, referred to as the former MFA, is located inside the southern portion of the site building. The sources of chlorinated VOCs and metals from this area included several degreasers and process/plating lines. In 1993, an ICM, consisting of dual groundwater and soil vapor extraction and treatment, was implemented inside the building. The system was installed as a source removal mechanism and to contain/prevent the migration of contaminants from the source area via groundwater flow. This system operated until 2005. As part of the property-line groundwater migration control treatment system installed in 2005, three additional recovery wells were installed along the northeastern property boundary downgradient of the MFA.

Supplemental investigative work was conducted throughout the 1990's and summarized in the January 1999 *RCRA Facility Investigation (RFI) Report*. The *RFI Report* provided a summary of investigation activities and a conceptual site model regarding groundwater flow and transport of constituents of concern at the site. A summary of the data presented in the RFI and the additional data collected since the submittal of the RFI was presented in the March 2008 *RAP*.

In December 2003, EPA concluded that based on a review of all available data, the facility achieved the Environmental Indicator (EI) *CA 725 Current Human Exposures Under Control*. As part of this determination, vapor control measures were taken in two downgradient residences to eliminate potential migration pathways from the subsurface to indoor air. Further details on these downgradient, off-property soil vapor reduction systems have been provided in previously submitted documents and a summary is discussed in Section 3.1.2.2.

On September 1, 2005, pursuant to RCRA Section 22a-449(c)-105(h)(6)(A) and in accordance with a CTDEP August 1, 2005 correspondence, a schedule of milestones for conducting remaining investigation and remediation activities at the facility was submitted. As part of the schedule and pursuant to CTDEP's August 1, 2005 letter, annual summaries and copies of technical plans and reports related to the investigation and remediation of the parcel have been submitted to the EPA and CTDEP. The on-property RAP was submitted to the Agencies in March 2008 as part of the RCRA corrective action obligations in accordance with Section 22a-449(c)-105(h) and in conjunction with a Form III certification pursuant to Section 22a-134a(c) of the Connecticut General Statutes. Public notice of the proposed on-property remediation activities was published in the Danbury News Times on March 19, 2008. During the 45-day public comment period following issuance of the public notice, no comments were received on the draft plan and no hearing was requested. In a May 29, 2008 correspondence, the EPA acknowledged that the remedy

proposed in the March 2008 *RAP* meets the RCRA Corrective action long term goals of protection of human health and the environment and satisfies the partial remedy decision criteria (CA-400).

In September 2008, EPA concluded that based on a review of all available data, the facility achieved the EI CA 750 *Migration of Contaminated Groundwater Under Control*. Semi-annual groundwater monitoring data is collected and submitted to EPA as part of the determination.

On June 19, 2009, a *RAP Completion Report* was submitted to document the completion of the selected remedy for on-property conditions at the Site. This document summarized the construction and completion of the primary components of the on-property remedy, which included: 1) the installation and operation of a sub-slab vapor control system beneath the existing building to prevent migration of impacted soil vapor into indoor air; 2) the continued operation of the existing groundwater extraction and treatment system; 3) closure of AOC-17, the former RCRA container storage area (CSA); and 4) long-term monitoring. In addition to these activities, a draft environmental land use restriction (ELUR) was provided in the *RAP Completion Report*. The ELUR was developed to prevent direct contact and ingestion of impacted soil and groundwater and restrict construction of any new buildings in select areas. In addition, the ELUR discussed the use of engineering controls via existing barriers (concrete building floor slab) to prevent direct contact and ingestion of impacted soils.

On September 29, 2009, the CTDEP issued the Stewardship Permit (Permit Number DEP/HWM/CS-034-006) for the Site, which ended the interim status of the facility and required long-term maintenance, monitoring and financial assurance obligations to ensure the facility's regulatory compliance. As part of this permit, a compliance schedule has been developed for various post closure and corrective action activities and submittals, including the Schedule for Scope of Work (dated November 25, 2009), which includes the work plan for the off-property investigation, provided in this document.

2.5 SURROUNDING AREA

The areas encompassing Old Newtown Road and Augusta Drive/Finance Drive are predominantly zoned as either general industrial or light industrial by the City of Danbury. The surrounding properties include a variety of different uses based on the applicable zoning designation which range from industrial warehousing and office parks to an undeveloped tract of land centrally located to the north of Old Newtown Road and east of the properties located along Augusta Drive and Finance Drive. Table 1 presents a summary of property information from the City of Danbury's Assessor's database for properties adjacent to the former Risdon facility. The location of these properties and the surrounding areas are shown on Figure 3.

The general configuration of the properties relative to existing land features such as the Still River and the topographic relief of the hillside bordering the undeveloped tract of wetlands in the central portion of the area, confirms that these key features were extensive enough to limit unrestricted development in these areas. Aside from the properties adjacent to the former Risdon facility, undeveloped open-space exists within the central portion of Old Newtown Road and Augusta/Finance Drive, consisting primarily of wetlands.

Many of the properties located adjacent to these wetlands were previously involved with industrial manufacturing processes and have consequently been responsible for past waste management practices. Specifically, the current Amphenol property (4 Old Newtown Road, currently owned by Commerce Park Realty LLC) housed a former drum storage area, an old septic system, and an abandoned UST during previous operation by the Tenax Corporation and/or Medsource. GAR Electroformers, Inc., located north of Amphenol at 11 Augusta Drive, utilized two separate lagoon areas, former pumice lagoons and an auxiliary lagoon area, which have been "clean-closed" in accordance with RCRA requirements. The Toppan/Dupont Photomasks Corporation previously owned and operated a facility along the northern portion of Finance Drive since 1969. A review of historic facility reports indicated the operation of

a former sludge drying bed was used to accept metals hydroxide wastes and “clean-closed” between 1984 and 1985. In addition, a machine shop operated along the northern border of the adjacent wetlands. Further summary of relevant investigations at these facilities and on-going monitoring activities are provided in Section 3.2.

2.6 TOPOGRAPHY AND SURFACE HYDROLOGY

The facility is located in the Housatonic River Basin with site elevations varying from approximately 296 feet to 308 feet above mean sea level (MSL). Immediately to the rear of the facility the topography rises considerably from an elevation of approximately 308 feet to a plateau of approximately 400 feet. The area surrounding the former manufacturing building is paved with the exception of a thin area of vegetation around the southern and eastern portions of the facility.

The regional drainage is to the north following the Still River to its confluence with the Housatonic River. The Still River and the wetland area to the north represent the major hydrologic influence in the vicinity of the facility. The wetland serves as a topographic relief in the area, located at an elevation of approximately 288 feet. The adjacent hillside along the east of the wetland rises steeply to an elevation of 330 feet above mean sea level (a.m.s.l). Refer to Figure 3 for a depiction of topographic elevations.

2.7 STILL RIVER

The Still River is classified by the State as a Class B river, which means that it is not used for drinking water supply, but can be used for agricultural or industrial supply, recreational uses, and fish and wildlife habitat. Photographs of the river are provided in Appendix A. Based on information discussed below, the river, in the vicinity of the facility, flows through a developed area consisting of industrial and residential properties and appears to have limited use. The CTDEP Boaters guide shows no listing for public boat launches on the Still River and based on visual inspections there were limited access points for boats. Given the narrowness and shallow depth of the river, only smaller vessels (i.e., canoes, etc.) could navigate the river at times of high water (see attached photographs). Visual inspection of the river in the vicinity of Old Newtown Road showed no signs of swimming such as beach areas, chairs on the banks, rope swings, or fishing activity such as worn paths along the banks or fishing line and other discarded fishing equipment. According to the CTDEP, the Still River is stocked with trout from Eagle Street in Danbury downstream to “the town linear park.” This area is approximately 7 tenths of a mile downstream from the point at which the Still River crosses Old Newtown Road.

2.8 GEOLOGY AND HYDROGEOLOGY

The geology of the Still River and Housatonic Basins are generally well-understood as a result of the complex geomorphologic and glacial history of the area. Bedrock beneath the Site consists of a muscovite/biotite schist and a pink granite consistent with the interpretation of Clarke (1958), who identified an interrelated series of gneiss, schist, plutonic rocks and a “younger” granite unit in the Still River valley near Danbury. During drilling activities, the granite was identified as more resistant to weathering and found within areas of shallow depths to bedrock. The schist is found in areas where depths to bedrock are deeper.

Overburden deposits overlying bedrock consist of glacial till overlain by glaciolacustrine sands, silts, and clays. The facies of these units are a result of Pleistocene-age glaciation and the ensuing retreat of this ice-margin. Regionally, as the ice front retreated a large proglacial lake, referred to as Lake Danbury, was confined by the surrounding highlands (Thomson, 1971). Till associated with the advance of the ice margin include compact deposits of silt or silty-clay with variable-size rock fragments ranging from pebbles to cobbles. Glaciolacustrine deposits of sand, silt, and clay occurred as a result of the energy associated with sediment transport into glacial Lake Danbury. In the

vicinity of the former Risdon facility, these glaciolacustrine deposits are overlain by a sandy-fill deposit associated with site development.

A generalized cross-section of the surficial and bedrock geology is presented in Figure 4, using subsurface information from borings oriented in an approximate northwest-southeast direction across the site towards the Still River. Throughout the central portion of the Site, the upper surface of the bedrock unit is overlain by a discontinuous zone of weathered rock. Both the till and glaciolacustrine deposits are not shown as continuous across the Site, with till absent in vicinity of MW-505 and replaced by glaciolacustrine deposits. A pronounced bedrock valley exists in the vicinity of Augusta Drive. The deepest portion of the valley is approximately 20 to 25-feet below each of the bedrock ridges which bound either side of the valley.

In general, there are two interconnected aquifer systems in the vicinity of the Site. The upper unconfined aquifer is comprised of the glacio-lacustrine deposits. The lower aquifer occurs in the upper fractured portions of the bedrock. Groundwater flow in the bedrock is restricted to the fractures and joints within the bedrock. The restriction of groundwater flow results in significantly lower hydraulic conductivity and reduced potential for migration of groundwater within the bedrock.

Depth to groundwater on the property varies between 3-feet (upgradient at MW-1) and 15-feet (former Lagoon Area) below the ground surface. The inferred configuration of the water table surface based on the September 2009 annual groundwater monitoring event is depicted on Figure 5. As illustrated on this figure, consistent with historical measurements, shallow groundwater generally flows in a north/northwesterly direction across the Site (from the topographic high south of the facility towards the direction of the Still River). The figure illustrates the hydraulic containment of the plume on-site by the groundwater extraction system with groundwater flow along the property boundaries inferred towards the six recovery wells. In addition to the site contours, Figure 5 includes the inferred groundwater contours from surrounding properties as depicted in their respective monitoring reports.

2.9 GROUNDWATER USE AND CLASSIFICATION

Groundwater at the site is classified by the CTDEP as GB and therefore presumed not suitable for human consumption without treatment. Groundwater surrounding the Site is GB to the north, east and west and GA to the south (as indicated above, south of the Site is hydraulically upgradient), as shown on the groundwater classification map provided as Figure 6.

No properties have been identified within ½ mile downgradient (generally to the north) of the Site that are not serviced by public water. The closest properties (2 locations) that are not supplied with public water and may potentially be serviced by private wells are located approximately 300 feet upgradient of the site to the southwest and southeast. The closest municipal well (Osborne Well, Danbury Water Department) is located approximately 1.2 miles west of the site.

2.10 CONCEPTUAL SITE MODEL

The former facility manufactured cosmetic containers for approximately 50 years (from 1956 to 2005). As part of operations, chlorinated solvents and metals were used and wastes generated. Based on investigation activities previously completed across the facility, subsurface soils, soil vapor, and groundwater have been impacted by past releases of chlorinated VOCs and metals at two separate areas on the facility.

One area is in the vicinity of the former Lagoon Area AOC, which was the location of two former surface impoundments along the western portion of the facility and used for the dewatering of metal hydroxide process wastes from approximately 1956 to 1982. The impoundments were closed by sludge/soil excavation and off-site

disposal in 1982. Investigation activities were initiated as part of the closure activities (1981) and have been ongoing since that time. Analytical results associated with these investigation activities confirmed the presence of subsurface VOC impacts in the vicinity of the Lagoon Area. In 1990, an ICM, consisting of groundwater extraction and treatment to remove and prevent the migration of VOC contaminated groundwater from the lagoon area and AS/VE to remove adsorbed phase VOCs from saturated soils, was implemented in this area. The groundwater extraction system (recovery wells RW-1 through RW-3) has been operational since 1990; however, the AS component of the ICM was never operated at its full capacity and has not been in operation since 1995. In 2005, as part of a property line hydraulic containment groundwater extraction system, the existing recovery wells were rehabilitated and tied into a larger system, which included a new groundwater treatment system and building.

The second area, referred to as the former MFA, is located inside the southern portion of the site building. Releases of chlorinated VOCs and metals from several degreasers and process/plating lines occurred in this area. In 1993, an ICM, consisting of dual groundwater and soil vapor extraction and treatment, was implemented inside the building. The system was installed as a source removal mechanism and to contain/prevent the migration of contaminants from the source area via groundwater flow. As part of the property line groundwater migration control treatment system, three additional recovery wells were installed along the northeastern property boundary downgradient of the MFA in 2005. At this time and given the facility was shut down, the existing MFA ICM, which incorporated the facility's wastewater treatment system, was also shut-down.

In general, there are two interconnected aquifer systems in the vicinity of the Site. An upper unconfined aquifer is comprised of glacio-lacustrine deposits and a lower aquifer occurs in the upper fractured portions of the bedrock. Overall, the gradients indicate that groundwater predominantly flows in the horizontal direction with a slight downward component from the overburden to the shallow bedrock. Groundwater at the Site is classified as GB, and generally, flows from south to north from a topographic high located behind the facility towards the Still River and wetlands area north of the facility. Water level measurements recorded while the treatment system has been operating indicate that groundwater extraction wells located along the downgradient edge of the property continue to provide hydraulic containment and effectively prevent the migration of impacted groundwater from past site operations off of the property.

