

RCRA Corrective Action

Environmental Indicator (EI) RCRIS code (CA750)

Migration of Contaminated Groundwater Under Control

Facility Name: Bell Aerospace Textron (Textron Reality Operations)

Facility Address: Wheatfield, New York

Facility EPA ID #: NYD0002106276

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 "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).

Migration of Contaminated Groundwater Under Control Environmental Indicator (EI) RCRIS code (CA750)

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?

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.

Textron Realty Operations (TRO) has completed the investigation of releases of hazardous waste constituents at the Wheatfield facility(see Figure 1). As a result of the investigation, TRO has concluded that hazardous waste constituents have been released to the fill/soil and groundwater beneath the facility.

The most significant source of contaminants is the former "Neutralization Pond" which was a surface impoundment located in the north-east area of the facility. That unit was dewatered in 1984, sludge and soils were removed in 1987, and the unit was closed in 1988 by placement of a low permeability clay cap over the excavated area. Because the TRO did not achieve "clean closure" of the pond, the NYSDEC has determined that the pond shall be regulated as a "hazardous waste disposal unit".

On the basis of the June 1991 "RCRA Facility Investigation, Neutralization Pond, Textron Realty Operations Wheatfield Plant, Final Report", releases of hazardous waste constituents may also have occurred from the following SWMUs:

9. Helicopter Blade Bonding Building

13. Rocket Test Building

Because those SWMUs are in the vicinity of the neutralization pond, and because they are hydraulically connected with the groundwater contaminant plume emanating from the pond, they were addressed under the corrective measures program for the pond.

Aqueous phase contamination (up to 100,000 ppm vocs) has been observed in the soils and unconsolidated sediments (overburden) at the facility and in the bedrock. The

extent of the nonaqueous phase plume in the overburden appears to be limited to the facility property. The extent of the aqueous phase bedrock plume is considerably greater. Contamination of the upper bedrock zone (Zone 1) extends as a pear shaped lobe from the neutralization pond to a point approximately five thousand feet (5000 ft) southeast of the pond. A list of the hazardous waste constituents which have been released to the groundwater, and the "groundwater protection standard" for the constituents is included in Table 1.

TABLE 1

PARAMETER	CAS#	GROUNDWATER PROTECTION STANDARD (: /L)
<u>Volatile Organic Compounds</u>		
Methylene chloride	75-09-2	5.0
Trichloroethylene	79-01-6	5.0
1,1,1-Trichloroethane	71-55-6	5.0
Acetone	67-64-1	5.0 x 10 ¹
1,2-Dichloroethylene (total)	75-35-4	5.0
Vinyl chloride	75-01-4	2.0
Carbon disulfide	75-15-0	5.0 x 10 ¹
1,1-Dichloroethylene	75-35-4	5.0
1,1-Dichloroethane	75-34-4	5.0

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).

Migration of Contaminated Groundwater Under Control
Environmental Indicator (EI) RCRIS code (CA750)

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)?

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): _____

General corrective measures objectives were to abate and remediate any significant threat to public health and the environment due to the release from the neutralization pond. The Corrective Measures Study (CMS) was submitted to and approved by the Department in June 1991. The CMS provided several potential corrective actions based upon engineering feasibility; demonstrated or expected effectiveness; protection of human health and the

environment; and technical reliability.

The selected corrective measures identified by the CMS were to develop two separate groundwater recovery and treatment systems, one to hydraulically contain the DNAPL and the other to remove the dissolved phase contamination, primarily in the Zone 1 aquifer. The intent of the Off-Site system was to remediate the dissolved phase plume in the Zone 1 aquifer which migrated off the on-site area. The intent of the On-Site system was to hydraulically contain the DNAPL and remediate dissolved phase contamination beneath the TRO facility located on-site. By hydraulically containing the DNAPL, risks of further off-site migration of the source of the dissolved phase contamination will be eliminated.

Implementation of the selected remedial program was undertaken in a phased approach to expedite installation of the remedial program. The Off-Site system was designed and installed first followed by the design and installation of the On-Site system. The Off-Site groundwater remedial system has been operating since March 1993. The On-Site groundwater remedial system has been operating since April 1995. TRO has capped and covered areas where contaminated soils were observed. In addition, TRO has implemented institutional measures to address potential off-site and on-site pathways.

