Analysis of Brownfields Cleanup Alternatives (ABCA)

Applicants should supply the following key components for the draft ABCA attached to their application for threshold eligibility purposes. This document must be available, along with the application, for public comment prior to submitting the application to EPA. The information should be derived from the response to the criterion on the project description.

For example, the document should start with an Introduction & Background section in which the site location (address), previous uses of the site, past site assessment findings, and the project goal (reuse plan) are summarized. The applicant should briefly summarize the environmental investigations that have occurred at the site, including what the Phase I and Phase II assessment reports revealed in terms of contamination present, if applicable.

Second, the document should contain a discussion of Applicable Regulations and Cleanup Standards. For example, the applicant should provide a discussion of the Cleanup Oversight Responsibility (identify the entity, if any, that will oversee the cleanup, e.g., the state, Licensed Site Professional, other required certified professional), the cleanup standards for major contaminants (briefly summarize the standard for cleanup e.g., state standards for residential or industrial reuse) and the laws and regulations that are applicable to the cleanup (briefly summarize any federal, state, and local laws and regulations that apply to the cleanup).

Finally, the document should contain an Evaluation of Cleanup Alternatives. For example, the applicant should provide a discussion of the cleanup alternatives considered (minimum two different alternatives plus a 'No Action' option), the adverse impact from potential extreme weather events to that remedy should it be selected, the cost estimate of cleanup alternatives, a brief discussion of the effectiveness, implementability, and a preliminary cost estimate for each alternative, and the 'Recommended Cleanup Alternative.'

You should evaluate how the commonly accepted potential adverse impacts from changing weather events modeled for your locale might impact proposed cleanup remedies. For example, you should evaluate if a proposed remedy is still protective if the site is along a coastline, near a flood plain, in an area with a potential increase of drought, and what the potential impact of increased frequency and intensity of storms, etc. would be. 67 EPA acknowledges that there are limitations related to this analysis and expects you to rely on existing information instead of generating new data specifically to develop the ABCA. Please use the following websites as resources to identify risks and regional trends: scenarios.globalchange.gov/ and www.epa.gov/sites/production/files/2015-

<u>09/documents/epa_oblr_climate_adaptation_checklist.pdf</u>. The ability to evaluate potential changing conditions will improve as more tools become available.

Urban Redevelopment Authority of Pittsburgh's Analysis of Brownfields Cleanup Alternatives (ABCA)

Introduction & Background

Describe/address:

- the site location (address),
- previous uses of the site,
- past site assessment findings, and
- the project goal (reuse plan) are summarized.

Briefly summarize the environmental investigations that have occurred at the site, including what the Phase I and Phase II assessment reports revealed in terms of contamination present, if applicable.

The Swisshelm Park brownfield site (commonly known as Summerset at Frick Park) is a 72.3acre site bounded on the north and west by Frick Park, on the south by the right-of-way of the Baltimore and Ohio Railroad, which parallels the Monongahela River, and on the east by residential properties in the 14th ward. It consists of City of Pittsburgh parcels 129-J-150 and 129-F-001.Nine Mile Run is located just north and west of the property and flows from northeast to southwest before entering the Monongahela River, approximately 300 yards from the southernmost property boundary. The brownfield site is also in close proximity to the Waterfront (an open-air shopping mall located across the Monongahela River) and Route 376.

The site is mainly undeveloped with the exception of a hiking/biking trail, a small access road, a power line right-of-way owned by Duquesne Light, a 16-inch HDPE water line owned by the Pittsburgh Water and Sewer Authority (PWSA), and 24-inch sewer line which is also owned by PWSA.

The Urban Redevelopment Authority of Pittsburgh (URA) defines the target area as the Summerset at Frick project site itself, whereas the target communities that will benefit from these site improvements are Squirrel Hill, Swisshelm Park, and Hazelwood neighborhoods and Swissvale, Rankin, Wilkinsburg, Munhall, Homestead, and Edgewood boroughs. The URA also factors communities that extend beyond Summerset at Frick approximately five miles east of Pittsburgh's Golden Triangle, also known as downtown Pittsburgh.

