RDMS DocID 109655

DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION

Interim Final 2/5/99

RCRA Corrective Action
Environmental Indicator (EI) RCRIS code (CA750)

Migration of Contaminated Groundwater Under Control

Facility Name: Doncasters (former New England Airfoil) Facility
Facility Address: 36 Spring Lane, Farmington, CT
Facility EPA ID #: CTD059831479

1. Has all available relevant/significant information on known and reasonably suspected releases to the groundwater media, 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?

   X If yes - check here and continue with #2 below.

   _____ If no - re-evaluate existing data, or

   _____ if data are not available, skip to #8 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 "Migration of Contaminated Groundwater Under Control" EI

A positive "Migration of Contaminated Groundwater Under Control" EI determination ("YE" status code) indicates that the migration of "contaminated" groundwater has stabilized, and that monitoring will be conducted to confirm that contaminated groundwater remains within the original "area of contaminated groundwater" (for all groundwater "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 "Migration of Contaminated Groundwater Under Control" EI pertains ONLY to the physical migration (i.e., further spread) of contaminated ground water and contaminants within groundwater (e.g., non-aqueous phase liquids or NAPLs). Achieving this EI does not substitute for achieving other stabilization or final remedy requirements and expectations associated with sources of contamination and the need to restore, wherever practicable, contaminated groundwater to be suitable for its designated current and future uses.

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).

2. Is **groundwater** known or reasonably suspected to be **"contaminated"**[1] above appropriately protective "levels" (i.e., applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action, anywhere at, or from, the facility?

   X___ If yes - continue after identifying key contaminants, citing appropriate "levels," and referencing supporting documentation.

   _____ If no - skip to #8 and enter "YE" status code, after citing appropriate "levels," and referencing supporting documentation to demonstrate that groundwater is not "contaminated."

   _____ If unknown - skip to #8 and enter "IN" status code.

Rationale and Reference(s): Overburden and bedrock groundwater have been affected by releases of brine and chromium (including hexavalent chromium). Historical data (summarized in the "*Semi-Annual Natural Attenuation Groundwater Monitoring Report – Summer & Winter 2009* – attached) indicates that chromium has historically exceeded the following critical regulatory levels in both overburden and bedrock: Hexavalent chromium – 0.11 mg/L (SWPC); total chromium – 0.05 mg/L (GA GWPC).

Footnotes:

[1] "Contamination" and "contaminated" describes media containing contaminants (in any form, NAPL and/or dissolved, vapors, or solids, that are subject to RCRA) in concentrations in excess of appropriate "levels" (appropriate for the protection of the groundwater resource and its beneficial uses).

3. Has the **migration** of contaminated groundwater **stabilized** (such that contaminated groundwater is expected to remain within "existing area of contaminated groundwater"[2] as defined by the monitoring locations designated at the time of this determination)?

X___ If yes - continue, after presenting or referencing the physical evidence (e.g., groundwater sampling/measurement/migration barrier data) and rationale why contaminated groundwater is expected to remain within the (horizontal or vertical) dimensions of the "existing area of groundwater contamination"[2]).

_____ If no (contaminated groundwater is observed or expected to migrate beyond the designated locations defining the "existing area of groundwater contamination"[2]) - skip to #8 and enter "NO" status code, after providing an explanation.

_____ If unknown - skip to #8 and enter "IN" status code.

Rationale and Reference(s): Groundwater condition is essentially "static", with insufficient mass loading of contaminants at the source to affect downgradient or off-site receptors. The concentrations of chromium (both total and hexavalent) have been shown to be stable, with no exceedance of the noted criteria in critical (down-gradient) sampling locations. (Ref – *Semi-Annual Natural Attenuation Groundwater Monitoring Report – Summer & Winter 2009*). Semi-annual groundwater monitoring is anticipated to continue to confirm this conclusion.

