



RDMS DocID 00100452

RCRA RECORDS CENTER
FACILITY *M H Ringden*
ID NO. *CTD001162114*
EPA ID # *R-13*
DATE *RDMS# 100452*

DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION

Interim Final 2/5/99

**RCRA Corrective Action
Environmental Indicator (EI) RCRIS code (CA725)**

Current Human Exposures Under Control

Facility Name: Former Conrac Cramer Division of Conrac Corporation (Cramer) Facility
Facility Address: 139 Mill Rock Road East, Old Saybrook, CT
Facility EPA ID #: CTD001162114

1. Has all available relevant/significant information on known and reasonably suspected releases to soil, groundwater, surface water/sediments, and air, subject to RCRA Corrective Action (e.g., from Solid Waste Management Units (SWMU), Regulated Units (RU), and Areas of Concern (AOC)), been considered in this EI determination?

If yes - check here and continue with #2 below.
 If no - re-evaluate existing data, or
 if data are not available skip to #6 and enter "IN" (more information needed) status code.

BACKGROUND

Definition of Environmental Indicators (for the RCRA Corrective Action)

Environmental Indicators (EI) are measures being used by the RCRA Corrective Action program to go beyond programmatic activity measures (e.g., reports received and approved, etc.) to track changes in the quality of the environment. The two EI developed to-date indicate the quality of the environment in relation to current human exposures to contamination and the migration of contaminated groundwater. An EI for non-human (ecological) receptors is intended to be developed in the future.

Definition of "Current Human Exposures Under Control" EI

A positive "Current Human Exposures Under Control" EI determination ("YE" status code) indicates that there are no "unacceptable" human exposures to "contamination" (i.e., contaminants in concentrations in excess of appropriate risk-based levels) that can be reasonably expected under current land- and groundwater-use conditions (for all "contamination" subject to RCRA corrective action at or from the identified facility (i.e., site-wide)).

Relationship of EI to Final Remedies

While Final remedies remain the long-term objective of the RCRA Corrective Action program the EI are near-term objectives which are currently being used as Program measures for the Government Performance and Results Act of 1993, GPRA). The "Current Human Exposures Under Control" EI are for reasonably expected human exposures under current land- and groundwater-use conditions ONLY, and do not consider potential future land- or groundwater-use conditions or ecological receptors. The RCRA Corrective Action program's overall mission to protect human health and the environment requires that Final remedies address these issues (i.e., potential future human exposure scenarios, future land and groundwater uses, and ecological receptors).

Duration / Applicability of EI Determinations

EI Determinations status codes should remain in RCRIS national database ONLY as long as they remain true (i.e., RCRIS status codes must be changed when the regulatory authorities become aware of contrary information).

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2. Are groundwater, soil, surface water, sediments, or air media known or reasonably suspected to be “contaminated”¹ above appropriately protective risk-based “levels” (applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action (from SWMUs, RUs or AOCs)?

	<u>Yes</u>	<u>No</u>	<u>?</u>	<u>Rationale / Key Contaminants</u>
Groundwater	<u>x</u>	___	___	Trichloroethene (TCE), 1,1-Dichloroethene
Air (indoors) ²	<u>x</u>	___	___	TCE may be present above risk-based levels in indoor air
Surface Soil (e.g., <2 ft)	___	<u>x</u>	___	_____
Surface Water	___	<u>x</u>	___	_____
Sediment	___	<u>x</u>	___	_____
Subsurf. Soil (e.g., >2 ft)	___	<u>x</u>	___	_____
Air (outdoors)	___	<u>x</u>	___	_____

___ If no (for all media) - skip to #6, and enter “YE,” status code after providing or citing appropriate “levels,” and referencing sufficient supporting documentation demonstrating that these “levels” are not exceeded.

x If yes (for any media) - continue after identifying key contaminants in each “contaminated” medium, citing appropriate “levels” (or provide an explanation for the determination that the medium could pose an unacceptable risk), and referencing supporting documentation.