Prior to 1922, the property was undeveloped until acquired by Duquesne Slag Products Company (and its successor Lafarge Corporation) for the disposal of slag wastes, which was discontinued in 1972. The property remained unchanged until the Urban Redevelopment Authority of Pittsburgh (URA) purchased the property in 1995.

The site is under a Consent Order and Agreement (COA) between the PADEP, the URA, and Summerset. The COA was originally executed on July 14, 2000. To date, the COA has been amended twice: once on August 24, 2000 and again on July 27, 2011.

A Phase I Environmental Site Assessment (ESA) was performed in May 2012 and identified Recognized Environmental Conditions in existence at the site and recommended execution of a Phase II ESA to identify the nature and extent of site contaminants. The purpose of the Phase II ESA is to provide sufficient data of defensible quality to assess whether impacts to the Site soil and groundwater exist above the applicable standards and the potential for vapor intrusion into current or future Site buildings if groundwater or soils are found to be impacted by VOCs. The Phase II ESA was conducted in December 2012.

During the Phase II ESA, a total of thirty-nine soil samples (nineteen surface and twenty subsurface, along with two duplicates) were collected and analyzed for metals and pH. Results of the laboratory analyses indicated that four parameters were detected above the soil PADEP Medium Specific Concentrations (MSCs) and are considered to be Chemicals Of Concern (COCs)in site soil: arsenic, iron, manganese, and thallium.

One round of groundwater samples was collected from the seven monitoring wells for Volatile Organic Compounds (VOCs), Semi-Volatile Organic Chemicals (SVOCs), and dissolved metals analyses; a second round of sampling was conducted for analysis only for the VOCs, SVOCs, and metals that were over laboratory detection limits in the first round. Laboratory analysis of groundwater samples indicated that concentrations of seven constituents exceeded MSCs: five metals (aluminum, antimony, arsenic, iron, and manganese), one VOC (2-hexanone), and one SVOC (bis-2 Ethylhexyl phthalate, BEHP).

On April 22, 2022, URA submitted a Notice of Intent to Remediate (NIR) to PADEP. The NIR indicated that constituents in soil and groundwater are attributed to former use of the site as a slag disposal area, and the planned remediation standard for soil and groundwater was the Site-Specific Standard. As the intended use of the Site is planned to be park and a solar panel farm. The Site will meet a residential protection standard, sufficient to allow public use of the site.

In May 2023 the URA submitted the Revised Combined Remedial Investigation and Cleanup Plan. A Conceptual Site Model was completed that identified the Chemicals of Concern (COCs), the nature and extent of contamination, and the potential effects of the contamination present on site to human and ecological receptors, including recreational users of the site, future construction workers, and receiving bodies of water (Nine Mile Run and the Monongahela River). This model eliminated groundwater and vapor intrusion as potential exposure pathways. Surface and subsurface soil impacts were retained to evaluate exposures to human health and the environment. Ecological risks from the site were evaluated in a Fate and Transport Modelling assessment which indicated site contaminants of concern pose no threat to these receptors. The Final Conceptual Site Model, which incorporates the effects of engineering and institutional controls implemented at the site, was utilized to identify remaining threats to human health and the environment. The model utilized engineering controls included placement of a soil cap over areas of surface soil impacts that will be used for recreational purposes. Institutional controls will include a groundwater use restriction recorded in a Uniform Environmental Covenant (UEC). Note that groundwater use is prohibited within the City of Pittsburgh. An Ecological Risk Assessment resulted in both DCNR and PFBC stated that "no impact is likely" and "no adverse impacts are expected to the species of special concern," respectively. In addition, site data demonstrate compliance with SWC from diffuse groundwater discharge to Nine Mile Run and the Monongahela River. Therefore, contact by ecological receptors with surface water is not considered a potential exposure pathway.

