

Natural Resource Restoration in the Meramec River Basin: Regional Conservation Partnership Program

Draft Restoration Plan and Environmental Assessment
October 2023



MISSOURI
DEPARTMENT OF
NATURAL RESOURCES



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1 Introduction

This Draft Restoration Plan and Environmental Assessment (RP/EA) has been prepared by the U.S. Department of the Interior, acting through the U.S. Fish and Wildlife Service (USFWS), the U.S. Department of Agriculture through the U.S. Forest Service (USFS), and the State of Missouri, through the Missouri Department of Natural Resources (MoDNR), acting in their capacity as natural resource trustees (Trustees) to address natural resources injured and ecological services lost due to releases of hazardous substances, including heavy metals from mines, mills, smelters, and tailings impoundments within the Old Lead Belt (OLB) and the Viburnum Trend Mining District (VT), which collectively make up the Southeast Missouri Lead Mining District (SEMOLMD).

The goals of the restoration projects proposed within this Draft RP/EA are to work collaboratively with agricultural producers and communities to reduce soil erosion, improve soil and water quality, and restore and enhance fish and wildlife resources in the SEMOLMD. The Trustees propose to accomplish these goals through community outreach and promoting landowner participation in a Natural Resource Conservation Service (NRCS) cost-share program focused on implementing land improvement practices and voluntary land protection on stream corridors, forest buffers, and unstable stream banks in target areas within the Meramec River basin. The Trustees and project partners used three previously funded Natural Resource Damage Assessment and Restoration (NRDAR) projects (Section 1.4), along with non-NRDAR projects funded by partnering agencies (Table 1) to demonstrate the collective partnership's conservation experience and financial commitment to restoration in the Meramec River Basin. These components were used by the Trustees and partners to secure additional funds through NRCS' Regional Conservation Partnership Program (RCPP; Section 1.4) to be used by the public for restoration in the Meramec River Basin.

For decades, heavy metals, including but not limited to lead, zinc, copper, and silver, were mined, milled, and smelted in the OLB and the VT. Past and ongoing releases of hazardous substances into nearby soils, sediments, and surrounding waters, including tributaries within the Meramec River basin, have led to natural resource injuries. Surface water, sediments, fish, mussels (including species listed under the Endangered Species Act), and migratory birds, have been exposed to and adversely affected by hazardous substances released from the mining-associated facilities in OLB and the VT.

Response actions by the U.S. Environmental Protection Agency (EPA) and the MoDNR in the OLB have focused on the reduction of threats to human health including the replacement of contaminated yard soils and stabilizing eroding mine tailings piles. EPA is conducting a Remedial Investigation/Feasibility Study (RI/FS) to investigate impacts of heavy metals and the ecological risks they pose in and around the Big River as part of the Big River Mine Tailings (BRMT) and Southwest Jefferson County (SWJC) National Priorities List (NPL) Superfund Sites. The RI serves as the mechanism for collecting data to characterize site conditions, determining the nature of the waste, assessing risk to human health and the environment, and conducting treatability testing to evaluate the potential performance and cost of the treatment technologies that are being considered. The FS is the mechanism for the development, screening, and detailed evaluation of alternative remedial actions. In conjunction with the RI/FS, EPA is

conducting pilot projects to develop remedial strategies for addressing human and ecological risks from metal contamination in and around the Big River, but not to restore natural resources and their services as part of their remedial actions.

The VT is not currently classified as an NPL Superfund site. The EPA's remedial actions in the VT are solely focused on removal and disposal of contaminated yard soils and addressing haul road contamination. Their actions will not address ecological risks or compensate the public for the ecological services lost in the interim under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).

This Draft RP/EA has been developed in accordance with CERCLA and its implementing regulations at 43 C.F.R. § 11.93, to inform the public of the types and scale of restoration to be undertaken towards compensating for injuries to natural resources. The Trustees are soliciting comments on this Draft RP/EA and will address comments in preparing a Final RP/EA, wherein the Trustees will identify the selected Restoration Alternative(s).

1.1 Relationship to the Southeast Missouri Ozarks Regional Restoration Plan

In 2014, the Trustees produced the [Southeast Missouri Ozarks Regional Restoration Plan](#) (SEMORRP), which provides a process framework governing the approach for restoration project identification, evaluation, selection and implementation. In the SEMORRP, the Trustees selected Alternative D as the Preferred Alternative (see Section 3.5, pages 23 and 24 of SEMORRP for a description), where the Trustees will consider a combination of restoration actions and projects to accomplish restoration goals at or near the site(s) of injury.

This Draft RP/EA includes references to and incorporates portions of the SEMORRP for expediency and efficiency, as appropriate. Specific sections of the SEMORRP are identified, including a brief summary of the incorporated material. The restoration actions proposed in this Draft RP/EA, in accordance with the analysis contained in the SEMORRP, will address injured natural resources/services lost due to the release of hazardous substances including metals. The restoration actions or projects proposed herein will address impacts to natural resources from releases of hazardous substances associated with mining activities in the OLB and the VT. Specifically, the goal of the restoration is to: Improve or protect water quality, the quality of aquatic, riparian, and floodplain habitats, and including the species and communities dependent on those natural resources.

1.2 Natural Resource Trustee Authority

Under CERCLA, the Trustees are authorized to act on behalf of the public to assess injuries to natural resources and services resulting from the release of hazardous substances into the environment. The NRDAR process allows the Trustees to pursue claims against responsible parties for damages based on these injuries to compensate the public. Pursuant to CERCLA, the goal of this process is to plan and implement actions to restore, replace, or rehabilitate the natural resources that were injured or lost as a result of the release of a hazardous substance, or to acquire the equivalent resources or their services (42 U.S.C. § 9601, *et seq.*; 43 C.F.R. Part 11).