The predominant constituents of concern detected in groundwater across the site are chlorinated VOCs and inorganics. With respect to the chlorinated VOCs, 1,1,1-Trichloroethane (1,1,1-TCA) and Trichloroethene (TCE) have been detected at the greatest frequency and at the highest concentrations in groundwater. These compounds were reportedly used at the facility as degreasing agents. In addition to these two chlorinated VOCs, typical degradation and/or related products of these VOCs, including Tetrachloroethene (PCE), cis-1,2-Dichloroethene (cis-1,2-DCE), 1,1-Dichloroethene (1,1-DCE), and 1,1-Dichloroethane (1,1-DCA), have also been detected frequently and at higher concentrations than other VOCs. The highest levels of chlorinated VOCs have been detected in the deep overburden and shallow, fractured/weathered bedrock, indicating that this layer appears to be the primary pathway for VOC migration in groundwater.

For general comparison purposes and given there are no uses of groundwater on the site (drinking or other uses), the recent inorganic data from wells along the property boundary were screened against the CTDEP Remediation Standard Regulations (RSRs) surface water protection criteria (SWPC). An exceedence of the SWPC was detected in five of the property line boundary and/or off-property wells from which samples were submitted for analysis (MW-3, MW-11, MW-113, MW-601B and MW-15M). Inorganics detected above the SWPC include cyanide (MW-15M), copper (MW-3, MW-113, 601B), nickel (MW-113), and zinc (MW-113 and MW-601B). The presence of copper (MW-11) and arsenic, beryllium, and lead (MW-113) have fluctuated above and below the standard over the past five years. This is consistent with historical monitoring events, with the highest concentrations of inorganics (primarily copper, nickel and zinc) detected downgradient of the former MFA (at wells MW-601B and MW-113) and the highest concentration of cyanide detected at MW-15M.

Similar to years past, the results of the March and September 2009 semi-annual groundwater monitoring support an overall decreasing trend of contaminant levels in groundwater across the Site since monitoring began in the late 1980's/ early 1990's. In addition, notable decreases in VOC concentrations within the past few years have been observed in the vicinity and immediately downgradient of the former Lagoon Area. Although current levels of inorganics and VOCs along the downgradient property boundary remain above the CTDEP RSRs SWPC in select wells, concentrations have declined over time and the number of locations with an exceedence has decreased as well.

Groundwater impacts are present in a bedrock depression in the vicinity of Augusta Drive as evidenced by the geologic and contaminant data from investigations associated with three monitoring locations near the intersection of Old Newtown Road and Augusta Drive. Concentrations of VOCs, notably TCE, have historically been encountered at well MW-15M. To further delineate subsurface conditions near MW-15M, a groundwater profile location, GW-2A/B was installed in 2001, approximately 135-feet west of MW-15M across Augusta Drive. Concentrations of VOCs were encountered at this location with depth, while bedrock was not encountered during drilling; thus indicating the occurrence of a bedrock depression in this area. Based on these observations, monitoring well 2ONR-MW1A at 2 Old Newtown Road was installed in 2006 for further delineation purposes. Competent bedrock was encountered 15-feet bgs during drilling. This, coupled with the subsurface information at GW-2A/B and MW-15M, confirms the profile of this bedrock depression (as depicted on Figure 4). Concentrations of VOCs at 2ONR-MW1A are significantly less than concentrations at GW-2A/B and MW-15M, with values slightly above laboratory detection limits. These results aid in delineating the bedrock valley and groundwater concentrations in the direction of the Still River; however, additional data is needed to determine the extent of these conditions on other off-property areas.

The area surrounding the former Risdon facility is occupied by properties associated with industrial uses. A review of historic reports associated with GAR Electroforming (11 Augusta Drive), Amphenol (formerly Medsource and Tenax, at 4 Old Newtown Road), and Toppan Photomasks (formerly Dupont Photomasks, at 9 Finance Drive) confirmed the use of contaminants of potential concern (COPCs) as part of historic manufacturing processes. At the GAR and Toppan Photomasks properties, spent chemical wastes were disposed of on-site in a series of on-property solid waste management units (SWMUs), many of which were removed or "clean-closed" in accordance with RCRA requirements. The current Amphenol property which was historically owned by Medsource and Tenax previously housed an abandoned UST, a former drum storage area, and antiquated septic system. Additional investigation activities and environmental monitoring has been on-going at these properties to assess contaminant concentrations, predominantly in groundwater, including VOCs and inorganic constituents. As described earlier in the CSM, localized groundwater migration and transport is hydraulically influenced by the Still River, wetlands to the north of Old Newtown Road, and the topographic high (hill) to the east. Contaminant migration and discharge downgradient of the former Risdon facility will be further evaluated using the investigation methods described within this work plan, which will subsequently be used to update the CSM.

3. PREVIOUS OFF-PROPERTY INVESTIGATION AND MITIGATION ACTIVITIES

A number of remedial investigation activities have been conducted in the vicinity of the Site due to the industrial nature of the surrounding area. Figure 3 provides a view of the surrounding properties, location of the Still River and downgradient wetland area, as well as the topography of the area. As discussed in the previous section, groundwater flows from south to north from a topographic high located behind the facility towards the Still River and wetlands area north of the facility. The following presents a summary of the off-property investigations and mitigation activities conducted by CR USA, as well as a brief summary of other investigation and mitigation activities conducted in the vicinity of the wetland area.

3.1 SUMMARY OF OFF-PROPERTY INVESTIGATIONS AND MITIGATION ACTIVITIES

Based on the on-property conceptual site model, a number of investigation and mitigation activities have been conducted outside the limits of the former Risdon facility property. These investigations have included sampling of groundwater, soil vapor and indoor air at a number of properties downgradient of the Site to evaluate the nature and extent of contaminants in these areas. Based on the investigation results, remedial activities have been conducted to mitigate the potential vapor intrusion pathway at select locations. In accordance with Conditions II.B.2(b)(i) of the September 29, 2009 Stewardship Permit and the November 25, 2009 approved Schedule for Scope of Work, Table 2 provides a summary of the investigation and mitigation activities conducted off-property by CR USA, Inc. and further discussion is provided below.

3.1.1 Previous Investigations

Investigation activities off of the property have included the installation of temporary and permanent groundwater monitoring locations and collecting groundwater, soil vapor, and indoor air samples for laboratory analysis.

3.1.1.1 Groundwater and Soil Vapor Investigation - 2001

An initial assessment of groundwater quality beneath select off-property locations and potential impacts to indoor air at off-property receptor locations was conducted by W&C in November and December 2001 and consisted of:

- Obtaining property-specific building construction information to aid in the selection of specific sampling depths and locations (i.e., presence of basements, foundation and floor construction, etc.) on five downgradient properties;
- Conducting an initial soil vapor survey to determine the presence and concentration of VOCs in soil vapors in the subsurface adjacent to occupied structures on these properties;
- Installing a soil vapor point adjacent to existing monitoring wells MW-15M (on Augusta Drive) and MW-111 (on the Risdon property) to evaluate the concentration of VOCs in soil vapor compared to concentrations of VOCs in groundwater (i.e., to aid in evaluating the volatilization from groundwater to soil vapor pathway); and
- Collecting a groundwater sample from each property from a temporary well point or existing monitoring well to evaluate the extent of VOCs on each of the properties where the soil vapor samples were collected.

A total of 22 soil vapor samples and 9 groundwater samples were collected during the off-property soil vapor and groundwater sampling survey. A breakdown of the number and type of samples collected at each of the five off-property locations is provided below:

- 2 Broad Street (residential) – 5 soil vapor and 1 groundwater sample

- 2 Old Newtown Road (residential) – 5 soil vapor and 2 groundwater samples
- 11 Old Newtown Road (commercial/office) – 4 soil vapor and 1 groundwater sample
- 4 Old Newtown Road (industrial) – 5 soil vapor and 4 groundwater samples
- 11 Augusta Drive (industrial) – 2 soil vapor and 1 groundwater sample
- Risdon Facility (industrial) – 1 soil vapor sample (near monitoring well MW-111)

Refer to Figure 2 for the location of each of these soil vapor and temporary groundwater monitoring locations and Appendix B for the summary table of results. Refer to W&C's April 2002 *Off-Property Soil Vapor and Groundwater Sampling Report* for additional details on the sampling procedures and results.

The soil vapor results indicated that 1,1,1-TCA and TCE were the most frequently detected chlorinated VOCs, present at 4 of the 5 off-property locations and adjacent to monitoring well MW-111 at the Risdon facility. No chlorinated VOCs were detected in soil vapor on the property at 11 Augusta Drive (GAR property).

The groundwater analytical results indicated the presence of 1,1,1-TCA, TCE, 1,1-DCE, and cis-1,2-DCE at all five off-property locations with TCE present at the highest concentration in all nine samples. Where groundwater samples were collected from multiple depths at a location, the deeper groundwater generally contained higher concentrations of VOCs than the shallower groundwater. Of the nine locations sampled during the investigation, concentrations of TCE and/or PCE were detected above the CTDEP RSRs SWPC at 3 locations, GW-2A at the corner of Augusta Drive and Old Newtown Road (TCE only) and at GW-1A and 1B (TCE only), along the eastern edge of the paved portion of the 4 Old Newtown Road property.

3.1.1.2 Off-property Soil Vapor, Indoor Air and Groundwater Investigation – March 2003

In consultation with EPA, the Connecticut Department of Public Health (CTDPH) conducted a Health Consultation in June 2002. The CTDPH Health Consultation indicated that potential indoor air concentrations (based on the soil vapor and groundwater data) had the potential to impact indoor air at the residences located at 2 Broad Street and 2 Old Newtown Road. The CTDPH indicated that this conclusion was based on very conservative assumptions and recommended testing the indoor air at the two residences.

On March 21, 2003, W&C collected three indoor air (basement, first floor and second floor), one sub-basement soil vapor and one shallow groundwater (adjacent to the house) sample from each residence, as well as an ambient air reference sample. The results from the indoor air samples were compared to the CTDEP RSR Target Indoor Air Concentrations (March 2003). The results indicated that TCE was the only VOC detected in excess of the standard. It was concluded that the vapor intrusion pathway from impacted groundwater to indoor air is a likely pathway for both residents and workers given that: 1) concentrations of VOCs were detected in groundwater (residential and commercial/industrial properties), soil vapor (residential and commercial/industrial properties), and sub-slab soil gas beneath the residences and the site facility building; and 2) VOCs were detected in indoor air samples collected from the two off-property residences and decreasing indoor air concentrations of TCE from the basement to upper floors were detected.

A September 2003 Health Consultation determined that there is no immediate risk based on this data; however, a pathway exists and should be eliminated within a few years. The May 2003 *EI CA 725 Vapor Intrusion Pathway Report* also concluded that based on the information collected to date, a vapor intrusion pathway is present at the two residences; however, there is some uncertainty associated with the potential influences/contribution from background or other sources to the indoor air concentrations. Therefore, as discussed in Section 3.1.2.2, sub-slab depressurization systems were installed in both residences in 2004-2005.

Further discussion on the mitigation activities conducted to address potential vapor migration concerns are provided in Section 3.1.2.2.

3.1.1.3 Groundwater Migration and Interaction with Surface Water – 2006

In January 2006, a supplemental investigation was performed downgradient of the property to evaluate groundwater flow patterns and the interaction of groundwater and surface water in the area. This investigation included the installation, development, and sampling of monitoring well 2ONR-MW-1A on the 2 Old Newtown Road property and the installation and gauging of two piezometers within the Still River. Monitoring well 2ONR-MW1A is screened in the overburden/ till directly above the bedrock surface (the primary flow path for contaminants on-site). Monitoring well 2ONR-MW1A is routinely monitored as part of the CA 750 groundwater monitoring plan and results from the past 4 years of monitoring have indicated that low to non-detect levels of chlorinated VOCs (below the CTDEP RSRs SWPC) are present within groundwater in this area.

Two stream piezometers were installed within the Still River at the locations shown on Figure 2. Due to the rocky stream bed, multiple attempts were required to install the piezometers with the final installation occurring on March 22, 2006 using a pneumatic jackhammer. The piezometers were installed at a depth of 4 feet below the top of the stream bed and positioned with 2 feet of well screen (2 to 4 feet below the stream bed). Results from this investigation demonstrated that the 2 Old Newtown Road property and the Still River (in the location of piezometer PZ-1) are located hydraulically downgradient from the site. Further discussion on these piezometers is provided in Section 4.2.

Refer to W&C's June 5, 2006 *Groundwater Investigation Report – 2 Old Newtown Road* for further details on these investigation activities.

3.1.1.4 Routine Off-property Groundwater Monitoring

Routine groundwater monitoring has been conducted both on and off of the property for a number of years. Off-property monitoring began in 1992 at MW-14 and MW-15M and in 2006 at 2ONR-MW1A. Currently, the depth to water is gauged at MW-14 and MW-15M on a monthly basis as part of OMM activities for the groundwater migration control system operating on the property and all three off-property wells are sampled and analyzed on a semi-annual basis in support of the CA 750 status. Based on the latest round of sampling, there are no exceedances of the CTDEP RSRs SWPC or I/C Volatilization Criteria at MW-14 or 2ONR-MW1A. Concentrations of TCE at MW-15M are above the I/C Volatilization Criteria and just above the SWPC. It is noted that the concentration of total VOCs at MW-15M has dropped an order of magnitude over the course of monitoring (21,160 in March 1993 to 2,801 in September 2009). In addition to TCE, cyanide is present at MW-15M above the CTDEP RSRs SWPC. Refer to the December 2009 *Semi-annual Remedy Operation and Post Closure Status Report* for a summary of groundwater monitoring results at these three off-property locations (2001 through 2009).

3.1.2 Mitigation Activities

To reduce off-property impacts that may be occurring as a result of any off-property migration of impacted groundwater, a number of mitigation activities have been conducted both on and off the property. The primary mitigation activity conducted to prevent migration of groundwater to off-property receptors at levels in excess of applicable criteria is the continued operation of the property line groundwater migration control system. This system was initially installed (in 1990) to reduce contaminant mass, as well as to prevent migration of groundwater off of the property along the western side of the property in the vicinity of the former Lagoon area. The system was upgraded in 2005 with additional recovery wells along the remainder of the property boundary to capture groundwater across the full extent of the property line. The additional mitigation activities conducted by CR USA, Inc. included the

installation of sub-slab depressurization systems at two downgradient residences. These vapor reduction systems were installed to mitigate any potential vapor intrusion pathways, as previously discussed. Further details of these mitigation activities are provided below.

