

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: National Standard LLC, Mount Joy Wire Impoundment  
Facility Address: 1000 East Main Street, Mount Joy PA  
Facility EPA ID #: PAR 000 514 182

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:** The facility consists of a closed hazardous waste impoundment. Figure 1, attached.

Groundwater monitoring began in October 1983 with 4 monitoring wells. Samples were analyzed for the following constituents of concern, based on materials handled at the manufacturing plant: iron, lead, manganese, sodium, chloride, sulfate, and nitrate-nitrogen. Boron was added to the list of required analytes in 2002. In 2006, lead and nitrate-nitrogen were deleted from the list of analytes, as the monitoring history showed that they were not facility-related contaminants.

Groundwater Contamination was detected in 1983. The initial groundwater samples identified facility-related contamination; specifically, iron, manganese, chloride, and sulfate.

The impoundment was closed in 1990. Closure actions included the removal of waste material and some contaminated soil, and the construction of a RCRA cap over the impoundment area to prevent surface water migration through the closed impoundment area.

The owner has operated a groundwater abatement system (pump and treat system) since 1985. Groundwater quality has improved significantly since the closure of the impoundment and the implementation of the groundwater abatement program.

The Post Closure Permit requires continued groundwater monitoring and operation of the groundwater abatement program (pump and treat system) to reduce the groundwater contamination to background and/or ACL concentrations for three consecutive years.

**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)**

1. Is **groundwater** known or reasonably suspected to be “contaminated” 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:**

Groundwater in the area of the closed impoundment is contaminated. Contamination is confined to one small area in the vicinity of monitoring well WQMP-6. The well is one of four post-closure groundwater wells monitor the groundwater quality.

Off-site groundwater monitoring has detected no contamination related to releases from the facility.

Alternate Concentration Limits (ACLs) for groundwater quality were approved by PADEP and are implemented through the facility’s Post Closure Permit. The ACLs are based on EPA and PADEP review of the *National Standard Alternate Concentration Limit Demonstrate Report, September 2005*. The ACLs established in the Post Closure Permit ensure that constituents of concern at the Facility will not pose a hazard to human health or the environment as long as the ACLs are not exceeded at the downgradient point of compliance wells, WQMP-2 and WQMP-4A. The ACLs were determined through a site-specific evaluation, including toxicology calculations and fate and transport analysis.

The ACLs for the Facility’s constituents of concern are:

Boron (dissolved):	2.1 mg/l
Chloride:	360 mg/l
Iron (dissolved):	1.6 mg/l
Manganese (dissolved):	1.5 mg/l
Sodium (dissolved):	230 mg/l
Sulfate:	250 mg/l

The current groundwater quality at the Facility, based on the most recent two years of groundwater data is summarized here:

- WLMP-3 (background well), WQMP-4A, and WQMP-2 show no exceedances of ACLs.
- WLMP-6 exceeds ACLs for manganese, sulfate and boron.

	Contaminant concentration mg/l	ACL mg/l
manganese	2.6	1.5
sulfate	906	360
boron	5.8	4.0

## Reference(s)

Semi-Annual (Second Quarter) April 2016 Post Closure Groundwater Monitoring Report, May 2016, prepared by GHD for National Standard LLC

Groundwater Split Sample Analytical Results, Second Quarter 2016 Sampling Event, National-Standard, PADEP letter report, 6/8/2016

Semi-Annual (Fourth Quarter) October 2015 Post Closure Groundwater Monitoring Report, December 2015, prepared by GHD for National Standard LLC

Semi-Annual (Second Quarter) May 2015 Post Closure Groundwater Monitoring Report, June 2015, prepared by CRA for National Standard LLC

Comprehensive Groundwater Monitoring Evaluation (CME-2013), National Standard, PADEP, April 2013

National Standard Alternate Concentration Limit Demonstrate Report, September 2005

Comprehensive Groundwater Monitoring Evaluation (CME- 2007), National Standard, PADEP, December 2006

Environmental Indicator Report for National Standard Company, prepared by PADEP for EPA, April 2003

## 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  
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2. 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:**

The groundwater quality has improved significantly since the closure of the impoundment and the implementation of the groundwater extraction program. The facility continues to operate the groundwater abatement system, as required by the Post Closure Permit.

