

**North Berkeley Rail Trail  
A portion of the Southern Trail Head at  
North Washington & Williams Streets  
Known as “Parcel 3”  
Berkeley Springs, WV**

**Draft Analysis of Brownfields Cleanup Alternatives  
Prepared for the Town of Bath**

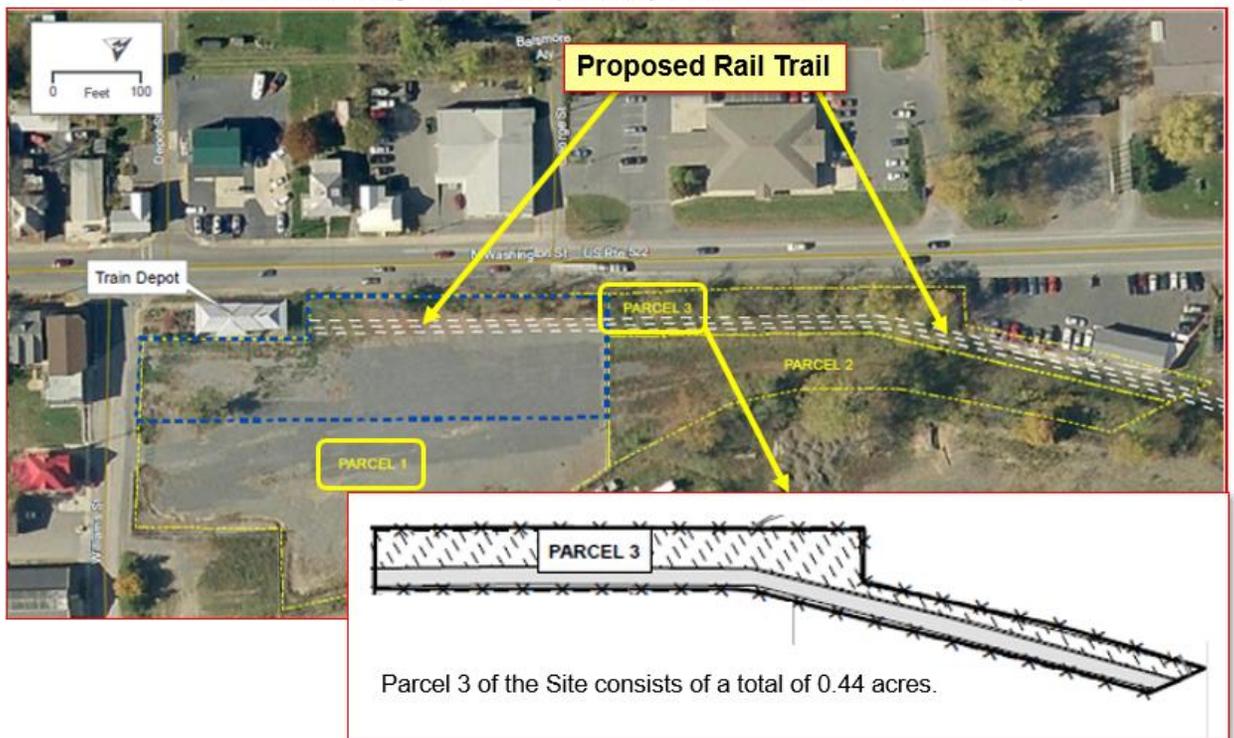
**I. Introduction & Background**

**a. Site Location (*address*)**

The site is located at the northeast corner of Williams and North Washington Streets in Bath (Berkeley Springs Incorporated), West Virginia (herein referred to as “the Site”). Figure 1 shows the location of Parcel 3 and its connection to Parcel 1. A portion of Parcel 1 within the blue-dashed-line is the Trail Head and Parking Area for the North Berkeley Rail Trail (NBRT). This ABCA addresses Parcel 3 only in the analysis of brownfield cleanup alternatives.

North Berkeley Rail Trail (NBRT) South Trail Head Site Map

Figure 1



All of Parcel 1 and all of Parcel 3 were entered into the West Virginia Voluntary Remediation Program WV-VRP on November 22, 2017 (VRP number: 16008). Parcel 3 only is also covered by a US-EPA Cleanup Grant (August 2017) and Cooperative

Agreement # BF96355001. Town of Bath portion of Parcel 1 is covered by the same Remediation Action Work Plan as the Rail Trail & Parking Area.

Soil sampling on Parcel 3 and soil and water sampling on Parcel 1 are complete. The resulting Risk Assessment and a Remedial Action Work Plan was submitted in January 2019 and the West Virginia Department of Environmental Protection (WV-DEP) approved this plan on January 22, 2019.

