
UNITED STATES

ENVIRONMENTAL PROTECTION AGENCY

REGION III

# STATEMENT OF BASIS FOR PROPOSED REMEDY

Sands Bethworks Gaming, LLC
(A Portion of Former Bethlehem Steel Corporation)

BETHLEHEM, PENNSYLVANIA

PAD990824161

## I. Introduction

The United States Environmental Protection Agency (EPA) has prepared this Statement of Basis (SB) to solicit public comment on its proposed remedy for a 56.27-acre parcel (Parcel) located on the property formerly owned and operated by Bethlehem Steel Corporation – Bethlehem Structural Products (BSC) (hereinafter referred to as the BSC Facility or Site), located in the City of Bethlehem, Northampton County, Pennsylvania. This SB applies to the portion of the Facility currently owned by Sands Bethworks Gaming LLC, who acquired the property in 2007.

EPA's proposed remedy consists of compliance with and maintenance of institutional controls (ICs) and operation and maintenance of engineering controls (ECs) that are already in-place and approved by Pennsylvania Department of Environmental Protection (PADEP). This SB highlights key information relied upon by EPA in developing this proposed remedy.

The former Bethlehem Steel Corporation - Bethlehem Structural Products property is subject to EPA's Corrective Action Program under the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act (RCRA) of 1976, and the Hazardous and Solid Waste Amendments (HSWA) of 1984, 42 U.S.C. §§ 6901 et seq. (Corrective Action Program). The Corrective Action Program is designed to ensure that certain facilities subject to RCRA have investigated and cleaned up any releases of hazardous waste and hazardous constituents that have occurred at their property. The Commonwealth of Pennsylvania (Commonwealth) is not authorized for the Corrective Action Program under Section 3006 of RCRA. Therefore, EPA retains primary authority in the Commonwealth for the Corrective Action Program.

The Administrative Record (AR) for the Parcel contains all documents, including data and quality assurance information, on which EPA's proposed remedy is based. An index to the Administrative Record is included at the end of this SB. See *Section IX, Public Participation*, for information on how you may review the AR.

## II. Facility Background

The BSC Facility had been a fully integrated steel mill consisting of approximately 1600 acres on the banks of the Lehigh River in Bethlehem, PA (Figure 1). All manufacturing operations ceased in the 1990s. The Facility was divided into various parcels to ease environmental investigation and eventual redevelopment. The Bethlehem Works Parcel consists of 160 acres on the western-most edge of the Facility, with numerous structures such as buildings, parking lots. The Bethlehem Works Parcel is bounded to the east and west by industrial properties once owned by Bethlehem Steel, Third Street to the south and railroad tracks to the north. Just beyond the rail tracks to the north is the Lehigh River.

Currently the Bethlehem Works Parcel is being redeveloped and has been divided into 27 smaller parcels as shown in Figure 2. The Sands Bethworks Gaming LLC parcel (parcel #17), is the subject of this SB. The environmental investigation discussed in the documents in the AR was conducted across the entire Bethlehem Works Parcel and reviewed by both PADEP and EPA. Section III below - Summary of Environmental History- is applicable to the entire 160-acre Bethlehem Works Parcel. The proposed remedy discussed in remainder of this SB pertains only to the Sands Bethworks Gaming LLC parcel which comprises 56.27 acres. EPA plans to issue a

separate SB for the Sands Bethworks Retail Parcels (Parcels 1,2,5-10, 12-16, and 21-27). The Redevelopment Authority of Bethlehem owns Parcel 11 which will also receive a final decision by EPA. Parcels 3,4,19, and 20 have already received a final decision from EPA.

## III. Summary of Environmental History

### A. Soils

**(Note: The investigations referenced in this section were conducted under the PADEP/EPA One Cleanup Program. Soil investigation results were compared to both EPA non-residential screening levels (RSLs) and PADEP non-residential state-wide health standards (or media specific standards – MSCs). The reports generated by the investigations typically used the MSC nomenclature. For non-residential use, PADEP and EPA standards are both protective. The MSC nomenclature is used in this SB to aid the reader in using the references found in the Administrative Record)**

Numerous sampling events were completed between 1995 and 1998 for the soils investigation at areas identified in the RCRA Facility Investigation (RFA) and other areas identified as potentially having contact with hazardous waste at the Bethlehem Works Parcel. More than 200 soil samples from over 120 locations were collected to meet both Act 2 and Corrective Action guidelines for site investigation and cleanup. Samples were analyzed for priority pollutant metals and organic constituents. The sampling results were compared to non-residential soil MSCs for direct contact and soil-to-groundwater pathways.

Concurrent with the investigation, demolition of certain buildings and removal of debris were completed under the redevelopment plan. The soils beneath the building foundations, were not investigated. EPA does not anticipate significant contamination beneath former structures. Nonetheless, any changes to these features will require the then-owner to re-evaluate the current conditions and exposure pathways. This requirement is specified in the Environmental Covenant for each parcel on the Bethlehem Works property.

To simplify the site-wide investigation during Phase II, the site was divided into various production areas which had similar potential hazardous constituents. Each of these areas contained a number of tanks, degreasers, storage areas, and other areas of concern. A list of the Solid Waste Management Units, grouped by production area investigated, is provided in Table 1A. The investigation also included a number of Areas recognized for potential contamination. Areas that required remedial activities are listed in Table 1B. Detailed descriptions of all areas investigated and the applicable sampling results are presented in the Remedial Investigation, Risk Assessment and Cleanup Plan (RI/RA/CP) and supplemental information submitted in 1998 and in the two Final Reports for Soils submitted in 2000 and 2002.

