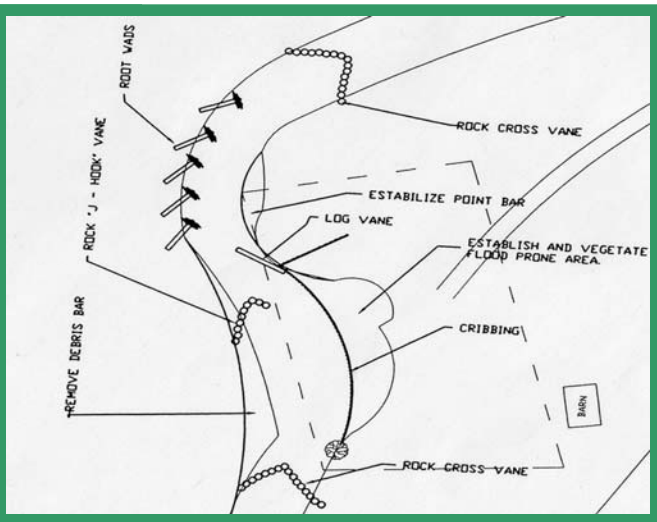
USDA NRCS Natural Resources Conservation Service

Emergency Watershed Protection Program

Final
Programmatic Environmental Impact Statement



NRCS
Emergency
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Protection
Program

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U. S. Department of Agriculture
Natural Resources Conservation Service
Emergency Watershed Protection (EWP) Program

Final Programmatic Environmental Impact Statement (PEIS)
EWP Program Improvement and Expansion

Abstract

The Emergency Watershed Protection (EWP) Program helps remove threats to life and property that remain in the nation's watersheds in the aftermath of natural disasters such as floods, hurricanes, tornadoes, and wildfires. This Programmatic Environmental Impact Statement (PEIS) analyzes the direct, indirect, and cumulative impacts on the nation's watershed ecosystems and human communities of a comprehensive NRCS proposal to improve and expand the EWP Program. EWP Program delivery improvements would enable NRCS staff with EWP Program responsibility to provide EWP assistance more effectively and efficiently when and where it is needed. These improvements, which comprise the agency's Preferred Alternative, would allow NRCS to more fully, equitably, and consistently meet the needs of people requiring emergency assistance. Program defensibility improvements would address environmental, economic, and social concerns and values. Program expansion would also address concerns raised about the need for more comprehensive disaster recovery in watershed areas not currently within the Program's purview. The PEIS analyzes three alternatives to this NRCS Preferred Alternative including taking No Action to improve the EWP Program.

NRCS had previously evaluated the environmental and socioeconomic impacts of three alternatives for future administration of the EWP Program in a Draft PEIS, which was published for public and agency review. The No Action alternative (Alternative 1) was used to establish a baseline of impacts assuming the EWP would not be changed in any way from the way it is currently run. The Draft PEIS Proposed Action (Alternative 2) incorporated 15 specific program improvements and expansions. A third alternative—Prioritized Watershed Planning and Management—was evaluated to consider how EWP decisions might be integrated with decisions on other watershed-based programs in flood-prone watersheds. The three Draft EWP PEIS alternatives are described and fully evaluated in this Final EWP PEIS along with the NRCS Preferred Alternative (Alternative 4). The Preferred Alternative, which incorporates many of the elements of the Draft PEIS Proposed Action unchanged or with only minor changes, was developed based on comments from other agencies and the public on the Draft EWP PEIS, comments on the Proposed EWP Rule (7 CFR 624) published in November 2003, and internal agency considerations concerning management, funding, and implementation feasibility.

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SUMMARY

S.1 BACKGROUND AND ORGANIZATION OF SUMMARY

The Emergency Watershed Protection (EWP) Program helps remove threats to life and property that remain in the nation's watersheds in the aftermath of natural disasters such as floods, hurricanes, tornadoes, wildfires, drought, and volcanic activity. The Program is administered by the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS), which provides technical and financial assistance to local authorities—Program sponsors—to preserve life and property threatened by erosion and flooding. The Program is authorized by Section 216 of the 1950 Flood Control Act as amended by the 1978 Agricultural Credit Act and the 1996 *Farm Bill* (Federal Agricultural Improvement and Reform Act). NRCS regulations for the EWP Program are set forth in 7 CFR 624.

The threats that the EWP Program addresses are termed *watershed impairments*. These include debris-clogged stream channels, undermined and unstable streambanks, jeopardized water control structures and public infrastructure, and damaged upland sites stripped of protective vegetation by fire or drought. Watershed impairments that are not addressed when they pose a serious threat are likely to cause loss of life, injury, or devastating property damage in a subsequent storm event.

This Final Programmatic Environmental Impact Statement (FPEIS) analyzes the impacts on the nation's watershed ecosystems and human communities of a comprehensive proposal by NRCS to improve and expand the EWP Program. It also evaluates the impacts of alternatives to that action.

This Summary presents a synopsis of the FPEIS and is organized for ease of reading as follows, with the FPEIS source chapters indicated:

- S.2 Purpose and Need (Chapter 1)
- S.3 Current EWP Program (Chapter 2)
- S.4 EWP Program Alternatives (Chapter 3, Sections 3.1 to 3.3)
- S.5 Affected Environment (Chapter 4)
- S.6 Comparison of Impacts of the EWP Program Alternatives (Chapter 3, Section 3.4 based on the impacts analyzed in Chapter 5)
- S.7 Mitigation (Chapter 3, Section 3.5)

S.2 PURPOSE AND NEED FOR THE ACTION

The NRCS Preferred Alternative is EWP Program Improvement and Expansion. To implement the Preferred Alternative, NRCS would incorporate changes in EWP Program administration, in project execution, and in the design of practices dealing with traditional watershed impairments. NRCS would expand the Program by adding floodplain sediment deposition restoration, upland disaster debris removal, and repair of damaged structural/enduring conservation practices to the list of watershed protection activities EWP addresses, to the extent these practices are not eligible under other USDA programs or the programs of other agencies.

The *purpose and need* for the NRCS Preferred Alternative is to improve the delivery and defensibility of the EWP Program and to address concerns about natural disaster-caused threats to life and property that the Program does not currently address.

EWP Program delivery improvements would enable NRCS field and State office personnel with EWP Program responsibility to provide EWP assistance more effectively and efficiently when and where it is needed. The improvements should allow NRCS to more fully, equitably, and consistently meet the needs of people requiring emergency assistance. Program defensibility improvements would address environmental, economic, and social concerns and values. Program expansion would address concerns raised about the need for more comprehensive disaster recovery in watershed areas not currently within the Program's purview.

S.3 THE CURRENT EWP PROGRAM

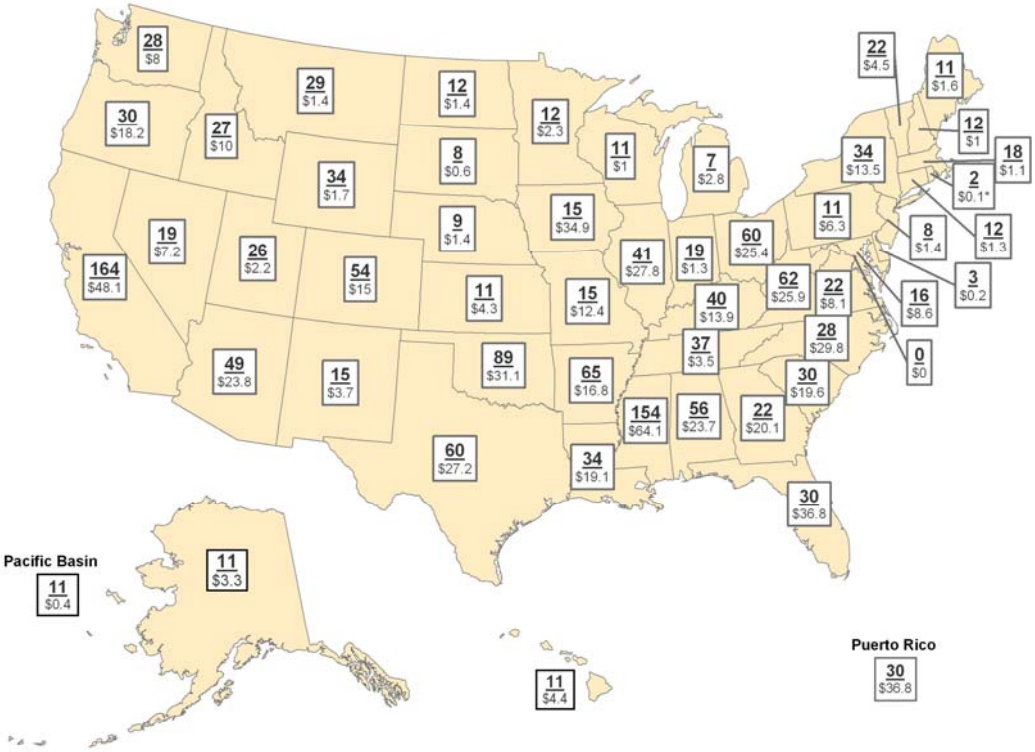
NRCS administers the EWP Program to respond to life and property-threatening watershed impairments caused by natural disasters. Local sponsors (e.g., counties, conservation districts) who request EWP assistance provide at least 20 percent of funding for EWP watershed repair practices. NRCS may provide up to 80 percent of funding and technical assistance (up to 100 percent for exigency) for EWP practices that remove disaster debris, repair damaged streambanks, dams, and dikes, protect floodplain structures, and restore critical watershed uplands. Federal funding is through supplemental Congressional appropriations as requested by NRCS. Total financial assistance allocated by state for EWP Program activities from 1988 to 2003 are shown in Figure S.3-1 (in millions of dollars). [Note: The dollar amounts presented in Figure S.3-1 do not include technical assistance]. At present, the EWP Program budget remains zero-based and allocations are made on a year-to-year basis according to need through requests for supplemental appropriations.

The major practices currently employed under EWP include stream flow capacity restoration; stream bank restoration and protection; dam, dike, and levee repair; protection of structures in floodplains; and restoration of critical upland portions of watersheds. EWP also currently administers a voluntary program of floodplain easement purchase on agricultural lands.

Restoration of stream channel dimension, pattern, and profile to allow normal stream flow often requires removal and disposal of debris. Damaged streambanks are protected directly by single application or combined use of hard armoring, use of woody structural materials, soil bioengineering, and vegetative plantings and seedings. Streambanks are indirectly protected by in-stream flow modification. Direct and indirect streambank protection also may be used in combination.

The EWP Program repairs disaster-damaged dams, dikes, and levees or removes them if repair is not feasible or cost-effective. Floodplain diversions are employed to divert flow away from structures such as water treatment plants. Sediment or debris basins trap materials up-gradient before they can damage structures. Repair of critical upland portions of watersheds includes installation of diversions, drains and conveyances, and sediment and debris basins, and revegetating by planting or seeding. The EWP practices generally share common activities:

creating access to reach a damage site, use of heavy equipment on bank, in-stream, or on uplands, material disposal, and grading, shaping, and revegetating portions of the site as appropriate.



**Rhode Island's financial assistance totaled $38,006*

Fig S.3-1 –Total Financial Assistance for EWP Program Work (bottom number, in millions) and Number of Disaster Events (top number) by State (1988-2003)

The EWP Manual documents NRCS policy governing EWP; the National EWP Handbook covers field procedures. NRCS staff administers the EWP Program in the field when sponsors request assistance with disaster damage. NRCS completes Damage Survey Reports (DSRs) describing the watershed impairments at a particular site, their eligibility for repairs, the cost and benefits of appropriate repair practices, and the environmental and technical soundness of the proposed measures. The EWP regulations, manual, and handbook (including the DSR) would be revised to reflect any Program changes NRCS decides to adopt.

The 1996 Farm Bill authorization of floodplain easements provides NRCS with an opportunity to purchase easements on flood-prone lands as an alternative to traditional eligible EWP practices. It is not intended to deny any party access to the traditional eligible EWP practices. It is intended to provide a permanent alternative solution to repetitive disaster assistance payments and to achieve greater environmental benefits where the situation warrants and where the affected landowner is willing to participate in the floodplain easement approach. The National Watersheds Manual (NWSM) 390-V, Circular 4, provides the current Program guidance for acquisition of floodplain easements. Currently, three categories of easements are eligible for

purchase on agricultural lands that are frequently damaged: 1) allows no agricultural uses, 2) allows certain compatible uses such as timbering, haying, and grazing, 3) allows cropping as well as timbering, haying, and grazing.

Exigency (high priority emergency situations) sites receive immediate attention and priority in funding; non-exigency sites are handled later. NRCS coordinates its work with Federal agencies, principally the U.S. Army Corps of Engineers (USACE), U.S. Fish and Wildlife Service (USFWS), Federal Emergency Management Agency (FEMA), Environmental Protection Agency (EPA), National Marine Fisheries Service (NMFS), and U.S. Forest Service (USFS), and with State agencies, including the relevant State Historic Preservation Office (SHPO), Tribal Historic Preservation Officer (THPO), and other consulting agencies, such as federally recognized tribes, wildlife resource and water quality offices, tribal governments, and local communities. At issue are important regulatory and environmental requirements, such as protecting federally listed endangered or threatened species and preserving unique cultural and historic resources, including those listed on or eligible for the National Register of Historic Places.