**b. Previous Site Use(s) and any previous cleanup/remediation**

The Site was the former location of a railroad bed and wood yard. The B&O railroad track on the site was developed in 1887 with rail lines and a depot building. The rail lines connected Berkeley Springs to Hancock, Maryland and were used to transport passengers, apples, wood pulp, and lumber. Passenger service was offered until 1932, while other lines remained active until the early 1970's.

Parcel 3 of the Site consists of a total of 0.44 acres. Parcel 1 consists of 2.142-acres. The total Site covered by the VRP is 2.582 acres.

Parcel 3 was sub parceled from a larger parcel owned by CSX Transportation, Inc. The remainder of the larger parcel is now called Parcel 2. (See Figure 1) Former rail lines through the area are the only known development on Parcel 3. No remediation has occurred in Parcel 3. Ownership of Parcel 3 was transferred to the Town of Bath in October 2015 trail development.

Parcel 1 of the Site was leased to WV Pulp and Paper, which was later named Westvaco Corporation, from 1974 – 2002 for the storing and loading of wood pulp. During that time, fill material was distributed throughout the site that buried the rail lines with approximately 1' of fill material. In 2006, the site owner at the time, CSX Transportation, Inc. entered Parcel 1 into the WV-DEP Voluntary Remediation Program (VRP) and is tracked under State Tracking Number 07697. The program guided site remediation for the following years and the site was awarded a Certificate of Completion for non-residential use in the fall of 2012. Ownership of Parcel 1 was transferred to the Town of Bath in July 2013. The historic depot building remains standing adjacent to but is not included in Parcel 1. It was registered historic in 2001 and is currently being rehabilitated in accordance with Department of the Interior and WV State Historic Preservation guidelines.

In 2007 to 2008, approximately 1,374 tons of soil was removed from the Parcel 1 area east of the former trail depot building and disposed offsite. The depth of the excavation extended to 10 feet below the existing ground surface. No groundwater was encountered at the depth of excavation. Confirmation samples reported arsenic levels in soil samples collected at the excavation limits ranged from 3.9 to 20 mg/kg, with a 95 percent Upper Confidence Limit of 12.94 mg/kg, which is less than the background level of 13 mg/kg. The excavation area was backfilled with approximately 1,490 tons of crush and run. An additional 61 tons of 57 stone was placed on top of the crush and run and was compacted. Approximately 12 inches of topsoil was added and seeded for site restoration.

From January and June 2010, approximately 300 cubic yards of soil was excavated from the western area of Parcel 1 and disposed offsite. The excavation was terminated in natural clay soils, approximately 2.5 to 4.5 feet below the existing ground surface. Confirmation samples were conducted to determine that soil with arsenic concentrations above Industrial De Minimis RBC had been removed. The excavation was backfilled with 999.17 tons of 2RC stone. Approximately 107.74 tons of #57 stone was applied in the eastern portion of Parcel 1 where soil stockpiles had been stored during remediation activities.

c. **Site Assessment Findings** (*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 following reports include any investigations and remediation activities conducted at the Site and are summarized below.

- AMEC Site Assessment Report, December 2007
- AMEC Interim Remedial Action Report, March 2008
- AMEC Site Assessment Report Addendum 1, February 2009
- AMEC Parcel 1 Final Report, May 2012
- Boggs Phase I Environmental Site Assessment Lot 3, August 2015
- HDR Site Characterization Report, July 2018

Prior to taking ownership of Parcel 3, the Town of Bath hired Boggs's Environmental Consultants to prepare an updated Phase I Environmental Site Assessment (ESA) for the Site, dated August 2015. A Site Assessment Report conducted on Parcels 1 and 3 by AMEC Earth and Environmental, Inc. in 2007 for CSX TRANSPORTATION, INC informed the Phase I ESA document.

The 2007 assessment identified elevated levels of arsenic and PAHs in the top 6" of soil throughout Parcel 3, and elevated xylene and ethylbenzene and benzene. Furthermore, the August 2015 Phase I Report mentions that the concentrations of arsenic and PAHs on the site exceed WVDEP allowances for industrial and recreational use, thus, creating a recognized environmental condition for the planned recreation use of the property as a bike trail. The report recommends establishing plans to cap and fill to prevent human contact with contaminants on the site.

Site assessment conducted at Parcel 3 identified site soils impacted by arsenic and PAHs. Arsenic and PAH concentrations exceeded Residential De Minimis soil standards in the southern portion of the property and exceeded Industrial De Minimis soil in the northern portion of the property.