[2] "existing area of contaminated groundwater" is an area (with horizontal and vertical dimensions) that has been verifiably demonstrated to contain all relevant groundwater contamination for this determination, and is defined by designated (monitoring) locations proximate to the outer perimeter of "contamination" that can and will be sampled/tested in the future to physically verify that all "contaminated" groundwater remains within this area, and that the further migration of "contaminated" groundwater is not occurring. Reasonable allowances in the proximity of the monitoring locations are permissible to incorporate formal remedy decisions (i.e., including public participation) allowing a limited area for natural attenuation.

4. Does "contaminated" groundwater **discharge** into **surface water** bodies?

___ If yes - continue after identifying potentially affected surface water bodies.

__X_ If no - skip to #7 (and enter a "YE" status code in #8, if #7 = yes) after providing an explanation and/or referencing documentation supporting that groundwater "contamination" does not enter surface water bodies.

_____ If unknown - skip to #8 and enter "IN" status code.

Rationale and Reference(s): Historical monitoring of water quality up-stream and down-stream of the potential discharge point of the contaminated overburdern groundwater to Scott Swamp Brook has not indicated the presence of any of the critical contaminant parameters (brine, chromium, or nickel) at any concentration which would indicate discharge of the plume to that surface water. Historical data for the surface water sampling is provided in the above-referenced 2009 *Semi-Annual Natural Attenuation Groundwater Monitoring Report.*

5. Is the **discharge** of "contaminated" groundwater into surface water likely to be **"insignificant"** (i.e., the maximum concentration[3] of each contaminant discharging into surface water is less than 10 times their appropriate groundwater "level," and there are no other conditions (e.g., the nature, and number, of discharging contaminants, or environmental setting), which significantly increase the potential for unacceptable impacts to surface water, sediments, or eco-systems at these concentrations)?

___ If yes - skip to #7 (and enter "YE" status code in #8 if #7 = yes), after documenting: 1) the maximum known or reasonably suspected concentration[3] of key contaminants discharged above their groundwater "level," the value of the appropriate "level(s)," and if there is evidence that the concentrations are increasing; and 2) provide a statement of professional judgment/explanation (or reference documentation) supporting that the discharge of groundwater contaminants into the surface water is not anticipated to have unacceptable impacts to the receiving surface water, sediments, or eco-system.

_____ If no - (the discharge of "contaminated" groundwater into surface water is potentially significant) - continue after documenting: 1) the maximum known or reasonably suspected concentration[3] of each contaminant discharged above its groundwater "level," the value of the appropriate "level(s)," and if there is evidence that the concentrations are increasing; and 2) for any contaminants discharging into surface water in concentrations[3] greater than 100 times their appropriate groundwater "levels," the estimated total amount (mass in kg/yr) of each of these contaminants that are being discharged (loaded) into the surface water body (at the time of the determination), and identify if there is evidence that the amount of discharging contaminants is increasing.

_____ If unknown - enter "IN" status code in #8.

Rationale and Reference(s):_____

[3] As measured in groundwater prior to entry to the groundwater-surface water/sediment interaction (e.g., hyporheic) zone.

6. Can the **discharge** of "contaminated" groundwater into surface water be shown to be **"currently acceptable"** (i.e., not cause impacts to surface water, sediments or eco-systems that should not be allowed to continue until a final remedy decision can be made and implemented[4])?

_____ If yes - continue after either: 1) identifying the Final Remedy decision incorporating these conditions, or other site-specific criteria (developed for the protection of the site's surface water, sediments, and eco-systems), and referencing supporting documentation demonstrating that these criteria are not exceeded by the discharging groundwater; OR 2) providing or referencing an interim-assessment,[5] appropriate to the potential for impact, that shows the discharge of groundwater contaminants into the surface water is (in the opinion of a trained specialists, including ecologist) adequately protective of receiving surface water, sediments, and eco-systems, until such time when a full assessment and final remedy decision can be made. Factors which should be considered in the interim-assessment (where appropriate to help identify the impact associated with discharging groundwater) include: surface water body size, flow, use/classification/habitats and contaminant loading limits, other sources of surface water/sediment contamination, surface water and sediment sample results and comparisons to available and appropriate surface water and sediment "levels," as well as any other factors, such as effects on ecological receptors (e.g., via bio-assays/benthic surveys or site-specific ecological Risk Assessments), that the overseeing regulatory agency would deem appropriate for making the EI determination.