3.1.2.1 Groundwater Migration Control System

A groundwater extraction and treatment system has been in operation at the facility since 1990. As part of the overall project objectives, a property line hydraulic containment measure, which included additional wells and a new treatment system, was installed and has been in operation since August 31, 2005. The property line groundwater migration control treatment system operates continuously, twenty-four hours a day and is one of the components of the approved on-property remedy. The system objectives are to: 1) prevent migration of groundwater to off-property receptors at levels in excess of applicable criteria; 2) reduce the mass of contaminants in the former MFA and Lagoon Area by extracting groundwater adjacent to these areas; and 3) treat the extracted groundwater to meet the discharge permit conditions.

The groundwater migration control system treats VOC impacted groundwater from six recovery wells (RW-1 through RW-6) at flow rates ranging from 13 to 19.5 gpm for an average continuous flow (with the recovery wells cycling) of approximately 5 to 18 gpm. Since the start of the system in August 2005, the system has operated for 4.25 years and has removed approximately 1,670 pounds of VOCs through the end of January 2010. Monitoring of the system has shown that the treatment system continues to perform effectively, meeting its operational goals by capturing the VOC impacted plume and effectively treating the extracted groundwater.

3.1.2.2 Residential Sub-slab Depressurization Systems

In December 2003, Environmental Indicator CA 725 was achieved for the facility pending installation and operation of sub-slab depressurization systems at two adjacent residences. In 2004 and 2005, vapor reduction systems were installed in the basements of the residences located at 2 Broad Street and 2 Old Newtown Road, respectively. These vapor reduction systems were installed to mitigate any potential vapor intrusion pathways, as discussed above in Section 3.1.1.2. While operational, the vapor reduction systems effectively create an advective “sweep” beneath the basement floor and mitigate the vapor intrusion pathway. Vacuum and indoor air measurements have been and continue to be collected on a semi-annual basis at 2 Old Newtown Road.

The vapor reduction system at 2 Broad Street was installed on July 27, 2004 and monitoring of the system has routinely been conducted on a semi-annual basis, with the last monitoring conducted in January 2009 (documented in a status report letter in February 2009). Given that the house at 2 Broad Street has been vacant since the middle of last year, the property owner has turned off the system in an effort to conserve electricity. The property owner has indicated that he has no plans to inhabit the residence and will not run the system when no one is living in the residence. On occasion, he and his business partner use a portion of the space for meetings for approximately 1 to 2 hours per day. As there are currently no residents within the household and none anticipated in the near future, there does not appear a need to require the homeowner to run the system nor does this reflect a change in the CA 725 status (given the residence is not occupied on a continuing basis). The homeowner has been notified that should a tenant occupy the home in the future, the system will need to be immediately turned back on and semi-annual monitoring re-started.

3.2 OFF-PROPERTY INVESTIGATIONS CONDUCTED BY OTHERS

As described earlier, the area surrounding the former Risdon facility is bordered by several industrial properties with detailed waste management histories. Response actions have been conducted at many of these properties, while environmental monitoring tasks remain on-going to evaluate residual contaminant trends. The following sections

present a brief summary of past waste storage and disposal practices, which may have resulted in subsurface impacts at three properties downgradient of the former Risdon facility. Refer to Figure 5 for the location of each of these properties, as well as existing monitoring wells and inferred groundwater contours. A summary of well construction details for off-property wells is provided in Appendix C.

3.2.1 11 Augusta Drive – GAR Electroforming

The GAR Electroforming Division facility is located at 11 Augusta Drive and was constructed in 1963 to conduct electroforming work. Two electroforming wastewater treatment sludge lagoons were constructed in the eastern-most corner of the property and a third lagoon was constructed northeast of the sludge lagoon to receive spent pumice from surface finishing of nickel products. In November 1986, approximately 250 tons of sludge and impacted soil were removed from the two electroforming sludge lagoons; however, 'clean' closure was not performed as excavation activities ceased when groundwater was encountered and impacted soil remained. Closure of these lagoons was completed in 1988 with the placement of an engineered cap. A description of cap placement activities pursuant to achieving closure is provided in an EPA and CTDEP approved closure plan, dated June 1988 (SE Technologies, 2007).

As part of closure activities associated with the two electroplating sludge lagoons, a soil sample was collected from one location in the adjacent pumice lagoons. Based on the sample results, no further remediation/closure activities were scheduled for the pumice lagoons. Post-closure groundwater monitoring using wells in the vicinity of both the sludge lagoons and pumice lagoon demonstrated that concentrations of metals decreased adjacent to the sludge lagoons, however nickel concentrations near the pumice lagoons had increased over time. Additional sampling of the pumice lagoons suggested that concentrations of sludge designated for disposal in the receiving lagoons, was mistakenly discharged to the pumice lagoon. As a result, an ICM was conducted in 2006 which included the excavation and off-site disposal of 136 tons of nickel impacted waste (F006-listed) and soil from the pumice lagoon.

During annual groundwater monitoring at the GAR facility, concentrations of metals and VOCs were historically detected in groundwater from four overburden wells (GAR-MW-1, GAR-MW-3, GAR-MW-6, and GAR-MW-7) and one bedrock well (GAR-MW-5) located in the vicinity of the three lagoons and one well which borders the adjacent Amphenol property (GAR-MW-1). TCE was the primary compound detected in each of the groundwater monitoring wells sampled. Lesser concentrations of TCA, PCE, and cis-1,2-DCE were detected exclusively in overburden wells GAR-MW-1 and bedrock well GAR-MW-5. Regarding metals, groundwater data presented in SE Technologies December 2007 *ICM Report* indicated that concentrations of nickel and copper in monitoring wells downgradient of the lagoons (GAR-MW-3, 4, 6 and 7) were higher than those measured in the upgradient well (GAR-MW-1).

3.2.2 4 Old Newton Road – Current Amphenol RF Facility (formerly Medsource and Tenax)

The 4 Old Newtown Road facility is an 8.7 acre parcel located along the intersection of Old Newtown Road and Augusta Drive. The property is currently owned by Commerce Park LLC; however, a series of six known tenants have occupied the facility since the 1940's, with uses ranging from ball-bearing and circuit board manufacturing prior to 1970 and medical-use plastics and radio-frequency interconnect systems production from 1976 to present.

A review of the Tenax ECAF Addendum, indicated that site activities during Tenax's occupancy included metal-working, parts manufacture, printing, plastic extraction and shipping. Degreaser and hydraulic oils were used during operations and a waste oil storage tank, used by a predecessor of Tenax, was abandoned in-place in 1987. Approximately 40 drums of spent chemicals and waste were staged at a former drum storage area prior to removal in 1986. Waste streams included sanitary sewage and non-contact cooling water. According to the historic site operator, the septic system and piping were removed after 1984 when the facility was connected to the city's sewer system.

Environmental assessment activities were undertaken within the three primary release on-site release areas: 1) former drum storage area, 2) former septic system, and 3) abandoned UST following CTDEP Order HM-318. Levels of TCA and PCE, and Freon were detected in a series of test pits advanced in the former drum storage area which resulted in the excavation and off-site disposal of 40 cubic yards of material in 1988. A source of the release was never explicitly identified and presumed to have occurred from poor drum storage practices which may have resulted in surface spilling. Investigations in the vicinity of the former septic system did not result in the detection of contaminant levels, that at the time, would have warranted further investigation according to the ECAF Addendum. No confirmed investigation activities were performed in the vicinity of the abandoned UST. The results from groundwater sampling indicated the presence of VOCs in two monitoring wells located along the southern edge of the property. Concentrations of TCE, TCA, and DCE (along with its degradation products of cis-1,2-DCE and trans-1,2-DCE) were the predominant dissolved constituents.

3.2.3 Finance Drive – Toppan Photomasks, Inc. (Dupont)

The Toppan Photomasks facility (formerly DuPont Photomasks, Inc.) is located on a 6-acre parcel along the northern edge of the large wetland area adjacent to Finance Drive. Historic operations at the facility included the manufacture of printed circuit boards between the mid-1970's and 1986, photomask production since 1972, and pellicle manufacturing in 1992 (pellicles are surface films designed to protect photomasks). These manufacturing processes resulted in the generation of several waste streams at the facility. Through the RCRA permitting program, the facility was responsible for the identification of 16 on-property Solid Waste Management Units (SWMUs) used for storage, treatment, and disposal of hazardous wastes. One SWMU (#1), the Former Sludge Drying Bed, was excavated and disposed off-site during 1984-1985 and certified as "closed" in a RCRA Equivalency Demonstration submitted to CTDEP in September 2004. A general machine shop was operated adjacent to the bordering wetland area of the site between 1969-1972.

Following closure activities at SWMU #1, comprehensive post-closure groundwater monitoring activities were initiated in 1986 and continued through 2005 (based on the *2005 Annual Groundwater Monitoring Report* (20th year) (DuPont, 2006). As noted in the *Current Conditions Report* (ERM, 1997), contaminants of concern found in groundwater include VOCs (predominantly PCE and TCE with lesser concentrations of TCA and DCA) and metals (sodium, iron, manganese, lead, chromium, copper, nickel, and cyanide). The Former Sludge Drying Bed SWMU documented the disposal of several of these metals and cyanide, while attributing select metals to reducing geochemical conditions in groundwater or anthropogenic activities such as road-salting.

Concentrations of VOCs were historically highest at two wells (MW-1 and MW-10) located along the rear (eastern) edge of the facility near the adjacent hill-side. PCE is the predominant solvent found in groundwater, which reached a maximum concentration of 40,000 µg/L in well MW-1 during sampling in 1988. Concentrations of PCE fluctuated around 4,000 µg/L in well MW-10 during monitoring between 1992-1995. Concentrations of TCE in these two wells were several orders of magnitude less, routinely below 200 µg/L at MW-1 with the exception of an increase to 1,400 µg/L in 1990, and concentrations were all below 100 µg/L at MW-10 during monitoring. Elevated concentrations of TCA and DCA were comparable with the range of values associated with TCE, with detections primarily along the Finance Drive portion of the facility (wells MW-6S and MW-6D).

4. PROPOSED OFF-PROPERTY INVESTIGATION

A phased investigation approach is proposed to evaluate off-property subsurface conditions in the vicinity of the Site. As described in the CSM, the presumed method of transport for contaminants of concern from the former Risdon facility is with groundwater flow. As previously described in Section 3, several of the properties adjacent to the former Risdon facility have documented the use of hazardous materials in current and past operation, as well as reported releases to the subsurface and groundwater. Consequently, the occurrence of these releases further complicates the ability to decipher off-property subsurface impacts directly related to the former Risdon facility.

This initial investigation will focus on three main off-property areas: the Still River, the bedrock valley along Augusta Drive, and the wetlands behind 4 Old Newtown Road. In addition, further investigation will be conducted at the one off-property AOC identified (former drain line to the Still River). The activities described herein will occur in conjunction with a phased approach, during which the results from initial investigation tasks will be evaluated to assess potential subsurface impacts. The newly collected data will be compared to applicable RSRs standards and a report prepared documenting the results. If needed, a supplemental work plan will be prepared based on these comparisons, to investigate additional areas.

Refer to Table 3 for a summary of proposed investigation activities, Table 4 for the analytical testing summary (ATS) and Figure 7 for the location of the proposed investigations. The QAPP required QA/QC tables are provided in Appendix D.

4.1 OFF-PROPERTY AOC INVESTIGATION – DRAIN LINE FROM THE FORMER LAGOON AREA

As part of past facility operations, a buried drain line was documented and used to convey process water away from the former waste lagoons into the Still River. A review of historic facility plans confirmed that an 18-inch diameter pipe was installed to assist with overflow management of lagoon wastewater to an adjacent catchbasin that drained to the Still River. The drain line to the catch basin was removed during RCRA closure activities for the former Lagoon Area; however, it is believed that process wastewater from the facility's new clarifier was tied into this drainage system until the facility was tied into the city's sewer system. Following the removal of lagoon soils, the area was backfilled with clean fill and re-seeded during the 1980's. The area was later paved with bituminous asphalt and turned into a parking lot for facility workers. Visual assessment of this parking area identified the location of a catch basin which contains an 18-inch drain line which is presumed to convey storm water to the Still River. It is assumed that this storm water drain line may be the same line that was utilized historically for the former lagoons and the facility's treated wastewater until the facility was tied into the city's sewer system. In the absence of detailed information regarding either the waste drain line or the existing storm drain, a series of investigation activities are proposed to evaluate the condition of the current storm drain line and potential impacts in the Still River near the outfall.

During the assessment of the existing drain line, the cover to the parking lot catch basin in the vicinity of MW-5 and RW-3 will be removed and the depth of the drain line will be confirmed with a weighted tape. The rim elevation of the catch basin will be surveyed and tied into the existing survey plan. A visual assessment of where this storm drain pipe enters the Still River will be made along with an attempt to survey the drain invert to determine the overall length of the drain and its slope.

To evaluate potential impacts to river sediments adjacent to the storm drain, one sample will be collected 10-feet into the river bed from the outfall and another sample will be collected 50-feet downstream beyond the first sample location. During sampling, the downgradient sample will be collected first to avoid suspension and transport of sediment at the upgradient location. In addition, a reference sediment sample will be collected 50-feet upgradient of the drain outfall. Samples at each location will be homogenized with a stainless steel bowl and spoon to remove excess water and any rock fragments prior to transfer into laboratory provided containers. Samples will be submitted

for the analysis of VOCs, 13 priority pollutant metals and cyanide to Alpha Analytical in Westborough, Massachusetts (Alpha). A review of previous river photographs indicates that the river contains a rocky bed, which may require several attempts to locate suitable quantities of sediment for laboratory analysis. At the conclusion of sampling, all locations will be recorded with a global positioning system (GPS) unit and added to the site plan. Sampling procedures and laboratory analysis will be conducted in accordance with the revised project Quality Assurance Project Plan (QAPP).

4.2 STILL RIVER INVESTIGATION

As described in the CSM and supported by the site's hydrogeologic model, the Still River acts as hydraulic boundary to groundwater flow to the west of the former Risdon facility. Near the former Risdon facility, the Still River generally occupies a meandering profile with a width on the order of a few hundred feet, prior to reaching its present half-mile width to the north. This meandering shape, combined with low hydraulic conductivity tills overlain by crystalline bedrock, presumably restricts groundwater flow beneath and across the basin.

