USDA NRCS Natural Resources Conservation Service

Emergency Watershed Protection Program

Final Programmatic Environmental Impact Statement

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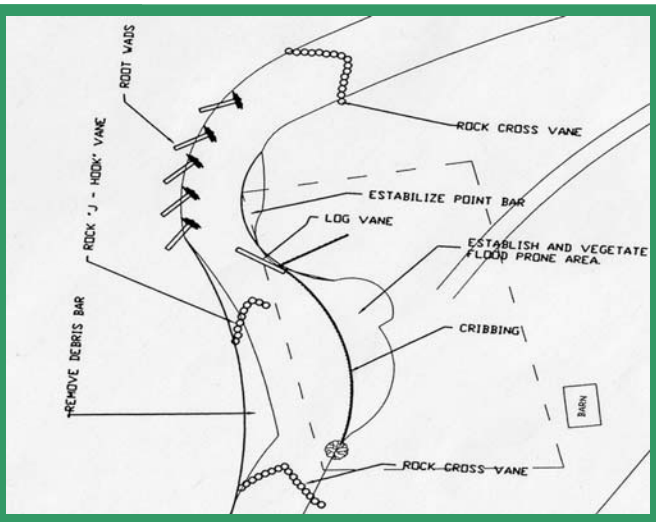

NRCS
Emergency
Watershed
Protection
Program

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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.

For more information about the EWP program, please contact:
Victor Cole
U.S. Department of Agriculture, Natural Resources Conservation Service
Financial Assistance Programs Division
P.O. Box 2890
Washington, D.C. 20013-2890
Phone: (202) 690-4575
Email: victor.cole@usda.gov

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

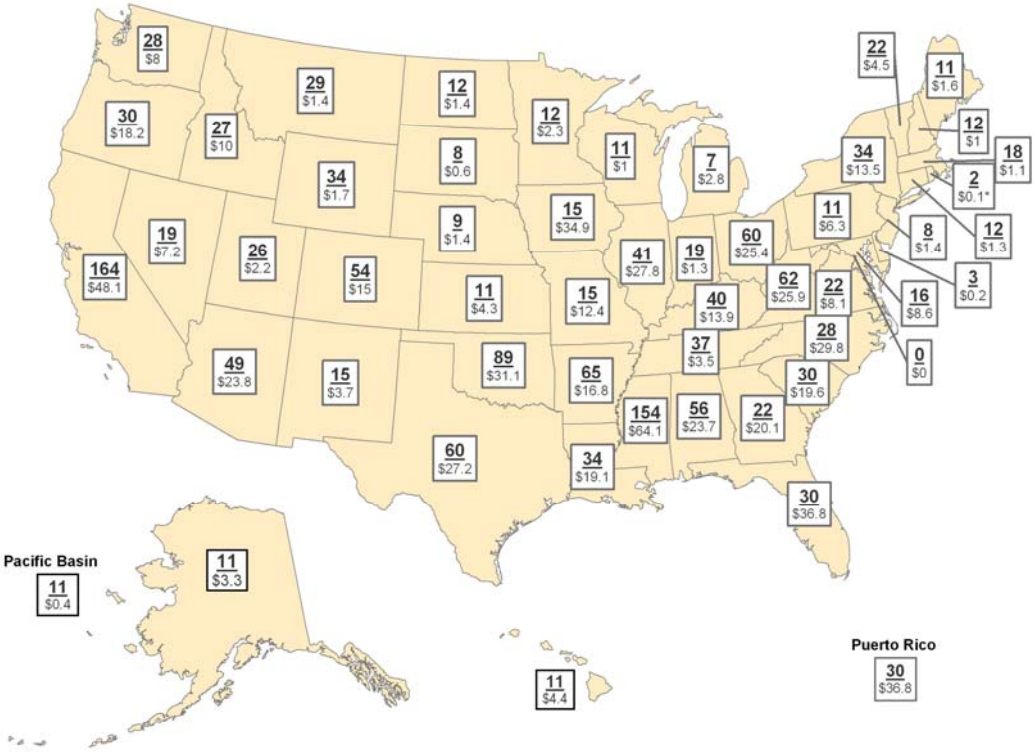
NRCS administers the EWP Program to respond to life and property-threatening watershed impairments caused by natural disasters. Local sponsors (e.g., counties, conservation districts) who request EWP assistance provide at least 20 percent of funding for EWP watershed repair practices. NRCS may provide 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 fills out a Damage Survey Report (DSR) 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 more 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. In small, rural watersheds, it is generally considered one of the most responsive to local needs. 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 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 in an exigency situation.

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 would be assembled, if requested.

7. 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. 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 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. 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 or other measures to prevent erosion.

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

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 any cultural resources present will mitigate adverse impacts.

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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

Chapter 1
PURPOSE AND NEED

Purpose and Need—The [environmental impact] statement shall briefly specify the underlying purpose and need to which the agency is responding in proposing the alternatives, including the proposed action (40 CFR 1502.13).

1.1 BACKGROUND

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 EWP Program is administered by the U.S. Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS), which provides technical and financial assistance to local sponsoring authorities to safeguard life and property threatened by disaster-caused erosion and flooding.

Threats that the EWP Program addresses are termed *watershed impairments*. These include debris-clogged stream channels, undermined and unstable streambanks (Fig.1.1-1), jeopardized water control structures and public infrastructure, and damaged upland sites stripped of protective vegetation by fire or drought. If these watershed impairments are not addressed, they pose a serious threat of injury, loss of life, or devastating property damage should a subsequent storm event occur.

Fig. 1.1-1 Failed streambank threatens nearby homes

1.2 DEVELOPMENT OF NRCS' PREFERRED EWP PROGRAM ALTERNATIVE

NRCS evaluated the environmental and socioeconomic impacts of three alternatives for future administration of the EWP Program in a Draft Programmatic Environmental Impact Statement (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. The 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. The Preferred Alternative was developed based on comments from other agencies and the public on the Draft EWP PEIS, on comments on the Proposed EWP Rule (7 CFR 624) published in November 2003, and on internal agency considerations concerning management, funding, and implementation feasibility. 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.

1.3 PURPOSE AND NEED FOR THE PREFERRED ALTERNATIVE PROGRAM

The **purpose and need** for the NRCS preferred EWP Program 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 now address.

Program delivery improvements are designed to 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 would more fully, equitably, and consistently meet the needs of people requiring emergency assistance. Program defensibility improvements are designed to address environmental, economic, and social concerns and values.

Proposed changes were identified, discussed, and refined in an ongoing comprehensive Program review that NRCS initiated. The process identified substantive ways to improve the environmental, economic, social, and technical soundness of Program activities.

The codified EWP regulations (7 CFR 624), National EWP Manual (policy), and Handbook (procedures) will be revised to reflect the changes that NRCS adopts. The specific changes that comprise the agency's Preferred EWP Program are described in Chapter 3, Section 3.2.4, under Alternative 4: the Preferred Alternative. Chapter 3 compares the Preferred EWP Program with the current EWP Program (No Action Alternative), the Draft PEIS Proposed Action, and the Prioritized Watershed Planning and Management Alternative. The current EWP Program is described in Chapter 2. The remaining sections of this chapter briefly describe the EWP Program's legislative authority and the recommendations NRCS would be addressing in making the changes in the Preferred EWP Program. The changes form the basis for the evaluation and comparison of impacts in this Programmatic Environmental Impact Statement (PEIS), which was prepared in accordance with the:

- National Environmental Policy Act (NEPA) of 1969 as codified in U.S. Code Title 42, Section 4321 and following sections (42 U.S.C. § 4321 *et seq.*)
- Council on Environmental Quality (CEQ) Regulations for implementing NEPA, codified in Title 40 of the Code of Federal Regulations, Parts 1500-1508 (40 CFR 1500-1508)
- NRCS NEPA regulations (7 CFR 650)
- EWP Program regulations (7 CFR 624)

1.4 PROGRAM LEGISLATIVE AUTHORITY

The EWP Program was authorized by Section 216 of the Flood Control Act of 1950 (Public Law 81-516) by amending the Flood Control Act of 1944 (Public Law 78-534). This amendment transferred jurisdiction over certain emergency watershed practices from the Department of the Army to the Secretary of Agriculture. A limit of $300,000 was imposed on the amount of funds that could be spent on the Program during any one fiscal year. In 1975, NRCS prepared a PEIS on the EWP Program, as it was then constituted.

An amendment stating that all EWP work carried out would be "in cooperation with landowners and land users" and adding drought as an eligible impairment was legislated under Section 403 of the Agricultural Credit Act of 1978 (Public Law 95-334).

Floodplain Easements—A new option on agricultural land, authorized in the 1996 Farm Bill, gives producers the opportunity to offer their land for floodplain easements. To be eligible, flooding must have damaged the land to the extent that the cost of restoring it and associated structures would be greater than the value of the land after restoration or the frequency of flooding is such that it is no longer profitable to farm without government subsidies. The easements permanently restore the natural floodplain hydrology as an alternative to traditional attempts to restore damaged levees, lands, and structures. The easement lands are ineligible for future federal disaster assistance (Public Law 104-127)

The EWP Program was amended further to include the purchase of floodplain easements (see text box) by Section 382 of the Federal Agricultural Improvement and Reform Act of 1996 (Public Law 104-127, also known as the 1996 Farm Bill). Public Law 81-516 (as amended) now reads as follows:

> *The Secretary of Agriculture is authorized to undertake emergency measures, including the purchase of floodplain easements, for runoff retardation and soil-erosion prevention, in cooperation with landowners and land users, as the Secretary deems necessary to safeguard lives and property from floods, drought, and the products of erosion on any watershed whenever fire, flood, or any other natural occurrence is causing or has caused a sudden impairment of that watershed.*

1.5 RECOMMENDATIONS FOR EWP PROGRAM CHANGES

NRCS broad program reviews are carried out by agency Oversight and Evaluation (O&E) teams, which periodically evaluate programs for efficiency and effectiveness in delivery. In 1997, at the direction of NRCS leadership, an O&E team of NRCS staff was formed to examine the EWP Program and to review questions and concerns voiced by people involved in important aspects of the Program. One aspect of the O&E team's mission was to determine if these questions and concerns were valid, particularly those concerns about potential adverse environmental impacts of installed EWP practices.

The O&E team identified three major Program review objectives. The team then evaluated EWP activities in 29 randomly selected counties in 10 states, reviewed project documentation for 17 disaster events and 98 project contracts, made 86 site visits, and interviewed 119 NRCS employees, partners, and sponsors as to their impressions of the Program, its outreach, and ways

to improve them. Within the broad Program review objectives, the O&E team identified specific goals for improvement and recommendations to meet those goals.

1.5.1 Objective 1: Review Site Eligibility & Exigency Determinations

The first objective was to determine if the EWP projects and sites met EWP Program eligibility criteria and if sites were properly classified as exigent or non-exigent. The O&E team focused on the apparent lack of consistency in how the Program was administered from state to state. For example, some states were interpreting the policy on exigency loosely, applying it to situations that were not truly urgent simply to obtain funding and commence work quickly. Interpretations of agency policy on EWP appeared to vary widely across the country and thus, more direction on interpreting agency policy appeared necessary.

The O&E Team developed the following specific goals and recommendations under Objective 1:

Goal: Ensure more accurate site eligibility determinations

- Provide training to NRCS employees and partners

Goal: Reduce overuse of the exigent classification

- Clarify the exigent and non-exigent classifications. Limit use of the exigent classification to situations where funding is immediately available, near-term probability of damage to life and property is high enough to warrant immediate NRCS action, funds can be obligated within 10 days, and construction can be completed in 30 days

Goal: Reduce the incidence of ineligible road repair work

- Limit assistance at road crossings to instances where the facility is not covered by an Operation and Maintenance (O&M) Agreement with a division of state government or is not under other agency jurisdiction.

1.5.2 Objective 2: Review Regulatory and Defensibility Evaluations

The second review objective was to determine if the EWP threat-reduction practices complied with laws, regulations, and policy, and if economically and environmentally defensible alternatives were considered and evaluated. The O&E team focused on whether or not environmental regulations and alternative practices that might reduce environmental effects received due consideration in EWP decisionmaking. NRCS leadership recognized that the Program is administered inconsistently not just because of differences in natural resource conditions across the country. Differing interpretations of policy, field staff familiarity with certain repair techniques, and a lack of knowledge and understanding of bioengineering principles and green restoration practices in general, also lead to inconsistent Program administration. For example, debris removal and channel reconstruction in one state may involve using a bulldozer in-stream. However, in another state, use of heavy equipment in-stream may be severely restricted and restoration design using the principles of natural stream dynamics and natural materials such as brush mattresses, fascines, and willow stakes may be emphasized.

Specific O&E team goals and recommendations developed under Objective 2 were:

Goal: Recognize the full value of habitat restoration

- Revise policy to emphasize restoration of the ecological functions of a system at an eligible site. Emphasize use of bioengineering, natural stream dynamics, and similar techniques. Require an interdisciplinary team approach for site assessments, alternative selection, and design

Goal: Take advantage of the expertise and financial resources of partner organizations

- Develop new and strengthen existing national, regional, and state partnerships by entering into EWP-specific agreements with agencies and organizations to address coordination, permit issuance, training, outreach, responsibilities, and follow-up to completed work

Goal: Begin limiting EWP funding of recurrently damaged sites

- Record EWP sites geospatially; use these data to locate recurrent EWP activity; then, fund studies to identify more permanent solutions in the watershed

Goal: Institute a program-wide performance review of installed practices

- Provide national guidance to evaluate an appropriate sample of EWP repairs in state quality-assurance plans

1.5.3 Objective 3: Review Equitability and Efficiency of EWP Administration

The third objective was to determine if the Program was being administered equitably and efficiently. The O&E team focused on how the Program could be managed more efficiently and effectively, specifically in funding, sponsorship, and documentation.

Specific O&E Team goals and recommendations under Objective 3 included:

Goal: Ensure that citizens are notified of the assistance available from NRCS

- Institute outreach procedures during EWP activation in each state

Goal: Take into account the limited resources of unincorporated and low-income communities

- Restructure Operation and Maintenance agreements to accommodate sponsors with limited resources and reduce their responsibilities to a shorter time frame

Goal: Take advantage of the efficiencies and speed of partnerships in contracting, design, and construction inspection

- Revise Part 509 of the National Watershed Manual to encourage use of sponsors or contracting for these activities, and revise the handbook accordingly

Goal: Reduce program inconsistencies and project start-up delays

- Seek an annual allocation to fund exigent situations, maintain a level of preparedness, and fund interdisciplinary EWP response teams

Goal: Ensure consistency in determinations of eligibility and classification across state lines

- Revise national policy to emphasize inter-state uniformity in the application of EWP; regions should establish collectively a process to ensure such uniformity

Goal: Ensure all required information is reported to NRCS Headquarters to receive funding

- Revise policy to streamline data requirements and develop an electronic process to request funds, document partner activities, submit final reports, and record site damages

In addition to the O&E Team recommendations, NRCS considered substantive recommendations made by other NRCS personnel, other agencies, and the public in defining the component changes of the EWP proposed action. Much of this input came during the *scoping* conducted for the EWP PEIS, during which NRCS met with, and solicited input from, representatives of other Federal, state, and local agencies, and the public. NRCS held public scoping meetings in six major U.S. cities and also sought input through a toll-free phone line, regular mail, and the NRCS website on the Internet. The proposed action and alternatives reflect opinions voiced and recommendations made during that scoping process. The other agency and public opinions and recommendations are described in detail in Appendix A. The correspondence between the recommendations made by the O&E Team and others during scoping and the components of the Preferred EWP Program are outlined in Chapter 3, Section 3.2.

1.6 ORGANIZATION OF THE FINAL EWP PEIS

This PEIS is organized in accordance with CEQ regulations at 40 CFR 1502.10.

- The cover sheet, summary, and table of contents are as specified by CEQ.
- Chapter 1 *Purpose and Need* explains why NRCS is proposing the EWP Program changes evaluated in this PEIS.
- Chapter 2 *The Current EWP Program* describes how NRCS administers the EWP Program now, including the agencies and programs it coordinates with, how it funds and executes EWP projects, the EWP restoration practices it uses to remedy watershed impairments, and its current use of floodplain easements. These details are the basis of the No Action alternative, which would simply be continuation of the current program.
- Chapter 3 *Alternatives including the Preferred Alternative* presents the details of the Program improvements and expansion comprising the NRCS Preferred EWP Program Alternative. Other Program alternatives evaluated in detail include the No Action Alternative, the Proposed Action evaluated in the Draft EWP PEIS (the Draft PEIS Proposed Action), and Prioritized Watershed Planning and Management. Alternatives considered but not evaluated in detail are also included. Chapter 3 then compares the impacts of the EWP alternatives.
- Chapter 4 *Affected Environment* describes the aspects of the environment that would be affected by each EWP Program alternative. It includes a general description of the ecosystems and human communities of watersheds of the U.S. and brief descriptions of a variety of typical recent EWP sites which are used as examples in the PEIS to illustrate how EWP practices and floodplain easements would potentially cause environmental effects.
- Chapter 5 *Environmental Consequences* presents the analysis of impacts on watershed ecosystems and human communities on which the comparison of alternatives is based.
- The *References Cited* lists the scientific, regulatory, and administrative materials used in preparing the PEIS.
- *Comments on the Draft EWP PEIS* reproduces the original comments on the Draft PEIS that NRCS received from Federal, State, and local agencies and organizations, as well as individual members of the public and provides numbered corresponding responses to each substantive comment.
- The *List of Preparers* identifies the members of the NRCS interdisciplinary team and other contributors to the preparation of the PEIS.

- *Consultation and Coordination* provides a list of agencies, organizations, and persons to which copies of the PEIS have been sent.

The PEIS also provides a glossary of EWP terms and other technical terms used in the PEIS and an index.

Five appendices provide:

- A description of the Scoping and Agency Coordination done for the PEIS (Appendix A)
- The impacts analysis methods (Appendix B)
- Relevant EWP documents, including a sample Damage Survey Report (Appendix C)
- Detailed descriptions of the example sites summarized in Chapter 4 (Appendix D)
- Details of the studies in the scientific literature supporting the impacts analysis (Appendix E)

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Chapter 2
THE CURRENT EWP PROGRAM

Current Management—Alternatives to the proposed action…shall…include…no action. 40 CFR 1502.14. [In] updating a land management plan, where ongoing programs initiated under existing legislation and regulations will continue even as new plans are developed…"no action" is "no change" from current management direction or level of management intensity. CEQ Memorandum: Questions and Answers About the NEPA Regulations, 46 FR 18026

This chapter summarizes the current EWP Program objectives and constraints, including the types and eligibility of authorized work, coordination with the programs and oversight functions of other agencies, engineering quality assurance, and funding. It describes the current procedures used to implement an EWP project in a state in the aftermath of a natural disaster, the different restoration practices currently used to address watershed impairments, and the use of floodplain easements. The EWP Program described here comprises the set of Program activities that constitute the action baseline. [**Note:** The description of the current EWP Program presented in this chapter is representative of the EWP Program at the time of the publication of the Draft EWP PEIS. Any changes or modifications to the EWP Program since that date are discussed under the Preferred Alternative in Chapter 3 of this Final PEIS.] The environmental impacts of this action baseline are compared with the impacts of the EWP Program Preferred Alternative as well as the Draft Proposed Action and Alternative 3 in Chapter 3.

2.1 EWP PROGRAM OBJECTIVES AND CONSTRAINTS

The Emergency Watershed Protection Program was established by Congress to respond to emergencies resulting from natural disasters. The USDA NRCS administers the EWP Program, providing technical and financial assistance to local sponsors who request aid to relieve imminent hazards to life and property caused by floods, fires, windstorms, and other natural occurrences.

EWP Program work includes removing debris from stream channels, road culverts, and bridges, reshaping and protecting eroded streambanks, repairing levees and flood control structures, and seeding or planting damaged upland areas. All EWP Program work is designed exclusively to reduce threats to life and property while being economically and environmentally defensible and technically sound. EWP Program work is not limited to any one set of prescribed practices. NRCS conducts case-by-case investigations of the needed work, considers various alternatives for alleviating the problem, and recommends a course of action.

Individuals are not eligible for EWP Program assistance (with the exception of floodplain easements) unless represented by a project sponsor (e.g., a State government or a political subdivision of a state, such as a city, county, tribal organization, general improvement district, or a conservation district). Under current provisions, the EWP recovery work can be done through either Federal or local contracts. NRCS

Tribal organization: Any Indian tribe or tribal organization, as defined in section 4 of the Indian Self-Determination and Educational Assistance Act (25 U.S.C. 450b), having authority under Federal, State, or Indian tribal law to carry out and maintain any EWP recovery work installed.

may bear up to 80 percent of the construction cost of the emergency practices (up to 100 percent for exigency); the remaining 20 percent must come from local sponsors and can be in the form of cash, in-kind services, or both. Sponsors are responsible for securing the land rights, obtaining necessary permits to make repairs, furnishing the local cost share, and operating and maintaining the finished work.

The National EWP Manual documents NRCS policy governing the EWP Program; the National EWP Program Handbook covers field procedures. Installed practices must be implemented in accordance with the Field Office Technical Guide and the National Engineering Manual 210-501.24 (c). Currently, NRCS follows EWP Program guidance (309-V National Watershed Manual, Part 509) issued in December 1992, based on legislative authorities in effect at that time.

2.1.1 EWP Coordination with Other Agencies

The EWP Program is one of a number of Federal and State programs dealing with emergency assistance. In small rural watersheds, it is recognized as one of the most responsive programs to local needs. The U.S. Army Corps of Engineers (USACE), Federal Emergency Management Agency (FEMA), U.S. Forest Service (USFS), USDA Farm Service Agency (FSA), Environmental Protection Agency (EPA), U.S. Fish and Wildlife Service (USFWS), and National Marine Fisheries Service (NMFS) are the principal Federal agencies that NRCS coordinates with on disaster emergency recovery work. The NRCS must also coordinate and consult with federally recognized tribal governments, Tribal Historic Preservation Officers (THPOs), and State government agencies, including State Historic Preservation Officers (SHPOs), regarding appropriate treatment of historic and cultural resources. A number of other Federal, State, and local agencies administer programs that deal with natural emergencies as well; they are described in Appendix A.

2.1.1.1 U.S. Army Corps of Engineers (USACE)

Under Public Law 84-99, as amended, the USACE may provide emergency assistance for flood response and post-flood response activities to save lives and protect improved property (i.e., public facilities or services and residential or commercial developments) during or following a flood or coastal storm. The USACE is not permitted to assist individual homeowners, agricultural lands, or businesses.

USACE assistance must be requested immediately and is limited to major flood or coastal storm disasters resulting in life-threatening or property-damaging situations. NRCS does not participate in flood-fighting efforts, but it coordinates with the USACE in Presidentially declared disaster situations when requested for post-flood damage repair and restoration. NRCS and USACE often coordinate in the repair of damaged levees and provide related rehabilitation assistance.

The USACE provides assistance that includes:

- Furnishing technical advice and assistance
- Clearing drainage channels, bridge openings, or structures blocked by debris

- Clearing blockages of critical water supply intakes and sewer outfalls
- Removing debris to reopen vital transportation routes
- Temporarily restoring critical public services or facilities
- Identifying hazard-mitigation opportunities
- Temporarily raising the height of levees with sandbags
- Strengthening flood control works with armor rock.

The USACE also may rehabilitate publicly sponsored flood control structures and Federally authorized and constructed hurricane and shore protective structures damaged or destroyed by wind, wave, or water action of other than an ordinary nature. Such assistance means repairing or restoring a flood-control structure to pre-disaster condition.

The criteria for USACE flood-control structure rehabilitation assistance include:

- Requests for rehabilitation assistance must be for a publicly sponsored project
- Costs for rehabilitation projects for non-Federal flood control works will be shared at 80 percent Federal and 20 percent from the public sponsor
- The proposed rehabilitation project must have a favorable benefit-cost ratio
- Deficient or deferred project maintenance that remains to be done when the disaster damage occurs will be accomplished by or at the expense of the sponsor, before or concurrent with authorized rehabilitation assistance
- Federally constructed projects are repaired at 100 percent of the Federal cost.

The Clean Water Act of 1996 grants USACE the authority and responsibility for issuing permits for projects that could affect navigable waters of the United States. Under the Clean Water Act, 42 U.S.C. § 1344, Section 404 prohibits the discharge of dredge or fill material into waters of the United States without a permit from the USACE. The most important permitting authority from the standpoint of EWP Program activities is Nationwide 37 permit, which authorizes EWP activities when there is an immediate threat to life or property.

2.1.1.2 Federal Emergency Management Agency (FEMA)

At the discretion of Congress and the Federal Government, states and their political subdivisions are jointly responsible for providing a system of emergency preparedness for the protection of life and property in the United States from hazards. The Federal Government provides oversight, coordination, guidance, and assistance, so that a comprehensive emergency preparedness system exists for all hazards (42 U.S.C. § 5195). These programs are overseen and coordinated by FEMA, which has been managing Federal disaster efforts since its formation in 1979. FEMA's mission is to reduce loss of life and property and protect the nation's critical infrastructure from all hazards through a comprehensive, risk-based, emergency management program of mitigation, preparedness, response, and recovery. The Small Business Administration and USDA's Rural Development Administration also have flood-related disaster-assistance programs.

Before FEMA can become involved, the President must declare an area a major disaster area under the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Public Law 93-288,

42 U.S.C. §§ 5121 *et seq*.). Under presidential declarations, FEMA coordinates emergency assistance and NRCS responds to this assistance. If FEMA transfers this responsibility to the Federal Regional Council during the recovery period, NRCS responds to the Council.

In Presidentially declared disasters, FEMA looks to NRCS to do the following:

- All agricultural work normally covered by the EWP Program
- Major scour and overwash acreages
- Repair of agricultural levees (usually those less than 6 feet high)
- Protection of rural roads, buildings, and homes
- Conduct of some of the above in smaller urban areas
- Adhere to National Flood Insurance Program requirements in federally mapped floodplains, especially concerning debris removal and disposal.

2.1.1.3 USDA Forest Service (USFS)

NRCS provides overall administrative direction and guidance for the EWP Program and transfers funds to the USFS at the national level for work done by USFS or its cooperators. [**Note:** As of the date of publication of the Draft EWP PEIS, a Memorandum of Understanding (MOU) was in place between NRCS and USFS indicating that NRCS would fund EWP Program work conducted on USFS lands. That MOU expired in July 2003, and no other agreement between the NRCS and USFS has since been signed. Currently, the USFS does not go through NRCS to fund watershed projects, including EWP Program work. NRCS currently funds only its own EWP Program work, and will continue to do so in the future. However, NRCS still provides overall administrative direction and guidance to the USFS for EWP Program work.]