The EWP Program is one among a number of Federal and State-level programs dealing with disaster assistance and watershed management. It has been characterized in public comments as one of the most responsive to local needs in small, rural watersheds. The key aspects of the current EWP Program that were considered for improvement or expansion under the Draft PEIS Proposed Action and the Preferred Alternative include:

1. Emergency Terminology – whether to continue using the terms “exigency” and “non-exigency” as they are now used
2. Exigency Funding and Completion Requirements – how best to improve current exigency response procedures
3. Prioritization of Project Funding – how best to improve procedures for project prioritization
4. NRCS and Local Sponsor’s Cost-share Rates – whether to continue to administer the EWP under current Federal/Sponsor cost-share rates
5. Project Defensibility Review Criteria – how best to address social concerns and values in project defensibility reviews
6. Level of Inter-agency Coordination, Planning, and Training – how best to improve current EWP Program coordination, training and planning
7. Eligibility of Repairs to Agricultural Lands – whether to allow repair of impairments to agricultural lands
8. Eligibility of Repeated Repairs to the Same Site – whether to continue to allow repeated repairs to EWP sites
9. Multiple Beneficiary Eligibility Requirement – whether to continue to require multiple beneficiaries be documented for non-exigency measures
10. Eligible Restoration Methods – whether to continue to employ only least-cost restoration measures
11. Compatible Uses of Floodplain Easement – whether to continue to allow land-owner uses of floodplain easements under the three existing compatible-use categories
12. Eligibility of Repairs to Enduring Conservation Practices – whether to allow repairs of enduring conservation practices

13. Eligibility of Improved Alternative Recovery Solutions – whether to allow funding of improved alternative solutions
14. Eligibility of Recovery Work Away from Streams and Critical Areas – whether to allow disaster-recovery work away from streams and critical areas
15. Floodplain Easement Eligibility on Improved Lands – whether to allow purchase of floodplain easements on improved lands

S.4 THE EWP PROGRAM ALTERNATIVES

S.4.1 EWP PEIS Public Involvement and Formulation of the Alternatives

In September 1998, NRCS announced its intent to prepare an EIS on the EWP Program and conducted formal scoping for the EWP PEIS, meeting with and soliciting input from representatives of other Federal, State, and local agencies, and the general public. Public scoping meetings were held in six cities located centrally to recent EWP project activities. The Federal Register and national newspapers published notices that NRCS was preparing a PEIS and that input was being sought through public scoping meetings, a toll-free phone line, regular mail, and the NRCS website on the Internet. The EWP Program alternatives reflect ideas voiced and recommendations made during that scoping process.

NRCS also solicited comments from the public and agencies on the Draft EWP PEIS. The Draft PEIS evaluated the environmental impacts of three alternatives for future administration of the EWP Program: a No Action alternative (Alternative 1), NRCS' Draft PEIS Proposed Action (Alternative 2), and an alternative of Prioritized Watershed Planning and Management (Alternative 3).

NRCS compiled and reviewed all Draft EWP PEIS comments submitted by Federal, State, and local government agencies, organizations, and members of the public and all substantive comments were considered in preparing this Final EWP PEIS. NRCS developed responses to the 202 substantive comments, and these comments and responses are provided in the Final PEIS. Based on the comments received on the Draft EWP PEIS and on the Proposed EWP Rule (7 CFR 624) published in November 2003, as well as internal agency considerations concerning management, funding, and implementation feasibility, NRCS developed a fourth EWP Program alternative—NRCS' Preferred Alternative—which incorporates many of the elements of the Draft PEIS Proposed Action, but that leaves some elements unchanged or introduces only minor changes when compared with the No Action. The Final EWP PEIS analyzes the environmental and socioeconomic impacts of this fourth alternative, as well as of the three Draft EWP PEIS alternatives mentioned above. A Final EWP Rule will be published simultaneously with the Final EWP PEIS Record of Decision a minimum of 30 days after the publication of this PEIS.

S.4.2 Definition of EWP Program Alternatives

NRCS evaluated the environmental and socioeconomic impacts of three alternatives for future administration of the EWP Program in the Draft EWP PEIS. A No Action alternative (Alternative 1) was used to establish a baseline of impacts assuming the EWP would not be

changed in any way from the way it is currently run. NRCS' Draft PEIS Proposed Action (Alternative 2) incorporated 15 specific Program improvements and expansions. A third alternative—Prioritized Watershed Planning and Management—was evaluated to consider how EWP decisions might be integrated with decisions on other watershed-based program decisions in particular in flood-prone watersheds. The three Draft EWP PEIS alternatives are described and fully evaluated in this Final EWP PEIS in Chapter 3. This Final EWP PEIS includes a fourth alternative—**NRCS' Preferred Alternative**—that incorporates many of the elements of the Draft PEIS Proposed Action, but that leaves some elements unchanged or introduces only minor changes when compared with the No Action. Descriptions of the four Program alternatives analyzed in detail for environmental impacts in the Final PEIS are provided below.

***Alternative 1—No Action*—**NRCS would continue to conduct the current EWP Program as it does now with no improvement or expansion (see Section S.3 above).

***Alternative 2—EWP Program Improvement and Expansion—Draft PEIS Proposed Action*—** included changes to the 15 specific EWP program elements to improve the delivery and defensibility of the Program and incorporate new restoration practices.

1. Emergency Terminology – Eliminate the terms "exigency" and "non-exigency." "Exigency" has been applied too liberally in situations that do not conform to the purpose for which the term was intended.

2. Exigency Funding and Completion Requirements– Stipulate that "urgent and compelling" situations be addressed immediately upon discovery. In a situation that demands immediate action to avoid potential loss of life or property, employees with procurement authority would be permitted to hire a contractor to remedy a watershed impairment immediately after evaluation of the site.

3. Prioritization of Project Funding – Set priorities for funding of EWP measures. NRCS would suggest priorities to be applied consistently across the country for funding EWP measures. Urgent and compelling situations would have highest priority.

4. NRCS and Local Sponsors' Cost-share Rates – Establish a cost-share rate of up to 75 percent for all EWP projects (except for projects in limited-resource areas, where sponsors may receive up to 90 percent, and floodplain easements, which are funded at 100 percent). This cost-share rate would align the EWP Program with the emergency programs of other agencies while providing extra help to those who otherwise might not be able to afford to participate in the Program.

5. Project Defensibility Review Criteria – Stipulate that measures be economically, environmentally, and socially defensible and identify the criteria to meet those requirements. Project alternatives would be reviewed to determine their acceptability according to the ideals and background of the community and individuals directly affected by the recovery activity. A combination of all three categories would be used to determine defensibility.

6. Level of Inter-agency Coordination, Planning, and Training – Improve disaster-recovery readiness through interagency coordination, training, and planning. NRCS would employ Disaster Assistance Recovery Training (DART) teams to train its employees, evaluate and

implement ways to improve coordination between EWP and other emergency programs, and assist State conservationists in preparing Emergency Recovery Plans (ERPs) that detail working relationships with other groups on the Federal, State, and local levels.

7. Eligibility of Repairs to Agricultural Lands – Allow repair of impairments to agricultural lands using sound engineering alternatives. This element would permit sound structural measures to be installed where they are economically, environmentally, and socially defensible.

8. Eligibility of Repeated Repairs to the Same Site – Limit repair of sites to twice in a ten-year period. Where a site has been restored twice and 10 or fewer years have elapsed since the first disaster event, the options remaining available under the EWP Program would be to acquire a floodplain easement or take no action at all.

9. Multiple Beneficiary Eligibility Requirement – Eliminate the requirement that multiple beneficiaries (property owners) be threatened before a site would be eligible for EWP Program repairs. NRCS recognized that in almost every instance benefits accrue to someone downstream of the impairment area.

10. Eligible Restoration Methods – Apply the principles of natural stream dynamics and, where appropriate, use bioengineering in the design of EWP restoration practices. DART teams would incorporate these design principles into disaster-readiness training of NRCS staff and provide more intensive training to NRCS staff responsible for EWP practice design and review.

11. Compatible Uses of Floodplain Easement – Simplify purchase of agricultural floodplain easements. NRCS would establish a single agricultural floodplain easement category and would specify compatible landowner uses.

12. Eligibility of Repairs to Enduring Conservation Practices – Repair enduring (structural or long-life) conservation practices. Conservation practices such as waterways, terraces, diversions, irrigation systems, and animal waste systems that are damaged during a disaster event would be eligible for EWP Program cost-share assistance.

13. Eligibility of Improved Alternative Recovery Solutions – Partially fund expanded or improved alternative solutions. This element would allow the EWP Program to help fund work that would be eligible for disaster recovery throughout the impaired watershed, but that would constitute a more extensive or differently designed solution than NRCS would initially recommend.

14. Eligibility of Recovery Work Away from Streams and Critical Areas – Allow disaster-recovery work in floodplains away from streams and in upland areas. Expansion of the EWP Program to include areas in an impaired watershed not directly adjacent to streams would allow the removal of sediment deposits from cropland and pastures and other debris (generally wind-blown material) from land and environmentally sensitive areas and plantings or other measures to prevent erosion.

15. Floodplain Easement Eligibility on Improved Lands – Purchase floodplain easements on non-agricultural lands. Under this change, floodplain easements would be purchased on both

unimproved and improved lands. For improved land, NRCS would provide 100 percent of the cost of an easement that conveys all interests and rights. Any structures would be demolished or relocated outside the 100-year floodplain at no additional cost to the government.

***Alternative 3—Prioritized Watershed Planning and Management*—**would allow NRCS to focus EWP Program efforts proactively on disaster-prone watersheds and integrate those efforts with other USDA programs dealing with watershed issues. Prioritized watershed planning would combine the elements of Alternative 2 with focused, Program-neutral, disaster-readiness and mitigation planning for selected high-priority watersheds.

In addition to instituting all 15 Program improvements and expansions described under the Draft PEIS Proposed Action (Alternative 2) above, the EWP Program elements implemented under Alternative 3 would include:

a. Continuing to deliver EWP project funding and technical assistance to address immediate threats to life and property as required by law. This would continue to be the highest, but not sole, priority in the EWP Program. EWP funding and technical assistance would be applied, post-disaster, when and where it is needed.

b. Facilitating a locally led pre-disaster planning effort. This locally-led effort initiated and coordinated by NRCS would address concerns about recurrent application of EWP repair measures in watersheds that have a history of frequent disasters and integrate EWP activities in those watersheds with NRCS programs dealing with other watershed issues.

c. Funding of priority watersheds in each State for pre-disaster planning and management. High priority watersheds and, as funding permits, medium priority watersheds would undergo pre-disaster planning and management providing there is a local sponsor (State, county, tribal organization or other eligible entity) who agrees to sponsor the pre-disaster planning.

d. Coordinating pre-disaster planning and management efforts with Federal, State, and local agencies and interested stakeholders. This would include:

   - Establishing an overall watershed management plan
   - Integrating other program authorities and practices available to NRCS
   - Purchasing floodplain easements on a stepwise, proactive, risk-reduction basis
   - Combining EWP with other program authorities to enhance watershed values

This alternative is a comprehensive approach that would most fully address the impacts of the broad variety of activities occurring or planned in a watershed, the natural processes at work in shaping the watershed, and the risk of threats to life and property from floods or other disaster events. It would provide a sound basis for ongoing NEPA-based analyses and documentation of cumulative watershed effects. Environmental evaluation and review of each EWP project, and of other NRCS projects in the watershed, would be best accomplished within the specific priority watershed context.

Alternative 4—EWP Program Improvement and Expansion—Preferred Alternative—The Preferred Alternative would incorporate many of the EWP Program improvements and elements listed in Alternative 2, the Draft PEIS Proposed Action, with some important exceptions. The 15 elements to improve the delivery and defensibility of the Program and incorporate new restoration practices under the Preferred Alternative would be as follows:

1. Retain the term "exigency"; eliminate "non-exigency." NRCS would not eliminate the key term "exigency" because of its broad interagency use but would eliminate the term non-exigency and simply refer to them as emergencies.

2. No State level funding for immediate exigency response. Change allowed time to address exigencies to 10 days. Funding would not be set aside in each of the States to immediately address exigencies, though the time frame to respond to exigencies would be lengthened to 10 days to allow more time to request and secure funding and to allow NRCS and sponsors to secure any necessary emergency permits and comply with any applicable Federal and State laws or regulations.

3. Set priorities for funding of EWP practices. NRCS would suggest priorities to be applied consistently across the country for funding EWP measures. Exigency situations would have highest priority.

4. Establish cost-share of up to 75 percent; up to 90 percent in limited-resource areas; and add a waiver provision allowing up to 100 percent in unique situations. In addition to the Federal cost-share rates proposed in Alternative 2, a waiver provision would be included allowing up to 100 percent cost-sharing for a sponsor in unique situations or when the sponsor demonstrates they have insufficient resources or finances to contribute the 25 percent cost-share.

