

MAR 31 2009

REMEDIATION DIVISION

Interim Final 2/5/99

DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION

Migration of Contaminated Groundwater Under Control

Facility Name: Former Pratt & Whitney Overhaul & Repair Operations (ORO)
Facility Address: 45 Newell Street, Southington, CT
Facility EPA ID #: CTD000844332

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?

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

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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).

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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):

The Newell Street facility (see Figure 1 in Attachment for location), formerly owned by Pratt & Whitney Overhaul & Repair Operations, is composed of approximately 47 acres of land including a parking area on the west side of the Quinnipiac River, a wooded undeveloped area to the north of the river and the land on which the facility buildings stand to the south of the river. The property is located in the Town of Southington, Connecticut, within the Quinnipiac River valley. The site is bounded on the east by the Boston & Maine Railroad, the Quinnipiac River, and Birch Street; on the south by Newell Street and West Queen Street; on the west by Newell Street and Redstone Street; and on the north by a mixture of residential and light-industrial properties. The Quinnipiac River flows through the site along three sides of the portion of the facility where the industrial buildings are located. The land surrounding the facility is characterized by a mixture of commercial, industrial, and residential uses.

For nearly 30 years, Pratt & Whitney used the facility for the overhaul and repair of aircraft jet engines or jet engine parts. Pratt & Whitney discontinued operations at the facility and vacated the site when the lease expired on December 31, 1993. Most of Pratt & Whitney's industrial operations at the facility ceased at the end of 1992. The site is currently operated by Yarde Metals, a metal processing warehouse.

An extensive investigation and remediation of the facility has been performed from 1992 to October 1999. An assessment of compliance with the Connecticut Remediation Standard Regulations (RSRs) has been performed and described in the report entitled *Assessment of Compliance with Connecticut's Remediation Standard Regulation, Former*

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Pratt & Whitney Overhaul & Repair Operations Facility, prepared by Loureiro Engineering Associates (LEA) dated August 5, 1996 and last revised on November 1, 1996. A copy of the report is provided in Appendix A. Various approval letters issued by the DEP are included in Appendix B.

A sitewide groundwater monitoring program is currently in effect at the facility, as described in the report entitled, *Sitewide Groundwater Monitoring Program Evaluation, Former Pratt & Whitney ORO Facility*, Southington, CT, prepared by LEA, dated April 2001, and last revised in July 2001. This report is available at the Connecticut Department of Environmental Protection (CT DEP).

There are six areas of groundwater contamination (AGWCs) at the site. The groundwater is primarily contaminated with chlorinated solvents such as 1,1,1-trichloroethane, tetrachloroethylene and associated degradation products and metals such as chromium and nickel.

The CT DEP has approved a remediation plan specifying remediation by natural attenuation for three of the plumes, and a variance due to technical impracticability of groundwater remediation to drinking water standards for the other three plumes.

The discharge of site groundwater to surface water does not pose an unacceptable risk to the designated uses of the Quinnipiac River. Compliance with the surface water protection criteria (SWPC) of the RSRs has been achieved for the site using either direct comparison of site groundwater data with the RSR default numeric criteria or through the use of approved alternate surface water protection criteria.

It should also be noted that based on verbal draft data provided by EPA, trichloroethylene has been detected at a concentration of 30 to 35 µg/l in a groundwater sample collected from a private well at 178 Newell Street. A review of the data available to date from the extensive investigations performed at the ORO facility indicates that there is no direct pathway for trichloroethylene from the site to reach the private wells, installed to a depth of 400 feet in the bedrock, since trichloroethylene has remained essentially undetected in the deeper aquifer zone below the facility. The only exception is the detection of trichloroethylene in the deeper aquifer zone in upgradient wells (C2-3, LEA10-2) and in wells located in areas of the facility impacted from off-site sources (C4-3A). It should be noted that in December 2002, the drinking water service was extended on Newell Street

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and Redstone Street and the properties relying on drinking well water were connected to the new water main. The private wells for each property were abandoned.