BSC removed soils and other materials from five distinct areas on the Bethlehem Works Property. These soils and other materials were determined to contain regulated substances at concentrations above non-residential MSCs for soils. Post removal samples of underlying soils were collected to ensure that remediation was adequate.

*Iron Foundry Sand Pile (Sands Bethworks Retail LLC)*
A stockpile of primarily foundry sand was located between the Iron Foundry Building and the Iron Casting, Cleaning and Shipping Building in the central portion of Bethlehem Works. This foundry sand was produced by using sand as the mold material in casting molten iron. The footprint of the pile was approximately 1600 square feet. The pile was sampled, characterized, and excavated in April 1998. Lead and cadmium were found at levels above direct contact MSCs. Approximately 83 cubic yards (123 tons) of sand was removed. Following removal, soil samples were collected from within the former footprint of the pile. These confirmatory samples did not detect any lead or cadmium above their MSCs of 1000 mg/kg for lead and 1400 mg/kg for cadmium.

*Soils Near BF-8 (Sands Retail Bethworks LLC)*
Soils with coal fines and tar-like material was removed from the area of monitoring well BF-8, in the northwest section of the Facility. This material was found during installation of BF-8 in 1995. Sampling showed PAHs above direct contact health standards (for benzo(a)pyrene and dibenzo(a,h)anthracene). Approximately 125 cubic yards of material was removed in 1998. Post excavation sampling from within the footprint showed detected concentrations below direct contact MSCs (11mg/kg) for both constituents.

*Tar/Pitch Tank Pad (Sands Retail Bethworks LLC)*
Also in the northwest section of the Bethlehem Works Parcel, a tar pitch tank pad was discovered south of monitoring well BF-8. Coal tar was found imbedded in a portion of the concrete pad and in two sumps. Affected concrete and surrounding soils were excavated; 27 cubic yards (18 tons). Samples taken of the area after excavation show attainment of the Act 2 statewide health standards for direct contact in soils for PAHs, which are the primary constituents in coal tar.

*Sintering Plant (Sands Bethworks Gaming LLC)*
The soils near the Sintering Plant electrostatic precipitators indicated the presence of arsenic and lead. Excavation of approximately 200 cubic yards was completed in 1999. Post excavation sampling showed two samples above the lead direct contact standard of 1000 mg/kg (at 2800 mg/kg and 7360 mg/kg). However, 75% of the samples were below the 1000 mg/kg standard and the 95% upper confidence limit calculated for the lead data set is below the 1000 mg/kg standard. Thus, this area meets the non-residential MSC for lead.

Arsenic was not found above Act 2 MSCs.

*Car Tipper Area (Sands Bethworks LLC)*
Soil sampling showed PAHs above remedial standards in the Car Tipper area. In 2002, 2.4 cubic yards of soil was excavated. Sampling of the soils below the excavation showed no PAHs above Act 2 nonresidential standards.

## B. Groundwater

There are three aquifers beneath the Bethlehem Works site area. The site is immediately underlain by an unconsolidated aquifer consisting of alluvium and fill material. Groundwater upgradient of the site flows toward the site in a carbonate aquifer directly beneath the unconsolidated aquifer. A granite gneiss aquifer, deepest of all, remains mostly upgradient of the site. Groundwater flows from south to north across the site. At the Bethlehem Works Parcel, contaminants have been found only in the shallowest, unconsolidated alluvium unit.

Sixteen new monitoring wells and three existing wells were installed across the site and along the perimeter of the site. Well placement was based on historical operations and land usage in addition to groundwater flow patterns. These 19 wells, were used to evaluate groundwater quality and to determine potential pathways and risks to the Lehigh River.

These monitoring wells were sampled once in 1995 and quarterly in 1997 and 1998. Fifty four samples were analyzed for organic and inorganic constituents. Additionally, groundwater samples were collected via direct push technology at locations of suspected releases of trichloroethene (TCE) and 1,1,1-trichloroethane (TCA), used in five degreasers located in buildings on the site.

Five of the sixteen wells were constructed in bedrock; the remaining 11 are completed in the overburden. Total depth of these sixteen wells ranges from 30 to 122 feet. The three existing wells were originally used to supply production water to the plant. The Spring Pit, a shallow pond-like well located near the Electric Furnace Melt building remained in operation until 1998. The Drop Forge Well, several hundred feet deep, stopped pumping in 1987 and was decommissioned in 1998. The Blue Mountain Well, also several hundred feet deep, was pumped until 2000, at which time it was decommissioned.

Groundwater samples were analyzed for organic and inorganic compounds, and were compared to the Act 2 Medium-Specific Concentrations (MSCs) for Non-Residential Used Aquifers. Detected concentrations were generally below the applicable MSC, however concentrations of volatile organic compounds (VOCs) downgradient of the Electric Repair Building (ERB) exceeded MSCs for TCA, TCE, and 1,2-dichloroethene (DCE). The maximum detected concentration of TCA was 7800ug/l, 120ug/l for TCE, and 280ug/l for DCE. The MSCs for these constituents are 200ug/l, 5ug/l and 7ug/l respectively. It is important to note that this contamination was only found in the overburden aquifer. The carbonate and gneiss aquifers are not affected by past releases in the vicinity of the Bethlehem Works Parcel.

Although the VOC presence appeared to be localized, EPA determined that additional information was needed to verify that the contamination was not impacting lower aquifers or the Lehigh River. During 1999 and 2000, BSC conducted a Verification Monitoring Program to provide this information. Three additional wells were installed along the most likely migration route between the ERB and Lehigh River. These wells sampled over four quarters for VOCs and polyaromatic hydrocarbons (PAHs).