___ If unknown (for any media) - skip to #6 and enter “IN” status code.

Rationale and Reference(s):

Groundwater: As part of the facility investigation, groundwater has been sampled for VOCs, TPH, and metals. This sampling has identified two groundwater plumes containing chlorinated volatile organic compounds (VOCs) which occur primarily within the intermediate portion of the overburden aquifer and appear to co-mingle. One of the plumes appears to originate within the southern portion of the former manufacturing building (possibly from the former Oil Room or the adjacent former container storage area). The second plume appears to originate near a septic tank (Septic Tank C), downgradient of the western portion of the former manufacturing building. Groundwater elevation data suggests that shallow groundwater flow direction ranges from west-southwesterly to southwesterly, toward the Oyster River and its associated tidal wetlands (Environmental Indicators Mill Meadow Development Property report dated December 20, 2002 prepared by ALTA Environmental Corp.). Groundwater monitoring was conducted along the axis and horizontal boundaries of the co-mingled plume since the year 2000, using a network consisting of the following wells: B1-MW, B2-MW, MW98-7, MW-H, and B3-MW. In addition, groundwater monitoring was also conducted at well MW 98-6, to evaluate the effectiveness of removal of contaminated soil from the former oil room and the former hazardous waste container storage area (analytical results from well B1-MW were also used for this purpose). Recent monitoring was also conducted at monitoring wells B4-MW and MW99-1 to define the vertical and lateral extent of the plume and evaluate whether the plume’s extent is stable over time (see Attachment 1 for well locations) (letter dated May 1, 2003 from Evan J. Glass and Kelly L. Meloy of ALTA Environmental to Jonathan Goldman, CT DEP). Trichloroethene (TCE) has been detected at levels above the Connecticut Remediation Standard Regulation (CT RSR) Groundwater Protection Criteria (GWPC) of 5 µg/L and above the generic groundwater screening level for vapor intrusion to indoor air pathway of 5.3 µg/L (corresponding to an additional lifetime cancer risk of 1 in 10,000) found in Table 2a of EPA’s Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils. The highest concentrations of TCE in groundwater were previously found in monitoring well MW 98-7, which is located in the valley west of Research Parkway and is screened in the mid-section of the overburden aquifer. Analytical results for TCE from groundwater samples collected from this well in November 2001 and May 2002 were 120 µg/L and 75 µg/L, respectively (Environmental Indicators Mill Meadow Development Property report dated

December 20, 2002 prepared by ALTA Environmental Corp.). In June and July 2003, groundwater sampling was conducted at nine water table groundwater monitoring wells located in the vicinity of the two facility buildings (the former manufacturing building and a building constructed in early 2000 to the west of the former manufacturing building). These wells included the following: MW-8, MW97-5, MW97-6, MW-A, MW-E, MW-F, MW-E1, MW-E2, and MW-E3 (see Attachment 2 for well locations). In June and July 2003, TCE levels of 190 µg/L and 200 µg/L were detected in monitoring well MW-F. In addition, 1,1-dichloroethene was detected in the MW-F samples at 15 µg/L in June 2003 and 9.6 µg/L in July 2003, above the CT RSR GWPC of 7 µg/L. Previous TCE concentrations detected in monitoring well MW-F had ranged from non-detect to 15 µg/L for the time period from September 1997 through October 1999 (Summary Report of Additional Soil and Groundwater Investigations, Former Cramer Company Facility, dated December 1999, prepared by Environmental Products and Services). However, in the year 2000, the new facility building, which overlies MW-F, was constructed with two septic systems, one of which directly overlies the plume and is located between Research Parkway (to the east) and the new building (to the west) at a location upgradient of MW-F. The facility's consultant has hypothesized that mounding caused by the leaching field may have shifted shallower portions of the plume from the area of the leaching field to the north, slightly (toward MW-F) (CA 725 Environmental Indicators Evaluation, Mill Meadow Development Property, dated September 9, 2003 prepared by ALTA Environmental). MW-F will be added to the monitoring well network for future groundwater monitoring.