Under general program criteria and procedures established by NRCS, USFS is responsible for administering EWP Program practices on national forests and national grasslands. USFS also is responsible for emergency practices on all forested lands or rangelands within the national forests, on adjacent rangelands administered under formal agreement with USFS, and on other forested lands. The Burn Area Emergency Rehabilitation (BAER) Program is administered by the USFS to treat critical wildfire-damaged areas and to reduce the risk that rainstorms will trigger major soil loss in runoff and downstream sedimentation in affected watersheds. In carrying out their responsibilities, USFS and NRCS work cooperatively with other Federal, State, and local government agencies (7 CFR 624.4).

2.1.1.4 USDA Farm Service Agency (FSA)

The FSA administers the Emergency Conservation Program (ECP), which shares with agricultural producers the cost of rehabilitating eligible farmlands damaged by designated natural disasters. ECP also may be available to areas without regard to a presidential or secretarial emergency disaster designation. FSA declares drought emergencies under P.L. 95-334 Sec. 624.5.

County FSA committees determine the eligibility of projects for ECP assistance by conducting individual on-site inspections and determining the type and extent of damage. Cost-share assistance of 75 percent (up to 90 percent for limited resource producers) is available. NRCS provides technical assistance for ECP. To be eligible for ECP assistance, the applicant must have suffered a natural disaster that created new conservation problems that, if left untreated, would:

- Impair or endanger the land;
- Materially affect the land's productive capacity;
- Represent unusual damage which, except for wind erosion, is not the type likely to recur frequently in the same area; or
- Be so costly to repair that Federal assistance is or will be required to return the land to productive agricultural use.

ECP funds may be used for debris removal, fence restoration, grading and shaping of farmland, restoring structures, and water conservation practices, including providing water to livestock in periods of severe drought. Other emergency conservation practices may be authorized by county FSA committees with the approval of the State committee and the agency's deputy administrator for farm programs. Conservation problems that existed before the natural disaster are not eligible.

The FSA State Executive Director implements ECP except in severe drought when the deputy administrator for farm programs may authorize assistance. During severe drought, ECP provides emergency water assistance—both for livestock and for existing irrigation systems for orchards and vineyards.

2.1.1.5 U.S. Environmental Protection Agency (EPA)

The EPA enforces requirements of the Clean Water Act, (42 U.S.C. § 1252 *et seq.)*. The Clean Water Act is the common name for the Federal Water Pollution Control Act, as amended over the years, particularly in 1972 and 1977. The Act's goal is to restore and maintain the chemical, physical, and biological integrity of the nation's waters, and establish a broad framework of planning, research, financial assistance, and permit systems to achieve that goal. The following are four of the most relevant sections of the act for this study:

Section 303, 42 U.S.C. § 1313 delegates the process of setting water quality standards to the states, provides for the development of basin plans for establishing these standards, defines critical water quality conditions, and provides waste load constraints.

Section 319, 42 U.S.C. § 1329 establishes nonpoint source pollution control programs. States are required to identify waters that cannot maintain applicable water quality standards without nonpoint source pollution control and to develop programs to control those nonpoint sources.

Section 401, 42 U.S.C. § 1342 requires states to certify that any discharge to waters of the United States requiring a Federal permit will comply with all water quality standards and effluent limitations.

Section 402, 42 U.S.C. § 1342 establishes the National Pollutant Discharge Elimination System (NPDES) permit system for point-source discharges into waters of the United States. EPA oversees the program, but it is administered in most cases by the individual states. Point sources relate to defined sources of discharge, such as pipes, but a 1987 amendment to the act also covers storm water runoff from industrial sites, municipal storm water runoff, and runoff from certain types of construction sites.

2.1.1.6 U.S. Fish and Wildlife Service (USFWS)

The USFWS is the principal Federal agency responsible for conserving, protecting, and enhancing fish, wildlife, and plants and their habitats. While the agency has no direct involvement with disaster relief, NRCS does consult with USFWS prior to beginning EWP work to ensure that no threatened and endangered (T&E) species will be adversely affected by the repairs, as required by the Endangered Species Act. Additionally, USFWS provides assistance in identifying environmentally sensitive areas, such as wetlands or fish habitat, to minimize impacts of the repairs.

2.1.1.7 National Marine Fisheries Service (NMFS)

The NMFS is part of the National Oceanic and Atmospheric Administration (NOAA). NMFS administers NOAA's programs which support the domestic and international conservation and management of living marine resources. NMFS is also responsible for administering the Endangered Species Act for listed marine species and is consulted by NRCS in cases where marine species or habitats may be affected.

2.1.1.8 State and Tribal Historic Preservation Officers (SHPOs and THPOs)

Consultation with SHPOs and THPOs is conducted for sites where cultural resources are at risk or where as-yet-undiscovered cultural resources are thought to exist. By involving SHPOs and THPOs, mitigations or other work can be implemented and historic and cultural resources protected.

2.1.2 EWP Program Engineering

Trained and experienced personnel are the foundation of technical quality in NRCS conservation engineering work. NRCS assigns job approval authority at the highest appropriate level to ensure the competence of each individual who provides engineering technical assistance under NRCS supervision. The NRCS State Conservation Engineer, a registered professional engineer, is the authority for all engineering work conducted in each state and delegates this authority to others who have the necessary training, experience, and demonstrated competence. The upper limits of job approval authority are measured by complexity, size, or hazard for each practice that an individual may design or plan. Many conservation practices, including those installed under the EWP Program, are approved by someone with appropriate job approval authority.

State or national NRCS practice standards, or State standards developed or adapted for EWP Program work, offer criteria specific to the design of EWP Program practices. While NRCS directives and standard professional references provide guidance for designing engineering practices, NRCS directives include the National Engineering Handbook and National Engineering Field Handbook (EFH). Chapter 16 of the EFH, "Streambank and Shoreline Protection", is a good reference for EWP Program work. The recently issued interagency document, "Stream Corridor Restoration, Principles, Processes and Practices," provides background useful in integrating knowledge of the principles of natural stream dynamics, ecological principles, and engineering skill to develop EWP Program alternatives that are environmentally, socially, and economically defensible and technically sound.

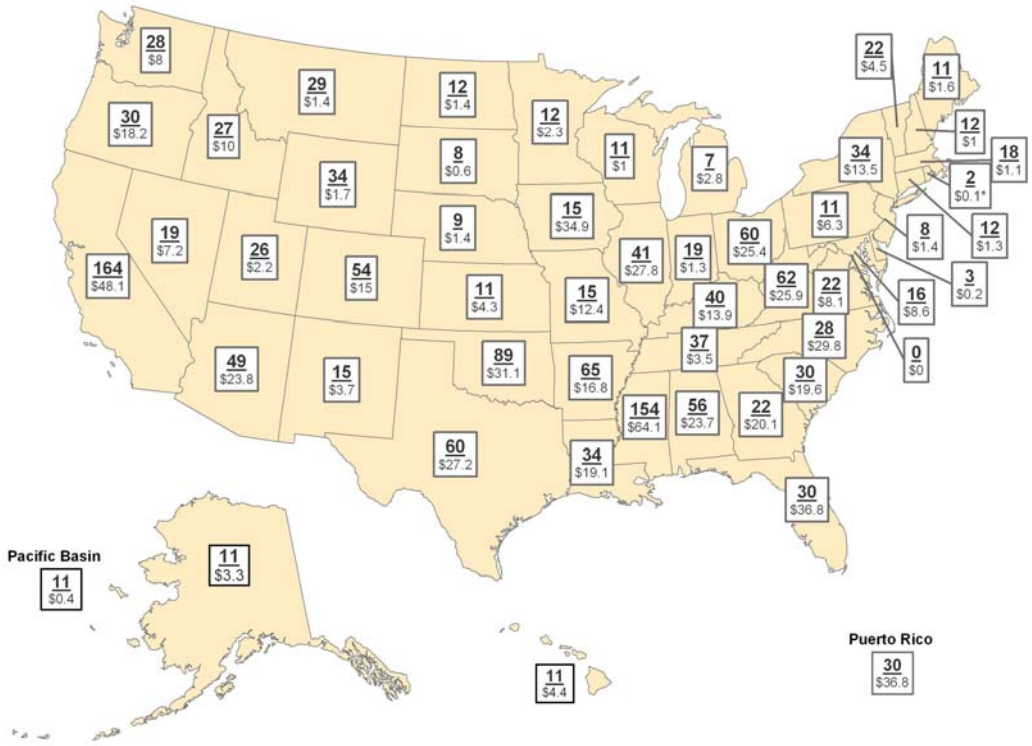
Some states have prepared State EWP Program handbooks containing standards, construction specifications, drawings, and other applicable materials. These help train new personnel and expedite the preparation of the site-specific construction documents necessary for contracting EWP Program work.

2.1.3 Program Funding

The early EWP Program implemented under the Flood Control Act of 1950 had a base funding of $300,000 per year for emergency practices. Disasters were not predictable; therefore, this was simply an estimate of potential needs. In a year without extensive disaster damage, the funds were available for regular flood prevention work, while in other years, extensive or large-scale disasters resulted in the need for supplemental appropriations. By 1969, all EWP Program work was funded through supplemental appropriations. In that year, $4 million was appropriated for forest fires in California, Nevada, Oregon, and Washington. In 1973, $36.5 million was appropriated to deal with the aftermath of Hurricane Agnes and flooding in the Mississippi River Valley, the Black Hills of South Dakota, and adjacent areas.

Total financial assistance allocated by state for EWP Program activities from 1988 to 2003 are shown in Fig. 2.1-1 (in millions of dollars). [Note: The dollar amounts presented in Fig. 2.2-1 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 EWP Program regulations on administration, eligible emergencies, recipients, assistance, eligible practices, limitations on use of emergency funds, environment, application, and investigation and request for funds, are in 7 CFR 624.



**Rhode Island's financial assistance totaled $38,006* *Source: NRCS, 2004*

Fig. 2.1-1. Total Financial Assistance for EWP Program Work (bottom number, in millions) and Number of Disaster Events (top number) by State (1988-2003)

2.2 EWP PROJECT ADMINISTRATION, COORDINATION, AND EXECUTION

2.2.1 EWP Project Implementation Criteria

A watershed emergency exists when a single natural occurrence or a short-term combination of occurrences suddenly impairs a watershed (see text box), creating an imminent threat to life or property. Natural occurrences include, but are not limited to, floods, fires, windstorms, earthquakes, volcanic actions, and drought. State Conservationists declare such watershed emergencies. Presidentially declared disasters may or may not coincide with the State Conservationist-declared disaster emergencies, depending on the nature and location of the disaster, the types of damage left in the aftermath, and the communities affected. Watershed impairments resulting from long-term combinations or series of natural or other occurrences are not considered sudden watershed impairments (7 CFR 624.5).

2.2.1.1 Eligibility Requirements

Emergency watershed protection assistance is available if the State Conservationist determines that:

- The EWP Program work would reduce threats to life and property.
- The imminent threat to life or property significantly exceeds that which existed before the impairment.
- The work would be economically and environmentally defensible, and sound from an engineering standpoint.
- The work would represent the least-cost alternative.
- The work would yield benefits to more than one person, except in exigency situations.
- Public and private landowners would be eligible for assistance, and they are represented by a sponsor (except in the case of floodplain easements, for which sponsors are not required).
- The sponsor is a public agency of State, county, or city government, a government special district, or a tribal organization (NRCS, 1999c).

EWP Program work is not limited to any one set of prescribed practices. The NRCS investigates the needed work case by case to determine the appropriate practice(s) for each case.

What constitutes a "sudden impairment" under the program was defined by virtue of a 1978 legal challenge in *Sierra Club v Bergland*, 451 F Supp. 120 (N.D. Miss., 1978). The court held that the decision to proceed with a proposed channel improvement of a section of the Tippah River Watershed, which was to be funded through appropriations under Section 216 of the Flood Control Act of 1950, was inconsistent with applicable law governing expenditure of such funds. The evidence demonstrated that the sedimentation that triggered the need for the improvement was the gradual result of an earlier channelization project and not caused by flooding or other natural force, which would justify expenditure of Section 216 funds as an emergency measure.

2.2.1.2 Eligibility Policy Constraints

Statutory authorities allow funding only for activities required to relieve imminent hazards to life and property caused by natural disasters. EWP Program regulations (7 CFR 624.7) prohibit funds from being used to install practices that are not essential to reduce hazards, nor can they be used to solve problems that existed before the disaster. EWP Program funds cannot be used to improve the level of protection above that which existed before the disaster, unless required by current technical standards or required by Federal, State, or local regulating agencies. In addition, the EWP Program cannot fund Operation and Maintenance (O&M) work, repair, rebuild, or maintain private or public transportation facilities or utilities. EWP Program work also cannot be done if it would affect downstream water rights, nor can repair work be performed on practices installed by another Federal agency. EWP funds can, however, be used to perform work on practices installed by a State or local agency (63 FR 45691).

2.2.1.3 Exigency and Non-Exigency Classification

Procedures for providing emergency assistance differ based upon whether the watershed emergency is an exigency or a non-exigency situation. An exigency exists when the near-term probability of damage to life or property is high enough to demand immediate Federal action. An exigency continues to exist as long as the probability of damage continues at a high enough level.

A non-exigency situation exists when the near-term probability of damage to life or property is high enough to constitute an emergency, but not sufficiently high to be considered an exigency. A non-exigency situation continues to exist as long as the probability of damage remains high enough to be considered an emergency (7 CFR 624.5).

2.2.1.4 Project Sponsorship and Cost Sharing

With the exception of floodplain easement, each EWP Program project requires a sponsor who applies for assistance. A sponsor can be any legal subdivision of State or local government, including local officials of city, county, or State governments, American Indian tribes, conservation districts, and watershed authorities. The sponsors determine the priorities for emergency assistance while coordinating work with other Federal and local agencies, and provide the legal authority for repair work, obtain necessary permits, contribute funds or in-kind services, and maintain the completed emergency practices (NRCS, 1999a).

NRCS may provide up to 80 percent of the funds needed for construction costs to restore the impaired watershed sites to their condition prior to the disaster. The community or local sponsor of the work pays the remaining 20 percent, which can be provided by cash, in-kind services, or both (NRCS, 1999a). Current practice, established in 1993, is to limit construction funding to 75 percent with sponsors paying 25 percent.

2.2.2 EWP Program Project Documentation and Coordination

The principal NRCS documentation for an EWP Program project is the DSR, which initiates the process of economic, environmental, and technical review, decision-making, and contracting. Copies of correspondence with other agencies and contract packages are normally attached to the DSR (documentation includes sketches, photographs, and videos). Appendix C shows a sample DSR with pertinent correspondence.

2.2.2.1 The Damage Survey Report (DSR)

A DSR is required for each impaired site or grouping of similar sites. As the basis for EWP Program assistance on sponsor-proposed impairment sites, the DSR is the NRCS-specified format for gathering information about the damaged site, evaluating the damage to determine eligibility for assistance, reviewing the environmental and economic defensibility of a proposed solution, and documenting the basis for the decision. Completing the DSR requires an interdisciplinary approach using appropriate expertise to evaluate each site.

The DSR describes:

- Impairments and the threats they pose
- The scope, cost, and nature of the emergency work being proposed
- The potential economic and environmental effects of the impairment
- The initial engineering cost estimate.

The DSR provides:

- Support for obligation of funds by project or cooperative agreement(s)
- Information needed for program management, including fund management and tracking progress
- Documentation for any review of accountability of NRCS staff that helps deliver technical and financial assistance through the EWP program
- Information that can be used in coordination activities with other agencies that are involved in disaster response and recovery
- Information that can be used in planning and evaluating disaster mitigation activities
- Documenting compliance with NEPA
- Documenting compliance with the National Historic Preservation Act (NHPA), including consultation with the SHPO and/or THPO
- Documenting compliance with the Endangered Species Act, including consultation with USFWS.

NRCS requires the DSR to be complete and accurate to ensure that these objectives are met. This ultimately ensures program integrity and consistency, program accountability and defensibility. It provides the documentation necessary in the event of appeals if assistance is denied or limited for those decisions that are appealable in accordance with 7 CFR parts 614 and 11.

The direct and indirect impacts of individual EWP Program practices are routinely documented and attached to the DSR. DSRs are on file at NRCS State offices.

2.2.2.2 Project Review and Approval in Exigency and Non-Exigency Situations

When NRCS receives an application for EWP Program assistance, the State Conservationist immediately investigates the emergency situation to determine if the EWP Program is applicable. In carrying out EWP Program work, State Conservationists take into consideration the two broad types of emergency situations: (1) an imminent situation of unusual urgency (an exigency), and (2) an emergency requiring action but of less urgency than an imminent situation (non-exigency) (7 CFR 624.5).

2.2.2.2.1 Exigency Situations

An exigency exists when prompt remedial action is provided to eliminate an imminent threat to loss of life. The State Conservationist notifies the Financial Assistance Programs Division, describes the emergency, and estimates the funds needed. If funds become available, the State Conservationist authorizes the actions necessary to remedy the emergency. The State Conservationist confirms the situation in a memorandum to the chief that explains the nature of the emergency, the location of the emergency, the kind of remedial work and funds needed, sponsors, and a description of potential damage. In these situations, the memorandum from the State Conservationist with its brief information constitutes the request for funds. Funds must be obligated within 10 days after the memorandum has been received and all work must be completed within 30 days after the funds are obligated.

2.2.2.2.2 Non-Exigency Situations

If the situation is not exigency, but the impairment justifies emergency assistance, a non-exigency situation exists and the State Conservationist submits a request for funds to the chief within 60 days after the disaster. Funds cannot be committed until the NRCS national office provides notification that the funds are available (7 CFR 624.10). Funds must be obligated and work completed within 220 consecutive calendar days after the date of receipt of funds. In non-exigency situations, the economic rationale of the proposed practices must be submitted in appropriate detail with the request for funds. Generally, the expected value of imminent damages (amount of damages multiplied by the near-term probability of their occurrence) must exceed the cost of the proposed emergency practices. Information in the request for emergency funds to support economic defensibility of the practices must include:

- Number and extent of values at risk because of the watershed impairment
- Estimated damages to the values at risk if the threat is realized
- Events that must occur for the threat to be realized and the estimated probability of their occurrence both individually and collectively
- Estimates of the nature, extent, and cost of emergency practices needed to relieve the threat.

The State Conservationist also submits adequate information to substantiate the environmental defensibility of the proposed emergency practices. Such information must include:

- Thorough descriptions of beneficial and adverse effects on environmental resources, including fish and wildlife habitat, cultural resources, and recreational resources
- Descriptions of the impact on water quality and water conservation as appropriate
- Analysis of the effects on downstream water rights.

A proposed EWP Program action is justifiable if the combined economic and environmental benefits exceed any adverse effects. This determination, made by the interdisciplinary team members, is documented in the comments section of the DSR. The description of the affected property (i.e., public, private, business, and other), value of repair or replacement cost, damage factor, and near-term damage reduction is documented and entered on the Economic Evaluation Worksheet for the alternative practices.

NRCS regulations (7 CFR 624.6b) and policy (National Watershed Manual 1992) require that practices proposed for installation are economically and environmentally defensible.

2.2.2.3 Environmental Review and Inter-Agency Coordination

NRCS coordinates its work with Federal agencies (USACE, USFWS, USFS, EPA, FEMA), State agencies (e.g. State emergency management agencies and State historic preservation offices), tribal governments, and local communities. At issue are important regulatory and environmental requirements, such as protecting Federal endangered or threatened species and preserving unique cultural and historic resources.

An environmental evaluation is conducted in both exigency and non-exigency situations. In exigency situations, the assessment and any necessary mitigation are often performed after the emergency work either has been initiated or completed. NRCS State Conservationists notify concerned field offices of the USFWS, NMFS, USACE, and EPA of anticipated EWP Program work. Through existing coordination mechanisms of State clearinghouses, State Conservationists notify the State fish and game agency and other appropriate agencies. Archeological, historical, or other needed special expertise is solicited from appropriate agencies and groups, while environmental and other considerations are integrated into emergency work by using an interagency and interdisciplinary planning approach. In particular, NRCS coordinates with the USFWS and the NMFS to ensure that federally listed T&E species are not jeopardized by project activities and to ensure proper coordination under the Anadromous Fish Conservation Act. The NRCS State cultural resources coordinator or specialist shall recommend consultation with the SHPO and/or THPO and concerned tribes with historic ties to the project area to ensure that cultural resources, including NHPA-listed or eligible resources are taken into account in the planning and implementation of EWP Program projects. NRCS is legally responsible for ensuring that National Register of Historic Places (NRHP) listed or eligible historic and cultural resources (including traditional cultural properties as defined under the Native American Graves Protection and Repatriation Act (NAGPRA)) are not inadvertently harmed by projects or programs under its jurisdiction. THPOs and federally recognized tribes must be consulted on a nation-to-nation basis that respect their sovereign nation status in accordance with Executive Order 13175 (Consultation and Coordination with Indian Tribal Governments) and Executive Order 13007 (Indian Sacred Sites). State fish and game agencies are also consulted to ensure that State-listed species are included in the planning process.

EWP Program work also is reviewed regarding the requirements of Executive Order 11988, Floodplain Management, 3 CFR 117 (1978), as amended by Executive Order 12148, 3 CFR 412 (1980), and Executive Order 11990, Protection of Wetlands, 3 CFR 121 (1978), as amended by Executive Order 12608, 52 FR 34617. Executive Order 11988 requires that all Federal agencies take action to reduce the risk of flood loss, restore and preserve the natural and beneficial values served by floodplains, and minimize the impacts of floods on human safety, health, and welfare. Executive Order 11990 requires Federal agencies to follow avoidance, mitigation, and preservation procedures with public input before proposing new construction in wetlands.

This PEIS hereby incorporates by reference the latest listing of threatened and endangered species, as published in 50 CFR 17.11 and 17.12.

2.2.3 Related Watershed Programs

Watersheds are becoming recognized as logical environmental management entities by a number of Federal agencies, including other NRCS programs. A number of Federal, State, and local programs relate to watersheds. Most are federally funded and use significant Federal technical assistance. The major Federal agencies involved in watershed-related programs are: NRCS, the USFS, which administers the EWP Program on national forest lands, and other Federal agencies (such as the FSA, EPA, USFWS, the National Park Service, the USACE, the Department of Housing and Urban

Development, and the Bureau of Reclamation). A number of other federal programs deal with watersheds. At least 16 other NRCS programs are watershed-based or have watershed components (see Appendix A, Table A.3-1-1). Other USDA programs that are watershed-based or have watershed components are listed in Appendix A, Table A.3-1-2. Other Federal agency programs are in Table A.3-1-3. State watershed programs often result from State delegation of some or all aspects of the federal programs.

2.3 EWP PROGRAM RESTORATION PRACTICES

When a natural disaster occurs and watershed impairments remain, NRCS takes immediate steps to evaluate the impairments and determine an appropriate course of action. Where warranted to eliminate threats to life and property, NRCS provides funding and technical assistance to install EWP practices. The practices should restore the site to pre-disaster conditions, while being economically and environmentally defensible and technically sound. The types of repair and protection practices NRCS uses to restore watersheds include practices that:

- Restore stream channel capacity
- Stabilize and protect streambanks
- Repair or remove damaged dams, dikes, and levees
- Protect structures located in floodplains
- Restore damaged upland areas of watersheds.

Restoring stream channel (hydraulic) capacity in general requires removing and disposing of debris composed of woody material, sediments, or larger mineral material such as cobbles or boulders. Structural practices (armoring), soil bioengineering, stream restoration, vegetative plantings, or a combination of these practices, stabilize and protect streambanks. The NRCS Engineering Field Handbook (EFH) details many of these methods aimed at streambank restoration. Streambanks may be protected indirectly by modifying stream flow away from them. Damaged water control structures that include dams, dikes, and levees either require repair practices or may need to be removed if repair is neither feasible nor cost-effective. Floodplain diversions will divert flow away from valued or sensitive structures such as water treatment plants, while sediment or debris basins trap materials up-gradient before they can reach such structures. Critical area treatment of upland portions of watersheds reduces the potential for extreme soil loss and sedimentation, mudslides, and damage to roads and structures through accelerated runoff from unprotected slopes. Critical area treatments include planting or seeding, installing upland diversions, drains and conveyances, and building sediment and debris basins.

The practices described here are those typically used in the EWP Program and analyzed in this PEIS (NRCS, 1996). This is not intended as an exhaustive list of all possible EWP practices.

2.3.1 Practices that Restore Stream Channel (Hydraulic) Capacity--Debris Removal and Channel Restoration

When a stream channel is obstructed by debris, its hydraulic capacity—the volume of water it can convey—is severely reduced. Debris accumulations (debris dams) may back the water enough to overflow streambanks, cause flooding upstream of the blockage, and deposit sediment in adjacent floodplains, leading to severe damage and threatening homes, businesses, or farming operations in these floodplains. Debris can undermine, damage, or destroy downstream structures such as bridges (Fig. 2.3-1) or culverts or threaten such damage in subsequent storms if not removed. Bridges can be washed out by the pressure of debris backup. Overflows may erode approaches to bridges and culverts. EWP Program debris-removal practices are used either when the hydraulic capacity of a channel is reduced by debris or when debris has the potential to move during subsequent storms. Removal of woody debris and removal of sediment or cobble are discussed separately here because of differences in how they affect stream channels and how they are removed and disposed.

Fig. 2.3-1 Debris Blockage of a Bridge

Debris removal generally involves the following components:

- Create access when needed to move trucks and heavy equipment to a debris site
- Dewater, if needed, to allow operations in-stream
- Use heavy equipment to remove debris from a streambank or in-stream position
- Restore stream dimension, pattern and profile
- Establish a low-flow channel, when needed
- Grade, shape, and re-vegetate affected streambanks by seeding or planting
- Dispose of debris on or off site

Fig. 2.3-2 Debris Removal Using Heavy Equipment (backhoe), Bethel Road Site, Hall County, GA

Creating access may require removing riparian vegetation, excavating and bank filling, grading, and stabilization. *Dewatering* diverts water within a stream, resulting in dry conditions. These dry conditions are needed for the completion of EWP Program practices. Using *heavy equipment* either from the bank (Fig. 2.3-2) or in-stream generally is the only feasible way to deal with the weight and volume of material that needs to be removed.

In *establishing a low-flow channel*, heavy equipment is used to excavate an impaired streambed to restore the stream's channel on its outside bends. The low- flow channel maintains the base flow (normal stream flow during average periods of rainfall) of the stream and aids in transporting fine sediment and restoring aquatic habitats.

Grading and shaping affected streambanks may be necessary during the finishing phase of a job to create slopes with a gradient suitable for sustaining vegetative growth. Reestablishing vegetation is accomplished by hand or mechanical seeding or planting and includes plant or seed stock, mulching, and fertilizing.