As discussed in Section 3.1.1.3, to evaluate shallow groundwater-surface water interaction, two piezometers (PZ-1 and PZ-2; Figure 2) were installed across from Broad Street and the 2 Old Newtown Road Property to the west of the former Risdon facility in March 2006. The installation of these piezometers occurred with considerable difficulty as a result of the coarse channel gravels and blast rock from historic development. Given that one of the piezometers is no longer viable and the other has been damaged, they will be replaced during this off-property investigation.

Replacement piezometers will be installed using methods described by Geist *et al.* (1998) which were specifically designed for piezometer installations in cobble bed rivers. Each piezometer will be constructed using 1-inch nominal, Schedule 40 steel pipe with a solid steel drive point welded to one end and a variable-length extension added to the other end using a threaded coupler. A short section of cross-pipe perforations will be drilled across a six-inch section of the pipe above the drive point to allow for groundwater gauging. Each piezometer will be driven into the substrate using a hand-operated impact hammer affixed to a drive rod placed inside of the 1-inch steel piezometer. Once the screened portion of the piezometer is driven 6 to 12-inches into the substrate, or to the maximum depth achievable if refusal is encountered before this depth, the internal drive rod will be removed using either wrenches or a jack. Additional drive rods and 1-inch steel piezometer sections will be added as necessary to reach the desired depth. Following installation, the outer-casing of each piezometer will be surveyed to obtain an accurate reference point for measurement. The surveyed location of both piezometers will be added to the existing site plan.

To evaluate groundwater-surface water interaction mechanisms, vertical hydraulic gradients will be calculated by taking measurements of the water surface elevation both inside and outside of the piezometer from the surveyed reference point using an electronic conductivity probe. Piezometer measurements and the calculation of vertical hydraulic gradients will occur annually consistent with the current monitoring program.

4.3 AUGUSTA DRIVE INVESTIGATION

Data from this downgradient area has routinely indicated concentrations of VOCs (predominantly TCE) at well MW-15M (screened 12-32 feet bgs), located along the northeastern edge of the intersection between Old Newtown Road and Augusta Drive. As part of an assessment of off-property groundwater in the vicinity of the residence at 2 Old Newtown Road, concentrations of VOCs (mostly TCE) were encountered in overburden groundwater at a groundwater profile location (GW-2A/B; "A": 17-21 feet bgs and "B": 7 – 11 feet bgs) to the west of the Old Newtown Road/Augusta Drive intersection in November/December 2001. Significantly lower (to non-detect) concentrations of VOCs have been measured at well 2ONR-MW-1A (installed in January 2006), located to the west of the residence at 2 Old Newtown Road and adjacent to the Still River. A review of subsurface information from boring logs at these locations indicates a pronounced bedrock depression or valley which may act as a preferential conduit for

overburden groundwater migration, rather than towards the Still River. Based on a review of the data in this area, additional investigation activities are proposed, as described below.

4.3.1 Bedrock Evaluation and Monitoring Well Installation

To evaluate the geologic profile and concentrations of contaminants in groundwater in this area, one well cluster is proposed in Augusta Drive across from 11 Augusta Drive (Figure 7). This well cluster (designated as MW-701) will consist of two overburden monitoring wells and one bedrock well. The locations of respective well screens will be based on a combined overburden soil screening program and a series of packer tests in bedrock during the advancement of the initial borehole. Subsurface information obtained during the advancement of this well will be used to determine overburden screen construction zones. For overburden screen interval selection, soil samples will be continuously recovered in 2-ft intervals during drilling for lithologic description and field screening with a portable gas chromatograph. The overburden interval demonstrating the highest VOC results will be selected for the subsequent installation of the overburden well. The other overburden well will be screened across the water table surface.

Prior to advancements into bedrock, an outer drill casing will be firmly seated into the upper bedrock surface. Advancement into the rock will be conducted using 5-foot length of NX or HQ size core barrels. After each run, the core will be retrieved and logged for rock type, fractures, weathering, etc. The borehole will be advanced to a target elevation of 240 feet above mean sea level (MSL), which corresponds to approximately 10 feet below on-property bedrock well MW-508C (refer to Figure 4). At each 10-foot interval, the borehole will be flushed to remove any residual drill cuttings and a pneumatic packer assembly and bladder pump will be deployed in the borehole to obtain representative samples of groundwater from the distinct bedrock zones. Groundwater samples will be collected for field screening with a portable gas chromatograph (headspace analysis). Measurements of groundwater quality will be recorded at routine intervals to document groundwater stabilization parameters. A zone will be selected for well screen placement based on the highest VOC results and review of fractures in the rock cores. If the target well screen interval is above the borehole end depth, the remainder of the borehole will be backfilled with a high-solids bentonite grout. During well construction a sand filter pack will be installed two-foot above the top of the well screen and a two-foot bentonite chip seal will be placed above the sandpack. The remainder of the borehole will be filled with a high-solids bentonite grout. The surface of the well will be completed with a flush-mounted roadbox. Refer to the updated project QAPP for Standard Operating Procedures (SOPs) for well construction and packer testing. Based on the location of the MW-701 well cluster, direct coordination (approval, scheduling, police detail) and approval for work will be required with the City of Danbury.

Following installation, each well will be manually developed to improve the hydraulic connection with the surrounding aquifer. All drill cuttings and purge groundwater will be containerized and brought back to the Site for treatment (purge water treated by the on-site treatment system) or off-site disposal (drill cuttings).

4.3.2 Groundwater Sampling

Groundwater samples will be collected from the new wells no earlier than 7-days after well development. Groundwater samples will be collected using low flow methodologies in accordance with the SOPs included in the project QAPP. Samples will be submitted to the laboratory for analysis of 13 PPMs, cyanide and VOCs in accordance with the project QAPP.

4.4 ADJACENT WETLANDS

As shown on Figure 3, a large wetland abuts the properties along Augusta Drive and Finance Drive. The eastern edge of the wetland is bounded by a topographic hill which trends in the north-south direction, while localized groundwater flow generally parallels the Still River. Based on the confined aerial extent of the wetlands and the

shallow depth to groundwater in the overburden aquifer, a groundwater discharge pathway likely exists towards the wetland. Concentrations of VOCs and metals have been detected within overburden wells located along the perimeter of the wetland at wells located on the GAR Electroforming (11 August Drive) and current Amphenol facility (4 Old Newtown Road) properties. As previously stated, current and past operations at many of the facilities adjacent to these wetlands documented the use of both VOCs and metals, which complicates the identification of a potential source area. Investigation of the southern edge of these wetlands is proposed to determine current concentrations of VOCs and inorganics in groundwater in this downgradient area.

4.4.1 Monitoring Well Installation

Based on overburden VOC results associated with groundwater profile location GW-1A/B/C installed in the northeast parking area of the current Amphenol property (4 Old Newtown Road) in 2001, an overburden monitoring well couplet (designated as MW-702 on Figure 7) will be installed adjacent to this profile location to evaluate contaminant trends since 2001 and to evaluate potential discharge to adjacent wetlands. The installation of these overburden wells will occur consistent with the procedures described for MW-701 using a field GC to screen concentrations of VOCs in soil and select a preferential zone for well screen construction. Previous VOC results and corresponding well depths from GW-1A/B/C will be used for comparative purposes during well construction. Each well will be constructed with either a 5 or 10-foot well screen section to monitor distinct overburden aquifer zones. Well construction procedures will occur consistent with methods described in the project QAPP.

A bedrock well is not proposed at this location due to the proximity of existing bedrock well, GAR-MW-5, which is screened across the target elevation (screened from 268-258 MSL). This well is periodically monitored and the data can be reviewed as part of this work. In addition, a primary objective of this location investigation is to determine potential discharge pathways and concentrations to the adjacent wetlands, which is more represented by overburden data.

4.4.2 Groundwater Sampling

Groundwater samples will be collected from the new well couplet no earlier than 7-days after well development. Groundwater samples will be collected using low flow methodologies in accordance with the SOPs included in the revised project QAPP. Samples will be submitted to the laboratory for analysis of 13 PPMs, cyanide and VOCs (CT RCP 8260B) in accordance with the updated project QAPP.

In addition to the collection of samples at these new wells, an attempt will be made to obtain groundwater data at existing wells on the current Amphenol property (4 Old Newtown Road). The data from these wells will be used to evaluate the data associated with these new wells and assess contaminant distribution trends along the edge of the adjacent wetland area. In the event that the existing data is not obtainable or is greater than five years old, a request will be made to collect samples more representative of current conditions at wells MS-MW-2 and MS-MW-4, which are located on either side of the proposed MW-702 wells.

4.5 REPORTING

Following completion of the proposed investigation activities and validation of the data, a report will be prepared documenting the methods and results from the off-property investigation. Based on the data, a supplemental work plan may be proposed for follow up investigation activities to meet the project objectives.

5. PROPOSED SCHEDULE

In accordance with the November 25, 2009 Schedule for Scope of Work, the proposed off-property investigation activities described in this document would commence upon EPA approval of the scope and attainment of access from the necessary property owners. Table 5 provides a list of the property, its current owner and the proposed activities for that location. The EPA and CTDEP will be notified on a monthly basis on the status of achieving access so that should access be delayed or not attainable, an alternative approach can be pursued.

6. REFERENCES

- Clarke, J.W., 1958. The bedrock geology of the Danbury quadrangle. Connecticut Geology and Natural History Survey Quarterly Report , 7, 47 p.
- DuPont Corporate Remediation Group, 2006. 2005 Annual Groundwater Monitoring Report (20th Year). Toppan Photomasks, Inc. (Formerly DuPont Photomasks, Inc.), Danbury, Connecticut. February 27.
- ERM-Northeast, Inc., 1997. Current Conditions Report. DuPont Photomasks, Inc., Danbury, Connecticut. October 31.
- Geist, D.R., Joy, M.C., Lee, D.R., and Gonser, T., 1998. A method for installing piezometers in large cobble bed rivers. Groundwater Monitoring and Remediation, Winter, pp. 78.82.
- SE Technologies. 2006. Interim Corrective Measures Report, Former Pumice Lagoon, GAR Electroforming Division, Danbury, Connecticut. November 21.
- SE Technologies. 2007. Interim Corrective Measures Report, Former Pumice Lagoon, GAR Electroforming Division, Danbury, Connecticut. December.
- Thomson, W., 1971. The drainage and glacial history of the Still River Valley, southwestern Connecticut. U.S.G.S. Open File Report 71-283, November 12.
- W&C, Inc. 2002. Off-Property Soil Vapor and Groundwater Sampling Report, Risdon Corporation, Danbury, Connecticut. April 18.
- W&C, Inc. 2006. Groundwater Investigation Report, Risdon Corporation, Danbury, Connecticut. June 5.
- W&C, Inc. 2008. Remedial Action Plan, Risdon Corporation, Danbury, Connecticut. March.
- W&C, Inc. 2009. Remedial Action Completion Report, Risdon Corporation, Danbury, Connecticut. June, 19.
- W&C, Inc. 2009. Semi-annual Remedy Operation and Post Closure Status Report, Risdon Corporation, Danbury, Connecticut. December.

TABLE 1
LIST OF SURROUNDING PROPERTIES
 15 Old Newtown Road, Danbury, Connecticut

Property No.	Property Address	Property Owner	Mailing Address	Relevant Operator/Occupant	Property Use	Zoning
K12183	11 Old Newtown Road	Robert P. Cicarelli	same	Berkshire Food, Inc.	industrial-office warehouse	Light Industrial
K12270	2 Broad Street	Antonio A. Ramos	same	A & A Iron Works	industrial	Light Industrial
K12184	5-9 Old Newtown Road	Joseph Kaiser c/o Kaiser Truck Stop	5 Old Newtown Road	Kaiser Truck Stop	industrial-mechanics shop	Light Industrial
K12182	2 Old Newtown Road	Vincent Torcasio	same	Aquascapes Pool Contractor	residential/commercial	General Industrial
L12001	4 Old Newtown Road	Commerce Park Realty LLC	PO Box 581, Danbury	Amphenol RF; Medsource; Tenax Corporation	industrial-office park	General Industrial
L12002	10 Old Newtown Road	Olive Tree LLC & Lemon Tree LLC	109 Boulevard Drive, Danbury	Danbury Self Storage	industrial-self storage area	General Industrial
K12180	11 Augusta Drive	GAR Realty	PO Box 340, Danbury	GAR Electroforming, Inc.	industrial	General Industrial
K11153	2 Augusta Drive	SKLG Investments LLC	301 Main Street, Danbury	U.S. Granite Inc. Warehouse/Facility	industrial-warehouse	General Industrial
K11150	21 Finance Drive	Robert Bedoukian	21 Finance Drive, Danbury	Bedoukian Research, Inc.	industrial	Light Industrial
K11151	27 Augusta Drive	Robert Bedoukian	21 Finance Drive, Danbury	Bedoukian Research, Inc.	industrial	General Industrial
K11152	15 Augusta Drive	Melvyn J. & Mary P. Powers	PO Box 581, Danbury	Vacant	undeveloped	General Industrial
L12030	72 Augusta Drive	Harry J. Antonson	19615 63rd Ave West Unit A, Lynnwood, WA 98036	Vacant	undeveloped	General Industrial
L11010	9 Finance Drive	Sempre Holding LLC	43 Lamppost Drive, Redding, CT 06896	Toppan Photomasks, Inc./ DuPont Photomasks, Inc. (1991-2003); Perkin Elmer (1986-1990)	industrial-office park	Light Industrial

Notes

1. Information obtained from the City of Danbury's Tax Assessor's Office, February 2010.

TABLE 2
SUMMARY OF OFF-PROPERTY INVESTIGATION AND MITIGATION ACTIVITIES
 15 Old Newtown Road, Danbury, Connecticut

