Hocking River Basin, Ohio Monday Creek Sub-Basin Ecosystem Restoration Project Final Feasibility Report

Civil Works Review Board Briefing

Huntington District Presentation

September 22, 2005

CWRB Briefing Purpose

- Overview of the Report and Planning Process
- Summary of the Recommended Plan
- Overview of the Product Delivery Team Process
- Results of the ITR and Policy Review Process
- Outcome of the Public Involvement and Review Processes
- Provide Necessary Information to the CWRB for Release of Report for State and Agency Review

Why Monday Creek?

- Study is Authorized and Funded
- Addresses State of Ohio Major Environmental Priority
- Significantly Improves Aquatic Ecosystem
- Addresses Acid Mine Drainage (AMD) Problems Contributing to Ecosystem Degradation
- Watershed Approach
- Consistent with Administration Policy

Study Authority

House Committee on Transportation & Infrastructure, Docket 2472, Document 306, 74th Congress, 1st Session:

"…determine whether modifications are warranted to solve a variety of water and related resource problems in the Hocking River Basin with priority given to Sunday and Monday Creek sub-basins. Special emphasis shall be given to the need for environmental restoration of lands and waters that have been impacted by resource extraction and other land uses. This study is to be conducted in consultation with the Hocking Conservancy District." − March 7, 1996

US Army Corps of Engineers

One Team – Relevant, Ready, Responsive, Reliable

- Funding
- Real Estate
- AMD Exp.

- Funding
- AMD Remediation Exp.
- Watershed Planning
- Feasibility Report/NEPA

- Bio Sampling & Analysis
- Set Biological Targets

- Real Estate
- Recreation Benefits
- Haul Road & Tree Cutting Plans

- Master Data Base: Social & Cultural
- AMD Remediation Experience

- Endangered Species Analysis

- Site Knowledge
- Water Quality Sampling
- Public Involvement

- Mass Balance
- AMD Remediation Experience
- Model Oversight

- Model Study
- AMD Remediation Exp.
- Historical Cost Data

Project Delivery Team Members

- Mark Kessinger – Project Manager
- Amy Frantz – Plan Formulation/NEPA
- Terry Noble/Susan Williams– Civil Design
- Russell Craddock/Derek Maxey – Cost Engineering
- Joan St. Clair/John Ferguson – Geology
- Mike Hesselbacher - Geotechnical
- Shane Hall – Construction
- Janet Wolfe – HTRW
- Ralph Ackerman – Real Estate
- Vince Marchese – Water Quality
- Stephen Stout – Hydrology & Hydraulics
- Brantley Jackson – Archeological Resources
- Kelley Campbell – Program Management Branch
- Sharanna Romans – Program Analyst

Independent Technical Review Team Members

- **Tom Swor (LRD RTS) – ITR Lead/NEPA/Formulation**
- Tom MacFarland (LRH) – Civil Design
- Mike Spoor (LRH) – Geotechnical/Engineering
- Don Whitmore (LRH) – Cost Engineering
- Mike Ferguson (LRH) – Cost Engineering
- Phil Anderson (LRH) – Hydrology & Hydraulics
- Wren Wilson (LRH) – Construction
- Ken Woodard (LRH) – HTRW
- OEPA/Ohio Univ. – TAMDL Model

Existing Conditions

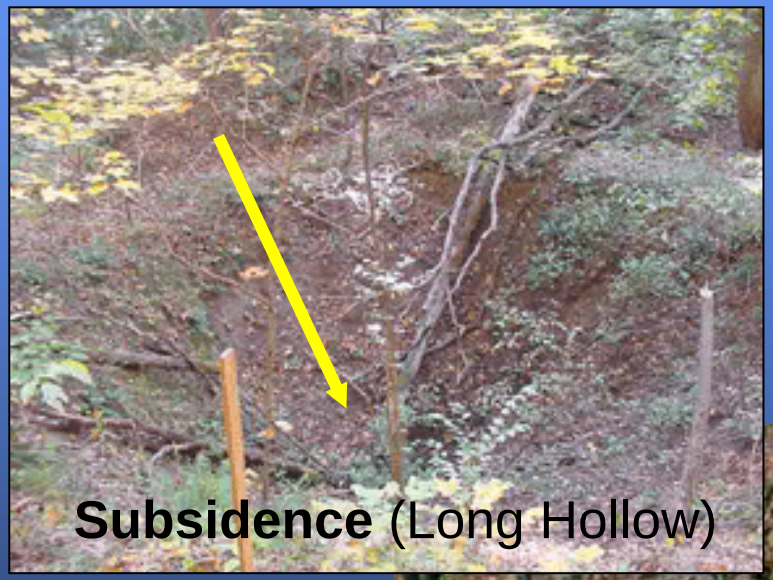
Majestic Mine Discharge

Acid mine drainage, or ***AMD***, results when the mineral pyrite (FeS_2) is exposed to air and water, resulting in the formation of sulfuric acid and iron hydroxide, leading to a severely degraded aquatic ecosystem

Existing Conditions

- Monday Creek provides 10% of the flow of the Hocking River
- Abandoned coal mined areas encompass 4,000 surface acres and 15,000 underground acres
  - Surface Mining Reclamation Action (SMCRA) of 1977 requires companies to be responsible for environmental degradation resulting from mining practices
  - Most mines in the area are late 1800s to 1960s.
- AMD has created a degraded aquatic ecosystem
- Impacted areas include
  - Main stem Monday Creek – 27 stream miles
  - Snow Fork – 10.3 stream miles

