



# Public Notice

**U.S. Army Corps  
of Engineers**  
Pittsburgh District

In Reply Refer to  
Notice No. below

US Army Corps of Engineers, Pittsburgh District  
1000 Liberty Avenue  
Pittsburgh, PA 15222-4186

Application No. 2013-513

Date: November 14, 2013, 2013

Notice No. 13-49

Closing Date: December 14, 2013

- TO ALL WHOM IT MAY CONCERN:** The following Nathaniel Mountain stream restoration project has been submitted by the West Virginia Department of Environmental Protection (WVDEP) for approval under the West Virginia In-Lieu Fee Program (WVILFP). A Nationwide Permit 27 will be issued for this project.
- APPLICANT:** Glenn McLernon  
WV In-Lieu Fee Coordinator (Stream and Wetland Mitigation)  
West Virginia Department of Environmental Protection  
601 57th Street, SE  
Charleston, WV 25304
- LOCATION:** The stream restoration work will be completed on unnamed tributary to North River, located within the Cacapon HUC 8, Hardy County, West Virginia.
- PURPOSE AND DESCRIPTION OF WORK:** The WVDEP proposes stream restoration work along Unnamed Tributary to North River. The project includes 134 lf of stream restoration. Please see attached drawings.
- WEST VIRGINIA CERTIFICATION:** Prior written approval is required from the West Virginia Department of Environmental Protection, Division of Water and Waste Management in concurrence with West Virginia Division of Natural Resources.
- IMPACT ON NATURAL RESOURCES:** The District Engineer has consulted the most recently available information and has determined that the project will have no effect on endangered species or threatened species, or result in destruction or adverse modification of habitat of such species which has been determined to be critical. While concurrence with this determination is not required, this Public Notice serves as a request to the U.S. Fish and Wildlife Service for any additional information they may have on whether any listed or proposed to be listed endangered or threatened species may be present in the area which would be affected by the activity, pursuant to Section 7(c) of the Endangered Species Act of 1972 (as amended).
- IMPACT ON CULTURAL RESOURCES:** The National Register of Historic Places has been consulted, and it has been determined that there are no properties currently listed on the

register which would be directly affected by the proposed work. If we are made aware, as a result of comments received in response to this notice, or by other means, of specific archeological, scientific, prehistorical, or historical sites or structures which might be affected by the proposed work, the District Engineer will immediately take the appropriate action necessary pursuant to the National Historic Preservation Act of 1966 - Public Law 89-665 as amended (including Public Law 96-515).

8. **PUBLIC INVOLVEMENT:** Any person may request, in writing, within the comment period specified in the paragraph below entitled "RESPONSES," that a public hearing be held to consider this proposed West Virginia In-Lieu Fee Project. The requests for public hearing shall state, with particularity, the reasons for holding a public hearing.

9. **EVALUATION:** Interested parties are invited to state any objections they may have to the proposed WVILF project.

10. **RESPONSES:** This project will be authorized under the existing WVILF Instrument unless its issuance is found to be contrary to the public interest. Written statements concerning the proposed activity should be received in this office on or before the closing date of this Public Notice in order to become a part of the record and to be considered in the final determination. Any objections which are received during this period may be forwarded to the applicant for possible resolution before the determination is made whether to approve as an ILF project. All responses to this notice should be directed to the Regulatory Branch, attn Donald Bole at the above address, by telephoning (412) 395-7576, or by e-mail at Donald.R.Bole@usace.army.mil Please refer to File 2013-513 in all responses.

FOR THE DISTRICT ENGINEER:

/SIGNED/

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Jon T.Coleman  
Chief, Southern Section  
Regulatory Branch

# MITIGATION PLAN

## Nathaniel Mountain Wildlife Management Area In-Lieu Fee Mitigation Project

Cacapon – HUC 02070003  
Hardy County, West Virginia



Submitted - September 2013

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# **1. Introduction**

This mitigation plan builds upon the design and CWA 404 Nationwide 27 (Aquatic Restoration) permit application for the Nathaniel Mountain WMA Fish Passage Project. This plan is organized according to the Department of Defense and Environmental Protection Agency 40 CFR Part 230 Compensatory Mitigation for Losses of Aquatic Resources; Final Rule published April 10, 2008; effective June 9, 2008.

## ***1.1. Mitigation Goal***

The goal of this project is to stabilize an existing road crossing on an unnamed tributary of the North River, to accommodate limited vehicular traffic and restore brook trout passage from below the crossing to the spawning habitat upstream. Brook trout passage is a critical need in the watershed.