Type	Investigation or Mitigation Activity Description	Media	Property	Period of Activity
Investigation/ Mitigation	Routine off-property groundwater monitoring (CA750) as part of O&M activities of the on-property groundwater migration control extraction and treatment system (MW-14, MW-15M, 2ONR-MW-1A)	Groundwater	Broad Street, 2 and 4 Old Newtown Road	1992 to present (currently semi-annual sampling)
Investigation	Off property soil vapor survey and groundwater monitoring conducted	Soil vapor, groundwater	2, 4 and 11 Old Newtown Road, 2 Broad Street, 11 Augusta Drive	November - December 2001
Investigation	Off-property soil gas, groundwater and indoor air sampling conducted	Soil vapor, indoor air, groundwater	2 Broad Street and 2 Old Newtown Road	March 2003
Mitigation	Sub slab depressurization system start-up and operation at 2 Broad Street	Soil vapor	2 Broad Street	July 27, 2004 to 2009; Currently residence is vacant and system is off
Mitigation	Sub slab depressurization system start-up and operation at 2 Old Newtown Road	Soil vapor	2 Old Newtown Road	December 9, 2005 to present
Investigation	Installation of monitoring well 2ONR-MW1A at 2 Broad Street	Groundwater	2 Old Newtown Road	January 2006
Investigation	Installation of piezometers PZ-1 and PZ-2 in the Still River	Groundwater/ Surface water	Still River	March 2006

Notes:

- 2 Broad Street (residential)
- 2 Old Newtown Road (residential)
- 11 Old Newtown Road (commercial/office)
- 4 Old Newtown Road (industrial)
- 11 Augusta Drive (industrial)

TABLE 3
PROPOSED INVESTIGATION SUMMARY
 15 Old Newtown Road, Danbury, Connecticut

Media	Location ID	Property ¹	Rationale	Analysis/Purpose	Additional Information
Off-Property AOC: Drain-Line Assessment					
Sediment	SR-SED-01 SR-SED-02	Still River, near 2 Broad Street	Collection of sediment at and downgradient of existing outfall pipe to evaluate potential sediment impacts from historic drain-line associated with the Lagoon Area	VOCs, 13 Priority Pollutant Metals, Cyanide	Samples collected 10-feet into the river at the drain line location and 50-feet downstream
Sediment	SR-SED-REF-01	Still River, near 2 Broad Street	Background/reference sediment sample for evaluation of primary samples	VOCs, 13 Priority Pollutant Metals, Cyanide	Sample collected in same manner as SR-SED-01/02 samples; located 50-feet upstream of the drain pipe,
Still River					
Groundwater/ Surface Water	PZ-1 & PZ-2	Still River	Replacement of piezometers in river bed	Groundwater Flow Information	Piezometers installed using modified approach with internal drive rod for enhanced anchoring
Augusta Drive					
Overburden - Groundwater	MW-701A (Shallow) MW-701B (Intermediate)	Augusta Drive	Wells installed to evaluate contaminant transport downgradient of former Risdon facility along inferred bedrock valley	VOCs, 13 Priority Pollutant Metals, Cyanide; Vertical Hydraulic Gradients	Overburden well screen placement based on field GC screening to target zones of elevated VOCs
Bedrock - Groundwater	MW-701C (Bedrock)	Augusta Drive	Well installed to evaluate groundwater quality in bedrock aquifer downgradient of former Risdon facility	VOCs, 13 Priority Pollutant Metals, Cyanide; Vertical Hydraulic Gradients	Borehole into rock with concurrent packer sampling of 10-foot zones to determine well screen interval
Adjacent Wetlands					
Overburden - Groundwater	MW-702A (Shallow) MW-702B (Intermediate)	4 Old Newtown Road (Amphenol facility)	Overburden well couplet proposed in vicinity of previous groundwater profile location GW-1A/B/C (2001) to evaluate VOC trends with time and potential groundwater discharge to wetlands.	VOCs, 13 Priority Pollutant Metals, Cyanide; Vertical Hydraulic Gradients	Overburden well screen placement based on field GC screening
Overburden - Groundwater	MS-MW-2 and MS-MW4	4 Old Newtown Road (Amphenol facility)	Review historical groundwater data; If data is not available, sample groundwater from these shallow overburden wells	VOCs, 13 Priority Pollutant Metals; Cyanide	Evaluate groundwater data relative to potential discharge to adjacent wetland

Notes:

1. Advancement of proposed investigation points and sampling at existing locations is dependent on confirmed access from the current property owner

TABLE 4
ANALYTICAL TESTING SUMMARY
 15 Old Newtown Road, Danbury, Connecticut

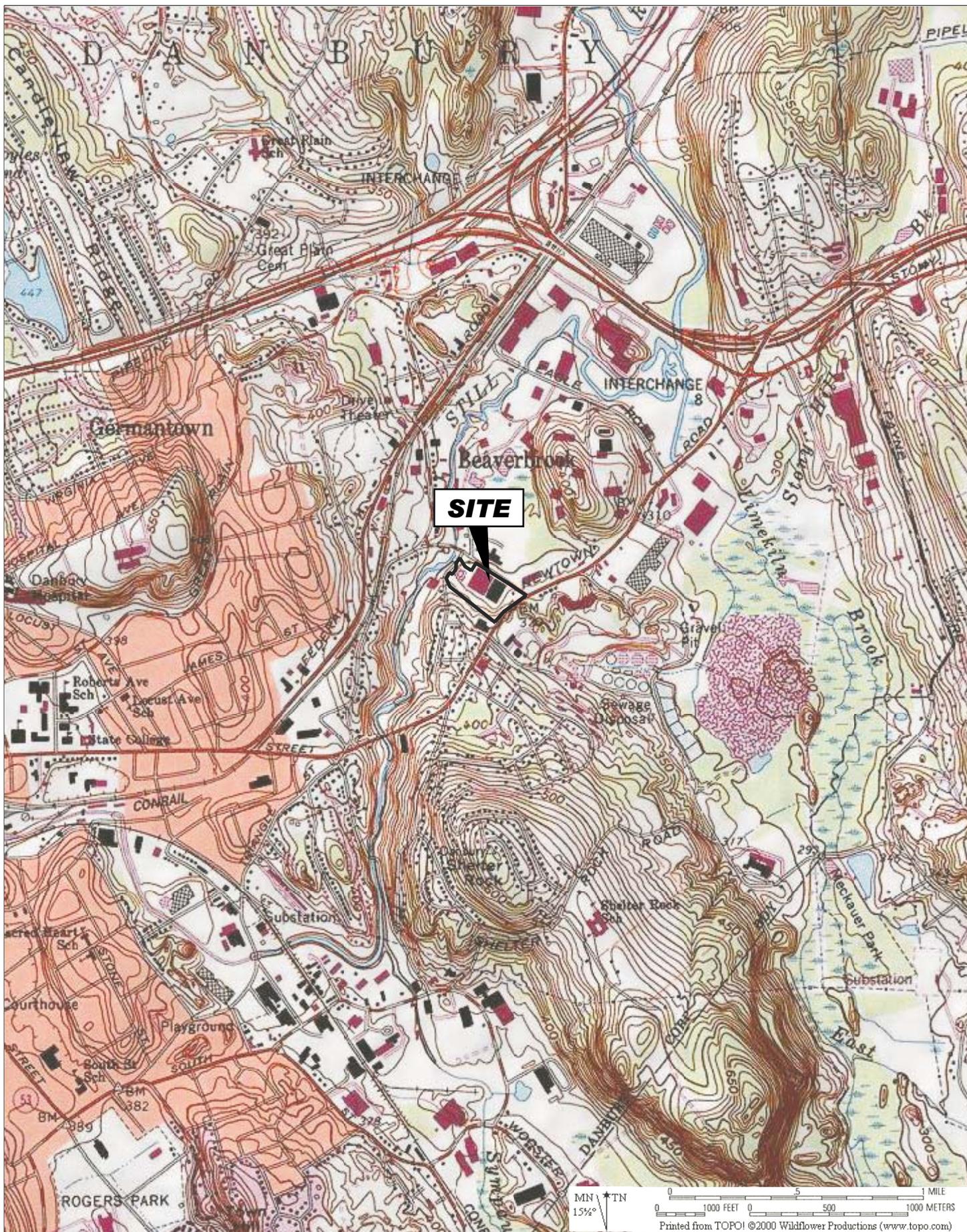
Media	Location ID	VOCs	13 Priority Pollutant Metals (unfiltered)	Cyanide
Off-Property				
Sediment	SR-SED-01	X	X	X
	SR-SED-02	X	X	X
	SR-SED-REF-01	X	X	X
Augusta Drive				
Groundwater	MW-701A (Shallow)	X	X	X
	MW-701B (Intermediate)	X	X	X
	MW-701C (Bedrock)	X	X	X
Adjacent Wetlands				
Groundwater	MW-702A (Shallow)	X	X	X
	MW-702B (Intermediate)	X	X	X
	MS-MW-2 ¹	X	X	X
	MS-MW-4 ¹	X	X	X
TOTALS	Sediment	3	3	3
	Groundwater	7	7	7

Notes:

1 - Sampling of these wells will be performed only if recent groundwater is not available from the property owner or other source (within past 3 to 5 years)

TABLE 5
ACCESS REQUIREMENTS FOR PROPOSED OFF-PROPERTY INVESTIGATION
 15 Old Newtown Road, Danbury, Connecticut

Location/ Address	Property Owner	Contact Information	Proposed Activities	Comments
Still River	State of Connecticut	CT DEP 860- 424-3000	Sediment sampling GPS of sediment locations Installation of 2 piezometers Survey of new piezometers	
Augusta Drive	City of Danbury	Engineering Department Fran Lollie 203-797-4535	Boring mark-out Overburden and bedrock drilling Well development Groundwater sampling Survey of new well	Will require submitting road opening application, certificate of insurance and bond, as well as a police detail during drilling, well development and sampling
4 Old Newtown Road	Commerce Park Realty LLC	PO Box 581 Danbury, CT	Boring mark-out Overburden drilling Well development Groundwater sampling at existing and new wells Passive soil vapor survey Survey of new well	



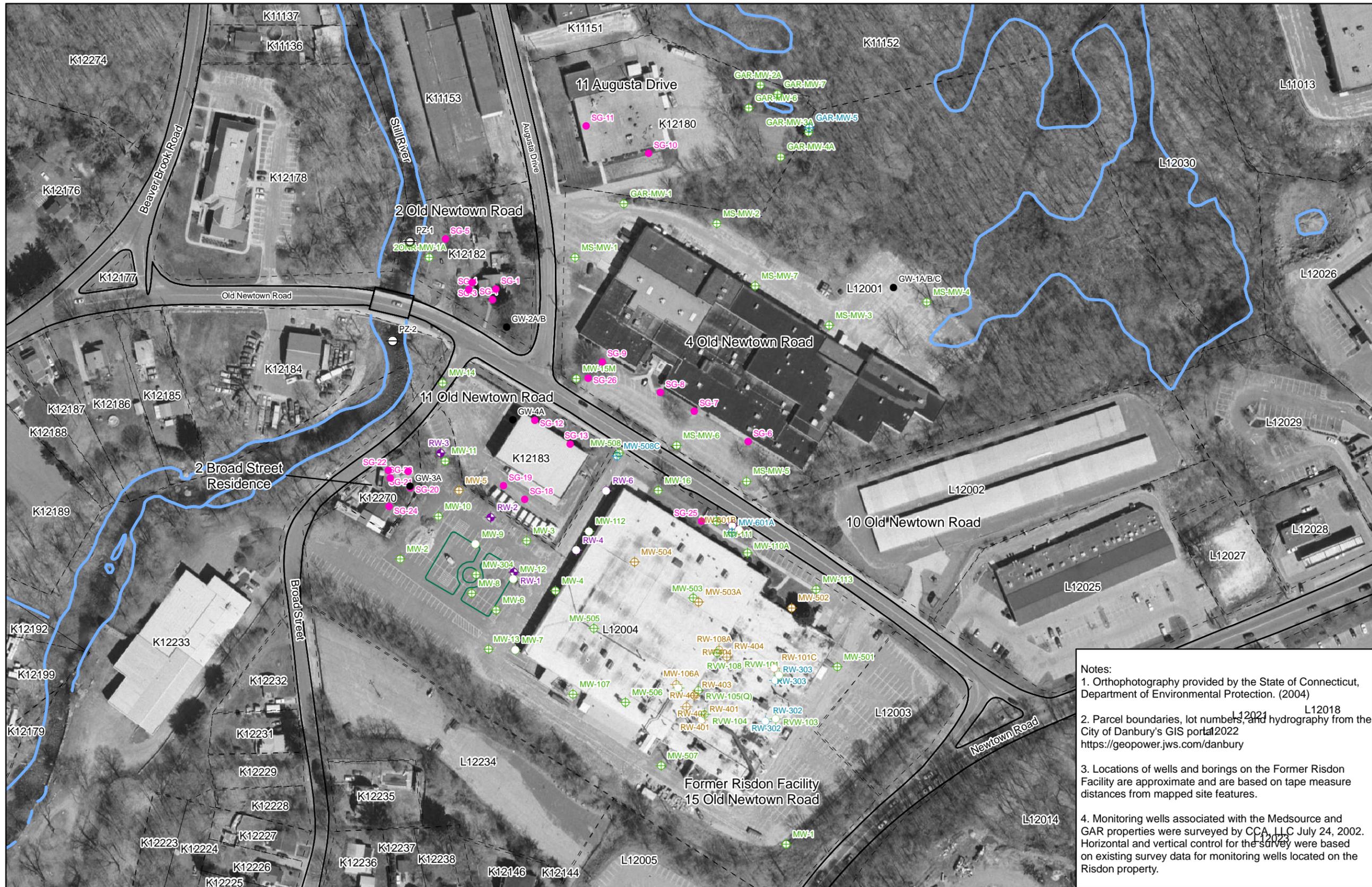

WOODARD & CURRAN
 35 New England Business Center
 Andover, MA 01810
 COMMITMENT & INTEGRITY DRIVE RESULTS

RISDON CORPORATION
 DANBURY, CONNECTICUT

SCALE: AS NOTED	JOB NO.: 97001
DATE: MARCH 2009	FILE: Figure 1.cnv

SITE LOCATION

DES.BY: EVR
DR.BY: EVR
CK BY: CMR
1



Notes:
 1. Orthophotography provided by the State of Connecticut, Department of Environmental Protection. (2004)
 2. Parcel boundaries, lot numbers, and hydrography from the City of Danbury's GIS portal 2022
<https://geopower.jws.com/danbury>
 3. Locations of wells and borings on the Former Risdon Facility are approximate and are based on tape measure distances from mapped site features.
 4. Monitoring wells associated with the Medsource and GAR properties were surveyed by CCA, LLC July 24, 2002. Horizontal and vertical control for the survey were based on existing survey data for monitoring wells located on the Risdon property.