Indoor Air: To evaluate the potential for vapor intrusion into the facility buildings, nine water table wells, including MW-8, MW97-5, MW97-6, MW-A, MW-E, MW-F, MW-E1, MW-E2, and MW-E3 were sampled in June and July 2003. TCE concentrations of 190 µg/L and 200 µg/L were detected in MW-F during these respective sampling events. These concentrations exceed the generic groundwater screening level for vapor intrusion to indoor air pathway of 5.3 µg/L (corresponding to a an additional lifetime cancer risk of 1 in 10,000) found in Table 2a of EPA's Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils. Other VOCs in MW-F and all VOCs in the other eight wells were below the corresponding generic groundwater screening level for vapor intrusion to indoor air pathway (CA 725 Environmental Indicators Evaluation, Mill Meadow Development Property, dated September 9, 2003 prepared by ALTA Environmental). As MW-F is located directly under the facility building constructed in 2000, there may be TCE from the vapor intrusion pathway present in indoor air in this building.

Surface and Subsurface Soil: Based on results of soil sampling conducted as part of the facility investigation and following remediation, it appears that soil contamination has been adequately addressed. In addition, any remaining soil contamination in the leach field or under building structures, if it were to remain, is not accessible to humans under current conditions (Supplemental Subsurface Investigation Report for Cramer Company dated August 1998 prepared by Environmental Products & Services, Inc.; Summary Report of Additional Soil and Groundwater Investigations, Former Cramer Company Facility, dated December 1999, prepared by Environmental Products and Services; Environmental Indicators, Mill Meadow Development Property, dated February 18, 2002, prepared by ALTA Environmental).

Surface Water: In 1997, four surface water samples were collected from the vicinity of the former surface impoundment and the edge of the wetland. One surface water sample contained cadmium (6 mg/l, GWPC 5 mg/l) and lead (28 mg/l, GWPC 15 mg/l) at concentrations greater than CT GWPC in addition to containing elevated levels of copper, nickel, and zinc. This location was resampled in 1998 and did not exceed appropriate criteria (Supplemental Subsurface Investigation Report for Cramer Company dated August 1998 prepared by Environmental Products & Services, Inc.). Groundwater at the facility contains a plume of chlorinated VOCs. This plume is migrating west toward the wetlands and appears to enter the wetlands. However, the maximum concentrations of TCE detected in recent groundwater sampling, at MW 98-7 and MW-F, are an order of magnitude below CT RSR Surface Water Protection Criteria (SWPC) of 2340 µg/L. While MW 98-7 is closer to the wetland boundary, MW-F is approximately 100 feet upgradient of the wetland.

Sediment: Based on the history of the site, it is not reasonably suspected that sediments in the tidal wetlands/salt marshes associated with the Oyster River would be contaminated at levels that would be a concern for human exposure under current conditions. The former metal hydroxide surface impoundments were surrounded by berms. Historical aerial photographs do not show any erosional features in the vicinity of the impoundments that would indicate any breaches of the berms or drainage features from the surface impoundment toward the wetland. While the groundwater plume appears to enter the wetlands, VOCs in the plume would not be expected to reside in sediments at levels that would be a concern for human exposure under current conditions. The section of the wetland located to the west of the former surface impoundments is within the boundaries of the facility property, now owned by Mill Meadow Development which is a commercial/industrial business park that is patrolled on week-days and week-ends. In addition, the section of the wetland along the developed portion of the facility is not readily accessible to trespassers, as they would need to climb down a steep riprap slope and traverse an area with dense vegetation. The headwater streamlet to the Oyster River is located several hundred feet west/northwest across the wetland from the developed portion of the facility and is not navigable. The facility manager for Mill Meadow Development, who has worked at the facility since 1996, has reportedly never seen this section of the river used for recreation and has never seen trespassers in the wetland (Environmental Indicators, Mill Meadow Development Property, dated February 18, 2002, prepared by ALTA Environmental).

Outdoor Air: Past manufacturing activities may have released contaminants to air but these activities are no longer ongoing. Outdoor air releases from surface soil or groundwater discharge to surface water would not be of a level to contaminate outdoor air above regulatory levels. This media is evaluated as not contaminated.