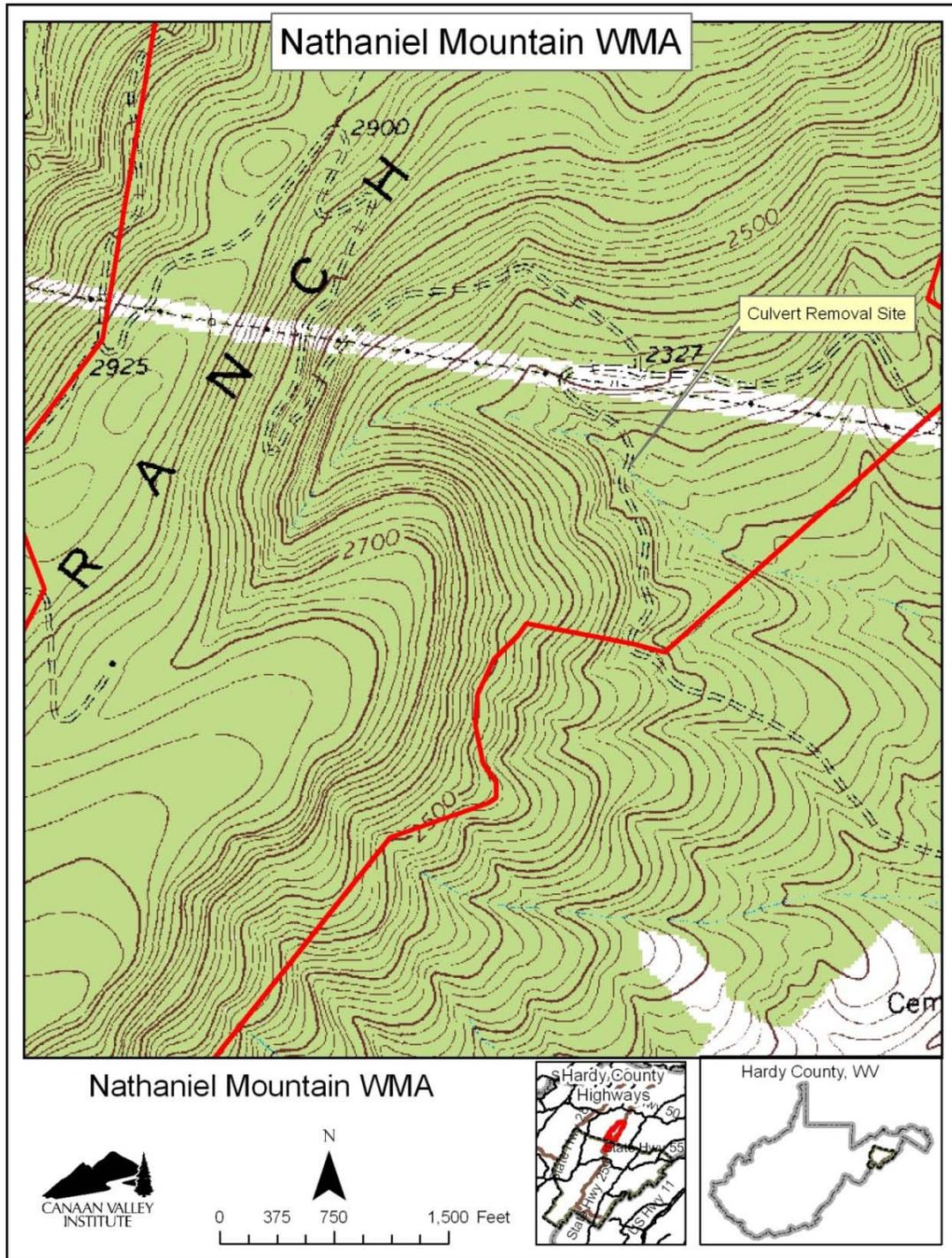
## ***1.2. Location***

The stream crossing in question is located near Inkerman in Hardy County, WV. To get to the site from Moorefield, WV, head east on US-48/WV-55 for 4.2 miles. Turn left onto County Route 1/North River Road for 1.4 miles. Turn left onto County Road 1/1 Mt Olive Road for 3.0 miles. Turn left to stay on Mt Olive road for 1.4 miles. The stream crosses the road. Maps on the following pages illustrate the location of this project.