Existing Conditions



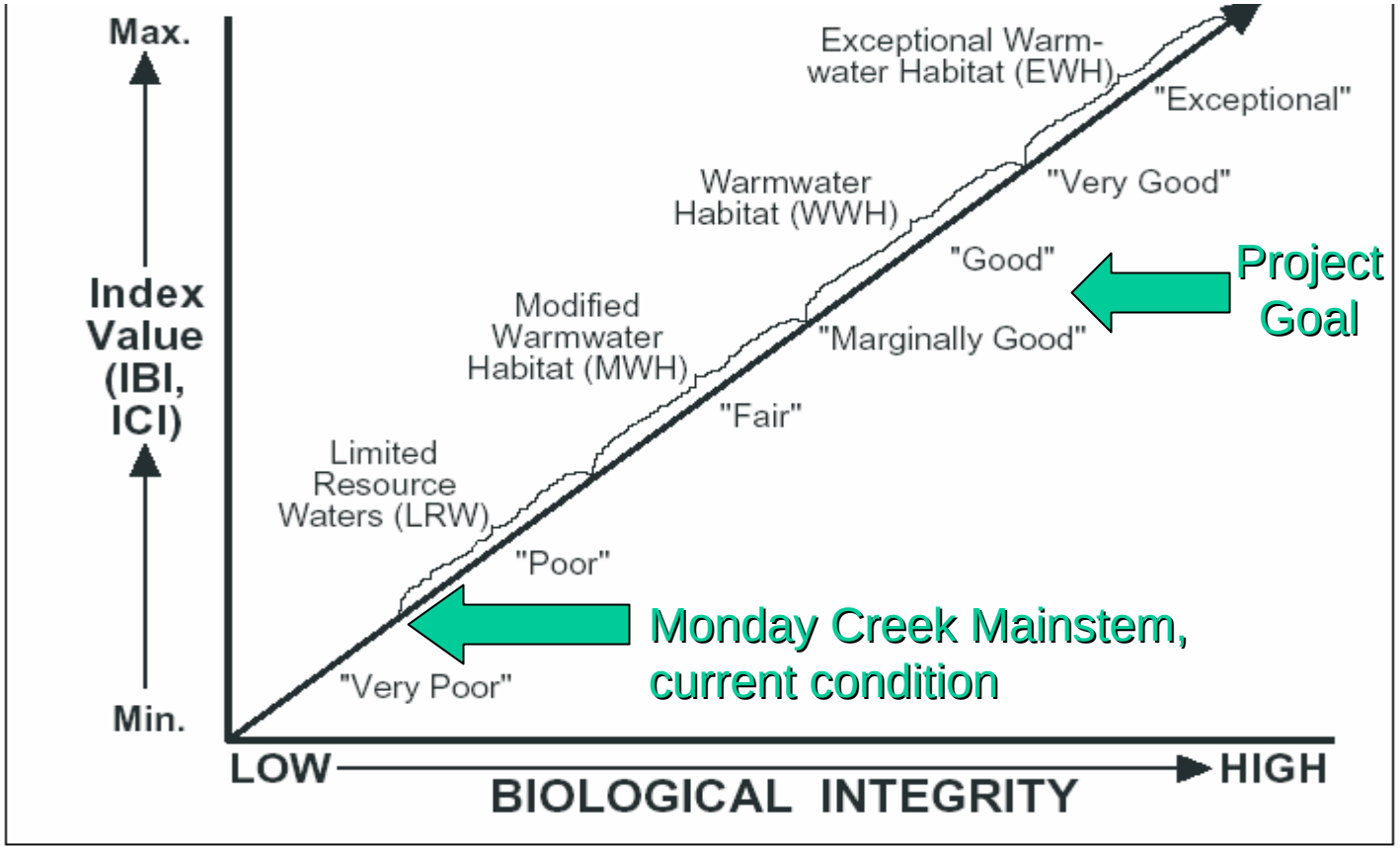
Subsidence (Long Hollow)

Gob Pile

AMD Seep (Essex Mine)

Existing Conditions

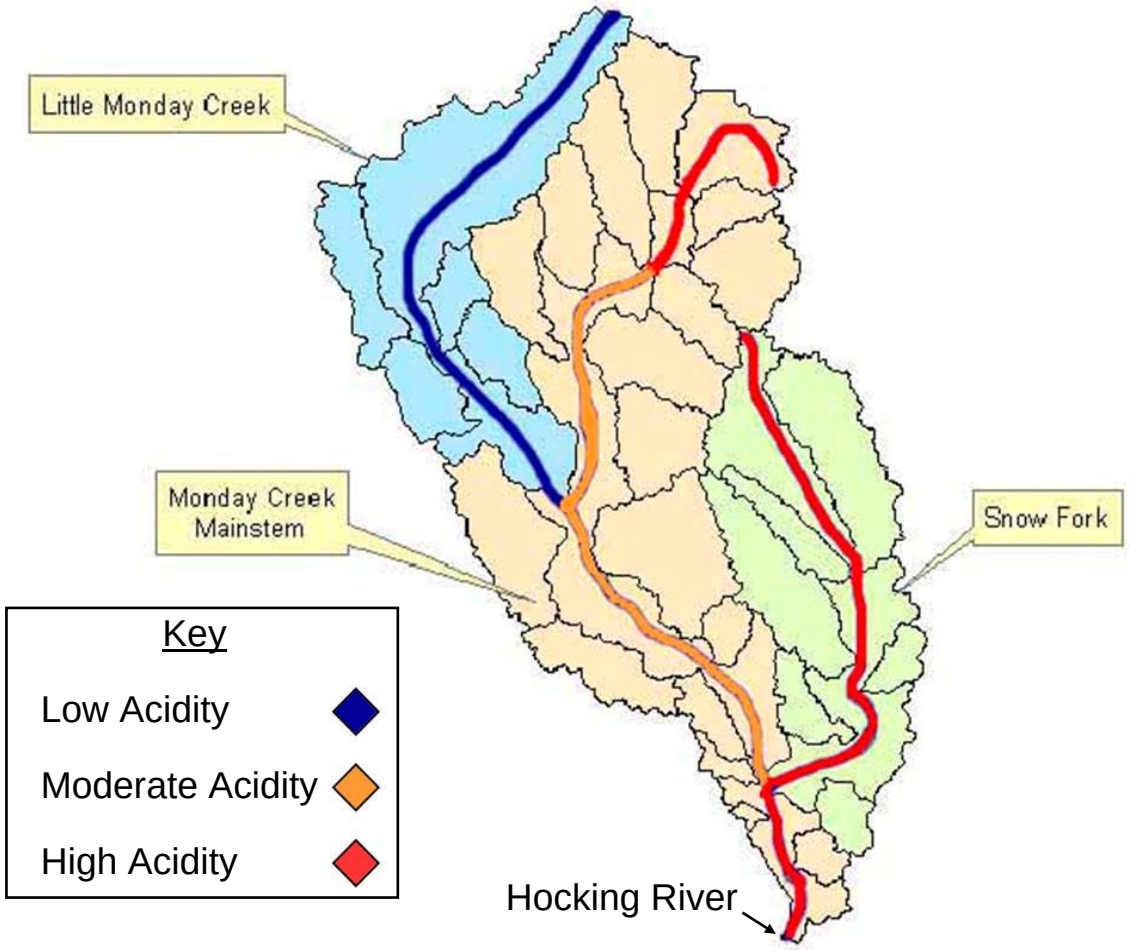
Gradient of Aquatic Life Uses and Narrative Description of Biological Community Condition



