



Dedicated to Mine Land Reclamation, Conservation, & Economic Development in the Wyoming Valley

**DRAFT**

## **Analysis of Brownfields Cleanup Alternatives**

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Espy Run Stream Restoration, Segment C  
City of Nanticoke, Luzerne County, PA

Prepared by  
Earth Conservancy

### **INTRODUCTION AND BACKGROUND**

This draft Analysis of Brownfields Cleanup Alternatives (ABCA) has been prepared for restoration of a portion of Espy Run at the Bliss Bank site in the City of Nanticoke, Luzerne County, Pennsylvania. The purpose of the ABCA is to provide information about environmental and contamination issues at the site and to evaluate remedial alternatives. This evaluation will be revised, as necessary, and incorporated into the final site cleanup plan for review by the community, project partners, regulatory oversight agencies, and the United States Environmental Protection Agency (USEPA).

Because of the large acreage of Bliss Bank and length of associated streamways, reclamation and restoration will be completed via multiple smaller projects. The funding will be used for making portions of the site available for mixed-use development. The project will also reduce water escaping underground into the mines, as well as mitigate mine drainage runoff that currently leaches into existing stormwater systems, local streams and the watershed. Once the Bliss Bank reclamation and Espy Run restoration are completed, the area will provide new development and recreation opportunities in the south Wyoming Valley of Luzerne County.

### **Organization and History**

In 1992, Earth Conservancy (EC) was formed as a non-profit, 501(c)(3) corporation through a partnership of government agencies, local municipalities, academic institutions, businesses, and nonprofits, with a mission to reclaim abandoned coal-mining lands in Luzerne County, Pennsylvania. After raising \$16 million in grants, loans, and private contributions, EC purchased the estate of the Blue Coal Corporation, which had declared bankruptcy in the 1970s. This included 16,496 acres of land, many of which were mine-scarred due to pre-regulatory mining activity.

The land purchase was completed in 1994. EC then directed itself to returning the lands to productive use. In order to proceed, EC undertook two important activities. First, with technical support from Wilkes University, it created a Geographic Information System database with fifteen layers of data on the environmental and geographic characteristics of the lower Wyoming Valley. Second, with professional planners and a 38-member steering committee, it developed a comprehensive, long-term *Land Use Plan (LUP)* to determine the smartest, most equitable, and most sustainable ways to reuse the received properties.

The *LUP* identified thousands of acres impaired by past mining activities, all of which required physical remediation before reuse could occur. As of today, EC has reclaimed 2,000 acres of that damaged land, which is now available for or already in constructive use across industrial, commercial, residential, and recreational sectors. EC has also worked to mitigate acid mine drainage (AMD) in area watersheds. Over \$47.3 million has been invested to date. All projects trace back to EC's overarching mission, one that seeks a more livable community now, and clears the way for positive, progressive change for future generations.

## Site Description and Proposed Scope of Work

Espy Run is a 2.4-mile stream within the Nanticoke Creek watershed, an 8mi<sup>2</sup> sub-watershed of the Susquehanna River Drainage Basin that extends into four municipalities: Hanover Township, Newport Township, Warrior Run Borough, and the City of Nanticoke. All of these towns show impacts from past anthracite mining operations, including mine spoils, refuse piles, and AMD-contaminated water.

Historically, Espy Run was a natural waterway, flowing from the Hanover Reservoir to the Nanticoke Creek, and then on to the Susquehanna River. Water quality at Espy Run's headwaters is good. However, past mining activity has damaged the watercourse. After approximately 3,200 feet, the stream encounters a 200-acre tract of legacy mineland. Known as Bliss Bank, the site was deep and strip-mined. Massive piles of coal waste were piled on the site as well. Here Espy Run disappears underground. The stream's natural channel is destroyed for the entirety of the mined tract. When water does regroup, flow is due solely to stormwater runoff. Sedimentation exacerbates the problem. AMD has also been detected, which enters the watershed. Where stream banks have been eliminated, flooding occurs.

This Bliss Bank property is owned by EC. Because of its size and location, Bliss Bank was identified as a priority in EC's plans to reuse mine-scarred lands in the south Wyoming Valley for environmental and economic revitalization. To assist in the site's reclamation, EC has been awarded six Brownfields Cleanup grants by the USEPA and two Growing Greener grants by the Pennsylvania Department of Environmental Protection (PADEP). Two additional Brownfields Cleanup grants have been awarded to restore 2,000 feet of Espy Run (Segments A and B). The application represented by this draft ABCA will seek funding to repair another 400 feet, connecting Segment B to stream work at the Bliss Bank reclamation site.