**Recent Assessments Conducted for and Included in the January 2019 Approved RA/RAWP**

On Parcel 3; Phase II ESA sampling was conducted by HDR on February 2, 2017. The purpose of these samples was to identify environmental impacts for the proposed trail

pathway. Four hand auger samples (SS-01 to SS-04) were collected from the top 6 inches at each location and analyzed for the following constituents:

- Moisture,
- Polychlorinated biphenyls (PCBs),
- SVOCs,
- TAL Metals, and
- Total Cyanide

Laboratory results reported arsenic concentrations above Residential De Minimis RBC for one sample and above Industrial RBC for the remaining three samples.

Concentrations ranged from 30.4 mg/kg to 364 mg/kg. Vanadium concentrations were above Residential De Minimis RBC for samples, with concentrations ranging from 18.7 to 25.6 mg/kg. Laboratory analysis indicated the following PAHs above Residential De Minimis RBCs:

- benzo(a)anthracene – concentrations ranged between 370 and 2,400 ug/kg
- benzo(a)pyrene – concentrations ranged between 550 and 2,000 ug/kg
- benzo(b)fluoranthene – concentrations ranged between 1,100 and 4,800 ug/kg
- benzo(k)fluoranthene – concentrations ranged between 440 and 2,000 ug/kg
- dibenz(a,h)anthracene – concentrations ranged between 150 and 560 ug/kg
- Indeno(1,2,3-cd)pyrene – concentrations ranged between 390 and 1,800 ug/kg

#### **Soil to Groundwater Migration**

Metals including antimony, arsenic, barium, cadmium, cobalt, copper, iron, lead, manganese, mercury, and vanadium were detected above the Migration to Water standards. PAHs, including benzaldehyde, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, dibenzofuran, indeno(1,2,3-cd)pyrene, 2-methylnaphthalene, 1,1-biphenyl, and naphthalene were detected above the Migration to Water standards.

#### **Analytical Results for Parcel 3**

During the February 2, 2017 site investigation the following concentrations were reported for Parcel 3:

- Arsenic was detected above Industrial De Minimis RBC in three of four surface samples (0 to 6 inches bgs).
- Vanadium concentrations in the shallow surface soils were detected above Residential De Minimis RBC.
- Benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene were detected above Residential De Minimis RBC.

#### **Soil to Groundwater Migration**

Metals including antimony, arsenic, barium, cadmium, cobalt, copper, iron, lead, manganese, mercury, molybdenum, selenium, vanadium, and zinc were detected above the Migration to Water standards.

- PCB-1254 was detected above the Migration to Water standards.
- PAHs, including acenaphthene, acenaphthylene, benzaldehyde, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene,

benzo(k)fluoranthene, 1,1-biphenyl, chrysene, dibenzo(a,h)anthracene, dibenzofuran, fluorene, indeno(1,2,3-cd)pyrene, 2-methylnaphthalene, naphthalene, and pyrene were detected above the Migration to Water standards.

### **Groundwater**

Metals including cobalt and manganese were detected above Groundwater De Minimis RBC. PAHs, including benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, and indeno(1,2,3-cd)pyrene, were detected above Groundwater De Minimis RBC.

d. **Project Goal (*site reuse plan*)**

The planned reuse for the Site is a rail-trail. The Town and Morgan County are in the process of redeveloping the site into a trail head and parking area that will provide access from the northern end of the Town to the North Berkeley Rail-Trail. The trail will eventually extend 5 miles to the Potomac River. Site clean-up will allow for development of the initial portion of this trail.

Although Parcel 1 previously went through the VRP, and has been remediated to industrial standards, additional remediation is required for the site to be suitable for the proposed recreational use. The Town is coordinating with WV-DEP, and took the necessary steps to enter the Site, including Parcels 1 and 3, into the VRP to meet necessary standards. Once remediated to recreational-use standards, the Site will be redeveloped into a trailhead with a parking area and a 10' wide paved trail through Parcels 1 and 3. The multi-use path will be used by the community for recreation and commuting. The restored depot building will offer trail amenities and educational opportunities.