Project Goals

- Achieve the aquatic life use designation of a Warm Water Habitat (WWH) for the Monday Creek watershed
- Reestablish diverse macroinvertebrate communities in the watershed
- Increase fish diversity in the watershed
- Reestablish the connection between the upper watershed and the Hocking River
- Restore aquatic habitat so that a sustainable ecosystem may develop

Existing and Future Without Project Aquatic Habitat Conditions



Plan Formulation

- Determine output values for the aquatic ecosystem – based on quantity, quality and importance
- Develop a model to estimate future stream habitat conditions with the implementation of various treatment configurations
- Design acid mine drainage remediation measures and alternatives to meet ecosystem restoration goals

Plan Formulation

Ecosystem Output =

Quantity x Quality x Importance

- Quantity - Area of Stream Bottom
- Quality - Invertebrate Community Index (ICI)
- Importance Factor – Percentage of restored aquatic acreage vs. total aquatic acreage in headwaters

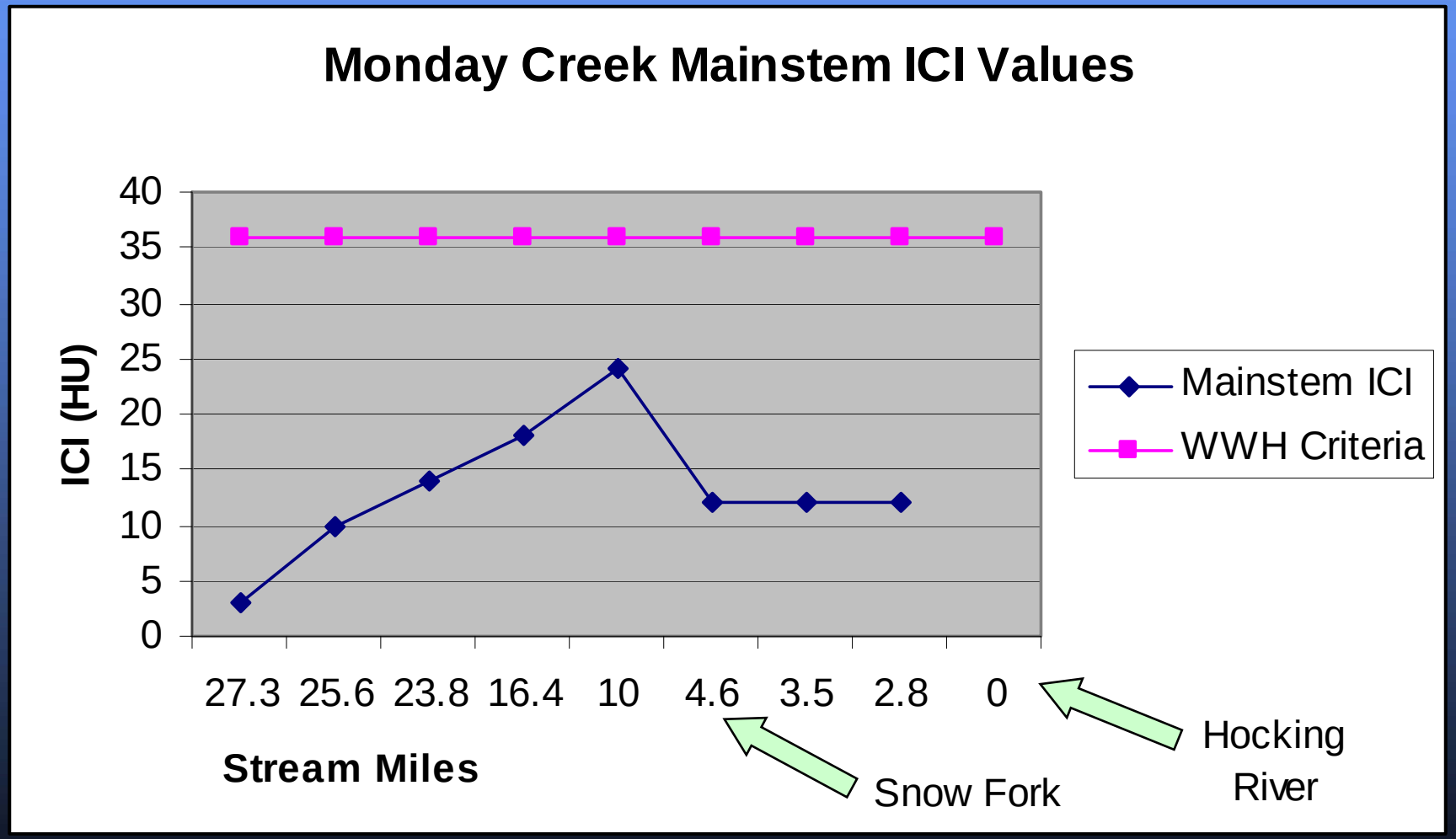
The Regional Ecosystem Perspective

Within the Western Allegheny Plateau Ecosystem, an Invertebrate Community Index (ICI) score of:

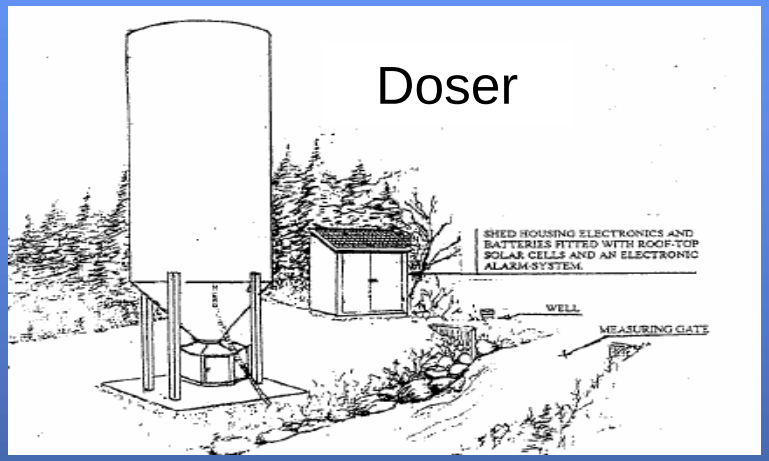
36 = “Good” Warm Water Habitat

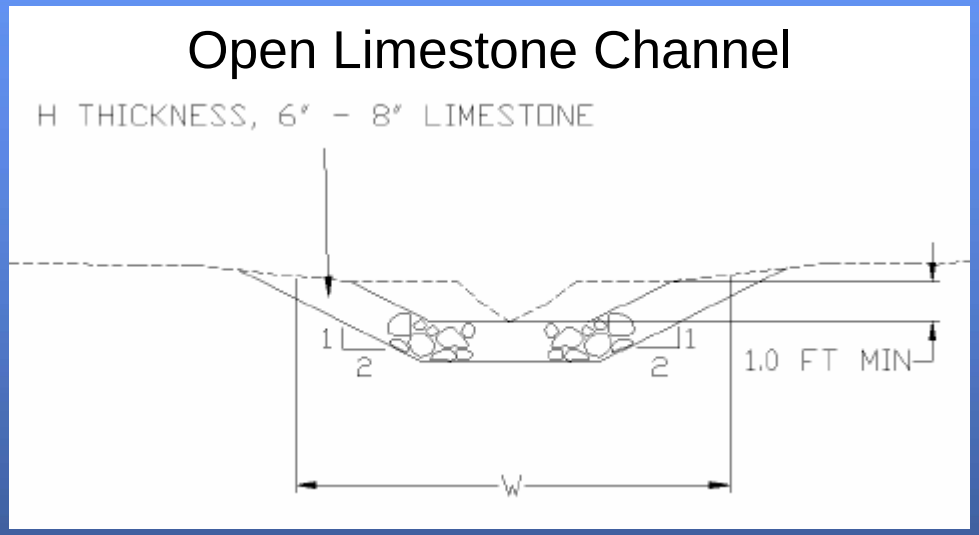
- *Baseline ICI Data obtained from OEPA Total Maximum Daily Load (TMDL) Research*