Reclaiming the mine spoils of Bliss Bank will help to address a source of nonpoint source pollution in the Nanticoke Creek watershed. As part of that work, restoring Espy Run within the

Bliss Bank site will make a significant contribution to that end as well. Re-establishment of a proper channel will impede erosion, sedimentation, and loss of water into the mines, thereby mitigating one source of AMD production.

## Cleanup Objectives

The objectives of the Espy Run Stream Restoration project are

1. Reduction of nonpoint source pollution (sediment, AMD) in the watershed;
2. Mitigation of flood hazards in area neighborhoods;
3. Restoration of natural channel conditions for the creek and its watershed;
4. Improvement of wildlife habitat;
5. Recovery of the site for community benefit (e.g., safety, aesthetic, economic).

These goals are consistent with past projects within the Nanticoke Creek watershed to reduce AMD and with recommendations and efforts by the U.S. Army Corps of Engineers (USACE) to restore hydraulic capacity to other sections of the Nanticoke Creek.

## SUMMARY OF PREVIOUS INVESTIGATIONS

In 2006, an Environmental Site Assessment (ESA) was completed by the USACE for the Nanticoke Creek watershed, which includes Espy Run, as part of its work with the PADEP, the PADEP Bureau of Abandoned Mine Reclamation, and EC in developing the *Detailed Project Report and Integrated Environmental Assessment of the Nanticoke Creek Watershed*, under Section 206 – Ecosystem Restoration. The ESA indicated that much of the Espy Run site is covered by Mine Dump soils. The limits of disturbance for this project are almost wholly within the Mine Dump soils, which on the Espy Run are generally steep, roughly graded, piles of mine waste material. Based on the study, no recognized environmental conditions were identified that would limit potential future uses.

In 2011, a Phase I ESA was completed for the entire Bliss Bank site, which includes part of Espy Run, as part of previous applications to the USEPA by EC for Brownfields Cleanup funding. This ESA indicated that the majority of the area is covered by Strip Mine (Sm) soils. According to the *Soil Survey of Luzerne County* (1981) by the U.S. Department of Agriculture, Sm soils are a “nearly level to very steep mixture of the bedrock and unconsolidated soil and rock material through surface mining to expose anthracite coal. Runoff is slow to very rapid, and the hazard of erosion is moderate to severe. Most areas are extremely acid.”<sup>1</sup> Areas of mine dump, mine wash, urban land, and cut and fill land are also included in strip mine areas. The report recommended no Phase II ESA need be performed.

A Phase I ESA is currently underway for the entire length of the former/proposed Espy Run stream channel. As with the 2011 ESA, it is expected that the majority of the area will be

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<sup>1</sup> Bush, R.D. (1981). *Soil Survey of Luzerne County, Pennsylvania*. Washington, D.C.: U.S. Department of Agriculture Soil Conservation Service in Cooperation with The Pennsylvania State University College of Agriculture and the Pennsylvania Department of Environmental Resources State Conservation Commission.

designated as covered by Strip Mine (Sm) soils and that no Phase II ESA need be performed.

## SITE ASSESSMENT FINDINGS

Based on the 2011 Phase I ESA, no recognized environmental conditions are present on the Bliss Bank or Espy Run sites. This draft ABCA, consequently, does not address “recognized environmental conditions.” Instead, as a brownfield, safety, social and economic, and environmental health concerns are the priority.

According to the USEPA, brownfields are sites that pose no or limited health risks to communities. They may, however, have broader health impacts to the community, which include:

- **Safety:** Abandoned and derelict structures, open foundations, other infrastructure or equipment that may be compromised due to lack of maintenance, vandalism, deterioration, controlled substance contaminated sites, or abandoned mine sites may all pose safety risks.
- **Social and Economic Factors:** Blight, crime, vagrancy, reduced social capital or community ‘connectedness’, reductions in the local government tax base and private property values that may reduce social services are all social and economic problems sometimes created by brownfields.
- **Environmental Health:** Potential environmental dangers can be biological, physical, or chemical, and can be the result of site contamination, groundwater impacts, surface runoff, migration of contaminants, or wastes dumped on site.