Results from the Verification Monitoring Program indicated that the VOC contamination is localized near the ERB and has been attenuating. Contaminate levels in the uppermost aquifer actually meet drinking water standards before discharging to the Lehigh River. The final sampling event at the source area showed TCA concentration at 2100ug/l (73% decrease), TCE concentration declining to 35ug/l (70% decrease), and DCE concentration at 2.3ug/l, which is below the MSC. No other VOCs or PAHs were found to be above MSCs during the sampling period.

The verification program required the installation of two wells at the top of bedrock down gradient of the source area in order to evaluate whether a dense non-aqueous phase liquid (DNAPL) was present in groundwater at the ERB. Site conditions show VOCs in soil are below 2mg/kg. Maximum concentrations of VOCs in groundwater were less than 0.5% of solubility and VOCs in soil gas is less than 200ppm. Characterization data does not support the potential for a DNAPL.

The Verification Monitoring Program also confirmed groundwater flow is northward, toward the Lehigh River, and the Lehigh is a gaining stream (groundwater flows into the Lehigh). This result was consistent with results previously reported in all earlier studies.

Groundwater at the site is not being used for potable purposes, and future uses will be restricted by environmental covenants. EPA met with City of Bethlehem officials in 2009 regarding potential use of the groundwater beneath the site. City officials explained that city ordinance prohibits use of groundwater within the city limits and requires hookup to the municipal supply system. They further explained that the overburden groundwater (where the contamination was found) would never be used for supply purposes based on yield and other factors. Both current and future direct contact exposure pathways to groundwater have been eliminated for both human and ecological receptors.

### C. Surface Water

An evaluation of potential impacts from groundwater discharges to water quality in the Lehigh River was considered in the risk assessment. This evaluation was based on mass balance modeling to determine whether the concentrations detected in groundwater discharging to the Lehigh River would result in in-stream concentrations that exceed the Pennsylvania Water Quality Criteria. To demonstrate that detected VOC concentrations are protective of surface water quality, maximum concentrations from all groundwater samples (including direct push) were evaluated. The risk assessment shows that surface water criteria for aquatic life and human health are not exceeded, including for maximum detected concentrations in groundwater. This indicates that existing groundwater concentrations are protective of surface water quality. (See **Section III.E** below for more information on the risk assessment)

With respect to ecological receptors on the site, other than the Lehigh River, no sensitive habitats, such as wetlands or endangered species exist on the site. The site currently has, and will have in the future, ground cover of buildings, parking lots and roads that eliminate direct contact exposure pathway for ecological receptors.

## D. Soil Gas

Soil gas samples were located near or down gradient of potential sources for VOCs. Thirteen areas were targeted, where 158 samples were collected using direct push technology, at depths of 0-2 and 2 to 15 feet below ground surface. Samples were initially screened using PID or FID. Samples with screening readings of over 10ppm were then analyzed using a field portable gas chromatograph. These samples were analyzed for vinyl chloride, DCE, TCA, TCE, PCE, toluene, and ethyl benzene. Samples were compared to criteria for worker exposure to substances in air; NIOSH, ACGIH, and OSHA. Only one sample exceeded a criterion, for vinyl chloride. This sample result is questionable as it was the lone exceedance, and found at the 0-2 foot depth. Vinyl chloride is highly volatile and it is unusual for it to be found at a shallow depth. Other shallow and deeper samples in the vicinity did not detect vinyl chloride. The results of the soil gas survey indicate that VOCs are not being released from soils or groundwater.

In addition to soil gas sampling, indoor air samples were also collected to evaluate the potential of VOCs to migrate into buildings. Indoor air samples were collected from the ERB, Carpenter and Pattern Shop, Machine Shop 2 and Central Tool Annex. These locations were selected as they once contained vapor degreasing units or were located above groundwater in which VOCs have been detected at levels above applicable MSCs. Two sampling pumps were placed in each building, within 10 to 20 feet of the former vapor degreaser locations. The air samples were collected after approximately 8 hours. Laboratory results showed no substances were detected, which indicates VOCs are not migrating into buildings at measurable concentrations. The results of indoor air sampling support the findings from the soil gas samples; VOCs are not present in soil gas at concentrations that pose a risk. In addition, the findings show the former degreasers do not pose an inhalation risk in the buildings.

## E. Risk Assessments

On March 31, 1998, the Facility submitted a Notice of Intent to Remediate to PADEP pursuant to Act 2. A combination of the Act 2 Non-residential Statewide Health Standards (SHS) and Site-Specific Standards (SSSs) were chosen as the cleanup goals to be achieved.

BSC presented the May 28, 1998 RI/RA/CP as the first formal submission under the Act 2 process. The Risk Assessment, contained within, describes potential exposures to regulated substances at the site. A combination of pathway elimination and transport modeling was used to assess potential exposures and to determine site-specific standards. Additional analytical data for groundwater was collected in 1999 and 2000. The evaluation of this data was, in part presented as a quasi-supplement to the Risk Assessment, to bolster the presented evaluation. This evaluation is found in the January 11, 1999 memo from BSC to EPA. This document can be found in the Administrative Record for this SB.

The following assumptions on future use were used to develop the Risk Assessment and were discussed with the stakeholders, including City of Bethlehem officials:

- The Bethlehem Works property will be restricted to non-residential uses;
- The future use of groundwater for any (potable or non-potable) purpose will be prohibited, other than for potential environmental monitoring.
- An existing public water system supplies drinking water in the area. Groundwater use is prohibited by local ordinances and/or other institutional controls.
- Current ground cover (i.e. pads, roadways, etc.) will remain in place.
- Future redevelopment plans indicate unpaved areas will be covered by asphalt, concrete, clean fill, etc. eliminating direct contact pathways.