## **II. Applicable Regulations and Cleanup Standards**

a. **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 is being overseen by the WV-DEP. The Town of Bath's intent is to perform the Site cleanup under the VRP under the WV Legislature's Voluntary Remediation and Redevelopment Act (VRRRA). The VRP requires that the site investigation and cleanup be performed under the oversight of a West Virginia Licensed Remediation Specialist. Reports documenting site investigation and cleanup activities must also be approved by the WV-DEP. The January 2019 Risk Assessment and Remedial Action Work Plan (RA/RAWP) has been approved by the WV-DEP. The DeMinimis cleanup standards under the VRP are listed in Table 60-3B of the West Virginia Voluntary Remediation and Redevelopment Rule (60CSR3). Soil cleanup standards are provided for protection of groundwater (leaching) as well as direct contact exposure under residential and non-residential site use scenarios. The VRRP also allows for the development of site-specific risk-based standards based on anticipated future use.

b. **Cleanup Standards for major contaminants (*briefly summarize the standard for cleanup e.g., state standards for residential or industrial reuse*)**

The Town currently anticipates that the state standards for recreational use will be used as the cleanup standards. However, it is possible that risk-based cleanup standards will be generated for compounds of concern, in accordance with state regulations. Site ESA's have identified arsenic concentrations from ~10 to over 350 mg/kg in sampled locations at depths up to 18". The site will have to have an arsenic concentration less than .39 mg/kg in order to meet state residential standards. The approved RA/RAWP identifies the remedial actions required at the Site (both Parcels 1 and 3) in terms of Engineering Controls (EC) and Institutional Controls (IC). These Institutional Controls will be a revision to the existing IC once remediation is complete.

c. **Laws & Regulations Applicable to the Cleanup** (*briefly summarize any federal, state, and local laws and regulations that apply to the cleanup*)

Laws and regulations that are applicable to this cleanup include the Federal Small Business Liability Relief and Brownfields Revitalization Act, the Federal Davis-Bacon Act, the VRRRA, state environmental law, and town by-laws. Federal, state, and local laws regarding procurement of contractors to conduct the cleanup will be followed. In addition, all appropriate permits (*e.g.*, notify before you dig, soil transport/disposal manifests) will be obtained prior to the work commencing.

### III. Evaluation of Cleanup Alternatives

a. **Cleanup Alternatives Considered** (*minimum two different alternatives plus No Action*)

To address contamination at the Site, three different alternatives were considered. For the analysis of cleanup alternative effectiveness, implementability, and cost, the following alternatives and associated actions are considered. When implemented, actions associated with the selected alternative will be informed by the VRP, and may differ from these.

#### **Alternative #1: No Action**

#### **Alternative #2: Capping –**

- **Proposed Trail Areas:** The asphalt trail will be constructed on an aggregate base over the demarcation geotextile. The total thickness of the asphalt and aggregate base will be a minimum of six inches.
- **Landscaped Areas:** Areas designated for landscaping with grass, shrubs and/or trees. The cap in these areas will be comprised of the placement of 18 inches of clean fill on the demarcation geotextile, with a landscape stone cover, or topsoil and seeded grass prior to final landscaping. The designated areas include the slope between the parcels and Route 522 (North Washington Street).
- **Aggregate Cap Placement:** Demarcation geotextile and aggregate will be constructed within areas outside of the asphalt trail and landscaped areas where areas can be accessed. Aggregate will be placed on the demarcation geotextile at a minimum thickness of 12 inches.
- **Physical Barrier:** A fence bordering the east side of the trail on Parcel 3 will prevent human exposure to the eastern portion of the Parcel outside of the trail.

The existing fence bordering Route 522 (North Washington Street) and Parcels 1 and 3 prevents access to the trail from the roadway.

**Alternative #3: Excavation with Offsite Disposal and Replacement with Clean Fill**

- Removal and replacement of the top 2' of soil, planting a hydroseed mix, and management of soil erosion. This would result in the same site grading as currently exists on the site.

b. **Cost Estimate of Cleanup Alternatives (*brief discussion of the effectiveness, implementability and a preliminary cost estimate for each alternative*)**

Effectiveness

**Alternative #1:** No Action is not effective in controlling or preventing the exposure of receptors to contamination at the Site. The NBRT could not be built on this Site.

**Alternative #2:** Capping is an effective way to prevent recreational receptors from coming into direct contact with contaminated soils along the corridor. The cap would be maintained as required in the approved Soil Management Plan that is included in the approved RA/RAWP. Furthermore, proposed trail paving will provide even more of a barrier between site users and soil contaminants. Raising the surface area of the trail area will also allow for the positive drainage of stormwater from the site.

**Alternative #3:** Excavation with Offsite Disposal and Replacement with Clean Fill is an effective way to eliminate risk at the Site, since contamination will be removed and the exposure pathways will no longer exist. Proposed trail development will provide an additional barrier between site users and buried contaminants. However, site grading to allow for the positive drainage of stormwater will need to occur.