_____ If no - (the discharge of "contaminated" groundwater can not be shown to be **"currently acceptable"**) - skip to #8 and enter "NO" status code, after documenting the currently unacceptable impacts to the surface water body, sediments, and/or eco-systems.

_____ If unknown - skip to 8 and enter "IN" status code.

Rationale and Reference(s):_____

[4] Note, because areas of inflowing groundwater can be critical habitats (e.g., nurseries or thermal refugia) for many species, appropriate specialist (e.g., ecologist) should be included in management decisions that could eliminate these areas by significantly altering or reversing groundwater flow pathways near surface water bodies.

[5] The understanding of the impacts of contaminated groundwater discharges into surface water bodies is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration to be reasonably certain that discharges are not causing currently unacceptable impacts to the surface waters, sediments or eco-systems.

7. Will groundwater **monitoring** / measurement data (and surface water/sediment/ecological data, as necessary) be collected in the future to verify that contaminated groundwater has remained within the horizontal (or vertical, as necessary) dimensions of the "existing area of contaminated groundwater?"

X If yes - continue after providing or citing documentation for planned activities or future sampling/measurement events. Specifically identify the well/measurement locations which will be tested in the future to verify the expectation (identified in #3) that groundwater contamination will not be migrating horizontally (or vertically, as necessary) beyond the "existing area of groundwater contamination."

____ If no - enter "NO" status code in #8.

____ If unknown - enter "IN" status code in #8.

Rationale and Reference(s): On-going semi-annual natural attenuation groundwater monitoring using critical monitoring wells will be continued indefinitely. Reports will be prepared and submitted annually to the CT DEP.

8. Check the appropriate RCRIS status codes for the Migration of Contaminated Groundwater Under Control EI (event code CA750), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (attach appropriate supporting documentation as well as a map of the facility).

   X YE - Yes, "Migration of Contaminated Groundwater Under Control" has been verified. Based on a review of the information contained in this EI determination, it has been determined that the "Migration of Contaminated Groundwater" is "Under Control" at the Doncasters (former New England Airfoil) facility, EPA ID # CTD059831479 located at 36 Spring Lane, Farmington, CT. Specifically, this determination indicates that the migration of "contaminated" groundwater is under control, and that monitoring will be conducted to confirm that contaminated groundwater remains within the "existing area of contaminated groundwater" This determination will be re-evaluated when the Agency becomes aware of significant changes at the facility.

   ____ NO - Unacceptable migration of contaminated groundwater is observed or expected.

   ____ IN - More information is needed to make a determination.

Prepared by (signature) ____ Date July 16, 2010
(print) Robert J. Drake, PE, Ph.D., LEP
(title) Senior Project Manager

DEP reviewed by (signature) ____ Date July 20, 2010
(print) SANDY BRINELLI
(title) EA3

DEP Supervisor (signature) ____ Date 9-27-10
(print) DAVID RINGQUIST
(title) SEA

(EPA Region or State) CTDEP

Reviewed and Approved,
Chief
RCRA Corrective Action
USEPA 11/30/10

All References may be found at:
Connecticut Department of Environmental Protection located at 79 Elm Street, Hartford, Connecticut

DEP file room contact telephone and e-mail numbers

Name: Terry Parker
Phone: 860 424-3936
E-mail: terry.parker@ct.gov

Environmental
Resources
Management

77 Hartland Street, Suite 300
East Hartford, CT 06108
(860) 466-8500
(860) 466-8501 (fax)

1 February 2010
Reference: 0101729

ERM.