The Risk Assessment evaluated exposures to current or future outdoor worker, indoor worker, and recreational visitor (potential receptors) from groundwater and surface water from identified constituents of interest. Exposures and cleanup levels were based on comparison of the maximum detected analytical groundwater results to PADEP medium specific concentrations (MSCs) and PADEP Water Quality Criteria (WQC) for surface water protection.

EPA has reviewed the risk assessment and the resulting calculated standards (Tables A and 2B). EPA has determined that the risk assessment was conducted in accordance with EPA guidance and that the groundwater and soil standards are protective of human health and the environment for non-residential land use.

## IV. Corrective Action Objectives

### 1. Soils

EPA's Corrective Action Objective for the Parcel soils is to prevent residential-level exposure to hazardous constituents remaining in the soils. This proposed remedy requires continued compliance with land use restrictions imposed by PADEP in the form of an Environmental Covenant. The Parcel meets Pennsylvania's Non-Residential Statewide Health Standards (NRSHS) for soils. EPA has determined that these standards are protective of human health and the environment for individual contaminants at the Parcel. The Non-Residential SHSs meet or are more conservative than EPA's acceptable risk range for non-residential use.

### 2. Groundwater

EPA's Corrective Action Objective for groundwater is to prevent potable use of the uppermost aquifer by requiring the compliance with and maintenance of groundwater use restrictions at the Parcel. The former Bethlehem Steel originally implemented these as deed restrictions in 1999. Bethworks-Sands converted these restrictions to an Environmental Covenant in 2013. (The City of Bethlehem already prohibits the use of groundwater for consumptive purposes anywhere within the City limits.)

Based on groundwater data collected from this parcel, contaminate levels in the uppermost aquifer attenuate to drinking water standards (or were not detected) by the point at which the

groundwater discharges to the Lehigh River. A groundwater model was used to calculate potential effects on surface water. The model was run using the highest levels of contaminates found during the investigation and assumed these levels were present in the groundwater immediately prior to discharge to the Lehigh River. The model result showed that the Lehigh River will not be impacted by groundwater discharging from the site. Those calculated levels can be found in Table 2A.

EPA is *not* requiring periodic monitoring of groundwater for the Parcel, as is generally done with attenuation remedies. There is no exposure risk and two independent prohibitions are in place to prevent groundwater use. The property has been redeveloped into a commercial and entertainment complex, so the long term use of the property will be non-residential. PADEP and EPA approved closing of all monitoring wells on the Parcel as part the redevelopment activities.

### 3. Vapors

EPA's Corrective Action Objective for the Parcel vapors is to control exposure to this hazard by requiring the compliance with and maintenance of land use restrictions at the Parcel as provided for in the environmental covenants applicable to this property.

### 5. Surface Water and Sediment

EPA has determined that the cleanup standards calculated for groundwater in Table A and the groundwater MSCs are protective of human health and the environment for individual contaminants at this Parcel, as groundwater discharges to the Lehigh River. Therefore, EPA's Corrective Action Objective for surface water and sediments is to control migration to the Lehigh River with a combination of engineering and institutional controls.

## V. Proposed Remedy

EPA has determined that the existing ground cover and construction of new structures and parking areas are protective of human health and the environment by controlling exposure to environmental media at this Parcel.

Use and activity restrictions are already in place and include a PADEP approved registered Uniform Environmental Covenant and an existing City of Bethlehem ordinance restricting groundwater use. Below are pertinent sections of the Covenant:

> (A) If any asphalt, concrete, soil or other ground cover is excavated or removed remaining soil or other materials in that area shall either (1) be demonstrated to meet Pennsylvania MSCs, or (2) be covered with material that eliminate pathways of

exposure to the underlying soil. This cover material may consist of (a) new asphalt, (b) new concrete, (c) not less than twelve (12) inches of clean soil, or (d) an alternative cover that is capable of physically supporting the intended use of the area and that provides protection to eliminate pathways of exposure to and from the underlying soil

(B) Groundwater shall not be used for any purpose and no wells shall be installed, unless authorized by the Department. However, monitoring wells and treatment wells may be installed solely for the purpose of monitoring and remediating.

(C) The Parcel property shall not be used for residential purposes unless it is demonstrated to PADEP, in consultation with EPA, that such use will not pose a threat to human health or the environment or adversely affect or interfere with the selected remedy and PADEP, in consultation with EPA, provides prior written approval for such use;

(D) The Property will not be used in a way that will adversely affect or interfere with the integrity and protectiveness of the final remedy;

## VI. Evaluation of EPA's Proposed Remedy

This section provides a description of the criteria EPA used to evaluate the proposed remedy consistent with EPA guidance. The criteria are applied in two phases. In the first phase, EPA evaluates three remedy threshold criteria as general goals. In the second phase, for those remedies which meet the threshold criteria, EPA then evaluates seven balancing criteria to determine which proposed remedy alternative provides the best relative combination of attributes.

A. Threshold Criteria

### 1. Protect Human Health and the Environment

BSC has remediated on-site soils to protect human health and the environment for industrial use, using current ground cover. Since current and anticipated land use is industrial, controls will be implemented at the Parcel to restrict future property uses to ensure that human health and the environment remain protected.

On May 8, 2013, Sands Bethworks Gaming, LLC recorded an environmental covenant which imposes land and groundwater use restrictions and conditions regarding the use of the Parcel property and groundwater. Under the covenant, Parcel property may only be used for non-residential purposes and groundwater beneath the property may not be used for any purpose. These conditions are enforceable and provide long–term assurance that the exposure assumptions used in developing EPA's proposed remedy are not changed without approval.