The final site layout (e.g., trail routes, etc.) has yet to be developed. A portion of the site may be leased as a solar farm for a period of time; however, the layout for this option will only be developed if pursued. The described controls were selected such that the site may meet residential standards for soils in areas used recreationally on a regular basis.

The site primarily consists of established walking and biking trails. There are also non-trail areas consisting of steep terrain, and areas of heavy vegetation (i.e., areas that are not conducive to recreational use). Rather than stripping the vegetation from all the recreational portions of the site, areas that see regular use will be capped, including:

- Parking areas,
- Picnic areas, and
- Established trails.

Upon completion of a site layout, an addendum will be submitted to the PADEP defining those areas that will be capped.

The cap may consist of one of the following:

- Concrete,
- Asphalt,
- Six (6) inches of gravel/stone over top a geotextile layer,
- Twelve (12) inches of a combination of clean soil and vegetated topsoil overtop a
- witness/marker barrier consisting of safety fencing, silt fencing, or similar, to be placed
- on the ground surface prior to placement of the 12 inches of clean soil material in areas
- subject to potential erosion/outwash and not otherwise covered by concrete, pavement, or
- other impervious surfaces,
- Twelve (12) inches of a combination of clean soil and vegetated topsoil overtop the
- existing site material (i.e., slag) that will act as a witness/marker barrier in areas with less
- potential for erosion/outwash based on slope and drainage.
- Twenty-four (24) inches of a combination of clean soil and vegetated topsoil, or
- Twenty-four (24) inches including a soil/slag mixture (four parts slag, four parts soil, and
- one part organic matter) and six inches of topsoil.

This Revised Combined Remedial Investigation and Cleanup Plan was accepted and approved by PADEP on June 22, 2023.

The Swisshelm Park brownfield site represents an opportunity to create a sustainable re-use out of its complicated past. The Summerset at Frick Phase 3 remediation project (the subject of this EPA application) is the third and final phase of remediation and end-use development of the 238-acre site. The remediation of approximately 22 acres will enable redevelopment of the remaining 70-acre site into solar fields and an extension of Frick Park.

The property on the western slope and side of the Nine Mile Run Watershed was remediated and redeveloped by the URA and its chosen developer, Summerset Land Development Associates, L.P. The construction of approximately 500 residential units was undertaken in two phases, from roughly 2000 through 2015.

Applicable Regulations and Cleanup Standards

Provide a discussion of:

- the Cleanup Oversight Responsibility (identify the entity, if any, that will oversee the cleanup, e.g., the state, Licensed Site Professional, other required certified professional),
- the cleanup standards for major contaminants (briefly summarize the standard for cleanup e.g., state standards for residential or industrial reuse) and
- the laws and regulations that are applicable to the cleanup (briefly summarize any federal, state, and local laws and regulations that apply to the cleanup).

The URA will be responsible for the remediation of the Phase 3 site, pursuant to the Pennsylvania Department of Environmental Protection's Land Recycling and Environmental Remediation Standards Act, Act of May 19, 1995, P.L. 4, 35 P.S. Sections 6026.101-6026.909 ("Land Recycling Act" or "Act 2") to obtain Release of Environmental Liability under the Pennsylvania Department of Environmental Resources' Act 2 Program. The remediation plan construction drawings and specifications will be developed by Registered Professional Engineers using accepted design standards. The construction of the site cap will be completed by licensed construction companies with experience in remedial construction, then the construction work will be inspected by licensed professionals familiar with the methods implemented. Samples of materials will be routinely tested to ensure the construction follows the design standards. The site construction will be certified as complete by a Registered Professional Engineer. After completion of construction, periodic inspections will be conducted at regular intervals to ensure the engineering controls are maintained.

Evaluation of Cleanup Alternatives

Provide a discussion of:

- the cleanup alternatives considered (minimum two different alternatives plus a 'No Action' option),
- the adverse impact from potential extreme weather events to that remedy should it be selected,
- the cost estimate of cleanup alternatives,
- a brief discussion of the effectiveness, implementability, and a preliminary cost estimate for each alternative, and
- the 'Recommended Cleanup Alternative.'