National Standard has closed the impoundment by removing waste material and constructing a RCRA cap over the impoundment area to prevent surface water migration through the closed impoundment area. In addition, the facility has operated a groundwater contamination abatement program since 1985.

Groundwater is extracted from the area of contamination around the closed impoundment and sent to the Mount Joy Wire wastewater treatment plant for treatment and discharge to Little Chickies Creek under NPDES Permit # PA 0042781.

The current groundwater quality at the Facility, based on the most recent two years of groundwater data is summarized here:

- WLMP-3 (background well), WQMP-4A, and WQMP-2 show no exceedances of ACLs.
- WLMP-6 exceeds ACLs for manganese, sulfate and boron.

	Contaminant concentration mg/l	ACL mg/l
manganese	2.6	1.5
sulfate	906	360
boron	5.8	4.0

Groundwater concentrations at the “point of compliance wells” (WQMP-2 and WQMP-4A) do not exceed the ACLs established in the Post Closure Permit. Therefore, groundwater contamination has stabilized.

**Reference(s):**

Semi-Annual (Second Quarter) April 2016 Post Closure Groundwater Monitoring Report, May 2016, prepared by GHD for National Standard LLC

Groundwater Split Sample Analytical Results, Second Quarter 2016 Sampling Event, National-Standard, PADEP letter report, 6/8/2016

Semi-Annual (Fourth Quarter) October 2015 Post Closure Groundwater Monitoring Report, December 2015, prepared by GHD for National Standard LLC

Semi-Annual (Second Quarter) May 2015 Post Closure Groundwater Monitoring Report, June 2015, prepared by CRA for National Standard LLC

<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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3. Does "contaminated" groundwater **discharge** into **surface water** bodies?

- If yes - continue after identifying potentially affected surface water bodies.
- X 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:**

Surface water in Little Chickies Creek, both upstream and downstream of the Facility, was sampled April in 2001. No contamination related to releases from the facility was detected.

The impoundment was capped after the removal of waste material, liner material, and the majority of the contaminated soil. Therefore, the potential for contaminant releases to surface water has been eliminated or reduced to an insignificant amount.

**Reference(s):**

Comprehensive Groundwater Monitoring Evaluation (CME – 2007), National Standard, PADEP, December 2006



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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 judgment/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<sup>3</sup> 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):**

<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<sup>4</sup>)?
- 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):**

<sup>4</sup> 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.

<sup>5</sup> 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:**

The Post Closure Permit requires continued monitoring of the four post-closure wells and operation of the groundwater abatement system (pump and treat) until groundwater contamination returns to background and/or ACL concentrations for three consecutive years.

Currently, groundwater is samples every third quarter, to assess seasonal groundwater fluctuations.


**Reference(s):**

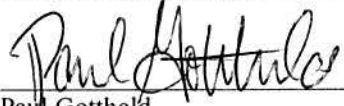
Post Closure Permit, National Standard LLC, ID No. PAR 000 514 182, issued by PADEP, 4/25/2008

**Migration of Contaminated Groundwater Under Control  
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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 National Standard LLC, Mount Joy Wire Impoundment, EPA ID # PAR 000 514 182, located at 1000 East mail Street, Mount Joy, PA. 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  Date 7-29-2016  
Maureen Essenthier  
RCRA Project manager

Supervisor  Date 8-1-2016  
Paul Gotthold  
Assoc. Director, Office of PA Remediation  
Waste & Chemicals Division, EPA Region 3

Locations where References may be found:

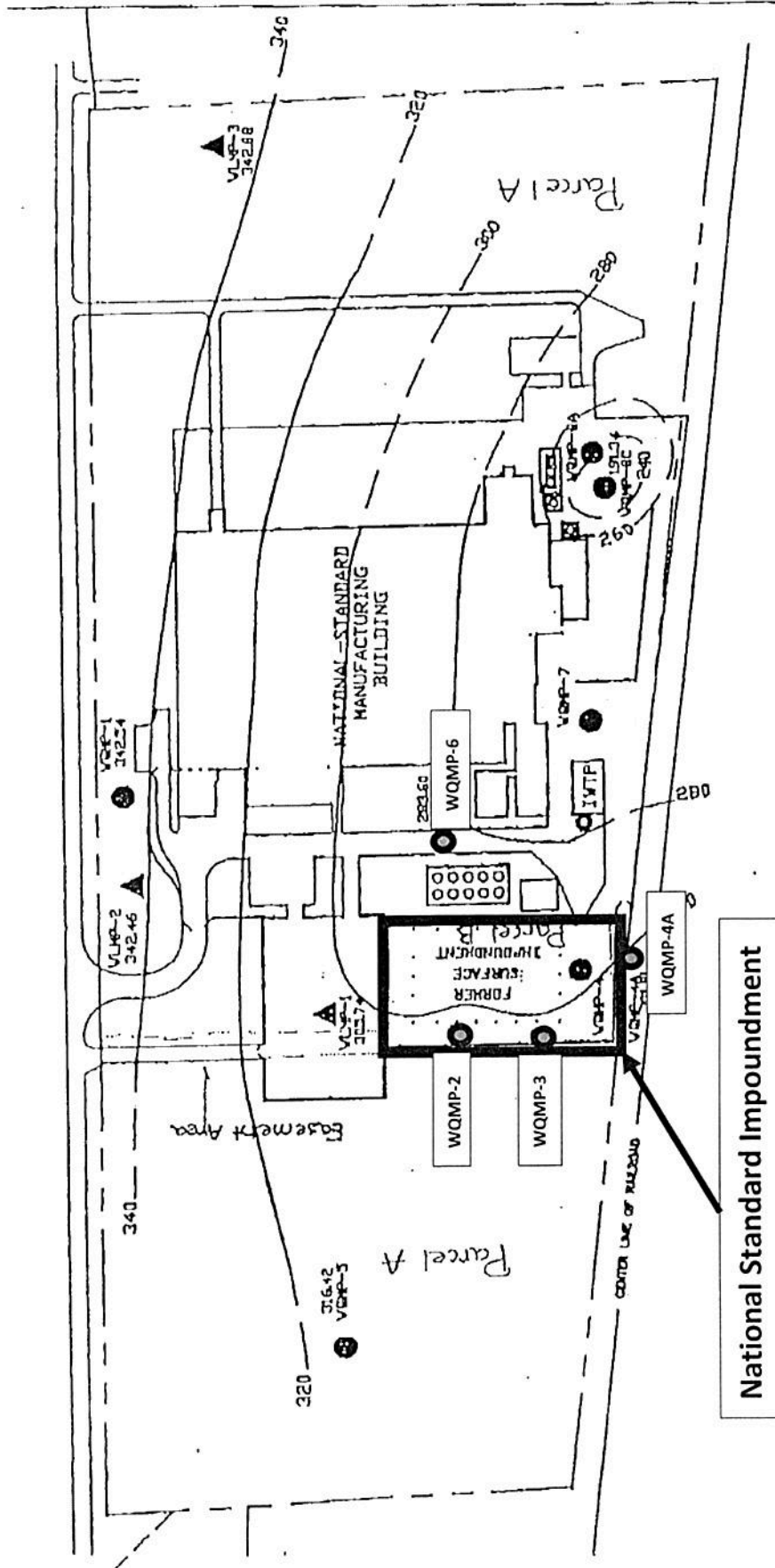
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National Standard Impoundment

**Figure 1**

<p><b>Client:</b> NATIONAL-STANDARD COMPANY</p> <p><b>Date:</b> First Quarter 1991 - (02/14/91)</p> <p><b>Prepared by:</b> Earth Resource Associates, Inc. Lancaster, Pennsylvania</p>	<p style="text-align: center;"><b>North</b></p> <div style="text-align: center;"> </div> <div style="text-align: center;"> <p>SCALE (feet)</p> </div> <p><b>NOTE:</b> Base mapping taken from National-Standard Company map #PMA0E251.</p> <p><b>Legend:</b></p> <ul style="list-style-type: none"> <li>● WQMP-# (WATER QUALITY MONITORING WELL)</li> <li>▲ WLMP-# (WATER LEVEL MONITORING WELL)</li> <li>--- 31.400 GROUNDWATER ELEVATION</li> <li>--- GROUNDWATER CONTOUR</li> </ul>
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Figure 1 - National Standard Impoundment - Migration of Groundwater Contamination Under Control