### 2. Achieve Media Cleanup Objectives

The Parcel has achieved the appropriate cleanup standards for soils, groundwater, and surface water. These standards meet EPA risk guidelines for human health and the environment at the

Parcel. EPA's proposed remedy requires compliance with the implementation and maintenance of institutional controls to ensure that Parcel property is not used for residential purposes, current ground cover remains in place and groundwater beneath Parcel property is not used for any purpose.

### 3. Remediating the Source of Releases

In all proposed decisions, EPA seeks to eliminate or reduce further releases of hazardous wastes or hazardous constituents that may pose a threat to human health and the environment. As described in the Summary of Environmental History section above, the Parcel has remediated the sources of releases. There are no remaining large, discrete sources of waste from which constituents would be released to the environment. Therefore, EPA has determined that this criterion has been met.

B. Balancing/Evaluation Criteria

### 1. Long-Term Effectiveness

The proposed use of institutional controls will maintain protection of human health and the environment over time by controlling exposure to the hazardous constituents remaining at the Parcel. EPA's proposed remedy requires the compliance with and maintenance of land use and groundwater use restrictions at the Parcel. The land use and groundwater use restrictions have already been implemented through an environmental covenant recorded in the chain of title of the deed for the Parcel property. The environmental covenant runs with the land and as such will be enforceable against future land owners.

### 2. Reduction of Toxicity, Mobility, or Volume of the Hazardous Constituents

The reduction of toxicity and volume of hazardous constituents at the Parcel has already been achieved by decommissioning the Parcel structures and soil excavation as described in the Summary of Environmental History section above.

### 3. Short-Term Effectiveness

EPA's proposed remedy does not involve any additional activities, such as construction or excavation that would pose short-term risks to workers, residents, and the environment. In addition, the land use and groundwater use restrictions have already been implemented through an environmental covenant recorded in the chain of title of the deed for the Parcel property.

### 4. Implementability

EPA's proposed remedy is readily implementable. An environmental covenant has already been recorded and the engineering and institutional controls are in place. Therefore, EPA does not anticipate any regulatory constraints in implementing its proposed remedy.

### 5. Cost

An environmental covenant has already been recorded in the chain of title of the deed to the Parcel property. Therefore, there should be no additional costs associated with the proposed remedy.

### 6. Community Acceptance

EPA will evaluate Community acceptance of the proposed remedy during the public comment period and will be described in the Final Decision and Response to Comments (FDRTC).

### 7. State/Support Agency Acceptance

Environmental cleanup at this Parcel has been overseen by PADEP as part of Pennsylvania's Act 2 Program since 1998. PADEP approved the Act 2 Final Report for remedial activities on November 3, 2010. EPA will evaluate further State acceptance based on any comments received from PADEP during the public comment period and will be described in the FDRTC.

## VII. Environmental Indicators

EPA sets national goals to measure progress toward meeting the nation's major environmental goals. For Corrective Action, EPA evaluates two key environmental indicators for each facility: (1) current human exposures under control and (2) migration of contaminated groundwater under control. The EPA has determined that the Parcel met these indicators on April 19, 1996 and April 02, 1999.

## VIII. Financial Assurance

EPA has evaluated whether financial assurance for corrective action is necessary to implement EPA's proposed remedy at the Parcel. Given that EPA's proposed remedy does not require any further engineering actions to remediate soil contamination at this time and given that the costs of implementing institutional controls at the Parcel will be minimal, EPA is proposing that no financial assurance be required.

## IX. Public Participation

Before EPA makes a final decision on its proposal for the Parcel, the public may participate in the remedy selection process by reviewing this SB and documents contained in the Administrative Record (AR) for the Parcel. The AR contains all information considered by EPA in reaching this proposed remedy. It is available for public review during normal business hours at:

U.S. EPA Region III
1650 Arch Street
Philadelphia, PA 19103

Contact: Ms. Linda Matyskiela (3LC30)
Phone: (215) 814-3420
Fax: (215) 814 - 3113
Email: Matyskiela.Linda@epa.gov

Interested parties are encouraged to review the AR and comment on EPA's proposed remedy. The public comment period will last thirty (30) calendar days from the date that notice is published in a local newspaper. You may submit comments by mail, fax, or e-mail to Ms. Linda Matyskiela. EPA will hold a public meeting to discuss this proposed remedy upon request. Requests for a public meeting should be made to Ms. Linda Matyskiela.

EPA will respond to all relevant comments received during the comment period. If EPA determines that new information warrant a modification to the proposed remedy, EPA will modify the proposed remedy or select other alternatives based on such new information and/or public comments. EPA will announce its final decision and explain the rationale for any changes in a document entitled the Final Decision and Response to Comments. All persons who comment on this proposed remedy will receive a copy of the FDRTC. Others may obtain a copy by contacting Mr. Linda Matyskiela at the address listed above.

Date: 3-21-17

Catherine A. Libertz

Catherine A. Libertz
Acting Director
Land and Chemicals Division
US EPA, Region III

Tables 1A and 1B
Tables 2A and 2B
Figure 1 – Location Map
Figure 2 – Bethlehem Works Parcel Layout

## INDEX TO ADMINISTRATIVE RECORD

**Groundwater**

Draft RCRA Facility Assessment, Bethlehem Steel Corporation, September 28, 1990; CDM for EPA

Groundwater Flow Study Report of Findings, Bethlehem Plant, June 1995; GTI for BSC, 1 binder

Remedial Investigation, Risk Assessment, and Cleanup Plan, Bethlehem Works Site, May 28, 1998; SAIC for BSC, 6 binders (on CD)

Supplemental Information to the Remedial Investigation, Risk Assessment, and Cleanup Plan Report, Bethlehem Works Site, August 27, 1998; SAIC for BSC to PADEP, 71 pgs. (on CD)

EPA Comments to Remedial Investigation, Risk Assessment, and Cleanup Plan, Bethlehem Works Site, December 22, 1998; EPA to BSC, 8 pgs.