1.3 Summary of NRDAR Settlements

The Trustees recovered monetary damages from American Smelting and Refining Company (ASARCO) as a part of bankruptcy proceedings. The 2008 settlement resolved certain legal

claims concerning injuries to natural resources associated with hazardous substances released from the Federal Mine and Mill Complex (part of the BRMT Site in St. Francois County) and several mining sites in the VT. Separately, the Trustees recovered monetary damages from Cyprus Amax in 2014 to settle certain legal claims concerning injuries to natural resources associated with hazardous substances released from the Buick Mine, Mill, and Smelter (Buick Facilities) in the VT. Since those settlements, the Trustees have expended restoration funds to restore injured natural resources. Currently, there is approximately \$22.7 million available from the BRMT Site ASARCO settlement and \$3 million from the Cyprus Amax settlement to conduct restoration. The Trustees propose to fund the projects described in this Draft RP/EA from these remaining settlement funds. The expected cost of the Preferred Alternative is approximately \$771,000.

1.4 Background for Proposed Activities

The Trustees, conservation agencies, and non-governmental organizations (NGOs) have been collaborating for years to coordinate restoration and conservation activities within the Meramec River basin, which is among the most biologically significant drainages in mid-continental North America. The Meramec River basin contains diverse and rare aquatic and terrestrial plants, animals, and natural communities, including multiple federally and state listed species. The Meramec River and tributaries are among the few remaining free-flowing streams of substantial size within the Mississippi River system. The largest tributary to the Meramec River is the Big River, which flows through the OLB and is contaminated with heavy metals from historic mining practices in the watershed. Huzzah Creek also serves as a major tributary to the Meramec River, and receives inputs from Crooked Creek, portions of which have been contaminated by releases of hazardous substances from historic and active mining facilities in the VT.

As part of the NRDAR for the BRMT and SWJC, the Trustees have coordinated with the U.S. Army Corps of Engineers (USACE) to identify potential restoration targets in the Big River to reduce metal impacts on federally endangered freshwater mussels. The USACE developed the [Meramec River Ecosystem Feasibility Study and Environmental Assessment](#) (Meramec FS), which identifies restoration techniques to address bank instability, erosion, suspended and bedded sediments, riparian zone loss, and altered stream geomorphology along the Big River. Land adjacent to the Big River is a priority for future restoration projects by the Trustees and under the Meramec FS. Restoration project development requires extensive outreach and coordination to find private landowners interested in implementing restoration on their property. The Trustees also recently funded restoration in Crooked and Huzzah Creeks, focusing on stabilization of stream banks, enhancement of riparian forests, and floodplains using a suite of conservation agricultural practices. These restoration projects are anticipated to increase wildlife habitat diversity, including for migratory birds, improve water quality through erosion reduction, and improved stabilization of in-stream habitat to support aquatic species and their habitats.

In 2021, a multi-agency partnership comprised of the Trustees, other state agencies, and NGOs (“the Partnership”; Table 1) successfully competed for Natural Resource Conservation Services (NRCS) Regional Conservation Partnership Program (RCPP) funding to benefit resources in the Meramec River basin, including, the Big River and Crooked and Huzzah creeks. The goal of the RCPP is to promote coordination between NRCS and

partners with similar conservation goals, to expand the scope of projects and benefits to natural resources. The RCPP provides a unique opportunity for NRCS to work alongside partners to implement solutions to natural resource challenges on agricultural lands, non-industrial private forest lands, or associated land which NRCS determines eligible activities will achieve desired conservation benefits.

As part of the RCPP application process, conservation partners must demonstrate their knowledge and experience implementing restoration by identifying approved cash or in-kind, value-added restoration contributions (Partner Contributions) to qualify for RCPP funding. The project submitted to NRCS by the Partnership, *The Meramec River Basin Restoration Project*, (Meramec RCPP) described \$6.3 million worth of approved restoration activities being implemented by the Partnership over a 5-year period. Restoration activities considered as Partner Contribution in the Meramec RCPP application include work conducted under three previously funded NRDAR projects; Crooked-Huzzah Creek Restoration (Iron and Crawford counties), Borehole Closure Program (St. Francois County), and Calico Creek Restoration (Jefferson County). These projects account for approximately \$2.4 of the \$6.3 million in Partner Contributions described in the Meramec RCPP application. Each of these NRDAR projects occur within the Meramec River basin, were funded under previous restoration plans, and are in the process of implementation by the Trustees and/or contracting agencies.

Based on the Partnership's experience and estimates of Partner Contribution, NRCS allocated up to \$2.4 million in Meramec RCPP funds available for local agricultural producers to implement restoration to benefit the public and natural resources in the Meramec River basin. These funds will support the implementation of conservation agricultural practices including but not limited to, stream bank stabilization, reinforced stream crossings, alternative watering sources, livestock exclusion fencing, riparian corridor revegetation, restoration of contaminated soils, and long-term land protection.

This Draft RP/EA proposes to use recovered NRDAR restoration funds for two purposes. First is to support approximately 39% of a Community Restoration Project Coordinator ("Coordinator") position. The Coordinator will work closely with interested private landowners along the Big River to identify restoration opportunities that could be considered for future restoration under (1) the Meramec FS, (2) the Meramec RCPP, or (3) as a separate NRDAR restoration project. The Nature Conservancy (TNC) will provide funding to support 24% of the Coordinator's position to conduct outreach to landowners throughout the greater Meramec River basin (outside of the Big River). Meramec RCPP funds (specifically, Technical Assistance Enhancement or Implementation funds) will support the remaining 37% of the Coordinator position working with interested and eligible landowners to sign-up for cost-share practices through the Meramec RCPP. Restoration opportunities identified for future funding consideration under the Meramec FS or as a separate NRDAR restoration project will be proposed under a separate Draft Restoration Plan(s).

Second, this Draft RP/EA proposes to use NRDAR restoration funds to reduce landowner or producer costs by supplementing eligible landowner cost-share obligations for select conservation practices under the Meramec RCPP, specifically in the Crooked and Huzzah

watersheds (Figure 1). This supplementary funding complements existing NRDAR funded restoration in the Crooked and Huzzah watersheds and may help to increase interest in high value practices that would be cost prohibitive to eligible landowners or producers. This priority geography is within the Meramec River basin and is in close proximity to a large network of managed public lands (USFS) and designated conservation areas.