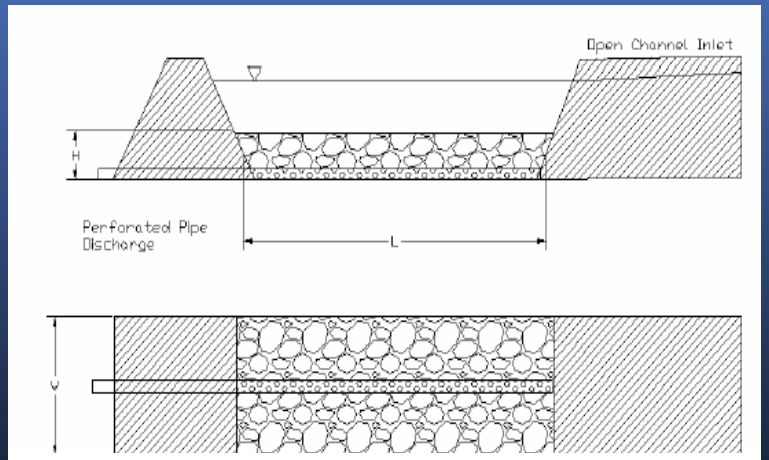
Invertebrate Community Index



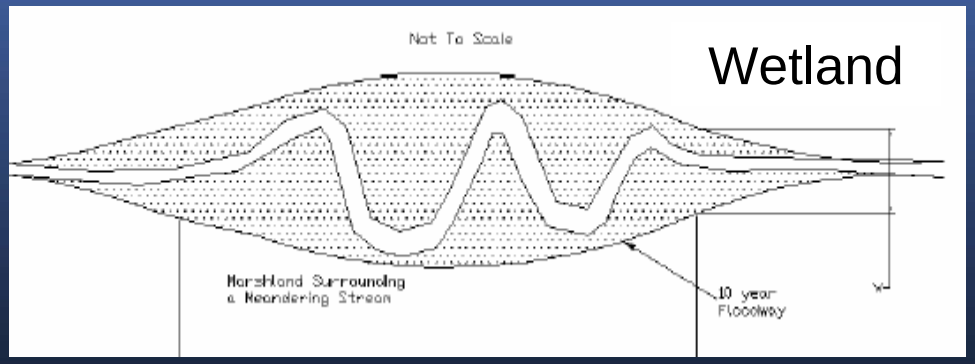
Measures Considered







Slag / Limestone Leach Bed

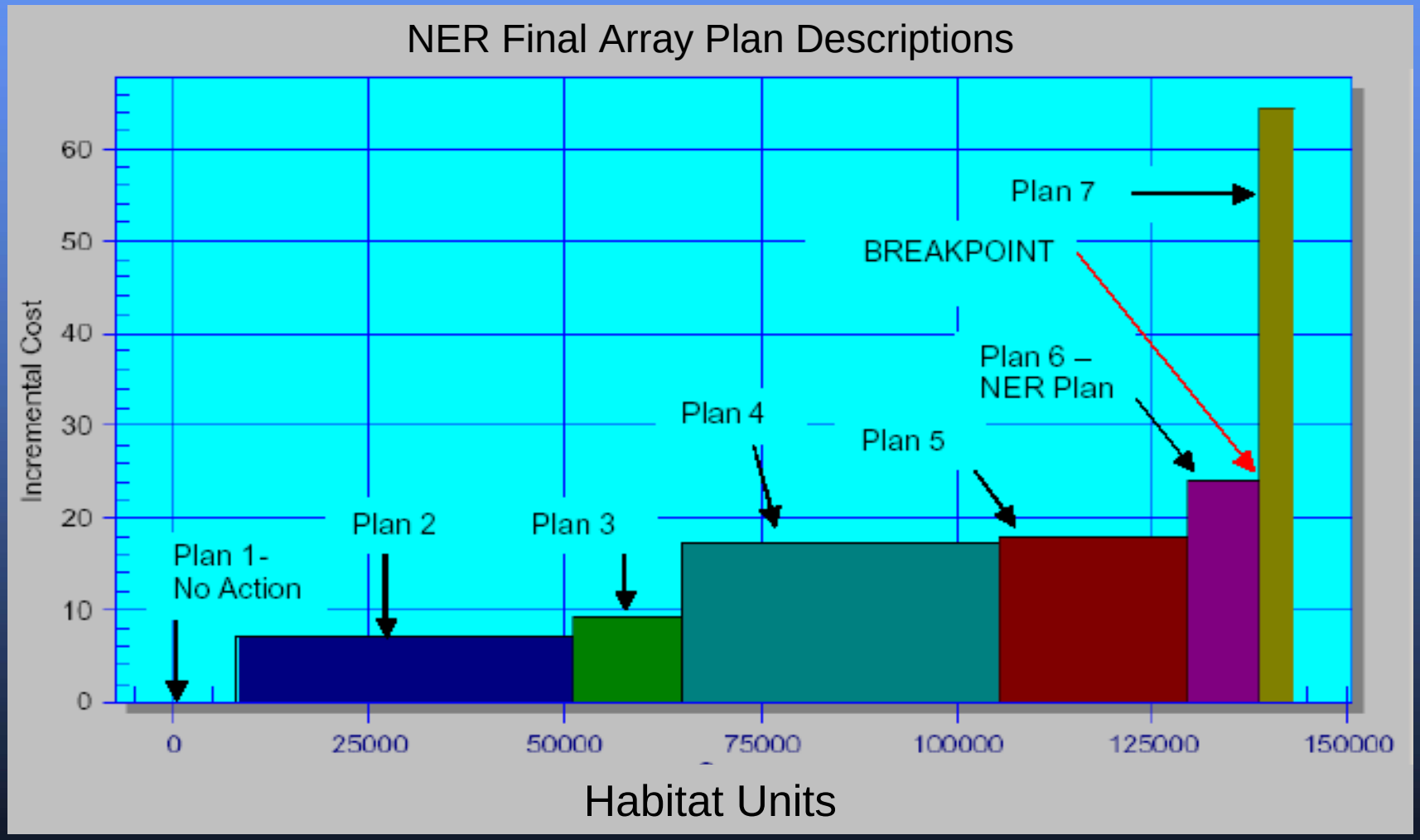


Optimized Final Plans

NER Final Array of Plan Combination Descriptions

Plan Combination	Plan Combinations
1	M (No Action or FWOPC)
2	A (Jobs) + B (Dixie) + C (Rock) + E (Lost w/ Doser)
3	A (Jobs) + B (Dixie) + C (Rock) + E (Lost w/ Doser) + G (Monkey w/ Doser)
4	A (Jobs) + B (Dixie) + C (Rock) + E (Lost w/ Doser) + G (Monkey w/ Doser) + H (Snake) + K (Snow Fork w/ Doser) + L (Coe)
5	A (Jobs) + B (Dixie) + C (Rock) + D (Lost) + G (Monkey w/ Doser) + H (Snake) + K (Snow Fork w/ Doser) + L (Coe)
6	A (Jobs) + B (Dixie) + C (Rock) + D (Lost) + G (Monkey w/ Doser) + H (Snake) + J (Snow Fork) + L (Coe)
7	A (Jobs) + B (Dixie) + C (Rock) + D (Lost) + F (Monkey) + H (Snake) + J (Snow Fork) + L (Coe)

Optimization Plan Outputs



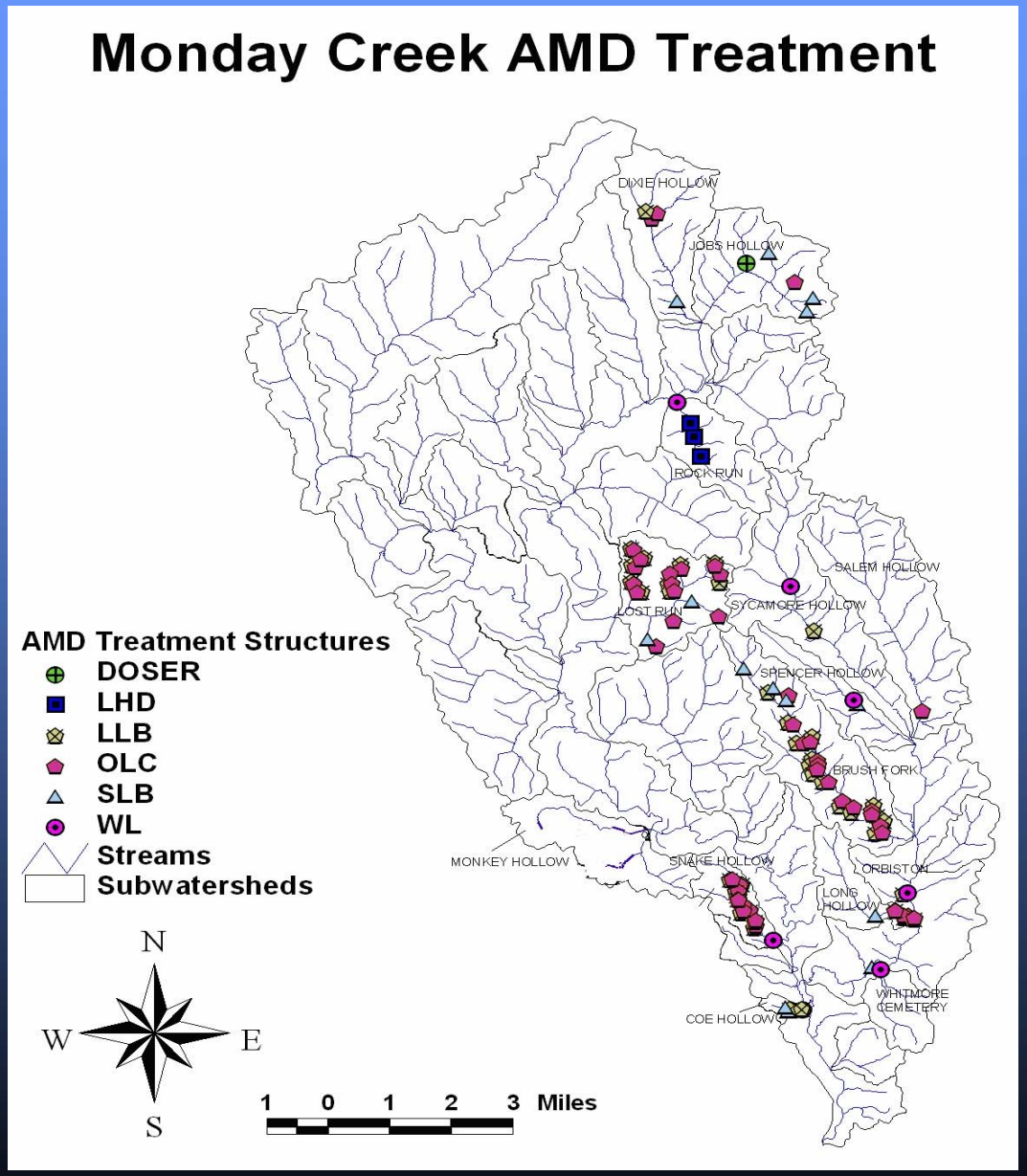
Recommended Plan

Plan 6

- 178 restoration sites
- 98% of watershed will be restored
  - 58.6 stream miles, 230.2 acres
- Achieves the ecological restoration objective of a sustainable ecosystem
- Maximizes the NER account
- Succeeds in establishing connectivity with Hocking River