The Bliss Bank/Espy Run site has several of the issues identified above. As a legacy mineland, it features physical risks for trespassers, who are not uncommon. Furthermore, the area surrounding Bliss Bank is predominantly residential, comprised of single-family homes. As a barren, unproductive property, it offers no benefit to those residents, nor to the community as a whole. Instead, it represents a form of blight, evidenced by illegal dumping, off-roading, and other illicit activities. Bliss Bank has endured in this condition for more than 40 years. The negative aesthetics and behaviors associated with it have correspondingly affected the outlook and economics of the area.

However, the greatest consequences are environmental. Part can be attributed to the loss of surface water: an ecosystem has been destroyed. A larger problem occurs when the creek diverts underground and catalyzes production of AMD. Generally, AMD develops when water encounters and picks up acid-bearing minerals, common in minelands. When oxygen is introduced – as when mine water resurfaces – sulfuric acid and ferric iron result. The former produces the strong smell of rotten eggs; the latter creates an orange precipitate.

In streams like Espy Run, AMD damages the environment in several ways. Most discernable is the orange coating on everything the AMD-laden water encounters. Furthermore, water becomes cloudy, raising water temperatures and impeding photosynthesis for algae and other plants. Iron deposits prevent insects and animals from burrowing or creating nests. It also can clog gill

structures, obstructing animals' oxygen intake. With the demise of smaller organisms, food sources for larger creatures disappear. Finally, lower pH levels make the water chemistry inhospitable to aquatic life.

For waterways near mine dumps, such as Espy Run and its proximity to Bliss Bank, the problem is exacerbated. Whether via rain or snowmelt, residual minerals contaminate the water, which then flows into adjacent streams or leaches into groundwater to discharge at another point. In total, water pollution associated with mine-scarred lands contaminates more than 5,500 miles of Pennsylvania waterways.<sup>2</sup> It is a toll on the environment, and the economy as well. It is estimated Pennsylvania loses approximately \$67 million annually from fisheries lost to AMD.<sup>3</sup>

## FORECASTED CLIMATE CONDITIONS

According to the U.S. Global Change Research Program (USGCRP), climate trends for the northeast region of the United States include increased temperatures, increased precipitation with greater variability, increased extreme precipitation events, and rises in sea level. Some of these factors, most specifically increased precipitation that may affect flood waters and stormwater runoff, are most applicable to the cleanup of the Bliss Bank/Espy Run site.

According to FEMA Flood Zone Map 42079C0365E, downstream from the restoration area is a section of Espy Run zoned "A" (i.e., a "High Risk Area" with a 1% annual chance of flooding and a 26% chance of flooding over the life of a 30-year mortgage). As noted, this occasional flooding – due to poor hydrologic functioning – is one of the reasons the Espy Run restoration and concurrent reclamation of Bliss Bank are being undertaken.

Greater storm frequency and intensity in a changing climate may result in more frequent and more powerful flood waters within Espy Run, which may result in changes to the flood zone and increased risk of flooding. However, given the nature of the project and its proposed reuse, climate change effects are not likely to have significant impacts.

## APPLICABLE REGULATIONS, LAWS, AND STANDARDS

### Laws and Regulations

- Neither Bliss Bank nor Espy Run have been identified by NPL, or are under CERCLA or RCRA orders. Furthermore, EC is not potentially liable for contamination in or along Espy Run under CERCLA §107, as stated in the Deed of Sale from the Trustee in Bankruptcy for the Blue Coal Corporation. All Appropriate Inquiries (AAI) were conducted prior to sale. EC is considered an Innocent Landowner (ILO) and is not potentially liable for AMD pollution originating at the site.

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<sup>2</sup> Pennsylvania Department of Environmental Protection. (2014). *Pennsylvania Integrated Water Quality Monitoring and Assessment Report*.