SITE PLAN

15 Old Newtown Road
 Danbury, Connecticut

Off Property Investigation
 Work Plan

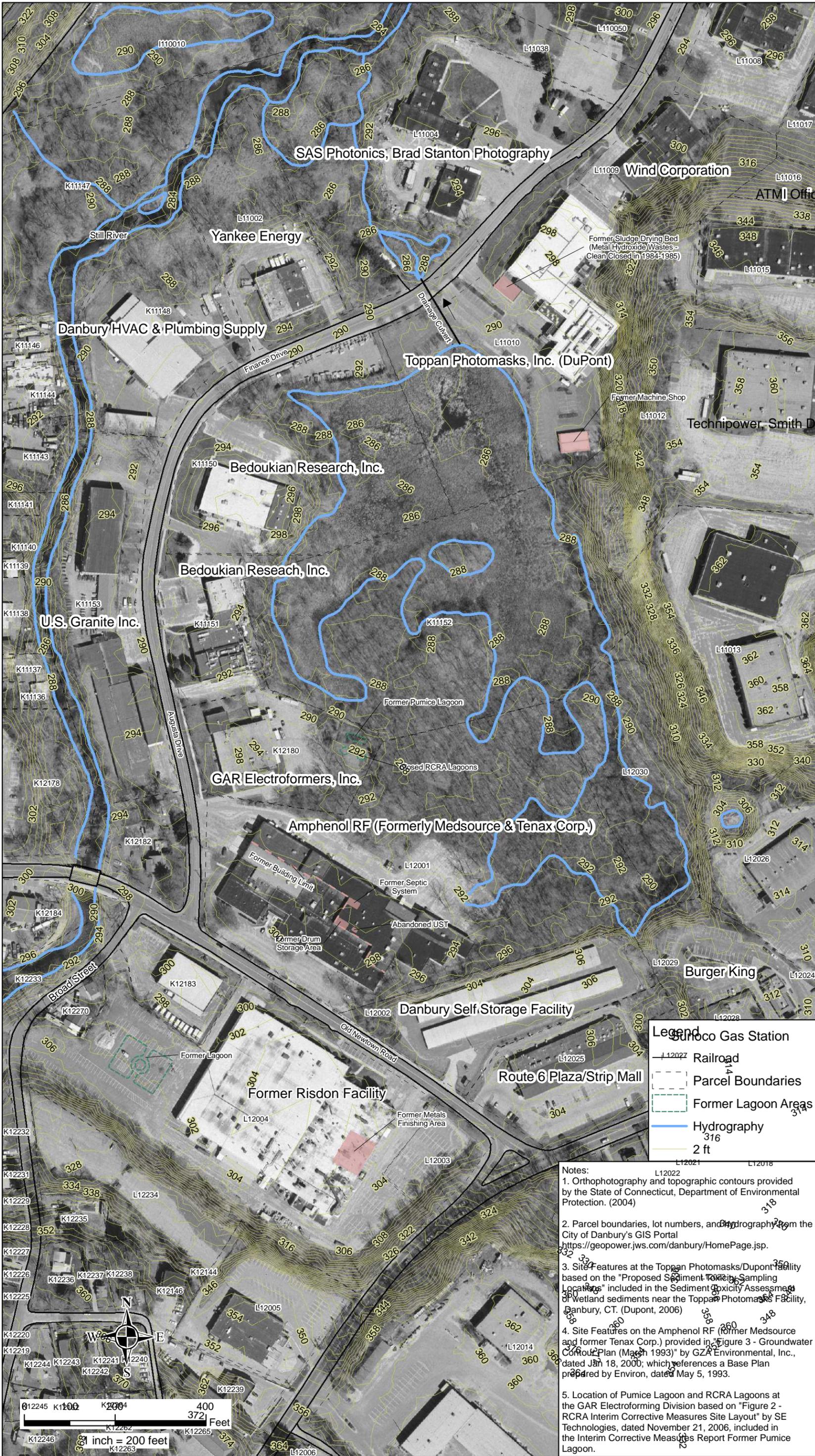
Job NO: 97001
 BY: SMO
 February 2010
FIGURE 2



- Legend**
- ◆ Active Recovery Well, Overburden
 - Groundwater Profile Location
 - ⊕ Monitoring Well, Bedrock
 - ⊕ Monitoring Well, Overburden
 - ⊕ Monitoring Well, Weathered Bedrock
 - ⊖ Piezometer
 - Off-Property Soil Vapor Sample Location
 - ▭ Former Lagoon Area
 - Railroad
 - Hydrography
 - Roads
 - - - Parcel Boundaries



1 inch = 150 feet



35 NEW ENGLAND BUSINESS CENTER | SUITE 180
 ANDOVER, MA 01810
 886.702.6371 | www.woodardcurran.com

COMMITMENT & INTEGRITY DRIVE RESULTS

Off-Property Investigation
 Work Plan

Surrounding Area and
 Topographic Elevations

15 Old Newtown Road
 Danbury, Connecticut

Job NO: 97001

DRAWN BY: SMO

February 2010

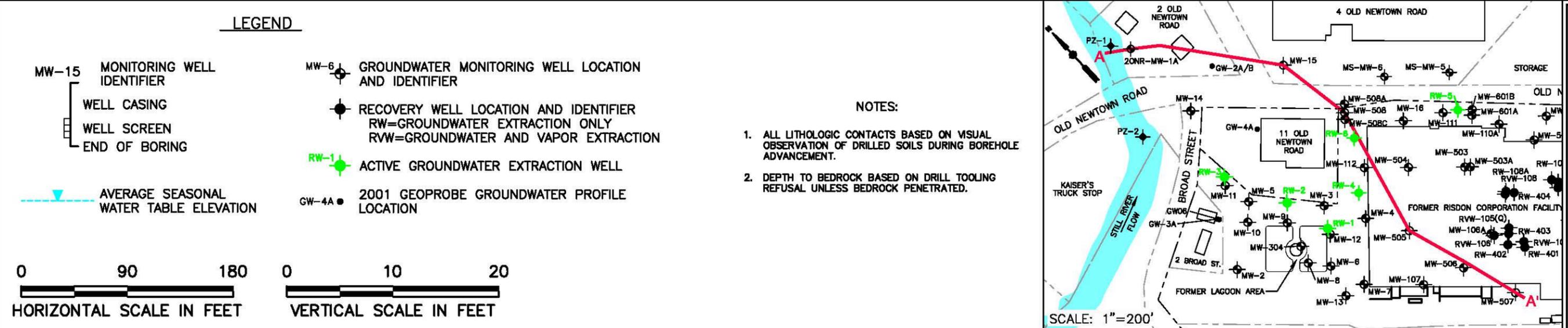
FIGURE 3

Legend

- Railroad
- Parcel Boundaries
- Former Lagoon Areas
- Hydrography
- 2 ft

Notes:

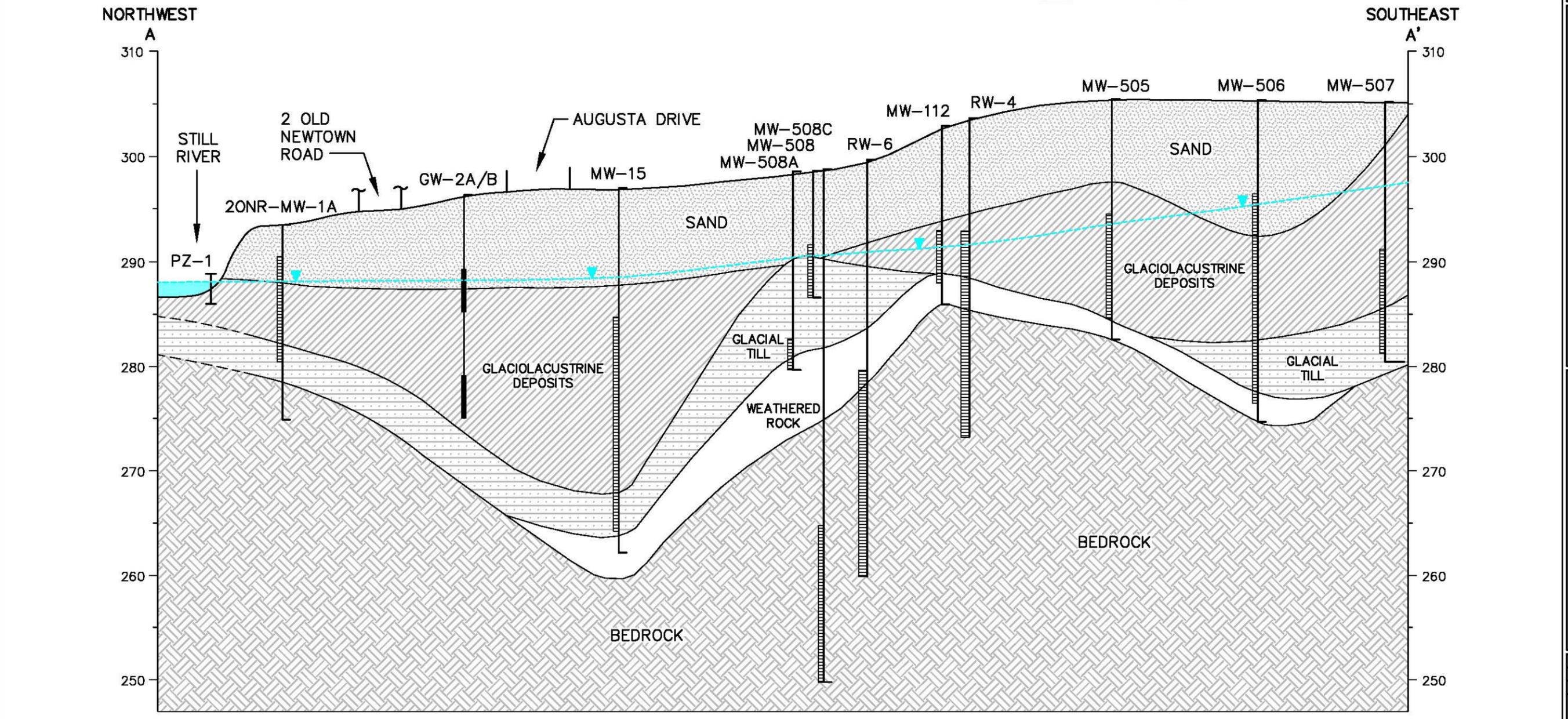
1. Orthophotography and topographic contours provided by the State of Connecticut, Department of Environmental Protection. (2004)
2. Parcel boundaries, lot numbers, and hydrography from the City of Danbury's GIS Portal <https://geopower.jws.com/danbury/HomePage.jsp>.
3. Site Features at the Toppan Photomasks/DuPont Facility based on the "Proposed Sediment Toxicity Sampling Locations" included in the Sediment Toxicity Assessment of Wetland sediments near the Toppan Photomasks Facility, Danbury, CT. (Dupont, 2006)
4. Site Features on the Amphenol RF (former Medsource and former Tenax Corp.) provided in "Figure 3 - Groundwater Contour Plan (March 1993)" by GZA Environmental, Inc., dated Jan 18, 2000; which references a Base Plan prepared by Environ, dated May 5, 1993.
5. Location of Pumice Lagoon and RCRA Lagoons at the GAR Electroforming Division based on "Figure 2 - RCRA Interim Corrective Measures Site Layout" by SE Technologies, dated November 21, 2006, included in the Interim Corrective Measures Report Former Pumice Lagoon.



35 NEW ENGLAND BUSINESS CENTER
ANDOVER, MASSACHUSETTS 01810
886.702.8371 | www.woodwardcurran.com

WOODWARD & CURRAN

COMMITMENT & INTEGRITY DRIVE RESULTS



GENERALIZED CROSS-SECTION A-A'

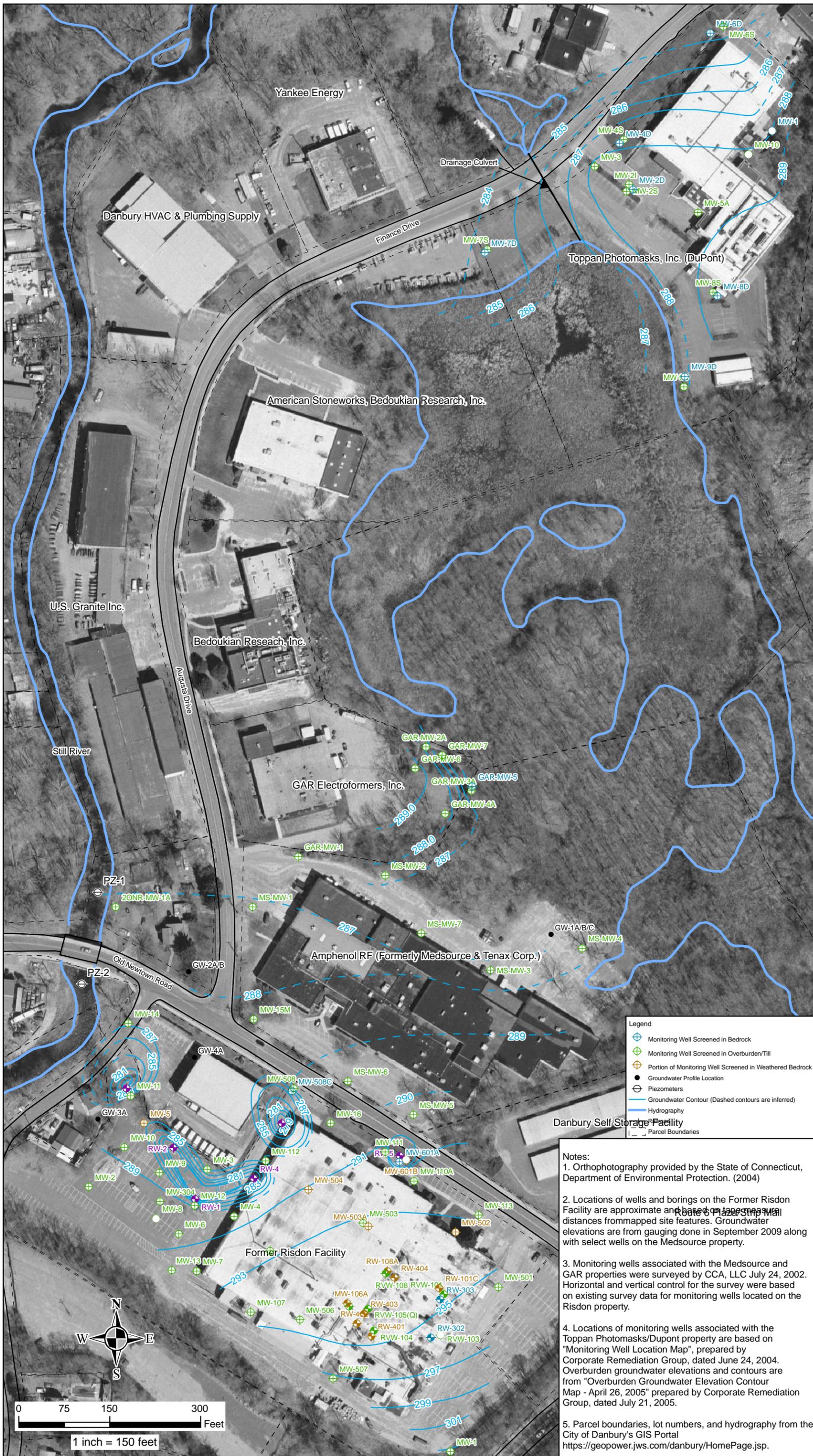
DESIGNED BY: EVR
CHECKED BY: CMR
DRAWN BY: Figure 4 General C-S.dwg