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3. Are there **complete pathways** between “contamination” and human receptors such that exposures can be reasonably expected under the current (land- and groundwater-use) conditions?

Summary Exposure Pathway Evaluation Table

Potential **Human Receptors** (Under Current Conditions)

“Contaminated” Media	Residents	Workers	Day-Care	Construction	Trespassers	Recreation	Food ³
Groundwater	_no_	_no_	_no_	_yes_			_no_
Air (indoors)	_no_	_yes_	_no_				
Soil (surface, e.g., <2 ft)	___	___	___	___	___	___	___
Surface Water	___	___	___	___	___	___	___
Sediment	___	___	___	___	___	___	___
Soil (subsurface e.g., >2 ft)	___	___	___	___	___	___	___
Air (outdoors)	___	___	___	___	___	___	___

Instructions for Summary Exposure Pathway Evaluation Table

1. Strike-out specific Media including Human Receptors’ spaces for Media which are not “contaminated”) as identified in #2 above.
2. enter “yes” or “no” for potential “completeness” under each “Contaminated” Media -- Human Receptor combination (Pathway).

Note: In order to focus the evaluation to the most probable combinations some potential “Contaminated” Media - Human Receptor combinations (Pathways) do not have check spaces (“___”). While these combinations may not be probable in most situations they may be possible in some settings and should be added as necessary.

- _____ If no (pathways are not complete for any contaminated media-receptor combination) - skip to #6, and enter “YE” status code, after explaining and/or referencing condition(s) in-place, whether natural or man-made, preventing a complete exposure pathway from each contaminated medium (e.g., use optional Pathway Evaluation Work Sheet to analyze major pathways).
- x If yes (pathways are complete for any “Contaminated” Media - Human Receptor combination) - continue after providing supporting explanation.
- _____ If unknown (for any “Contaminated” Media - Human Receptor combination) - skip to #6 and enter “IN” status code

Rationale and Reference(s):

Groundwater

Residents: The facility completed a well survey to determine whether each occupied property in the facility vicinity is served by public water. Based on westerly/southwesterly groundwater flow direction and a steep topographic rise to the north, the well survey was completed in the area within approximately 500 feet to the east and north (the inferred upgradient direction) of the former manufacturing building and within the area bounded by the Connecticut Turnpike to the west, Elm Street to the southwest, and the railroad tracks to the south (as shown in Attachment 3). The properties in this area found to be served by private wells are shown on Attachment 3. Based on the nature and extent of the chlorinated VOC plume and the location of these

wells, it does not appear that the plume has the potential to migrate to any of these wells (Environmental Indicators Mill Meadow Development Property report dated December 20, 2002 prepared by ALTA Environmental Corp.).

Workers: The facility buildings are served by public water. Therefore, workers would not be expected to contact contaminants in groundwater at the facility.

Daycare: There is no on-site day-care at the property.

Construction: It is possible that construction workers could contact contaminants in groundwater if they were conducting invasive work in the vicinity of the plume.

Food: Based on the well survey, the three wells identified in the vicinity of the facility are not in locations to which the plume would potentially migrate. Therefore, humans would not be reasonably expected to be exposed to contaminants through this pathway.

Indoor Air:

Residents: Based on the nature and extent of the chlorinated VOC plume in groundwater, it does not appear that the plume would have the potential to migrate to off-site structures at levels that could result in residential exposure to contaminants in indoor air.

Workers: Groundwater samples collected from MW-F, which is located below one of the facility buildings, showed levels of TCE in excess of the generic groundwater screening level for vapor intrusion to indoor air pathway of 5.3 µg/L (corresponding to an additional lifetime cancer risk of 1 in 10,000) found in Table 2a of EPA's Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils. Therefore, it is possible that workers in this facility building could be exposed to TCE from vapor intrusion to indoor air.

Daycare: There is no on-site day-care at the property.