<sup>3</sup> U.S. Geological Service. Pennsylvania Water Science: Coal Mine Drainage Projects in Pennsylvania. <http://pa.water.usgs.gov/projects/energy/amd/>

- No historic sites are on or eligible for the National Register of Historic Places for Bliss Bank.
- In accordance with the Endangered Species Act, a survey of threatened and endangered species was undertaken. No threatened or endangered species are known to inhabit the site.
- Laws and regulation that are applicable to this cleanup include the Federal Small Business Liability Relief and Brownfields Revitalization Act, the Federal Davis-Bacon Act, state environmental law, and local municipality bylaws. Federal, state, and local laws regarding procurement of contractors to conduct the cleanup will be followed.
- Prior to construction, all appropriate permits will be obtained. This includes submission and approval of an Erosion and Sediment (E&S) Control Plan to the Luzerne Conservation District (LCD), which will identify sources of erosion and sediment on the property and Best Management Practices to implement to address each. Upon approval of the E&S plan, a National Pollutant Discharge Elimination System (NPDES) permit will be issued.
- During construction, the contractor will adhere to all federal, state, and local rules and regulations relating to occupational safety and health (OSHA), including monitoring the site for hazardous conditions during work. The construction contract will require the contractor to immediately notify EC and the project engineer if a hazardous environmental condition is encountered.
- Because no hazardous substances have been identified at the project site, institutional controls, restrictions, and/or compliances will not be required.

## Cleanup Oversight

To ensure compliance with regulatory requirements and project goals, EC will provide project management, administrative services, and technical expertise during work. The selected project engineer will also assist in these roles, including periodic site visits to monitor progress and adherence to plans. Additional inspections will be performed by the LCD and PADEP to verify regulatory compliance and ensure any inconsistencies are immediately addressed.

## Documentation and Reporting

The Espy Run Segment C cleanup will comply with all USEPA Brownfields Program requirements (e.g., information repository, public comment, ABCA, cleanup oversight, etc.). EC will be responsible for all documentation and reporting.

## EVALUATION OF CLEANUP ALTERNATIVES

To address the brownfield conditions at the site, three different alternatives were considered for

the Espy Run Stream Restoration, Segment C project. To satisfy USEPA requirements, the effectiveness, implementability, and cost of each alternative must be considered prior to selecting a recommended cleanup alternative.

### **Alternative #1 | No Action**

Alternative #1 would essentially leave the site in its existing condition. No mitigation of environmental damage would occur, nor would issues related to safety, aesthetics, flooding, or AMD be addressed. Moreover, it would not promote returning the site to productive reuse and would render stream work already funded by the USEPA (Segments A and B) obsolete.

### **Alternative #2 | Restoration of Stream Channel from Segment B, upstream for 400 feet to Bliss Bank, Phase III, Connection**

The USACE *Restoration Report*, which EC still uses in its planning to restore the Nanticoke Creek watershed, recommended restoration of stream channels between stream headwaters and lower stream reaches to “re-establish flows and maximize habitat connectivity and ecosystem function.” As noted, within the project area past mining activities have compromised Espy Run, predominantly due to sediment buildup in the former stream channel. This contributes not only to AMD, but also to flooding of streets and other low-lying areas downstream.

Alternative #2 involves performing 400 feet of stream restoration, beginning at the terminus of the Segment B project and connecting to stream work at Bliss Bank, Phase III. Construction for this alternative would involve excavation of the channel to original grades and slopes, channel lining, and site stabilization. This work will reestablish surface flow, restore channel capacity, and remove coal refuse from the stream channel. Re-vegetation of the area would also occur, including a riparian buffer zone. This alternative would reduce stormwater velocity and/or percolation; create a stable channel for flood flows; and reduce contributions to AMD production and its associated impacts.

The proposed path for stream restoration for Alternative #2 is shown on Appendix A. The cost estimate included as Appendix B. This alternative will improve safety, environmental, and aesthetic conditions at the site. However, with inclusion of the channel lining and riparian buffer, it would exceed available cleanup funds. It would also decrease land available for future reuse of the parcel.

### **Alternative #3 | Restoration of Stream Channel from Segment B, upstream for 400 feet to Bliss Bank, Phase III, Connection (Channel Rehabilitation)**

Alternative #3 involves performing approximately 400 feet of stream restoration upstream from the Segment B project to the stream channel on the Bliss Bank, Phase III, reclamation site. As with Alternative #2, construction for this alternative would involve excavation of the channel to original grades and slopes, and site stabilization. This work will restore channel capacity and remove coal refuse from the stream channel. Basic re-vegetation of the area would also occur. This alternative would reduce stormwater

velocity and/or percolation; create a stable channel; and reduce contributions to AMD production and its associated impacts.