Summary Document for Sufficient Characterization, January 11, 1999; BSC to EPA, 14 pgs.

Verification Requirements for Beth Works Groundwater, March 03, 1999; EPA to BSC, 4 pgs.

Letter of Act 2 Liability Protection for Groundwater at Beth Works Site, April 05, 1999; PADEP to BSC, 1pg.

Approval of Soils and Groundwater Remediation, April 2, 1999; EPA to PADEP, 6 pgs.

Approval of Soils and Groundwater Remediation, May 06, 1999; EPA to PADEP, 6 pgs.

Results for Verification Monitoring, Bethlehem Works Site, Sept 16, 1999; BSC to EPA, 84 pgs.

Bethlehem Works Site Verification Monitoring Program Results, May 5, 2000; BSC to EPA, 4 pgs.

Bethlehem Works Site Groundwater Approval, January 22, 2001; EPA to BSC, 1 pg.

**Soils**

Draft RCRA Facility Assessment, Bethlehem Steel Corporation, September 28, 1990; CDM for EPA

Remedial Investigation, Risk Assessment, and Cleanup Plan, Bethlehem Works Site, May 28, 1998; SAIC for BSC, 6 binders (on CD)

Supplemental Information to the Remedial Investigation, Risk Assessment, and Cleanup Plan Report, Bethlehem Works Site, August 27, 1998; SAIC for BSC to PADEP, 71 pgs. (on CD)

Site-Specific Standards for Soils for the Bethlehem Works Site, January 26, 1999; SAIC to PADEP, 5 pgs.

Residual Materials as Construction Fill, March 12, 1999; PADEP to BSC, 2 pgs.

Approval of Soils and Groundwater Remediation, April 2, 1999; EPA to PADEP, 6 pgs.

Approval of Soils and Groundwater Remediation, May 06, 1999; EPA to PADEP, 6 pgs.

An Evaluation of the Potential for Acute Health Effects on Children Exposed to Iron in Surface Soils and Other Materials, October 1999; SAIC for BSC, 51 pgs. (on CD)
Final Report for Soils Phase I Area, Bethlehem Works Site, April 2000; SAIC for BSC, 219 pgs. (on CD)

Final Report for Soils Phase I Area, Bethlehem Works Site, April 14, 2000: Cover letter, Act 2 transmittal sheet, final report summary, checklist and proof of public notice, 42 pgs.

Bethlehem Works Post-Characterization Supplemental Soils Sampling, June 5, 2000; BSC to PADEP, 3 pgs.

Amendment to Final Report for Soils Phase I Area, Bethlehem Works Site, August 10, 2000; BSC to PADEP, 5 pgs.

Letter of Act 2 Liability Protection for Phase I Soils Area at Bethlehem Works Site, September 14, 2000; PADEP to BSC, 2 pgs.

Final Report for Soils Phase II Area, Bethlehem Works Site, November 2002; SAIC for BSC, 138 pgs. (on CD)

Replacement page to Final Report for Soils Phase II Area, Bethlehem Works Site, January 31, 2003; SAIC to PADEP, 2 pgs.

Letter of Act 2 Liability Protection for Phase II Soils Area at Bethlehem Works Site, February 19, 2003; PADEP to BSC, 2 pgs

Demolition Cleanup Process, February 23, 2006 Email; HDR to EPA, 2 pgs.

**Ownership/Environmental Covenants**

Bethlehem Works Phase I Area, October 12, 2001; recorded by BSC

Bethlehem Works Phase II Area, September 13, 2004; recorded by Tecumseh Redevelopment Inc.

Map of Sands Bethworks Properties, August 04, 2011

Environmental Covenant, Condominium Unit 1, May 08, 2013, recorded by Sands BethWorks Gaming, LLC

**Public Participation**

Press Release- October 14, 1998; Morning Call article- October 14, 1998; Morning Call article October 14, 1998; 5 pgs.

**Table 1A: Solid Waste Management Units Identified in RFA**

| Solid Waste Management Unit (as identified in RFA) | Waste Description | Waste Destination | Release noted in RFA? | Remediation |
|---|---|---|---|---|
| 20 Blast Furnace | | | | |
| Dorr Clarifiers | Non-hazardous iron fines and carbon | Sinter Plant, RWL | No release | |
| Vacuum Filters | Non-hazardous iron fines and carbon | Sinter Plant, RWL | No release | |
| Cast House Baghouses | Non-hazardous iron oxide | RWL | No release | |
| Flue Dust Catchers | Non-hazardous iron fines and carbon | Sinter Plant, RWL | No release | |
| N21 Sinter Plant | | | | |
| Precipitators | D006/D008 Cadmium, Lead, Arsenic | On-site piles, then off-site | Release to soils | Excavation in 1999. (200 yd3) |
| Cyclones | D006/D008 Cadmium, Lead, Arsenic | On-site piles, then off-site | Release to soils | See above |
| Cold Transfer Baghouse | D006/D008 Cadmium, Lead, Arsenic | On-site piles, then off-site | Release to soils | See above |
| Hot Transfer Baghouse | D006/D008 Cadmium, Lead, Arsenic | On-site piles, then off-site | Release to soils | See above |
| 40 Electric Arc Furnace Baghouse system | Non-hazardous dust | Re-use in Sinter Plant | No release | |
| 50 Electroslag Remelt Shop | | | | |
| Dust Drums | D007 Chromium | Off-site | No release | |
| ESR Baghouse System | D007 Chromium | Off-site | No release | |
| 60 Brass Foundry | | | | |
| Multi Clones | D006/D008 Chromium, Lead | Off-site | No release | |
| Dust Drums | D006/D008 Chromium, Lead | Off-site | No release | |
| Casting Emissions Baghouse | D006/D008 Chromium, Lead | Off-site | No release | |
| Cutting Unit Baghouse | D006/D008 Chromium, Lead | Off-site | No release | |
| Furnace Baghouse | D006/D008 Chromium, Lead | Off-site | No release | |
| Hoffman System Baghouse | D006/D008 Chromium, Lead | Off-site | No release | |
| Sand Mixer Baghouse | D006/D008 Chromium, Lead | Off-site | No release | |