5. Stipulate that practices be economically, environmentally, and socially defensible. In addition to environmental and economic defensibility, project alternatives would be reviewed to determine their acceptability according to the ideals and background of the community and individuals directly affected by the recovery activity.

6. Improve disaster-readiness through interagency coordination, planning, and training. Major steps would be taken to improve interagency coordination, planning, and training. Although Disaster Assistance Recovery Teams (DART) teams would not become a major Program element, technical teams for specific disasters, or to provide programmatic training, would be assembled.

7. Allow repair of impairments to agricultural lands using sound engineering alternatives. This element would permit sound structural measures to be repaired where they are economically, environmentally, and socially defensible.

8. Limit repair of sites to twice in any ten-year period. Where a site has been restored twice and 10 or fewer years have elapsed since the first disaster event, the options remaining available

under the EWP Program would be to acquire a floodplain easement, fund a buyout with structure removal as a recovery measure, or take no action at all.

9. Eliminate the requirement that multiple beneficiaries (property owners) be threatened before a site would be eligible for EWP Program repairs. NRCS recognized that in almost every instance benefits accrue to someone downstream of the impairment area.

10. Apply the principles of natural stream dynamics and bio-engineering in restoration.

11. Simplify purchase of agricultural floodplain easements; eliminate land designation categories. NRCS would establish a single agricultural floodplain easement category and would specify compatible landowner uses.

12. Repair enduring (structural or long-life) conservation practices, except when such measures are under ECP jurisdiction. Conservation practices, such as waterways, terraces, diversions, irrigation systems, and animal waste systems that are damaged during a disaster event would be eligible for EWP Program cost-share assistance. However, repair of enduring conservation practices or disaster-recovery work that is eligible for emergency assistance under the Emergency Conservation Program (ECP) would not be eligible under EWP.

13. Partially fund improved alternative solutions. The EWP Program would be allowed to partially fund work that would be eligible for disaster recovery throughout the impaired watershed, but when a sponsor desires a more extensive or differently designed solution than NRCS would initially recommend, the sponsor is required to pay 100 percent of the additional costs.

14. Allow disaster-recovery work in floodplains away from streams and in upland areas, where such measures are not under ECP jurisdiction. Expansion of the EWP Program to include areas in an impaired watershed not directly adjacent to streams would allow the removal of sediment deposits from cropland and pastures and other debris (generally wind-blown material) from land and environmentally sensitive areas and plantings when necessary for runoff retardation or soil erosion prevention.

15. Allow purchase of floodplain easements on non-agricultural lands only to fully restore floodplain function but not where small rural communities are at issue. Fund buyouts for recovery of small flood-prone communities through sponsors. NRCS would not purchase floodplain easements on lands with multiple property owners and residences for the sole purpose of relocating small flood-prone rural communities under the floodplain easement portion of the EWP Program. However, as an EWP recovery measure, NRCS would consider cost-sharing with a sponsor to fund buyouts of residents in such flood-prone circumstances when it would be the most cost-effective and environmentally preferable recovery measure.

S.4.3 Comparison of Implementation Aspects Likely to Affect Impacts

Major aspects of the EWP Program would be different under the various Program alternatives that have implications in terms of effects on watershed ecosystems and human communities. Major changes are summarized in Table S.4-1. [**Please Note:** The text comparisons address the alternatives in sequence from 1 through 4. However, to emphasize their similarities, the tabular comparisons present NRCS' Preferred Alternative (Alternative 4), next to Alternative 2, the Draft PEIS Proposed Action, because Alternative 4 would adopt, in whole or in part, most of the elements of Alternative 2. In contrast, Alternative 3 would constitute a major change in the scope of the program.]

Table S.4-1 EWP Program Changes with Important Implications for Impacts Analysis

Major EWP Program Aspect	No Action (Alternative 1)	Draft PEIS Proposed Action (Alternative 2)	Preferred Alternative (Alternative 4)	Prioritized Watershed Planning & Management (Alternative 3)
Reliance on use of "Green"[1] practices versus "Armoring"[2] for recovery where feasible	Slow, steady shift to greener methods where feasible[3]	Accelerated shift to "greener" methods[3]	Accelerated shift to "greener" methods[3]	Accelerated shift to "greener" methods[3]
Relative number of "armoring" practices contracted	Likely to be the highest of the 4 alternatives	Reduced due to emphasis on "greener" methods and increased number of floodplain easements purchased	Reduced due to emphasis on "greener" methods and increased number of floodplain easements purchased	Greatest reduction due to emphasis on "greener" methods and greatest number of floodplain easements purchased
Use of floodplain easements on agricultural land	Retain 3 categories of agricultural floodplain easements	Categories 1 & 3 dropped	Categories 1 & 3 dropped	Categories 1 & 3 dropped
Other uses of floodplain easements	None	Improved lands floodplain easements	Purchase of improved land floodplain easements limited to ensure floodplain function. EWP recovery could fund buyouts in small flood-prone communities	Improved lands floodplain easements and focus on broad purchase in disaster-prone watersheds
Funds allocated for Easement Purchase	Lowest amount	Moderate amount	Moderate amount	Highest amount
Debris removal practices and channel restoration[2]	Slowest improvement in adopting natural designs	Accelerated use of natural designs and focus on leaving some debris in place	Accelerated use of natural designs and focus on leaving some debris in place	Improved channel design and debris removal practices integrated into overall watershed program

[1] Bioengineering practices
[2] The practice of installing erosion control and stream bank protection measures.
[3] Restoration design based on the principles of natural stream dynamics where feasible to protect streambanks.

S.4.4 Alternatives & Program Elements Considered but Not Evaluated in Detail

Two other EWP Program alternatives were considered but not evaluated in detail because NRCS judged that they would not improve Program delivery and defensibility.

Reduced Federal Role. Under this alternative, NRCS would continue to administer the EWP Program and provide technical assistance, but would shift project evaluation and monitoring

responsibility and authority to the states. NRCS would rely on the efforts of each state emergency management organization (EMO) to carry out the needed work.

Grant to Qualified Sponsors. This alternative would shift much Program responsibility to qualified sponsors. NRCS would not continue to administer the EWP Program nor provided technical assistance, but instead would provide EWP Program grant funds directly to qualified sponsors in each state.

Additional elements suggested for the Draft PEIS Proposed Action and Preferred Alternative—allowing non-governmental organizations to sponsor floodplain easements, repairing lakeshore damage, and repairing roads—were not considered in detail.

S.5 AFFECTED ENVIRONMENT

The environment affected by the EWP Program consists of the portions of the watersheds of the U.S. and territories that are associated with human uses and communities where watershed impairments resulting from natural disasters may threaten life or property. Potentially affected watersheds include those of the 50 States and territories, except coastal areas (including beaches, dunes, and coastlines) and Federal lands. Although EWP work can be done in virtually any watershed location, EWP restoration work typically is done in relatively small watersheds, often in the upper reaches of a watershed, and usually in rural areas or the rural outskirts of urban areas. There are exceptions to this general rule, as in the case of the 1993 Upper Mississippi floods, when NRCS assisted in the recovery effort by repairing mainstem river levees.

The PEIS environmental impacts analysis addresses the effects of the EWP Program on watershed aquatic, floodplain, wetland, and riparian ecosystems and, for certain practices such as critical area treatment and upland debris removal, the impacts on watershed upland ecosystems. The analysis is based on the potential for adverse and beneficial changes in the condition of watershed ecosystems. The analysis is based on a general representation of the condition of these ecosystems before and in the aftermath of a disaster event and as affected subsequently by an installed EWP practice or a floodplain easement. It covers current EWP restoration measures and easements as well as proposed practices and easements. The condition of aquatic habitats (Table S.5-1) is the basis for consideration of EWP impacts. Characterization of condition is based on EPA's rapid bio-assessment protocols according to aspects of in-stream habitat and channel morphology. Water quality and pollutants are also addressed in considering habitat conditions ranging from poor to excellent in terms of supporting aquatic communities, including threatened and endangered (T&E) species.

Table S.5-1 Aquatic Habitat Condition Classification Applied to Affected Environment

General Feature	Specific Aspects or Components
In-stream habitat	Bottom substrate, embeddedness, velocity at low flow
Channel morphology	Channel alteration, bottom scouring and deposition, pool/riffle ratio
Water quality parameters	Dissolved oxygen, turbidity, temperature
Pollutants	Nutrients, contaminants
Biota	Macro-invertebrates, fish, plants, algae, T&E species

Similar general condition classifications (Table S.5-2) were used to characterize the before-disaster, after-disaster, and after-EWP condition of riparian, floodplain, wetland, and upland watershed ecosystems. The general evaluation of impacts incorporates analyses of the environmental effects of EWP practices at example project sites that typify application of the EWP practices.

Table S.5-2 Condition Classification Applied to Affected Environment

Ecosystem	Components Considered
Riparian Areas	Bank stability/erosion, bank vegetative stability, streamside cover, vegetative zone width, wildlife & habitat, T&E species and habitat
Wetlands	Hydrology, wetland management, vegetation/habitat, wildlife, T&E species
Floodplains	Land-use/development, hydrology, vegetation/habitat, wildlife, T&E species
Watershed Uplands	Slope/stream gradient, soil erosion potential, land use/development, vegetation, wildlife, T&E species

T&E species are federally protected and site-specific in occurrence. They are addressed before implementation of every EWP project and protected, as appropriate, on a case-by-case basis. They are neither characterized nor evaluated species-by-species in the general programmatic impacts analysis. However, they are described as protected components of the affected environment for each of the example EWP sites and are discussed as sensitive biotic components of the affected ecosystems.

Aspects of the human communities potentially affected by the EWP Program include economic, social, cultural, recreational and related resources. A general characterization of these potentially affected elements is done for rural communities nationwide, then for selected example communities where substantial EWP work has recently been done. These rural outskirts, small towns, and rural agricultural locations typify the range of human communities where EWP is used to deal with threats to life and property. The cumulative impacts of EWP projects and other watershed activities are addressed using selected example small watersheds and major watersheds (8-digit USGS hydrologic units).

Cultural resources are site-specific and community-specific resources that are addressed before implementation of every EWP project and protected, as appropriate, on a case-by-case basis. They are not characterized programmatically nor evaluated in the general programmatic impacts analysis. However, they are described as protected components of the affected environment for each of the example EWP sites.

Twenty-three individual practice or easement sites were selected in 14 watersheds (Table S.5-3) to represent typical impairment types and EWP practices. Of the locations (Fig. S.5-1), 6 were chosen to represent the range of affected human communities and three were selected as cumulative effects locations, where the activities throughout the watershed were factored into the analysis.

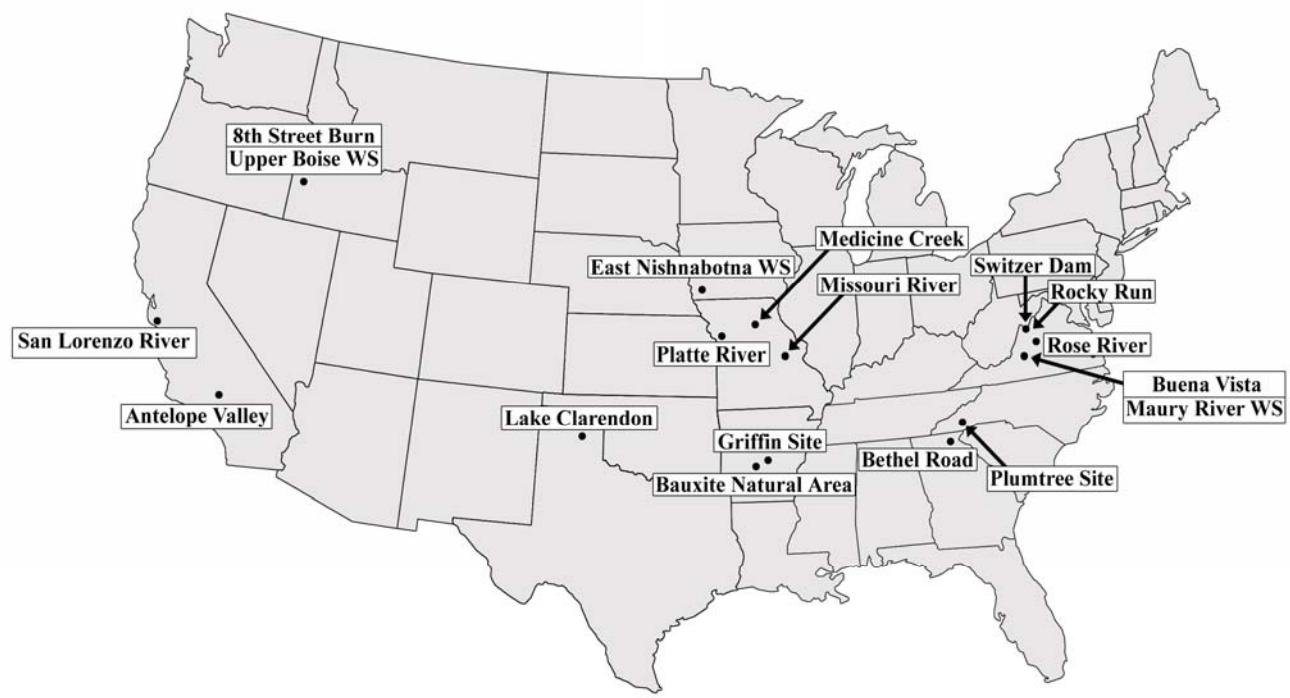


Fig. S.5-1. EWP Example Site, Human Community, and Watershed Locations

Table S.5-3 Watersheds and EWP Sites where Impacts were addressed in the PEIS Analysis