³ Indirect Pathway/Receptor (e.g., vegetables, fruits, crops, meat and dairy products, fish, shellfish, etc.)

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4 Can the **exposures** from any of the complete pathways identified in #3 be reasonably expected to be **“significant”**⁴ (i.e., potentially “unacceptable” because exposures can be reasonably expected to be: 1) greater in magnitude (intensity, frequency and/or duration) than assumed in the derivation of the acceptable “levels” (used to identify the “contamination”); or 2) the combination of exposure magnitude (perhaps even though low) and contaminant concentrations (which may be substantially above the acceptable “levels”) could result in greater than acceptable risks)?

If no (exposures can not be reasonably expected to be significant (i.e., potentially “unacceptable”) for any complete exposure pathway) - skip to #6 and enter “YE” status code after explaining and/or referencing documentation justifying why the exposures (from each of the complete pathways) to “contamination” (identified in #3) are not expected to be “significant.”

If yes (exposures could be reasonably expected to be “significant” (i.e., potentially “unacceptable”) for any complete exposure pathway) - continue after providing a description (of each potentially “unacceptable” exposure pathway) and explaining and/or referencing documentation justifying why the exposures (from each of the remaining complete pathways) to “contamination” (identified in #3) are not expected to be “significant.”

If unknown (for any complete pathway) - skip to #6 and enter “IN” status code

Rationale and Reference(s):

Groundwater:

Construction: If construction activities are performed in areas where construction workers could contact contaminants in groundwater, the facility has agreed that they will ensure that construction workers would use the appropriate personal protective equipment to minimize their exposure to contaminants. Therefore, exposure of construction workers to contaminants in groundwater would not reasonably be expected to be significant.

Indoor Air:

Workers: Based on the concentrations of TCE detected in MW-F, the facility modeled the vapor intrusion pathway for the tenant space overlying MW-F, located in the northernmost section of the building constructed in 2000. Based on the facility’s modeling calculations, it appears that the maximum concentration of TCE detected at MW-F is an order of magnitude below any concentration that could be expected to produce indoor air concentrations of TCE, through the vapor intrusion pathway, exceeding the OSHA 8-hr time weighted average Permissible Exposure Limit (PEL) for TCE. Based on these calculations, worker exposure to TCE in indoor air would not reasonably be expected to be significant.

⁴ If there is any question on whether the identified exposures are “significant” (i.e., potentially “unacceptable”) consult a human health Risk Assessment specialist with appropriate education, training and experience.

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6. Check the appropriate RCRIS status codes for the Current Human Exposures Under Control EI event code (CA725), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (and attach appropriate supporting documentation as well as a map of the facility):

YE - Yes, "Current Human Exposures Under Control" has been verified. Based on a review of the information contained in this EI Determination, "Current Human Exposures" are expected to be "Under Control" at the Former Conrac Cramer Division of Conrac Corporation (Cramer) Facility, EPA ID # CTD001162114, located at 139 Mill Rock Road East, Old Saybrook, CT under current and reasonably expected conditions. This determination will be re-evaluated when the Agency/State becomes aware of significant changes at the facility.

NO - "Current Human Exposures" are NOT "Under Control."

IN - More information is needed to make a determination.

Completed by

(signature)

(print) Stephanie Carr

(title) RCRA Facility Manager

Date

9/30/03

Supervisor

(signature)