Debris use or disposal involves a number of choices, and the advantages and disadvantages of each option are affected by feasibility and cost. The method selected depends on the circumstances at the disposal site and an evaluation of how disposal may affect the environment. Debris can be used for a number of purposes either on-site or off-site. Where allowed, it can be burned or buried. Burning or burying the material off-site requires heavy equipment to transport the debris to an adequate site. Hazardous materials in the debris require special consideration in its disposal and would follow all applicable State and local regulations regarding handling and disposal. Cobbles or boulders may be used to stabilize banks, although retention of cobbles on site may contribute to the debris load in future flood events. Where practical, cobbles and debris is removed from the floodplain. Cobble and gravel can restore fish habitat or modify water flow. Rootwads (tree trunks with root structure intact) and tree trunks can also be used to stabilize stream banks. The components of debris-removal depend on the location and characteristics of the debris impairment. Some components of these practices, such as creating low-flow channels and revegetating disturbed areas, are the same as or similar to the components involved in stream restoration.

Relationships between a natural disaster, the watershed impairments it may cause, the EWP practices that may be employed to repair them, and the components of those practices are illustrated in Fig 2.3-3. Development of this flow logic was one of the first steps the NRCS interdisciplinary team used in the environmental impacts analysis method outlined in Chapter 5. Appendix B presents comprehensive environmental impact flow diagrams identifying cause-effect relationships between practice components and ecosystem components for aquatic, wetland, riparian, floodplain, and upland ecosystem, and community components for human communities.

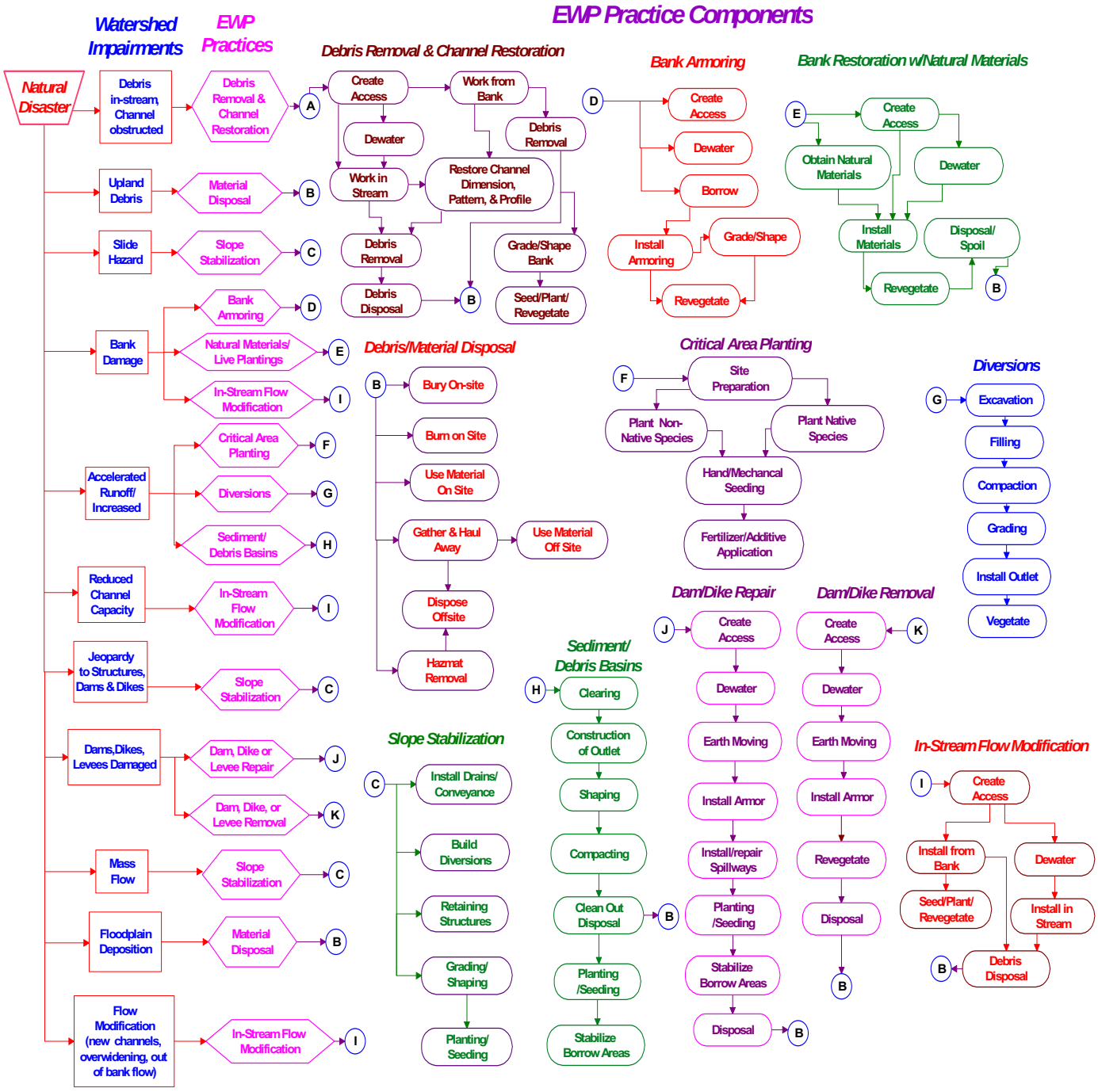


Fig 2.3-3 EWP Project Flow Chart of Watershed Impairments, Practices and Practice Components

2.3.2 Practices that Protect Streambanks

Intense storm flows, caused by the heavy rains associated with hurricanes, tornados, and floods, can intensify bank erosion (Fig. 2.3-4) and remove vital bank vegetation. The vulnerability of streambanks to the damaging forces of disasters can be dramatically affected by the impact of humans in the upper portions of watershed. A greater number of impervious surfaces may increase markedly the volume of runoff, thereby increasing storm peak flows. Greater peak flow increases the stress on streambanks and causes erosion, resulting in a degradation of in-stream habitat and a reduction of water quality because of sedimentation and loss of cover.

Fig. 2.3-4 Property Threatened by a Failed Streambank

Streambanks are stabilized and protected directly by structural practices (bank armoring such as riprap), soil bioengineering, vegetative seeding or plantings, or more often a combination of these practices, or indirectly by installing structures in-stream to deflect stream flow away from the eroding bank.

2.3.2.1 Direct Streambank Protective Practices

Direct protection of streambanks involves installing materials along the damaged bank to protect it from the erosive force of the stream. Those practices include bank armoring and the use of natural woody materials and live plantings. Most often these techniques are used in combination, with armoring where normal stream flow velocities are relatively high—greater than plantings alone could resist—and particularly where high-value structures are immediately adjacent or downstream to the eroding streambank, and the probability of failure must be minimized.

2.3.2.1.1 Bank Armoring

Traditional protective practices, known as bank armoring techniques, use stone and other armored structures to provide protection. Typical armoring practices include gabions and riprap.

Gabions are large-volume wire-mesh baskets (Fig. 2.3-5) filled with stone or cobble and placed along streambanks and streambeds of smaller streams for stabilization and grade control. Gabions are flexible and can be shaped to conform to topographical features such as

Fig. 2.3-5. Gabions Installed at Rocky Run, VA

Fig. 2.3-6 Riprap Installed at Rocky Run, VA

sharp bends and steep streambanks. They usually are wired together with durable fasteners, making them structurally sound and long-lasting.

Riprap (Fig. 2.3-6) is a layer of stone placed along eroded streambanks to protect and stabilize them. Like gabions, riprap is used where stream velocities are too great to establish vegetative cover successfully. Gabion or riprap installation generally involves creating access and using heavy equipment. Dewatering is sometimes required. Typically, the upper portion of the armored streambank is not actually armored but instead graded and shaped, then planted or seeded.

2.3.2.1.2 Natural Materials and Live Plantings

Dead woody materials, including dead trees, tree branches, and cut logs and rootwads, are used to protect banks. Soil bioengineering combines live plantings with engineered materials for reinforcement. Vegetative plantings and seeding may be used alone where stream velocities allow, but most often are used in combination with armoring or dead woody materials. The roots of live materials secure the streambank soils, making the banks far less vulnerable to erosion and providing riparian and fish habitat.

Fig. 2.3-7 Rootwads Installed at Rose River, VA

Dead Woody Materials

Rootwads are embedded trunk-first in streambanks (Fig. 2.3-7) to stabilize the banks. They are a more natural, biologically functional alternative to armoring structures. Timber *cribbing* structures (Fig. 2.3-8) are log installations similar to gabions in function.

Fig. 2.3-8 Timber Cribbing Structure, Cherokee County, NC

Soil Bioengineering

Soil bioengineering uses living plants as structural components (NRCS, 1996). Adapted types of shrubs or trees are installed initially in configurations that offer immediate soil protection and reinforcement. A typical installation may include riprap, rock fill, or geo-textiles, or a combination of these materials with plants inserted

through the materials into the soil (Fig. 2.3-9). Soil bioengineering systems create resistance to sliding or mass movement of a streambank as they develop roots or fibrous inclusions. Hydrophytic plants, such as willows that are quick to root and grow, are often used for these projects.

Fig. 2.3-9 Composite photo, live plantings in rock base (left) and soil bioengineering using geotextiles, Glen Arbor, Santa Cruz Co., CA

Streambank repair and protection consists of the following practice components:

- Create access when needed to move heavy equipment to a damaged bank site;
- Dewater to allow operations in-stream;
- Borrow materials;
- Operate heavy equipment from on-bank or in-stream to install protective practices; and
- Grade, shape, and, when appropriate, revegetate streambanks.

Fig. 2.3-10 Bank Vegetation Site, Back Creek, Augusta County, VA (with riprap toe section)

Planting and Seeding

Vegetative stabilization techniques (Fig. 2.3-10) involve choices among seeding methods and materials, nonnative or native plantings, and fertilizers and additives. Vegetative plantings are used where they are capable of protecting the bank from the erosive forces of streamflow. A common streambank stabilization detail incorporates structural protection of the bank toe from the bed elevation to the normal water surface or to the approximate 2-year flow line, with vegetative treatment of the upper bank to the general flood plain elevation or as needed. Criteria may be developed locally to define limiting velocities where predominantly vegetative treatments can be used successfully. Many variables, including climate, soils, bank height and slope, plant species, cost, material and labor availability, and animal and human bank traffic, influence the success of vegetative treatment.

Vegetative stabilization practice components include:

- Create access;
- Fill or excavate;
- Grade;
- Harvest plant materials; and
- Install plants or seeds, and apply fertilizer and mulch.

2.3.2.2 In-stream Flow Modification

In-stream flow modification uses structures placed in a stream to redirect flow, thereby protecting banks from lateral erosion or to stabilize grade, thereby protecting the streambed from cutting erosion by the downward force of the flow. These techniques are used when out-of-stream practices alone cannot repair a bank stability problem, when they are the most environmentally sound solution, and when there is sufficient area for effectiveness. A *rock weir*, a typical in-stream structure to regulate flow, is a series of boulders placed across a channel (Fig. 2.3-11) and anchored to the streambank or streambed. Rock weirs can also direct flow away from damaged streambanks.

Fig. 2.3-11 Rock Weir, Rose River, VA

Rock weir installation involves:

- Create access;
- Dewater (if necessary);
- Use heavy equipment; and
- Grade, shape, and seed.

2.3.3 Dam, Dike, and Levee Repair or Removal

The EWP Program rule prohibits repairs to NRCS-assisted dams (Fig. 2.3-12), dikes, and levees when they are damaged by a natural disaster. However, the rule also allows the NRCS Chief to grant an exception and in 1996, the Chief granted a blanket exception to this rule. EWP Program repair or removal does not apply to water-control structures maintained or owned by other Federal agencies. A dam, dike, or levee is removed when the threat of failure is high and repair is not economically or technically feasible. In some states, agricultural dikes less than six feet high or nonagricultural dikes less than ten feet high are eligible for repair or removal, depending on individual State agreements with the USACE.

Fig. 2.3-12 Emergency Spillway Damage, Switzer Dam, Dry River, VA

Dam, dike, and levee repair may consist of the following practice components:

- Create access, when needed, to move heavy equipment to the site;
- Dewater if needed to allow operation to proceed under dry conditions;
- Install armor to protect either the dam, dike, levee, or downstream structures;
- Repair spillways by fill and compaction;
- Grade, shape, and re-vegetate repaired areas and borrow sites by seeding or planting.

2.3.4 Practices that Protect Structures in Floodplains

Heavy rains associated with natural disasters such as hurricanes can cause intense storm flows that carry storm water and debris downstream or into down-slope floodplains. Debris torrents can threaten life and property, especially in mountainous regions where steep gradients exist. Debris and floodwaters can reduce the capacity of stream channels, damage infrastructure, and potentially impair water quality by damaging the water supply or wastewater treatment facilities. To diminish these threats, the EWP Program installs sediment and debris basins and floodplain diversions.

Fig. 2.3-13 Eighth Street Burn, Boise Hills, ID

2.3.4.1 Sediment and Debris Basins

Sediment and debris basins retain and store debris from floods when this material could threaten life and property and other control methods are deemed inadequate. Practice components involved in sediment and debris basin installation include:

- Create access, when needed, to move heavy equipment to the site;
- Excavate soil and shape the basin;
- Compact soils to ensure basin stability and water retention capability;
- Construct outlets for the release of storm water; and
- Grade, shape, and revegetate soils by seeding or planting.

2.3.4.2 Floodplain Diversions

Floodplain diversions are constructed when excessive runoff or debris flow threatens valuable structures in a floodplain such as water and wastewater treatment facilities. A floodplain diversion installed at a waste treatment facility that was being flooded by heavy rains in Clarendon, TX (Fig. 2.3-14) will keep the facility from overflowing. The EWP Program practice components involved in installing a diversion are:

Fig 2.3-14 Floodplain Diversion Site, Clarendon, TX

- Create access, when needed, to move heavy equipment to the site;
- Excavate soil;
- Fill, when needed, and compacting soils for stability;

- Construct outlets to release storm water;
- Grade, shape, and re-vegetate affected areas by seeding or planting.

2.3.5 Practices that Protect Watershed Uplands

Natural disasters such as drought (Fig 2.3-15), fire, and flood can strip large areas of vegetation. Vegetation plays a vital role in controlling wind and water erosion, ensuring groundwater recharge, maintaining soil productivity, and providing habitat. Without adequate vegetation, soils may become susceptible to mass-flow events, which can threaten life and property. Areas that have lost vegetation often become a priority concern for communities or residents living near the impaired area. Unprotected, light soils susceptible to erosion by high winds (Fig. 2.3-15) can reduce visibility causing hazardous driving conditions and irritate eyes and respiratory systems. Heavy rains can cause debris torrents that deposit sediment, woody debris, and other materials in floodplains.

Fig 2.3-15 Dust Storms Caused Traffic Accidents near this Drought-Stricken Site at Antelope Valley, CA

Critical area treatment involves one or more practices to stabilize priority upland areas by increasing the vegetative cover, binding and retaining soils, helping maintain infiltration, reducing surface runoff by slowing water velocity through structures on side slopes and improved infiltration, and improving drainage conditions to protect property. Treatments that stabilize critical areas include critical area planting, installing diversions, check dams, contour trenches, drains, conveyances, and outlet structures.

2.3.5.1 Critical Area Planting

Critical area planting involves seeding (Fig. 2.3-16) or planting areas that are prone to erosion and destabilization. It is used where vegetative cover has been lost, when erosion or sedimentation will create an imminent threat to life or property, or when conventional seeding methods are inadequate. Critical area planting uses permanent grasses and legumes to stabilize the soil and reduce damage from sediment and runoff to downstream areas. It also controls wind erosion of exposed topsoil. Critical area planting includes site preparation, hand or mechanical seeding, planting native or nonnative plants, and applying fertilizers or other additives. *Preparing a site* for planting (Fig. 2.3-16) involves a number of techniques

Fig. 2.3-16 Critical Area Tilling and Seeding, Antelope Valley, CA

to help establish vegetation, including ripping and raking, which turn soil over to make it more conducive to vegetation growth (Fig. 2.3-17). This is especially important where soils are crusted or hard and do not allow seeds to penetrate the surface layer. Ripping, disking, harrowing, or raking to prepare seedbeds for planting can increase sedimentation and runoff on a short-term basis, because any vegetation that may have been present is disturbed. It is most likely, though, that these practices decrease runoff in high-gradient areas if the work is completed in a horizontal pattern across slopes (NRCS, 1999d). The terraced pattern will slow runoff and increase infiltration.

Fig. 2.3-17 After Critical Area Treatment Revegetated the Site, Antelope Valley, CA

Seeding or planting with native or non-native stock can be accomplished by aerial seeding, drilling, or hand seeding. In aerial seeding, an airplane or helicopter scatters the seeds. With drilling, a tractor-pulled drill, such as the rangeland drill, furrows a trench and plants the seeds. Chains dragged behind the drill cover the trenches and prevents the loss of seed. Drilling is often conducted to help create terraces that slow runoff and aid in the infiltration of surface water (NRCS, 1999d). Hand planting can stabilize impaired areas in settings that are not conducive to mechanical planting or seeding. *Applying fertilizers, additives, or ground cover* such as lime and mulch helps reestablish newly planted vegetation.

Critical area planting may consist of the following practice components:

- Create access, when needed, to move heavy equipment to a planting site;
- Prepare sites for planting;
- Seed with native, or nonnative grasses;
- Plant native, or nonnative seedlings; and
- Apply fertilizers or other additives.

Fig. 2.3-18 Upland Diversions,8th Street Burn. Boise Hills. ID

2.3.5.2 Upland Diversions

Upland diversions (Fig. 2.3-18), which include *contour felling and contour trenching*, protect areas that lack vegetative cover, reducing excessive runoff, and protecting downslope communities or structures from debris-laden surface water flow. In contour felling, cut trees are placed in horizontal rows on side slopes to divert water. Contour trenching is similar, except that excavated trenches replace logs. Contour trenches are ditch-like trenches constructed on slopes with moderate-to-deep *rills*. Trenches

generally are dug in parallel from the top to the bottom of the slope. Their main purpose is to store accelerated soil erosion and overland flow.

Installing upland diversions involves the following practice components:

- Create access, when needed, to move heavy equipment to a diversion site;
- Excavate to create or install the diversion;
- Fill to prepare the site to install the diversion;
- Install outlet structures (drains and conveyance);
- Compact soils to ensure stability; and
- Grade, shape, and revegetate affected areas by seeding or planting.

Installing contour trenches consists of:

- Creating access to move heavy equipment, if needed, to a construction site;
- Excavating trench to capture runoff; and
- Grading, shaping, and revegetating affected areas by seeding or planting.

2.3.5.3 Grade Stabilization Structures

Grade stabilization structures are small dams constructed in drainage ways and across or at the base of slopes, to reduce erosion by reducing flow velocity (Fig. 2.3-19). Grade stabilization structures are used in areas that have intermittent flows where it would be impractical to line an area with non-erodible materials. They usually are constructed of riprap, straw bales, logs, or sandbags (Smoot and Smith, 1998).

Fig. 2.3-19 Temporary Grade Stabilization Structure, 8th Street Burn, Boise Hills, ID

Installing grade stabilization structures consists of the following practice components:

- Create access to move heavy equipment, if needed, to a construction site;
- Excavate to place grade stabilization structures in correct configuration for flow reduction;
- Install grade stabilization structures; and
- Grade, shape, and revegetate affected areas by seeding or planting.

2.3.5.4 Drains, Conveyances, and Outlet Structures

Critical area treatment may require installing practices to protect roads and structures from severe runoff. Drains, conveyances, and outlet structures conduct storm water away from roads, buildings, developed lots, and critically damaged areas and usually discharge into the nearest

stream channel. Outlet structures usually are lined with clean stone to reduce the velocity of water leaving the structure, which helps protect the areas of discharge from erosion (Canadian Department of Fisheries and Oceans, 1999).

Installing drains, conveyances, and outlet structures consists of the following practice components:

- Create access to move heavy equipment to site;
- Install drains, conveyances, and outlet structures;
- Install armoring; and
- Grade, shape, and revegetate affected areas by seeding or planting.

2.3.5.5 Slope Stabilization

Slope stabilization involves a combination of structural and natural techniques that are used in upland watersheds after fires, landslides, or other natural disasters to control or minimize the risk of soil movement, rockslides, and erosion.

Installing slope stabilization consists of the following EWP practice components:

- Create access to move heavy equipment, if needed, to a construction site;
- Install drains or conveyances;
- Build diversions;
- Plant or seed; and
- Install retaining structures.

2.4 FLOODPLAIN EASEMENTS

The Federal Agriculture Improvement and Reform Act of 1996 (commonly referred to as the 1996 Farm Bill) provides the authority for NRCS to purchase floodplain easements under the EWP Program. Authorization for floodplain easements provides NRCS with an opportunity to purchase easements on flood-prone lands as an alternative to traditional eligible EWP Program practices. It is not intended to deny any party access to traditional eligible EWP Program practices. Instead, it is intended to provide a more permanent solution to repetitive disaster assistance payments and to achieve greater environmental benefits where the situation warrants and the affected landowner is willing to participate in the easement approach. Current guidance for administering the purchase of floodplain easements under the EWP Program is provided in the National Watersheds Manual (NWSM) 390–V, Circular No. 4, which supplements Part 509 of the NWSM.

Floodplain easements are intended to:

- Reduce the public risk of flood damages, including public risks to downstream or adjacent lands;

- Protect lives and property from floods, drought, and the products of erosion;
- Retard soil erosion through the restoration, protection, or enhancement of the floodplain;
- Allow the unimpeded reach and flow of water in, over, on, or through the easement area, to restore, reconnect, and enhance water conditions on the easement area;
- Eliminate future disaster payments that would otherwise be applicable to the area;
- Restore, protect, manage, maintain, and enhance the functions of wetlands, riparian areas, conservation buffer strips, and other lands;
- Conserve natural values including fish and wildlife habitat, water quality improvement, floodwater retention, groundwater recharge, open space, aesthetics, and environmental education.

Eligible Land: Lands potentially eligible for floodplain easement purchase include agricultural lands damaged by flooding that have been subject to repeated flood damage or are where the flooding can be expected to recur (Fig. 2.4-1). Agricultural lands are predominantly cropland (including orchards and vineyards), grazing land, hay land, or forestland adjoining the channel of a river, stream, watercourse, water body, lake, or ocean. Incidental areas adjacent to, and part of the agricultural land tract that may not meet eligibility criteria independently, may be acquired where necessary to facilitate the acquisition process (i.e., purchase of remaining uneconomic remnants of land, inclusion of lands that are required for the floodplain hydrology reconnection and restoration to occur, or lands necessary for practicable and manageable easement boundaries). The State Conservationist, in consultation with the State technical committee, will develop appropriate guidance for field-level use in determining eligibility and will be responsible for closely monitoring implementation.

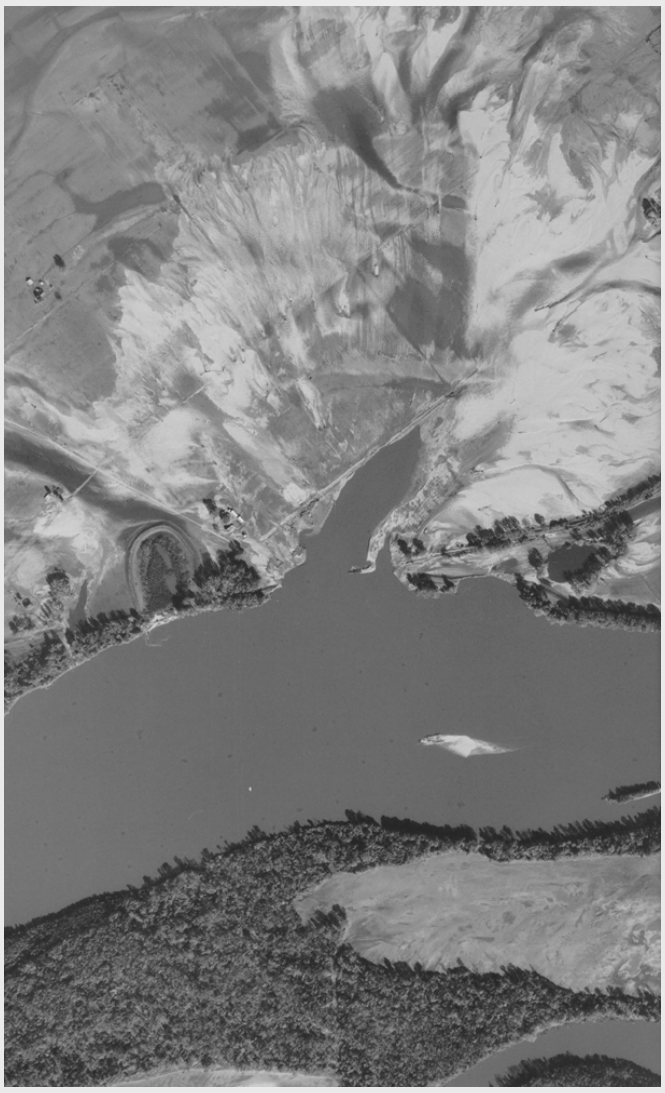


Fig 2.4-1 Aerial Photo of Washed-Out Levee and Floodplain Deposition on the Lower Missouri River

Designation of Land Categories within the Floodplain Easement: Three categories of lands may be designated within a given easement area. A single floodplain easement acquisition may consist of one, two, or all three categories.

All easements require that lands, including all designated land categories within easements, and landowners must:

- Meet eligibility requirements
- Be covered by a perpetual easement
- Have the landowner waive the right to be protected from floodwaters and provide the United States with the right to restore and enhance the reach and flow of waters to achieve flood flow, flood storage, erosion control, or conservation objectives (e.g., removing levees, filling ditches, or impounding surface waters)
- Prohibit construction or maintenance of buildings or other structures
- Waive future disaster assistance that may be applicable to easement lands
- Reserve to the landowner the right to control ingress and egress and the rights to hunting, fishing, and undeveloped recreational activity (e.g., either personal use or commercial leasing)
- Provide the landowner with the opportunity to participate in easement restoration and management activities that the United States acquires through the easement.

Category 1 Criteria include:

- All vegetative buffer areas being restored, established, enhanced or otherwise protected adjacent to a river, stream, watercourse, water body, lake or ocean including distinct drainage and flowage areas (required width to be determined by State Conservationist in response to site-specific natural resource needs)
- Habitats of present or potential future importance in the protected, restored, or enhanced condition to State or Federal at-risk species
- Other landscape situations determined by the State Conservationist to warrant Category 1 application (e.g., old-growth cypress stands or unusually severe erosion problem areas)

The easement area in this category is restored and enhanced to the extent practicable to optimize floodplain functions and fish and wildlife habitat values. This easement prohibits uses such as cropping, grazing, or timber harvest.