8-digit Watershed (code)	Site(s)/Location	Impairments Requiring Restoration Practices or Easements	Affected Human Communities	Cumulative Impacts Affected Area
Lower Boise (17050114)	8th Street Burn, Boise Foothills north of Boise, ID	Critical area treatment of major burn area in outskirts of Boise	Rural area in a metropolitan county	Lower Boise River Watershed, Ada Co., Region
Maury River (02080202)	Buena Vista, VA (small city on the Maury River)	Debris removal in 4 streams flowing through city	Independent city of Buena Vista in predominantly rural region	Buena Vista and Maury River Watersheds, Rockbridge County
	4 conservation practice locations in watershed, VA	Enduring conservation practices		
East Nishnabotna (10240003)	3 East Nishnabotna restoration sites, IA	Riverton Easement Debris, bank and levee damage on 3 sites on river and tributaries	Incorporated rural community of Shenandoah, IA and nearby farms	E. Nishnabotna Watershed, Fremont Co.
East Nishnabotna (10240003)	Riverton Easement Site, IA	Floodplain easement near Riverton		E. Nishnabotna Watershed, Fremont Co.
Upper Chattahoochee River (03130001)	Bethel Road site, Hall Co., GA	Tornado debris in stream	Two small independent farms in a rural area	
South Fork Shenandoah (02070005)	Rocky Run Site, Rockingham Co., VA	Streambank repair, hypothetical improved lands floodplain easement	Residential cluster community of Rocky Run	
	Switzer Dam Site, Dry River, Rockingham Co., VA	Switzer Dam, spillway damaged by Hurricane Fran		
Rapidan-Upper Rappahannock (02080103)	Rose River site, Criglersville, Madison Co., VA	Streambank repair site	Independent farm near small rural community	

Table S.5-3 (continued) Watersheds and EWP Sites where Impacts were addressed in the PEIS Analysis

8-digit Watershed (code)	Site(s)/Location	Impairments Requiring Restoration Practices or Easements	Affected Human Communities	Cumulative Impacts Affected Area
Upper Saline (08040203)	Bauxite Natural Areas, AR	Tornado downed trees in sensitive habitat		
	Griffin site, Alexander, AR	Household and woody debris from tornado		
Antelope-Freemont Valleys (18090206)	Antelope Valley, CA	Drought with life-threatening sandstorms		
San Lorenzo-Soquel (18060001)	San Lorenzo River - Santa Cruz Co., CA	Soil-bioengineering to protect streambanks		
Nolichucky River (06010108)	Plumtree, NC	Natural stream dynamics and bioengineering practices pilot project		
Upper Salt Fork Red (11120201)	Lake Clarendon Clarendon, TX	Sewage treatment plant on floodplain		
Lower Missouri River (10300200)	Missouri River floodplain site, MO	Floodplain deposition site		
Lower Grand (10380103)	Medicine Creek site, MO	Floodplain easement with setback levee, water control		
Platte River (10240012)	Platte River, MO	Floodplain easement, water control		

S.6 COMPARISON OF THE IMPACTS OF THE ALTERNATIVES

An overview of the environmental impacts of the Preferred Alternative and other EWP Program alternatives on watershed ecosystems and human communities and the cumulative impacts of the Program alternatives is presented in Table S.6-1.

Table S.6-1 General Comparison of Impacts of EWP Alternatives

Impact	No Action (Alternative 1)	Draft PEIS Proposed Action (Alternative 2)	Preferred Alternative (Alternative 4)	Prioritized Watershed Planning & Management (Alternative 3)
Impacts on Aquatic, Wetland, Floodplains & Riparian Ecosystems	Disaster repairs which restore stream channels and protect banks may benefit these ecosystems by restoring some levels of pre-disaster function. However, greatest likelihood for local and downstream adverse effects due to continued use of "hard" engineering practices, excessive channel restoration and debris removal, and limited use of easements.	Reduced likelihood of adverse impacts due to emphasis on bio-engineering practices and broader use of easements	Reduced likelihood of adverse impacts due to emphasis on bio-engineering practices but more limited reductions from more limited use of easements than under DPEIS Proposed Action	Highest likelihood of reduced adverse effects and increased beneficial effects especially in well-managed priority watersheds.
Impacts on Human Communities	Highest likelihood of continuing to protect all uses of the floodplain with attendant local risks from subsequent storms and local and Federal costs.	Use of non-agricultural floodplain easements would encourage more restricted uses of floodplain, some older rural communities may be disrupted by voluntary relocations.	Limited support for buyouts as part of recovery program would encourage more restricted uses of the floodplain but may disrupt older rural communities	Highest likelihood of encouraging best use of floodplain but highest potential for disruption of older rural communities.

Table S.6-1 (continued) General Comparison of Impacts of EWP Alternatives

Impact	No Action (Alternative 1)	Draft PEIS Proposed Action (Alternative 2)	Preferred Alternative (Alternative 4)	Prioritized Watershed Planning & Management (Alternative 3)
Cumulative Impacts	Lowest likelihood of addressing watershed level effects—e.g., water quality.	Increased likelihood of addressing watershed level effects—e.g., water quality, fisheries—using green practices and more floodplain easements.	Increased likelihood of addressing watershed level effects—e.g., water quality, fisheries—using bio-engineering practices and more floodplain easements	Greatest likelihood of planning for and addressing watershed level effects—e.g., water quality.

S.6.1 General Discussion of Specific Elements of EWP Program Alternatives Likely to Affect Impacts

The principal changes that would influence Program-wide differences in environmental impacts among the four EWP Program alternatives (see Table S.4-1 above) involve changes in the design of restoration practices and in the Program's emphasis on, and eligibility criteria for, purchase of floodplain easements. Specific elements of each of the alternatives would likely cause several differences in environmental effects Program-wide. The specific Program changes under each of the alternatives that would influence Program-wide differences in environmental impacts involve changes in the priority designation of sites seeking funding, the Federal cost-share of proposed measures, what restoration practices may be available under each of the alternatives, the design of restoration practices, and the inclusion of and emphasis on agricultural and improved lands floodplain easements.

The effect of replacing "exigency" terminology with "urgent and compelling" terminology under Alternatives 2 and 3 would have the same Program implications as simply clarifying the exigency terminology under Alternative 4. In either case, the number of instances in the past that may have been labeled "exigencies," but that were not truly situations requiring immediate measures should be reduced. This should lead to a Program-wide decrease in situations that are considered a serious enough threat to warrant immediate EWP action.

Setting priorities for EWP funding under Alternatives 2, 3, and 4 would tend to focus agency work on economically defensible projects where there are also federally protected resources at issue before lower priority EWP work is undertaken. Reducing the general Federal cost-share from 80 percent under Alternative 1, to 75 percent under Alternatives 2, 3, and 4, likely would not have much effect in terms of reducing numbers of sites restored because 75 percent has been the level applied in practice for about the last 10 years. However, establishing a higher Federal cost-share rate for limited resource areas and adding a social defensibility requirement to proposed restoration measures under Alternatives 2, 3, and 4, would tend to increase the number of restoration practices installed in limited resource areas. The addition of the waiver provision under Alternative 4, where the Federal cost-share could be up to 100 percent in situations where sponsors do not have sufficient funds to provide their percentage share, would further support this potential trend.

Improvements in disaster readiness under Alternatives 2, 3, and 4, would tend to make the process of coordinating the activities of sponsors and reviewing agencies more efficient, speed the work of restoration, and educate the public about the benefits of the "greener" restoration methods and of floodplain easements. Several of the other proposed changes under these alternatives could, however, have somewhat offsetting effects. Allowing structural repairs to agricultural lands would tend to increase the use of armoring in some watersheds to protect cropping while limiting repairs to twice in 10 years would tend to decrease the Program-wide use of armoring and increase purchase of floodplain easements. Simplifying agricultural floodplain easement purchase would tend to foster reduced production of agricultural crops in the floodplain. Also tending to decrease Program-wide use of armoring would be the shift in emphasis on restoration design using the principles of natural stream dynamics and bioengineering. Repair of enduring conservation practices and disaster recovery work in uplands should help minimize the possibility of disaster-caused impacts on water quality.

S.6.1.1 Overview of the Impacts of Specific Elements of the Preferred Alternative

Retaining use of the term 'exigency' but eliminating the term "non-exigency" under Preferred Alternative Element #1 would result in environmental benefits similar to the impacts discussed for the Draft PEIS Proposed Action. Rather than changing EWP terminology to help prioritize and focus funding on situations requiring immediate attention, NRCS would instead reinforce the originally intended meaning of the term exigency through oversight at NHQ. Rather than creating State-level pre-disaster funding to be used "on the spot" as proposed under Draft PEIS Proposed Action Element 2, NRCS NHQ would continue to oversee DSR review and funding of exigencies to ensure that only fully documented critical situations are funded under the "exigency" designation. Emphasis on this oversight requirement would be extremely important because *exigencies would be the first priority for funding* under Preferred Alternative Element 3.

Another Preferred Alternative change would also help ameliorate the problem of too many projects being identified as exigencies. Because the newly proposed *cost-share rates would be the same for exigencies and other emergencies* under Preferred Alternative Element 4, there would not be a cost-share advantage in listing a site as an exigency.

Extending the time to make repairs of exigencies from 5 days to 10 days under Preferred Alternative Element 2 will help ensure NRCS and sponsors have sufficient time for environmental review, permitting, and securing the sponsor's cost share. In contrast with the "on the spot" response time of the Draft PEIS Proposed Action, this 10-day period would reduce the chances that environmental resources might be damaged. In combination with the changes described under *improving disaster readiness* (Preferred Alternative Element #6), the risk of such damages would be further reduced, as training would help NRCS staff to recognize potential problems with T&E species, cultural resources, and other resources of interest. The planning and coordination conducted would establish a protocol for ensuring that environmental resources are not overly affected, while not hampering the urgency of the repairs.

Revising the cost share rates (Preferred Alternative Element #4) would likely have positive environmental impacts, as EWP can complete work for sponsors that may not have been able to afford their share under the previous cost-share arrangement. Reducing the general Federal cost-

share from 80 to 75 percent likely would not have much effect in terms of reducing numbers of sites restored because the funding level has been the level applied in practice for the past 10 years.

Improving disaster readiness (Preferred Alternative Element #6) should reduce adverse environmental impacts. Training would increase staff awareness to problem areas with the implementation of the various practices. Pre-disaster planning and coordination would prepare staff for what impacts to expect and allow for proactive solutions to situations that are likely to be encountered. Disaster response protocols can be established to prepare for the possible interactions with T&E species or cultural resources, and plans can be made to preserve those resources while still responding to the urgent need for repairs. NRCS staff also could be made aware of areas where these resources are known to exist or how to recognize new occurrences, and rapid response consultations with outside agencies could be facilitated. Pre-disaster planning and training would also inform staff about disaster effects that may be considered beneficial, such as certain amounts of woody debris in-stream or periodic small floods in wetland areas.

As was the case for the Draft PEIS Proposed Action, *making repairs to agricultural lands eligible under EWP* (Preferred Alternative Element #7) may yield environmental benefits, as these repairs would employ streambank restoration practices described in Section 5.2.2.2, which carry some benefits and some adverse consequences, depending on site-specific characteristics and the type of practice implemented. By repairing or restoring previously untreated land, stream degradation due to disaster impairments would decrease. Also, under the new Program, more environmentally beneficial methods would be available for implementation, which increases the likelihood of positive impacts from this restoration work. However, if repairs are made, the land would likely continue in agricultural use and may contribute to poor water quality and habitat. If repairs were not made to the site, erosion would increase resulting in increased sedimentation.

Limiting repairs to twice per 10-year period (Preferred Alternative Element #8) would likely have mixed environmental effects, as was discussed under the Draft PEIS Proposed Action. Hard armoring may tend to be the solution chosen for first or second repairs in cases where NRCS technical staff believe a location is disaster-prone and wish to avoid a near-term requirement for a third repair. Greener solutions might be reserved for those locations that are not considered likely to be repeatedly damaged. The solution would still meet the environmental defensibility criterion, but this element might tend to weigh against any near-term increase in use of greener solutions which is one of the major program improvement goals. Offsetting this potential short-term trend would be the fact that at repeatedly damaged sites, floodplain easements or recovery funded buyouts would become the only available options regardless of previous restoration history. Therefore, this element would likely provide some longer-term environmental benefits, unless landowners choose not to sell an easement or take a buyout and perform the repairs on their own.