(print) Matthew Hoagland

(title) Chief, RCRA Corrective Action Section
(EPA Region or State) EPA Region I

Date

12/23/03

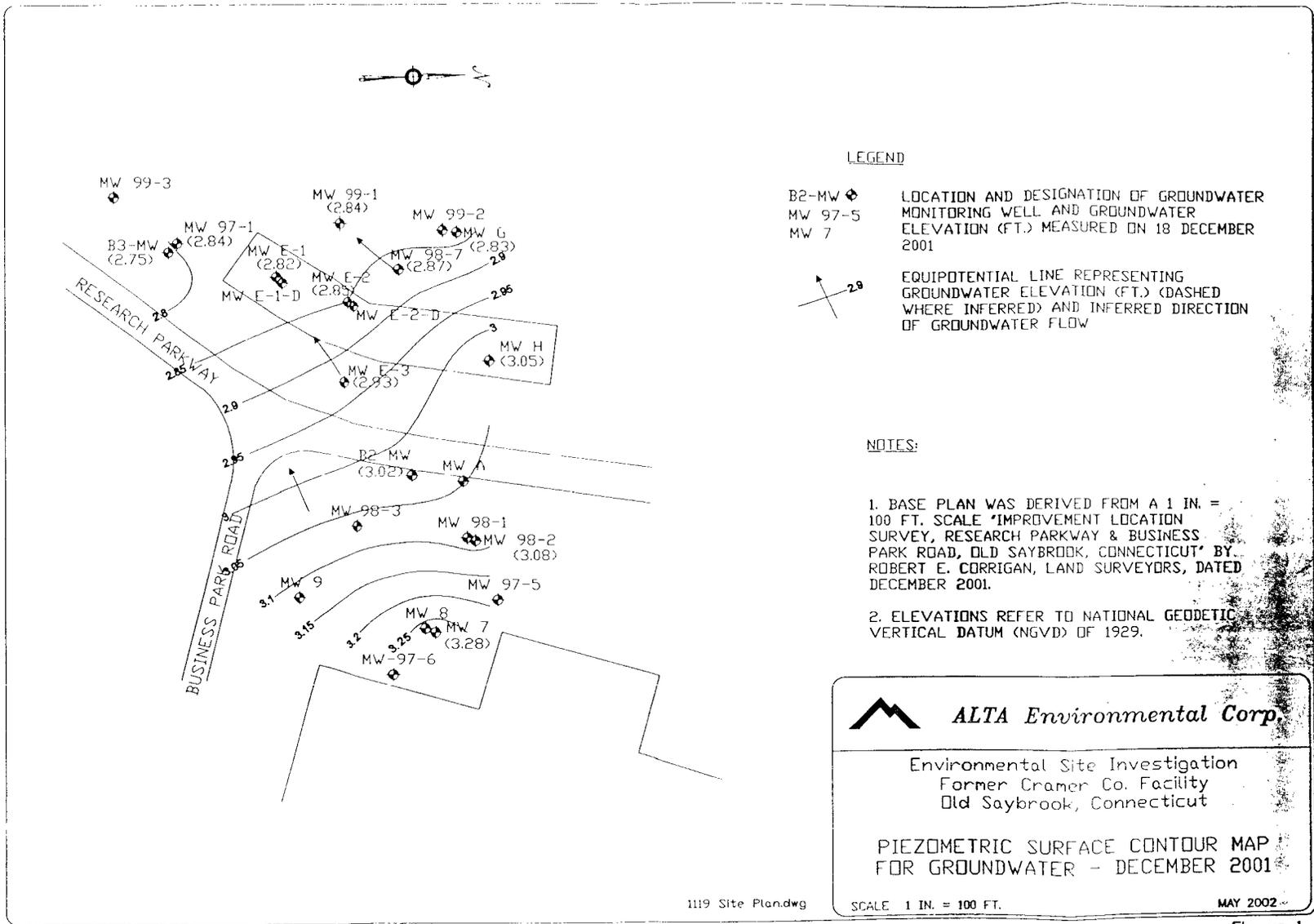
Locations where References may be found:

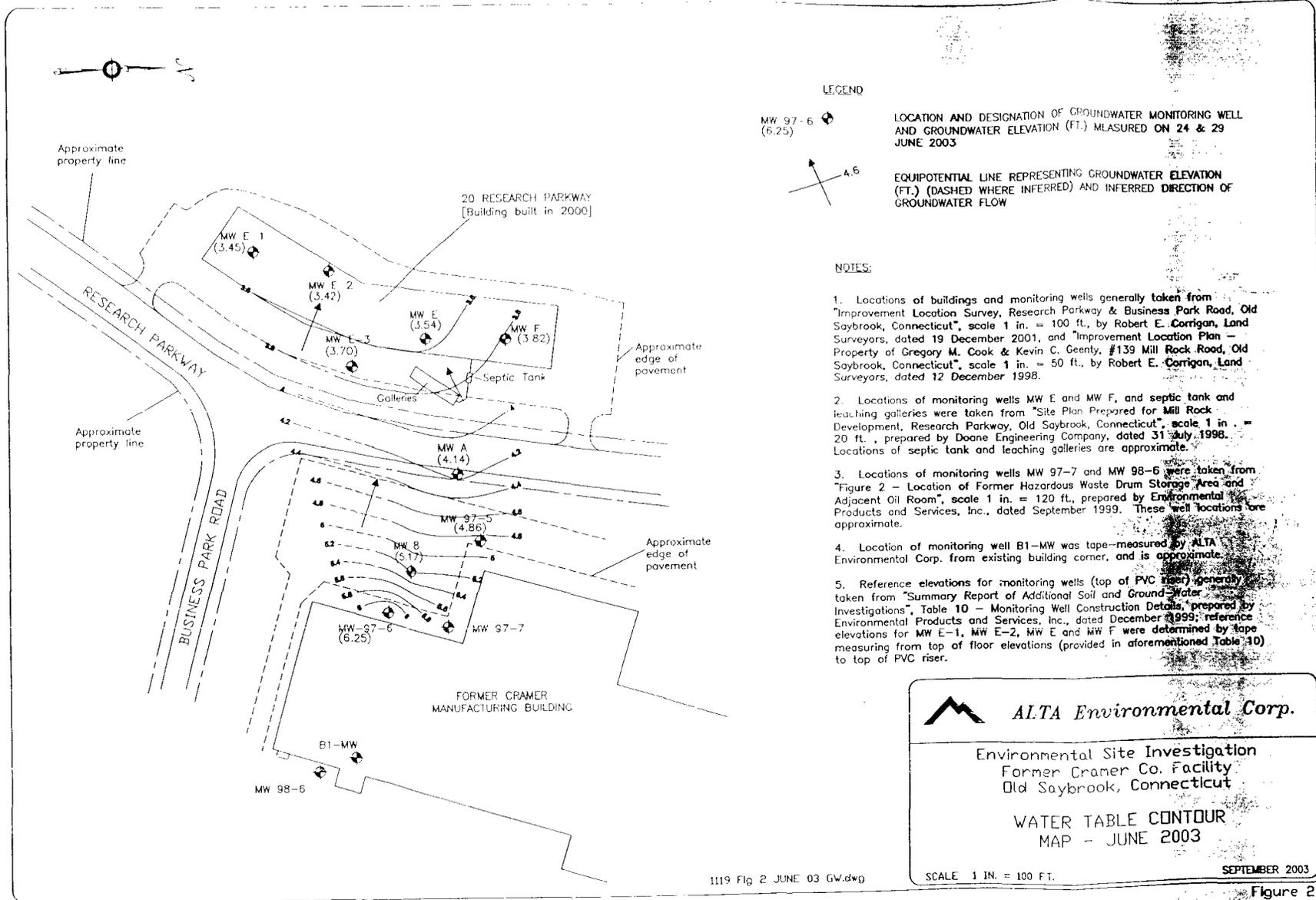
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Contact telephone and e-mail numbers