Mr. Rich Krystanowicz
Director, Human Resources
Doncasters, Inc.
36 Spring Lane
Farmington, Connecticut 06032

Re: Semi-Annual Natural Attenuation Groundwater Monitoring Report – Summer & Winter 2009
New England Airfoil Facility
36 Spring Lane, Farmington, Connecticut

Dear Mr. Krystanowicz:

ERM Consulting & Engineering, Inc. (ERM) is pleased to submit this *Semi-Annual Natural Attenuation Groundwater Monitoring Report* for the New England Airfoil Facility located at 36 Spring Lane in Farmington, Connecticut (the "Site"). This letter report summarizes the current and historical groundwater quality data, describes the calculated direction of groundwater flow, and provides an assessment of current progress of the natural attenuation process.

REVIEW OF MONITORING PROGRAM

The revised (and approved) Natural Attenuation Monitoring Program (NAMP) consists of the semi-annual collection and analysis of samples from the following locations:

- *Monitoring Wells* MW-6a, MW-8, MW-9, and MW-13.

Sampling of these wells was conducted on July 8 and December 11, 2009. Prior to collection of groundwater samples, groundwater elevations were determined in all accessible on-site and off-site wells. Bedrock elevations were not determined prior to collection of groundwater samples due to accessibility issues. The water level data determinations are included in the attached Table 1.

Laboratory analysis was conducted as follows:

- Sodium, chloride, soluble chromium, and hexavalent chromium at wells MW-6A, MW-9, and MW-13; and
- Total Petroleum Hydrocarbons (TPH) at MW-8 and MW-13.

FINDINGS AND ANALYSIS

The following is a summary of the notable observations during the July and December 2009 natural attenuation monitoring events.

Groundwater Flow Direction

Figure 1 and Figure 2 show the overburden water table elevation contours for July and December, respectively, flowing to the southeast, similar to historical sampling events.

Groundwater Analytical Results

The analytical results from the NAMP sampling and historical analytical results can be found in the attached Table 2. As was the case during the previous sampling events, water samples contained excessive amounts of silt and other fine materials. All samples were filtered in the laboratory and all reported results reflect soluble concentrations only. Based on this data, the following observations are made:

- Soluble chromium was detected in MW-9 and MW-6a at concentrations above the GA Groundwater Protection Criteria (GWPC) of 0.05 milligrams per liter (mg/L) for the July and December 2009 sampling events, respectively. Analytical results for the July 2009 sampling event indicated a decrease in soluble chromium concentrations in groundwater samples collected from MW-6a, MW-9 and MW-13 relative to the previous December 2008 sampling event, however, the concentration of soluble chromium in groundwater samples collected from MW-9 remained above the GWPC at 0.172 mg/L. Analytical results for the December 2009 sampling event indicated an increase in soluble chromium concentrations in groundwater samples collected from MW-6a and MW-13, where the MW-6a sample exceeded the GWPC at 0.0522 mg/L and a decrease in soluble chromium concentrations for the MW-9 sample below laboratory detection limits.

- Hexavalent chromium was detected in groundwater samples collected from MW-6a, MW-9 and MW-13 at concentrations in excess of the SWPC of 0.11 mg/L for the July 2009 sampling event and was not detected in excess of the SWPC of 0.11 mg/L for the December 2009 sampling event. Analytical results for the July 2009 sampling event indicated an increase in hexavalent chromium concentrations in groundwater samples collected from MW-13, a decrease in hexavalent chromium concentrations in groundwater samples collected from MW-9 and hexavalent concentrations remained unchanged in groundwater samples collected from MW-6a relative to the previous December 2008 sampling event. Analytical results for the December 2009 sampling event indicated a decrease in hexavalent chromium concentrations in groundwater samples collected from MW-6a, MW-9 and MW-13 to below the SWPC of 0.11 mg/L.

