

DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION

RCRA Corrective Action  
Environmental Indicator (EI) RCRIS code (CA725)  
Current Human Exposures Under Control

Facility Name: Ellwood Group, Inc. (former National Forge Company)  
Facility Address: One Front Street, Irvine, Pennsylvania 16329  
Facility EPA ID #: PAD002101418

I. Has all available relevant/significant information on known and reasonably suspected releases to soil, groundwater, surface water/sediments, and air, 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 #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 "Current Human Exposures Under Control" EI**

A positive "Current Human Exposures Under Control" EI determination ("YE" status code) indicates that there are no "unacceptable" human exposures to "contamination" (i.e., contaminants in concentrations in excess of appropriate risk-based levels) that can be reasonably expected under current land- and groundwater-use conditions (for all "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 "Current Human Exposures Under Control" EI are for reasonably expected human exposures under current land- and groundwater-use conditions ONLY, and do not consider potential future land- or groundwater-use conditions or ecological receptors. The RCRA Corrective Action program's overall mission to protect human health and the environment requires that Final remedies address these issues (i.e., potential future human exposure scenarios, future land and groundwater uses, and ecological receptors).

**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. Are groundwater, soil, surface water, sediments, or air **media** known or reasonably suspected to be “contaminated”<sup>1</sup> above appropriately protective risk-based “levels” (applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action (from SWMUs, RUs or AOCs)?

	<u>Yes</u>	<u>No</u>	<u>?</u>	<u>Rationale / Key Contaminants</u>
Groundwater	X			Detections of polynuclear aromatic hydrocarbons (PAHs), acenaphthene, anthracene, fluorene, phenanthrene, and pyrene
Air (indoors) <sup>2</sup>		X		OSHA compliance
Surface Soil (e.g., <2 ft)		X		Contaminated soil excavated during closure of SWMUs.
Surface Water		X		Surface water samples indicate no exceedances for constituents of concern.
Sediment		X		Sediment samples indicate no exceedances for constituents of concern.
Subsurf. Soil (e.g., >2 ft)	X			Landfill wastes left in place and capped
Air (outdoors)		X		Emission controls are in place. No evidence of violation

- If no (for all media) - skip to #6, and enter “YE,” status code after providing or citing appropriate “levels,” and referencing sufficient supporting documentation demonstrating that these “levels” are not exceeded.
- If yes (for any media) - continue after identifying key contaminants in each “contaminated” medium, citing appropriate “levels” (or provide an explanation for the determination that the medium could pose an unacceptable risk), and referencing supporting documentation.
- If unknown (for any media) - skip to #6 and enter “IN” status code.

**Rationale:**

The Facility is formerly known as the National Forge Company (NFC). It is located in Irvine, Pennsylvania, a rural community about 60 miles southeast of Erie, PA. The facility encompasses 323 acres with 46 acres of developed property and 578,000 sq. ft. of plant/buildings under roof. The site is situated on the banks of Brokenstraw Creek and is located in the High Plateau Section of the Appalachian Plateaus Province of PA.

The Facility was founded in 1915 by Clinton Wilder. The Wilder family later sold the company to its employees in 1995. It remained as an employee-owned company until 2003 when the Ellwood Group, Inc. (EGI) acquired the assets of the NFC out of bankruptcy. EGI reconfigured the former NFC facility into two distinct subsidiaries, the Ellwood National Forge and the Ellwood National Crankshaft. EGI closed the steel melting and forging operations at the facility and transferred the work to EGI's New Castle and Ellwood City plants.

**Groundwater:**

The onsite groundwater plume consists of mineral/cutting oil, quenching oil and No. 2 fuel oil. The five dissolved constituents of concern are polynuclear aromatic hydrocarbons (PAHs), acenaphthene, anthracene, fluorene, phenanthrene, and pyrene. The cause of the groundwater contamination was due to past releases from the underground process flow-through tanks and the aboveground fuel storage tanks. The nearest residential wells are located upgradient from the onsite groundwater plume. There are no human exposures to the groundwater plume.