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.

Migration of Contaminated Groundwater Under Control

Environmental Indicator (EI) RCRIS code (CA750)

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): _____ **Groundwater modeling performed as part of the CMS evaluated the potential impacts of off-site groundwater discharge to Berholtz Creek. Because the creek is incised into the overburden and because the overburden groundwater is clean in the vicinity of the creek, significant discharge of contaminated groundwater into the creek was not predicted by the model. Sediment and water samples were collected in the creek. The sampling results indicate that if there is discharge of the groundwater contaminant plume into the creek it is insignificant.**

Migration of Contaminated Groundwater Under Control
Environmental Indicator (EI) RCRIS code (CA750)

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 judgement/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. **(See discussion above.)**

_____ 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): _____

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

Migration of Contaminated Groundwater Under Control
Environmental Indicator (EI) RCRIS code (CA750)

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)?

_____ 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.

Migration of Contaminated Groundwater Under Control
Environmental Indicator (EI) RCRIS code (CA750)

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):__

Performance Monitoring

TRO currently performs routine monitoring of select groundwater monitoring wells and extraction wells to evaluate the performance of the On-Site and Off-Site systems. During each monitoring event, the hydraulic performance of the On-Site and Off-Site system is evaluated to determine if the systems are operating in accordance with the intent of the system’s objective. In addition, during each monitoring event chemical analysis of groundwater samples from select wells is performed. Groundwater samples collected from monitoring and extraction wells are analyzed for VOC’s according to USEPA SW-846 Method 8240 or 8260. An evaluation of the groundwater chemistry is also used to determine if the systems are operating in accordance with the intent of the system’s objective. (See the attached Table for a list of the wells in the monitoring network.)

The review of the hydraulic response in bedrock Zone 1 due to the operation of the Off-Site system indicates that the system is operating in accordance with the design objectives. There is a consistent and significant overlap of the cone-of-depression and the contaminant plume in the off-site area (See Figure 8). Groundwater flow directions have remained relatively consistent since start-up of the Off-Site system in March 1993.

The hydraulic response in Zone 1 due to the operation of the On-Site system has generally met the design expectations of establishing a zone of groundwater capture over the DNAPL plume; maintaining an upward gradient between Zone 3 and Zone 1; maintaining a downward gradient between the overburden materials and Zone 1; and establishing and

maintaining a groundwater capture zone along the southern property boundary of the TRO facility between extraction wells EW-7 and EW-8. Although a significant ground water capture zone has been established along the southern property boundary of TRO, a small component of groundwater was noted to be flowing south between EW-7 and EW-8. An additional extraction well, EW-13, was recently installed in the area between EW-7 and EW-8 in order to enhance groundwater capture along the southern boundary of the facility.

TRO has been performing quarterly monitoring events since 1990. Recent monitoring data (see “1998-1999 Summary and System Performance, Off-Site and On-Site Ground Water Extraction System”) indicate that, in general, contaminant concentrations detected in groundwater samples from both the on-site and off-site monitoring wells are gradually declining, as anticipated. (Representative Figures are attached.)

**Migration of Contaminated Groundwater Under Control
Environmental Indicator (EI) RCRIS code (CA750)**

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 “Bell Aerospace Textron” facility , EPA ID # NYD0002106276, located at Walmer Road, Wheatfield, NY.** 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) _____ Date 9/29/99

(print) William E. Wertz, Ph.D.

(title) Senior Engineering Geologist

Supervisor (signature) _____ Date 9/30/99

(print) Paul J. Merges

(title) Director, Bureau of Radiation & Hazardous Site Management

(EPA Region or State) NYSDEC

Locations where References may be found:

NYSDEC

Division of Solid & Hazardous Materials

Rm 460

50 Wolf Road

Albany NY 12233

Contact telephone and e-mail numbers

(name) William E. Wertz

(phone #) (518) 457-9253

(e-mail) wewertz@gw.dec.state.ny.us

SUMMARY OF HYDRAULIC MONITORING DATA
 JANUARY 1999 MONITORING EVENT
 FORMER TEXTRON INC. WHEATFIELD, NEW YORK FACILITY
 (Measurements Recorded January 26, 1999)

* Denotes well at which chemical monitoring is performed.