- As indicated by analytical results, TPH was detected above laboratory Method Detection Limits (MDLs), normally the same value as the GA GWPC, for the July and December 2009 sampling event. TPH in groundwater collected from MW-8 exceeded the GA GWPC value of 0.1 mg/L. Overall, the July and December 2009 sampling events indicated decreasing levels of TPH from the December 2008 sampling event.

SUMMARY AND CONCLUSIONS

The sixteenth and seventeenth semi-annual sampling events of the NAMP at the former New England Airfoil facility in Farmington Connecticut were conducted on July 8, 2009 and December 11, 2009. Based on these results and observations, the following assumptions have been made:

- Overburden groundwater samples indicate that concentrations appear to be generally similar to previous levels;

- Groundwater flow directions are consistent with former findings; and

- Continuation of the revised NAMP sampling effort appears warranted, due to residual concentrations of chromium and TPH remaining above applicable standards.

Please call the undersigned with any questions regarding this submittal.

Regards,

Robert Drake, PE, Ph.D., LEP
Senior Project Manager

Michael B. Teetsel, C.P.G.
Principal

Enclosures:

Table 1	Groundwater Elevation Determination
Table 2	Summary of Groundwater Analysis Data Since 1992
Figure 1	Overburden Groundwater Contours, July 2009
Figure 2	Overburden Groundwater Contours, December 2009
Appendix A	Laboratory Certificates of Analysis