Enabling single beneficiaries (Element #9) to be eligible for EWP work may result in positive environmental impacts, as previously un-restored sites may now be eligible for repairs. Depending on the site-specific details and restoration, benefits may be realized, especially if more natural restoration practices are used. As was discussed for the Proposed Action, not

requiring documentation of multiple beneficiaries for emergency repairs would tend to limit the number of privately-funded repairs made without interagency review or consultation, thus reducing the potential for environmental degradation over the short and long-term.

Use of *natural stream dynamics* (Element #10) may produce locally significant environmental benefits, as a closer approximation to natural stream function would be returned. Other benefits such as improved habitat and reduced erosion would also be realized. These are detailed in Section 5.2.3.1.

Allowing repair of enduring conservation practices (Preferred Alternative Element #12) would lead to environmental benefits because repairing damaged or undersized conservation structures would minimize further environmental degradation of downstream habitat and, by requiring these practices meet current NRCS standards, older or undersized practices would be replaced with more effective ones.

Partially funding expanded or improved alternative solutions (Preferred Alternative Element #13) would yield environmental benefits in terms of improved water quality and aquatic habitat where the improved projects are intended to provide such benefits and because NRCS would oversee the work and would ensure adequate environmental review as well. The substitution of one practice for another could also give rise to significant environmental benefits in cases where the sponsor wishes to employ more natural restoration methods. Where local entities wish to install more expansive or different measures to address community social values, NRCS funding and technical oversight would ensure the environmental defensibility of the measure.

Funding disaster recovery work away from streams and critical upland areas (Preferred Alternative Element #14) would also lead to environmental benefits although these would be limited by the fact that EWP would not fund projects that are eligible under ECP. By restoring floodplain deposition and upland debris areas, affected floodplains, wetlands, riparian zones and aquatic communities can realize benefits in water quality and habitat. Conversely, restoring these sites may discourage the landowner from selling a floodplain easement or putting the land to other more natural uses since they can continue to farm the restored land.

Effects of Preferred Alternative Changes on Easements

Improved disaster readiness (Preferred Alternative Element #6), as described above under *Execution of Practices*, may provide environmental benefits in addition to the positive impacts listed. Disaster-readiness training, coordination, and planning would also encourage further identification of problem areas within the watershed and subsequent floodplain easement purchases. This change would offer broader solutions and provide for better coordination of easement purchases. *Limiting repairs to twice in 10-years* (Preferred Alternative Element #8) would likely encourage floodplain easement purchase of repeatedly damaged sites.

Simplification of agricultural floodplain easement purchase (Element #11) provides benefits but has some limitations. Elimination of Category 1 easements has removed the most natural floodplain easement, as acceptable uses of the land would maximize floodplain function and natural restoration. By eliminating Category 3, the least desirable floodplain easement from an

environmental standpoint, the consequences of continued cropping on floodplain easement lands are removed. The remaining Category 2 easements provide positive environmental impacts but not to the degree of the former Category 1 (by allowing compatible uses), requiring longer timescales for floodplain restoration. Simplifying agricultural floodplain easement purchase would also tend to foster reduced production of agricultural crops in the floodplain. In sum, there is no net gain or net loss of environmental benefits.

Non-agricultural floodplain easements (Preferred Alternative Element #15), as analyzed in Section 5.2.3.2, would provide significant environmental benefits in instances where those lands are purchased to restore full floodplain function to a larger easement area. By removing improvements, the floodplain easement tract would be returned to a far more natural state and improved floodplain function.

Effects of Preferred Alternative Changes on Environmental Review

Prioritization of funding (Element #3) would likely yield some environmental benefits, as potential sites would be evaluated for unique environmental characteristics. Sites with sensitive environmental resources would be restored first, reducing the length of time in a damaged condition. This would likely benefit the environmental resource, as the source of impairment would be removed more quickly and the length of the disturbance minimized.

Defensibility review (Element #5) would ensure that social requirements are also met in determining site eligibility. Additional projects may become eligible for restoration due to some socially compelling reason. Based on previous conclusions that restoration may yield environmental benefits, these socially compelling projects are also likely to have accompanying environmental benefits. Additionally, social values may influence the environmental outcome, as a community may request more environmentally beneficial restoration practices or may be unsure of such practices and request armored structures. The former would likely result in environmental benefits, and the latter would likely result in smaller benefits than those that would have been realized by installing the practices originally proposed by EWP.

S.6.2 Watershed Ecosystem Impacts under the EWP Alternatives

The proposed improvements and expansion of the EWP Program would substantively affect how future EWP projects are selected, prioritized, and implemented. The impacts to the natural environment would vary across the alternatives accordingly. In Sections S.6.2.1 through S.6.2.5, the discussion of watershed ecosystem impacts are broken down into effects on aquatic ecosystems, riparian ecosystems, floodplain ecosystems, wetland communities, and impacts of other EWP practices on watershed ecosystems.

S.6.2.1 Aquatic Ecosystem Impacts

A comparison of the impacts of the EWP Program alternatives on aquatic ecosystems is presented in Table S.6-2. A detailed discussion and comparison of the impacts of the alternatives on aquatic ecosystem are provided in Chapter 3, Section 3.4.2.1, and Chapter 5, Section 5.2, of the Final EWP PEIS.

Table S.6-2 Comparison of EWP Program Impacts to Aquatic Ecosystems

	Alternative 1: No Action	Alternative 2: Draft PEIS Proposed Action	Alternative 4: Preferred Alternative	Alternative 3: Prioritized Management
Impacts on Habitat Structure[1]				
Impacts of Restoration Practices	Adverse effects would likely continue to occur from almost complete removal of in-stream debris, as this removes habitat and nutrients. Armoring would continue to limit re-vegetation and redirect flows downstream to other banks. Levee repairs would continue to limit natural floodplain function. There would be no provision to structurally protect agricultural lands, which would limit use of armoring.	Adverse effects would be reduced by employing "greener"[4] restoration methods, including retaining more in-stream debris and using restoration design based on the principles of natural stream dynamics. Benefits would accrue from increased use of floodplain easements, as floodplain functions return and habitat is created or improved. Agricultural lands could be protected with structural practices if economically defensible.	Adverse effects would be reduced by retaining more in-stream debris and using restoration design based on the principles of natural stream dynamics. Benefits would accrue from increased use of floodplain easements, as floodplain functions return and habitat is created or improved. Agricultural lands could be protected with structural practices if economically defensible.	Coordinated planning would incorporate natural resources in the management strategy, resulting in increased usage of natural stream dynamics and other long-term approaches that create additional quality habitat. Agricultural lands could be protected with structural practices if economically defensible.
Impacts of Floodplain Easements	Continuing to use 3 easement categories would result in some easement lands serving as natural floodplains; others would support intensive agriculture. Benefits and adverse effects would vary accordingly.	Using only Category 2 easements would eliminate the most restrictive of compatible uses, while also eliminating the least restrictive. Floodplain and riparian habitats would improve using Category 2 but not as quickly as under Category 1.	Using only Category 2 easements would eliminate the most restrictive of compatible uses, while also eliminating the least restrictive. Floodplain and riparian habitats would improve using Category 2 but not as quickly as under Category 1.	Coordinated easement purchases would help create contiguous restored floodplain areas.
Impacts on Water Quality[2]				
Impacts of Restoration Practices	Benefit from reduced erosion and turbidity at damaged site. Removal of in-stream debris may increase velocity and increase turbidity. Repair of levees continues the channelization of stream and leads to increases in turbidity. Short-term decrease in water quality during construction with increases in turbidity and risk of pollutants.	Retention of some in-stream debris may reduce turbidity. Restoration design based on natural stream dynamics should reduce flow velocity and increase sinuosity, decreasing turbidity. Increased use of bioengineering may also better regulate water temperatures.	Retention of some in-stream debris may reduce turbidity. Restoration design based on natural stream dynamics should reduce flow velocity and increase sinuosity, decreasing turbidity. Increased use of bioengineering may also better regulate water temperatures.	Coordinated planning may incorporate natural resources in the management strategy, resulting in increased usage of natural stream dynamics and other long-term approaches that improve water quality.
Impacts of Floodplain Easements	Varied effects, depending on category of easement. Category 1 easements increase filtration, improve vegetation and increase flood storage. Category 3 would continue to contribute to agricultural runoff and declines in water quality.	Improvements in water quality, as easement purchases are increased. Category 2 easements would likely provide benefits in water quality, though not to the degree of Category 1. Purchase of agricultural and improved land floodplain easements would reduce urban and agricultural runoff.	Improvements in water quality, as easement purchases are increased. Category 2 easements would likely provide benefits in water quality, though not to the degree of Category 1. Purchase of agricultural and improved land floodplain easements would reduce urban and agricultural runoff.	Coordinated easement purchases may create contiguous floodplain areas, improving water quality on a large scale.

[1] Habitat structure includes habitat quality, sedimentation and channel structure
[2] Water quality includes turbidity, temperature, dissolved oxygen, and pollutants
[3] Biota includes plant and animal species
[4] "Greener" restoration includes channel restoration using the principles of natural stream dynamics, limitations on debris removal, and use of bioengineering employing live and dead plant materials instead of hard surfaces for streambank protection.

Table S.6-2 (continued) Comparison of EWP Program Impacts to Aquatic Ecosystems

	Alternative 1: No Action	Alternative 2: Draft PEIS Proposed Action	Alternative 4: Preferred Alternative	Alternative 3: Prioritized Management
Impacts on Biota[3]				
Impacts of Restoration Practices	Armoring may provide habitat for some invertebrates and small fish but limits vegetative cover for larger biota. Structures may also redirect flows to other reaches and damage habitat there. Use of woody structures (root wads, revetments, etc) may mitigate these effects. Removal of debris may remove habitat.	Substantive improvements over current Program, as habitat and channel structure increase in quality under "greener"[4] restoration practices.	Substantive improvements over current Program, as habitat and channel structure increase in quality under "greener"[4] restoration practices.	Coordinated planning may result in contiguous habitat areas and allow for permanent establishment of biotic populations.
Impacts of Floodplain Easements	Category 1 easements may develop into high quality habitat, whereas Category 3 would likely continue to contribute to poor habitat conditions. In general, easements would lead to increased vegetation and improved habitat features such as pools.	Elimination of Category 1 reduces quality of potential habitat, whereas removing Category 3 may yield higher quality habitat following easement purchase. Increased easement purchases offer improvements in habitat and channel structure.	Elimination of Category 1 reduces quality of potential habitat, whereas removing Category 3 may yield higher quality habitat following easement purchase. Increased easement purchases offer improvements in habitat and channel structure.	Coordinated easement purchase may create contiguous floodplain areas, improving habitat and benefiting biotic resources.

[1] Habitat structure includes habitat quality, sedimentation and channel structure
[2] Water quality includes turbidity, temperature, dissolved oxygen, and pollutants
[3] Biota includes plant and animal species
[4] "Greener" restoration includes channel restoration using the principles of natural stream dynamics, limitations on debris removal, and use of bioengineering employing live and dead plant materials instead of hard surfaces for streambank protection.

S.6.2.2 Riparian Ecosystem Impacts

A comparison of the impacts of the EWP Program alternatives on riparian ecosystems is presented in Table S.6-3. A detailed discussion and comparison of the impacts of the alternatives on riparian ecosystem are provided in Chapter 3, Section 3.4.2.2, and Chapter 5, Section 5.2, of the Final EWP PEIS.

Table S.6-3 Comparison of Impacts to Riparian Ecosystems

	Alternative 1: No Action	Alternative 2: Draft PEIS Proposed Action	Alternative 4: Preferred Alternative	Alternative 3: Prioritized Management
Impacts on Bank Stability				
Impacts of Restoration Practices	Short-term improvements, such as armoring practices and levee repairs, stabilize streambanks. May cause long-term problems as stream energy is directed to up or downstream reaches. Some stability may be lost as vegetation is removed during construction. Removal of embedded debris may destabilize banks.	Short and long-term benefits, as local impairments are repaired and natural stream dynamics techniques dissipate stream energy and minimize effects on other reaches.	Short and long-term benefits, as local impairments are repaired and natural stream dynamics techniques dissipate stream energy and minimize effects on other reaches.	Coordinated planning may result in decreased emphasis on local impairments, focusing on watershed scale stream function.