Recommended Plan Site Locations and Restoration Measures

DOSER = limestone dispenser
LHD = low head dam
LLB = limestone leach bed
OLC = open limestone channel
SLB = slag leach bed
WL = wetland



Consistency with Environmental Operating Principles

1. Environmental Sustainability
   - Plan 6 minimizes OMRR&R requirements
2. Interdependence of life and physical environment
   - Plan 6 was designed to establish an ecosystem able to support aquatic life.
3. Synergy between human and natural systems
   - Plan 6 was coordinated to ensure that land use and access were compatible with the project
4. Accountability under law
   - All Plan 6 restoration measures were coordinated with USFWS to ensure compliance with the Endangered Species Act

Consistency with Environmental Operating Principles

5. Mitigate cumulative impacts to the environment
   - All Plan 6 measures are designed to minimize environmental impacts during construction.
6. Build and share knowledge
   - A multi-partner process was established to obtain information for the study and determine the recommended plan.
7. Respect the views of individuals and groups
   - All groups and individuals were provided opportunity to voice their concerns and ideas through public meetings and bi-monthly team meetings.

Independent Technical Review Highlights

- Restoration measures on another Federal agency property
  - Measures on USFS lands were critical to project success.
  - USFS does not have a mission or mandate to perform ecosystem restoration.
- Lack of description of fish resources
  - Information concerning fish population resources, including density, diversity etc., was added.
- IWR plan – some of the terms were not defined and needed clarification
  - IWR-Plan terms were clarified and the CE/ICA process was explained.

Alternative Formulation Briefing (AFB) Policy Issues

- Corps Interest: Should USFS take the lead?
  - USFS does not have a mission or mandate to perform ecosystem restoration.
  - Measures on USFS lands are critical to project success and need to be implemented.
- Corps Interest: Responsible parties for AMD
  - There are no known potential responsibility parties (PRP).

Alternative Formulation Briefing (AFB) Policy Issues

- Future Without Project Conditions: Mining and logging; ability of the watershed to recover on its own.
  - Fully described the FWOPC with regard to logging and mining
  - Discussed the potential of the watershed to recover naturally
- Plan Formulation: Appearance of Designing to a Predetermined Target
  - Sections of the AFB Report were revised to explain the connectivity issue and the need to implement all measures of the Recommended Plan.

Alternative Formulation Briefing (AFB) Policy Issues

- Ecosystem Outputs: Need to emphasize ecosystem outputs, not water-quality improvements
  - Aquatic habitat outputs were emphasized while explaining that water-quality improvements were critical to project success.
- Cost Effectiveness/Incremental Cost Analysis (CE/ICA): Need to update some key components
  - Real estate costs, future without-project condition, average annual costs and the relative importance of habitat quality factors were updated and described in the report.

Public Involvement & Comments

- Public Meetings – June 28, 2004 in New Straitsville and June 29, 2004 in Nelsonville, Ohio
- Public Comment Period May – June 2005
- Monthly newsletter published by the Monday Creek Restoration Group
- Public comments of draft report favorable

Senate 728 WRDA Language

- PROJECTS SUBJECT TO FINAL REPORT …are authorized to be carried out…if a favorable report of the Chief is completed not later than December 31, 2005."

"*HOCKING RIVER BASIN, MONDAY CREEK, OHIO - The project for ecosystem restoration, Hocking River Basin, Monday Creek, Ohio, at a total cost of $20,000,000, with an estimated Federal cost of $13,000,000 and an estimated non-Federal cost of $7,000,000."*

Project Implementation

- Execution of Favorable Chief's Report.. Sep 05
- Execute Preconstruction Engineering and Design (PED) Agreement..... FY 06
- Obtain PED Funding…… FY 06
- Obtain Construction Funding…….. FY 07
- Execute PCA…… FY 08

Project Costs – Plan 6

FEATURE ACCOUNT		ESTIMATED COST	CONTINGENCY	TOTAL (PL 1-OCT03)
01.-.	Lands and Damages	$98,000	$0	$98,000
02.-.	Relocations	$171,000	$26,000	$197,000
09.-.	Channels and Canals	$10,862,000	$1,548,000	$12,410,000
18.-.	Cultural Resource Preservation	$25,000	$0	$25,000
19.-.	RE Office Building	$17,000	$3,000	$20,000
21 & 22.-.	Prior Expenditures	$1,305,000	$0	$1,305,000
30.-.	E&D	$2,126,000	$0	$2,126,000
31.-.	S&A	$947,000	$0	$947,000
	TOTAL	$15,551,000	$1,577,000	$17,128,000