## ***1.3. Service Area***

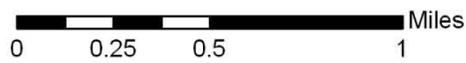
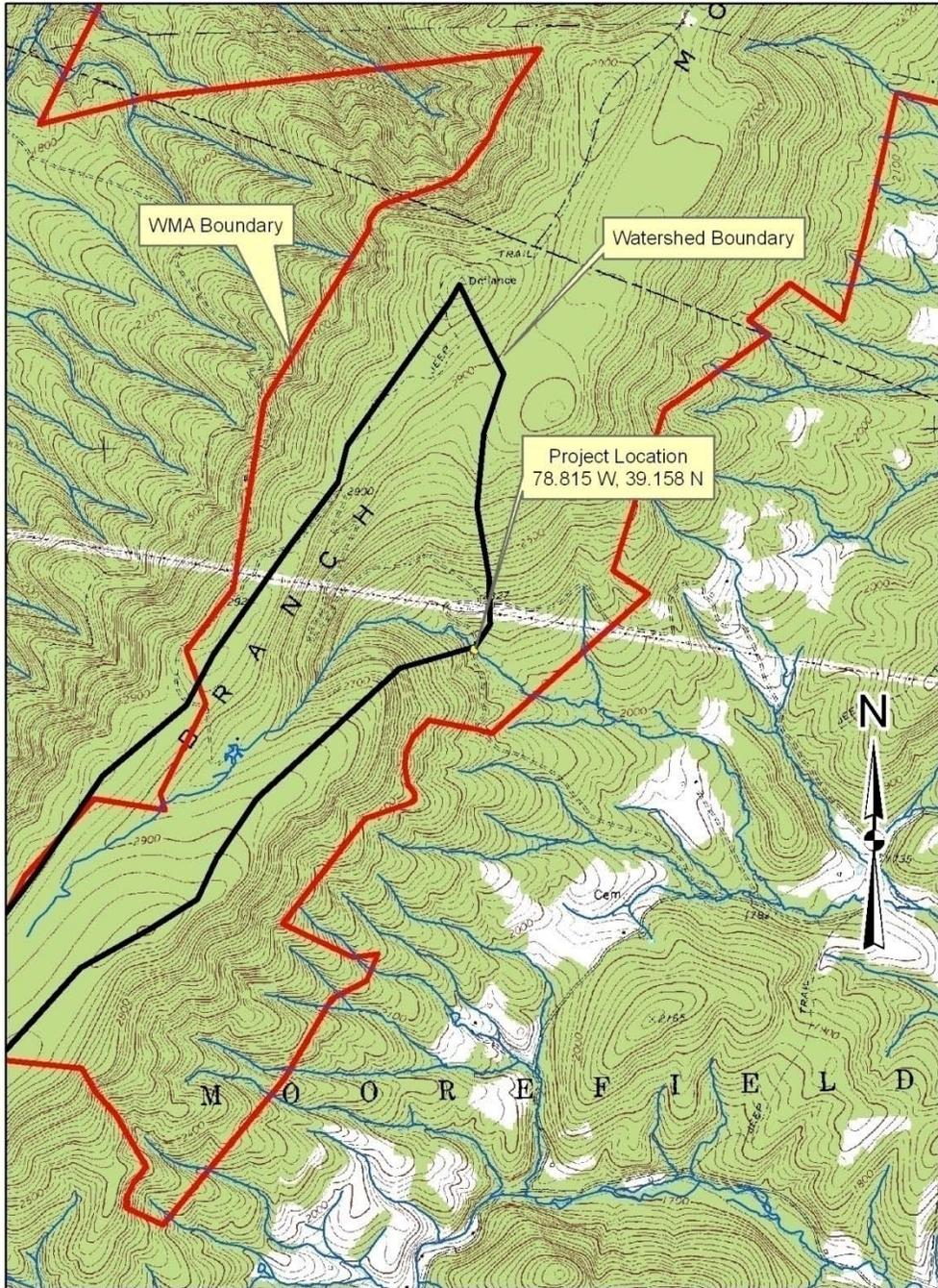
The project lies within the Cacapon watershed 8-digit HUC 02070003. This project is funded by In-Lieu Fee Mitigation Program for WV Air National Guard, PN# 08-34 Pittsburgh District, 681 feet of stream.

# Map 1



# Map 2

## Nathaniel Mt. WMA Culvert Removal



## **2. Site Selection Criteria**

Initially the project/site was selected because it consisted of a 4'x34' corrugated metal culvert which backed-up flow, caused upstream deposition of sediment, and presented a fish passage barrier to approximately 2700' of brook trout habitat for the reproducing population downstream. Removing the culvert building a series of step pool and cascade structures would provide a self-sustaining solution, restoring brook trout passage and stabilizing the vehicular crossing.

## **3. Site Protection Instrument**

The crossing, the watershed above it, and approximately 1000 feet of stream below it, lie within the Nathaniel Mountain Wildlife Management Area, providing long-term site protection. The stream bed is owned by the State of West Virginia, managed by the DNR Office of Land and Streams.