Table 1: The Partnership agencies for the Meramec RCPP

Agency/Organization	Moniker
U.S. Fish and Wildlife Service	USFWS
Missouri Department of Natural Resources	MoDNR
The Nature Conservancy	TNC
Land Learning Foundation	LLF
Missouri Department of Conservation	MDC
Ozark Land Trust	OLT
Shaw Nature Reserve	SNR

1.5 Public Participation

Public participation and review are integral to the restoration planning process and is specifically required in the CERCLA NRDAR regulations (*e.g.*, 43 C.F.R. §11.81(d) (2)). This Draft RP/EA will be open for public comment for 30 days from the date of publication. After consideration of public comments, the Trustees will select an alternative to be included in a Final RP/EA. The Trustees will address public comments and will document their responses as part of the Final RP/EA. Interested individuals, organizations, and agencies may submit comments by writing or emailing:

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Copies of this document are available online at the [USFWS Service Southeast Missouri NRDAR Website](#) or the [MoDNR's What's New in NRDAR Website](#). As the project progresses, the Trustees may amend the Final RP/EA if significant changes are made to the types, scope, or impact of the projects. In the event of a significant modification to the Final RP/EA, the Trustees will provide the public with an opportunity to comment, as appropriate.

2 Summary of Injury to Natural Resources

The Trustees initiated the NRDAR process at numerous sites within the SEMOLMD, including the BRMT, the SWJC (which encompasses the Big River and its floodplain in Jefferson County), and in the VT. The Trustees completed a Damage Assessment Plan in 2009, summarizing existing information on natural resource injuries and describing proposed studies to evaluate past, current, and future impacts to natural resources and the services they provide. In addition, the Damage Assessment Plan outlined how information gathered from the studies would be used to determine the types and scale of restoration needed to address these injuries. The Trustees conducted a series of site-specific studies assessing the exposure of natural resources, such as songbirds, sediments, geologic resources, mussels, crayfish, plant communities, and mammals, to hazardous substances and potential effects resulting from that exposure. The Trustees' assessment studies identified mining related metal contamination which caused injuries to geologic resources (sediment and soil), aquatic resources (mussels, crayfish, and benthic fish), and terrestrial resources (songbirds and floristic quality). Evidence to support injury determination in the Big River, its floodplains and in the VT includes:

- exceedances of water quality criteria due to elevated heavy metals in sediment, established for the protection of aquatic biota (Pavlowsky et al. 2017, MacDonald et al 2000);
- sediment and soil contamination at concentrations that effect geologic resources;
- reduction in mussel density and community richness (Roberts 2010, 2016, 2023);
- reduction in crayfish density (Allert 2010);
- reduction in riffle fish density (McKee 2010);
- lead concentrations in benthic fish exceeding World Health Advisory consumption advisories;
- lead concentrations in songbird tissues in excess of levels found to have adverse effects (Beyer 2013); and
- phytotoxicity and reduced floristic quality (Struckhoff 2013).

Please see Section 2.2 of the SEMORRP for further information related to the history of lead mining and NRDAR in the SEMOLMD. Summary information about Southeast Missouri Ozarks' physical, biological, and socioeconomic resources are contained in Section 4 of the SEMORRP. Summary information about Big River and the Meramec River Watershed of the Southeast Missouri Ozarks, including physical resources (geology, topography, soil, surface water, and groundwater), aquatic habitat, and biological resources, including sensitive species, is contained in Appendix D of the SEMORRP (see pages 14 – 17, 22, 25, 26, 27, and 32). These sections of the SEMORRP are incorporated by reference herein.

3 Proposed Restoration Alternatives

To compensate the public for injuries to natural resources from releases of metals from BRMT, SWJC and the VT, the Trustees must develop alternatives for the “restoration, rehabilitation, replacement, and/or acquisition of the equivalent of the natural resources and the services those resources provide” (42 C.F.R. §11.82 (a)). The Trustees developed the SEMORRP and identified broad categories of restoration types. As described in Alternative D (Preferred Alternative) of the SEMORRP, the Trustees presented a suite of restoration project types that would be considered

for implementation, including upland resource restoration, wetland, floodplain, and riparian corridor restoration, and surface water quality and aquatic resource improvement. It is anticipated that restoration opportunities identified by the Coordinator under this proposed Draft RP/EA will fall into categories of floodplain and riparian corridor enhancement, surface water quality, and aquatic resource improvement or upland restoration and will be consistent with the preferred alternative in the SEMORRP.

3.1 Restoration Alternatives Evaluated

The Trustees evaluated the following restoration alternatives:

1. Alternative A – No Action (Natural Recovery)
2. Alternative B – Jointly funded Community Restoration Project Coordinator Position and Meramec RCPP Funding (Preferred)
3. Alternative C - Trustee Led Outreach

3.2 Restoration Evaluation Criteria

To ensure the appropriateness and acceptability of restoration options, the Trustees evaluated each option against restoration evaluation criteria as described in 43 C.F.R. § 11.82(d)(1-10):

1. Technical Feasibility
2. Cost Benefit Comparison
3. Cost Effectiveness
4. Results of Actual/Planned Response Action
5. Avoidance of Further Injury
6. Natural Recovery Period
7. Ability of Resources to Recover without Restoration
8. Public Health and Safety
9. Consistency with relevant Laws, Regulations, and Policies
10. Compliance with applicable Laws, Regulations, and Policies

Additional criteria for restoration alternative selection, developed through discussions with natural resource managers at each of the Trustee agencies, were also evaluated and are consistent with the criteria identified in Sections 6.4 and 6.5 of the SEMORRP, incorporated by reference herein.