For the easement land payment, landowners are compensated the least of the following three values: 100 percent of the agricultural or other undeveloped or raw land value of the land (assuming a post-disaster restored condition); the geographic rate cap where one is established; or the landowner offer. EWP Program funds may cover up to 100 percent of the cost of land treatment practices and all administrative, survey, appraisal, title insurance, and other costs associated with establishing the easement.

Category 2 Criteria include:

- Eligible floodplain lands that are, or will in the future, be considered as high risk because they will be subject to frequent flooding

- Lands where the type and importance of the habitat, at present or in the restored or enhanced condition, has been determined or is projected to become important to fish and wildlife species of Federal importance (e.g., anadromous fish or migratory birds).

Landowners may request compatible uses including, but not limited to, managed timber harvest, periodic haying, or grazing. To be approved as a compatible use, the activity must be consistent with long-term protection and enhancement of the flood control, erosion control, and conservation purposes for which the easement was established. NRCS makes the final decision concerning the amount, method, timing, intensity, and duration of any compatible use that may be authorized. Cropping will not be authorized as a compatible use nor is haying or grazing on lands that are being returned to woody vegetation.

Landowners are compensated at a level corresponding to the lowest of 100 percent of: the agricultural or other undeveloped or raw value of the land (assuming a post-disaster restored state), the geographic rate cap where one is established, or the landowner's offer.

EWP Program funds may cover up to 100 percent of cost of land treatment practices and all of the administrative, survey, appraisal, title insurance, and other costs associated with establishing the easement.

Category 3 includes only quality farmland that is subject to periodic flooding. Under this category, the landowner retains the right to control cropping, haying, grazing, or timber harvest while the United States acquires all other rights included in the easement.

Landowners are compensated 50 percent of the easement land payment amount that would be paid for the easement acres if they were being placed under Category 2.

Determining Category Boundaries: The State Conservationist is required to develop an overall floodplain easement acquisition strategy for floodplain lands whose landowners voluntarily express an interest in the easement option. The two primary components of that strategy are to determine the type and extent of practices required to restore and enhance the floodplain hydrology of potential easement lands, and to locate the boundaries of the appropriate easement land categories that are necessary to address the multiple resources of each offered easement area.

The type and extent of hydrology restoration and enhancement (e.g., restoration or enhancement of the reach and flow of water in, over, on, or through the easement area) will need to be identified before the easement offer is made to the landowner. Enough detail must be included to enable NRCS to determine the potential benefits and general costs and to ensure that the landowner understands the scope of the hydrology change that NRCS would likely implement if the easement is established. At this stage of the easement planning process, there is no intent to develop detailed and specific hydrology restoration and enhancement plans.

The State Conservationist determines the spatial arrangement of the three categories of floodplain easement lands that will be offered to the landowner within each easement. One, two, or all three

categories may be applicable to a single floodplain easement. The boundaries are established as to provide the benefits for which the floodplain easement is being acquired and are consistent with site- specific land resource needs, including the need for manageable boundaries. Surveys generally are required to establish effective category boundaries. This determination becomes the NRCS easement offer for that particular tract.

Easement Terms and Conditions: A single floodplain warranty easement deed document applies to all floodplain easement situations. NRCS prepared this document in consultation with its Office of General Council and modification of the document is not authorized.

Application Process: The floodplain easement program follows the same general application, ranking, funding allocation request, easement development, restoration plan development, contract administration, and easement management process used by the Wetlands Reserve Program (WRP). They use forms similar to WRP forms with modifications to reflect accurately the funding source, program name, authority, and resource management goals for the EWP Program.

Easement Administration: EWP Program floodplain easements are administered by the NRCS. NRCS may enter into partnerships with eligible local sponsors or other partners to further the purposes of the program. Title to the easement is held by the United States through the Secretary of Agriculture. NRCS is the acquiring agency but has the flexibility to delegate management, maintenance, monitoring, and enforcement responsibilities to eligible partners. Eligible partners may include Federal and State agencies. In conjunction with the delegation of responsibility, provision is made for NRCS to ensure that the terms of the easement are upheld and in the event that NRCS determines it necessary, the NRCS can terminate the delegation and have all responsibility revert to the NRCS.

Easement Plans and Files: NRCS maintains an easement plan that reflects the current management, restoration, and delegation decisions for each particular easement. The official file is kept in the State office. It includes a copy of the filed easement, the easement plan, and copies of correspondence concerning compatible use requests and agency responses. This file material is in a secure location and serves as a backup if, during the course of easement management and monitoring, one has to refer to a complete record or has to replace materials that are lost or damaged during field work. In addition, the responsible field office has a working file that can be used for reference when landowner or monitoring questions arise. The working file can be taken to the field for on-site reference.

All floodplain easements require a plan that outlines objectives, conservation treatment needs (e.g., removal of fences or buildings, establishing vegetation, realigning or removing levees, filling ditches, breaking tiles, and impounding surface water to restore or establish wetland or flood storage conditions), partnerships, long-term operation and management requirements, and status reports in response to annual monitoring efforts. If restoration, management, maintenance, monitoring, or enforcement responsibilities are delegated, they are noted in the plan and a procedure is established to ensure that the delegated activities are carried out in a manner consistent with agency responsibilities. While the intent is that all actions by NRCS following

purchase of an easement and under the terms of the plans are undertaken in cooperation with the landowner, the plans are living documents and NRCS may modify these documents within the authority provided in the easement.

Economic Justification: All conservation easements and practices must be economically, environmentally, socially, and technically defensible. The costs of restoring lands and structures, costs associated with the repeat of future disasters, and the costs of efforts that would be required to prevent a repeat of such events, are considered in the cost-efficiency analysis of the easement alternative. The easement alternative must be cost-effective in comparison with other traditional EWP practices.

Establishing Priorities: The program can be targeted to individual project sites where the benefits are associated with the individual site, or to clusters of projects in defined problem areas in general, where the combined benefits of the cluster form the basis for an eligibility determination that applies to the entire cluster. Priority consideration may be given to those sites where eligible sponsors and partners are willing to share the cost of acquisition, restoration, management, monitoring or enforcement. Special consideration is given to those situations that provide the greatest reduction in threat to life and property, cost effectiveness in achieving conservation objectives, and environmental benefits from the restoration, protection, and enhancement of conservation values. Efforts are made to extend outreach efforts to all potential participants including, but not limited to, communities with limited resources.

Disaster Assistance Payments: In no case is an owner eligible for future Federal disaster assistance on the easement land purchased with EWP Program funds. Where landowners purchased private insurance benefits under the Crop Insurance Act, they are treated as follows:

- Payment through the Non-Insured Crop Disaster Assistance program for damage to crops for which insurance is not available is disaster assistance, and is not available to owners for which the easement has been purchased under the EWP Program.
- Benefits obtained through crop insurance programs offered under the Federal Crop Insurance Act are not considered disaster assistance and are available to owners of Category 3 land for which the easement has been purchased under the EWP Program.

Easement Payment: NRCS generally appraises the land to determine its agricultural value. For incidental lands not in active agricultural use, the appraised value is the raw land value excluding speculative commercial, industrial, or residential values. The payment offer for the easement lands is based on the agricultural value or other undeveloped or raw land value, a geographic land payment cap, or landowner offer. The least of the three potential values forms the basis of the NRCS offer.

The easement land payment amount for Category 1 and Category 2 lands is the least of the following: (1) agricultural value of the land as if restored for agricultural production or the applicable undeveloped or raw land value; (2) the geographic cap established by the State Conservationist; or (3) the landowner offer. For lands that are not used directly for cropping or other relative intense agricultural activity (e.g., woodlot, riparian stream border, or permanent

pothole wetland), the easement payment is the undeveloped or raw land value excluding any value that might be assigned for speculative residential, commercial, or industrial development. With Category 3 lands, the payment will be not more than 50 percent of the amount that would have been paid for the same area had it been under a Category 1 or Category 2 classification.

The acquisition of buildings or other surface improvements and facilities is not an integral part of the floodplain easement program. If the State Conservationist determines that the presence of such isolated farm buildings, improvements, or facilities may warrant special consideration, the Director, Easement Programs Division may consider the case.

If the State Conservationist, in consultation with Federal, State, or local officials familiar with agricultural land values in the area, determines that the landowner has made an offer clearly below even the most conservative estimate of the value of the potential easement area and cap, or the cap is clearly below the most conservative estimate of such value, no detailed evaluation to determine value is required. The basis for the determination by the State Conservationist that such a situation exists is documented and placed in the project file and the landowner offer or cap value may be considered potentially acceptable.

EWP Program funds may be used to pay up to 100 percent of the cost of installing land treatment practices deemed necessary and desirable to achieve the purposes of the easement. Such practices as fencing to exclude livestock or restoring surface hydrology, removing levees, filling ditches, and restoring natural vegetation are the type expected to be most common. The use of EWP Program funds for installing land treatment practices will be commonplace with Category 1 and Category 2 lands. In the case of Category 3 lands, such funding is largely limited to hydrology restoration and enhancement actions (e.g., removing levees, filling ditches or impounding water for flood storage or restoring or establishing wetland conditions).

There is no authority to provide EWP Program funding for implementation of land treatment practices that are associated with the landowner's agricultural use of the easement area of Category 3 lands.

2.5 RECENT PROGRAM HISTORY

As part of the impacts evaluation, the PEIS uses example restoration and floodplain easement sites in nine states: Arkansas, California, Georgia, Idaho, Iowa, Missouri, North Carolina, Texas, and Virginia. The states were chosen because they provide a range of disaster types and of terrain and climatic conditions that are representative of the range of impairment types and watershed environments the EWP Program typically addresses. Tables 2.5-1 through 2.5-9 list recent EWP Program activities in the nine states. Listed are the natural disasters and resulting watershed impairments, total EWP Program funds expended for repairs and technical assistance, and the practices installed.

Table 2.5-1 Recent EWP Program Activities in Arkansas

Location	Disaster Date	Total Federal $	Disaster Type	Watershed Impairments	EWP Program Practices
1998 Arkansas EWP Work					
Miller County	5/28/98	52,345	Flood	Abutments De-stabilized	Bank Stabilization
				Erosion Near Abutments	Debris Removal
				Endangered Structures & Roads	
Miller County	5/28/98	82,244	Flood	Abutments Destabilized	Bank Stabilization
				Silt Bars Blocking Channels	Debris Removal
				Roads Threatened	
Mississippi County	4/16/98	3,500	Tornado	Debris Blockage of Major Drain System	Debris Removal
				222 Residences	
				22 Businesses	
				Loss of Utilities	
				Increased Threat of Flooding	
				Emergency Access Blocked by Debris	
Clay County	Not Stated	163,298	Not Stated	Not Stated	Bank Stabilization
Columbia County	Not Stated	56,413	Flood	Abutments De-stabilized	Bank Stabilization
				Scour Near Abutments	
1997 Arkansas EWP Work					
Clark County	3/1/97	79,411	Tornado	Debris Blockages in Streams	Debris Removal
				Storm Water Drains Clogged	
				Day Care Center Endangered on Slope	Bank Stabilization
				Flooding Potential Increased	
Clark County	3/1/97	70,480	Tornado	Trees and Debris Blocking Channels	Debris Removal
				Roads/Bridges/Culverts Endangered	Bank Stabilization
				Drainage Outlet Clogged With Debris	
Cross County	3/1/97	737.50	Tornado/Heavy Rains	Drainage Channels Clogged With Debris	Debris Removal
				Increased Risk of Flood to City	
Jackson County	3/1/97	9,000	Tornado/Rainfall	Drainage Channels Blocked with Debris	Debris Removal
				Destroyed 40 Homes	
				Utilities Disrupted	
Clay County	3/1/97	51,873	Heavy Rains/Flooding	Erosion	Bank Stabilization
				Sloughing	Debris Removal
				3 Homes Threatened	
				Bridge Threatened	

Table 2.5-2 Recent EWP Program Activities in California

Location	Disaster Date	Total Federal $	Disaster Type	Watershed Impairments	EWP Program Practices
1997 California EWP Work					
Placer County	1/1/97	291,890	Flood	Failing Streambanks	Streambank Stabilization
				Debris Jams Threatened Bridges/Homes	Debris Removal
				Channels Clogged	Rechannelization
				Access Routes Threatened	Diversions
				Sediment Accumulation	
Tehama County	1/1/97	752,682	Flood	Increased Threat to life and Property	Repair/Restoration of Levees
				Bridges/Utilities De-stabilized	Streambank Stabilization
					Debris Removal
Plumas	1/1/97	406,728	Flood	Increased Threat to Life and Property	Repair/Restoration of Levees
				Bridges/Utilities De-stabilized	Streambank Stabilization
					Debris Removal
Butte	1/1/97	2,376,707	Flood	Increased Threat to Life and Property	Repair/Restoration of Levees
				Bridges/Utilities De-stabilized	Streambank Stabilization
					Debris Removal
Trinity	1/1/97	39,238	Flood	Increased Threat to Life and Property	Repair/Restoration of Levees
				Bridges/Utilities De-stabilized	Streambank Stabilization
					Debris Removal
Humboldt	1/1/97	174,000	Flood	Increased Threat to Life and Property	Repair/Restoration of Levees
				Bridges/Utilities De-stabilized	Streambank Stabilization
					Debris Removal
S Luis Obis	1/1/97	31,500	Flood	Increased Threat to Life and Property	Repair/Restoration of Levees
				Bridges/Utilities De-stabilized	Streambank Stabilization
					Debris Removal
Shasta	1/1/97	16,390	Flood	Increased Threat to Life and Property	Repair/Restoration of Levees
				Bridges/Utilities De-stabilized	Streambank Stabilization
					Debris Removal
Napa	1/1/97	485,461	Flood	Increased Threat to Life and Property	Repair/Restoration of Levees
				Bridges/Utilities De-stabilized	Streambank Stabilization
					Debris Removal

Table 2.5-2 (Continued) Recent EWP Program Activities in California

Location	Disaster Date	Total Federal $	Disaster Type	Watershed Impairments	EWP Program Practices
3 National Forests	1/1/97	195,000	Flood	Sedimentation	Revegetation
				Clogged Channels	Debris Removal
				Eroded Banks	Grade Stabilization
				De-stabilized Banks	Stabilize Banks
Sacramento	1/1/97	3,491,778	Flood	Clogged Waterways	Debris Removal
				Levee Destabilization	Repair/Restoration of Levees
				Streambank De-stabilization	Streambank Stabilization
Sutter	1/1/97	31,935	Flood	Clogged Waterways	Debris Removal
				Levee De-stabilization	Repair/Restoration of Levees
				Streambank Destabilization	Streambank Stabilization
Colusa	1/1/97	187,500	Flood	Clogged Waterways	Debris Removal
				Levee Destabilization	Repair/Restoration of Levees
				Streambank Destabilization	Streambank Stabilization
Santa Cruz	1/1/97	402,655	Flood	Clogged Waterways	Debris Removal
				Levee Destabilization	Repair/Restoration of Levees
				Streambank De-stabilization	Streambank Stabilization
Yuba	1/1/97	13,500	Flood	Clogged Waterways	Debris Removal
				Levee Destabilization	Repair/Restoration of Levees
				Streambank Destabilization	Streambank Stabilization
Kern	1/1/97	64,510	Flood	Clogged Waterways	Debris Removal
				Levee Destabilization	Repair/Restoration of Levees
				Streambank Destabilization	Streambank Stabilization
El Dorado	1/1/97	45,798	Flood	Clogged Waterways	Debris Removal
				Levee Destabilization	Repair/Restoration of Levees
				Streambank Destabilization	Streambank Stabilization
Siskiyou	1/1/97	122,507	Flood	Clogged Waterways	Debris Removal
				Levee Destabilization	Repair/Restoration of Levees
				Streambank Destabilization	Streambank Stabilization

Table 2.5-2 (Continued) Recent EWP Program Activities in California

Location	Disaster Date	Total Federal $	Disaster Type	Watershed Impairments	EWP Program Practices
1996 California EWP Work					
Lassen	08/96	241,558	Flood	Not Stated	Reservoir Construction
City of Malibu (LA County)	10/96	18,761	Fire	Threats of Mudslides	Clearing
				Threats of Debris Flows	Diversions
				Threats of Drainage Clogging	
				Threats of Channel Clogging	
				Loss of Vegetation	
Baldwin WS (LA County)	10/96	6,706	Fire	Threats of Mudslides	Clearing
				Threats of Debris Flows	Diversions
				Threats of Drainage Clogging	
				Threats of Channel Clogging	
				Loss of Vegetation	
Kalarama St/Aliso (Ventura County)	10/96	19,450	Fire	Threats of Mudslides	Clearing
				Threats of Debris Flows	Diversions
				Threats of Drainage Clogging	
				Threats of Channel Clogging	
				Loss of Vegetation	
1994 EWP California EWP Work					
Sierra County	08/94	241,932	Fire	Flood Threat Increased	Spillway Repair/Installation
				Sediment Damage Increased	Clearing
				Increases in Runoff and Debris	
Ventura, San Bernardino,	01/94	2,486,254	Earthquake	Sediment and Debris Flows	Debris Basin Construction
Santa Barbara			Fires	Threat to Life and Property	Streambank Stabilization
Northridge	01/94				
1993 California EWP Work					
Topanga/Malibu Fires	11/93	7,843,459	Fire	Vegetative Reduction	Revegetation
LA, Ventura, Orange, San Bernardino,				Restoration	
Riverside and San Diego Counties					
1992 California EWP Work					
Arroyo Simi, Ventura County	10/92	173,655	Flood	Streambank Erosion	Streambank Protection
				Buildings/Homes Threatened	

Table 2.5-3 Recent EWP Program Activities in Georgia

Location	Disaster Date	Total Federal $	Disaster Type	Watershed Impairments	EWP Program Practices
1996 Georgia EWP Work					
Douglas County	08/96	234,000	Flooding	30 Roads Damaged	Bank Stabilization
				3 Miles of Stream Destabilized	Debris Removal
				Debris Jams	
				Sediment Deposition	
				Flooding	
				Damage to Property	
				Damage to Utilities	
				Flows Redirected Out of Banks	
1995 Georgia EWP Work					
Effingham, Long Counties	08/95	1,026,455	Flooding Tropical	Debris/Sediment Accumulation	Bank Stabilization
			Depression Jerry	Roads Washed Out	Debris Removal
			Hurricane Opal	Culverts/Roads Unsafe	
				Hazardous Driving Conditions	
				Threat of Flooding to Life and Property	
1994 Georgia EWP Work					
Thomas, Grady, Dector,	11/94	1,100,000	Flooding	Debris Accumulation	Debris Removal
Mitchell, Brooks, Colquitt Counties				Bridges, Culverts, and Abutments Damaged	Bank Stabilization
				Increased Threat of Flooding	
				Hazardous Driving Conditions	
				Newly Cut Channels	
				Increased Bank Erosion	
				Damaged Properties	
56 Counties Throughout State	07/94	19,800,000	Tropical Storm Alberto	Dams Failed	Not Stated
				Rivers Rose	
				Floods Occurred	
				Roads/Culverts Washed Out	
				Railroad Trestles/Bridges/Utilities Undermined	
				Water Covered 10,000 Square Miles	
				50,000 People Driven From Homes	
				Damage to Infrastructure and Agriculture	
Tobesofkee Creek Watershed	07/94	30,554	Flooding	Earthen Dams and Spillways Scoured	Debris Removal
				Erosion	Bank Stabilization
				Threat to Life and Property Increased	
				Debris Accumulation	

Table 2.5-4 Recent EWP Program Activities in Idaho

Location	Disaster Date	Total Federal $	Disaster Type	Watershed Impairments	EWP Program Practices
1997 Idaho EWP Work					
Bingham, Bonneville, and Madison Counties	06/97	607,232	Flood	Erosion/Sediment	Streambank Stabilization
				Streams Clogged	Debris Removal
				Increased Flood Threat	Revegetation
				Threat to Life and Property	
Boise National Forest - Valley,	01/97	359,181	Flood	Access Roads Damaged	Drainage Projects
Idaho, Washington, and Adams Counties				Utility Service to District Forest Offices Cut off	Bank Stabilization
				Mass Movement of Uprooted Trees Filled Channels	Debris Removal
				New Channels Formed	
				Recreation Facilities Swept Downstream	
				Culverts/Ditches Plugged	
Adams, Boise, Gem, Idaho,	01/97	564,000	Flood	Roads/Infrastructure Destabilized	Streambank Stabilization
Latah, Nez Perce, Payette, Washington and Valley Counties				Channel Capacity Limited by Debris and Sediment	Debris Removal
				Potential Threats to Life and Property	Dike Repair
				Homes/Businesses Destroyed	Revegetation
1996 Idaho EWP Work					
Boise 8th Street Burn	8/96	5,662,254	Fire	Loss of Vegetative Cover	Revegetation
				Erosion Potential Increased	Streambank Protection
				Sediment-Laden Waters May Increase	Channel Flow Alteration
				Debris Accumulation Potential	Debris Removal
				Increased Threat to Life and Property	Grade Stabilization Structures
Nez Perce County	02/96	765,937	Flood	Erosion/Sedimentation	Streambank Stabilization
				Streams Clogged	Debris Removal
				Increased Flood Threat	Dike Repair
					Revegetation
Clearwater County	02/96	380,340	Flood	Erosion and Sedimentation Increases	Revegetation
				Streambank Degradation	Streambank Stabilization
				Debris Accumulation	Debris Removal
				Dike and Levee Degradation	
				Out-of-Bank Damage Downstream	
Latah County	02/96	402,577	Flood	Erosion/Sediment	Streambank Stabilization
				Streams Clogged	Debris Removal
				Increased Flood Threat	Dike Repair
				Threat to Life and Property	
					Revegetation

Table 2.5-4 (Continued) Recent EWP Program Activities in Idaho

Location	Disaster Date	Total Federal $	Disaster Type	Watershed Impairments	EWP Program Practices
1996 Idaho EWP Work					
Lewis County	02/96	96,720	Flood	Streambank Degradation	Bank Stabilization
				Debris Accumulation in Channels	Debris Removal
				Increased Flood Threat	
				Increased Threat to Life and Property	
Benewah County	02/96	84,300	Flood	Channel Capacity/Stability	Channel Reconstruction
				Threat to Life and Property Streams	
Bonner and Boundary	02/96	32,769	Flood	Channel Capacity	Debris Removal
				Increased Flood Threat	Dike Repair
				Increased Erosion/Sedimentation	Streambank Stabilization
				Threat to Life and Property	
Kootenai County	02/96	97,390	Flood	Streambank Erosion	Streambank Stabilization
				Increased Flood Threat	Debris Removal
				Threat to Life and Property	Dike Construction
Shoeshone County	02/96	171,886	Flood	Channel Capacity	Debris Removal
				Increased Flood Threat	Streambank Stabilization
				Increased Erosion/Sedimentation	Dike Repair
				Threat to Life and Property	Revegetation
1995 Idaho EWP Work					
Boise National Forest	08/95	219,270	Flood	Road and Utility Damage	Debris Removal
Boise, Elmore Counties				Channel Capacity/Sediment Dams	Streambank Stabilization
North Fork Boise River				Culverts Plugged	Seeding
				Mass Movement	Riparian Planting
				Streambank Erosion	
1994 Idaho EWP Work					
Boise County	08/94	105,817	Flood	Erosion/Sedimentation	Erosion Control Structures
Star Gulch Fire				Streams Clogged	Grade Stabilization
				Increased Flood Threat	Seeding
					Riparian Planting
1993 Idaho EWP Work					
Elmore County	08/93	830,670	Flood	Increased Erosion/Sedimentation	Seeding
Foothills Fire				Increased Flood Threat	
				Threat to Life and Property	
1992 Idaho EWP Work					
Boise County	09/92	46,4318	Flood	Increased Erosion/Sedimentation	Seeding/Revegation
Dunnigan Creek Fire				Increased Flood Threat	Sediment Retention Structures
				Threat to Life and Property	
Blaine County	08/92	89,898	Fire	Increased Erosion/Sedimentation	Seeding/Revegation
Ro Fire				Increased Flood Threat	Sediment Retention Structures
				Threat to Life and Property	

Table 2.5-5 Recent EWP Program Activities in Iowa

Location	Disaster Date	Total Federal $	Disaster Type	Watershed Impairments	EWP Program Practices
1993 Iowa EWP Work					
84 Counties	1993	31,900,000	Flood	Sedimentation	Debris Removal (136 Sites)
(Great Flood of 1993)				Erosion	Bank Stabilization (455 Sites)
				Damage to Levees	Levee Repair (54 Sites)
				Damage from Flooding	Other Erosion and Sedimentation Repair (57 Sites)
				Bridges/Culverts Destabilized	
				Roads/Properties/Drainage Ditches Damaged	
				Debris Accumulation	

Table 2.5-6 Recent EWP Program Activities in Missouri

Location	Disaster Date	Total Federal $	Disaster Type	Watershed Impairments	EWP Practices
1996 Missouri EWP Work					
statewide	1996	295,290	Flood	Infrastructure Threatened	Not stated
				Levees Damaged	
				Ditches Damaged	
				Streams Blocked	
				Streambank Erosion	
1995 Missouri EWP Work					
statewide	1995	18,294,154	Flood	Infrastructure Threatened	Easements
				Levees Damaged	
				Ditches Damaged	
				Streams Blocked	
				Streambank Erosion	
1993 Missouri EWP Work					
statewide	1993	19,000,000	Flood	Streambank erosion	Bank stabilization
				Threats to bridges, culverts	Obstruction removal
				Threats to water and sewer lines	Dams and dikes
				Damage to levees and dams	
				Threat of property damage	
				Threat to public health	
				Debris in channels, culverts	
				Sedimentation	
				Threats to public lands	
statewide	1993	30,240,917	Flood	Infrastructure Threatened	Easements
				Levees Damaged	
				Ditches Damaged	
				Streams Blocked	
				Streambank Erosion	