## **4. Baseline Information**

This project is on Nathaniel Mountain WMA in Hardy County. The stream is an unnamed tributary of the North River, which flows into the Cacapon River. It is a high quality, spring fed, perennial stream that supports a native brook trout fishery (Assistant Fisheries Biologist Brandon Keplinger, WV Division of Natural Resources, personal communication, February 14, 2013). The fish passage site is in a forested landscape with nearly complete tree canopy cover.

An undersized and poorly designed culvert was placed in the stream some time ago. It induced deposition of fine sediment upstream, was frequently clogged and overtopped, and projected from its fill to the extent that it was a fish migration barrier. While in the area performing other, unrelated duties, Columbia Natural Resources removed the culvert as part of this project per an earlier agreement. The crossing they left was not designed for long-term stability, nor was the approach enhanced in any way that would promote fish passage. The gravel road materials left in place at the crossing provide a smooth vehicular surface for the short term, but no long-term stability. There is a serious risk of headcut as the channel cuts through the small materials to re-establish its natural gradient and step pool sequence. This plan seeks a stable, fish passable reach that also permits limited vehicular crossing of the stream.



*Upstream, from center of road*



*Upstream of impacted reach*



*Crossing as viewed from left*



*Downstream, from center of road*

## 5. Credit Determination Methodology

The following table, developed by WV DNR, has been used to determine the mitigation credits that may be derived from enhancing fish passage through the road crossing, and restoring passage to approximately 2700 feet of perennial stream channel upstream. 1470 ILF credits will be generated.

DRAFT Culvert Credit/Debit Calculator			
Length of perennial flow above culvert (ft)	2640	Type of Blockage	1.00
Length of intermittent flow above culvert (ft)	0	Total = 1.0	
		Partial = 0.5 to .75	
<b>Perennial</b> habitat category # (EPA RBA Habitat Assessment)	0.75	Stream Fish Type	1.50
Optimal = 1.0		B2 Trout = 1.5	
Sub-Optimal = 0.75		HQS = 1.0	
Marginal = .50		Water Quality (0-1) Based on Water Quality on WV SWVM Calculation WQ=0 if ,score <8	
		Water Quality (0.8-1)	1.00
<b>Intermittent</b> habitat category # (COE HGM High Gradient Stream model)	0	Public Land = 1.5	1.50
Optimal = .5		Private = 1.0	
Sub-Optimal = 0.25			
(Intermittent for trout water only)		<b>CREDIT/DEBIT (ft)</b>	1470.15
		Value @ \$800 per unit	\$1,176,120.00
Preliminary Total	1980	(in-lieu fee schedule)	
Mitigation Credit = (Preliminary Total x TOB x SFT x WQ x Land) X .33 (0.33 is the correction factor for improving biological function only of stream above culvert)			
Length of Impact (debit)	681	Credit - Debit	789.15
In-lieu Fee	\$544,800.00	Cost of Project	\$98,262.00
Bank Credits		ILF - CP	\$446,538.00

## 6. Mitigation Objectives and Work Plan

The objectives for restoring the site are to enable fish passage, sediment transport and storm flows through the step-pool channel, and for the restored reach to remain stable and functional over time. High clearance vehicles (pickup trucks) will also be able to cross the stream, at least during reasonable flows. Design drawings are included in Appendix A.

The work plan below describes how the project will be implemented by Canaan Valley Institute.

1. Transport equipment and materials to the site.
2. In stream construction shall begin at the lower end of the reach. The pools and cascades shall be installed from downstream to upstream.
3. Once all construction activities are completed and the designer has verified that the plan has been followed, the ford will be completed with imported materials as necessary to facilitate vehicular traffic; any remaining disturbed areas shall be graded, seeded, and mulched.
4. While this site is already under forest canopy, a small number of trees, shrubs and live stakes will be planted for additional stream stability as soon as heavy equipment is unlikely to disturb them and their work.

## 7. Ecological Performance Standards

The project has been designed to accommodate stable fish passage and vehicular crossing. In a stream of this type, the features are generally very resistant to erosion, limit deposition, and change very little. As long as the project is constructed according to the design and within the ranges of design criteria, it should be successful.

As-built success criteria are used to determine whether the construction of restoration activities meets the design specifications, or have the approval of the designer. CVI will provide as-built documentation, including an evaluation of whether the as-built success criteria have been met. This will be completed by the end of the calendar year during which construction activities have concluded for each site. CVI will use the same criteria to evaluate the project's success during the 5 year monitoring period, and submit annual monitoring reports with a longitudinal profile, cross-sections, photos and visual observations.