In December 1995, NFC initiated the pump and treat/recovery system to recover free-phase product and to control groundwater plume migration. After years of pump and treat, the groundwater concentrations for the constituents of concern achieved the Pennsylvania Act 2 non-residential Statewide Health Standard. In April 2001, NFC with the Pennsylvania

Department of Environmental Protection's (PADEP) approval, discontinued the pump and treat system for two years to evaluate the groundwater plume under static conditions. The study consists of sampling 44 monitoring points for two consecutive years on a monthly basis. The study was conducted between April 2001 and March 2003. The objective was to evaluate the plume under static conditions and to determine if the pump and treat system is still required to control groundwater plume migration. The results from the study were compared to historic data to evaluate the potential of future offsite migration. Based on the study, the assessment of the historic data, and given the characteristics of the constituents, PADEP concluded that the groundwater plume has remained relatively immobile for the last 70-80 years and is unlikely to migrate beyond its present location in the future. Subsequently, PADEP terminated the groundwater monitoring program and approved the decommissioning of the wells. NFC executed a deed notice that limits the property to non-residential use and restricts groundwater use for industrial purposes only.

As required for the closure of the former onsite landfills, the Facility conducted groundwater monitoring to assess the potential impact of the former landfills to groundwater. Historic groundwater data indicated no constituents of concerns above the regulatory levels. After decades of groundwater monitoring, PADEP terminated the post-closure groundwater monitoring program and certified the closure of the landfills.

#### **Surface Water:**

The Facility discharges treated facility process wastewater and stormwater run-off to the Brokenstraw Creek under the National Pollutant Discharge Elimination System (NPDES) Permit. Historic surface water samples indicate no exceedances for constituents of concern in surface water. All applicable VOCs and SVOCs were below the acceptable detection levels. The majority of the selected metals were non-detect. Detected metals include iron (140 ug/l), magnesium (6530 ug/l), manganese (113 ug/l), lead (2 ug/l), thallium (3 ug/l), and zinc (22 ug/l). Phosphorous, sulfide, and sulfite were non-detect. Detected chemical parameters include nitrate-nitrite (640 ug/l), nitrogen (222 ug/l), sulfate (2767 ug/l), surfactants (92 ug/l), and total phenols (44 ug/l).

#### **Sediment:**

Three sediment samples collected from the Brokenstraw Creek for VOCs, SVOCs, inorganics and PCBs indicate no exceedances for constituents of concern. VOCs were detected in only one sediment sample. Detected VOCs were dichloroethane (0.016 mg/kg), chloroform (0.014 mg/kg), bromodichloromethane (0.01 mg/kg), toluene (0.007 mg/kg), and xylene (0.011 mg/kg). Twelve detected SVOCs had concentrations between 0.00831 mg/kg to 0.38993 mg/kg. TPH and PCBs were not detected in any of the sediment samples. PAH concentrations were below the USEPA Ecotox threshold values.

#### **Surface Soil (<2 ft.):**

Contaminated soil was detected during the closures of several Solid Waste Management Units (SWMUs) and the evaluation of several Areas of Concerns (AOC). The contaminated soil was excavated and disposed of offsite. The excavated areas were backfilled with clean soil.

#### **Subsurface Soil (>2 ft.):**

NFC operated two former onsite landfills; the Electric Arch Furnace Dust Landfill and the Slag Landfill. Wastes in the former landfills consisted of slag waste, furnace dust, spent steel shot and miscellaneous building materials. The landfills were closed with wastes in place and capped under PADEP's supervision. Historical groundwater monitoring indicated no impact to the groundwater. PADEP terminated the groundwater monitoring program and certified the closure of both landfills.

#### **Air (outdoors):**

Presently, the Facility is in compliance with the PADEP Air Permits. In the past there have been minor violations to the permits which have since been corrected. The Facility's operations do not pose human health risks via air emissions.

#### **Air (indoors):**

There has been no record of releases that are above protective risk-based "levels" by the Facility. The onsite groundwater plume is located within the facility property line and consists primarily of polynuclear aromatic hydrocarbons (PAHs), acenaphthene, anthracene, fluorene, phenanthrene, and pyrene. The levels in groundwater meet Pennsylvania Act 2 non-residential Statewide Health Standard. There are no indoor air concerns associated with the onsite groundwater plume.

(NFC Environmental Inspection Report March 2002, Combined Remedial Investigation Statewide Health Standards and Site Specific Standard Final Report Sept. 2003, PADEP Final Report Approval Letter Nov 2003, PADEP Closure Letter to NFC Sept. 2008)

Footnotes:

<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 appropriately protective risk-based “levels” (for the media, that identify risks within the acceptable risk range).

<sup>2</sup> Recent evidence (from the Colorado Dept. of Public Health and Environment, and others) suggest that unacceptable indoor air concentrations are more common in structures above groundwater with volatile contaminants than previously believed. This is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration necessary to be reasonably certain that indoor air (in structures located above (and adjacent to) groundwater with volatile contaminants) does not present unacceptable risks

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3. Are there **complete pathways** between “contamination” and human receptors such that exposures can be reasonably expected under the current (land- and groundwater-use) conditions?