Table 2.5-7 Recent EWP Program Activities in North Carolina

Location	Disaster Date	Total Federal$	Disaster Type	Watershed Impairments	EWP Practices
1996 North Carolina EWP Work					
Polk, Yancey, Mitchell	1/13/96	1,176,778	Heavy Rains	Stream Blockage	Bank Stabilization
Avery, Watauga, and				Threat of Property Damage	Obstruction Removal
Caldwell County				Flooded Cropland	Revegetation
				Stream Bank Erosion	
1995 North Carolina EWP Work					
Nantahala NF	10/5/95	11,253	Landslide	Sediment Deposition	Revegetation
				Threat of property damage	Obstruction removal
				Threat of road damage	
				Threat of bridge damage	
				Stream Blockage and bank erosion	
Nantahala NF	4/1/95	13,876	Flood	Threat of road damage	Bank Stabilization
				Stream bank erosion	Obstruction Removal
				Threat of fisheries damage	
Clay County	2/15/95	356,941	Heavy Rains	Stream Blockage	Bank Stabilization
Cherokee County				Threat of property damage	Revegetation
Graham County				Threat of utility damage	Obstruction removal
				Threat of road damage	
				Stream bank erosion	
1990 North Carolina EWP Work					
Graham County	3/15/90	39,104	Flood	Bank Erosion	Bank stabilization
Jackson County				Property Loss	Revegetation
				Sedimentation	
Swain Conty	2/9/90	48,400	Heavy Rains	Bank Erosion	Bank Stabilization
				Property Loss	Obstruction Removal
				Health and Safetey Threat	Revegetation
				Debris in River Channel	
1989 North Carolina EWP Work					
Watauga County	9/22/89	210,000	Hurricane	Stream Blockage	Bank stabilization
Ashe County				Threatened Bridges	Obstruction removal
				Flooded Cropland	
				Threat of property damage	
				Debris in channels, culverts	
				Streambank erosion	
Union County	9/22/89	387,500	Hurricane	Stream Blockage Clearing	Bank stabilization
				Threatened Bridges	Obstruction removal
				Threat of property damage	
				Debris in channels, culverts	
				Streambank erosion	

Table 2.5-8 Recent EWP Program Activities in Texas

Location	Disaster Date	Total Federal $	Disaster Type	Watershed Impairments	EWP Program practices
1997 Texas EWP Program work					
Bandera County	6/23/97	55,800	Floods	Stream Crossings Endangered	Not Stated
				Access To Subdivision Threatened	
Donley County	4/24/97	58,000	Floods	Sewer Treatment Plant Endangered	Levee Installed at Treatment Plant
				Sewer Water Backing Up into Homes	
1996 Texas EWP Program work					
Red River County	7/29/96	26,700	Floods/Heavy Rains	Debris/Sediment Accumulation in Channel	Debris Removal
				Flooding of Homes in Minority Neighborhood	
1995 Texas EWP Program work					
Collingsworth, Childress, Hall,	6/95	1,306,100	Floods	Sewage Treatment Plant Flooded	Diversion Use
Wheller, Foard, and Willbauger				Water Quality Degraded	
Counties				Roads/Bridges Endangered	Bank Stabilization
Collingsworth, Childress, Hall,	6/95	204,000	Floods	County Roads and Bridges Endangered	Bank Stabilization
Wheller, Foard, and Willbauger Counties				Sewage Treatment Plant Threatened	
1994 Texas EWP Program work					
Polk County	10/94	9,484	Floods	Head Cut	
				Utilities Exposed	Bank Stabilization
				Road Crossings Threatened	Debris Removal
Polk County	10/94	22,722	Floods	Head Cut	
				Utilities Exposed	Bank Stabilization
				Road Crossings Threatened	Debris Removal
Trinity County	10/94	9,065	Floods	Debris Jams	Debris Removal
				Bridges Endangered	
				Roads Endangered	
				Access for 100 Landowners Threatened	
Nacogdoches County	10/94	4,058	Floods	Head Cut	
				Utilities Exposed	Bank Stabilization
				Road Threatened	Debris Removal
				Rural Waterline Threatened	
Tyler County	10/94	124,292	Floods	Embankment Slope Failure	Bank Stabilization
				Outlet Channel Structures Eroded	Clearing
				Utilities Exposed	Debris Removal
				Access Road Threatened	
				Emergency Access Prohibited	

Table 2.5-8 (Continued) Recent EWP Program Activities in Texas

Location	Disaster Date	Total Federal $	Disaster Type	Watershed Impairments	EWP Program practices
1994 Texas EWP Program work					
San Jacinto	10/94	9,705	Floods	Head Cut	Bank Stabilization
				Utilities Exposed	
				Outlet Structures Destabilized	
				Access Road Threatened	
1991 Texas EWP Program work					
Milam and Williamson Counties	1/20/91	140,000	Floods	Roads Endangered	Bank Stabilization
				Debris and Sediment Accumulation	Debris Removal
1990 Texas EWP Program work					
Comanche County	4/12/90	50,000	Floods	County Roads and Bridges Damaged	Streambank Stabilization
					Bank Stabilization
Austin, San Jacinto, Newton, Navasota, and Montgomery Counties	6/5/90	376,150	Floods	Roads Threatened	Streambank Stabilization
				Bridges Threatened	Bank Stabilization
				Homes/Churches/Cemeteries Threatened	

Table 2.5-9 Recent EWP Program Activities in Virginia

Location	Disaster Date	Total Federal $	Disaster Type	Watershed Impairments	EWP Program practices
1998 Virginia EWP Work					
Allegheny, Bath, and Rockbridge Counties	01/98	71,968.4	Flood	Stream Blockages	Obstruction Removal
					Streambank Stabilization
					Revegetation
1996 Virginia EWP Work					
Augusta County (George Washington and Jefferson National Forests)	09/96	32,000	Hurricane Fran	Log Debris/River Cobble in Channel	Obstruction Removal
				Forest Development Road threatened	Channel Alteration
15 Counties/ 2 Cities	09/96	7,214,300.1	Hurricane Fran	Threat to Life (1,019 People)	Streambank Stabilization
				Houses, Bridges, Business, Public and Private	Slope Stabilization
				Roads, Utilities, Agricultural Land Threatened	
				Debris in Streams	Obstruction Removal
				Streambanks Destabilized	
				Sediment Accumulation	
				Eroded Slopes/Land	Revegetation
				Flood Control Dams Damaged (13)	Dams/Dikes Repaired
				Stream Restoration Sites Damaged	
Augusta, Grayson Counties	01/96	17,000	Flood	Debris in Channel	Obstruction Removal
(George Washington and Jefferson National Forests)				Roads Threatened	Streambank Stabilization
				Campground Endangered	

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Chapter 3
EWP PROGRAM ALTERNATIVES

Alternatives—This section is the heart of the environmental impact statement. Based on information and analysis presented in the sections on the Affected Environment (1502.15) and the Environmental Consequences (1502.16), it should present the environmental impacts of the proposal and the alternatives in comparative form, thus sharply defining issues and providing a clear basis for choice among options by the decisionmaker and the public. (40 CFR 1502.14)

This chapter describes how NRCS identified the alternatives evaluated in the Draft EWP PEIS and selected the Preferred Alternative for this Final EWP PEIS. It describes the:

- Scoping process that gathered input on the EWP Program from NRCS personnel, other agencies, and members of the public and used that input to define the Program alternatives that were analyzed in the Draft PEIS;
- EWP Program alternatives that were analyzed in detail in the Draft PEIS—the No Action alternative, the Draft PEIS Proposed Action, and the Prioritized Watershed Planning and Management alternative;
- Preferred Alternative that would fully or partially implement many of the elements of the Draft PEIS Proposed Action and that is analyzed in detail in this Final EWP PEIS; and
- Alternatives that were identified in the scoping process, but not considered in detail in the PEIS analysis, and why NRCS eliminated those alternatives.

The chapter provides text and tabular comparisons of the important aspects of the alternatives that would likely cause differences in environmental impacts and summarizes and compares the beneficial and adverse environmental impacts of the Program alternatives based on the detailed analysis presented in Chapter 5. It compares the socioeconomic impacts of the alternatives on affected human communities and compares the cumulative effects of the alternatives in affected watersheds. It then describes mitigation measures developed in the course of evaluating the alternatives that NRCS could employ to reduce or eliminate adverse environmental impacts. [**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.]

3.1 FORMULATION OF THE EWP PROGRAM ALTERNATIVES

As noted in Chapter 1, the purpose and need for the NRCS Preferred Alternative action is to incorporate changes into the Program recommended to improve the Program's effectiveness and to address environmental and other concerns. Authorization of floodplain easements for the Program in the 1996 Farm Bill and the recommendations of the O&E team were the first items to factor into defining the proposed action.

3.1.1 Ensuring Public and Agency Participation in the PEIS

In September 1998, NRCS announced its intent to prepare an EIS on the EWP Program (see 1998 NOI in Appendix A) and initiated a formal scoping process to solicit input on issues, concerns, and opportunities for Program improvement from the public and other local and Federal agencies. To ensure the public had an opportunity to comment, public scoping meetings were advertised in regional and local newspapers and held in Kansas City, Atlanta, Sacramento, Minneapolis, Albany, and Washington, DC. The first five cities were chosen because they are centrally located in regions where most EWP Program activities were being carried out and are accessible to the public by air, automobile, and rail transport. Meetings at these locations were expected to facilitate the involvement of State agencies, as well. Washington, D.C., was included to facilitate participation of interested Federal agencies. Public comments also were received by mail, e-mail, and toll-free phone line.

NRCS also held discussions with other agencies, including FSA, EPA, USFS, FEMA, U.S. Army Corps of Engineers (USACE), and USFWS, as well as NRCS field personnel who routinely deal with EWP projects.

In addition to the Federal agencies, 19 State agencies in 14 states and 20 County agencies in 12 states commented, as did regional agencies, a Native American tribe, and environmental groups.

Scoping: There shall be an early and open process for determining the scope of issues to be addressed and for identifying the significant issues related to a proposed action. … the lead agency shall:…invite the participation of affected … agencies, and affected Indian tribe[s], and other interested persons … determine the specific issues to be analyzed in depth … [and] identify and eliminate from detailed study the issues which are not significant (CEQ NEPA Regulations, 40CFR1501.7).

3.1.2 Issues Identified through Scoping

A number of issues surfaced repeatedly during the scoping process. Most of the commenters said that the EWP Program is a good program because it works and that purchasing floodplain easements is a good idea because so much effort and money are spent to fix recurrent problems. Many said that methods more environmentally friendly than armoring should be used, that the exigency category is inconsistently and improperly used, that bureaucratic red tape delays projects, and proactive measures such as interagency pre-planning and coordination are critical.

Some commenters said that operating and maintaining floodplain easements might place too heavy a burden on landowners and that NRCS monitoring and maintenance of easements might be a problem. Others said that purchasing floodplain easements could lead to the introduction of threatened and endangered (T&E) species where none existed before, creating serious concerns for their protection. A few commenters said that the EWP Program is so good that it should stay exactly as it is—it should not be altered in any way. Other commenters said that NRCS should include relocation of households out of flood damaged locations as an alternative to installing restoration practices, and that NRCS should reduce funding for repairs on recurrent impairments. Some commenters urged NRCS to include drainage ditches, unstable channels, and lakeshores in the Program, and allow for substitution projects in which funds could be used, for example, to rebuild a recurrently damaged bridge at a different location. Details of the EWP PEIS scoping process and a review of each comment received are provided in Appendix A.

3.1.3 Comments on the Draft EWP PEIS

NRCS also solicited comments from the public and agencies on the Draft EWP PEIS. 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, including 119 comments from Federal agencies, 47 from State agencies, 14 from local agencies and tribal organizations, and 22 from a private individual. The comments and responses are provided in a separate section at the end of this Final PEIS. As noted in Chapter 1, the Preferred Alternative was developed based on those comments and on internal agency considerations concerning management, funding, and implementation feasibility.

3.2 ALTERNATIVES EVALUATED IN DETAIL

NRCS considered six EWP Program alternatives and evaluated the environmental impacts of four of those alternatives in detail in this Final EWP PEIS. The alternatives that were evaluated in detail are described here and summarized in Table 3.2-1.

Table 3.2-1 Progressive Increments of Program Change across Alternatives

	Alternative 1	Alternative 2	Alternative 4	Alternative 3
	No Action—Continue the Current EWP Program	**Draft PEIS Proposed Action EWP Program Improvement and Expansion**	**Preferred Alternative EWP Program Improvement and Expansion**	**Prioritized Watershed Planning and Management**
Types of watershed impairments NRCS would address	Address traditional types of watershed impairments—in-stream, near-stream on floodplain, and in critical upland areas	Include more types of watershed impairments—in floodplains away from stream, upland debris sites, enduring conservation practices	Include more types of watershed impairments—in floodplains away from stream, upland debris sites, enduring conservation practices	Include more types of watershed impairments—address impairments in floodplain away from stream, upland debris sites, enduring conservation practices, and others
Improvements in EWP Program delivery and defensibility	No EWP Program improvements would be made	Institute Program improvements to deal with current and new types of impairment work	Institute Program improvements to deal with current and new types of impairment work	Institute Program improvements to deal with current and new types of impairment work
New program planning and management structure	No new planning and management structure would be instituted	No new planning and management structure would be instituted	No new planning and management structure would be instituted	Institute prioritized watershed planning and management

3.2.1 Alternative 1—No Action—Continue the Current Program

Under the No Action alternative, NRCS would continue to administer the EWP Program as it does now. NRCS would not make substantive changes in administering the Program, in the procedures for review of projects before funding, or in follow-up on the Program's procedures after completion. NRCS would continue to purchase floodplain easements on agricultural lands but would not institute purchase of floodplain easements in the non-agricultural lands of small flood-prone rural communities. NRCS would not expand the EWP Program to include watershed impairments it does not currently address, such as damaged streambanks in agricultural lands, nor would NRCS make any other changes that have been recommended to improve the delivery or defensibility of the Program. This alternative simply continues the current Program described in Chapter 2.

3.2.1.1 Elements of the No Action Alternative

Fifteen elements of the current EWP Program that would remain in effect under the No Action Alternative are described here. These Program elements were the specific areas of improvement and expansion that were used to define the alternatives to the current program in the Draft EWP PEIS and the Preferred Alternative in this Final EWP PEIS. [Note: Changes have been made in the EWP Program to meet legal requirements since the time the Draft EWP PEIS was published and those are highlighted.]

EWP Element 1 - Emergency Terminology
No Action: Continue using the terms "exigency" and "non-exigency" as they are now used.

Under the No Action Alternative, watershed emergencies would continue to be classified, according to the current EWP regulation (7 CFR 624), as either exigency or nonexigency situations. An exigency exists when the near-term probability of damage to life or property is high enough to demand immediate Federal action. An exigency continues to exist as long as the probability of damage continues at a high enough level. A nonexigency situation exists when the near-term probability of damage to life or property is high enough to constitute an emergency but not sufficiently high to be considered an exigency.

EWP Element 2 - Exigency Funding and Completion Requirements
No Action: Continue current exigency response procedures.

Under the No Action Alternative, NRCS NHQ would continue to respond to State requests to provide funding for exigency responses as they are received by NHQ and would not provide each State with separate "pre-disaster' funding for "on the spot" State-level responses. NRCS would continue to allow 30 days to address exigencies.

EWP Element 3 - Prioritization of Project Funding
No Action: Continue using current procedures for project prioritization.

Under the No Action Alternative, NRCS State Conservationists would continue to prioritize EWP projects for their States in non-Presidentially-declared disasters as they deem appropriate and may include input from the sponsors in these decisions. In Presidentially-declared disasters, NRCS would continue working with FEMA and the USACE in establishing priorities.

EWP Element 4 - NRCS and Local Sponsor's Cost-share Rates
No Action: Continue to Administer EWP under Current Cost-Share Rates.

Under the No Action Alternative, NRCS would continue to provide EWP funding at a Federal cost-share of up to 100 percent for exigencies and up to 80 percent for non-exigencies. [Note: Although current regulations tie cost-sharing to the exigency/non-exigency designation, NRCS has not been applying the 100 percent Federal cost sharing rate originally allowed for exigencies or the 80 percent rate allowed for non-exigencies for the past 10 years, but instead has been applying a single cost-share rate of 75 percent to both exigency and non-exigency situations.]

EWP Element 5 - Project Defensibility Review Criteria
No Action: Continue to employ current defensibility review requirements.

Under the No Action Alternative, NRCS would continue to be review EWP recovery practices to determine whether they are economically and environmentally defensible.

EWP Element 6 - Level of Inter-agency Coordination, Planning, and Training
No Action: Continue current EWP Program coordination, training and planning.

Under the No Action Alternative, NRCS would continue its current level of interagency coordination, training, and planning in each State with no specific national provisions to improve interagency coordination, training, and planning.

EWP Element 7 - Eligibility of Repairs to Agricultural Lands
No Action: Continue to disallow repair of impairments to agricultural lands.

Under the No Action Alternative, NRCS would continue to disallow repair of impairments to agricultural lands. This would preclude use of restoration measures such as streambank armoring to protect high-value croplands from continued erosion caused by future flooding.

EWP Element 8 - Eligibility of Repeated Repairs to the Same Site
No Action: Continue to allow repeated repairs to EWP sites.

Under the No Action Alternative, NRCS would impose no restrictions on the number of repeated repairs of damaged EWP sites that could be funded. For example, a flood-damaged levee could be rebuilt at the same location any number of times additional flood damage occurs.

EWP Element 9 - Multiple Beneficiary Eligibility Requirement
No Action: Continue to require multiple beneficiaries for non-exigency measures.

Under the No Action Alternative, NRCS would continue to require that multiple beneficiaries be identified and documented in the project Damage Survey Report (DSR) for site repair of non-exigency emergencies. This is not a requirement for exigencies where sites with single beneficiaries are eligible for EWP repairs.

EWP Element 10 - Eligible Restoration Methods
No Action: Continue to employ only least-cost restoration measures.

Under the No Action Alternative, NRCS would continue to fund disaster recovery measures on a least-cost basis for repair of site damage alone, so long as they are environmentally defensible, without regard to ancillary environmental considerations or benefits.

EWP Element 11 - Compatible Uses of Floodplain Easement
No Action: Continue to allow land-owner uses of floodplain easements under the three existing compatible-use categories.

Under the No Action Alternative published in the Draft EWP PEIS, NRCS would have continued to fund agricultural floodplain easement purchases under three compatible land-use categories. Since that time, NRCS has been required to restrict compatible uses to a single category of uses. This change is consistent with the improvement proposed under the Draft PEIS Proposed Action and Alternative 3 and this Final PEIS Preferred Alternative.

EWP Element 12 - Eligibility of Repairs to Enduring Conservation Practices
No Action: Continue to disallow repairs of enduring conservation practices.

Under the No Action Alternative, NRCS would continue to disallow repair of enduring (structural or long-life) conservation practices (to which the Chief previously allowed a blanket exception).

EWP Element 13 - Eligibility of Improved Alternative Recovery Solutions
No Action: Continue to disallow funding of improved alternative solutions.

Under the No Action Alternative, NRCS would continue to disallow partial funding of improved alternative solutions. NRCS would fund projects based on a least-cost design to achieve the specific site restoration objectives only, without regard to any additional benefits sponsors may wish to gain with an expanded but more expensive design.

EWP Element 14 - Eligibility of Recovery Work Away from Streams and Critical Areas
No Action: Continue to disallow disaster-recovery work away from streams and critical areas.

Under the No Action Alternative, NRCS would continue to disallow disaster-recovery work in floodplains away from streams or in upland areas, except in critical areas or in cases of drought or fire.

EWP Element 15 - Floodplain Easement Eligibility on Improved Lands
No Action: Continue to disallow purchase of floodplain easements on improved lands.

Under the No Action Alternative published in the Draft EWP PEIS, NRCS would have continued to disallow purchase of floodplain easements on improved lands. Since that time, NRCS has instituted procedures to acquire improved lands in connection with floodplain easement purchases where continued use of those lands would affect NRCS ability to attain the benefits of the floodplain easement by restoring full floodplain function. This change is not fully consistent with the improvement proposed under the Draft PEIS Proposed Action and Alternative 3 but is consistent with this Final PEIS Preferred Alternative.

3.2.2 Alternative 2—EWP Program Improvement and Expansion under the Draft PEIS Proposed Action

3.2.2.1 Elements of the Draft PEIS Proposed Action

In the Draft EWP PEIS, NRCS proposed to implement changes in the 15 program areas to improve and expand the EWP Program. The first 11 Draft PEIS proposed changes were in how the EWP Program is conducted. Under four additional changes, NRCS had considered incorporating new types of disaster recovery work that were currently covered to some extent by other USDA programs or State or local authorities, or that were not covered at all. The details of these Draft PEIS proposed changes are described here.

EWP Element 1 - Emergency Terminology
Draft PEIS Proposed Action: Eliminate the terms “exigency” and “non-exigency.”

In many cases, the term “exigency” has been applied too liberally and implemented for purposes for which it was not intended because the Federal government covered 100 percent of the repair costs. Interpretations of “exigency” and “non-exigency” vary so widely among NRCS personnel and are so ingrained, that uniform definitions cannot be reached. In some cases, an “exigency” allows certain contracting procedures to be waived; in others, an “exigency” ensures funding of a project; and in still others, sponsors use “exigency” to obtain a better cost-share rate and to circumvent normal permitting requirements. These interpretations are not what NRCS intended when the two categories were established. Rather, the original intent was to allow NRCS to respond quickly to only those situations that needed immediate attention and that could be addressed within 30 days. Current regulations tie cost-sharing to this designation, although NRCS has not applied the higher cost sharing rate originally set for exigencies for the past 5 years, applying a single cost-share rate of 75 percent to exigency and non-exigency situations.

Under the Draft PEIS Proposed Action, both terms would be eliminated and all sites would be considered simply emergency sites. Recognizing that certain situations require immediate attention, a second related change also has been proposed and is discussed under Element 2.

The most substantive implication of eliminating the terms "exigency" and "non-exigency" is that the term "exigency" is cited in a nationwide 404 permit issued by the USACE for work within waters of the U.S. This permit allows emergency recovery work to proceed quickly without the issuance of an individual 404 permit for each site. Other agencies' documents may need to be changed, as well. [Note: As of January 2002, USACE NWP-37 no longer used the terms.]

This change would result in more uniform delivery of the EWP Program across the nation. A single emergency category would leave no room for interpretation. Eliminating "immediate need" for action would allow the Damage Survey Report (DSR) team the time to evaluate all aspects of a site from economic, environmental, and social standpoints. This change should not affect Program funding. This change would necessitate parallel changes by other agencies (including the historic preservation agencies that follow the definitions of emergency in 36 CFR Part 800) and may cause confusion until agencies and sponsors adjust to new terminology.

EWP Element 2 - Exigency Funding and Completion Requirements
Draft PEIS Proposed Action: Stipulate that "urgent and compelling" situations are to be addressed immediately upon discovery.

"Urgent and compelling" situations exhibit an extremely high potential for loss of life or significant property damage unless immediate action is taken. Instituting this element of the Draft PEIS Proposed Action would allow NRCS to provide immediate funding and contract emergency-response measures on the spot.

Occasionally a situation demands immediate action to avoid potential loss of life or property should another disaster event occur shortly thereafter. An urgent and compelling situation cannot be ignored in good conscience. Examples of such a situation are debris jamming a bridge or culvert, causing water to back up and possibly endanger nearby buildings or the bridge itself; and a building being undercut by a streambank that, if not stabilized immediately, could result in loss of the building.

This change to the EWP Program would allow immediate action when no reasonable alternative is available. The NRCS damage survey team leader would be authorized to carry out the needed remedial work to alleviate the urgent and compelling situation once:

- A DSR is completed
- A team member has, or can secure, procurement authority
- EWP funds are available
- A determination is made that cost-share funds are available from the sponsor(s)
- Necessary land rights have been acquired.

Relieving an urgent and compelling situation could entail a simple temporary correction until a more permanent solution can be designed and implemented. The "urgent and compelling" designation would not be used to circumvent the permitting process, although permits could be obtained after the fact in accordance with emergency permitting procedures. Other agencies would be notified as quickly as possible after the fact. All work on urgent and compelling situations would be completed within five days of the site becoming accessible.

Staff members with appropriate procurement authority would be permitted to hire a contractor and relieve the immediate threat after a site is evaluated. Funding of up to $25,000 per event would be immediately available without request from a special fund established in the national office of NRCS for these situations. This would allow NRCS field personnel to react quickly and appropriately. Table 3.2-2 addresses actions a State can take based on the availability of funds.

The changes introduced by this and the previous elements of the Draft PEIS Proposed Action would reduce the number of situations when immediate action is taken, limiting immediate action to situations of an extremely critical nature. It would save time and better respond to local needs.

Table 3.2-2 Actions Available for Urgent and Compelling Situations

Availability of Funds	Cost $25,000 or less	Cost > $25,000
EWP funds available in state	Proceed immediately	Proceed immediately
State does not have sufficient EWP funds available	➢ Proceed immediately ➢ Funds available from national office ➢ Notify national office when job is complete	➢ Contact national office for funding over $25,000 ➢ Proceed when notified funds are available

EWP Element 3 - Prioritization of Project Funding

Draft PEIS Proposed Action: Set priorities for funding EWP practices.

In some situations, more EWP work needs to be carried out than can be covered with available funds. In other cases, damage is so great that an extended period is necessary to complete work on all eligible sites. When a State Conservationist declares a local disaster, this element of Alternative 2 recommends the following priorities to determine the order in which sites/counties/areas would be repaired.

Table 3.2-3 Priority Order of EWP Funding

PRIORITY	DAMAGE SITUATION
1	Urgent and compelling situations
2	Sites where there is a serious, but not immediate, threat to human life
3	Sites where buildings, utilities, or other important infrastructure components are threatened
4	Sites with Federally Protected Resources, including: ➢ Sites inhabited by federally listed T&E species or containing the species' designated critical habitat where the individuals of the species or the critical habitat would be in jeopardy without the EWP practice ➢ Sites that contain or are in proximity to historical and cultural sites listed on or eligible for listing on the National Register of Historic Places where the listed resource would be jeopardized if the EWP practice were not installed ➢ Sites where prime farmland supporting high value crops is threatened ➢ Sites containing wetlands that would be damaged or destroyed without the EWP practice ➢ Sites that have a major affect on water quality
5	Sites containing unique habitat– supporting State-listed T&E species or species of concern, recreation, or State-identified sensitive habitats other than wetlands
6	Other lands

Currently, in a Presidentially-declared disaster, NRCS takes its direction from FEMA (or the State agency having emergency recovery responsibilities). NRCS would continue to do so after the implementation of this change, following priorities set by those agencies. This could result in some deviation from the above priority list in those circumstances.

EWP Element 4 - NRCS and Local Sponsor's Cost-share Rates

Draft PEIS Proposed Action: Establish a cost-share rate of up to 75 percent for all projects (except for those in limited-resource areas, where sponsors may receive up to 90 percent).

Under current EWP Program regulations, exigencies receive up to 100 percent Federal funding and non-exigencies up to 80 percent Federal funding. Eliminating the exigency and non-exigency categories would also eliminate the differential cost sharing and make these regulations moot. A single category of emergency would require a single cost-share rate. In addition, NRCS would reduce the general cost share ceiling to align it with the rate used in related Federal programs. Under the Draft PEIS Proposed Action, NRCS would reduce the general cost share rate, funding all emergencies up to 75 percent.

However, some increase in the Federal cost-share rate appears warranted for sponsors with limited resources because NRCS recognizes the needs of those who might not be able to participate in the Program at the 75 percent cost-share rate. Therefore, NRCS would make limited-resource sponsors eligible to receive up to 90 percent Federal funding.