As-built success criteria must leave some room for minor design modifications during construction. The challenges of implementing a design with natural, irregular materials in an environment with natural, irregular features (sometimes undiscovered until construction begins) may require that certain features are placed or built in a different way than they were designed. However, minor design changes should not result in changing the overall restoration goals and objectives, or the desired function or classification of the restored sites. Design changes shall be documented and approved by the designer.

Post-construction monitoring may reveal some minor changes in stream morphology, but any changes that threaten the stability of the project, and recommended solutions, will be noted. For example, pool depths may vary slightly from year to year as material flushes through the stream, but stream gradient and structure placement should remain constant.

**Table 1: Nathaniel Mountain Crossing As-Built & Monitoring Success Criteria**

<i>Category</i>	<i>Parameter</i>	<i>Measurement Method</i>	<i>Success Criteria</i>
Channel	Channel Length	Surveyed Longitudinal Profile	Design Specifications
Channel	Channel Profile	Surveyed Longitudinal Profile	Design Specifications
Channel	Dimension	2 Surveyed Cross Sections	Design Specifications
Channel	Pattern	Surveyed Longitudinal Profile	Design Specifications
In-stream structures	Structure Placement	Surveyed Longitudinal Profile, Visual Inspection and Photos	Designer Observation

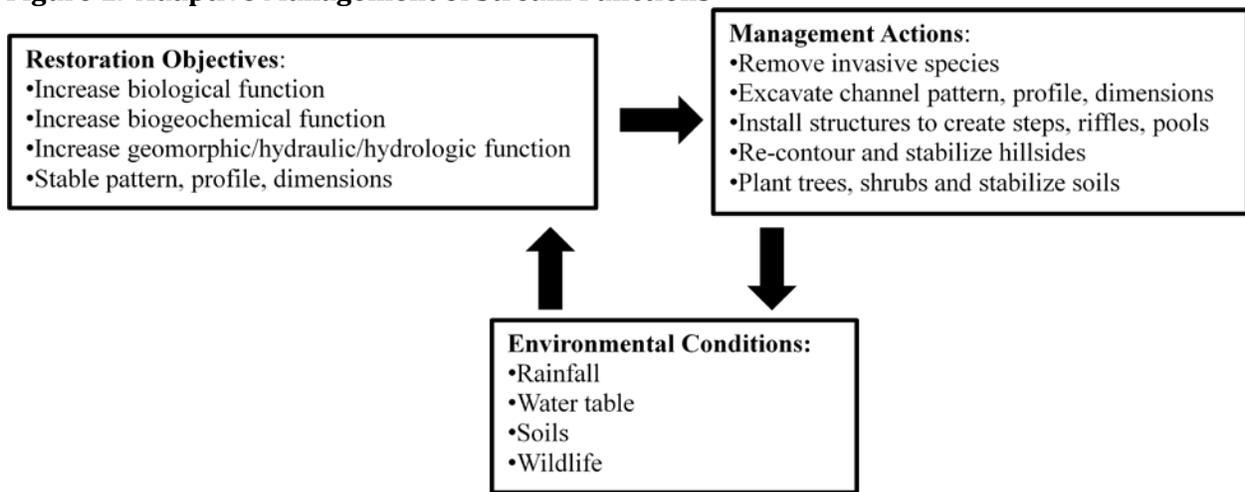
## 8. Monitoring Requirements

CVI will provide annual monitoring and visual inspection for 5 years after construction to ensure that performance standards are met, and determine if anything is unacceptable or incompatible with fish passage and vehicular travel.

## 9. Adaptive Management Plan

CVI will be responsible for implementing this mitigation plan, and ensuring that all as-built and performance success criteria are met. If monitoring indicates that certain features of the project are not meeting their mitigation goals or success criteria, and routine maintenance is not sufficient to correct the problem, DNR will work with the District Engineer and IRT to determine appropriate adaptive management actions including site modifications and repairs. As illustrated in the flowcharts below, adaptive management actions should be designed to address environmental conditions and meet restoration objectives. Adaptive management actions may require revisions to monitoring and maintenance requirements, and performance standards, as approved by the District Engineer and IRT.

**Figure 1. Adaptive Management of Stream Functions**



## 10. Maintenance Plan

This project is designed to require little if any post-construction maintenance. CVI will monitor the site to ensure that performance standards are met and determine if maintenance is required within the monitoring period. Stream channel instability will be corrected by design modification aimed at correcting the problem. This may entail in-stream structure modification, or addition or removal of in-stream structures. In-stream structure instability will be corrected by design modification and repair. Repair may entail physical structure modification through change of shape, angle, structure replacement, or structure removal. The removal of excess debris from the crossing will be performed as needed.