1. Relationship to Injured Resources and Services
2. Consistency with Trustees' Restoration Goals
3. Time to Provide Benefits
4. Duration of Benefits

3.3 Alternative A - No Action Alternative (Natural Recovery)

Under this alternative, the Trustees would take no direct action to coordinate with landowners or provide additional funds to support restoration opportunities to restore injured natural resources or compensate for lost natural resource services in the OLB and the VT. This alternative would include the continuance of ongoing state and federal private landowner programs but would not provide landowner incentives in the Big River, Crooked and Huzzah watersheds, or include additional outreach to identify landowner supported restoration opportunities aimed at reducing contamination, reducing potential exposure to contaminants, or enhancing aquatic ecosystems. Under this alternative, a Coordinator position would not be funded, supplemental cost-share would not be provided for Meramec RCPP practices in Big River (if applicable) or Crooked-

Huzzah watersheds, and NRDAR funds would not be used as Partner contribution, therefore limiting funds available to landowners through the Meramec RCPP.

3.4 CERCLA NRDAR Evaluation

The no action alternative is technically feasible and has no associated costs. Under this alternative, state and federal agencies, and NGOs would continue to manage, conserve, and protect natural resources through already-funded restoration activities. However, outreach to local landowners would be limited to what agencies and organizations are already doing in the area with limited existing resources. No targeted outreach aimed at identifying restoration opportunities in the Big River would be conducted, which would limit the Trustees' ability to conduct future restoration activities including implementation of projects under the Meramec FS. Under the no action alternative, it is unlikely that injured resources will recover on their own within a reasonable timeframe. Response actions in the area are limited in scope and focused on human health. They are not anticipated to address ecological risks or compensate the public for natural resource services lost. The No Action Alternative does not meet the requirements and goals of the CERCLA NRDAR process.

3.5 Alternative B – Jointly funded Community Restoration Project Coordinator Position and NRCS RCPP Funding (Preferred)

This alternative proposes to fund approximately 39% of a jointly funded Coordinator position that will be physically located in the Meramec River basin and will work closely with interested landowners to identify restoration opportunities in the Meramec River basin. NRDAR restoration funds would support the Coordinator to provide outreach and assistance to landowners specifically along the Big River. Any Big River restoration opportunities identified by the Coordinator could be considered for future funding under the Meramec FS, separate Draft NRDAR Restoration Plan(s), or supplemental cost-share as part of the Meramec RCPP under this Draft RP/EA, in coordination with EPA's remedial action. Close coordination of the timing of restoration implementation in the Big River will ensure proposed NRDAR restoration projects are not redundant to or conflict with EPA's remedy.

The remaining (61%) of funds to fully support the Coordinator's position will be provided in part by The Nature Conservancy (TNC) and remainder through reimbursed Technical Assistance (TA) funding under the Meramec RCPP. Restoration activities associated with TNC or TA funding will be similar in nature to NRDAR funded restoration activities, but will extend throughout the greater Meramec basin instead of focusing on the Big River. TA funds from the Meramec RCPP can be used to reimburse specific components of the Coordinator's time, including enrollment of eligible landowners and producers in RCPP cost-share programs, preparing habitat improvement plans, and certifying implemented RCPP practices. Conservation practices anticipated to be eligible through the Meramec RCPP will complement restoration activities currently being implemented by the Partnership in the Meramec River basin.

The Preferred Alternative also provides NRDAR restoration funds to supplement eligible landowner and agricultural producer's cost-share (the remaining cost of a project or practice that is not covered by the \$2.4 million Meramec RCPP financial assistance and is the responsibility of the landowner). Cost reimbursement to producers of up to 95% will be

available on applicable Meramec RCPP Conservation Agricultural Practices (i.e riparian corridor plantings, livestock exclusion fencing, alternative livestock waterers, reinforced stream crossings), and stream bank stabilization in the Crooked-Huzzah sub-basin (Figure 1). Supplemental funds to augment eligible landowner or producer cost-share will vary based on practice. The Trustees may also expand efforts to include the Big River watershed in future years, when EPA's response actions are known and restoration can be implemented without the potential for overlap. These Trustee priority areas align with current and prior funded restoration projects Crooked, Huzzah, and Big River watersheds.

3.5.1 Meramec RCPP Partnership

As previously described in Section 1.4, the proposed project relies heavily on agency and organization partnerships to streamline and coordinate multi-agency conservation efforts and achieve shared conservation goals and priorities efficiently. This project provides a unique opportunity to make approximately \$2.4 million in additional NRCS cost share dollars available to the public for restoration through the Meramec RCPP. The Partnership (Table 1) has over 20 years of experience implementing similar conservation practices in and around the Meramec River basin.

3.5.2 Project Benefits

This project will result in the identification, development and implementation of conservation and restoration opportunities directly related to the injuries from which the proposed restoration project funds are derived. Specific benefits provided by this project includes:

- a. Identification of restoration opportunities on interested landowner property in and around Big River to restore native habitat injured from releases of metals from historic mining practices;
- b. Outreach and coordination with landowners on multi-agency restoration activities ongoing in the Big River;
- c. Implementation of priority conservation agricultural practices in the Crooked-Huzzah sub-basin focused on establishing, restoring, and protecting riparian corridor vegetation and protecting eroding stream banks;
- d. Addition of up to \$2.4 Million in NRCS cost-share dollars through the Meramec RCPP for conservation agricultural practices throughout the Meramec River basin.

3.5.3 Timeline

The proposed projects assume a 5-year timeframe and will commence as soon as practicable. If selected for funding, the Coordinator position would be targeted for hiring in late 2023. The Coordinator position would continue through the duration of the Meramec RCPP contract.

3.5.4 Proposed Budget

The Trustees anticipate the cost of funding 39% of the Coordinator position and supplementing applicable cost-share will cost \$771,000 over a 5-year period and will generally follow the budget categories below. In addition, costs associated with three previously funded NRDAR projects (see Section 1.4) in the Meramec River basin qualify as Partner Contribution to secure availability of NRCS RCPP funds.

Table 2 New Funding Request Cost Estimates for Jointly funded Community Restoration Project Coordinator Position and NRCS RCPP Funding

Costs Description	Estimated NRDAR Funding	Implementing Agency
Big River Coordinator - 0.39 FTE	\$336,000	Jointly hired position through Partnership
Funds to supplement Landowner cost-share in Crooked-Huzzah and/or Big River sub-basin	\$435,000	MoDNR/Partnering Agency
Total Request*	\$771,000	

*The distribution of the budget items under “New Funding Request Under Proposed Project” described above, may vary as necessary, to accomplish the purpose of this restoration plan.