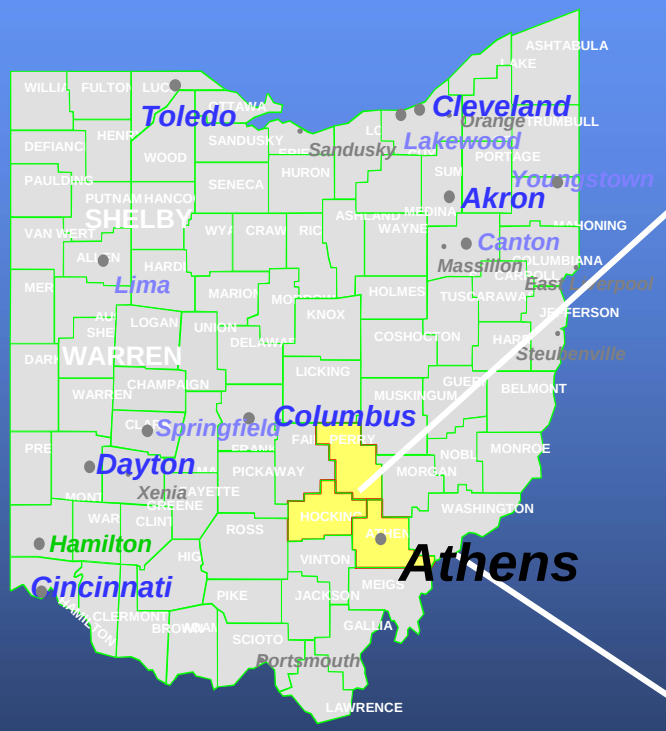
Project Budget Breakdown

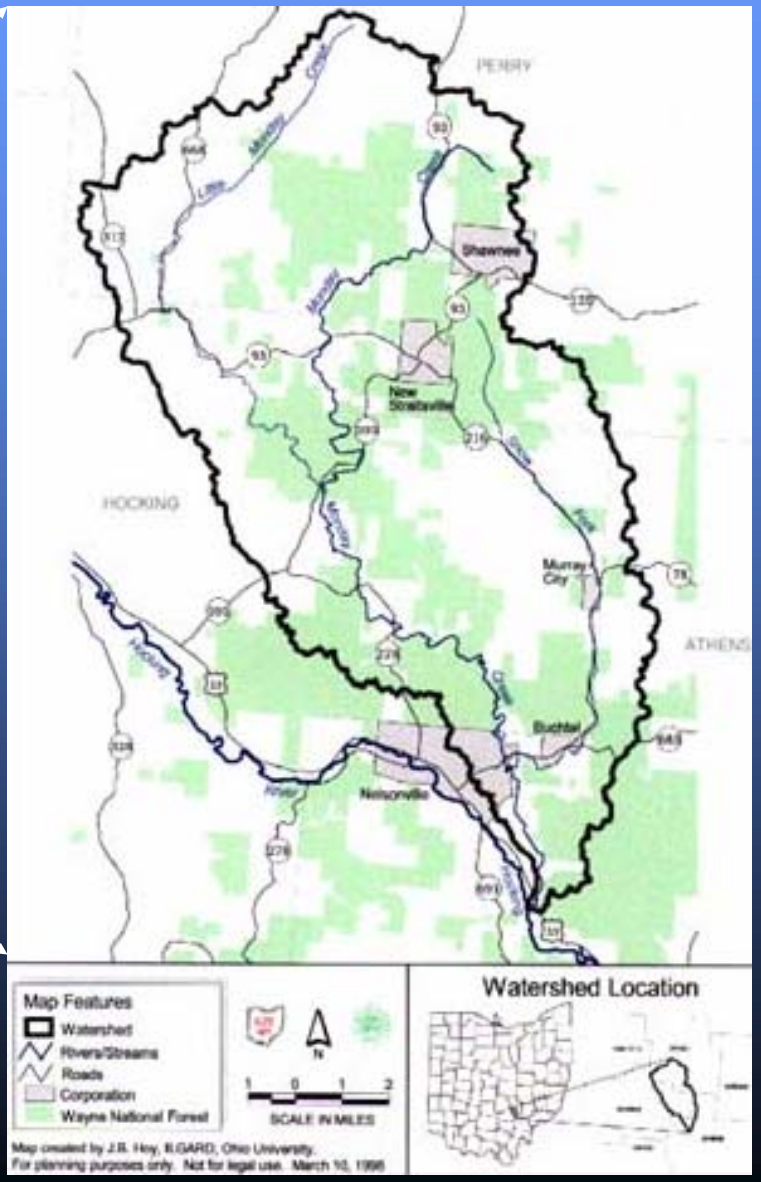
- Planning, Engineering and Design Phase
  - Cost: $900,000 and 2 years to complete
- Project Construction Phase
  - Cost: $16,200,000 and 4 years to complete
- Adaptive Management Monitoring Phase
  - Cost: $27,000 per year for 5-years after construction completion
- Operation, Maintenance, Rehabilitation, Repair and Replacement (OMRR&R)
  - $320,000 per year
  - Considered life-cycle costs over a 20-year period
    - Routine inspection of restoration areas
    - Replacement of limestone and steel slag in leach beds

In Summary

- Team/Partners
- General description
- Existing condition
- Future without project
- Formulation
- Recommended Plan
- Schedule
- Cost Sharing
- OMRR&R
- Next Steps
- Summary

Monday Creek Watershed





- Southeastern Ohio near Athens
- 116 square miles
- 40% of watershed is in the Wayne National Forest

US Army Corps of Engineers®

One Team – Relevant, Ready, Responsive, Reliable

MSC Commander's Briefing

Hocking River Basin, Ohio Monday Creek Sub-Basin Ecosystem Restoration Feasibility Study

Michael B. White, P.E.
Director of Programs
Great Lakes and Ohio River Division
September 2005

Briefing Objectives

- The Rationale for Project Support
- The Expected Response to the draft Report of Chief of Engineers
- Other Observations
- LRD's Recommendations, including finalizing the draft Chief's Report for execution

Rationale for Project Support

- Formulated in Accordance with Policy and Guidance (P&G) and ER 1105-2-100
  - Existing & Future Without Conditions properly identified
  - NEPA compliant – signed FONSI
- In the Federal Interest – *The Recommended Plan is the National Environmental Restoration (NER) Plan*
- Ecosystem Restoration projects are supported by the Administration
- Certified legally and policy compliant
- Division Engineer's Transmittal Letter signed July 2005

Rationale for Project Support

- Public Notice signed July 2005
  - Although not required under the new EC's, the Division Commander and senior leaders have opted to continue using the Public Notice as a means to:
    - maintain communication with partners and stakeholders
    - provide an update and summary of the final report findings
    - make the final report available to interested parties mitigating the cost of producing and distributing the report to the public
  - The issuance of the Public Notice does not duplicate the State & Agency review distribution

Partnerships

- The Non-Federal Sponsor
  - Ohio Department of Natural Resources (ODNR)
    - ODNR has a supportable draft financing plan
- Collaborative Approach
- Numerous Partners and Stakeholders
  - *Federal*: U.S. Forest Service, U.S. Fish and Wildlife Service, U.S. Office of Surface Mines, U.S. Department of Energy
  - *Non-Federal*: Ohio EPA, Monday Creek Restoration Project, Ohio University, West Virginia University
  - General Public

Quality Assurance

- Independent Technical Review Team led by external GS-13 Technical Specialist – Tom Swor, LRN
- Appropriate Policy Review. District Commander certified that the project is technically, legally and policy compliant
- Policy Certification signed in May 2005 by LRD Chief of Policy and Planning
- Division Commander's concurring endorsement of the Report and District recommendations dated 29 July 2005.