Table S.6-3 (continued) Comparison of Impacts to Riparian Ecosystems

	Alternative 1: No Action	Alternative 2: Draft PEIS Proposed Action	Alternative 4: Preferred Alternative	Alternative 3: Prioritized Management
Impacts of Floodplain Easements	Stability not as great a concern, as channel would be allowed to meander. Natural re-vegetation would likely reestablish and generate improvements in stability. Category 1 would yield the greatest potential benefits, while Category 3 would yield minimal benefits.	Increased easement purchases would result in long-term benefits, as natural flows can meander as needed and vegetation is reestablished. Elimination of Categories 1 and 3 remove greatest and least potential for vegetative restoration.	Limited increase in easement purchases would result in some long-term benefits, as natural flows can meander as needed and vegetation is reestablished. Elimination of Categories 1 and 3 remove greatest and least potential for vegetative restoration.	Coordinated planning may result in contiguous easement sections, reducing the need for streambank repairs.
Impacts on Streamside Cover				
Impacts of Restoration Practices	Armoring and levees may inhibit riparian vegetation establishment. Planting and seeding would increase re-vegetation. Debris removal may involve damage to riparian vegetation.	Substantive improvements, such as natural stream dynamics techniques promote natural riparian regeneration.	Substantive improvements, such as natural stream dynamics techniques promote natural riparian regeneration.	Coordinated planning may result in contiguous riparian areas.
Impacts of Floodplain Easements	Natural re-vegetation would likely improve cover, especially under Category 1. Planting and seeding in easement management plan would augment natural processes.	Increased easement purchases may establish significant ecosystem components, such as riparian forests and buffer zones.	Increased easement purchases may establish significant ecosystem components, such as riparian forests and buffer zones.	Coordinated easement purchases may establish contiguous ecosystem components, such as riparian forests and buffer zones.
Impacts on Biota				
Impacts of Restoration Practices	Armoring and levees may limit vegetation establishment and wildlife access to stream.	Improvements for biotic components likely, as natural channels and riparian areas are established.	Improvements for biotic components likely, as natural channels and riparian areas are established.	Coordinated planning may result in benefits to biota, through establishment of larger or contiguous habitat areas and more natural stream function.
Impacts of Floodplain Easements	Improved habitat, as riparian vegetation provides cover and areas of slack water may provide habitat for reptiles, amphibians and emergent aquatic vegetation.	Increased purchase of easements should benefit biotic communities, as riparian habitat and access to streams is increased.	Somewhat Increased purchase of easements should benefit biotic communities, as riparian habitat and access to streams is increased.	Coordinated easement purchase may result in extensive, contiguous natural habitat, benefiting biotic communities.

S.6.2.3 Floodplain Ecosystem Impacts

A comparison of the impacts of the EWP Program alternatives on floodplain ecosystems is presented in Table S.6-4. A detailed discussion and comparison of the impacts of the alternatives on floodplain ecosystem are provided in Chapter 3, Section 3.4.2.3, and Chapter 5, Section 5.2, of the Final EWP PEIS. Overall, under Alternatives 2, 3, and 4, natural stream dynamics and an increased emphasis on easements would improve floodplain function, increase flood retention capabilities, and promote floodplain habitat.

Table S.6-4 Comparison of Impacts to Floodplain Ecosystems

	Alternative 1: No Action	Alternative 2: Draft PEIS Proposed Action	Alternative 4: Preferred Alternative	Alternative 3: Prioritized Management
Land Use and Development				
Impacts of Restoration Practices	Armoring and levee repairs may serve to maintain agricultural or urban uses.	Natural stream dynamics may lead to change in land use to more natural land uses, as stream channel is allowed to meander.	Natural stream dynamics may lead to change in land use to more natural land uses, as stream channel is allowed to meander.	Coordinated planning may convert floodplain land uses to more natural uses, improving floodplain function and reducing threats to life and property.
Impacts of Floodplain Easements	Substantive improvements with Category 1, as easement purchases would return developed lands to a more natural state. Category 3 easements offer minimal benefit, as intensive agriculture is allowed.	Substantive improvements, as easement purchases would return developed lands to a more natural state.	Substantive improvements, as easement purchases would return developed lands to a more natural state.	Coordinated easement purchases may focus on problematic land uses or frequently damaged areas and return these areas to a more natural state.
Hydrology				
Impacts of Restoration Practices	Armoring and levees offer minimal benefits, as practices tend to transfer stream energy to other reaches. Armoring alters floodplain function while levees restrict it. Complete removal of debris from channel fails to slow flow velocity and divert waters into the floodplain.	Marked improvement, such as natural stream dynamics, may dissipate stream energy. In-stream debris would lead to some pooling and overflow into the floodplain.	Marked improvement, such as natural stream dynamics, may dissipate stream energy. In-stream debris would lead to some pooling and overflow into the floodplain.	Coordinated easement purchases may create contiguous reaches of well-regulated flows and result in an overall reduction in stream energy and destructive power.
Impacts of Floodplain Easements	Substantive improvements, as all easement categories would return floodplain function to the site. Water quality and infiltration would be best served by Category 1 easements.	Substantive improvements, as Category 2 easements return floodplain function to the site. Limitations on compatible uses may offer benefits to water quality, infiltration, and groundwater recharge.	Substantive improvements, as Category 2 easements return floodplain function to the site. Limitations on compatible uses may offer benefits to water quality, infiltration, and groundwater recharge.	Benefits of coordinated easement purchases do most to approximate a free flowing river.
Biota				
Impacts of Restoration Practices	Minimal benefits from armoring and levees, as floodplain hydrology and full function is not restored.	Minor benefits due to some flooding from debris jams or stream sinuosity. Floodplain function is not fully returned, minimizing benefits to floodplain biota.	Minor benefits due to some flooding from debris jams or stream sinuosity. Floodplain function is not fully returned, minimizing benefits to floodplain biota.	Minor benefits due to some flooding from debris jams or stream sinuosity. Floodplain function is not fully returned, minimizing benefits to floodplain biota.
Impacts of Floodplain Easements	Category 3 offers very little in potential habitat. Under Category 1, substantive benefits may be seen for both plant and animal floodplain communities, as floodplain function is returned.	Substantive benefits to both plant and animal floodplain communities, as floodplain function is returned. Category 2 easements likely would not return floodplain function as quickly or completely as Category 1.	Substantive benefits to both plant and animal floodplain communities, as floodplain function is returned. Category 2 easements likely would not return floodplain function as quickly or completely as Category 1.	Coordinated easement purchase may result in extensive, contiguous natural habitat, benefiting biotic communities.

S.6.2.4 Impacts on Wetland Communities

A comparison of the impacts of the EWP Program alternatives on wetland communities is presented in Table S.6-5. A detailed discussion and comparison of the impacts of the alternatives on wetland communities are provided in Chapter 3, Section 3.4.2.4, and Chapter 5, Section 5.2, of the Final EWP PEIS. Overall, Under Alternatives 2, 3, and 4, natural stream dynamics and a focus on floodplain easement purchase may lead to improvements in wetland communities. By restoring to more natural hydrologic regimes, wetlands may be restored in areas with appropriate soils. Easements would also likely restore wetlands and wetland functions, as periodic flooding would promote wetland growth and development.

Table S.6-5 Comparison of Impacts to Wetland Communities

	Alternative 1: No Action	Alternative 2: Draft PEIS Proposed Action	Alternative 4: Preferred Alternative	Alternative 3: Prioritized Management
Hydrology				
Impacts of Restoration Practices	Continuing current debris removal, armoring, and levee repair practices, would not help restore natural stream hydrology and normal flood regime to promote wetland growth or function.	Stream restoration based on principles of natural stream dynamics and debris left in-stream, would help restore natural stream hydrology and normal flood regime to minimally promote wetland growth and function.	Stream restoration based on principles of natural stream dynamics and debris left in-stream, would help restore natural stream hydrology and normal flood regime to minimally promote wetland growth and function.	Coordinated planning may lead to contiguous reaches with sufficient flooding and natural hydrology to maintain and improve wetland areas.
Impacts of Floodplain Easements	Continued purchase of agricultural floodplain easements would continue to restore some natural flooding conditions, improving wetland hydrology in some watersheds.	Increased purchase of agricultural floodplain easements plus non-agricultural floodplain easements would increase restoration of natural flooding conditions, improving wetland hydrology in more watersheds.	Increased purchase of agricultural floodplain easements plus non-agricultural floodplain easements would increase restoration of natural flooding conditions, improving wetland hydrology in more watersheds.	Coordinated purchase of agricultural and non-agricultural floodplain easements would maximize restoration of flooding conditions, improving wetland hydrology in flood-prone watersheds.
Water Quality				
Impacts of Restoration Practices	Continuing current debris removal, armoring and levee repair practices, would not help restore natural flooding regime to improve water quality.	Some benefits, such as natural stream dynamics, may give rise to some wetland formation.	Some benefits, such as natural stream dynamics, may give rise to some wetland formation.	Coordinated planning may lead to contiguous reaches with sufficient flooding and hydrology to promote wetland areas.
Impacts of Floodplain Easements	Some improvement, as easements may promote wetland creation, resulting in increased filtration.	Increased improvement, to the extent easement availability increases, may promote wetland creation, resulting in increased filtration.	Increased improvement, to the extent easement availability increases, may promote wetland creation, resulting in increased filtration.	Coordinated easement purchase may result in contiguous wetland areas, resulting in large scale filtration.
Biota				
Impacts of Restoration Practices	Minimal benefits, such as wetland habitat and restoration, are not promoted by debris removal, armoring and levee repair.	Some benefits, such as natural stream dynamics, may give rise to some wetland formation.	Some benefits, such as natural stream dynamics, may give rise to some wetland formation.	Coordinated planning may lead to contiguous reaches with sufficient flooding and hydrology to promote wetland areas.
Impacts of Floodplain Easements	Purchase of floodplain easements would continue to promote wetland creation or growth, resulting in increased wetland habitat.	Increased use of easements, would promote increased wetland creation or growth, resulting in greater increases in wetland habitat.	Increased use of easements, would promote increased wetland creation or growth, resulting in greater increases in wetland habitat.	Coordinated easement purchase may result in creation or growth of more extensive wetland habitat than Alternatives 1 or 2.

S.6.2.5 Impacts of Other EWP Practice Changes

A comparison of the impacts of other EWP practice changes on watershed ecosystems is presented in Table S.6-6. A detailed discussion and comparison of these impacts are provided in Chapter 3, Section 3.4.2.5, and Chapter 5, Section 5.2, of the Final EWP PEIS.

Table S.6-6 Comparison of Watershed Ecosystem Impacts of Other EWP Practices

	Alternative 1: No Action	Alternative 2: Draft PEIS Proposed Action	Alternative 4: Preferred Alternative	Alternative 3: Prioritized Management
Current EWP Practices				
Diversions & Sediment & Debris Basins	Restoration would be conducted in same manner as current Program.	Would be conducted in same manner as current Program.	Would be conducted in same manner as current Program.	Locally led process may restrict placement of municipal infrastructure within the floodplain.
Critical Area Treatment (including drought)	Restoration would be conducted in same manner as current Program.	Restoration would be conducted in same manner as current Program.	Restoration would be conducted in same manner as current Program.	Use would tend to reduce the level of concern in some flood prone watersheds for the effects of damage to such critical areas.
Proposed EWP Practices				
Floodplain Deposition Removal	Currently carried out under FSA ECP Program or by landowner.	NRCS would fund removal or deep tilling. May conflict with the goals of floodplain easements.	NRCS would fund removal or deep tilling only on lands not eligible for the ECP Program.	NRCS would fund removal or deep tilling. May conflict with the goals of floodplain easements.
Upland Debris Removal	Other agencies or landowner responsible for removal.	NRCS assistance would ensure environmentally sound cleanup and disposal.	NRCS assistance would ensure environmentally sound cleanup and disposal.	NRCS assistance would ensure environmentally sound cleanup and disposal.
Repair of Damaged Conservation Practices	Currently operated under FSA or privately by landowner.	NRCS would fund repair of conservation practice.	NRCS would fund repair of conservation practice.	Locally-led process may address placement of conservation structures within the floodplain.
Improved Alternative Solutions	Currently carried out by sponsor or landowner without NRCS involvement.	NRCS may approve substitute solution but is obligated to only pay cost share of restoration work being replaced.	NRCS may approve substitute solution but is obligated to only pay cost share of restoration work being replaced.	Locally led process may address benefits of substitutions on watershed scale, leading to more natural methods or easements.

S.6.3 Impacts of the EWP Alternatives on Human Communities

A comparison of the impacts of the EWP Program alternatives on human communities is presented in Table S.6-7. A detailed discussion and comparison of the impacts of the alternatives on human communities are provided in Chapter 3, Section 3.4.3, and Chapter 5, Section 5.3, of the Final EWP PEIS. In general, continuation of the current Program (Alternative 1) would be expected to have an essentially minimal impact to the local economy of affected communities, whereas the elements of the Draft PEIS Proposed Action (Alternative 2) and the Preferred Alternative (Alternative 4) would be substantially beneficial to affected human communities. Alternative 3 (Prioritized Watershed Planning and Management), would have the greatest beneficial impacts to human communities.