Table 3 Summary of Current Programmed NRDAR Funds used as Contribution for the NRCS RCPP Application

Costs Description	Approved NRDAR Funding	Implementing Agency
Implementation Costs – Borehole Closure Program	\$300,000	Soil and Water Conservation District
Implementation Costs – Crooked-Huzzah Project	\$1,200,000	The Nature Conservancy
Project Management and Implementation Costs – Calico Creek	\$901,548*	Trustee agencies, USACE, SEMO State, other contractors
Total Restoration Implementation funds as Contribution Toward NRCS RCPP Funds	\$2,401,548	

* Only a portion of the total project funds are applied as Partner contribution due to uncertainties in implementation timing. This number may be adjusted if additional eligible project activities, consistent with the approved RP, occur within the RCPP project timeframe.

The Trustees will also include applicable personnel costs for the planning of new projects or oversight of existing projects in the Meramec River Basin as Partner Contribution for the 5-year project period. If the Meramec RCPP funds are programmed or implemented prior to the end of the 5-year timeframe, additional RCPP funds may be available, dependent on new projects or new qualifying Partner Contributions.

3.6 CERCLA NRDAR Evaluation

Activities included under the Preferred Alternative will provide benefits to injured resources and their supporting habitats that cannot be achieved through natural recovery, and provides outreach necessary to facilitate future restoration in the Big River. This alternative is technically feasible as it supports activities currently implemented under state and federal conservation agricultural programs. The Preferred Alternative provides benefits to migratory birds, increased water quality, recovery of aquatic biota, and benefits to supporting habitats over time. It also facilitates outreach to local landowners and the development of future restoration opportunities. The Preferred Alternative is cost effective as it leverages funding and in-kind contributions from Project Partners and makes funding from NRCS' Meramec RCPP available to landowners. Restoration activities are not anticipated to overlap with current or future response actions and will reduce future injury to natural resources exposed to hazardous substances.

It is unlikely that the Preferred Alternative will result in adverse impacts to public health and safety and it meets the requirements and goals of the CERCLA NRDAR process to provide for restoration that compensates the public for the injury and loss of natural resources and services caused by releases of hazardous substances. Proposed activities under this Draft RP/EA are subject to requirements of other laws, regulations, and applicable statutes.

3.7 Alternative C – Trustee Led Outreach

This project alternative involves all of the components identified in Alternative B but would be completed by the Trustees instead of hiring a Coordinator, and would not include supplemental cost-share funds in the Crooked-Huzzah sub-basin or Meramec RCPP funding. This project would help to identify restoration opportunities in and around Big River that would address injuries related to the release of hazardous materials associated with the Federal Facility Complex, for which settlement funds were obtained (see Section 1.3).

3.8 CERCLA NRDAR Evaluation

Under Alternative C, no Coordinator would be hired, and the ability to conduct landowner outreach would be greatly reduced utilizing only existing Trustee agency staff. The alternative is technically feasible as coordination and outreach activities are currently conducted by the Trustees. However, this alternative is not as cost effective compared to Alternative B, since no funding or in-kind work would be leveraged and adding agency Trustee staff, if needed to support workloads, would result in higher transaction costs. Outreach activities will serve to coordinate restoration activities with response actions to ensure there is no overlap. This alternative will provide future restoration opportunities that will benefit injured resources and their supporting habitats that cannot be achieved through natural recovery. However, future benefits may be limited; without a Coordinator in close proximity to the Project Areas, current Trustee staffing levels may not allow for sufficient outreach, planning, and project implementation to occur. This alternative is not likely to result in adverse impacts to public

health and safety and it meets the requirements and goals of the CERCLA NRDAR process to provide for restoration that compensates the public for the injury and loss of natural resources and services caused by releases of hazardous substances.

4 Environmental Assessment

Actions undertaken by a federal Trustee to restore natural resources or services under CERCLA are subject to National Environmental Policy Act (NEPA) (42 U.S.C. § 4321, *et seq.*) and other federal laws. NEPA and its implementing regulations set forth a process of environmental impact analysis, documentation, and public review for federal actions, including restoration. NEPA provides a framework for federal agencies to consider reasonably foreseeable environmental effects of proposed actions and inform and involve the public in the decision-making process. The NRCS has developed national categorical exclusions for actions that do not create significant individual or cumulative effects on the human environment, and programmatic EAs for the [RCPP](#), [Environmental Quality Incentives Program \(EQIP\)](#), and [Conservation Stewardship Program \(CSP\)](#), which each evaluate potential effects of the respective program as a whole, and reserves site-specific NEPA evaluation to be completed through Environmental Evaluations per NRCS regulations (7 C.F.R. Part 650).

The Trustees anticipate two primary actions under this Draft RP/EA:

1. Funding a Coordinator to conduct outreach to landowners in the Big River watershed;
2. Providing NRDAR restoration funds to augment eligible landowner cost-share obligations on practices funded by NRCS through the Meramec RCPP in the Crooked-Huzzah sub-basin.

In this section, the Trustees analyze the environmental consequences of Alternatives A-C to determine whether implementation of any of these alternatives may significantly affect the quality of the human environment, particularly with respect to the physical, biological, socio-economic, or cultural environments.

4.1 Affected Environment

This Draft RP/EA evaluates restoration options to compensate the public for the natural resource injuries and associated losses in ecological services resulting from exposure to hazardous substances in the VT and Big River. As part of the evaluation, the Trustees assessed the current physical, biological, socio-economic, and cultural resources of the area within which restoration activities are likely to occur. This information will ensure that potential restoration projects are designed to both maximize ecological benefits while minimizing or eliminating project-related adverse environmental consequences.