## 11. Long Term Management Plan

The DNR will be responsible for the long-term management of the Nathaniel Mountain stream crossing project site. Once the construction is complete and the as built report submitted and accepted, long-term management activities should involve only periodic re-surfacing of the road crossing.

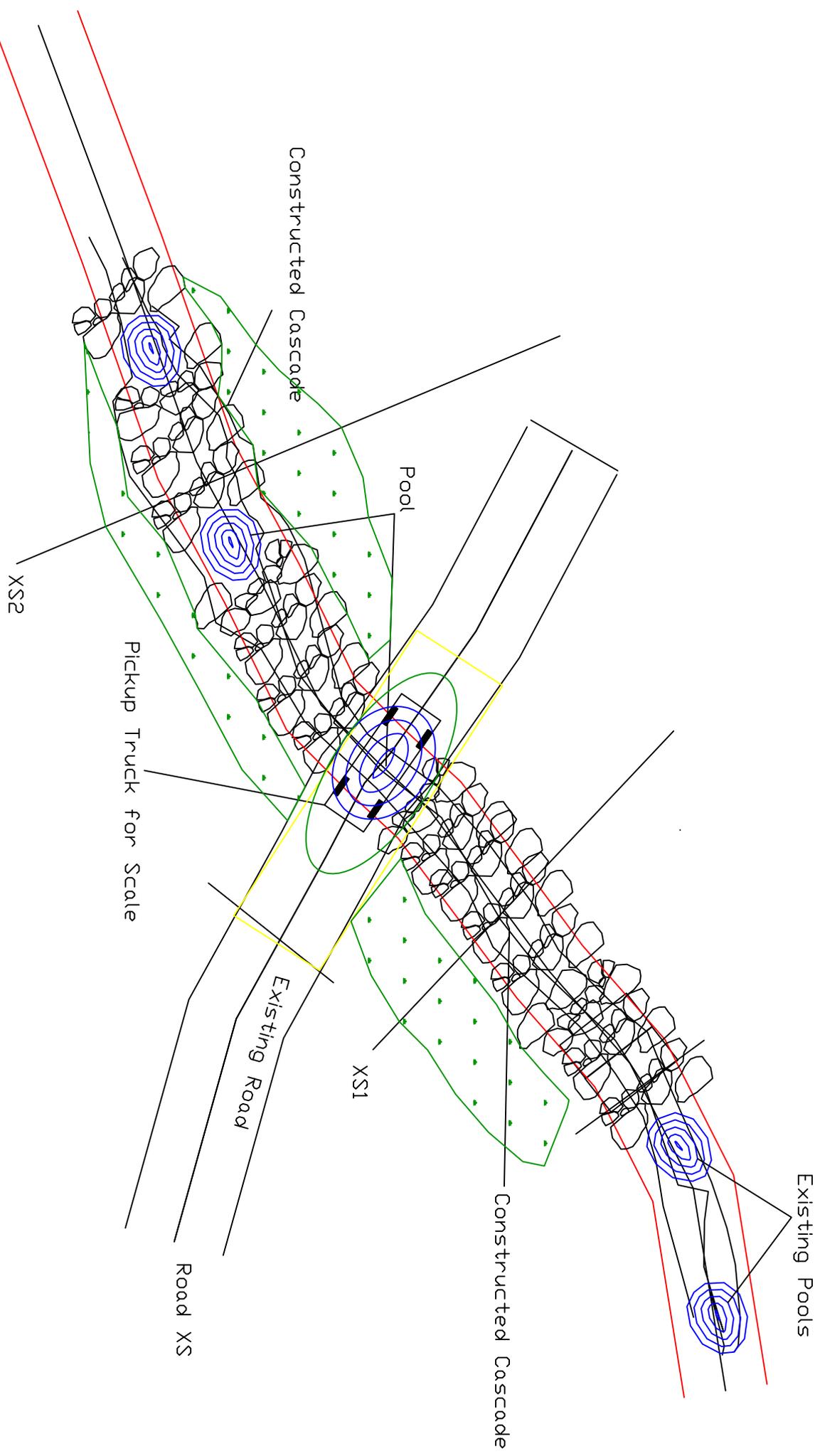
## **12. Financial Assurances**

A contingency fund in the amount of twenty percent (20%) of the approved project budget will be maintained by DEP in the In-Lieu Fee Fund until the project has been declared successful and released by USACE and the IRT. This contingency fund will be available to DNR upon request and approval by USACE and the IRT.