Expected Response to the Chief of Engineers' Report

- Favorable reaction by State and Agency Review
- Favorable reaction to the Chief's Report

Other Observations

- WRDA 05
  - Senate Bill 728 – subject to a favorable Chief's Report
  - House Bill 2864 – subject to a favorable Chief's Report
  - Time-sensitive: if enacted
- Congressional Support – Voinovich – OH, DeWine – OH; Hobson OH-07, Ney OH-18, Strickland OH-06
- Appropriations
  - Budget for Planning, Engineering and Design (PED) – none in FY 06; under consideration in FY 07

Recommendations

- Approve Final Report
- Release for State and Agency Review
- Execute Chief's Report
- Reprogram FY 06 to Initiate Preconstruction Engineering and Design (PED)
- Support FY 07 Budget for PED

Civil Works Review Board

Significant Policy Review Concerns

Monday Creek Ecosystem Restoration project

Mark Matusiak

Office of Water Project Review

Policy and Policy Compliance Division

Washington, DC – September 22, 2005

Monday Creek Ecosystem Restoration project

HQUSACE Policy Compliance Review Team Recommendation

Release the report and EA for S&A Review

Significant Policy Issues for Monday Creek Study

- Corps Interest
- Future With-Out Project Condition
- Plan Formulation
- Emphasize Significant Ecosystem Outputs, not WQ
- Cost Effectiveness and Incremental Cost Analysis

Policy Compliance Review – Significant Issue

Issue/Concern: Corps Interest

Reason/Basis: US Forest Service is biggest landowner in the watershed, why should the Corps take the lead on AMD effort? Have any potential responsible parties been identified to remedy the AMD problems?

Significance: Normally, when the Corps does work for another Federal agency, such work is performed on a 100% reimbursable basis. If potential responsible parties could be identified, they could share some of the cost of the remedy for the AMD problem.

Resolution: The District clarified the issue by stating that the non-Federal sponsor would seek separate authorization to enable Corps participation. Once authorization is obtained, t his project is a good fit with Corps areas of expertise in water resources management and aquatic ecosystem restoration, two key Corps mission areas. No potentially responsible other parties have been identified.

Resolution Impact: The issue has been resolved, and HQUSACE supports Corps involvement in the study.

Policy Compliance Review- Significant Issue

Issue/Concern: Future Without-Project Condition (FWO)

Reason/Basis: The FWO did not fully address the affects of future logging and mining on the study area, and did not address the ability of the Monday Creek system to recover over time, without any human intervention.

Significance: The FWO is the baseline for the Corps planning process and the NEPA process. It is of critical importance that the description of FWO be comprehensive.

Resolution: The District clarified the FWO with regard to logging and mining, and addressed the potential of the system to recover naturally over time

Resolution Impact: HQUSACE believes that District evaluation of FWO is complete, and supports District planning process

Policy Compliance Review-Significant Issue

Issue/Concern: Plan Formulation

Reason/Basis: HQUSACE requested clarification of the plan formulation rationale in the AFB used to determine the appropriate scale of the project in relation to the identified goals.

Significance: The AFB materials supported a plan that would restore 100% of the Monday Creek watershed, and stated that this scale of restoration was needed ensure connectivity of Monday Creek habitat improvements with Hocking River.

Resolution: The District revised sections of the report to clarify the connectivity issues, in particular, explaining that all sections of the main stem of Monday Creek must be restored to enable connectivity with Hocking River.

Resolution Impact: Issue is resolved.

Policy Compliance Review- Significant Issue

Issue/Concern: Emphasize Significant Ecosystem Outputs, not WQ

Reason/Basis: The AFB materials appeared to focus on needed improvements to water quality in Monday Creek, and did not emphasize the habitat quality improvements that these WQ improvements would facilitate.

Significance: The Corps' mission areas include aquatic ecosystem restoration, but does not include WQ, which is usually seen as a mission of the USEPA and State EPA.

Resolution: Revisions were made to the report emphasizing the gains in aquatic habitat outputs, explaining that WQ was a necessary component of realizing the habitat gains.

Resolution Impact: Issue resolved.

Policy Review Compliance- Significant Issue

Issue/Concern: Cost Effectiveness/Incremental Cost Analysis (CE/ICA)

Reason/Basis: HQUSACE recommended that the CE/ICA for the study be revised to include updated real estate costs, updated future without-project condition, average annual costs, and the relative importance of the habitat quality factors described in the report.

Significance: Updated costs and FWO conditions are essential parts of a CE/ICA. Also, not all habitat quality measures are equally important to a successful restoration project, and the relative importance of each measure must be reflected in the CE/ICA

Resolution: The CE/ICA was revised to include the above factors.

Resolution Impact: Issue is resolved.

Monday Creek Ecosystem Restoration Project Feasibility Report

Lessons Learned

Huntington District

Lessons Learned (LRH)

#1 When trying to reach a decision, or at least a consensus, with a large number of stake-holders, allow for more time than usual. A consensus to utilize the TAMDL model took 19 months *(Sep 2000 thru Apr 2002)*

- *Numerous team members wanted to ensure the program was sufficient for the needs of the project.*

***Take Away**: Teams must learn how to communicate more effectively and efficiently*

Lessons Learned (LRH)

#2 Ecosystem Restoration projects involving acid mine drainage remediation are complex.

- *Large projects involving complex ecosystems and numerous possible scenarios are difficult to scope.*

***Take Away**: District Team should schedule ample time for formulation and review in the project schedules.*

Lessons Learned (LRH)

#3 The Alternative Formulation Briefing was not a "timely completion of review" as per EC 1105-2-406. 15 months (Mar 2004 to Jun 2005)

- *The LRD RIT team was unfamiliar with Monday Creek project and AMD restoration activities.*

***Take Away**: District Teams must communicate regularly and more effectively with HQ RIT teams. The District will schedule review time and site visits for HQ RIT team in project schedules.*

Monday Creek Ecosystem Restoration Project Feasibility Report

Lessons Learned

Great Lakes and Ohio River Division

Lessons Learned (LRD)

#1 Communication Issues

- *Ineffective and limited communication had a delaying effect on the feasibility phase process.*

***Take Away**: The team must communicate more effectively and efficiently via established processes such as FSMs, AFBs, etc., and by routine contacts with team members.*

Lessons Learned (LRD)

#2 Proper Understanding of Formulation (Justification) for Ecosystem Restoration Projects

- *i.e., subtle and sometimes not so subtle differences between water quality benefits and NER benefits*

***Take Away**: The production and ITR teams must understand that projects are primarily intended to improve water quality are not a Corps mission*