4.2 Physical Environment

The Big River, Crooked, and Huzzah creeks lie within the Meramec River basin which have been injured by the release of hazardous substances from the VT and Big River Mine Tailings Site (Figure 1). Summary information about Southeast Missouri Ozarks' physical, biological, and socioeconomic resources are contained in Section 4 of the SEMORRP. Summary information about the Meramec and Big River Watersheds, including physical resources

(geology, topography, soil, surface water, and groundwater), aquatic habitat, and biological resources, including sensitive species, is contained in Appendix D of the SEMORRP and incorporated by reference herein. Prior to implementing restoration practices described by this RP/EA, additional Endangered Species Act and National Historic Preservation Act (NHPA) consultation will be completed, as necessary, prior to construction activities.

There are a number of areas in the VT and Big River affected by one more or more environmental stressors. Stressors include not only hazardous substances released from hard rock mining, but also effluent from wastewater treatment facilities, other point source discharges, and sedimentation and erosion from agricultural and logging practices. Evaluation of environmental stressors are important when selecting restoration projects and areas to identify and prioritize areas within the watersheds most in need of restoration, areas most at risk, where restoration will be most likely to succeed, etc. Environmental stressors are also considered in the evaluation of injury when establishing the baseline conditions of the area.

4.3 Socioeconomic and Recreational Resources

A summary of demographic data is provided in Table 3. In general, the proposed projects areas are rural where agriculture, including pastured cattle, hay cropping, and timber, produce jobs for local populations. Areas of fastest growth are in the commercial and services sector along major road transportation corridors and larger cities. Additional information on demographics of the areas within which the Trustees propose restoration activities in this Draft RP/EA are discussed in SEMORRP section 4.3.2 page 30 and are incorporated by reference herein.

Recreational resources are highlighted in the SEMORRP in Section 4.3.1 and a list of public lands in the SEMO provided in Appendix F. These sections of the SEMORRP are incorporated by reference herein.

Table 3 Project Area demographics by county.

Demographic Category	Iron	Reynolds	Crawford	Dent	Washington	St. Francois	Jefferson
Population (2016 estimate)	10,150	6,274	23,984	15,518	24,819	66,653	224,777
Minority Population	571	416	1,237	1,038	1,565	5,947	16,504
Percent Minority	6%	7%	5%	7%	6%	9%	7%
Low Income Population**	50%	42%	42%	45%	47%	40%	24%
% persons in poverty (estimate)	21.7	15.6	16.5	16.9	19.2	18.6	8.2
Households	4,102	2,580	9,798	6,355	9,278	24,572	84,978
Population per square mile	18	8	32	21	33	147	342

* Statistics generated using 2016-2020 U.S. Census Bureau data and EPA’s Environmental Justice Screening and Mapping Tool (Version 2.1) <https://ejscreen.epa.gov/mapper/>

** State average is 31%

4.4 Executive Order 12898 Analysis

Executive Order 12898 (Feb. 11, 1994) requires federal agencies to identify and address, as appropriate, disproportionately high and adverse human health or environmental effects of its

programs, policies, and activities on minority and low-income populations. For the purpose of evaluating environmental justice issues associated with implementation of the Preferred Alternative, demographic data were obtained from the U.S. Census Bureau and the State of Missouri (Table 3). In this analysis, a county is considered to have a minority population if its non-white population is greater than 50 percent or is meaningfully larger than the statewide non-white population. Low-income areas are defined as counties where the percentage of the population below poverty status exceeds 50 percent or is meaningfully greater than the general population (average statewide poverty level). To make a finding that disproportionately high and adverse effects would likely fall on minority or low-income populations, three conditions must be met:

- There must be a minority or low-income population in the impact zone.
- A high and adverse impact must exist.
- The impact must be disproportionately high and adverse on the minority or low-income population

Based on the census data for the counties of Iron, Reynolds, Crawford, Dent, Washington, St. Francois, and Jefferson, the minority population in the areas of the proposed projects does not meet the condition of being classified having a minority population since the minority population comprises only 5 to 9% of the population for each county. The project areas could be considered low-income because close to half (24-50%) of the population in counties where projects will occur are classified as low income. In addition, poverty levels exceed the statewide average (estimate of 13%) for all but one county (Jefferson) where projects will occur.

4.5 Cultural and Historic Resources

The proposed projects are located in Iron, Reynolds, Crawford, Dent, Washington, St. Francois, and Jefferson County, Missouri. Significant historical and cultural resources, including Civil War battlefields and Native American cultural and archeological sites, some of which are protected through Missouri State Parks system, are found in the vicinity of the restoration areas. Outreach activities covered under this EA have no potential to affect properties meeting the criteria for the National Register of Historic Places and other cultural resources, and any restoration opportunities identified through outreach will be subject to review under future restoration plan(s). Restoration activities covered under this EA such as planting riparian buffers, stabilizing stream banks, fencing and alternative water source instillation have the potential to affect cultural resources. Specific areas for restoration implementation within the project area have not been identified. Prior to the implementation of the proposed restoration projects, potential impacts to historic and archaeological resources and historic will be reviewed under Section 106 of the National Historic Preservation Act (NHPA).

4.6 Environmental Consequences

The following sections evaluate anticipated environmental consequences of restoration Alternatives A, B, and C. The Trustees will continue to evaluate environmental impacts as project details are identified, designed and implemented, and determine whether additional analysis under NEPA is warranted.

4.6.1 Environmental Consequences of Alternative A: No Action

The No Action Alternative in this RP/EA (Alternative 1) is similar to the No Action Alternative from the SEMORRP (see SEMORRP p. 16, 25, and 26). Environmental consequences of the No Action Alternative are described on pages 35 and 36 of the SEMORRP, incorporated by reference herein.

4.6.1.1 Conclusion of Alternative A

The Trustees found that the No Action Alternative would not meet the purpose and need for restoration under this Draft RP/EA, the Restoration Evaluation Criteria, or CERCLA, including as defined by CERCLA NRDAR procedures. Therefore, the No Action Alternative is not a preferred restoration alternative.

