**DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION**
**RCRA Corrective Action**
**Environmental Indicator (EI) RCRIS code (CA750)**

**Migration of Contaminated Groundwater Under Control**

Facility Name: **Electro-Platers of York**
Facility Address: **209 East Willow Street Wrightsville, PA 17368**
Facility EPA ID #: **PAD015139470**

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 ManagementUnits [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 ofcontaminated 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" (forall 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 withsources 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)**: Electroplaters of York (EPY) was an electroplating facility that was contracted by various businesses who supplied prefinished metal components for custom electroplating. EPY conducted operations at the facility from 1968 until December 21, 2004. Electroplating operations included: plating with zinc, cadmium, chromium, nickel, brass and silver; pickling steel; and depositing electroless nickel. Wastewater treatment for destruction of cyanide, chromium reduction, chemical precipitation, flocculation, coagulation, and settling with sludge dewatering occurred on site. The facility used trichloroethene (TCE) for vapor degreasing.

A Limited Phase II Environmental Site Assessment (ESA) (ECS, March 2006) included a geophysical survey, advancement of soil borings, installation of temporary monitoring wells, and excavation of test pits. The limited investigation was performed in effort to determine whether historical uses of the property had resulted in adverse impacts to the environmental integrity of the property. Limited/select groundwater and soil samples were submitted for laboratory analyses. The ESA compares analytical results to PADEP Non-Residential Non-Use Aquifer MSCs. No supporting documentation, references or approvals for the determination of Non-Use Aquifer for the site or the region was provided in the report. The facility was previously used for industrial purposes and it is currently owned by the Wrightsville borough with intended use for non-residential purposes (i.e., recreational uses). Therefore, for the purposes of this EI, a preliminary evaluation of the groundwater data using Non-Residential Used Aquifer MSCs was conducted.

The ESA presented groundwater sampling and analytical results from two of 12 direct-push borings, eight temporary monitoring wells, and two existing production wells. In the direct-push boring samples, TCE at EPGP-11 was reported at a concentration of 56.3 µg/L, exceeding the PADEP Non-Residential Used Aquifer MSC of 5 µg/L. Volatile Organic Compounds (VOCs) were detected in all of the groundwater samples submitted from temporary monitoring wells EPB-1 through EPB-8. TCE and its breakdown products (1,2-DCE and vinyl chloride) were detected in the groundwater near a manhole and other locations presumably downgradient (towards the river) of this manhole. This manhole was shown on a soil boring location map approximately 50 feet from the Former TCE Storage Pad (SWMU 9). The highest concentrations of TCE and its breakdown products that were detected in the presumed downgradient area (i.e., between the storage pad and river) included 1,180 µg/L of TCE (at EPB-2), 589 µg/L of cis 1,2-DCE (at EPB-4), and 494 µg/L of vinyl chloride (at EPB-3) which exceeded their respective Non-Residential Used Aquifer MSC s 5 µg/L, 70 µg/L, and 2 µg/L, respectively. The cadmium concentration (8.7 µg/L) at the only location (EPGP-6) where shallow groundwater was analyzed for metals, exceeded its Non-Residential Used Aquifer MSC of 5 µg/L. The full extent of contamination in the shallow groundwater in the vicinity of soil boring location EPGP-6 is unknown.

Two of the four production wells (with intakes from a deeper aquifer) were sampled, with detections of beryllium and zinc in EP-WELL, and TCE in EPWELL 2, at concentrations less than their respective Non-Residential Used Aquifer MSCs. EP-WELL is located at the edge of the western portion of the former building footprint and EPWELL 2 is located near the southeastern corner of the former building footprint. The detection of TCE in one of the production wells (whose intake is reportedly deeper than 200 feet, according to the RFA), indicates that vertical migration of contamination may have occurred.

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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)?

_____ 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.

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

**Rationale and Reference(s):**

The detection of TCE in one of the production wells (whose intake is reportedly deeper than 200 feet, according to the RFA), indicates that vertical migration of TCE may have occurred. There is inadequate information to fully understand the source, release mechanism, migration pathway, and vertical extent of the contamination in the groundwater.

The vertical and horizontal extent of groundwater contamination could not be determined within the scope of the Limited Phase II ESA due to only the installation of temporary monitoring wells; therefore, there is inadequate data to determine whether the migration of contaminated groundwater has stabilized.

The facility is bordered along the east/northeast by the Susquehanna River, a water body used for recreational activities. The property is located within the 100-year flood-plain of the river. The land surface slopes gently east-southeast, toward the river with a steeper change in elevation within a few feet of the edge. The southeast portion of the facility has the lowest elevation. Neither fate and transport modeling nor surface water sampling was conducted and it is unknown whether migration of groundwater constituents to surface water has or may result in adverse impacts.

The Limited Phase II ESA did not consider the Soil-to-Groundwater migration pathway; therefore, for the purposes of this EI, a preliminary evaluation of the soil data was conducted. When compared to Soil-to-Groundwater migration MSCs for Non-Residential Used Aquifers, the soil sample from EPGP-4, exceeded the Soil-to-Groundwater MSC for cadmium in Used Aquifers (38 mg/kg) at a concentration of 607 mg/kg. Similarly soil samples from three soil borings and a two test pit samples contained one or more constituents exceeding their respective Soil-to-Groundwater MSCs for Non-Residential Used Aquifers. TCE concentrations at EPGP-2 (3-4 foot bgs) and EPGP-6 (6 foot bgs) were 1.16 mg/kg and 1.01 mg/kg, exceeding 2 times its Non-Residential Soil-to-Groundwater MSC of 0.5 mg/kg. EPGP-2 and EPGP-6 were located near the SWMU 2, Neutral Waste Treatment Tanks. The soil sample from EPGP-2 also contained chromium at a concentration of 333 mg/kg, exceeding its Soil-to-Groundwater MSC (assuming hexavalent chromium) of 190 mg/kg. The soil sample from the third soil boring EPGP-4 (1 foot bgs) contained antimony (57 mg/kg), cadmium (607 mg/kg), and chromium (814 mg/kg), exceeding their respective Soil-to-Groundwater MSCs of 27 mg/kg, 38 mg/kg, and 190 mg/kg (for hexavalent chromium). Test pit TP-1 soil sample (4 foot bgs) contained cadmium (141 mg/kg), chromium (265 mg/kg), lead (526 mg/kg), and thallium (20.4 mg/kg), exceeding their respective Soil-to-Groundwater MSCs of 38 mg/kg, 190 mg/kg, 450 mg/kg, and 18 14 mg/kg. Test pit TP-2 soil sample (4 to 6 foot bgs) also contained chromium (293 mg/kg) exceeding its

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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.

Soil-to-Groundwater MSC of 190 mg/kg. Although a potential for migration from soil to groundwater was indicated in the Limited Phase II ESA, the groundwater at these locations was not investigated, therefore, it is unknown whether groundwater contamination has occurred or stabilized in these areas.

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):**

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 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[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)?

_____ 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 wateris (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?"

_____ 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):

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 **Electro-Platers of York** facility, EPA ID # **PAD015439470**, located at **209 East Willow St. Wrightsville, PA 17368**.
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 wil be re-evaluated when the Agency becomes aware of significant changes at the facility.

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

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

Completed by (signature) _____ Date 12/15/10

(print) Kevin Bilash

(title) RCRA Project Manager

Supervisor (signature) _____ Date 12-17-10

(print) PAUL GOTTHOLD

(title) ASSOCIATE DIRECTOR LED

(EPA Region or State) EPA R3

Locations where References may be found:

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