**Summary Exposure Pathway Evaluation Table**

Potential **Human Receptors** (Under Current Conditions)

<b>“Contaminated” Media</b>	Residents	Workers	Day-Care	Construction	Trespassers	Recreation	Food <sup>3</sup>
Groundwater	No	No	No	No			No
Air (indoors)							
Soil (surface, e.g., <2 ft)							
Surface Water							
Sediment							
Soil (subsurface e.g., >2 ft)		No		No			No
Air (outdoors)							

Instructions for Summary Exposure Pathway Evaluation Table:

1. Strike-out specific Media including Human Receptors’ spaces for Media which are not “contaminated” as identified in #2 above.
2. enter “yes” or “no” for potential “completeness” under each “Contaminated” Media -- Human Receptor combination (Pathway).

Note: In order to focus the evaluation to the most probable combinations some potential “Contaminated” Media - Human Receptor combinations (Pathways) do not have check spaces (“\_\_\_”). While these combinations may not be probable in most situations they may be possible in some settings and should be added as necessary.

- If no (pathways are not complete for any contaminated media-receptor combination) - skip to #6, and enter “YE” status code, after explaining and/or referencing condition(s) in-place, whether natural or man-made, preventing a complete exposure pathway from each contaminated medium (e.g., use optional Pathway Evaluation Work Sheet to analyze major pathways).
- If yes (pathways are complete for any “Contaminated” Media - Human Receptor combination) - continue after providing supporting explanation.
- If unknown (for any “Contaminated” Media - Human Receptor combination) - skip to #6 and enter “IN” status code.

**Rationale:**

**Groundwater:**

The onsite groundwater plume is contained within the facility property line. Historic groundwater monitoring has concluded that the plume has remained immobile and is unlikely to migrate beyond its present location. The nearest residential wells are located upgradient from the groundwater plume. The groundwater plume does not present a pathway to potential human receptors. NFC executed a deed notice that restricts groundwater use for industrial purposes only.

**Subsurface Soil (>2 ft.):**

The Facility operated two former onsite landfills; the Electric Arch Furnace Dust Landfill and the Slag Landfill. Wastes in the landfills consisted of slag waste, furnace dust, spent steel shot and miscellaneous building materials. The landfills were closed with wastes in place and capped. PADEP certified the closures of both landfills. There are no direct exposures to the wastes.

<sup>3</sup> Indirect Pathway/Receptor (e.g., vegetables, fruits, crops, meat and dairy products, fish, shellfish, etc.)

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4. Can the **exposures** from any of the complete pathways identified in #3 be reasonably expected to be **“significant”**<sup>4</sup> (i.e., potentially “unacceptable” because exposures can be reasonably expected to be: 1) greater in magnitude (intensity, frequency and/or duration) than assumed in the derivation of the acceptable “levels” (used to identify the “contamination”); or 2) the combination of exposure magnitude (perhaps even though low) and contaminant concentrations (which may be substantially above the acceptable “levels”) could result in greater than acceptable risks)?
- If no (exposures cannot be reasonably expected to be significant (i.e., potentially “unacceptable”) for any complete exposure pathway) - skip to #6 and enter “YE” status code after explaining and/or referencing documentation justifying why the exposures (from each of the complete pathways) to “contamination” (identified in #3) are not expected to be “significant.”
- If yes (exposures could be reasonably expected to be “significant” (i.e., potentially “unacceptable”) for any complete exposure pathway) - continue after providing a description (of each potentially “unacceptable” exposure pathway) and explaining and/or referencing documentation justifying why the exposures (from each of the remaining complete pathways) to “contamination” (identified in #3) are not expected to be “significant.”
- If unknown (for any complete pathway) - skip to #6 and enter “IN” status code

**Rationale:**

<sup>4</sup> If there is any question on whether the identified exposures are “significant” (i.e., potentially “unacceptable”) consult a human health Risk Assessment specialist with appropriate education, training and experience.

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5. Can the “significant” exposures (identified in #4) be shown to be within **acceptable** limits?
- If yes (all “significant” exposures have been shown to be within acceptable limits) - continue and enter “YE” after summarizing and referencing documentation justifying why all “significant” exposures to “contamination” are within acceptable limits (e.g., a site-specific Human Health Risk Assessment).
  - If no - (there are current exposures that can be reasonably expected to be “unacceptable”)- continue and enter “NO” status code after providing a description of each potentially “unacceptable” exposure.
  - If unknown (for any potentially “unacceptable” exposure) - continue and enter “IN” status code.

**Rationale and Reference(s):**