4.7 Environmental Consequences of Alternative B: Jointly funded Community Restoration Project Coordinator Position and NRCS RCPP Funding (Preferred)

As part of this Draft RP/EA, the Trustees anticipate 1) providing NRDAR restoration funds to hire a Coordinator to conduct outreach activities in the Big River watershed and 2) augmenting eligible landowner cost-share obligations to implement conservation practices in the Crooked-Huzzah sub-basin, under the NRCS' Meramec RCPP. Outreach and increased support for landowners to access habitat restoration and enhancement activities on their land would result in beneficial direct impacts to the environment but no major impacts to physical, biological, or socio-economic, cultural environments. Implementation of Conservation Ag Practices under the Meramec RCPP could cause minor to moderate, short-term, localized adverse impacts to existing natural resources, and result in long-term benefits that are expected to outweigh these impacts. There would be minor to moderate short-term, direct disruptions to habitat due to the movement of sediments and soils as a result of stream bank reshaping, trenching associated with alternative water systems, instream placement of materials for reinforced stream crossings, grading activities, and other related actions. These impacts are expected to be localized and limited to the project area through the use of best management practices. Further, project implementation would appropriately adhere to all federal, state, and local laws, regulations, and policies. The use of heavy machinery or other equipment would likely increase noise and diesel emissions in the surrounding area during construction. However, these disturbances would be temporary and minor. In addition, fish and wildlife may be disturbed by the increase in turbidity and noise but could avoid the area during construction and are likely to resume normal patterns of movement shortly after implementation is complete. Though these construction-related impacts would be adverse, they are anticipated to be minor to moderate, and short-term in nature. Long-term beneficial impacts to aquatic resources and riparian plants and animals would occur due to the reduced erosion, and increased shelter and foraging opportunities provided by riparian plantings, and beneficial impacts would span a large geographic area downstream. Stabilizing stream banks and implementing conservation agricultural practices (i.e., cattle exclusion fencing, installation of alternative water sources, riparian corridor revegetation, reinforced stream crossing and aquatic organism passage) will reduce detrimental impacts to aquatic organisms associated with long-term sediment and soil erosion, and result in enhanced condition of aquatic habitats and the organisms they support, including crayfish and riffle fish.

4.7.1 Conclusion of Alternative B

The Trustees found Alternative B to best meet the purpose and need and all Restoration Evaluation Criteria (Section 3.2), including alignment with the Trustees' restoration goals identified in the SEMORRP. The Trustees anticipate Alternative B to have primarily beneficial direct and indirect long-term impacts including development of landowner restoration partnerships, identification of new restoration opportunities, and improved land management activities and stream conditions which will enhance fish and wildlife communities and recreation opportunities.

4.8 Environmental Consequences of Alternative C: Trustee Led Outreach

This alternative would consist only of funding the NRDAR Trustees to conduct outreach activities in the Big River basin and would result in beneficial direct impacts to the environment but no significant impacts to physical, biological, or socio-economic, cultural environments.

4.9 Conclusion of Alternative C

The Trustees' evaluation of Alternative C found that it meets the purpose and need and will have primarily beneficial direct and indirect long-term impacts to the environment. However, under the Restoration Evaluation Criteria, Alternative C is not cost effective and does not provide as many natural resource benefits as Alternative B. Therefore, Alternative C is not a preferred restoration alternative when evaluated against the NRDAR evaluation criteria.

4.10 Cumulative Impacts

Cumulative impacts associated with the Preferred Alternative of the SEMORRP can be found in Section 5.5.1 of that restoration plan. Information in the SEMORRP is incorporated by reference herein. The section that follows tiers from and expands upon the SEMORRP analysis to a project-specific level.

The Preferred Alternative proposed in this RP/EA is anticipated to have a cumulative impact that is long-term and beneficial. The combination of outreach coordination and augmentation of landowner cost share obligations presented in Alternative B would contribute most to the Trustees' efforts to restore natural resources in the Big River and Crooked and-Huzzah creeks and would result in the greatest positive impact for the Meramec River basin as a whole. Outreach to landowners will serve to build long lasting restoration partnerships and identify future restoration opportunities in the Big River. Augmentation of landowner cost-share obligations for select practices under the Meramec RCPP will make those practices more accessible to landowners for implementation, and will serve to increase habitat diversity, suitability and robustness for terrestrial and aquatic biota.

The Preferred Alternative is not expected to result in significant cumulative impacts on the human environment since it will not change the hydrologic patterns of discharge in tributaries of the Meramec River and would cause only a negligible to minor change in recreation, economic activity, and land-use in the project area. Future activities within the scope of the Preferred Alternative, either completed by the Trustees or other organizations, agencies, or groups, will enhance habitat that exists naturally in the area and identify opportunities for future restoration that would provide additional benefits to the environment. Regulatory activities anticipated or ongoing in the Meramec River basin that, in combination with the proposed restoration activities described herein, will provide additional cumulative benefits to the environment include future

remedial actions to address contaminated sediment, ecosystem restoration activities in and around the Big River by the U.S. Army Corps of Engineers USACE and the Trustees. Restoration activities proposed in this Draft RP/EA have been designed to integrate or complement these planned environmental controls and restoration activities. Other ongoing non-regulatory land-use activities that will likely have cumulative impacts on the area would include continued mining and milling activities, and limited logging and cattle grazing operations.

5 Monitoring

Ecological monitoring at sites where NRDAR restoration funds augment the cost-share associated with implemented conservation agricultural practices will be conducted by a Trustee representative and/or cooperative partners where appropriate and in accordance with applicable methods and metrics identified in the Meramec RCPP.

Previously funded NRDAR restoration projects identified as Partner Contribution for the Meramec RCPP application may include ecological and/or water quality monitoring specific to those projects. They will be implemented in accordance with the project's final Restoration Plan.