| | | | | |
|---|---|---|---|---|
| Hot Blast Baghouse | D006/D008 Chromium, Lead | Off-site | No release | |
| 61 Iron Foundry | | | | |
| Shakeout Baghouses | Non-hazardous sand and iron fines | RWL | No release | |
| Chipper Baghouse | Non-hazardous sand and iron fines | RWL | No release | |
| Hydroblast Scrubber & Settling Tank | Non-hazardous sand and iron fines | RWL | No release | |
| Shotblast Baghouse | Non-hazardous sand and iron fines | RWL | No release | |
| 70 Central Tool TCE Drum Storage | 111-TCE | Off-site | No release | |
| 71 Lehigh Electric Repair Shop- TCE Drum Storage | 111-TCE | Off-site | No release | GW release - additional monitoring |
| 72 No. 2 Machine Shop- TCE Drum Storage | 111-TCE | Off-site | No release | |
| 80 Drop Forge | | | No release | |
| Oil Collection Sump | Non-hazardous oil and grease | Recycled for fuel at plant | No release | |
| Soil Removal Sump | Non-hazardous oil and grease | Recycled for fuel at plant | No release | |
| Shotblast Baghouse | Non-hazardous dust and fines | RWL | No release | |
| Etch Room Neutralization Pit | Muriatic acid | Neutralized, then NPDES outfall 008 | No release | |
| 81 Press Forge | | | | |
| Collection Pits | Non-hazardous oil and grease | Recycled for fuel at plant | No release | |
| Collection Box | Non-hazardous oil and grease | Recycled for fuel at plant | No release | |
| Clarifier | Non-hazardous oil and grease | Recycled for fuel at plant | No release | |
| Burning Emission Baghouse | Non-hazardous dust | RWL | No release | |
| 92 Lehigh Powerhouse Oil Separation Tank | Non-hazardous oil and water | Recycled for fuel at plant | No release | |

NA = not applicable, no release
Sampling results compared to non-residential MSCs for Direct Contact.

Residual Waste Landfill (RWL) was operated as a non-hazardous solid waste landfill for disposal of various plant wastes. This 500-acre landfill is located along the eastern border of the Former Bethlehem Steel Facility, not on the BethlehemWorks Parcel, nor the Parcel which is the subject of this Remedy Decision Proposal.

**Table 1B: Areas Requiring Remediation (Not Identified in RFA)**

| Area | Soil/Soil Gas Results | Remedial Action |
|---|---|---|
| Northwest Section- Soils near BF-8 | PAHs | Excavation in 1998. (125 yd3) |
| Sand Pile near Iron Foundry | Cadmium, lead | Excavation in 1998-remove foundry sand pile (123tons/83yd3) |
| Northwest Section- Tar Pitch Pad | PAHs (coal tar) | Excavation in 1999. (27 yd3) |
| Car Tipper Area | PAHs | Excavation in 2002. (2.4 yd3) |

Sampling results compared to non-residential MSCs for Direct Contact.

**Table 2A**: Groundwater SSS's compared to PADEP MSC and Parcel highest concentrations for constituents exceeding MSCs

| Constituent Sample | Highest | MSC | SSS |
|---|---|---|---|
| Cyanide | 2200 | 200 | 12,500 |
| 1,1-Dichloroethene | 280 | 7 | 535 |
| Indeno(1,2,3-cd)pyrene | 12 | 0.029 | 27 |
| Methlyene chloride | 9 | 5 | 44,560 |
| Pyrene | 100 | 13 | 1000 |
| Tetrachloroethene | 48 | 5 | 6238 |
| 1,1,1-Trichloroethane (TCA) | 7800 | 200 | 1,512,500 |
| Trichloroethene (TCE) | 120 | 5 | 26,736 |

