

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: Bell Helicopter Textron, Inc. (BHTI) – Plant #1
Facility Address: 600 East Hurst Boulevard, Hurst, TX 76053
Facility EPA ID #: TXD980626006

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 #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, GPRAs). 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 key contaminants identified in the groundwater at Bell Helicopter Textron (BHTI) Plant #1 facility with maximum concentrations that currently exceed human health risk-based levels for ingestion (i.e., Maximum Contaminant Level based when available) are Trichloroethene (TCE) = 240 µg/L, Tetrachloroethene (PCE) = 1300 µg/L and Hexavalent Chromium = 6.9 mg/L. Other contaminants include cis-1,2 Dichloroethene, Vinyl Chloride, Arsenic, Barium and Cadmium. The risk-based ingestion values are found in 30 Texas Administrative Code §350. Note that selection of the final remedy will determine if this ingestion pathway is considered complete.

References

Affected Property Assessment Report, November 30, 2004, SECOR’s, Attachments 2A and 2D SECOR’s 2004 Semi-Annual Groundwater Monitoring Report (First and Second Quarters), SECOR International, Inc., October 1, 2004
2003 Semi-Annual Groundwater Monitoring Report (Third and Fourth Quarters), SECOR International, Inc., April 20, 2004
EPA Environmental Indicator Form (CA 750), SECOR International, Inc., March 26, 2004
Results of Additional Investigation Activities at the Heliport Landfill, Arcadis Geraghty & Miller, February 18, 2000
RCRA Facility Investigation Report, Geraghty & Miller, Inc., December 21, 1998
RCRA Facility Investigation Report, Big 3 Area, Geraghty & Miller, Inc., April, 1996
RCRA Facility Investigation Report Unit 01-Heliport Landfill, Geraghty & Miller, Inc., April 1997
Aquifer Hydraulic Conductivity Evaluation, Geraghty & Miller, Inc., July 18, 1994.
Limited Subsurface Investigation, Geraghty & Miller, Inc., April 11, 1994.
Limited Subsurface Investigation, Geraghty & Miller, Inc., March 9, 1993.

3. Has the **migration** of contaminated groundwater **stabilized** (such that contaminated groundwater is

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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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):

Two water-bearing zones (Upper Sand Unit and Lower Sand Unit, both < 45 feet below ground surface) have been identified beneath the Plant 1 facility and are discussed in detail in SECOR’s *Affected Property Assessment Report* dated November 30, 2004. Groundwater sampling at the site has occurred as early as 1992 with the most recent sampling completed in October 2004. Review of historical and current groundwater data collected from the Upper and Lower Sand indicate relatively decreasing and/or stabilized concentrations. Plume stability is enhanced due to discharge to surface water bodies in the dominant down-gradient direction (i.e., east). Monitoring locations down-gradient of surface water bodies indicates migration does not occur beyond these points, and for the southerly direction the plume is bounded by monitoring locations with analytical results less than human health risk-based levels for ingestion. The number and proximity of monitoring wells currently at the site are sufficient to continue monitoring activities in order to verify through time that migration of contaminated groundwater is under control. Based on the current available data, the contaminated groundwater is expected to remain within the existing perimeter of contamination.

References

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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Worksheet 2.1, and Attachments 6A and 6B of SECOR's *Affected Property Assessment Report*, November 30, 2004

See additional references in #2.

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):

The Upper Sand Unit is limited in aerial extent, however the Lower Sand Unit discharges to surface waters present to the east of the Big 3 Area. Water bodies include ditches, ponded areas and the perennial stream - Walker Branch Creek, which ultimately flows to the West Fork of the Trinity River.

References

Section 7 of SECOR's *Affected Property Assessment Report*, November 30, 2004

See additional references in #2.

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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 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.

 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):

To evaluate potential impacts of groundwater to surface water, analytical data for monitoring wells located in or near the zone of discharge to surface waters is used. Walker Branch Creek is not a designated water supply segment. Further, based on analytical data for groundwater, surface water and sediment, groundwater discharges to surface waters are not capable of affecting the next downstream water body in a way that would pose risk to a water supply body. Therefore the evaluation presented here, does not consider water ingestion as an appropriate risk-based level for groundwater within the zone discharging to surface water. However, for human health, fish ingestion and contact recreation are considered. Further, exposure to aquatic life and wildlife is considered for ecosystem effects. Sufficient analytical data is currently available to determine if unacceptable impacts are present to aquatic life and wildlife, however additional investigation data is necessary to characterize potential risk to the benthic community prior to determining the final remedy.