As part of exploring potential development plans for the Swisshelm Park remediation with Civil & Environmental Consultants, Inc, the URA has identified the following brownfield cleanup alternatives below.

Additionally, each alternative has to consider the potential effects of extreme weather events due to the location of the Swisshelm Park brownfield. The site has sandy and clay loam according to the EPA National Stormwater Calculator and is located near a floodplain. The specific project site has a flat slope, but the surrounding portion of the site has steep slopes.

The Pittsburgh region is also susceptible to increased/decreased temperatures due to high winds and heavy snow according to the NOAA National Centers for Environmental Information's 2022

State Climate Summary for Pennsylvania. The EPA's Climate Indicator Map shows that in the past 50 years, heat waves have occurred with greater frequencies and duration in the Pittsburgh area at a statistically significant level. Further, the change in seasonal winter temperature has increased by 3.18 degrees from 1896 to 2021. Heavy rains can cause particularly damaging floods when they combine with spring snowmelt.

The engineering controls proposed are designed to resist erosion and reduction in depth caused by extreme weather events. Vegetation will be established that will act to hold cover soils in place. Concrete, asphalt and gravel are more resistant to erosion than soil. These materials are readily available and can be implemented using common construction techniques. Periodic inspections of the remediated site post-construction will identify areas that have eroded, and additional materials will be installed as required to maintain the integrity of the cap.

Option 1: No Action, least expensive but not best impact for environment, community economics.

Option 1 would render the site completely unchanged with no effort made to remediate the contamination including the Arsenic, Iron, Manganese, Thallium, and Vanadium in the soils. In extreme weather events, such as severe rain, levels of Antimony, Arsenic, Manganese, and Vanadium, may increase in the groundwater, and more contaminated water would flow into the Nine Mile Run.

There would be no construction cost associated with this approach, but it would not manage any of the toxicity of the site and therefore the site would remain the detriment to public and environmental health it is today. Additionally, development on site cannot occur without remediation, and therefore the brownfield would continue to be underutilized, unsupportive of the local tax base, and detrimental to neighboring property values.

Option 2: Capping and prevention of the use of groundwater

Option 2 would remediate the site contamination including the Arsenic, Iron, Manganese, Thallium, and Vanadium in the soils, with surface soil caps identified above. Groundwater use would be prohibited by a Uniform Environmental Covenant inserted into the Deed.

(Groundwater use for drinking is prohibited in the City of Pittsburgh). Depending on the type of recreational use identified, the cap may consist of a variety of materials including soil, gravel, concrete or asphalt. Once the final plan for the site is further developed, the particular cap type will be identified.

High costs (currently estimated at \$7.5 million) would be associated with this approach, but it would manage toxicity of the site to a level deemed appropriate by the DEP and therefore improve public and environmental health outcomes. Additionally, development on site could occur after the remediation, and therefore the brownfield could be brought back to productive use, supportive of the local tax base, and improve neighboring property values.

Option 3: remove all the soil, bring in clean fill, best environmental site impact:

Option 3 would be the most expensive option, but would remediate the site contamination by removing it. Slag material would be excavated, hauled and disposed at an approved disposal site. Clean fill would be borrowed from off-site sources, hauled to the site, and backfilled to create a new topography. Existing vegetation would be cleared, and new vegetation would be established. Based on the cost of option 2, the cost of this option would be at least twice as much (around \$15-25 million). Development on site could occur after the remediation, and therefore the brownfield could be brought back to productive use, supportive of the local tax base, and

improve neighboring property values. Fossil fuel usage to implement this option would be the highest of any remediation, and result in higher tailpipe and CO2 emissions. Option 2 appears to be the most robust and practical option. It will remain protective if extreme weather events occur. The higher elevation of this site compared with local water courses will eliminate the threats from floods. Extreme weather events will result in inspection of the site to identify wash outs and locations where erosion has occurred. The cover materials will be reestablished as required.