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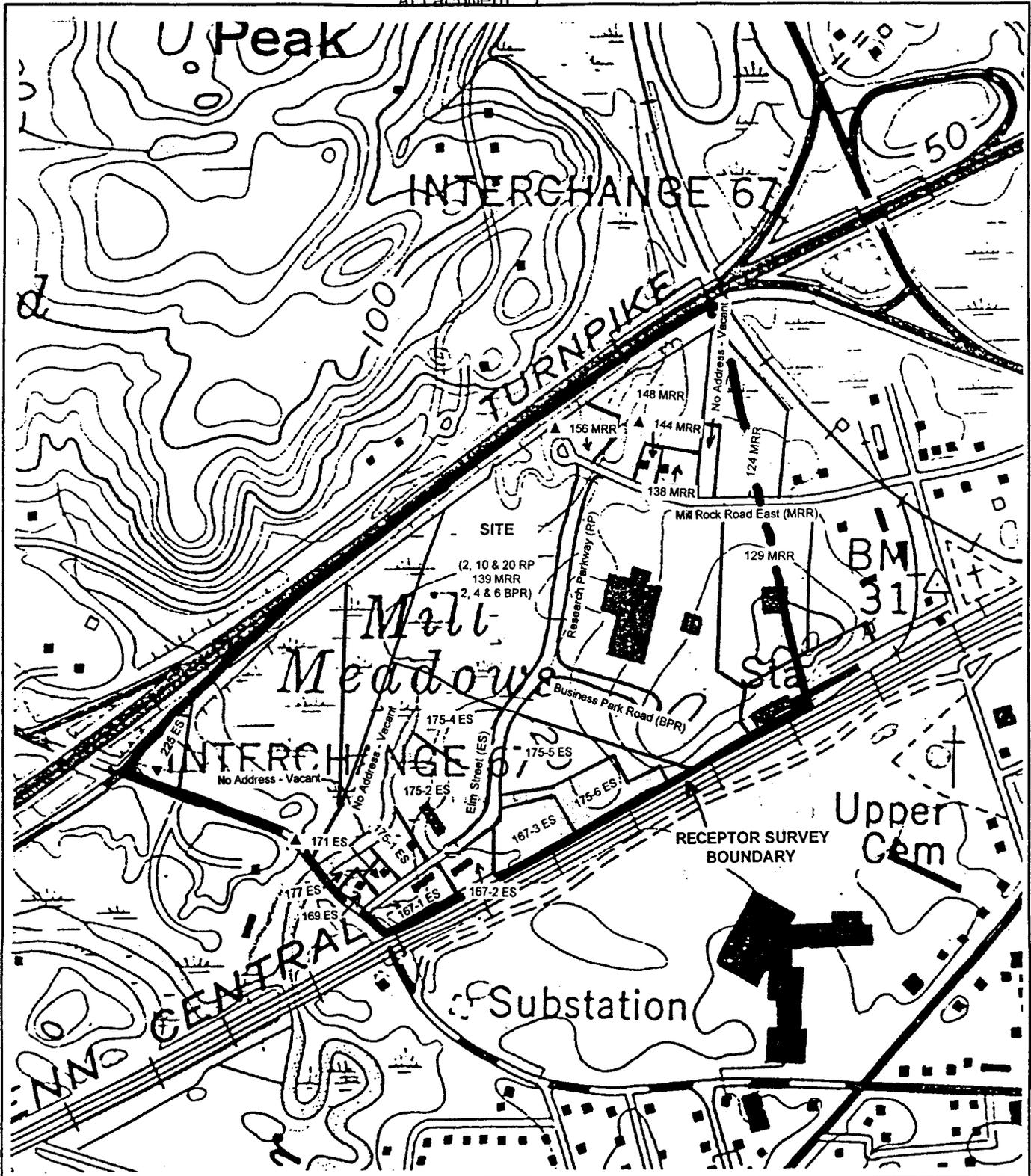
FINAL NOTE: THE HUMAN EXPOSURES EI IS A QUALITATIVE SCREENING OF EXPOSURES AND THE DETERMINATIONS WITHIN THIS DOCUMENT SHOULD NOT BE USED AS THE SOLE BASIS FOR RESTRICTING THE SCOPE OF MORE DETAILED (E.G., SITE-SPECIFIC) ASSESSMENTS OF RISK.





Attachment 2

Figure 2



LEGEND:

▲ Documented drinking water well location



ALTA Environmental Corporation

**ENVIRONMENTAL SITE ASSESSMENT
FORMER CRAMER COMPANY FACILITY
OLD SAYBROOK, CONNECTICUT**

RESULTS OF DETAILED WELL SURVEY

SCALE 1 in. = 600 ft.

JANUARY 2003