15 OLD NEWTOWN ROAD
DANBURY, CONNECTICUT

OFF-PROPERTY
INVESTIGATION WORK PLAN

JOB NO: 97001
DATE: FEBRUARY 2010
SCALE: AS NOTED

FIGURE 4



Off-Property Investigation
 Work Plan

Inferred Groundwater
 Elevation Contours

15 Old Newtown Road
 Danbury, Connecticut

Job NO: 97001

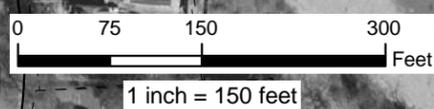
DRAWN BY: SMO

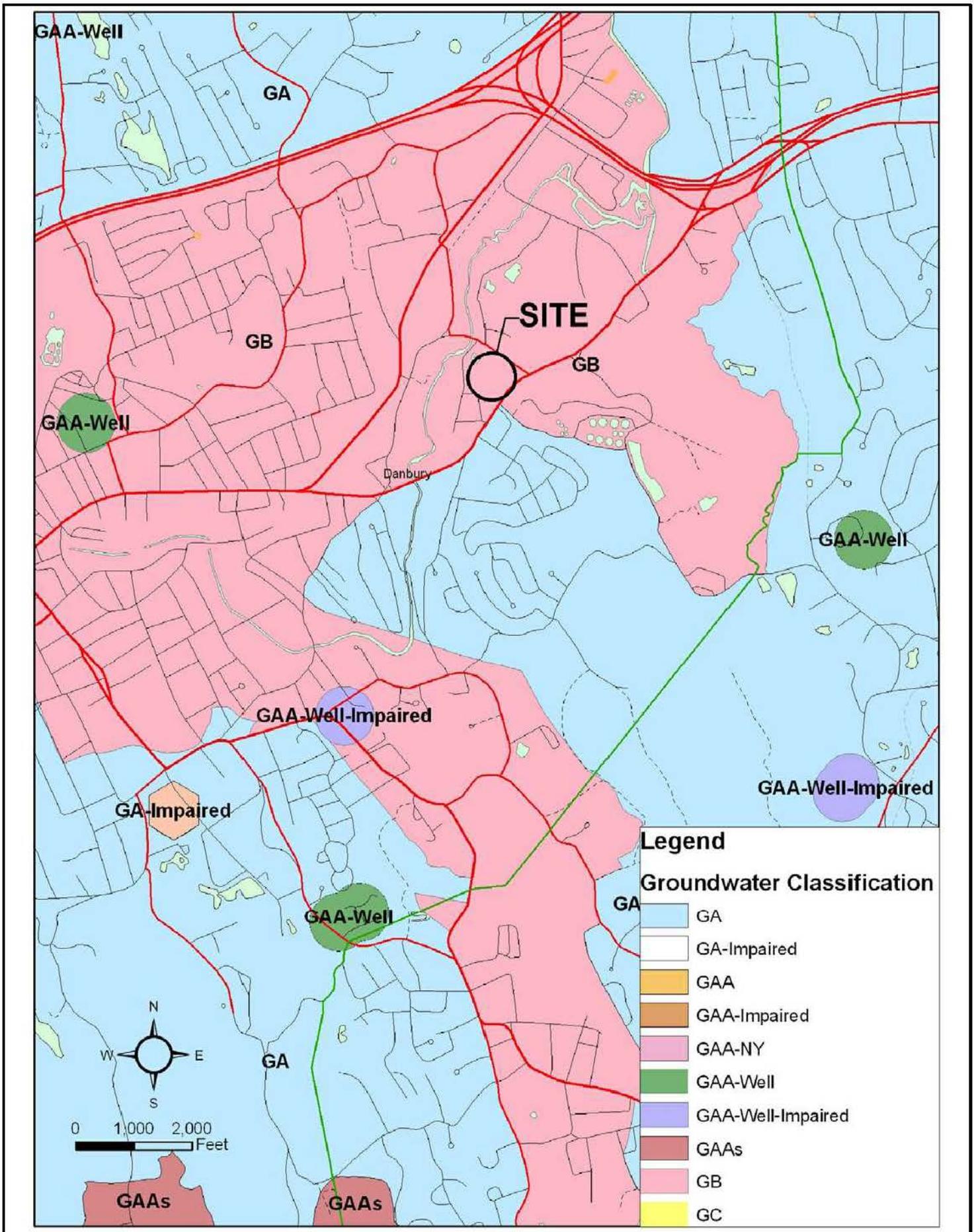
February 2010

FIGURE 5

- Legend**
- Monitoring Well Screened in Bedrock
 - Monitoring Well Screened in Overburden/Till
 - Portion of Monitoring Well Screened in Weathered Bedrock
 - Groundwater Profile Location
 - Piezometers
 - Groundwater Contour (Dashed contours are inferred)
 - Hydrography
 - Parcel Boundaries

- Notes:**
1. Orthophotography provided by the State of Connecticut, Department of Environmental Protection. (2004)
 2. Locations of wells and borings on the Former Risdon Facility are approximate and based on map distances from mapped site features. Groundwater elevations are from gauging done in September 2009 along with select wells on the Medsource property.
 3. Monitoring wells associated with the Medsource and G.A.R. properties were surveyed by CCA, LLC July 24, 2002. Horizontal and vertical control for the survey were based on existing survey data for monitoring wells located on the Risdon property.
 4. Locations of monitoring wells associated with the Toppan Photomasks/DuPont property are based on "Monitoring Well Location Map", prepared by Corporate Remediation Group, dated June 24, 2004. Overburden groundwater elevations and contours are from "Overburden Groundwater Elevation Contour Map - April 26, 2005" prepared by Corporate Remediation Group, dated July 21, 2005.
 5. Parcel boundaries, lot numbers, and hydrography from the City of Danbury's GIS Portal <https://geopower.jws.com/danbury/HomePage.jsp>.





35 NEW ENGLAND BUSINESS
ANDOVER, MASSACHUSETTS 01910
960.708.6371 | www.woodardcurran.com

COMMITMENT & INTEGRITY DRIVE RESULTS

GROUNDWATER CLASSIFICATION MAP

DESIGNED BY:
DRAWN BY: EVR

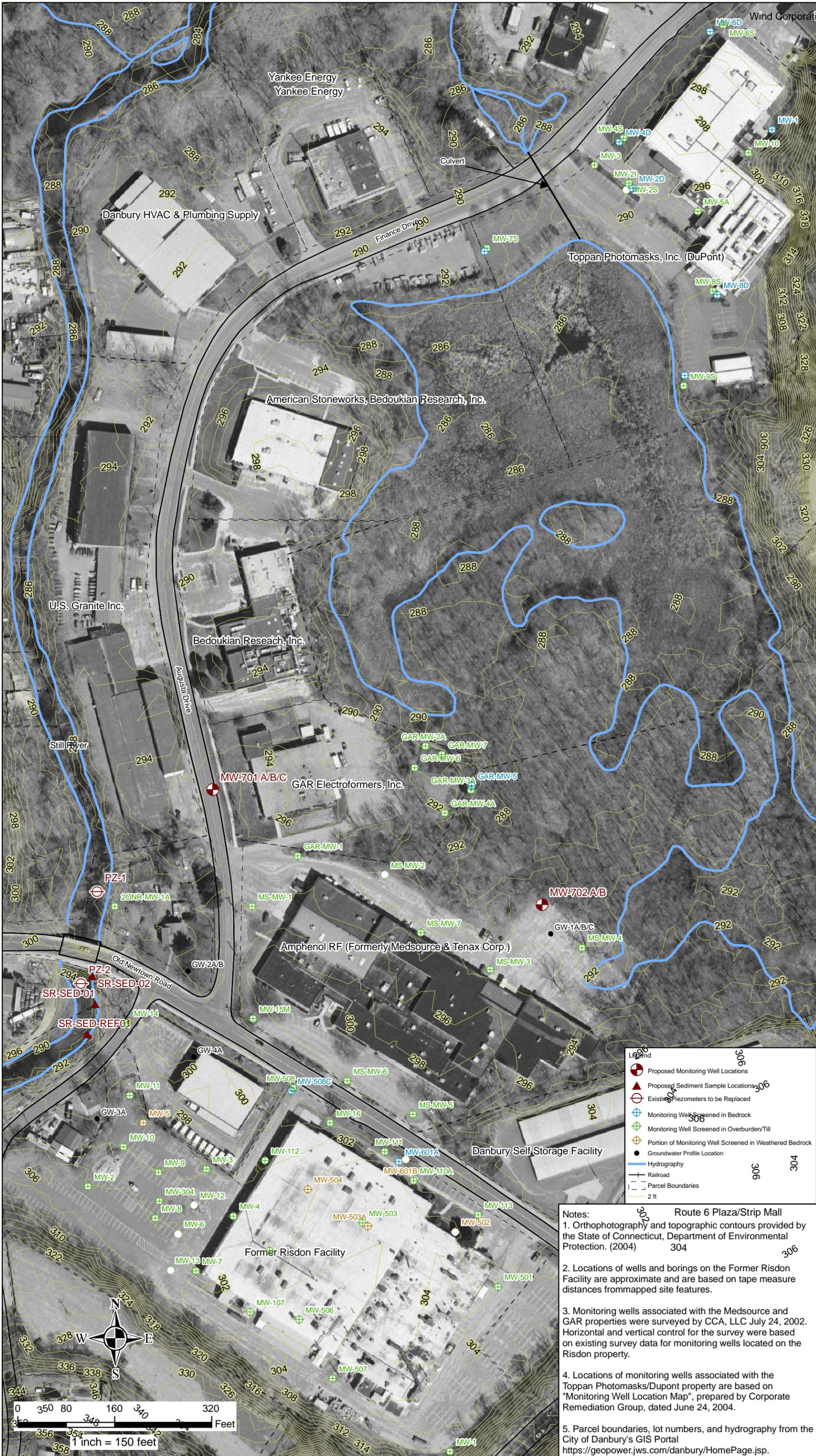
CHECKED BY:
Figure 6 GW Classification.dwg

15 OLD NEWTOWN ROAD
DANBURY, CONNECTICUT

OFF-PROPERTY
INVESTIGATION WORK PLAN

JOB NO: 97001
DATE: FEBRUARY 2010
SCALE: AS NOTED

FIGURE 6



35 NEW ENGLAND BUSINESS CENTER | SUITE 180
 ANDOVER, MA 01810
 886.702.6371 | www.woodardcurran.com
 COMMITMENT & INTEGRITY DRIVE RESULTS

Off-Property Investigation
 Work Plan

Proposed Investigation Locations

15 Old Newtown Road
 Danbury, Connecticut

Job NO: 97001

DRAWN BY: SMO

February 2010

FIGURE 7

- Notes:
1. Orthophotography and topographic contours provided by the State of Connecticut, Department of Environmental Protection. (2004)
 2. Locations of wells and borings on the Former Risdon Facility are approximate and are based on tape measure distances from mapped site features.
 3. Monitoring wells associated with the Medsource and GAR properties were surveyed by CCA, LLC July 24, 2002. Horizontal and vertical control for the survey were based on existing survey data for monitoring wells located on the Risdon property.
 4. Locations of monitoring wells associated with the Toppan Photomasks/DuPont property are based on "Monitoring Well Location Map", prepared by Corporate Remediation Group, dated June 24, 2004.
 5. Parcel boundaries, lot numbers, and hydrography from the City of Danbury's GIS Portal <https://geopower.jws.com/danbury/HomePage.jsp>.