The proposed path for stream restoration for Alternative #3 – the same path as for Alternative #2 – is shown on Appendix A. The cost estimate included as Appendix C. This alternative will improve safety, environmental, and aesthetic conditions at the site. It will also take into account and integrate with reclamation work already underway at Bliss Bank, Phase III, and allow for the fullest reuse of the site. It will also be able to be completed within funds available.

## Recommended Cleanup Alternative

After review of remedial alternatives, the recommended alternative is **Alternative #3, Restoration from Segment B, upstream for 400' to the Bliss Bank, Phase III pad.** Alternative #1 cannot be recommended since it does not address site risks and impacts. Alternative #2, although it would restore the stream channel, cannot be recommended because of its costs and failure to consider current activity on the Bliss Bank site and its future use. Alternative #3 will not only have the desired environmental, safety, and aesthetic benefits; but it will also ensure thoughtful integration of work with that for the entire Bliss Bank reclamation project (e.g., E&S, habitat, etc.). It is also the most cost-effective alternative given the funds available. For these reasons, Alternative #3 is the recommended alternative.

## ADDITIONAL CONSIDERATIONS

### Public Participation

Public comments on the proposed restoration of Segment C of Espy Run are important to the cleanup process. A final cleanup method will be selected only after the public is given adequate time to review and comment on the draft ABCA and all comments have been reviewed and responded to appropriately.

EC will solicit input from the public on this draft ABCA by 1.) posting a copy of the draft ABCA on EC's website; 2.) notifying the public of the draft ABCA's availability on social media; and 3.) publishing a public notice inviting input on the draft ABCA at a public meeting. Modifications to the draft ABCA may be made on the proposed alternative based on new information or comments received from the public.

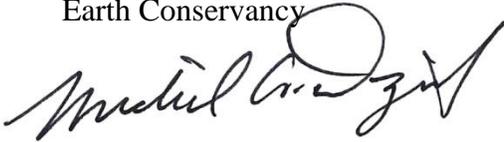
### Limitations and Contact

The contents and format of this report are based upon information available and are comparable to cleanup planning documents developed and approved in connection with previous USEPA

Region 3 Brownfields Grant programs. This report is a work of opinion; therefore we cannot offer any warranty regarding our conclusions, advice, or recommendations.

Questions or comments regarding the content of this draft ABCA report are welcome and should be directed to the undersigned at 570.823.3445 or [m.dziak@earthconservancy.org](mailto:m.dziak@earthconservancy.org).