Environmental Land Use Restrictions (ELURs) have been recorded on the property that: prohibit the use of groundwater for drinking or other domestic purposes, prohibit disturbance of inaccessible soils at portions of the site, and prohibit the construction of buildings in portions of the site. The ELUR documents were received by the Town Clerk of the Town of Southington, Connecticut, on July 23, 2001 and are recorded on Volume 800, Page 62 of the Town of Southington records.

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).

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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):

Extensive groundwater investigations have been performed at the site. The results of the groundwater investigation show that the horizontal and vertical extent of groundwater contamination is fully defined and stable. Copies of Annual Groundwater Monitoring Reports are available at the CT DEP. These conclusions are further supported by the data and concentration versus time graphs presented in the report entitled, *Groundwater Monitoring Program Evaluation*, prepared by LEA and dated February 12, 2009. This report is available at the CT DEP.

In addition, a hydraulic containment system has been installed at the site and is currently operational. The hydraulic containment system is the remaining component for addressing DNAPL in the subsurface. The system confines dissolved contaminants to the shallow aquifer zone above the aquitard in the northeast portion of the site, thus minimizing any potential migration of dissolved DNAPL constituents to deeper aquifer zones. The effluent from the hydraulic containment system is being discharged into the sanitary sewer under a general permit, as described in the report entitled *Hydraulic Containment System Installation Report* prepared by LEA and dated October 2001 and last revised January 2002. This report is also available at the CT DEP.

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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.

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

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

 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):

Contaminated groundwater from the site is discharging to the Quinnipiac River.

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5. Is the **discharge** of "contaminated" groundwater into surface water likely to be "**insignificant**" (i.e., the maximum concentration³ 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)?

 X If yes - skip to #7 (and enter "YE" status code in #8 if #7 = yes), after documenting: 1) the maximum known or reasonably suspected concentration³ 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 concentration³ 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 concentrations³ 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):

The groundwater data have been evaluated against the Surface Water Protection Criteria listed in the RSRs. Compliance with the RSRs has been demonstrated either by direct comparison of the groundwater data obtained or through the use of an approved alternative surface water criterion based on an alternative dilution factor. In accordance with the RSRs, the alternative dilution factor is calculated as one fourth of the ratio of the average daily discharge of the polluted groundwater to the seven-day, ten-year low flow (7Q10) of the Quinnipiac River. Such computations of alternative surface water protection criteria can be found at the report entitled, *Assessment of Compliance with*

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Connecticut's Remediation Standard Regulation – Former Pratt & Whitney Overhaul and Repair Operations Facility, prepared by LEA, dated August 5, 1996 and last revised on November 1, 1996, and the submittal to the CT DEP entitled, *Calculation of Alternative Surface Water Protection Criterion for Nickel in Groundwater in the Vicinity of Well OB-17*, prepared by LEA and dated August 18, 1997. These documents are available at the CT DEP.

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 implemented⁴)?

N/A

_____ 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.

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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?"

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):

A sitewide groundwater monitoring program is currently in effect at the facility, as described in the report entitled, *Sitewide Groundwater Monitoring Program Evaluation, Former Pratt & Whitney ORO Facility, Southington, CT*, prepared by LEA, dated April 2001, and last revised in July 2001. The report is available at the CT DEP.

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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).

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 *Former Pratt & Whitney Overhaul & Repair Operations (ORO)*, EPA ID CTD000844332, located at *45 Newell Street, Southington, 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.

Completed by (signature) [Signature] Date 3/23/09
(print) BEAL, GUY
(title) SENIOR VICE PRESIDENT

(signature) [Signature] Date 4/1/09
(print) Jing chen
(title) Environmental Analyst II - CTDEP

Supervisor (signature) [Signature] Date 4-1-09
(print) DAVID R. NICHOLIST
(title) SUPERVISING ENV. ANALYST
(EPA Region or State) _____

Locations where References may be found:
See references included in this EI Checklist

Contact telephone and e-mail numbers

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Appendix A

**Assessment of Compliance with Connecticut's
Remediation Standard Regulations**

August 5, 1996

Revised November 1, 1996

**(See Appendix A of Environmental Indicator (EI) RCRSI Code CA 725
Dated September 15, 2003)**

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Appendix B

Approval Letters

**(See Appendix B of Environmental Indicator (EI) RCRSI Code CA 725
Dated September 15, 2003)**