A limited-resource area (normally a county or tribal lands) would be defined as an area where housing values are less than 75 percent of the state average, per capita income is less than 75 percent of the national median income, and unemployment during the preceding three years is twice the U.S. average. All 3 criteria would have to be met to qualify. The most recent U.S. census data for an entire county would be used regardless of the income of individual communities. About 10 percent of U.S. counties are expected to qualify as limited-resource areas.

If a natural disaster strikes a limited-resource community in a non-limited-resource area, the NRCS State Conservationist would have the authority to document the limited-resource status using state census data for the three factors mentioned above, and thus approve the 90 percent cost-share rate for that community. In no case would this procedure be used for a unit smaller than a community, which is defined as a unit of government, an American Indian tribe on tribal land or a reservation, or a group of people within a bounded geographical area who interact within shared institutions, and who possess a common sense of interdependence and belonging. Communities would be categorized as limited-resource communities based on their median housing values, per capita income, and level of unemployment. Implications of this change are that participation in the Program would be more readily available.

Reducing the rate from 100 percent to 75 percent would not change Program operation since the 100 percent rate has not been used for the past 5 years, but it could result in a need for additional Program funds to cover the higher rate for limited resource areas. This change also would keep the EWP Program aligned closely with the emergency programs of other agencies.

EWP Element 5 - Project Defensibility Review Criteria

Draft PEIS Proposed Action: Stipulate that practices be economically, environmentally, and socially defensible and identify the criteria to meet those requirements.

Current EWP Program review standards require NRCS staff to review proposed EWP emergency practices for environmental and economic defensibility as well as for technical soundness. Under the Draft PEIS Proposed Action, NRCS would add a social defensibility review requirement, which would require review of alternatives based on the ideals and background of the community, including an American Indian tribe, and individuals directly affected by the recovery activity. All three categories would be used to determine a project's overall defensibility. Further, a project that is not economically defensible could be eligible for EWP Program funding if there were a compelling social or environmental justification for the work. This principle is implemented in the new rule with the elimination of the least-cost requirement for restoration design selection.

Because more values are at issue in decisions concerning EWP practices than can be expressed in strictly economic terms, NRCS proposes to change its policy to ensure that all benefits—not just dollar benefits—are included in site evaluations. The Government tends to deal strictly with a cost-benefit ratio and does not generally account for benefits that cannot be expressed in dollar terms. However, environmental and social factors have a direct impact on or are affected by EWP work but cannot be expressed easily in terms of dollars. This change is proposed to ensure that environmental and community values as well as economics are taken into

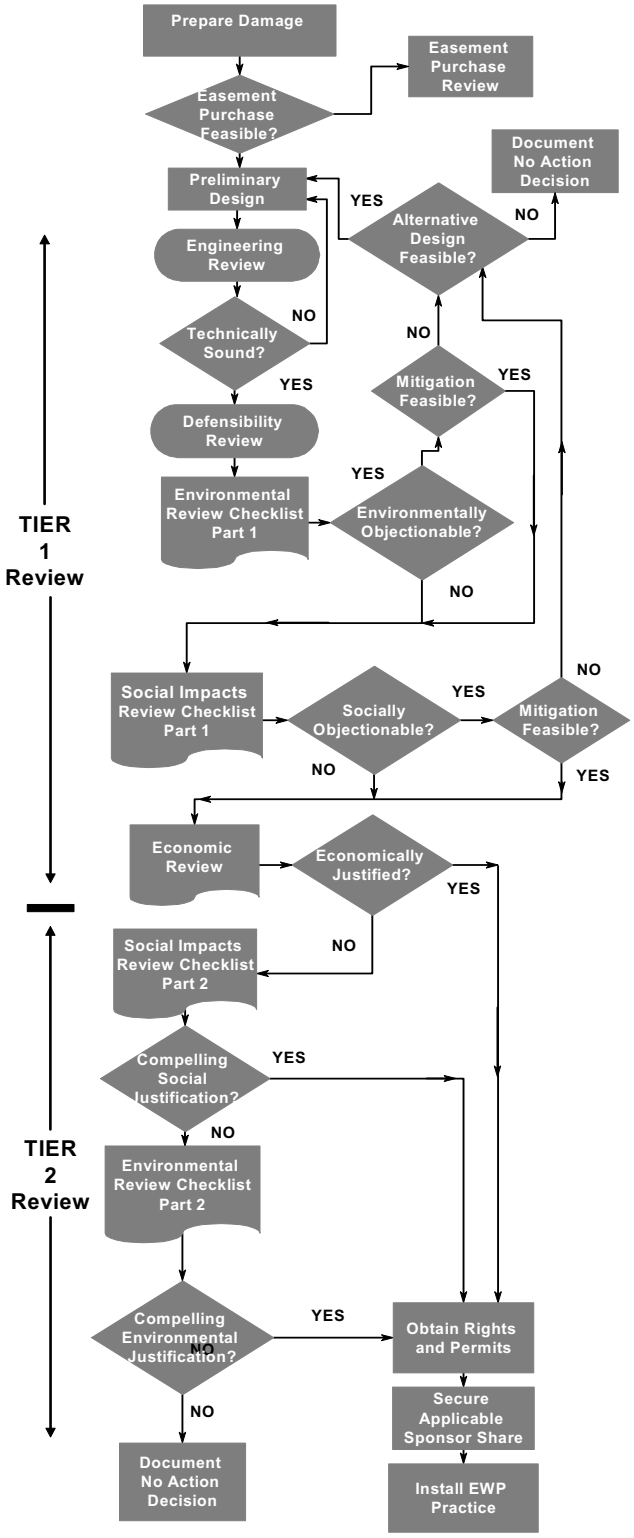


Fig. 3.2-1 Flow Logic for Defensibility Review of EWP Practices

consideration. If a more expensive, but more environmentally or socially compelling solution is available, EWP may proceed with the higher cost solution.

Only EWP sites that meet the overall defensibility criteria would be installed with EWP Program funding. The EWP work proposed for a site would be considered defensible if the practices installed:

- Comply with Federal, State, and local laws
- Are acceptable to affected individuals and communities
- Protect natural and cultural/historic resources effectively
- Include all necessary physical components
- Reduce targeted threats to life and property effectively.

A logical sequence of steps (Fig. 3.2-1) would be taken in reviewing the decisions to be made at an EWP site.

The two-tiered process assumes that NRCS has determined that life or property is being threatened by a watershed impairment as a result of a natural disaster. The Tier 1 review gauges the technical, environmental, social, and economic defensibility of the proposed solution. The Tier 2 review examines impairments with compelling environmental or social impacts that could outweigh economic defensibility requirements in the best interests of society.

At the start of every EWP site repair, a determination is made as to whether an easement would be feasible for the site. If not, a preliminary design for an appropriate EWP practice is prepared and reviewed for technical soundness. Then, the environmental, social, and economic defensibility of the proposed practices are evaluated. The Tier 1 environmental and social defensibility reviews employ checklists to determine if the installed EWP practice or some aspect of the EWP project could potentially harm some important element of the environmental or social communities in the locality. Where such adverse effects are likely and may be significant, mitigation to reduce the effect below a level of concern is considered. Where such mitigation is not feasible, redesign is considered, and if implemented, would be included as part of the project costs and shared by NRCS and the sponsor. Where redesign would not help, the proposal would not go forward.

Under Tier 1 review, EWP work would be environmentally defensible if 1) the proposed recovery work would not adversely affect the environment or 2) any adverse effects could be adequately mitigated. If there were a potential for a significant environmental impact at a site, for example, a potential for the EWP work to jeopardize a T&E species, mitigation would be required before any work would proceed. The mitigation might involve delaying the work or employing some alternative restoration measure, or the decision might be made to not do any work at all. Work in a stream that supports salmon reproduction might need to be delayed to ensure that no impact to their spawning occurs. Where adverse impacts might occur that would not be significant, all reasonable mitigation efforts to minimize the adverse effects would be accomplished as feasible, and the proposed work would proceed.

NRCS is considering how to consistently evaluate the social defensibility of EWP Program practices at the field level. The approach under consideration is based on a checklist of social, socioeconomic, and local/community cultural values that EWP Program field personnel would use when filling out the DSR for a site. This checklist would be in line with the economic and natural and cultural/historic environmental evaluation checklists that are part of the DSR described in the National EWP Handbook. NRCS would ensure that this checklist is consistent with the social impact evaluation in the PEIS. For example, installation of a large debris basin may protect individual homes but might disrupt the pattern of social life in the affected neighborhood. Consideration would be given in this case to possible redesign or relocation of the debris basin, if feasible, to minimize the effect.

To determine economic defensibility, near and long-term probable damages to the property, not the market value of the property being protected, would be evaluated (see proposed revised DSR in Appendix C).

Tier 2 checks are undertaken if the determination is made in the economic evaluation that the proposed practice is not economically justified simply in terms of the monetary value of the protected property and related dollar values. Where compelling environmental or social values would be protected, the recommendation may be to proceed with the installation of the EWP practice, even though the economic defensibility review was not favorable. Examples might be sites where critical spawning habitat or a low value home would be protected. Where neither case could be made, the proposal would not go forward.

EWP Element 6 - Level of Inter-agency Coordination, Planning, and Training

Draft PEIS Proposed Action: Improve disaster-recovery readiness through interagency coordination, planning, and training.

To improve disaster recovery readiness under the Draft PEIS Proposed Action, NRCS would:

- Seek to improve coordination between EWP and other emergency programs;
- Require that State conservationists prepare Emergency Recovery Plans (ERPs) that detail working relationships with other groups on the Federal, State, and local levels; and
- Employ disaster assistance recovery training (DART) teams to train its employees.

Interagency coordination: NRCS would evaluate and implement ways to improve coordination between the EWP Program and other emergency programs. Coordination would help each agency understand better the roles and responsibilities of the other agencies. This would entail working more closely with EPA, USFWS, FEMA, NMFS, USACE, USFS, Bureau of Land Management (BLM), tribal governments, State Historic Preservation and Archaeologist's Office, and State emergency response and recovery agencies before a disaster to avoid problems with permits, regulatory consultation, and duplication of work. This was a key point brought out at public scoping meetings.

Planning: NRCS would request State Conservationists to prepare Emergency Recovery Plans (ERPs) to define working relationships among Federal, State (including historic preservation offices), and local groups, as well as tribal governments. The State conservationist would

activate an ERP when a natural disaster occurs or an emergency is declared. In those cases where a state plan already exists, and NRCS is a major partner in that plan, a separate ERP would not be required.

State conservationists would take the lead in establishing and coordinating EWP disaster-readiness teams to develop State ERPs for implementation in case of emergency. A State team should consist of leaders of the USFS, USFWS, EPA, USACE, FEMA, other USDA agencies, State agencies, State associations of conservation districts, tribal governments, and other agencies and partners needed to accomplish the task of this team. A State disaster-readiness team should meet periodically (at least annually) to review procedures, update the ERP if appropriate, and meet other agencies' emergency-preparedness personnel. The ERP would address:

- The role of each cooperating agency
- Coordination of immediate disaster response
- Potential sponsors of EWP work
- Typical practices used in recovery work
- Expediting the permitting and mandatory consultation processes
- Contracting procedures
- Environmental concerns, especially identifying critical habitat of T&E species, wetlands, and cultural/historic resources
- Environmental justice
- Appropriate public outreach and on-going consultation efforts to keep the public informed
- Other issues as needed

This plan is expected also to include a record of those areas that would require consultation with the USFWS and National Marine Fisheries Service (NMFS) on threatened and endangered (T&E) species and coordination under the Anadromous Fish Conservation Act (AFCA); State Historic Preservation Officer, Tribal Government, Tribal Historic Preservation Officer (THPO), and other consulting parties including federally recognized tribes on cultural resources (as per the nationwide Memorandum of Agreement (MOA)); EPA and USACE on permitting under Section 404 of the Clean Water Act; and State Department of Natural Resources (or other cognizant State agency) on State permits and State-listed species. EWP Program planning would identify environmental baseline information, including T&E species, cultural resources, and other sensitive resources such as wetlands and fisheries deemed important by the State and other resource agencies, including the USFWS and the NMFS. All these resources would be identified in the ERP. This PEIS hereby incorporates by reference the latest listing of T&E species, as published in 50 CFR 17.11 and 17.12, as revised.

Training: NRCS would employ interdisciplinary DART teams with up-to-date knowledge of the EWP Program to provide disaster-readiness training to NRCS employees on a non-emergency basis. The teams also could be dispatched to disaster sites to train employees, sponsors and others in emergencies. DART team services would be provided upon request of a State Conservationist and could be adapted to meet specific needs.

In an emergency, the team would help a State Conservationist establish an emergency recovery office, train local personnel, and recommend operating procedures. Once a work force is trained,

DART team members would return to their duty stations but remain available for consultation. DART would uniformly execute the EWP Program across state lines.

DART disaster-readiness training would emphasize how best to be prepared in the event of a disaster. Teams would focus on developing ERPs and coordinating with other agencies, including SHPOs, THPOs, State fish and game departments, and others, to avoid having to make fundamental decisions under duress.

Implications of this element include the establishment of more uniformity in Program delivery, improved cooperation between agencies involved in recovery work, and a more efficient response to disaster.

EWP Element 7 - Eligibility of Repairs to Agricultural Lands
Draft PEIS Proposed Action: Allow repair of impairments to agricultural lands using sound conservation alternatives.

Under current regulations, long-term structural protective practices are not implemented on unimproved agricultural land. The Draft PEIS Proposed Action would allow NRCS to install sound structural practices on unimproved lands where economically, environmentally, and socially defensible. Current policy does not allow permanent structures such as riprap to protect agricultural lands, including high-value agricultural lands. However, in the past riprap was used indiscriminately to stabilize streambanks. This was not in the best interest of conservation and the process often raised questions about the economic defensibility of the work.

This policy is being dropped because the USDA is moving away from riprap as the invariable solution of choice due to the increased emphasis on defensibility to justify carrying out needed work. NRCS technical specialists would be encouraged to use combinations of armoring, bioengineering, and vegetation to protect streambanks where appropriate.

The intent of this Proposed Action Element is not to resume use of riprap for all high-value agricultural lands, but as would be the case for the improved EWP Program in general, to emphasize use of restoration design based on natural stream dynamics and bioengineering. Nevertheless, riprap may prove to be the only technically feasible solution on certain sites, particularly where high flow velocities occur.

Implications of this action are increased streambank work carried out under the Program and thus increased Program costs. In addition, landowners would have equal chances of receiving needed benefits.

EWP Element 8 - Eligibility of Repeated Repairs to the Same Site
Draft PEIS Proposed Action: Limit repair of sites to twice in a 10-year period.

Successive disasters may strike one area within a relatively short period and require repeated emergency EWP interventions at one location. Under the Draft PEIS Proposed Action, NRCS would limit repairs to twice within a 10-year period. If a site already has been restored twice and less than 10 years have elapsed between the disaster that triggered the first repair and the disaster

now triggering a third repair, the only options available would be to purchase a floodplain easement on the damaged site or to take no action at all.

If a building is protected, it is considered one EWP site. Regardless of what practice was used or in what specific location it was restored to protect the building the first two times, any third restoration to protect the building would not be allowed. Where multiple residences are at risk from repeated flooding, local sponsors may request assistance from NRCS for flood protection measures under the agency's PL-566 watershed protection program, which would employ cost-effective structural or non-structural flood protection measures to reduce risks to life and property from recurrent events.

Because dikes (or levees) can run contiguously for miles, a specific location on a dike (or levee) is considered one EWP site for the determination of where a recurrent failure occurs along the dike. Repairs can be made repetitively on a dike so long as the same location on the dike is not repetitively repaired.

Other programs are available to landowners and sponsors to plan and implement protective practices to solve resource problems that continue to recur. The Federal Government does not have funds to indemnify those reluctant to relocate homes, businesses, and farming operations out of harm's way. If a landowner is not interested in selling a floodplain easement, the needed recovery work would not be accomplished.

Other emergency programs limit the number of times the Federal Government would compensate individuals who suffer disaster damages. This proposal would bring the EWP Program in line with this general trend in Government. EWP Program guidance would stress the need for sufficient local documentation of EWP Program implementation to monitor this requirement.

EWP is a recovery program, not a prevention program. Other programs are available to plan and implement protective practices to solve recurrent problems. This Program change would encourage individuals and project sponsors to use those programs to solve existing resource problems.

Implications of this change are not great. Cases where a site is repeatedly damaged are generally limited to certain disaster-prone locations. Therefore, additional costs to the Program are expected to be minimal. This change would encourage people to allow the floodplain to perform its natural function.

EWP Element 9 - Multiple Beneficiary Eligibility Requirement

Draft PEIS Proposed Action: Eliminate the requirement that multiple beneficiaries (property owners) be threatened before an impairment location site would be eligible for EWP Program repairs.

NRCS policy has always required an EWP practice to have multiple beneficiaries to be eligible for funding (except in exigencies when single beneficiaries are allowed), primarily to avoid windfall benefits to a single landowner and to ensure that the general public benefits from the

Federal funds spent. However, experience with the Program indicates that only rarely does EWP site work result in substantial benefits to only a single landowner. Under the Draft PEIS Proposed Action, NRCS would eliminate the multiple-beneficiaries requirement.

This change would be implemented because NRCS recognizes that natural resource issues affect areas that are not bounded by property ownership lines. Areas downstream of repaired sites benefit from repairs in ways that include sediment reduction and habitat preservation. Recognizing that these downstream benefits do result, it was decided to eliminate the multiple-beneficiaries requirement.

In current practice, DSRs are complete enough that the defensibility of work in terms of multiple beneficiaries should not be at issue. These benefits already were being specified in most cases. This change therefore would not change Program costs or NRCS staff time spent on Program activities because this proposal simply codifies current practice.

EWP Element 10 - Eligible Restoration Methods

Draft PEIS Proposed Action: Apply the principles of natural stream dynamics and, where appropriate, use bioengineering in the design of EWP restoration practices.

This element of the Draft PEIS Proposed Action would be implemented by incorporating design techniques published in the NRCS Handbook "Stream Corridor Restoration: Principles, Processes, and Procedures" developed by 15 Federal agencies under the leadership of NRCS, as well as Chapters 13, 16, and 18 of the NRCS Engineering Field Handbook. DART teams would incorporate these concepts into training presentations, and NRCS employees responsible for EWP practice design or review would be encouraged to take training in the principles of stream restoration.

Specifically, future EWP sites will make greater use of the application of the principles of natural stream dynamics, which includes the installation of rock weirs, rootwads, plant fascines, engineered meanders, and other techniques. Bioengineering, in the form of willow plantings, the use of geotextile fabrics, and other practices, will also be more widely applied. In conjunction with increased floodplain easement purchases (Proposed Action Elements 11 and 15), NRCS is shifting EWP repair work towards methods that offer greater environmental benefits wherever possible. Armoring will not be eliminated entirely, as there may be some situations where bioengineering would not be effective, and in these instances, structural engineering may be required. Every EWP site plan must first be deemed technically sound before undergoing other defensibility tests, as outlined in Proposed Action Element 5.

For the past five years, NRCS has encouraged technical assistance to be more sensitive to the environment in the design and installation of EWP practices. Much has been accomplished, but the agency seeks to carry this concept further. It proposes that NRCS look at more than just site damage alone; that they also consider the dynamics of the overall stream environment and design practices that lead to a more stable hydraulic and environmental condition. These techniques are effective only in certain situations, and sites would be evaluated individually according to the resources affected. By eliminating the least-cost requirement for restoration design selection, a

more expensive, yet highly environmentally or socially compelling solution may be implemented.

The implications of this proposal in terms of increased training costs would be compensated by the cost savings from better design of stream restoration practices. Channels would be more stable and aquatic species would be able to reestablish themselves in a shorter period. Fewer failures would occur if the stream environment was stable and in equilibrium, which would decrease costs in the long-term.

Element 11 - Compatible Uses of Floodplain Easement
Draft PEIS Proposed Action: Simplify purchase of agricultural floodplain easements.

For this change, NRCS would establish a single agricultural floodplain easement category and would specify compatible landowner uses. Current NRCS easement guidelines, which are presented in National Watersheds Manual Circular 4, define three categories of floodplain easements that differ in the level of restriction on landowner uses, from prohibiting uses such as cropping, grazing, or timber harvest (under Category 1) to allowing the landowner to retain rights for cropping, haying, grazing, or timber harvest (under Category 3 which pays only 50 percent of the easement value). Category 2, which allows compatible uses would be the single category retained. Landowners would have the right to request compatible uses including, but not limited to, managed timber harvest, periodic haying, or grazing. To be approved as a compatible use, the activity would have to be consistent with long-term protection and enhancement of the flood control, erosion control, and conservation purposes for which the easement was established. NRCS would make the final decision relative to the amount, method, timing, intensity, and duration of any compatible use that might be authorized. Cropping would not be authorized as a compatible use and haying or grazing would not be authorized as a compatible use on lands that are being returned to woody vegetation. In establishing floodplain easements, NRCS will fully comply with the consultation requirements under Section 7 of the Endangered Species Act.

Category 1 easements are being eliminated because of the cost and time of acquisition. Surveys are required on all Category 1 easements, adding substantial costs to the purchase price. Additionally, experience has shown that Category 1 easements are often small acreages, further reducing the benefits gained for the time and funds expended. To help offset the elimination of Category 1 easements, all EWP floodplain easements will be required to maintain a buffer strip of a fixed width. If the stream meanders to a different course, the same requirements for buffer width still apply, and additional buffer may need to be created. For easement lands where grazing is identified as a compatible use, fencing will also be required to keep livestock a reasonable distance from streams.

Element 12 - Eligibility of Repairs to Enduring Conservation Practices
Draft PEIS Proposed Action: Allow repairs of enduring (structural or long-life) conservation practices.

Currently the EWP Program does not repair structural conservation practices, such as irrigation systems. The Program only repairs NRCS-assisted structures, such as dams, under a blanket exception. This change would incorporate both types of work into the Program.

Conservation practices

Under the Draft PEIS Proposed Action, NRCS would make enduring conservation practices that are damaged during disaster events eligible for EWP Program cost-share assistance. Nonstructural management practices such as conservation tillage would not be eligible. This provision would include repair of such conservation practices as waterways, terraces, embankment ponds, diversions, irrigation systems, and animal waste systems.

NRCS Program Assisted Structures

This change to the EWP rule would formalize the current policy set by the blanket exception to the EWP rule made by the NRCS Chief in 1996 for NRCS-assisted dams. It would permit repair of NRCS-assisted structural practices constructed under the Small Watershed Protection and Flood Control Program (Watershed Protection and Flood Prevention Act of 1954, "PL 83-566"), Flood Prevention Program (Flood Control Act of 1944, "PL 78-534"), Resource Conservation and Development Program, and the Watershed Rehabilitation Program.

When a disaster strikes, NRCS-assisted, project-type flood control structures may be damaged beyond the level that would normally be dealt with under routine operation and maintenance activities and beyond the sponsor's ability to make needed repairs. For example, when an emergency spillway is damaged, extensive repairs can be required to allow it to function properly in the future. However, in many cases these dams are high-hazard structures above towns where failure cannot be tolerated. The EWP Program regulations currently prohibit providing structural assistance unless the chief of the NRCS grants an exception. In 1996, the chief granted a blanket exception to this requirement and assistance has been provided on several occasions.

With respect to enduring conservation practices, structure damage will be corrected using the latest technology and construction techniques that do not have adverse effects on the environment. Project structures will be repaired to a like condition that existed prior to the event with the exception of those structures where the State or local entity requires a permit to correct the damage or to operate the repaired structure. Project structure requiring a permit will be designed to meet minimum State or local entity requirements with due consideration of the environmental impacts.

Implications of adopting this proposal include:

- The repair work would address conservation needs that may not be addressed elsewhere
- It would help ensure that practices remain functional rather than being abandoned

- It would allow the EWP Program to assist more landowners
- Rapid treatment by the EWP Program might prevent further damage on and off site
- It might lead to repairing practices that were poorly designed or inadequately maintained
- Needed repairs could be made in a timely manner if sponsors know they would receive help to make them
- It would increase the dollar amount in NRCS supplemental appropriations requests for EWP Program funds to cover the additional work.

Element 13 - Eligibility of Improved Alternative Recovery Solutions
Draft PEIS Proposed Action: Partially fund improved alternative solutions.

There are some situations where the necessary and sufficient EWP restoration solution proposed by NRCS could be less than the sponsor would like. Under the proposed Program change, if a sponsor would want to increase the level of protection provided by a proposed EWP practice or extend the protection afforded by the practice beyond what is justified under EWP policy and guidelines, the sponsor would have to pay 100 percent of the upgrade or additional work (in addition to the required 25 percent of basic EWP cost). NRCS would do the environmental evaluation and design work as part of the total package, but any necessary additional permits and/or mitigation would be the sponsor's responsibility. For example, NRCS might consider a 200-foot structural practice sufficient to meet the streambank restoration need at an EWP site but a sponsor might want greater protection with a 300-foot design. In this case, NRCS would assist in the design and defensibility evaluation of a 300-foot structural practice but would fund only 75 percent of the cost of the 200-foot design. The sponsor would pay their 25 percent share of the 200-foot installation plus 100 percent of the cost of the extra 100-feet. NRCS would assist with the design and their limited share of the funding of this larger installation so long as the increased-size work was otherwise environmentally and socially defensible.

Substitution of one practice for another would be allowed if the benefits of the practice were not reduced, the sponsor paid additional costs associated with the change, and the new practice was environmentally and technically sound and compatible with local zoning and environmental or historic preservation ordinances. NRCS would determine if the proposed change is acceptable. Changes that appreciably increase the time NRCS would have put into the original planning, design, or installation may require reimbursement of NRCS by the sponsor for additional time spent.

This policy change would make the Program more locally-led by giving sponsors and landowners more opportunity to determine what is in their best interests but would ensure that Federal funds would be used only for public benefit. This added element also would allow more work to be carried out under NRCS supervision, rather than a sponsor deciding to do the work on their own without EWP assistance. This is not expected to cause much change in Program operation because requests in the past have not been numerous and the sponsor will be required to pay for additional costs. However, it is possible that the number of requests was low because sponsors knew substitution was not permitted.

NRCS recognizes that there are times when a sponsor may decide to do additional work after the initial EWP work is completed and accepted. In some cases, this is work that NRCS would not

approve or install under any circumstances. Landowners have also been known to hire the contractor for "after hours" work for a cash payment. NRCS would discourage this type of activity (including contract termination), if there were reason to believe it might occur, to ensure that the additional work does not jeopardize the EWP work or is environmentally or socially indefensible.

Element 14 - Eligibility of Recovery Work Away from Streams and Critical Areas
Draft PEIS Proposed Action: Allow disaster-recovery work in floodplain areas away from streams and in upland areas.