Implementability

**Alternative #1:** No Action is easy to implement since no actions will be conducted.

**Alternative #2:** Capping is somewhat resource intensive, yet relatively easy to implement. The activity will cause some short-term community disturbance (*e.g.*, trucks transporting fill materials). Once the cap is in place, a restriction on digging and excavating on the site will eliminate the need for ongoing monitoring and maintenance of the cap. Capping would require a layer of geotextile fabric, covered by a minimum of 6", 12", or 18" of clean fill as specified in the RA/RAWP. The site would then need to be graded and hydroseeded in conjunction with an erosion control plan.

**Alternative #3:** Excavation with Offsite Disposal and Replacement with Clean Fill is the most resource intensive alternative, but also feasible to implement. Coordination (*e.g.*, dust suppression and monitoring) during cleanup activities and

short-term disturbance to the community are anticipated. Ongoing monitoring and maintenance will not be required following excavation and offsite disposal.

Cost

**Alternative #1:** No Action would have no associated costs for remediation but will cost the Town and County in lost economic development and tourism dollars or increased cost to move the planned rail trail to a different location.

**Alternative #2:** A rough cost estimate would be:

Equipment Mobilization/Operations =	\$ 5,000
Licensed Remediation Specialist Project Oversight=	\$ 10,000
Geotextile Layer (for 0.44 acres) =	\$ 2,130
Clean Fill (1.5' depth over 0.21 acres) =	\$ 15,013
Asphalt Cap (6" asphalt over 6" aggregate) =	\$ 28,500
Hydro seeding for additional capping =	\$ 5,000
Soil and Water Erosion Plan Implementation =	\$ 10,000
Post Clean-up Confirmatory Sampling and Analysis =	\$ 5,000
<b>Total =</b>	<b>\$ 80,643</b>

**Alternative #3:** A rough cost estimate would be:

Erosion Plan Implementation =	\$ 5,000
VRP Implementation Costs =	\$ 10,000
Equipment Mobilization/Operations =	\$ 5,000
Licensed Remediation Specialist Project Oversight=	\$ 10,000
Geotextile Layer (for 0.44 acres) =	\$ 2,130
Soil Removal (2' depth over 0.44 acres) =	\$ 70,950
Clean Fill (2' depth over 0.44 acres) =	\$ 42,571
Asphalt Cap (6" asphalt over 6" aggregate) =	\$ 28,500
Hydro seeding for additional capping =	\$ 5,000
Soil and Water Erosion Plan Implementation =	\$ 10,000
Post Clean-up Confirmatory Sampling and Analysis =	\$ 5,000
<b>Total =</b>	<b>\$194,151</b>

**c. Recommended Cleanup Alternative**

The recommended cleanup alternative is Alternative #2: Capping. Alternative #1: No Action cannot be recommended since it does not address site risks. Alternative #3: Excavation with Off-Site Disposal would be an effective approach to site remediation. While this alternative would clean the site up to recreational standards, it would require more cost and effort than is necessary. Alternative #2: Capping will meet remediation requirements for recreational site use with significantly less cost and effort than Alternative #3. For these reasons, Alternative #2: Capping is the best brownfield cleanup alternative for the site.

**References:**

(These documents are the sampling, technical, analysis and approval products from the West Virginia Voluntary Remediation Program (VRP) that are the basis for the WV Department of Environmental Protection review and approval of the remediation proposed for Parcels 1 and 3 of the NBRT Southern Trail Head. These documents include discussion and results for both Parcels 1 and 3 and were used as the basis for this ABCA.)

- a) Brownfields Cooperative Agreement BF96355001, starting 10-01-2017, ending 09-30-2020
- b) NBRT Revised Final Phase II Sampling Plan (Includes Parcels 1 and 3), revision dated Feb 28, 2018
- c) NBRT Sampling Plan Approval by WVDEP, e-mail dated Feb 21, 2018
- d) NBRT Final Site Characterization Report (Includes Parcels 1 and 3), dated Jun 29, 2018
- e) NBRT Approved Risk Assessment and Remedial Action Work Plan (RA/RAWP) dated Jan 22, 2019
- f) NBRT WVDEP Approval Letter for the RA/RAWP, dated Jan 22, 2019
- g) NBRT HDR Memo: Summary of Requirements for Remediation, dated Mar 1, 2019
- h) Community Relations Plan (CRP) for the Sampling and Remediation of Brownfields Associated with the Southern Trail Head of the North Berkeley Rail Trail (NBRT), dated Aug 2018
- i) EPA E-Mail of Oct 24, 2018, confirming approval of the Community Relations Plan