

**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: Bulova Technologies LLC

Facility Address: 101 North Queen Street, Lancaster, PA 17604

Facility EPA ID #: PAD 000800680

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])

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).

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Bulova Technologies, LLC**

**Background**

The Bulova Technologies, LLC facility is a 210,000 four-story brick building in downtown Lancaster, PA that was built in the early 1970s and originally housed a Hess' Department Store. Hamilton Technology, Inc. purchased the building in 1980, refurbished it for commercial use and began the design, manufacturing and assembly of arming devices under a government contract in the spring of 1981. The facility changed hands in 1986, when Hamilton Technology, Inc. was taken over by the Clabir Corporation, and in 1988, when the Olin Corporation purchased the facility. The facility was purchased by 101 N. Queen Street Associates in 1991 and Bulova Technologies, LLC concurrently began operations at the property.

Bulova's operations at the facility included the manufacturing and assembly of military detonators, safety equipment, commercial computer chips, and circuit boards. In 2001, Bulova sold the defense products portion of its business to BT Fuze Products Division, a subsidiary of the L-3 Communications Corporation. Bulova had leased a portion of the facility to BT Fuze until L-3 decided to move its operations out of state in January 2007. Bulova continued to assemble printed wiring boards until it also closed down its operations in Lancaster, PA in November 2008. The building has remained vacant since that time.

Several solid waste management units (SWMUs) were historically used at the facility including a wastewater treatment system, electroplating sludge tank, filter press, waste solvent storage area, solvent recycling still and a permitted air scrubber. Hamilton Technology, Inc. and subsequently BT Fuze operated a permit-by-rule elementary neutralization and wastewater treatment system that discharged to the Lancaster publicly owned treatment works (POTW) until BT Fuze ceased operations at the facility. All of the above equipment was either removed or pressure washed and left in place and there has never been a known or suspected release from any of the facility's SWMUs. An underground storage tank (UST) used to store No. 2 fuel oil was removed from service in 1982 and closed in place in 1995.

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2. Is groundwater known or reasonably suspected to be “contaminated”<sup>1</sup> 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.

  X   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):**

Soils at the site are classified as Urban land by the Soil Conservation Service, which indicates that more than 85% of the surface is covered by roads, parking areas, buildings or other structures. The site is underlain by the Conestoga Formation, a gray limestone of Cambrian and Ordovician age. Groundwater in the Conestoga aquifer is under water-table conditions and is believed to flow in the downward-sloping direction of the overlying topography toward the Conestoga River to the south/southeast. Two wells originally constructed for industrial use, but whose current status is unknown, tapped the Conestoga Formation at a location approximately 500 feet south of the site. Depth to the static water level in these wells was reported to be 23 feet below the surface and 41 feet below the surface, respectively.

No releases of hazardous constituents are known or suspected to have occurred at the facility. Subsurface soil sampling conducted in 2001 as part of a Phase I Environmental Site Assessment indicated very minor soil contamination. Trichloroethylene (TCE) was the only volatile organic compound (VOC) detected in a single subsurface soil sample at a concentration of 19 ug/kg. The detected TCE concentration is more than two orders of magnitude less than the EPA Region 3 risk based concentration for residential soil for TCE (2,800 ug/kg). A soil sample taken from two feet below the sidewalk surface directly under the outside fill port of the former fuel oil UST system exhibited a total petroleum hydrocarbons-diesel range organics (TPH-DRO) concentration of 610 mg/kg, which is slightly above the PADEP action level of 500 mg/kg. A second composite soil sample taken between 3 and 6 feet at the same location returned a TPH-DRO concentration of 27 mg/kg, confirming that only a very limited amount of soil had been impacted. The above results suggest that any groundwater impacts associated with the observed contamination would be insignificant.

There have been no past, current or planned groundwater monitoring efforts at the facility. The portion of Lancaster surrounding the facility is supplied water from the City of Lancaster, which obtains its water supply from surface water intakes on the Conestoga and Susquehanna Rivers.

Ref: Final Environmental Indicator Inspection Report for Bulova Technologies, LLC, prepared by Michael Baker Jr., Inc., August 2009; Record of Telephone Conversation between Steve Gurba, President and CEO of Bulova Technologies, LLC and Andrew Clibanoff, RCRA Project Manager, July 26, 2010.

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<sup>1</sup> “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”<sup>2</sup> 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”<sup>2</sup>.

\_\_\_\_\_ If no (contaminated groundwater is observed or expected to migrate beyond the designated locations defining the “existing area of groundwater contamination”<sup>2</sup>) - 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):

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<sup>2</sup> “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?

\_\_\_\_\_ 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):

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5. Is the **discharge** of “contaminated” groundwater into surface water likely to be “**insignificant**” (i.e., the maximum concentration<sup>3</sup> 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<sup>3</sup> 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 concentration 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<sup>3</sup> 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):

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

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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)?

\_\_\_\_\_ 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,<sup>5</sup> 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):

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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):

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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 Bulova Technologies LLC facility,

EPA ID # PAD 000800680, located at 101 North Queen Street, Lancaster, PA 17604.

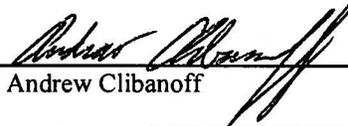
Specifically, this determination indicates that the migration of "contaminated" groundwater is under control, and that monitoring will be conducted to confirm that contaminated groundwater remains within the "existing area of contaminated groundwater". This determination will be re-evaluated when the 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 08/02/10

Andrew Clibanoff

(print)

RCRA Project Manager

(title)

Supervisor

(signature)



Date 8-2-2010

Paul Gotthold

(print)

Associate Director, Office of PA Remediation

(title)

(EPA Region or State) EPA Region 3

Locations where References may be found:

USEPA Region III  
Land and Chemicals Division  
1650 Arch Street  
Philadelphia, PA 19103

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Southcentral Regional Office  
909 Elmerton Avenue  
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