WELL	Top of	Water	Water	WELL	Top of	Water	Water
Name	Riser	Depth	Level	Name	Riser	Depth	Level
87-01(0)	588.10	14.82	573.28	87-21(0)	577.23	8.55	568.68
87-01(l)	587.99	15.23	572.76	* 87-21(l)	577.33	7.92	569.41
87-02(l)	589.21	15.18	574.03	* 87-22(0)	583.80	DRY	DRY
87-02(3)	588.63	12.93	575.70	* 87-22(l)	583.97	13.99	569.98
87-04(0)	589.32	7.37	581.95	* 87-23(0)	587.27	9.63	577.64
87-04(l)	589.08	12.64	576.44	87-23(l)	587.13	13.33	573.80
87-04(3)	589.49	12.65	576.84	* 89-03(l)	581.01	15.05	565.96
87-05(l)	589.37	13.76	575.61	* 89-04(l)	577.92	7.54	570.38
87-05(3)	589.46	11.85	577.61	89-05(lA)	577.56	15.25	562.31
87-06(l)	588.27	11.89	576.38	89-05(l B)	577.77	9.55	568.22
87-08(l)	589.48	12.02	577.46	89-06(l)	575.93	10.10	565.83
87-10(0)	587.30	11.00	576.30	89-07(l A)	577.66	11.99	565.67
87-10(l)	587.52	14.90	572.62	89-07(l B)	577.48	11.24	566.24
87-12(l)	583.84	14.10	569.74	89-12(l)	586.60	14.28	572.32
87-13(0)	589.77	8.80	580.97	89-13(0)	588.18	9.47	578.71
87-13(l)	590.06	13.40	576.66	* 89-14(0)	587.45	8.03	579.42
87-13(3)	589.91	12.43	577.48	* 89-14(l)	587.59	10.81	576.78
87-14(0)	589.56	9.60	579.96	* 89-15(l)	588.76	15.05	573.71
87-14(l)	589.06	12.30	576.76	* 89-16(l)	576.76	6.15	570.61
87-14(3)	590.35	12.30	578.05	* 89-17(l)	577.59	7.84	569.75
87-15(0)	590.70	14.30	576.40	89-18(l)	576.75	12.72	564.03
87-15(l)	590.27	11.98	578.29	93-02(l)	579.05	17.99	561.06
87-15(3)	589.87	11.66	578.21	* 93-03(l)	572.30	12.05	560.25
87-16(3B)	590.51	12.52	577.99	* 94-02(l)	574.50	8.60	565.90
87-17(0)	589.50	12.09	577.41	96-01(l)	585.18	15.79	569.39
87-17(l)	589.62	11.60	578.02	96-02(l)	584.82	15.49	569.33
87-18(0)	585.95	11.89	574.06	* B-8(0)	590.26	12.45	577.81
87-18(l)	586.02	17.80	568.22	B-12(0)	589.48	12.41	577.07
87-19(0)	581.57	3.00	578.57	B-13(l)	588.41	12.13	576.28
87-19(l)	581.47	12.79	568.68	* B-14(l)	589.54	13.69	575.85
87-20(0)	578.77	4.30	574.47	89-SW(2)	577.54	8.12	569.42
87-20(l)	579.01	9.28	569.73	* EW-2	568.15	8.35	559.80
EW-8	578.44	9.90	568.54	* EW-3	569.56	N/A	556.50
DW-9	581.30	2.50	578.80	* EW-4	570.07	N/A	549.70
DW-1 0	583.95	8.31	575.64	* EW-5	569.47	N/A	554.00
DW-1 1	583.05	9.98	573.07	* EW-6	568.17	6.97	561.20
DW-1 2	580.48	8.60	571.88	* EW-7	580.96	14.05	566.91

EW-13 579.84 11.04 568.80