Review of historical groundwater monitoring well data located nearest to the ponded waters of the Big 3 area indicate that the contaminant concentrations are generally decreasing and/or stable. Maximum groundwater concentrations for key contaminants in the zone of discharge to surface water are PCE = 630 µg/L, TCE = 200 µg/L, cis-1,2 Dichloroethene = 220 µg/L, Vinyl chloride = 11 µg/L, and Arsenic = 0.026 mg/L. These concentrations are based on the most recent analytical data (October 2004) collected from the site. These groundwater data along with surface water and sediment data indicate impacted surface waters are protective for human exposures applicable to these water bodies as determined by comparison to risk-based levels as described in *Determining PCLs for Surface Water and Sediment* (RG-366/TRRP-24 revised December 2002). Further, any exceedence’s of risk-based levels is less than one order of magnitude.

Regarding ecosystem effects, a certified senior ecologist with SECOR completed a Tier 2 Ecological Risk Assessment, which is presented in Section 9 of SECOR’s *Affected Property Assessment Report*, November 30, 2004). The

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

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methodology used is consistent with *Guidance for Conducting Ecological Risk Assessments at Remediation Sites in Texas* (TCEQ, August 30, 2001). These groundwater data along with surface water and sediment data indicate impacted surface waters are protective for ecosystem endpoints applicable to these water bodies as determined by comparison to risk-based levels associated with the Texas Risk Reduction Program (i.e., any exceedence of risk-based levels is less than one order of magnitude). Further, the potential for bioaccumulation of the key contaminants is limited. Note that additional data collection will be necessary prior to final remedy selection (i.e., chromium in sediment requires further delineation and mercury detection limits warrant additional data collection). Regarding both the human health and ecosystem level effects, current data and assessments indicate the discharge to surface waters can continue until determination of the final remedy. This EI determination will be re-evaluated when the TCEQ becomes aware of information indicating significantly different conditions at the facility.

References:

Sections 7 and 9 of SECOR's Affected Property Assessment Report dated Nov. 30, 2004.

See additional references in #2.

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.

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

Rationale and Reference(s):

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):

Quarterly groundwater sampling was currently completed for 2004. Groundwater monitoring data will continue to be collected in 2005 on a quarterly or semi-annual basis as described in the *Groundwater Sampling and Analysis Plan* dated September 19, 2002 prepared by SECOR and approved by the TCEQ. The samples will be collected by low-flow sampling methods. In addition, since the final remedy has not been selected for this site, additional data will be collected as needed.

References

Texas Risk Reduction Program (TRRP) Affected Property Assessment Report, SECOR International, Inc.,
November 30, 2004
Groundwater Sampling and Analysis Plan, SECOR International Inc., September 19, 2002

See additional references in #2.

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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).

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 Helicopter Textron Inc. Plant 1** facility, EPA ID # **TXD980626006**, located at **600 East Hurst Boulevard, Hurst, TX 76053**. 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/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) | | Date | 2/28/05 |
| | (print) | John Wilder | | |
| | (title) | Project Manager | | |

| | | | | |
|------------|-----------------------|-------------------|------|---------|
| Supervisor | (signature) | | Date | 2/28/05 |
| | (print) | Catherine Remmert | | |
| | (title) | Team II Leader | | |
| | (EPA Region or State) | Texas | | |

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| Locations where References may be found: |
| TCEQ Central Records, Austin, Texas |

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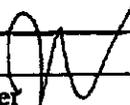
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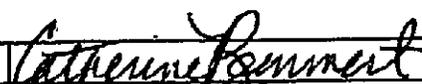
8. Check the appropriate RCRIS status codes for the Migration of Contaminated Groundwater Under Control EI (event code CA750), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (attach appropriate supporting documentation as well as a map of the facility).

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 Helicopter Textron Inc. Plant 1 facility, EPA ID # TXD980626006, located at 600 East Hurst Boulevard, Hurst, TX 76053. 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/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) |  | Date | 2/28/05 |
| | (print) | John Wilder | | |
| | (title) | Project Manager | | |

| | | | | |
|------------|-----------------------|--|------|---------|
| Supervisor | (signature) |  | Date | 2/28/05 |
| | (print) | Catherine Remmert | | |
| | (title) | Team II Leader | | |
| | (EPA Region or State) | Texas | | |

Locations where References may be found:

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