6 Agencies, Organizations, and Parties Consulted for Information

U.S. Fish and Wildlife Service
Columbia Ecological Services Field Office
101 Park DeVille Drive, Suite A
Columbia, MO 65203

Missouri Department of Natural Resources
Environmental Remediation Program
P.O. Box 176
Jefferson City, MO 65102

Ozark Land Trust
Gray Summit Field Office
302 Morton Lane
Villa Ridge, MO 63089

Missouri Department of Conservation
St. Louis Regional Office
2360 Hwy D
St. Charles, MO 63304

The Nature Conservancy
Missouri Chapter
P.O. Box 440400
St. Louis, MO 63144

Shaw Nature Reserve
307 Pinetum Loop Rd,
Gray Summit, Mo 63039

Land Learning Foundation
704 W Jackson
P.O. Box 55
Keytesville, MO 65261

U.S. Environmental Protection Program – Region 7
11201 Renner Blvd
Lenexa, KS 66219

U.S. Army Corps of Engineers – St. Louis District
1222 Spruce Street
St. Louis Mo, 63103

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- Roberts, A.D., Hundley, J. Mosby, D.E., Rosenberger, A. Bouska, K.L., Simmons, B., and Lindner, G. 2016, Quantitative survey of freshwater mussels (unionoidea) and assessment of sediment contamination in the Big River, Missouri. Accessed via: [Quantitative survey of freshwater mussels \(unionoidea\) and assessment of sediment contamination in the Big River, Missouri](#)
- Roberts, A.D., J. Besser, J. Hundley, D.E. Mosby, A. Rosenberger, K.L. Bouska, B.R. Simmons, S.E. McMurray., S. Faiman, L. Lueckenhoff. 2023. As assessment of the relation between metal contaminated sediment and freshwater mussel populations in the Big River, Missouri. *Science of the Total Environment*. 876.
- Struckhoff, M., E. Stroh, and K.W. Grabner. 2013. Effects of mining-associated lead and zinc soil contamination on native floristic quality. *Journal of Environmental Management* 119: 20-28.
- U.S. Corps of Engineers St. Louis Riverfront - Meramec River Basin Ecosystem Restoration Feasibility Study with Integrated Environmental Assessment. November. 2019. [Meramec River Basin Ecosystem Restoration Feasibility Study with Integrated Environmental Assessment](#)
- U.S. Department of Agriculture – Natural Resources Conservation Service – RCPP <https://www.nrcs.usda.gov/programs-initiatives/rcpp-regional-conservation-partnership-program#resources>

8 Figures

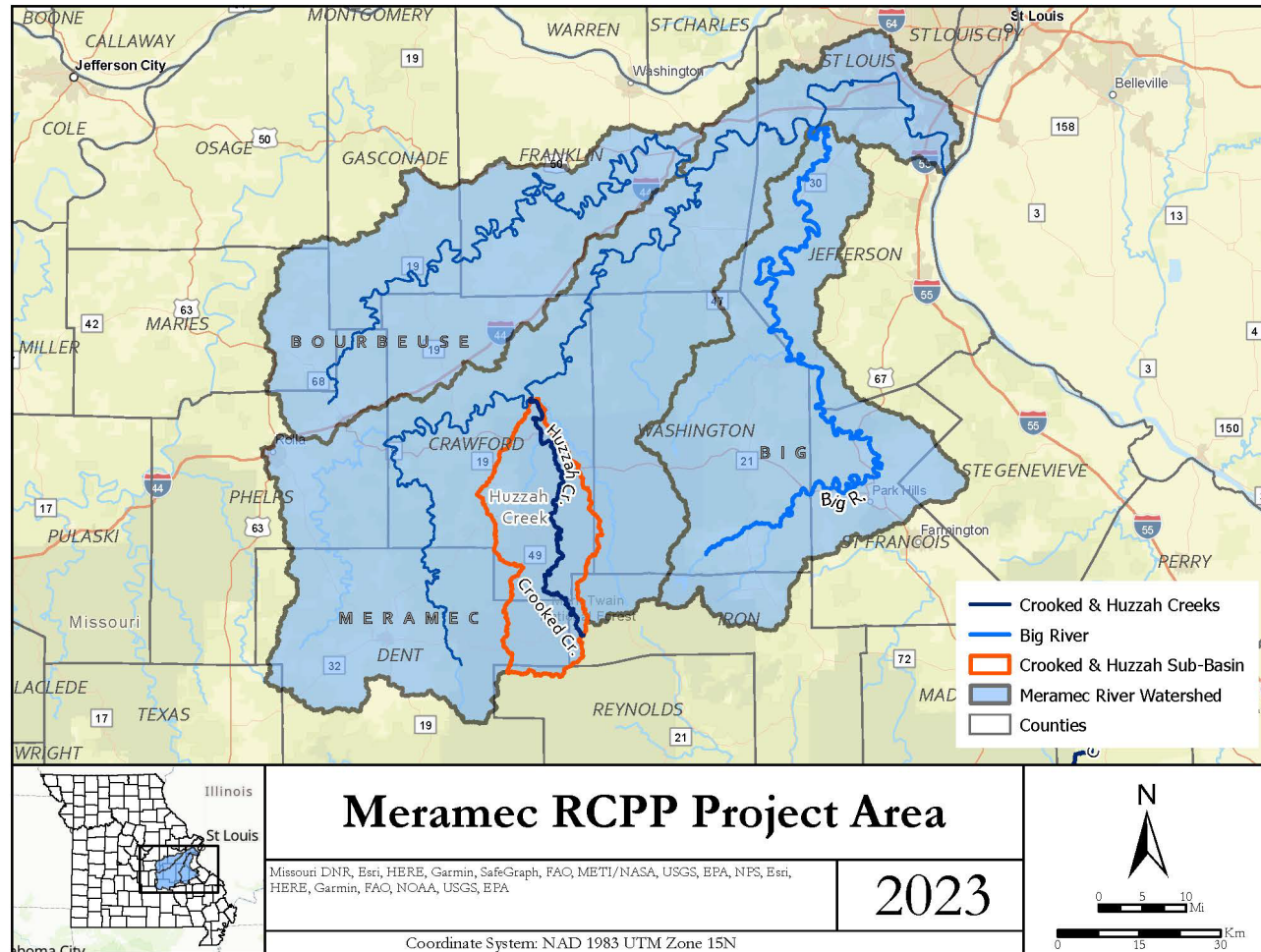


Figure 1. Meramec RCPP project area and Crooked and Huzzah sub-basin