Table S.6-7 Impacts of the EWP Program Alternatives on Affected Human Communities

	Alternative 1: No Action	Alternative 2: Draft PEIS Proposed Action	Alternative 4: Preferred Alternative	Alternative 3: Prioritized Management
Local Economy	Some potential for income associated with continuing disaster assistance. Benefit from restoration of previous productive use. Purchase of floodplain easements could result in a loss of employment and income from agricultural land but would reduce demand for services and disaster assistance.	General effect would be similar to the No Action alternative; however, expansion of floodplain easements to improved land may have a greater impact on employment and income from affected properties. A correspondingly greater reduction in demand for services and disaster assistance could result.	General effect would be similar to the No Action alternative; however, expansion of floodplain easements to improved land may have a greater impact on employment and income from affected properties. A correspondingly greater reduction in demand for services and disaster assistance could result.	More efficient use of capital resources and economic potential of watershed resources would be possible. Easements may reduce income from productive lands and facilities but the highest corresponding reduction in demand for services and disaster assistance could result.
Value of Natural Resources	Repair and protection of land restores previous value, but may induce additional development in flood prone areas increasing risk from future natural disaster. Purchase of floodplain easement on agricultural land potentially withdraws acreage from production, but may increase value of neighboring properties	Purchase of floodplain easement on improved and unimproved land potentially withdraws productive property from community use, but may increase value of neighboring properties. Community tax base may be affected.	Purchase of floodplain easement on improved and unimproved land potentially withdraws productive property from community use, but may increase value of neighboring properties. Community tax base may be affected. However, repair of impairments to agricultural land potentially restores productive property to the community.	Purchase of floodplain easement withdraws land from production and decreases its value, but may increase value of neighboring properties
Property	Short-term benefits from protecting structures, no long-term benefits from moving structures out of harm's way with easements. Emphasis on protecting existing property, but funding resources may be inefficiently used.	Short-term benefits from protecting structures, long-term benefits from moving structures out of harm's way, especially with non-agricultural floodplain easements. Requirement that practices be defensible may affect some structures. Easement purchases may result in the loss of business, commercial, or residential structures.	Short-term benefits from protecting structures, long-term benefits from moving structures out of harm's way, especially with buy-out practice. Requirement that practices be defensible may affect some structures. Easement purchases may result in the loss of business, commercial, or residential structures.	Short-term benefits from protecting structures. Best strategy for long-term benefits from moving structures out of harm's way with easements in disaster-prone watersheds. Easements may result in community loss of business, commercial, or residential structures.
Public Health and Safety (PH&S) & Community Resources	Short-term benefit from protecting PH&S directly and indirectly by protecting emergency services. In disaster-prone areas, long-term PH&S concerns remain high. Would not substantially alter existing community resources, but may result in some visual impairment.	Short-term benefit from protecting PH&S directly and indirectly. Improved lands floodplain easements help long-term PH&S considerations. Improved cost share for communities with limited resources; alternative uses of easement properties represent additional benefit.	Short-term benefit from protecting PH&S directly and indirectly. Limited funding of buyouts of small flood-prone rural communities would help long-term PH&S considerations. Improved cost share for communities with limited resources; alternative uses of easement properties represent additional benefits.	Short-term benefit from protecting PH&S directly and indirectly. Watershed mgmt best long-term solution to protect PH&S. Some loss of existing resources is possible, but may increase availability of watershed related recreational, educational and other uses.

Table S.6-7 (continued) Impacts of the EWP Program Alternatives on Affected Human Communities

	Alternative 1: No Action	Alternative 2: Draft PEIS Proposed Action	Alternative 4: Preferred Alternative	Alternative 3: Prioritized Management
Land Uses	Would maintain existing uses of the land, but may increase habitation and use of flood prone acreage increasing cost of future protection except where agricultural floodplain easements are purchased.	Floodplain easements could alter previous land uses on subject and neighboring properties.	Floodplain easements could alter previous land uses on subject and neighboring properties.	Easements could alter previous land uses on subject and neighboring properties.
Social Patterns	Some temporary disruption during project construction may result, but no permanent disruption to local community.	Improved lands floodplain easements may result in the breakup of existing residential networks or neighborhoods.	Limited funding of buyouts of homes in small flood-prone rural communities may break up residential networks or neighborhoods.	Improved lands floodplain easements may result in the breakup of existing residential networks or neighborhoods.

S.6.4 Cumulative Impacts of the EWP Alternatives

S.6.4.1 Cumulative Impacts at the Watershed Level

The contribution of the effects of EWP practices to cumulative impacts on watershed ecosystems, based on the analysis of the example watersheds, are minimal under all four EWP Program alternatives. However, in one example watershed, that of the East Nishnabotna River, where wetlands are already highly stressed according to EPA, the overall cumulative impacts were found likely to be significant. Therefore, EWP environmental evaluations should pay particular attention to watershed health indicators in order to limit potential cumulative impacts to acceptable levels. Comparisons of the cumulative impacts of the EWP Program alternatives are presented in Table S.6-8.

Table S.6-8 Cumulative Impacts of the EWP Program Alternatives

Environmental Resource	Alternative 1: No Action	Alternative 2: Draft PEIS Proposed Action	Alternative 4: Preferred Alternative	Alternative 3: Prioritized Management
Impacts to Aquatic Resources	Minor effects from restoration practices would continue to add to long-term declines in quality of aquatic habitat. These effects may be important in watersheds stressed by other factors such as development. Easements should help slow declines in some cases.	Upgrade in restoration practices would diminish any adverse effects and may slow long-term declines in quality of aquatic habitat. Expanded easement program would also help slow or reverse this situation in some watersheds.	Upgrade in restoration practices would diminish any adverse effects and may slow long-term declines in quality of aquatic habitat. Moderately expanded easement program would help improve this situation but in fewer watersheds.	Upgrade in restoration practices and focused locally-led watershed management would be best way to slow long-term declines in quality of aquatic habitat. Expanded easement program could be used as an integrated part of watershed restoration program.

Table S.6-8 (continued) Cumulative Impacts of the EWP Program Alternatives

Environmental Resource	Alternative 1: No Action	Alternative 2: Draft PEIS Proposed Action	Alternative 4: Preferred Alternative	Alternative 3: Prioritized Management
Impacts to Wetlands, Riparian and Floodplains Resources	Minor effects from restoration practices would continue to occur and would add to habitat loss and loss of natural floodplain functioning that are a contributing part of general watershed decline. Agricultural floodplain easements may mitigate these effects in some watersheds.	Some reduction in minor effects from restoration practices, which would reduce the rate of habitat loss and loss of natural floodplain functioning. In some portions of watersheds the better designed EWP work may reverse such a trend. Expanded easement program would help slow or reverse this situation in some watersheds.	Some reduction in minor effects from restoration practices, which would reduce the rate of habitat loss and loss of natural floodplain functioning. In some portions of watersheds the better designed EWP work may reverse such a trend. Moderately expanded easement program would help improve this situation but in fewer watersheds.	Upgrade in restoration practices and focused locally-led watershed management would be best way to slow long-term declines in quality and acreage of wetland, riparian, and floodplain habitat. Expanded easement program could be used as an integrated part of watershed restoration program.
Impacts to Watershed Uplands	Watershed impairments would continue to threaten life and property, except in cases where special authorization is given to repair the damage.	Adverse effects of impairments would be reduced, as upland debris would be removed. Floodplains, wetlands, riparian areas, and aquatic communities would likely benefit from the reduction in impacts.	Adverse effects of impairments would be reduced, as upland debris would be removed. Floodplains, wetlands, riparian areas, and aquatic communities would likely benefit from the reduction in impacts.	Adverse effects of impairments would be reduced, as upland debris would be removed. Floodplains, wetlands, riparian areas, and aquatic communities would likely benefit from the reduction in impacts.
Impacts to Socioeconomic and Other Human Resources	Life and property would continue to be protected but longer term solutions to repeated damage would not be a major consideration. Minor income would be derived from performing restoration practices, but resources may be inefficiently used.	Life and property would continue to be protected but longer term solutions to repeated damage would begin to be a major consideration, especially with use of improved lands floodplain easements. Minor income would be derived from performing restoration practices. Shifts in Program emphasis may result in slightly different mix between agriculture and other uses.	Life and property would continue to be protected but longer term solutions to repeated damage would begin to be a major consideration, especially with use of improved lands floodplain easements or buy-out practices. Minor income would be derived from performing restoration practices. Shifts in Program emphasis may result in slightly different mix between agriculture and other uses.	Life and property would continue to be protected but better organized and funded longer term solutions to repeated damage would be the major consideration. Minor income would be derived from performing restoration practices. Shifts in Program emphasis may result in slightly different mix between agriculture and other uses.

Cumulative Impacts of Alternative 1: No Action Alternative

Alternative 1 would not change EWP practices contributions to cumulative impacts in affected watersheds. For aquatic resources, there would continue to be minor turbidity, sedimentation, and flow-altering effects from traditional EWP repair practices. These effects would continue to contribute over the long-term to the slow decline of watershed health in some watersheds and to more rapid decline in others. For wetlands, riparian areas, and floodplains, minor effects from restoration practices would continue to occur and would add to the habitat loss and loss of natural floodplain functioning that are a contributing part of general watershed decline in some watersheds.

Human communities like the City of Buena Vista, VA would continue to benefit from protection of their homes and businesses and would continue to derive income from performing EWP restoration practices although minor community disruptions may occur. Major floodwork by the USACE and NRCS at Buena Vista have combined to help sustain the viability of the community in the face of repeated recent flood damage, a community that has seen a marked industry decline because of the floods and other factors. The viability of agricultural communities, such as those along the East Nishnabotna, and of rural fringe communities, such as Boise Hills, depend in large measure on damage restoration and preventative measures. In the long-term, however, the cumulative drain on local, State, and Federal resources to maintain any such communities that are repeatedly threatened may lead to sufficient impetus to seek longer-term solutions. Agricultural floodplain easements that are part of the current Program are likely to be major parts of this solution.

Cumulative Impacts of Alternative 2: Draft PEIS Proposed Action

Under this alternative, NRCS would emphasize more environmentally sensitive implementation of EWP practices and would expand the types of watershed impairments to activities away from streams, upland debris sites, and include repairs to enduring conservation practices, and others. Fifteen specific Program changes would improve the EWP Program and incorporate new restoration practices. For aquatic resources, there would be a reduction in minor turbidity, sedimentation, and flow-altering effects from restoration practices. This would diminish the degree to which any of these adverse effects would add in the long-term to decline of watershed health. In some watersheds these improved practices may even slow or reverse some of the decline. For wetlands, riparian areas, and floodplains, there would be some reduction in minor effects from restoration practices, which would reduce the rate of habitat loss and loss of natural floodplain functioning. In some portions of watersheds the EWP work may reverse such a trend. Better coordination with other Federal, State, and local agencies and additional projects approved should result in less overall habitat destruction.

Human communities would continue to be protected in the short-term but a greater emphasis on agricultural floodplain easements and introduction of improved lands floodplain easements should provide better long-term solutions than repetitive repair work where repeated damages occur. Shifts in Program emphasis may result in a slightly different mix between agriculture and other uses as easement lands increase.

Cumulative Impacts of Alternative 3: Prioritized Watershed Planning & Management

Alternative 3 would tend to minimize EWP Program impacts because it would be the most proactive and integrative EWP approach to disaster recovery and damage avoidance. It would allow maximized use of more environmentally beneficial EWP practices by focusing the resources of NRCS and other entities in disaster-prone watersheds. Here, restoration design based on the principles of natural stream dynamics and bioengineering would likely cause the most marked reductions in degradation of stream hydrology and habitat. When used in conjunction with purchase of floodplain easements in these more highly stressed watersheds, some substantive abatement or reversal of watershed degradation is possible. In less seriously

stressed watersheds, use of these practices and easements would help maintain watershed integrity. NRCS and other technically cognizant agencies would need to take adequate steps during the locally-led development and implementation of the watershed plan to ensure all decisions are well-informed decisions, made with the best available scientific information and soundest technical advice to help avoid decisions made simply because they appear on first inspection to be heading in the right direction.

Cumulative Impacts of the Preferred Alternative (Alternative 4)

Alternative 4, the Preferred Alternative, involves many of the EWP Program improvement and expansion elements discussed under Alternative 2, and thus would contribute the majority of its cumulative impacts. Under the Preferred Alternative, NRCS would again emphasize more environmentally sensitive implementation of EWP practices and would expand the types of watershed impairments to include floodplain sediment deposition, activities away from streams, upland debris sites, and enduring conservation practices to the extent those practices are not eligible under other USDA programs or programs of other agencies. There would be a minor reduction in the immediate increase of turbidity, sedimentation, and flow-altering effects associated with the implementation of restoration practices. In some watersheds, the improved practices proposed may even slow or reverse some of the decline of long-term watershed health. For wetlands, riparian areas, and floodplains, there would be a minor reduction in restoration practice effects, which would reduce the rate of habitat loss and loss of natural floodplain functioning. In some portions of watersheds, the EWP work may even reverse such a trend. Improved agency coordination should decrease the effects on protected resources affected by restoration practices. Human communities would continue to be protected in the short-term but a greater emphasis on agricultural floodplain easements and introduction of improved lands floodplain easements should provide better long-term solutions than repetitive repair work where repeated damages occur. Shifts in Program emphasis may result in a slightly different mix between agriculture and other uses as floodplain easement lands increase.