Currently, EWP Program work is normally confined to watercourses and areas immediately adjacent, except in case of drought or fire, when work may be carried out on critical areas in upland portions of a watershed. However, agricultural productivity, public health and safety, and the natural and cultural environment often are threatened in the aftermath of disasters that occur outside these limits. NRCS proposes that the EWP Program expand to include practices needed on all lands.

This element of the Draft PEIS Proposed Action would expand the EWP Program to include areas away from streams. It would allow the removal of sediment and other disaster debris from agricultural land (croplands, orchards, vineyards, and pastures) and other debris (generally windblown) from upland areas, particularly in environmentally sensitive areas.

EWP Floodplain Deposition Recovery Practices

Deposition of excessively large quantities of sediments on floodplains may result from heavy flooding. Such materials are usually coarse and infertile, and they often destroy or smother plants. This is a normal occurrence in the dynamics of floodplain systems but it can jeopardize the productivity of agricultural lands. Alternative practices that are considered in these cases would include:

- Purchase of a floodplain easement
- Removal and disposal of the sediment
- Incorporating the sediment into the underlying soil

The purchase of a floodplain easement would be encouraged as the first alternative, thus removing the land and resources from further concerns over flood damages. Barring floodplain easement purchase, the most effective alternative treatment depends upon many factors such as the size of the particles, depth of material deposited, lateral extent of the deposit, land use and soil type of the underlying material, and value of the land to the entire agricultural operation. When the extent of the sediment is not great, heavy equipment can usually be used to scrape it up and load it into trucks. Some type of disposal area is required with this solution. Without NRCS assistance, it may be pushed to the side of the field to form a low berm, which would reduce the productive acreage of the agricultural land, but more importantly, would serve as a sediment storage area that would wash further downstream to affect some other agricultural land. In those situations where the affected area is large, this solution often is not an alternative.

Floodplain easements are usually a viable option in cases when there is too much deposition to incorporate and it is not feasible to dispose of the debris. EWP funds can be used to purchase rights to the affected acreage that would then be allowed to function as a natural floodplain. A one-time payment is made in exchange for the agricultural and development rights to the land. No future disaster payments would be made to the landowner once the easement has been purchased.

The practice components used to deal with floodplain deposition include:

- Creating access when needed to move trucks and heavy equipment to the site
- Using heavy equipment to plow in or remove the sediment
- Grading and shaping the area affected by the debris operation
- Using or disposing of the sediment off-site

EWP Upland Debris Removal Practices

Most debris deposited on upland areas is wind-borne, and it is the result of hurricanes and tornadoes. Such debris usually consists of downed trees, telephone poles, fence posts, hazardous or toxic household materials such as paints, petroleum-based organic liquids, propane and other gas tanks, or building materials, such as insulation, shingles, metal roofing, metal siding, and similar non-biodegradable materials, which may cover portions of several watersheds. These items may constitute a public health and safety threat, as well as a threat to water quality and above-ground or near-surface cultural resources. They are potentially harmful to wildlife within the area, and may pose a fire hazard or a breeding ground for undesirable pest species**.**

NRCS recognized that much of the necessary debris removal in these situations is not eligible for assistance through any Federal program and can be cost prohibitive for a landowner to deal with. Much of the debris may be scattered in rural or sparsely populated areas on private lands. As with other EWP work, upland debris will only be removed when it poses a threat and the removal is defensible. Woody debris that does not create a hazard will not be removed using EWP funding since is it does not meet eligibility criteria.

The practice components used to deal with upland debris deposition include:

- Creating access when needed to move trucks and heavy equipment to a debris site
- Using chain saws, other power tools, winches and other machinery and heavy equipment to gather and process the debris for onsite disposal or removal
- Disposing of debris onsite by burial, chipping, or burning
- Loading on trucks for removal and disposal off site
- Obtaining special technical assistance and personnel to handle hazardous materials such as asbestos, petroleum products, propane or other compressed gas containers, or other potentially hazardous or toxic compounds or materials
- Grading, shaping, and revegetating, by seeding or planting, any portion of the area affected by the debris removal operation

Element 15 - Floodplain Easement Eligibility on Improved Lands
Draft PEIS Proposed Action: Purchase floodplain easements on non-agricultural lands.

In 1996, the EWP Program was expanded to include the purchase of floodplain easements as a tool in the disaster-recovery process to reduce future Government outlays for damages. Currently, purchasing floodplain easements is allowed on agricultural lands only. (Agricultural lands are predominantly cropland, including orchards and vineyards, pasture, hayland, and forested land, adjacent to watercourses.) This change would allow NRCS to purchase easements on both unimproved and improved rural lands regardless of land use. Current procedure for purchasing unimproved-lands floodplain easements is described in Chapter 2. Purchase of non-agricultural land simply would be added to this procedure. In establishing floodplain easements, NRCS will fully comply with the consultation requirements under Section 7 of the Endangered Species Act and, if necessary and appropriate, the Section 106 consultation requirements of the ACHP regulations.

For improved land, NRCS would provide 100 percent of the predisaster cost of the floodplain easements with all interests and rights included. A deed restriction would permit uses compatible with the natural floodplain functions as determined by NRCS. Since this would be a voluntary selling, the Uniform Relocation Act may not apply. Structures would be demolished and removed or relocated outside the 100-year floodplain, whichever is least-cost, based on a 75 percent Federal/25 percent Sponsor cost-share. Landowners would be responsible for finding new housing and moving their belongings. The floodplain easement rights would be held by the Secretary of Agriculture, but the title to the land could be held by the seller or a sponsoring local organization who would also carry out any monitoring of use, enhancement, or operation and maintenance needed. A deed restriction would permit only uses compatible with the natural floodplain functions as determined by NRCS.

This element of the Draft PEIS Proposed Action would tend to increase Program costs in the short run, but reduce costs to the Federal government in the long run, as people are relocated out of the floodplain. As more acreage is returned to an open condition, the floodplain would be able to function in a more natural fashion. Since, in most cases, the holder of the easement restrictions would be a town or local municipality, it would be easier for the sponsor to control its use and reserve the land for appropriate floodplain uses. For floodplain easement lands where grazing is identified as a compatible use, fencing will also be required to keep livestock a reasonable distance from streams.

3.2.2.2 Correspondence between Draft PEIS Proposed Action Elements and Scoping Recommendations

The Draft EWP PEIS included a Table that summarized how the elements of the Draft PEIS Proposed Action would have addressed the recommendations made by the O&E Team and others during scoping. That table has been replaced in this Final PEIS by Table 3.2-6 (Section 3.2.4.2), which summarizes those findings with respect to the Preferred EWP Program Alternative.

3.2.3 Alternative 3--Prioritized Watershed Planning & Management

Under this alternative, NRCS would integrate the EWP Program into the broader NRCS mission and mandate of watershed management and restoration through regulatory, policy, and directive changes that would address all of the important aspects of watershed management. This alternative anticipates that decisions about specific EWP projects would be made in the context of knowledge of the overall watershed values and dynamics at issue. This would make the Program more comprehensive and proactive than the Draft PEIS Proposed Action in several respects because it would integrate and enhance many of the features of the proposed action and place them in a broader management context. Some EWP work would be undertaken within the context of broader interests in the watershed natural resources goals and other objectives identified in the locally led process. Included in this integrated Program would be acquisition of baseline resource information, analysis, and management; planning and interagency coordination; training and technical assistance; and integrated watershed-based decision-making. Prioritized watershed planning would combine the specific Program improvements and expansion of the Draft PEIS Proposed Action alternative with focused, "program-neutral", disaster-readiness and mitigation planning for selected, high-priority watersheds.

Alternative 3 would include the following components:

1. ***Continue 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 Program funding and technical assistance would be applied, post-disaster, when and where it is needed for eligible projects in a manner consistent with the changes identified in the Draft PEIS Proposed Action.

2. ***Institute the 15 improvement and expansion items of the proposed action noted above.***

3. ***Facilitate a locally led disaster-readiness and mitigation planning effort.***

This component of the alternative would be a locally-led effort initiated and coordinated by NRCS. It would address concerns about recurrent applications of EWP repair practices in watersheds with a history of frequent disasters and integrate EWP Program activities in those watersheds with other NRCS programs that deal with other watershed issues. The steps required to implement this aspect of the Program would include:

- Categorizing watersheds (8-digit hydrologic units) according to the degree to which they are disaster-prone and according to important priorities in a state such as water quality.
- Integrating a watershed's score in each category into an overall priority score that incorporates the disaster-prone ranking and other important criteria.
- Ranking the watersheds in each state as high, medium, or low priority.

4. Fund priority watersheds in each state for disaster-readiness and mitigation planning and management.

High-priority watersheds (and, as funding permits, medium-priority watersheds) would undergo disaster-readiness planning and management if a state, county, tribal organization, or other eligible entity agrees to sponsor the pre-disaster planning. The Federal portion of the funding to do pre-disaster planning (75 percent) would come in equal parts from 25 percent of the current year's supplemental appropriations for EWP Program work and matching funds from other NRCS program(s) active in the watershed(s).

Part of planning funds would be used to hire an executive director to facilitate the process of planning and public involvement. Funding to implement the plan would come from applicable Government agency programs and would be cost-shared at each agency's applicable rate.

5. Coordinate disaster-readiness and mitigation planning and management efforts with Federal, State, and local agencies and interested stakeholders.

- Establish an overall watershed management plan for the priority watershed that includes preventive and restorative practices that take watershed functions and values into account
- Integrate NRCS program authorities and practices with the overall EWP Program goal of reducing the likelihood of catastrophic consequences from natural events and restoring watershed functions and values
- Purchase floodplain easements on a stepwise, proactive, risk-reducing basis as an integrated part of overall watershed management rather than a program-specific post-disaster measure
- Combine the EWP Program with other program authorities to enhance watershed values, including fish and wildlife habitat improvements such as pool and riffle installation on individual EWP sites where economically feasible, rather than simply restoring the site to pre-disaster conditions.

This alternative offers a comprehensive approach that would most fully address the impacts of the broad variety of activities 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 form a sound basis for ongoing NEPA-based analyses and documentation of cumulative watershed effects. Environmental aspects of EWP Program projects and of other NRCS projects in the watershed would be evaluated and reviewed within the context of a specific watershed.

NRCS recognizes that Alternative 3 would likely be the environmentally preferable alternative. However, the agency supports Alternative 4 as its Preferred Alternative for the following reasons:

1. Current law, as interpreted by NRCS legal counsel, limits activities conducted under EWP primarily to disaster recovery work. Alternative 3 would add a substantial increment of preventative measures to reduce future flood damages. Legislative authority would be required to implement such a major expansion of the purpose of EWP under Alternative 3;
2. To a large extent, NRCS has integrated the management of its watershed programs as described in Alternative 3 within the Water Resources Branch of the NHQ Financial

Assistance Programs Division working closely with the NHQ Easement Programs Branch. Together they oversee the recovery practices and floodplain easements portions of EWP and provide funding and technical assistance and training to the NRCS State Offices. But NRCS is limited in fully implementing the scope of Alternative 3 primarily by funding constraints. Several NRCS watershed programs currently exist under P.L. 566 and P.L. 534 that address watershed planning and management and include measures for watershed protection and flood prevention, as well as the cooperative river basin surveys and investigations. Under the new Watershed Rehabilitation Program, NRCS works with local communities and watershed project sponsors to address public health and safety concerns and potential adverse environmental impacts of aging dams. NRCS so far has undertaken 118 projects in 20 States to assess the condition of and repair of more than 10,000 upstream flood control structures built since 1948. EWP must remain available to deal with the aftermath of major disasters regardless of improvements under the other watershed programs, the structural and non-structural practices implemented and the floodplain easements purchased under those programs have greatly reduced the need for future EWP measures in project watersheds.

3.2.4 Alternative 4 – EWP Program Improvement and Expansion under the Preferred Alternative

NRCS implementation of the Preferred Alternative would incorporate many of the EWP Program improvements of the Draft PEIS Proposed Action, with important exceptions. NRCS would not eliminate the key term "exigency" because of its broad interagency use and would not expand the Program to address disaster situations that are currently addressed by FEMA (floodplain easements on improved lands) or FSA (ECP on commodity croplands). Funding would not be set aside in each of the States to immediately address exigencies, and disaster assistance recovery teams (DART) would not become a major Program element, although technical teams for specific disasters would be assembled, if requested.

An important aspect of the EWP Program that would be implemented under the Preferred Alternative is the waiver provision in the EWP rule (7 CFR 624). The waiver provision would apply to all of the specific elements of the Program described below. It states*: § Sec 624.11 Waivers. To the extent allowed by law, the NRCS Deputy Chief for Programs may waive any provision of these regulations when the agency makes a written determination that such waiver is in the best interest of the Federal government.* Waivers are likely to be requested on a case-by-case basis to address such elements as cost-share rates as discussed under Element 4 below.

Table 3.2-4 summarizes the proposed changes in the rule governing EWP administration that constitute the basis for proposed implementation of the Preferred Alternative in this PEIS.

Table 3.2-4 Proposed Changes to the EWP Rule to be Implemented under the Preferred Alternative

Existing EWP Program	Proposed EWP Program
Use terms exigency and nonexigency	Term exigency retained, and the term emergency used to denote all emergency situations not deemed exigencies
Cost-share NRCS contribution: ➢ Exigency up to 100 percent ➢ Nonexigency up to 80 percent	Cost-share NRCS contribution: ➢ Up to 75 percent irrespective of exigency designation; up to 90 percent for limited resource areas; ➢ up to 100 percent for situations where a waiver is granted; and 100 percent for floodplain easements
Limitations: ➢ Work must yield benefits to more than one person, except in exigency situations ➢ Work cannot be performed on other Federally-installed structures/ practices, except if installed by USFS ➢ Chief has to make an exception to conduct work on NRCS PL 83-566 and PL 78-534 projects	Limitations: ➢ Documentation of multiple beneficiaries not required ➢ Limit repair of the same structural measure at the same location for the same type of disaster event to twice in 10 years ➢ Clarified recovery measures can include work outside of the floodplain (i.e., storm deposited debris removal) ➢ Added the ability to remove sediment and debris from the floodplain on agricultural land ➢ Added ability to allow sponsor to increase level of protection when the sponsor pays 100 percent of such increase ➢ Work cannot be performed on any other Federally installed structures/practices (the USFS is responsible for installing EWP practices on USFS lands) ➢ Added the ability to receive assistance for structural/enduring/long-life conservation practices which do not qualify for ECP assistance ➢ Added the provision to conduct work on certain PL 83-566 and PL 78-534 constructed projects without the need for Chief exception
Documentation: ➢ Economic and environmental effects of watershed impairment must be documented in DSR	Documentation: ➢ Economic, social, and environmental effects of watershed impairment must be documented in DSR
Implementation: ➢ Work measures represent the least-cost alternative	Implementation: ➢ Work measures represent the least-cost alternative while using the least damaging practical construction techniques and equipment that would retain as much of the existing characteristics of the landscape and habitat as possible
Time limits: ➢ Exigency work must be completed within 30 days ➢ Nonexigency work completed within 220 days (Chief may grant an extension)	Time limits: ➢ Exigency work completed within 10 days (after the date funds are made available) ➢ Emergency work completed within 220 days (after the date funds are made available)
Funding priorities: ➢ Exigencies ➢ Non-exigencies For non-Presidentially declared disasters, the STC prioritizes EWP projects which may include input from the sponsor.	Funding priorities: 1. Exigency situations 2. Sites where there is a serious, but not immediate threat to human life 3. Sites where buildings, utilities, or other important infrastructure components are threatened 4. Other resource areas and/or funding priorities established by the Chief of NRCS
Floodplain easements: ➢ Pilot program to acquire agricultural land ➢ Designation of land categories (1, 2, or 3) within the floodplain easement	Floodplain easements: ➢ Expanded nationwide ➢ Acquire both agricultural and nonagricultural land ➢ Ability to remove structures ➢ Removed land designation categories within floodplain easement

3.2.4.1 Elements of the Preferred EWP Program Alternative

An element-by-element description of the Preferred Alternative is provided here, comparing what would be done under this alternative to what was initially proposed under each of the 15 elements of the Draft EWP PEIS Proposed Action.

EWP Element 1 - Emergency Terminology
Preferred Alternative: Retain the term "exigency" but eliminate the term "non-exigency."

Under the Preferred Alternative, NRCS would partially implement the Program changes described under Element 1 of the Draft PEIS Proposed Action. Under the Preferred Alternative, the term "exigency" would be retained and used to describe emergencies requiring immediate action. This would maintain consistency in use of the term by NRCS and other agencies and eliminate any potential for confusion among agencies and sponsors that might occur if the terminology were changed. However, the term "non-exigency" would be eliminated; emergencies that are not exigencies would simply be referred to as "emergencies." NRCS would focus oversight on proper use of the exigency category by thorough review of DSRs to reduce instances where the exigency category is misapplied as it was in the past.

EWP Element 2 - Exigency Funding and Completion Requirements
Preferred Alternative: Continue current NHQ role in funding exigencies and extend time to institute exigency repairs to within 10 days after funding is authorized.

Under the Preferred Alternative, NRCS would not implement the Program changes described under Element 2 of the Draft PEIS Proposed Action. Rather than adopting the term "urgent and compelling," NRCS would continue to use the term "exigency" to refer to situations posing substantial risk to life or property which require immediate implementation of EWP measures.

Because of funding constraints, NRCS cannot guarantee NRCS State Offices funding would be available for exigency measures as previously proposed by allowing State Conservationists to obligate up to $25,000 per event without contacting NRCS NHQ. NRCS State Offices will still need to request funding and authorization from the NRCS National Office to proceed to install exigency measures.

Based upon further review of agency experience, NRCS has reconsidered the time frame proposed to respond to exigency situations under the Draft PEIS Proposed Action and would extend the time frame under the Preferred Alternative to 10 days rather than attempt to implement a process under which measures would be implemented "on the spot" and completed within 5 days. The extended timeframe would allow more time to request and secure funding from NHQ, to conduct appropriate procurement procedures under the Federal Acquisition Regulations (FAR), to aid sponsors in their effort to secure their cost-share, and to allow NRCS and sponsors to secure any necessary emergency permits and comply with any applicable Federal laws or regulations.

EWP Element 3 - Prioritization of Project Funding
Preferred Alternative: Set priorities for funding EWP practices and clarify their use.

Under the Preferred Alternative, NRCS would fully implement the Program changes described under Element 3 of the Draft PEIS Proposed Action, but with some clarification about how the prioritization is to be interpreted. NRCS would provide funding assistance based on the same priorities initially proposed under the Draft PEIS Proposed Action (Table 3.2-5), with the exception that the term "urgent and compelling" would not be used to connote exigency situations.

Table 3.2-5 Priority Order of EWP Funding under the Preferred Alternative

PRIORITY	DAMAGE SITUATION
1	Exigency situations
2	Sites where there is a serious, but not immediate, threat to human life
3	Sites where buildings, utilities, or other important infrastructure components are threatened
4	Other funding priorities established by the Chief of NRCS

When evaluating projects in accordance with priorities 1 to 3 above, NRCS will take into account the following resources:

a. Sites inhabited by federally listed T&E species or containing federally designated critical habitat where the species or the critical habitat could be jeopardized, destroyed, or adversely modified without the EWP practice;
b. Sites that contain, or are in the proximity of, cultural resources sites listed on the National Register of Historic Places (NRHP) where the listed resource could be jeopardized if the EWP practice is not installed;
c. Sites where prime farmland supporting high value crops is threatened;
d. Sites containing wetlands that would be damaged or destroyed without the EWP practice;
e. Sites that have a major affect on water quality; and
f. Sites containing unique habitat, including but not limited to, areas inhabited by State-listed threatened and endangered species, fish and wildlife management areas, or State-identified sensitive habitats.

Funding priorities would be based on projects that have been evaluated and found economically defensible. The priorities are not to be interpreted as giving a higher priority to installing projects that would only protect environmental resources, such as T&E species or wetlands that are federally-protected, although that could be an ancillary benefit. The authorization for the EWP Program stipulates that it is to protect human lives and property, so projects that would protect T&E species or wetlands alone would not be eligible for EWP funding. Rather, when different EWP measures are equally economically defensible, and one also protects a T&E species or wetland and the other does not, the former would take priority.

Funding for floodplain easement acquisition would continue to be managed separately from EWP funding for recovery measures. This is due to Congressional language as part of the EWP

funding appropriation that has designated the amount of funding that could be used to purchase floodplain easements. States will typically establish ranking prior to accepting applications for floodplain easements.

EWP Element 4 - NRCS and Local Sponsor's Cost-share Rates
Preferred Alternative: Establish a cost-share rate of up to 75 percent for EWP projects, up to 90 percent for projects in limited-resource areas, and up to 100 percent where a waiver is requested.

Under the Preferred Alternative, NRCS would fully implement the Program changes described under Element 4 of the Draft PEIS Proposed Action. NRCS would apply a cost-share rate of 75 percent to all emergencies, whether they are exigencies or not. If NRCS determines that an area qualifies as a limited resource area in accordance with National census data, the Federal contribution toward the implementation of emergency measures shall not exceed 90 percent of the construction cost of such emergency measures.

Because NRCS recognizes there may be unique situations that require a waiver from these cost-sharing rates, NRCS has adopted in the EWP final rule Section 624.11 Waivers, which allows the NRCS Deputy Chief for Programs to waive any provision of these regulations to the extent allowed by law when the agency makes a written determination that such waiver is in the best interest of the Federal government. An example may include allowing up to 100 percent cost-sharing for a sponsor when the sponsor demonstrates they have insufficient resources or finances to contribute the 25 percent cost-share in an exigency situation. All exigency situations do not warrant 100 percent Federal cost-share. However, through the waiver provision of the final rule, the agency recognizes that there may be situations were 100 percent cost-share is warranted.

EWP Element 5 - Project Defensibility Review Criteria:
Preferred Alternative: Stipulate that practices be economically, environmentally, and socially defensible and identify the criteria to meet those requirements.

Under the Preferred Alternative, NRCS would fully implement the Program changes described under Element 5 of the Draft PEIS Proposed Action. NRCS would review proposed EWP practices for economic, environmental, and social defensibility as described under the Draft PEIS Proposed Action.

NRCS would mitigate adverse effects to the environment or the affected community in cases where adverse effects would cause a project to be either environmentally or socially not defensible. If redesign or other mitigation was not sufficient to adequately reduce such adverse effects, the project would not be installed. For example, NRCS would not install a project that would harm a federally listed T&E species or its critical habitat or a project that would cause disproportionately high and adverse effects to a low-income or minority community.

A project is economically defensible when the cost of installation is less than or equal to the economic benefits of the project in terms of the value of property protected. In general, NRCS would not fund a project that is not economically defensible. However, where a sponsor requests that a project be installed or modified to protect additional environmental or social values and the project or modification is otherwise not defensible on a strictly economic basis, the project could

still be funded so long as the DSR includes sufficient documentation of the compelling environmental or social values, that would add to the economic value of the human property to be protected as justification for installation of the measure.

EWP Element 6 - Level of Inter-agency Coordination, Planning, and Training
Preferred Alternative: Improve disaster-recovery readiness through interagency coordination, planning, and training.

Under the Preferred Alternative, NRCS would partially implement the Program changes described under Element 6 of the Draft PEIS Proposed Action. NRCS would implement the interagency coordination and planning described in the Draft PEIS Proposed Action. Technical advisory assistance would be made available from the national office, if requested. However, training by DART teams would not be implemented.

EWP Element 7 - Eligibility of Repairs to Agricultural Lands
Preferred Alternative: Allow repair of impairments to agricultural lands using sound conservation alternatives.

Under the Preferred Alternative, NRCS would fully implement the Program changes described under Element 7 of the Draft PEIS Proposed Action. NRCS would allow installation of long-term practices to protect high-value agricultural lands where the project is economically, environmentally, and socially defensible. Emphasis would be placed on use of bioengineering solutions and vegetation and natural materials over armoring in these situations where flow rates allow.

EWP Element 8 - Eligibility of Repeated Repairs to the Same Site
Preferred Alternative: Limit repair of sites to twice in a 10-year period.

Under the Preferred Alternative, NRCS would fully implement the Program changes described under Element 8 of the Draft PEIS Proposed Action. In cases where the same type of natural event occurs within a 10-year period and a structural measure has been installed or repaired twice within that period using EWP assistance, any additional EWP assistance would be limited to those sites eligible for the purchase of a floodplain easement or where NRCS might cost-share in a sponsored buyout as described below under Element 15. NRCS would not apply this restriction to repeated debris removal from the same location.

EWP Element 9 - Multiple Beneficiary Eligibility Requirement
Preferred Alternative: Eliminate the requirement that multiple beneficiaries (property owners) be threatened before an impairment location site would be eligible for EWP Program repairs.

Under the Preferred Alternative, NRCS would fully implement the Program changes described under Element 9 of the Draft PEIS Proposed Action. NRCS would no longer require documentation of multiple beneficiaries as a criterion of eligibility for installation of an EWP practice.

EWP Element 10 - Eligible Restoration Methods
Preferred Alternative: Apply the principles of natural stream dynamics and bioengineering to the design of EWP restoration practices where they constitute the least-cost defensible solution.

Under the Preferred Alternative, NRCS would fully implement the Program changes described under Element 10 of the Draft PEIS Proposed Action. NRCS would promote use of bioengineering practices in watershed restoration and would describe the use of these practices in the EWP Manual and Handbook.

EWP Element 11 - Compatible Uses of Floodplain Easement
Preferred Alternative: Simplify purchase of agricultural floodplain easements.

Under the Preferred Alternative, NRCS would conduct simplified purchases of agricultural floodplain easements as described under Element 11 of the Draft PEIS Proposed Action. Beginning in 2001, as a result of a USDA Office of Inspector General (OIG) investigation, NRCS has operated the floodplain easement portion of the EWP Program by purchasing a single type of floodplain easement—restoration with compatible uses—which is category 2 under the previous categorization. This is fully consistent with the Preferred Alternative goal of simplifying easement purchases.

EWP Element 12 - Eligibility of Repairs to Enduring Conservation Practices.
Preferred Alternative: Repair enduring (structural or long-life) conservation practices.

Under the Preferred Alternative, NRCS would fully implement the Program changes described under Element 12 of the Draft PEIS Proposed Action. NRCS would make enduring conservation practices that are damaged during disaster events eligible for EWP Program cost-share assistance. Nonstructural management practices such as conservation tillage would not be eligible. This provision would include repair of such conservation practices as waterways, terraces, embankment ponds, diversions, irrigation systems, and animal waste systems. However, practices that are eligible for emergency assistance for such disaster recovery under the Emergency Conservation Program (ECP) would not be eligible under EWP. EWP differs significantly from ECP because a sponsor is required for EWP recovery work but not for ECP; EWP recovery assistance does not provide financial assistance directly to individuals but rather to eligible sponsors.