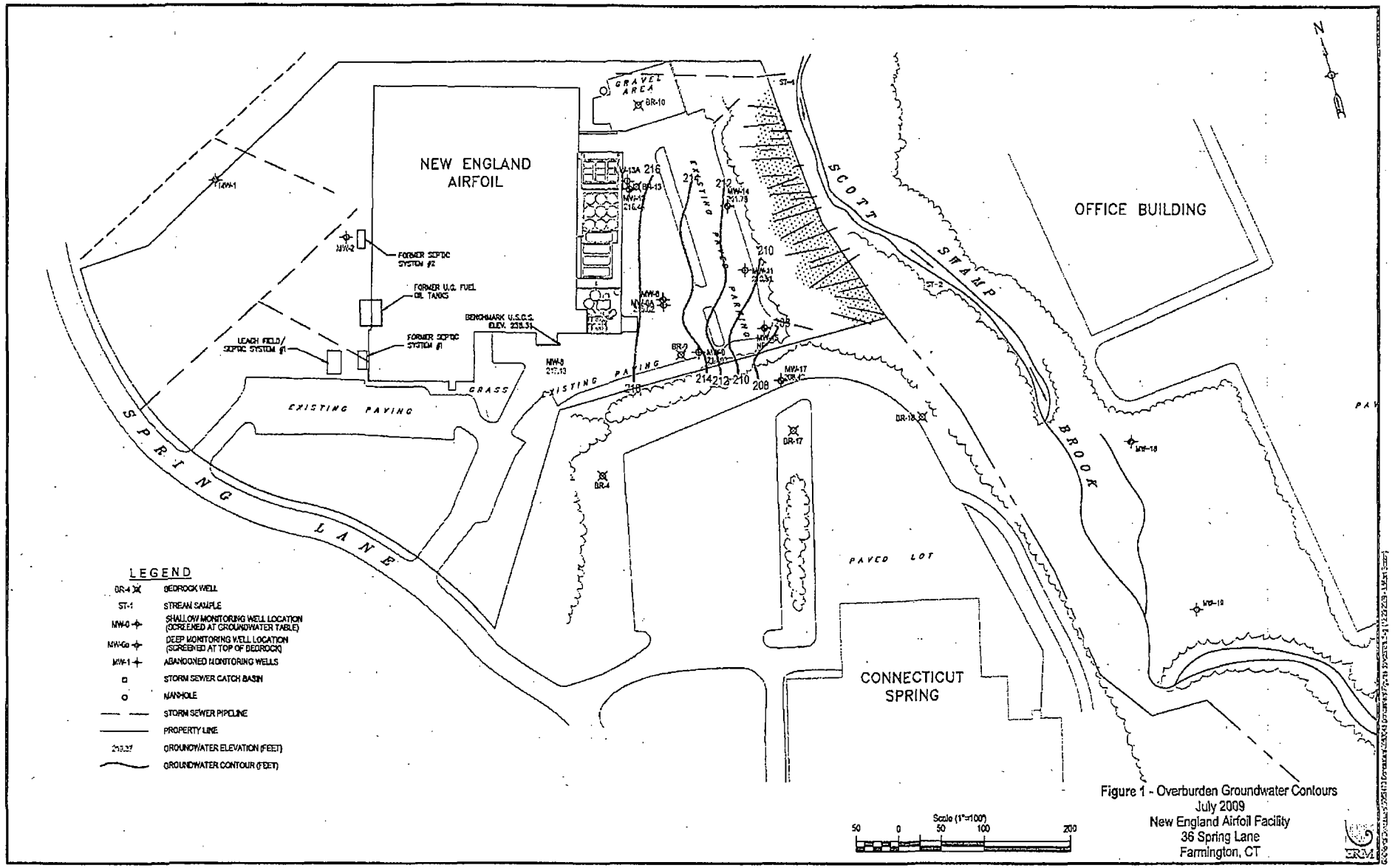

Figure 1 - Overburden Groundwater Contours
July 2009
New England Airfoil Facility
36 Spring Lane
Farmington, CT