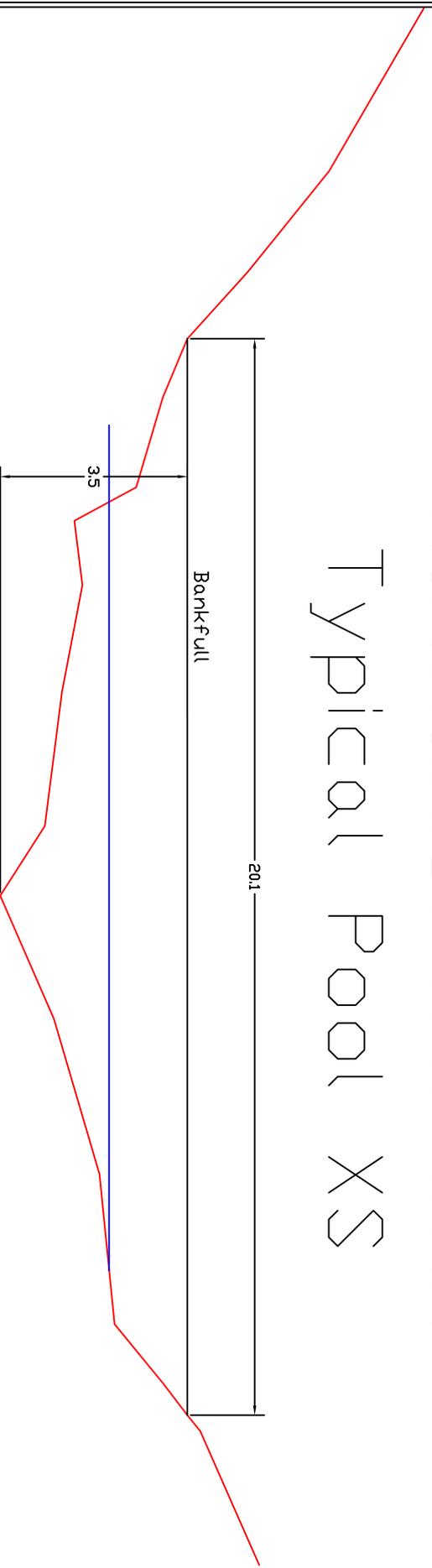
## **Appendix A – Design Drawings**

Design Criteria									
		Upstream, Watson/Saville		"Widow", Harman					
		reference		reference				design	
		min	max	min	max			min	max
stream type		B3		A3				B3	
drainage area		0.6		0.17				0.6	
xsa		9.6						9.6	
d		0.8						0.8	
w=		12.4						12.4	
w/d		16.1		13				16.1	
er		1.6		1.2				1.6	
maxd		1.3						1.3	
max/meand		1.6						1.6	
slope		0.1044		0.07				0.08	0.1142
p-p		27.5	55.8					27.4	36.0
pool to pool spacing ratio		2.2	4.5	1.1	7.9			2.2	4.5
cascade slope		0.1064	0.14						
cascade/overall slope		1.0	1.3	0.4	2.1			1.0	2.0
pool depth		2.0	3.5					2.0	3.6
pool depth to cascade depth		2.6	4.5					2.6	4.7
cascade length %		63		90				50	
pool length %		37		10				50	
pool lengths		10.0	12.5					10.0	16.0
cascade lengths		5.9	40.5					10.0	20.0
pool length to cascade width		0.8	1.0	0.2	0.6			0.8	1.3
cascade length to cascade width		0.5	3.3	0.7	7.4			0.8	1.6

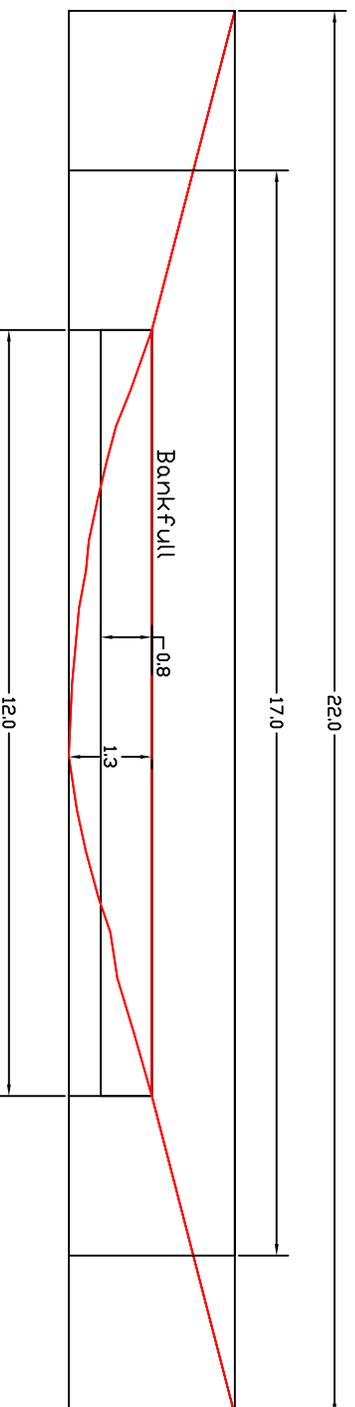
# Proposed Nathaniel Mt. WMA Crossing/Fish Passage