APPENDIX A: STILL RIVER PHOTOGRAPHS

Still River, Danbury, CT



Date: 9/3/03

Description:

**Still River, Upstream
of Old Newtown
Road, Bridge Facing
Downstream.**

View: Looking North



Date: 9/3/03

Description:

**Still River on Old
Newtown Road
Bridge, Facing
Downstream.**

View: Looking
Northwest

APPENDIX B: PRIOR INVESTIGATION RESULTS

Table 1

Summary of Volatile Organic Compounds Detected in Soil Vapor and Groundwater Samples

November/December 2001 Off-Property Soil Vapor Survey
Risdon Corporation - Danbury, CT

Property Location	Sample Point	Sample ID	Sample Type	Sample Depth (ft bgs)	VOCs Detected (ppbv for soil vapor and ug/l for groundwater)												
					Freon 12	Freon 113	Chloro-form	1,1,1-TCA	TCE	PCE	1,1-DCE	cis-1,2-DCE	Toluene	m,p-Xylene	1,1-DCA	Vinyl Chloride	MTBE
2 Old Newtown	SG-1	SG1-SG-019	Soil Vapor	2	< 11	< 11	< 11	1500	280	< 11	86	150	< 11	< 11	25	< 11	< 11
2 Old Newtown	SG-2	SG2-SG-021	Soil Vapor	5	< 12	< 12	< 12	240	94	< 12	26	69	< 12	< 12	< 12	< 12	< 12
2 Old Newtown	SG-3	SG3-SG-022	Soil Vapor	6	< 10	< 10	< 10	1800	67	< 10	36	< 10	< 10	< 10	15	< 10	< 10
2 Old Newtown	SG-4	SG4-SG-018	Soil Vapor	5.5	< 11	< 11	< 11	1200	28	< 11	27	< 11	< 11	< 11	< 11	< 11	< 11
2 Old Newtown	SG-5	SG5-SG-016	Soil Vapor	2	< 11	< 11	< 11	19	< 11	12	< 11	< 11	< 11	< 11	< 11	< 11	< 11
2 Old Newtown	GW-2A	GW2A-GW-007	Groundwater	17 - 21	< 250	NA	< 38	130	2700	< 25	69	130	< 38	< 25	< 38	< 50	< 50
2 Old Newtown	GW-2B	GW2B-GW-009	Groundwater	7 - 11	< 50	NA	< 7.5	53	310	< 5	19	160	< 7.5	< 5	18	< 10	< 10
4 Old Newtown Road	SG-6	SG6-SG-006	Soil Vapor	2	< 11	< 11	< 11	< 11	< 11	< 11	< 11	< 11	23	19	< 11	< 11	< 11
4 Old Newtown Road	SG-7	SG7-SG-005	Soil Vapor	2	< 12	< 12	< 12	15	49	< 12	< 12	< 12	< 12	< 12	< 12	< 12	< 12
4 Old Newtown Road	SG-8	SG8-SG-004	Soil Vapor	2	< 12	< 12	< 12	< 12	17	< 12	< 12	< 12	13	< 12	< 12	< 12	< 12
4 Old Newtown Road	SG-9	SG9-SG-003	Soil Vapor	2	< 11	< 11	< 11	16	71	< 11	< 11	< 11	20	18	< 11	< 11	< 11
4 Old Newtown Road	GW-1A	GW1A-GW-003	Groundwater	22 - 26	< 500	NA	< 75	69	4100	100	56	130	< 75	< 50	< 75	< 100	< 100
4 Old Newtown Road	GW-1B	GW1B-GW-004	Groundwater	12 - 16	< 500	NA	< 75	52	5200	60	< 75	190	< 75	< 50	< 75	< 100	< 100
4 Old Newtown Road	GW-1C	GW1C-GW-005	Groundwater	2 - 6	< 5.0	NA	< 0.75	< 0.5	5.3	< 0.5	< 0.5	4.8	< 0.75	< 0.5	< 0.75	< 1.0	< 1.0
4 Old Newtown Road	MW-6	TMW6-GW-013	Groundwater	12	< 25	NA	< 3.8	4.5	120	5.2	< 2.5	22	< 3.8	< 2.5	5.2	< 5.0	< 5.0
11 Augusta Drive	SG-10	SG10-SG-001	Soil Vapor	2	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	22	16	< 10	< 10	< 10
11 Augusta Drive	SG-11	SG11-SG-002	Soil Vapor	2	< 11	< 11	< 11	< 11	< 11	< 11	< 11	< 11	16	< 11	< 11	< 11	< 11
11 Augusta Drive	MW-1	GMW1-GW-001	Groundwater	20	< 25	NA	< 3.8	4.3	320	31	5.8	17	< 3.8	< 2.5	< 3.8	< 5.0	< 5.0
11 Old Newtown Road	SG-12	SG12-SG-029	Soil Vapor	2	46	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10 J	20
11 Old Newtown Road	SG-13	SG13-SG-028	Soil Vapor	2	18	< 9.8	< 9.8	< 9.8	< 9.8	< 9.8	< 9.8	< 9.8	< 9.8	< 9.8	< 9.8	< 9.8 J	< 9.8
11 Old Newtown Road	SG-18	SG18-SG-025	Soil Vapor	2	130	22	10	1200	4100	20	360	510	16	20	95	< 9.6 J	44
11 Old Newtown Road	SG-19	SG19-SG-026	Soil Vapor	2	240	14	< 9.8	300	51	< 9.8	< 9.8	< 9.8	< 9.8	< 9.8	< 9.8	< 9.8 J	< 9.8
11 Old Newtown Road	GW-4A	GW4A-GW-012	Groundwater	21 - 25	< 100	NA	< 15	94	950	< 10	53	330	< 15	< 10	42	29	< 20
2 Broad Street	SG-20	SG20-SG-014	Soil Vapor	2	< 11	< 11	< 11	< 11	< 11	< 11	< 11	< 11	< 11	< 11	< 11	< 11	< 11
2 Broad Street	SG-21	SG21-SG-013	Soil Vapor	2	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	210	< 10	< 10	< 10	< 10
2 Broad Street	SG-22	SG22-SG-012	Soil Vapor	5 - 6	< 13	< 13	< 13	290	46	< 13	< 13	< 13	< 13	< 13	< 13	< 13	< 13
2 Broad Street	SG-23	SG23-SG-011	Soil Vapor	5 - 6	< 12	< 12	< 12	160	44	< 12	< 12	< 12	< 12	< 12	< 12	< 12	< 12
2 Broad Street	SG-24	SG24-SG-015	Soil Vapor	2	< 12	< 12	< 12	31	< 12	< 12	< 12	< 12	< 12	< 12	< 12	< 12	< 12
2 Broad Street	GW-3A	GW3A-GW-011	Groundwater	14 - 18	< 5.0	NA	< 0.75	4.2	4.9	< 0.5	1.3	0.94	1.9	0.51	1.2	< 1.0	< 1.0
Risdon Facility (MW-111)	SG-25	SG25-SG-007	Soil Vapor	5	< 18	54	< 18	1400	13000	360	520	77	< 18	< 18	< 18	< 18	< 18
4 Old Newtown Road (MW-15)	SG-26	SG26-SG-009	Soil Vapor	5	< 12	< 12	< 12	360	3500	72	30	62	15	< 12	22	< 12	< 12

Abbreviations:

Freon 12 is also known as Dichlorodifluoromethane or Difluorodichloromethane.

Freon 113 is also known as Trichlorotrifluoroethane or 1,1,2-trichloro-1,2,2-trifluoroethane.

NA = Not analyzed for; Freon 113 is not an analyte on the standard 8260B list.

ft bgs = feet below ground surface

ppbv = parts per billion volume

ug/l = micrograms per liter

1,1,1-TCA = 1,1,1-trichloroethane

TCE = trichloroethene

PCE = tetrachloroethene

1,1-DCE = 1,1-dichloroethene

cis-1,2-DCE = cis-1,2-dichloroethene

m,p-Xylene = meta or para xylene

1,1-DCA = 1,1-dichloroethane

MTBE = methyl-tert-butyl-ether

J = estimated value

APPENDIX C: OFF-PROPERTY WELL CONSTRUCTION DETAILS

APPENDIX C: OFF PROPERTY WELL CONSTRUCTION DETAILS

Well Identification	Date Installed	Total Depth of Boring (ft bgs)	Construction Material	Well Screen Information		
				Depth (ft bgs)	Length (ft)	Geologic Unit
2 Old Newtown Road						
2ONR-MW1A	Jan-06	18.5	2-inch PVC	3 - 13	10	sand/weathered bedrock
Broad Street						
MW-14	Mar-92	18 R	2-inch PVC	8 -18	10	overburden
11 Augusta Drive (GAR Property)						
GAR-MW-1	unknown	26.5	2-inch PVC	5-25	15	overburden
GAR-MW-2	unknown	19.5	2-inch PVC	4-19	15	overburden
GAR-MW-3	unknown	19.5	2-inch PVC	4-19	15	overburden
GAR-MW-4	unknown	21.5	2-inch PVC	10-20	10	overburden
GAR-MW-5	unknown	40	2-inch PVC	27-37	10	bedrock/weathered bedrock
GAR-MW-6	unknown	23	2-inch PVC	12-22	10	overburden
GAR-MW-7	unknown	23	2-inch PVC	12-22	10	overburden
4 Old Newtown Road (Former MedSource)						
MW-15M	Mar-92	34	2-inch PVC	12 - 32	20	sands and silts
MS-MW-1	unknown	11 ⁽¹⁾	2-inch PVC	6 - 11	5	sands and silts
MS-MW-2	unknown	12 ⁽¹⁾	2-inch PVC	7 - 12	5	sands and silts
MS-MW-3	unknown	11 ⁽¹⁾	2-inch PVC	6 - 11	5	sands and silts
MS-MW-4	unknown	8 ⁽¹⁾	2-inch PVC	3 - 8	5	sands and silts
MS-MW-5	unknown	13 ⁽¹⁾	2-inch PVC	8 - 13	5	sands and silts
MS-MW-6	unknown	12 ⁽¹⁾	2-inch PVC	7 - 12	5	sands and silts
MS-MW-7	unknown	12 ⁽¹⁾	2-inch PVC	7 - 12	5	sands and silts
4 Finance Drive (Toppan Photomasks, Inc.)²						
MW-1	unknown	18.9	open hole	5.9-18.9	13.0	bedrock
MW-2S	unknown	14.2	2-inch PVC	4.2 - 14.2	10.0	overburden
MW-2I	unknown	77.3	2-inch PVC	67.6 - 77.3	9.7	overburden
MW-2D	unknown	90.0	2-inch PVC	80.5 - 90.0	9.6	bedrock
MW-3	unknown	14.8	2-inch PVC	4.8 - 14.8	10.0	overburden
MW-4S	unknown	14.6	2-inch PVC	4.6 - 14.6	10.0	overburden
MW-4D	unknown	110.6	2-inch PVC	101.1 - 110.6	9.5	bedrock
MW-5A	unknown	14.0	2-inch PVC	4.0 - 14.0	10.0	overburden
MW-6S	unknown	19.6	2-inch PVC	9.6 - 19.6	10.0	overburden
MW-6D	unknown	64.0	2-inch PVC	54.5 - 64.0	9.5	bedrock
MW-7S	unknown	17.0	2-inch PVC	7.5 - 9.6	9.6	overburden
MW-7D	unknown	99.8	2-inch PVC	90.4 - 99.8	9.5	bedrock
MW-8S	unknown	13.1	2-inch PVC	3.7 - 13.1	9.4	overburden
MW-8D	unknown	26.9	2-inch PVC	17.4 - 26.9	9.6	bedrock
MW-9S	unknown	28.0	2-inch PVC	18.7 - 28.0	9.4	overburden
MW-9D	unknown	53.9	2-inch PVC	44.3 - 53.9	9.7	bedrock
MW-10	unknown	13.9	2-inch PVC	8.9 - 13.9	5.0	overburden
<p>NOTES</p> <p>1 - total depth of boring unknown; depth noted is bottom of well screen</p> <p>2 - geologic unit assumed based on groundwater contour maps prepared for the property.</p> <p>ft = feet</p> <p>ft bgs = feet below ground surface or finished floor slab</p> <p>MW = monitoring well</p> <p>RW = recovery well</p> <p>RVW = recovery vapor well</p> <p>PVC = polyvinyl chloride</p> <p>FRP = fiberglass reinforced plastic</p> <p>R = refusal</p>						

APPENDIX D: QAPP QA/QC TABLES

**APPENDIX D
MEDIA-SPECIFIC PROJECT QUALITY OBJECTIVES TABLE**

MATRIX	PARAMETERS	METHODS	ANALYTICAL LEVEL ¹	DATA EVALUATION TIER²	INTENDED DATA USE ³
Field Parameters					
Groundwater	pH, Temperature, Conductivity, Turbidity, DO, ORP	On-Site Field Screening and/or portable field gas chromatograph with PID during packer testing	Level I	NA	SI
Subsurface Soil	VOCs	Handheld PID Meter and/or portable field gas chromatograph with PID	Level I	NA	H&S, SI
Off-Site Laboratory Analysis					
Groundwater	VOCs 13 PP Metals Total Cyanide	EPA Method 8260B EPA Method 6010B/6020A/7470A EPA Method 9014	Level II/III	Modified Tier II	SI
Sediments	VOCs 13 PP Metals Total Cyanide	EPA Method 8260B EPA Method 6010B/ 7471A EPA Method 9014	Level II/III	Modified Tier II	SI

NOTES:

- 1) Analytical levels (USEPA, October 1988)
Level I, on-site field screening, use one point calibration.
Level II analyses using standard laboratory QA/QC, including duplicate analyses, suitable calibration standards, sample preparation equipment, and operator training.
Level III analyses will be conducted in a fixed-based laboratory using standard methods that include duplicate, blank, and matrix spike/matrix spike duplicate analyses.
Level IV see Table 15-2 for Sample Deliverable Package elements.
- 2) Tier levels for Region I, EPA-New England Data Validation Fictional Guidelines for Evaluating Environmental Analyses (USEPA 1996).
- 3) Data Intended End Use:
H&S = Health & Safety
SI = Site Investigation

**APPENDIX D
FIELD AND QUALITY CONTROL SAMPLE SUMMARY**

Medium/Matrix	Analytical Parameter	USEPA Analytical Method	Proposed No. of Sampling Locations	Field QA/QC Samples (frequency)					Approximate Total No. of Samples to Lab
				No. of Field Duplicate Pairs	No. of MS	No. of MSD	No. of VOC Trip Blanks	No. of Field Blanks ¹	
Groundwater (from monitoring wells)	VOCS; Total Metals (13 Priority Pollutant); Total Cyanide	CT RCP 8260B; 6010B, 7470A (Hg), 9014 (CN), 6020A (As, Be), 7196A (Cr)	TBD	5%	1	1	1 per cooler	1/event	TBD
Sediment	VOCS; Total Metals (13 Priority Pollutant); Total Cyanide	CT RCP 8260B; 6010B, 7471A (Hg), 9014 (CN)	3	1	--	--	1 per cooler	--	5

Notes:

1. All groundwater samples will be collected with dedicated tubing and a peristaltic pump. The selected tubing/pump assembly will not result in cross-contamination of groundwater, and as a result, a field blank will ONLY be collected when new dedicated tubing is deployed.
TBD = to be determined; dependent on whether recent groundwater data is available from 4 Old Newtown Road.