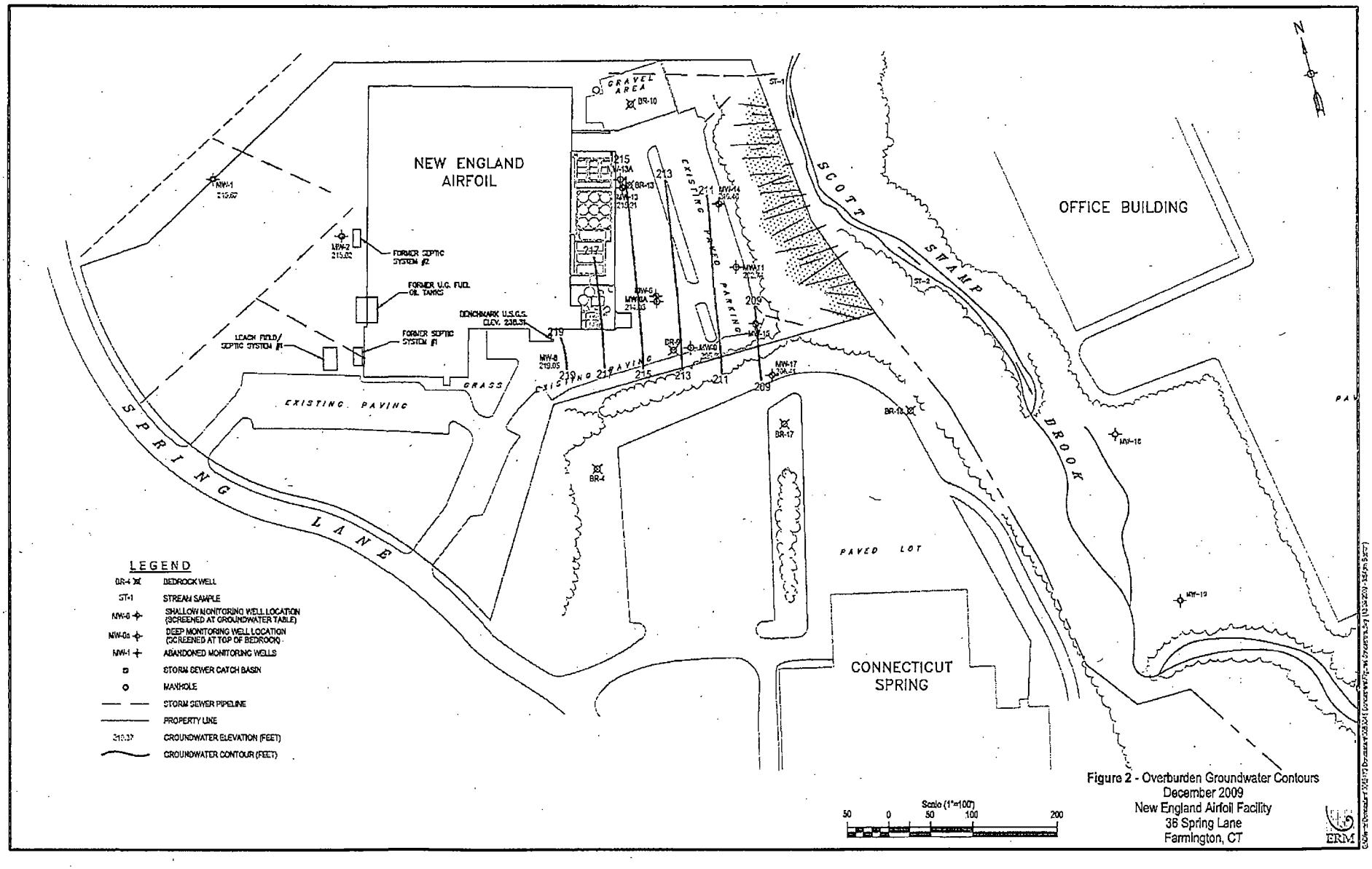

Figure 2 - Overburden Groundwater Contours
December 2009
New England Airfoil Facility
36 Spring Lane
Farmington, CT

Table 1: Groundwater Elevation Determination
New England Airfoil
36 Spring Lane, Farmington, CT
Work Order No. 0017573

OVERBURDEN WELL SUMMARY TABLE

Well ID	Casing Elevation (ft)	DTW (ft) 7/8/2009	Groundwater Elevation	DTW (ft) 12/11/2009	Groundwater Elevation
MW-14	228.44	16.65	211.79	17.98	210.46
MW-13A	232.73	destroyed		destroyed	
MW-13	233.11	16.61	216.5	17.9	215.21
MW-15	226.42	NF	-	NF	-
MW-11	227.56	22.67	204.89	24.82	202.74
MW-9	231.57	24.9	206.67	26.01	205.56
MW-6a	232.27	16.03	216.24	17.29	214.98
MW-8	233.78	14.28	219.5	14.73	219.05
MW-17	223.08	14.22	208.86	14.67	208.41

BEDROCK WELL SUMMARY TABLE

Well ID	Casing Elevation (ft)	DTW (ft) 7/8/2009	Groundwater Elevation	DTW (ft) 12/11/2009	Groundwater Elevation
BR-9	233.43	destroyed		destroyed	
BR-17	224.3	NM	-	NM	-
BR-18	219.52	NF	-	NF	-
BR-4	228.50	NM	-	NM	-

Well ID	Casing Elevation (ft)	DTW (ft) 7/8/2009	DTB (ft)	DTW (ft) 12/11/2009	DTB (ft)
MW-1	Unknown	16.23	24.14	17.38	24.14
MW-2	Unknown	17.27	26.03	18.4	26.03
MW-6	Unknown	15.08	22.21	15.77	22.21

NM = Not Measured
NF = Not Found

TABLE 2

SUMMARY OF INORGANIC GROUND WATER ANALYSIS SINCE 1992

New England Airfoil, 36 Spring Lane, Farmington, CT

| WELL ID | ANALYTE | GA GWPC mg/l | SWPC mg/l | Sampling Date † | | |