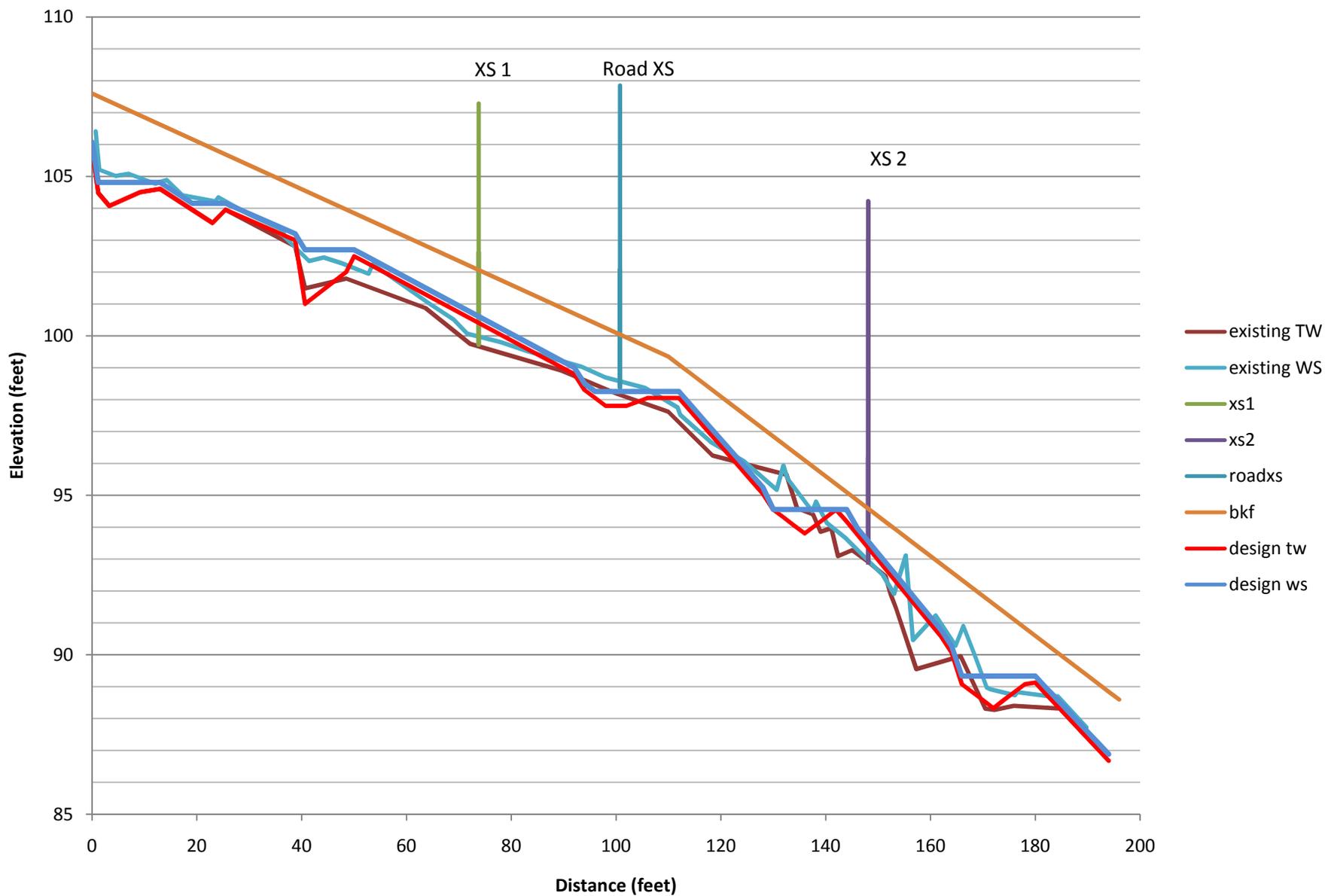
# Nathaniel Mt. WMA Typical Pool XS



# Nathaniel Mt. WMA Typical Cascade XS



# Nat. Mt. WMA Design Longitudinal Profile



# Proposed Nathaniel Mt. WMA Crossing/Fish Passage Planting Zones

Existing Forest

Existing Forest

Existing Forest

Existing Road

Existing Road

Existing Forest

Existing Forest

