

DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION

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

Facility Name: Solid State Scientific, Inc. (SSS)

Facility Address: 160, 200 and 201 Commerce Drive, Montgomery Township, PA 18936

Facility EPA ID #: PAD002278331

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 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.

Rationale and Reference(s):

A. Background:

The former Solid State Scientific (SSS) facility was located at the corner of Commerce Drive and Enterprise Road in Montgomeryville, PA. The facility consisted primarily of three buildings in the Montgomeryville Industrial Park. The facility no longer exists and the property has been subdivided into three properties, which each correspond to one of the SSS buildings. Located at 201 Commerce Drive is SSS Building #1, which is currently owned by Aztec Products that manufactures floor care equipment. The SSS building #2 located at 160 Commerce Drive is currently owned and operated by 160 Commerce Drive LP which leases portions of the building to commercial tenants. Current uses include storage, a closet assembly business, and a water resource consulting firm office. At 200 Commerce Drive is SSS Building #3, which is currently owned by Grampians, LP and operated by Saint-Gobain Abrasives, Inc. The three properties are located in an industrial park. Neighboring properties are mostly industrial and commercial with some residences in the general vicinity

The facility was a semiconductor manufacturing facility that produced large-scale integrated circuits. These circuits were used in watches, clocks, smoke detectors, computers, space and telecommunications, military communications, and various other uses. The circuits were produced on the surface of a silicone wafer with each wafer containing as many as 800 circuits. The wafers were mass-produced using photographic techniques, high temperature heat treatments, and chemical processing.

Two of the SSS buildings (Buildings #2 and Building #3) processed the silicone wafers and the third building (Building #1) contained the photo processing operation. The facility utilized variety of acids, solvents, and photo chemicals. All spent acids and low pH rinse streams were neutralized with sodium bicarbonate before being discharged to a tributary of Park Creek. Used solvents were transported to a neighboring chemical company for reclamation.

On August 18, 1980, SSS filed a Notification of Hazardous Waste Activity for its generation and treatment/storage/disposal of hazardous waste. SSS submitted a Part A Permit Application in November 1980.

B. Investigations and Remediation

The Solid Waste Management Units (SWMUs) identified at the facility included Empty Drum Storage Area, Acid Treatment Tank, Underground Waste Solvent Tank, Drum Storage Shed, and Aboveground Waste Storage Tanks. A closure plan for the SSS facility was submitted in December 1984. Closure activities for the Waste Chemical Storage Areas, the Underground Waste Solvent Tank, and Drum Storage Shed were performed. It was determined that closure was performed in

accordance with the approved closure plan and PADEP approved the closure on September 26, 1985.

Investigations and remediation under PADEP Act 2 program have been performed at the Facility. VOCs contaminated soils around the former waste solvent tank were excavated. Approximately 250 tons of impacted soil were excavated and removed from the site. Groundwater investigations revealed that TCE, 1,1-DCE, and vinyl chloride were detected in groundwater at the facility at concentrations above the MCLs. The groundwater contamination, however, does not migrate offsite and is confined within the facility's property boundary. The Facility's Act 2 Final Reports were approved by PADEP.

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):

The migration of contaminated groundwater has stabilized. The groundwater contamination does not migrate offsite and is confined within the facility’s property boundary. Groundwater monitoring results of the compliance wells showed that concentrations of TCE, vinyl chloride, and cis-1,2 DCE were decreasing over time and remained below the respective MCLs.

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?
- 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):

Surface water samples were collected. Analytical results of the samples showed that the VOCs were detected in surface water at concentrations below the PADEP surface water standards.

**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)?

- 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):

Surface water samples were collected. Analytical results of the samples showed that the VOCs were detected in surface water at concentrations below the PADEP surface water standards. The discharge of contaminated groundwater into surface water is likely to be insignificant.

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-assessments, 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):

Analytical results of surface water samples showed that the VOCs were detected in surface water at concentrations below the PADEP surface water standards and surface water is not impacted.

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?”
- 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):

Groundwater investigations revealed that the groundwater contamination is confined within the facility’s property. Groundwater monitoring results of the compliance wells showed that concentrations of TCE, vinyl chloride, and cis-1,2 DCE were decreasing over time and remained below the respective MCLs.

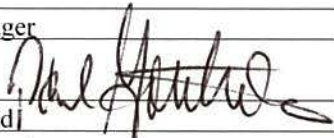
**Migration of Contaminated Groundwater Under Control
Environmental Indicator (EI) RCRIS code (CA750)**

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).

- 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 Solid State Scientific, Inc. facility, EPA ID # PAD002278331, located at 160, 200 and 201 Commerce Drive, Montgomery Township, PA 18936. 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) 
Tran Tran
Project Manager

Date 7/31/2018

Supervisor (signature) 
Paul Gotthold
Associate Director
EPA Region 3

Date 7-31-2018

Locations where References may be found:

US EPA Region III
Land & Chemicals Division
1650 Arch Street
Philadelphia, PA 19103

Contact telephone and e-mail numbers

Tran Tran
215-814-2079
tran.tran@epa.gov