S.6.4.2 Cumulative Impacts at the National Program Level

To the extent that the EWP Program protects life, health and public and private property, there is a beneficial cumulative effect in terms of the Program's contribution to the overall viability of the community itself. The cumulative socioeconomic benefit from Program implementation nationwide could be estimated in terms of the aggregate benefit to communities participating in the Program. This benefit could be expressed in terms of the total number of human lives protected and the total value of all property protected as a result of the EWP Program. Without the Program, both would be in jeopardy nationally.

The level of risk to life and property resulting from natural disasters could be estimated. By reducing this potential risk, the EWP Program protects the general health and safety of the population both directly, in terms of the immediate residents or users of affected property, and indirectly for the community as a whole through the protection of public health and safety systems. In both cases, the beneficial result is an improved quality of life for local residents through increased public safety and restoration of the economic value and social use of the affected property.

In addition to the direct cost of repairing damaged land and installing protective measures to reduce the risk of future adverse impacts, the public cost of a natural disaster also includes the protection of the public during and immediately after the disaster event. Funding allocated for the operation of emergency services (police, fire, rescue, etc.) and the costs associated with evacuation of the public to safe shelters and the maintenance of support services for the displaced population can cause a significant strain on the fiscal resources of an affected community. Resources consumed for this purpose would have to be taken from other important public services provided by the community for its residents. By providing the necessary funding and technical assistance to the community for the protection and repair of damaged property the EWP Program contributes to the general welfare by freeing up assets for other socially important uses.

The aforementioned benefits are relatively short-term compared with longer-term consideration of the inherent risks of continuing to live and work in disaster-prone areas, particularly in flood-prone watersheds. The numerous EWP restoration practices executed in the aftermath of disasters in watersheds that are repeatedly affected by major storms arguably simply act cumulatively to restore and maintain an overall short-term solution for the watershed that is not likely to be viable in the long-term. In many cases, upgradient changes in these watersheds, particularly by intensive agriculture or development, affect the flow capacity requirements of downstream reaches, which cannot absorb the higher, swifter flows of the markedly changed system and which may be quickly damaged by erosion. These human-induced changes exacerbate the natural tendency of stream courses to vary over time, moving laterally and deepening or becoming shallow over different reach segments. These natural dynamics can pose a threat to agriculture or improved property near the stream even in relatively undisturbed watersheds. In developed watersheds, such threats are likely to appear more often over larger portions of the watershed. Continued reliance on EWP restoration practices in these watersheds simply postpones the time when measures other than restoration, measures that locate crops, homes, and businesses out of harm's way, would be the only viable solution to deal with repeated damages and further threats of damage. The EWP policy of allowing repairs only twice in 10 years at a damage site was proposed in recognition of this problem.

Traditional restoration techniques used in the current EWP Program, that would continue under the No Action alternative, tend to maintain the status quo in flood-prone areas; and may actually result in increased human habitation and use of these areas. Although affording a short-term reduction in the risk to public health and safety and a degree of protection for affected property, these practices have the potential to increase risk over the longer term by allowing increases in the size of potentially affected populations and increasing the value of the land and associated property that may be potentially damaged. Restoration design based on the principles of natural stream dynamics can help restore or approximate as closely as possible the natural hydrology of these systems and can help maintain and protect otherwise non-viable human communities. These communities may not have the room to move their valued property out of harm's way because the majority of useable land is near stream courses. In other cases, however, EWP purchase of floodplain easements in lieu of repairs provides the better long-term alternative strategy. Both agricultural and improved lands floodplain easements are available tools for this purpose under both Alternatives 2 and 4. The management strategy proposed under Alternative

3, emphasizing the use of floodplain easements on improved land and local ordinances to restrict future development in these areas, applies these tools in an overall strategy, and represents the most comprehensive, organized approach. Although costs and potential cumulative impact to the local community may be higher in the short-term, this strategy would be preferable for reducing long-term overall costs to the community, the states, and to Federal taxpayers and for reducing problems associated with public health and safety.

S.7 MITIGATION OF EWP PROGRAM IMPACTS

NRCS would implement the following mitigation procedures for potential EWP Program impacts.

S.7.1 Mitigation for Aquatic Community Resources

Many potentially adverse impacts to the aquatic community could be minimized by reducing the use of structural EWP practices that harden stream banks, eliminate riparian vegetation, and generally increase runoff and the consequent delivery of pollution sources to the stream. Use of restoration designs based on the principles of natural stream dynamics, and bioengineering would help mitigate these impacts. Other governmental programs could be encouraged to restore and rehabilitate armoring sites to a more natural riparian state where practicable. Where such natural practices are inappropriate, ensuring that the structural EWP practices are properly maintained would help mitigate the need for additional structural practices due to failure of the original structures.

NRCS would continue to consult with the USFWS or NMFS in any situation where there is a potential to affect T&E species, critical habitat, and anadromous fish species and would work with USFWS and NMFS to develop adequate protective measures.

S.7.2 Mitigation for Wetlands, Floodplain, and Riparian Resources

Potential adverse impacts to wetlands, floodplains, and riparian resources are described in Chapter 5, Section 5.2. Like the impacts to aquatic community resources, these impacts could also be mitigated through reducing the dependence of EWP Program activities on structural practices that harden stream banks, remove protective riparian vegetation, and generally increase runoff and the consequent delivery of nonpoint source pollution to the stream.

Coordination with other Federal, State, and local agencies and the landowning public to encourage understanding of the concepts underlying the EPA 404(b)(1) guidelines for wetlands protection in land use activities, and ensuring that the guidelines are followed as a planning practice, as well as for wetlands mitigation, would help mitigate the loss of both wetlands and floodplain resources.

NRCS would continue to consult with the USFWS or NMFS in any situation where there is a potential for jeopardy to a T&E wetland, riparian, or floodplain species and would work with USFWS or NMFS to develop adequate protective measures.

S.7.3 Mitigation for Watershed Upland Resources

Reducing the dependence of EWP Program activities on structural practices would help mitigate damage to terrestrial resources by reducing the use of heavy equipment in surrounding upland areas. Use of more advanced techniques such as helicopter seeding for critical area treatments would reduce heavy equipment impacts on soils.

NRCS would continue to consult with the USFWS or NMFS in any situation where there is a potential for jeopardy to a T&E upland species and would work with USFWS or NMFS to develop adequate protective measures.

S.7.4 Mitigation for Socioeconomic and Other Human Resources

EWP activities may draw heavily on a community's resources for funding, which can be destabilizing – at least in the short run. These impacts can potentially be mitigated by keeping bid packages for EWP work small, so that local contractors with the skills required would have a fair chance to obtain the work, thus returning some portion of the funds to the locality. Where floodplain easements are used in place of structural practices, floodplain usage may be reduced, requiring relocation of people and activities currently in those areas. Attention paid to preserving and protecting neighborhood structure and residential networking can mitigate the effects of this relocation. In rural communities, certain institutional structures, such as churches, schools, and other "special" places, may require special consideration to mitigate adverse effects from such changes.

Where land under floodplain easement purchase is removed from economically productive activities, which were contributing to the local economy and tax base, compensation can be encouraged through seeking alternative replacement activities through such vehicles as HUD's urban development block grants and similar public-private measures. There would be some measure of local economic self-correction inherent in the process anyway, because the community would no longer need to provide the same level of services (power, sewer, road repair) to the easement locality and would no longer have to pay their share of the cost of disaster damage repairs in the future. Nevertheless, NRCS would encourage income-producing activities on floodplain easement lands that would be compatible with their basic purpose. On improved lands floodplain easements where the sponsor gains title to the land, entry fees to open space uses such as trails, walkways, fishing and boat access might be feasible. On agricultural floodplain easements, the landowner keeping title might charge a fee for hunting.

S.7.5 Mitigation for Cultural Resources

If NRCS determines that an adverse effect is going to occur during program implementation, in accordance with 36 CFR Part 800.6, the agency will continue consultation to resolve (avoid, mitigate, or minimize) this effect. NRCS shall notify the ACHP of this determination and continued consultation and invite the Council to participate. The NRCS shall also involve all previous consulting parties (including but not limited to the SHPO, THPO and tribes) and

provide them all, including the ACHP, with the full documentation and a recommendation regarding steps to be taken to resolve the adverse effect. NRCS will provide a draft of programmatic agreement that outlines the steps to resolve the adverse effects and advise the participants of the nature of the resources that are to be affected.

Currently, some NRCS field offices define the Area of Potential Effect (APE) for EWP projects as the immediate site location, which may inadvertently omit addressing potential adverse impacts to listed of eligible historic properties nearby or downstream. The Cultural Resource Coordinators in the example site states indicate that EWP activities need to be very near to historic resources for NRCS to consider the possibility of impacts. Therefore, at present, unless potential historic structures located in the floodplain, such as homes or mills, are directly affected by sudden impairments and NRCS is planning EWP work to protect them, such resources would not be considered to be in the APE. In addition, NRCS focus on historic structures may result in omitting cultural resources such as archaeological sites, viewsheds, historic landscapes, and cultural places. With narrowly defined APEs, cultural resources may also be affected by ancillary activities such as soil borrow and heavy equipment staging. NRCS' mandatory cultural resources training for field personnel, given to all new field personnel with cultural resources responsibilities, is customized in each state to cover the range and extent of historic, cultural and traditional cultural resources from region to region within the state. Treatments under Section 106 of the NHPA and implementing regulations must, necessarily, be tailored to address the specific values of these resources. This training, coupled with the EWP training and consultation with SHPOs, THPOs, and other consulting agencies, including federally recognized tribes, should ensure that mitigation is appropriate for cultural resources on a case-by-case basis.

Consultation with the SHPO, THPO, and other consulting parties, including federally recognized tribes is a part of the EWP planning and coordination function before a disaster occurs and contact with the SHPO/THPO is made before actions at EWP are taken. Because cultural resources are locality specific, mitigation to protect particular cultural resources would be developed if needed at the site level as part of the defensibility review of the EWP practice.

To minimize impacts to cultural resources, the definition of the APE will be changed to include the entire area of potential effect, including ancillary activities resulting form EWP restoration, such as soil borrow or heavy equipment use. Additionally, recovering information about cultural resources present in the APE will help the agency to design the undertaking to avoid adverse effects to historic properties or help NRCS determine what additional mitigation measures may be necessary to address the potential adverse effect of the projects or actions on NRHP-listed or eligible historic properties.

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ACRONYMS AND ABBREVIATIONS

AFCA	Anadromous Fish Conservation Act
AHCP	Advisory Council on Historic Preservation
APE	Area of Potential Effect
BAER	Burned Area Emergency Rehabilitation
BLM	Bureau of Land Management
BMP	Best Management Practice
CAA	Clean Air Act
CBDG	Community Development Block Grant
CEQ	Council on Environmental Quality
C-E-Q	Cause-Effects-Questions
CFR	Code of Federal Regulations
COCS	Cost of Community Studies
CPOM	Coarse Particulate Organic Matter
CWA	Clean Water Act
CZMA	Coastal Zone Management Act
DART	Disaster Assistance Recovery Team
DOI	Department of the Interior
DSR	Damage Survey Report
DU	Dwelling Unit
EA	Environmental Assessment
ECP	Emergency Conservation Program
EFH	Engineering Field Handbook
EIS	Environmental Impact Statement
EMO	Emergency Management Organization
EPA	Environmental Protection Agency
EPCRA	Emergency Planning and Community Right-to-Know Act
ERP	Emergency Recovery Plans
ERS	Economic Research Service
ESA	Endangered Species Act
EWP	Emergency Watershed Protection
FA	Financial Assistance
FAR	Federal Acquisition Regulations
FEMA	Federal Emergency Management Agency
FHA	Federal Highways Administration
FONSI	Finding of No Significant Impact
FOTG	Field Office Technical Guide
FSA	Farm Service Agency
FR	Federal Register
Fed. Reg.	Federal Register
FWCA	Fish and Wildlife Coordination Act
HUC	Hydrologic Unit Classification
HUD	Department of Housing and Urban Development
IWI	Index of Watershed Indicators

MSA	Metropolitan Statistical Area
NHPA	National Historic Preservation Act
NEPA	National Environmental Policy Act
NFIP	National Flood Insurance Program
NMFS	National Marine Fisheries Service
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
NPS	National Park Service
NRCS	Natural Resources Conservation Service (formerly SCS)
O&E	Oversight and Evaluation
OIG	Office of the Inspector General
O&M	Operation and Maintenance
PA	Programmatic Agreement
PDR	Purchase of Development Rights
PEIS	Programmatic Environmental Impact Statement
POL	Petroleum, Oil and Lubricants
RCRA	Resource Conservation and Recovery Act
SHPO	State Historic Preservation Officer
SLA	State Level Agreement
STC	State Technical Committee
SWAP	Small Wetlands Acquisition Program
SWAP+H	Soil, Water, Air, Plants plus Humans
TA	Technical Assistance
TDR	Transfer of Development Rights
T&E	Threatened and Endangered
THPO	Tribal Historic Preservation Officer
USACE	United States Army Corps of Engineers
USC	United States Code
USDA	United States Department of Agriculture
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
VDGIF	Virginia Department of Game and In-Land Fisheries
WRP	Wetlands Reserve Program
WSRA	Wild and Scenic Rivers Act