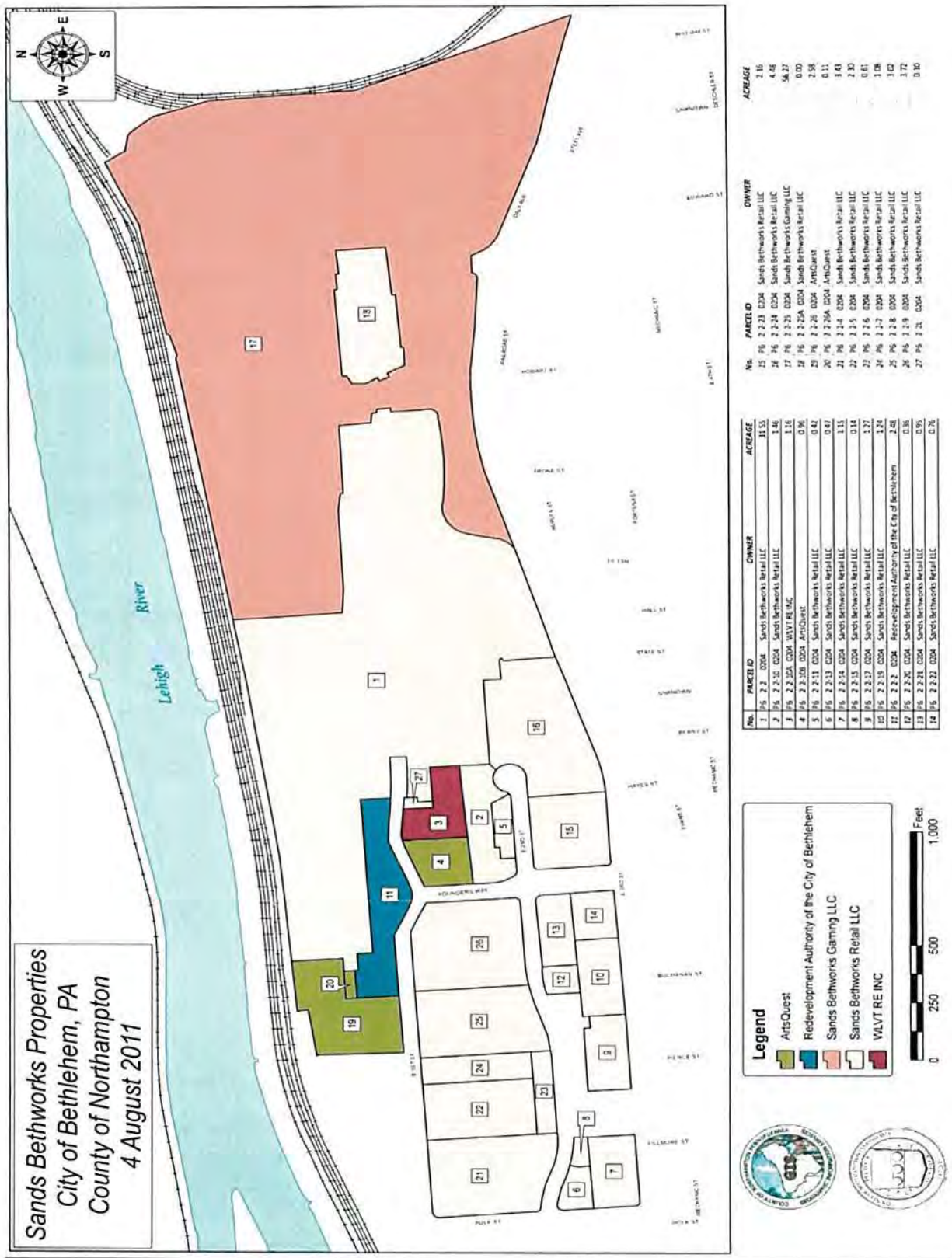
All concentrations in ug/L

**Table 2B:** Soil SSS's compared to PADEP MSC for constituents exceeding MSCs

| Constituent Sample | MSC | SSS |
|---|---|---|
| iron | 190,000 mg/kg | 850,000 mg/kg |

**Figure 1 - Location Map**

**Figure 2 - Bethlehem Works Parcel Layout**




| No. | PARCEL ID | OWNER | ACREAGE |
|---|---|---|---|
| 1 | P6 2 2 0204 | Sands Bethworks Retail LLC | 31.53 |
| 2 | P6 2 2-30 0204 | Sands Bethworks Retail LLC | 1.46 |
| 3 | P6 2 2-30A 0204 | WLVT RE INC | 1.16 |
| 4 | P6 2 2-30B 0204 | ArtsQuest | 0.96 |
| 5 | P6 2 2-31 0204 | Sands Bethworks Retail LLC | 0.42 |
| 6 | P6 2 2-33 0204 | Sands Bethworks Retail LLC | 0.47 |
| 7 | P6 2 2-34 0204 | Sands Bethworks Retail LLC | 1.15 |
| 8 | P6 2 2-35 0204 | Sands Bethworks Retail LLC | 0.14 |
| 9 | P6 2 2-37 0204 | Sands Bethworks Retail LLC | 1.27 |
| 10 | P6 2 2-38 0204 | Sands Bethworks Retail LLC | 1.24 |
| 11 | P6 2 2 2 0204 | Redevelopment Authority of the City of Bethlehem | 2.48 |
| 12 | P6 2 2-2C 0204 | Sands Bethworks Retail LLC | 0.36 |
| 13 | P6 2 2 21 0204 | Sands Bethworks Retail LLC | 0.95 |
| 14 | P6 2 2 22 0204 | Sands Bethworks Retail LLC | 0.76 |
| 15 | P6 2 2 23 0204 | Sands Bethworks Retail LLC | 2.16 |
| 16 | P6 2 2 24 0204 | Sands Bethworks Retail LLC | 4.48 |
| 17 | P6 2 2 25 0204 | Sands Bethworks Gaming LLC | 56.27 |
| 18 | P6 2 2 25A 0204 | Sands Bethworks Retail LLC | 0.00 |
| 19 | P6 2 2-26 0204 | ArtsQuest | 2.58 |
| 20 | P6 2 2 26A 0204 | ArtsQuest | 0.11 |
| 21 | P6 2 2 4 0204 | Sands Bethworks Retail LLC | 3.43 |
| 22 | P6 2 2 5 0204 | Sands Bethworks Retail LLC | 2.30 |
| 23 | P6 2 2 6 0204 | Sands Bethworks Retail LLC | 0.61 |
| 24 | P6 2 2-7 0204 | Sands Bethworks Retail LLC | 1.08 |
| 25 | P6 2 2 8 0204 | Sands Bethworks Retail LLC | 3.02 |
| 26 | P6 2 2 9 0204 | Sands Bethworks Retail LLC | 3.72 |
| 27 | P6 2 2L 0204 | Sands Bethworks Retail LLC | 0.30 |