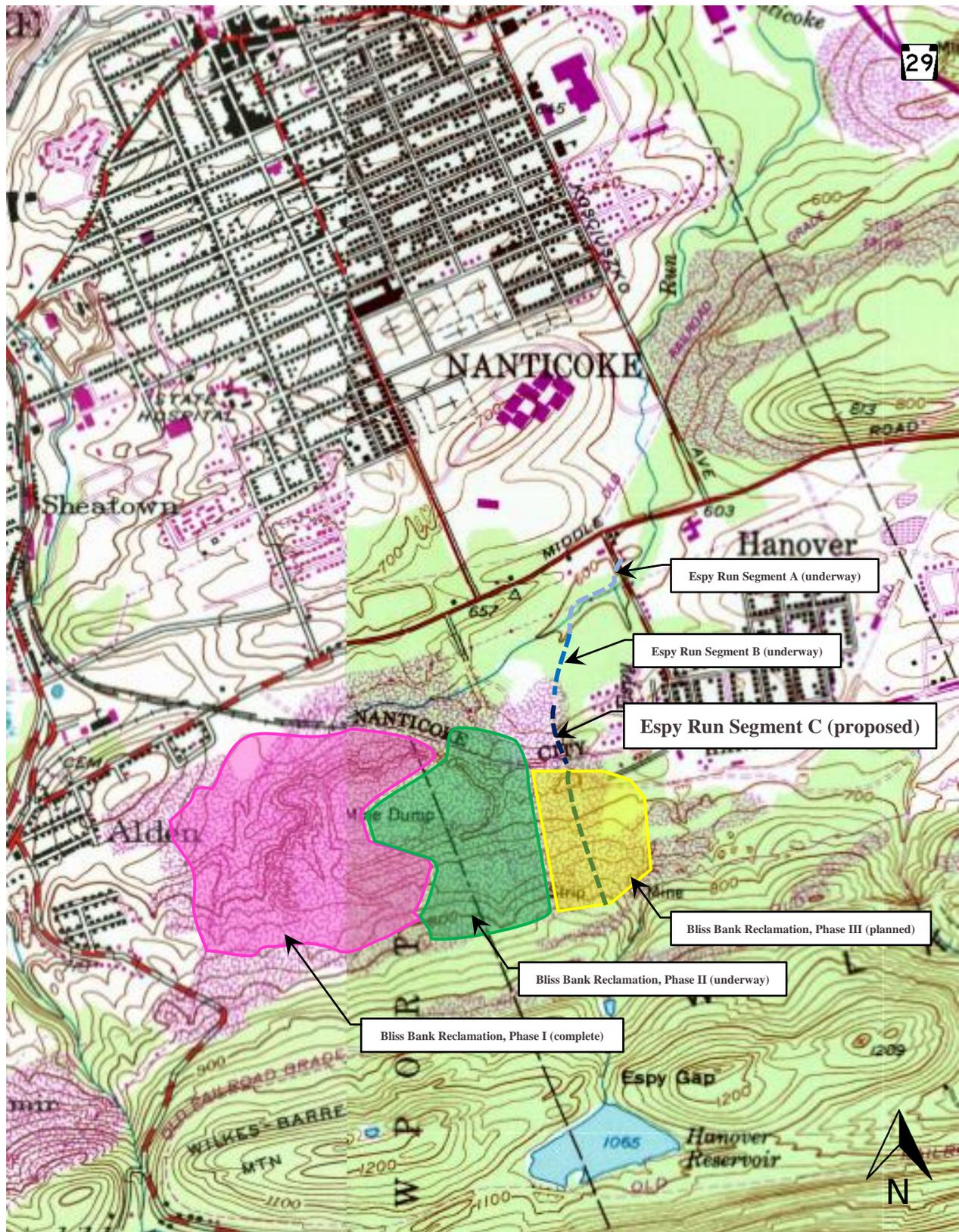
Earth Conservancy

A handwritten signature in black ink, appearing to read "Michael Dziak". The signature is fluid and cursive, with a large loop at the end.

Michael Dziak  
President & CEO

# Conceptual Map of Cleanup Alternatives

Espy Run Stream Restoration, Segment C | City of Nanticoke, Luzerne County, PA



## Cost Estimate: Alternative #2

Espy Run Stream Restoration, Segment C  
City of Nanticoke, Luzerne County, PA

Item No.	Item	Quantity	Unit	Unit Price	Total Price
1	Engineering, Permits, Bonds, etc.	1	lump sum	\$ 41,000.00	\$ 41,000.00
2	Mobilization	1	lump sum	10,000.00	10,000.00
3	Clear & Grub Site Area	2	acres	2,000.00	4,000.00
4	12" Compost Filter Sock	500	lf	8.00	4,000.00
5	Weighted Sediment Filter Tube	100	lf	18.00	1,800.00
6	Rock Construction Entrance	1	each	3,000.00	3,000.00
7	Mass Earthwork: Channel Excavation	35,000	cy	8.00	280,000.00
8	Rip Rap Lining	3,000	sy	75.00	225,000.00
8	Erosion Control Matting	1,000	sy	4.00	4,000.00
9	Seed & Mulch	2	acres	2,100.00	4,200.00
10	Restoration/Buffer Plantings	1	lump sum	8,000.00	8,000.00
				<b>Total Estimate =</b>	<b>\$585,000.00</b>

## Cost Estimate: Alternative #3

Espy Run Stream Restoration, Segment C  
City of Nanticoke, Luzerne County, PA

Item No.	Item	Quantity	Unit	Unit Price	Total Price
1	Engineering, Permits, Bonds, etc.	1	lump sum	\$ 41,000.00	\$ 41,000.00
2	Mobilization	1	lump sum	10,000.00	10,000.00
3	Clear & Grub Site Area	2	acres	2,000.00	4,000.00
4	12" Compost Filter Sock	500	lf	8.00	4,000.00
5	Weighted Sediment Filter Tube	100	lf	18.00	1,800.00
6	Rock Construction Entrance	1	each	3,000.00	3,000.00
7	Mass Earthwork: Channel Excavation	35,000	cy	8.00	280,000.00
8	Erosion Control Matting	1,000	sy	4.00	4,000.00
9	Seed & Mulch	2	acres	2,100.00	4,200.00
<b>Total Estimate</b>				<b>=</b>	<b>\$352,000.00</b>