EWP Element 13 - Eligibility of Improved Alternative Recovery Solutions
Preferred Alternative: Partially fund improved alternative solutions.

Under the Preferred Alternative, NRCS would fully implement the Program changes described under Element 13 of the Draft PEIS Proposed Action. If a sponsor desires to increase the level of protection that would be provided by an EWP practice, NRCS would require the sponsor to pay 100 percent of the upgrade or additional work unless the upgrade is the result of permit requirements necessary to implement the recovery. NRCS can provide EWP assistance toward upgrading damaged or undersized practices for structural, enduring, and long-life conservation practices when technology advances or construction techniques warrant. Such modifications will be cost shared in accordance with Section 624.7. All structural, enduring, and long-life

conservation practices for which the sponsor is required to obtain a permit issued by a Federal, State, or local entity shall be designed and installed to meet the permit requirements or NRCS standards, whichever is greater. If a structure has to be upgraded to meet Federal permitting or other requirements, such modifications will be cost shared in accordance with Section 624.7.

EWP Element 14 - Eligibility of Recovery Work Away from Streams and Critical Upland Areas

Preferred Alternative: Allow disaster-recovery work in floodplain areas away from streams and in upland areas.

Under the Preferred Alternative, NRCS would partially implement the Program changes described under Element 14 of the Draft PEIS Proposed Action. NRCS would expand the EWP Program to provide assistance for the removal of sediment and other debris from agricultural land (croplands, orchards, vineyards, and pastures) and windblown debris. However, practices that are eligible for emergency assistance for such disaster recovery under ECP would not be eligible under EWP.

EWP Element 15 - Floodplain Easement Eligibility on Improved Lands

Preferred Alternative: Purchase floodplain easements on non-agricultural lands.

Under the Preferred Alternative, NRCS would partially implement the Program changes described under Element 15 of the Draft PEIS Proposed Action. NRCS would purchase floodplain easements on non-agricultural lands for the purpose of creating a manageable easement area and to maximize all floodplain functions. NRCS would maintain the flexibility to acquire on a voluntary basis structures such as barns, silos, and other outbuildings and structures as well as residential structures in situations where their acquisition and removal or demolition is necessary to allow full floodplain functioning to be restored. For example, where dikes are to be removed to allow flooding of an agricultural area on which a floodplain easement has been purchased, and that flooding would affect such structures, the land would be also purchased as part of the easement and the structures would be removed or demolished. No permanent structures would be allowed to be built on the floodplain easement property. NRCS would not offer to purchase an easement if there are unresolved hazardous materials issues related to the site. If such a situation is cleaned up at the owner's expense, NRCS would then consider an easement purchase.

However, 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. This would duplicate the programs of other agencies, such as FEMA. However, as an EWP recovery measure, NRCS would consider cost-sharing with a sponsor to fund buyouts of residents in such flood-prone circumstances because it would be the most cost-effective and environmentally preferable recovery measure. Cost sharing would be 75 percent Federal in general or 90 percent for limited resource areas. Sponsors would be required to work with landowners directly to purchase fee title, easement, or similar deed restrictions in these cases.

3.2.4.2 Correspondence between Preferred Alternative Elements and Scoping Recommendations

Table 3.2-6 summarizes how the elements of the EWP proposed Program changes address the recommendations made by the O&E Team and others during scoping. Some changes that are being implemented but that would not cause environmental impacts are noted but are documented elsewhere. Recommended changes that were not included in the Preferred Alternative are also noted.

Table 3.2-6. Correspondence between O&E Team and other Recommendations and Elements of NRCS EWP Program Preferred Alternative

Oversight & Evaluation Team Recommendations	
Objective 1 Recommendations	**Resolution**
Provide training to NRCS employees and partners.	Element 6 of the Preferred Alternative (PA) would provide for additional training of NRCS staff to improve Program effectiveness. Workshops were conducted in 2000 and additional workshops are planned for spring of 2005.
Limit use of the exigent classification to situations where funding is immediately available, the near-term probability of damage to life and property is high enough to warrant immediate NRCS action, funds can be obligated within 10 days, and construction completed in 30 days.	The Preferred Alternative would fully implement this recommendation (see Element 1).
Limit assistance at road crossings to instances where the facility is not covered by an Operation and Maintenance Agreement with a division of state government or is not under other agency jurisdiction.	The current EWP Program allows for protection of only non-federally assisted roads.
Objective 2 Recommendations	**Resolution**
Revise policy to emphasize restoration of the ecological functions of a system at an eligible site. Emphasize use of bioengineering, fluvial geomorphology, and similar techniques. Require an interdisciplinary team approach for site assessments, alternative selection, and design.	Preferred Alternative Elements 5 and 10 would stress design of restoration work using the principles of natural stream dynamics. Element 6 would foster further training, coordination, and planning.
Develop new and strengthen existing national, regional, and state partnerships by entering into EWP-specific agreements with agencies and organizations to address coordination, permit issuance, training, outreach, responsibilities, and follow-up to completed work.	Preferred Alternative Element 6 would facilitate improved coordination with other agencies.
Record EWP sites geo-spatially; use these data to locate recurrent EWP activity; then fund studies to identify more permanent solutions in the watershed.	PA Element 8 would require NRCS to track the number of repairs at each site so that no site is repaired more than twice in 10 years.
Provide national guidance to evaluate an appropriate sample of EWP repairs in state quality-assurance plans.	This objective was considered but not evaluated in detail.
Objective 3 Recommendations	**Resolution**
Institute outreach procedures during EWP activation in each state.	Outreach procedures are part of the planning process under PA Element 6.
Restructure Operation and Maintenance agreements to accommodate sponsors with limited resources and reduce their responsibilities to a shorter time frame.	PA Element 4 would provide for a larger Federal cost share in resource-limited areas.
Revise Part 509 of the National Watershed Manual to encourage use of sponsors or contracting for these activities and revise the handbook accordingly.	This process is underway.
Seek an annual allocation to fund exigent situations, maintain a level of preparedness, and fund interdisciplinary EWP response teams.	Funding constraints do not allow NRCS to set aside annual allocations for exigent situations. PA Element 6 would provide for further training and disaster preparedness.
Revise national policy to emphasize inter-state uniformity in the application of EWP; regions should establish collectively a process to ensure such uniformity.	The policy to coordinate multi-state disasters is identified in the proposed revised EWP Manual.
Revise policy to streamline data requirements and develop an electronic process to request funds, document partner activities, submit final reports, and record site damages.	The proposed revised EWP Manual contains these changes.

Table 3.2-6 (Continued) Correspondence between O&E Team and other Recommendations and Elements of NRCS EWP Program Preferred Alternative

Other Recommendations From Scoping	
Floodplain Easements	**Resolution**
Floodplain easements are appropriate as a preventative tool or as an alternative to engineering solutions, especially where repeated use of engineering solutions has been unsuccessful.	PA Element 8 would limit repairs to twice in 10 years. Elements 11 and 15 would allow purchase of easements at those sites.
The policy on using floodplain easements should be clarified. Provide sufficient guidance on the use of easements- specifically, on what criteria trigger use of easements, the applicability of repeated flooding as a trigger and what cost/benefit considerations apply.	PA Elements 11 and 15 and the revised EWP Manual clarify easement policy.
Floodplain easement use would require additional funding and staffing. Purchasing easements would increase the burden on NRCS staff. Hire additional staff dedicated to EWP.	Funding is typically provided through emergency supplemental appropriations that are provided sporadically and therefore would not be suitable to support additional full time staff.
Easement use where there are residences should include relocation of residents.	NRCS would consider purchase of floodplain easements on non-agricultural lands but would not purchase and demolish multiple residences and relocate small communities.
Focus easement purchases in flood-prone areas, purchasing contiguous plots of land to avoid a patchwork system.	PA Elements 11 and 15 would promote purchase of contiguous plots where feasible.
Eliminate Category 1 of the proposed action, and purchase cropping and development rights along with easement purchases.	PA Element 11 eliminates category 1 easements. Purchase would include development rights and would not allow cropping.
Allow some level of funding for the maintenance of easements because of potential problems outside the easement if no maintenance is done. Employ a land management company to manage the easements.	NRCS is considering this recommendation, within its full easement portfolio, including easement maintenance under the Wetland Reserve Program (WRP) and Farm and Ranch Land Protection Program (FPP)
Extend easements to urban areas.	PA Element 15 would extend easement purchase to improved lands but NRCS does not anticipate easement purchase in major urban areas.
Speed the easement purchasing process to take advantage of land that comes on the market.	NRCS would continue to conduct analyses for the easement acquisition process to streamline it consistent with Federal and State requirements.
Inform the seller of tax implications.	NRCS provides participants with available IRS tax code information and advises to direct any further questions to the IRS.
Coordinate easement purchases with other Federal programs pooling funds from several agencies to purchase easements.	NRCS has adopted an approach that includes pooling resources with other agencies where there are common goals and objectives, e.g. Missouri River Restoration Project with the USACE, USFWS, and State agencies
Floodplain easements do not fit in the EWP mandate to relieve imminent threats to life and property.	NRCS believes that easements are a realistic alternative to repetitive repairs and government outlays in disaster-prone areas.
Use easements in certain low relief and developed areas only if set-back levees are used. Some areas in CA are farmed in summer, flooded in winter.	Use of setback levees with easement purchase is part of the current Program. PA Element 11 would eliminate cropping as a compatible use and thus address this practice.

Table 3.2-6 (Continued) Correspondence between O&E Team and other Recommendations and Elements of NRCS EWP Program Preferred Alternative

Limited Resource Sponsors	Resolution
What constitutes a limited-resource sponsor be defined clearly, fairly, and objectively.	PA Element 4 identifies a practical equitable approach for determination of a limited resource area. NRCS has adopted the Nat Census Data to identify limited resource counties. There would be no limited resource sponsors per se. Waivers would be considered in instances where sponsors cannot meet their cost share obligations.
Economic, Environmental, & Social Defensibility	**Resolution**
For the installed EWP measures to be environmentally defensible, they need to take into consideration T&E species and shallow-water habitats for fish, wildlife, and invertebrates.	PA Element 5 would ensure that environmental review of proposed solutions would cause no significant adverse effects to these ecosystem components. Coordination with the USFWS would ensure no T&E species is jeopardized.
Where the installed measures are found to be not completely defensible environmentally, EWP funds should be made available for mitigation work.	PA Element 5 would ensure that mitigation for adverse effects would be accomplished before implementing a restoration practice.
NRCS should consider alternative funding mechanisms in cases of recurring requests, for example, the Federal cost-share could be reduced to less than 75 percent for second and subsequent projects that deal with watershed impairments in the same location.	NRCS has proposed instead under PA Element 8 to not fund a third repair at all at the site in a 10-year period. EWP assistance would be limited to those sites eligible for the purchase of a floodplain easement or where NRCS might provide cost-share funding of a sponsored buyout as described under Element 15.
The defensibility categories should have clearly defined criteria to evaluate them.	PA Element 5 identifies the criteria that would be used to evaluate economic, environmental, and social defensibility.
Upgrading the environmental defensibility of the Program was necessary and to do this, the review process would need to provide more backup documentation.	The revised DSR would provide such documentation.
DART Team Training	**Resolution**
Training needs to be conducted before disaster strikes so that local, rather than Federal personnel can respond. The locally trained teams know the areas and should write the DSRs.	Disaster-readiness training would be provided under PA Element 6.
Countrywide meetings would help ensure uniform policy application and interpretation.	A series of six regional workshops were conducted in the spring of 2000 and additional workshops are planned for spring of 2005.
Eligible Impairments	**Resolution**
EWP-eligible work should include broadening the scope of EWP work to include lakeshores, single landowner or windfall benefits, dams, concrete spillways, substitution projects.	Lakeshores were considered but eliminated from the PA because they constitute O&M situations. Single beneficiaries are allowed under PA Element 9 but the economic review would not allow windfall benefits. Dam and spillway repair are allowed under the current Program. Substitution projects were considered but eliminated from the PA as noted under PA Element 13.
Include repair of storm water detention basins.	EWP is a recovery, not a preventative, program. Stormwater detention basins are a flood prevention structure so repair is considered normal operation and maintenance work not recovery work.

Table 3.2-6 (Continued) Correspondence between O&E Team and other Recommendations and Elements of NRCS EWP Program Preferred Alternative

Permanent Solutions to Watershed Damage	Resolution
The EWP Program should adopt a program approach, involving natural hydrology, floodplain management, bioengineering, vegetation, and relocation solutions. Permanent solutions are many times more cost effective in the long term than short-term fixes. Permanent solutions are important even in an emergency situation and should be implemented.	The Preferred Alternative does move the EWP Program toward more permanent solutions, particularly use of the principles of natural stream dynamics for repairs and use of agricultural and improved lands floodplain easements.
Program Monitoring	**Resolution**
Initiate a series of long-term monitoring projects that would allow personnel to implement proven environmentally sound projects that would function on a holistic level. Establish a long-term monitoring database to help exchange information on successful projects among states.	Monitoring projects are considered beyond the scope of the EWP Program because of the major increase in staff that would be needed to do an adequate job.
A national database should be set up at NRCS headquarters to help track EWP projects. The database should include GIS, fund tracking, efficacy of the installed practice, costs, and benefits. Use Newton pads for DSR completion.	A national database has been set up to do this tracking that includes costs, type and amount of EWP measures installed, and benefits or the EWP measures. At the State level, the NRCS State Offices will be required to track location-specific project information to track such data as installation date to monitor repeated installations.
Coordination, Planning, and Outreach	**Resolution**
Interagency coordination and advance planning are essential in the emergency-response process, that red tape bogs down the process, and that permits need to be issued faster and more easily. T&E species and permitting issues should be handled in these pre-emergency interagency coordination meetings.	PA Element 6 would address this concern.
Remedy misuse of the 400-mi^2 standard.	A memorandum of understanding would be entered into with the USACE to reach an agreement on this matter.
Pre-disaster planning needs to be better staffed and to include public outreach to address environmental justice.	PA Element 6 would go a long way to helping solve this concern. Public outreach is part of the planning process.

3.3 ALTERNATIVES THAT WERE CONSIDERED BUT NOT EVALUATED IN DETAIL

3.3.1 Other EWP Program Alternatives

Two EWP Program alternatives were considered but eliminated from detailed evaluation in the PEIS. These alternatives would provide certain benefits in terms of diminishing NRCS workloads and oversight requirements. Overall, these alternatives were deemed unacceptable because NRCS judged that they would not improve the delivery or defensibility of the Program. They also would limit NRCS's ability to fulfill the agency's consultation responsibilities under Section 7 of the ESA and Section 106 of the NHPA or decisionmaking responsibilities under these authorities or NEPA.

3.3.1.1 Reduced Federal Role

Under this alternative, NRCS would maintain its role in the EWP Program administration and provision of technical assistance. However, it would shift greater responsibility and authority to the States for project evaluation and monitoring. NRCS would rely upon the efforts of the State emergency management organization (EMO) to accomplish the needed work. NRCS employees would continue to determine eligibility of all sites. Funds needed to accomplish the work would be given to the EMO by the State Conservationist. The EMO would be responsible for designing and installing the needed practices. NRCS would follow up to ensure that the job is done and that documentation is complete and in order. NRCS would also monitor any needed operation and maintenance activities. This alternative would allow NRCS employees to continue to service normal, everyday workload requests without interruption.

3.3.1.2 Total Grant to Sponsors

Under this alternative, NRCS would not maintain its role in EWP program administration and provision of technical assistance. Instead, it would provide EWP program grant funds to qualified sponsors in each State. Sponsors would complete a Damage Survey Report (DSR) and determine eligibility of the damage sites. This information would provide the basis for an application for funding from the appropriate regional NRCS office. Design, installation, and operation and maintenance, where warranted, would be carried out by the sponsor. There would be minimal oversight by NRCS, enough to ensure that the sponsor conducts EWP activities in compliance with eligibility requirements.

3.3.2 Other Proposed Action Elements

A number of other changes were recommended during scoping as elements of the proposed action but were eliminated from detailed evaluation for various reasons. Among these are the use of non-profit organizations as floodplain easement sponsors, repair of lakeshore damage, and removing threats to Federal-aid highways.

3.3.2.1 Nonprofit Sponsors

It was originally thought that organizations that promote natural floodplains be permitted to act as sponsors for the acquisition of floodplain easements. Although non-profits did not have all the requirements of regular sponsors, they had the best interest of the floodplains at heart. However, since all easements are voluntary and the Federal Government holds the easement, sponsors are not necessary. NRCS policy already has provisions for the agency to enter into partnerships with other organizations to carry out aspects of the Program without them having to be a sponsor.

3.3.2.2 Repair of Lakeshore Damage

A proposal that NRCS allow repair of lakeshore damage as part of the EWP Program was raised during the scoping sessions. Such repair has not been permitted in the past since most lakeside damage is due to ongoing wave action from winds and boats. It is difficult to determine whether a disaster or simply an ongoing erosive process is the cause of the damage. Therefore, a decision was made to not include this option in the Program.

3.3.2.3 Repair of Federal Highways

This is another proposal resulting from the scoping meetings. The Federal Highway Administration (FHA) already has a program called the "Emergency Relief for Federally Owned Roads" (ERFO) which provides 100 percent of the cost to repair these highways. In addition, the Federal-aid Highway Emergency Relief Program provides cost-share funds to State highway departments to repair damage to Federal–aid Highways. These are Interstates, National Highways, major rural and urban arterial and collector roads. It would be a duplication of effort for the EWP Program to do this work and therefore the proposal was not pursued.

3.4 COMPARISON OF THE ALTERNATIVES

This section presents the impacts of the EWP Program alternatives in comparative form to define the issues that clearly distinguish the alternatives and provide a clear basis for choice among the alternatives by the decision-maker and the public (CEQ Regulations 40 CFR 1502.14).

3.4.1 Comparison of Implementation Aspects likely to Affect Impacts

Major aspects of the current EWP Program (the No Action alternative) that would change under the Preferred Alternative, under the Draft PEIS Proposed Action, and under Alternative 3, and that have implications in terms of potential effects on watershed ecosystems and human communities, are summarized in Table 3.4-1. A summary of specific Program elements under each of the Program alternatives is presented in Table 3.4-2.

Table 3.4-1 Summary of Major Implementation Differences of EWP Program Alternatives

Major EWP Program Aspect	Alternative 1: No Action	Alternative 2: Draft PEIS Proposed Action	Alternative 4: Preferred Alternative	Alternative 3: Prioritized Management
Reliance on use of armoring versus "greener" methods[1] for stream restoration where feasible	Slow, steady shift to "greener" methods where feasible	Accelerated shift to "greener" methods	Accelerated shift to "greener" methods	Accelerated shift to "greener" methods
Relative number of armoring practices contracted	Likely to be the Highest of the 3 alternatives	Reduced due to emphasis on bioengineering methods and increased number of floodplain easements purchased	Reduced due to emphasis on bioengineering methods and increased number of floodplain easements purchased	Greatest reduction due to emphasis on bio-engineering methods and greatest number of floodplain easements purchased
Debris Removal Practices and Channel Restoration[1]	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
Use of Floodplain Easements on Agricultural Land	Retain 3 categories of agricultural floodplain easements	Floodplain easement categories 1 & 3 eliminated	Floodplain easement categories 1 & 3 eliminated	Floodplain easement categories 1 & 3 eliminated
Floodplain Easement Purchase on Improved Lands	None	Purchase improved lands floodplain easements, including small flood-prone communities	Purchase of improved land floodplain easements is limited to those that ensure full floodplain function. EWP recovery program may fund buyouts in small flood-prone communities	Purchase improved lands floodplain easements and focus on broad easement purchase in disaster-prone watersheds

[1] design based on the principles of natural stream dynamics and bioengineering

3.4.1.1 Major Differences Among the Alternatives Likely to Affect Impacts

The principal changes that would influence Program-wide differences in environmental impacts among the four EWP Program alternatives (Table 3.4-1) involve changes in the design of restoration practices and in the Program's emphasis on, and eligibility criteria for, purchase of floodplain easements. Under the No Action alternative, armoring would continue to be the principal method of restoration to repair and protect streambanks. Alternatives 2, 3, and 4 would involve training and emphasis on design of restoration based on the principles of natural stream dynamics and the use of natural materials, and planting and seeding, alone or in combination with "hard" structural materials and geotextiles. This would involve addressing more than just site damage alone, as NRCS staff would also consider the design practices that would lead to a more stable hydraulic and environmental condition in which aquatic species would be able to reestablish themselves in a shorter time. Program-wide, there would likely be installation of

more natural or "greener" measures under Alternatives 2, 3, and 4, and fewer simple armoring practices.

Use of floodplain easements would change in terms of the types of compatible uses allowed on agricultural floodplain easements and the criteria for purchase of floodplain easements on improved lands. Under Alternative 1, NRCS would continue to purchase agricultural floodplain easements, some of which would allow cropping as a compatible use. Under the Draft PEIS Proposed Action, NRCS would eliminate cropping as a compatible use on agricultural floodplain easements and would allow additional floodplain easement purchases on improved lands, to include sponsor-involved floodplain easement purchases of multiple residences in small flood-prone rural communities. Under Alternative 3, NRCS would focus a broad, multi-program, locally-led effort in disaster-prone watersheds on purchase of contiguous blocks of easements. Under Alternative 4, the Preferred Alternative, floodplain easement purchase would be simplified but purchase of easements on improved lands would be limited to situations where required to ensure restoration of full floodplain function.

3.4.1.2 Specific Elements of Alternatives Likely to Affect Impacts

Specific elements of each of the alternatives (Table 3.4-2) likely would 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.

Table 3.4-2 Specific EWP Program Changes under the Program Alternatives

Element of EWP Program	*Current Program Provisions Retained under the No Action Alternative (Alt 1)*	*Draft PEIS Proposed Action (Alt 2) and Prioritized Watershed Planning and Management (Alt 3)*	*Changes that would be Implemented under the Preferred Alternative (Alt 4)*
1. Emergency Terminology	Continue use of the terms "exigency" and "non-exigency."	Eliminate the terms "exigency" and "non-exigency."	Retain the term "exigency"; eliminate "non-exigency."
2. Exigency Funding and Completion Requirements	No State level funding for immediate exigency response. Continue to allow 30 days to address exigencies.	Stipulate that "urgent and compelling" situations be addressed immediately with State level funds. Change exigency allowed time to 5 days.	No State level funding for immediate exigency response. Change allowed time to address exigencies to 10 days.
3 Prioritization of Project Funding	For non-Presidentially declared disasters, the STC prioritizes EWP projects which may include input from the sponsor.	Set priorities for funding of EWP practices.	Set priorities for funding of EWP practices.
4. NRCS and Local Sponsor's Cost-share Rates	Cost-share of up to 100% for exigencies; up to 80% for non-exigencies.	Establish cost-share of up to 75%; up to 90% in limited-resource areas.	Establish cost-share of up to 75%; up to 90% in limited-resource areas; and add a waiver provision allowing up to 100% in unique situations.
5. Project Defensibility Review Criteria	Practices must be economically and environmentally defensible.	Stipulate that practices be economically, environmentally, and socially defensible.	Stipulate that practices be economically, environmentally, and socially defensible.

Table 3.4-2 (Continued) Specific EWP Program Changes under the Program Alternatives

Element of EWP Program	*Current Program Provisions Retained under the No Action Alternative (Alt 1)*	*Draft PEIS Proposed Action (Alt 2) and Prioritized Watershed Planning and Management (Alt 3)*	*Changes that would be Implemented under the Preferred Alternative (Alt 4)*
6. Level of Inter-agency Coordination, Planning, and Training	No specific provisions to facilitate interagency coordination, training, and planning.	Improve disaster-readiness through interagency coordination, planning, and training, including DART teams.	Improve disaster-readiness through interagency coordination, planning, and training, without DART teams.
7. Eligibility of Repairs to Agricultural Lands	No repair of impairments to agricultural lands allowed.	Allow repair of impairments to agricultural lands using sound engineering alternatives.	Allow repair of impairments to agricultural lands using sound engineering alternatives.
8. Eligibility of Repeated Repairs to the Same Site	No limit to the repeated repair of sites.	Limit repair of sites to twice in any ten-year period.	Limit repair of sites to twice in any ten-year period.
9. Multiple Beneficiary Eligibility Requirement	Continue multiple-beneficiary requirement for site repairs.	Eliminate multiple- beneficiary requirement for site repairs.	Eliminate multiple- beneficiary requirement for site repairs.
10. Eligible Restoration Methods	Least-cost restoration practices focused on the repair of site damage alone.	Apply the principles of natural stream dynamics and bio-engineering in restoration.	Apply the principles of natural stream dynamics and bio-engineering in restoration.
11. Compatible Uses of Floodplain Easement	Agricultural floodplain easement purchase would retain complex designation of land categories (1,2, 3) within easements.	Simplify purchase of agricultural floodplain easements; eliminate land designation categories.	Simplify purchase of agricultural floodplain easements; eliminate land designation categories.
12. Eligibility of Repairs to Enduring Conservation Practices	No repair of enduring (structural or long-life) conservation practices allowed under Program Rule, however Chief has granted a blanket exception.	Repair enduring (structural or long-life) conservation practices.	Repair enduring (structural or long-life) conservation practices, except when such measures are under ECP jurisdiction.
13. Eligibility of Improved Alternative Recovery Solutions	No partial funding of improved alternative solutions allowed.	Partially fund improved alternative solutions.	Partially fund improved alternative solutions.
14. Eligibility of Recovery Work Away from Streams and Critical Areas	No disaster-recovery work allowed in floodplains away from streams or in upland areas, except in critical areas in cases of drought or fire.	Allow disaster-recovery work in floodplains away from streams and in upland areas.	Allow disaster-recovery work in floodplains away from streams and in upland areas, where such measures are not under ECP jurisdiction.
15. Floodplain Easement Eligibility on Improved Lands	No purchase of floodplain easements on non-agricultural lands allowed.	Allow purchase of floodplain easements on non-agricultural lands.	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.

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.

3.4.1.2.1 Alternative 1 (No Action Alternative)

The No Action alternative would not involve any changes in the current Program. The impacts to the environment would be essentially the impacts described under each practice, in Sections 5.2.2, 5.2.3, and 5.2.4. Refer to these sections for the detailed discussions of the environmental impacts of the Current Program. Refer to discussions and tables later in this Chapter for summary of No Action impacts.

3.4.1.2.2 Alternative 2 (Draft PEIS Proposed Action)

The 15 changes proposed under the Draft PEIS Proposed Action are organized here in three general categories: Execution of EWP Recovery Practices, Floodplain Easements, and Environmental Review. *Execution of Practices* refers to changes made in the way an existing practice is planned or conducted, or the addition of a new practice. *Floodplain Easement* changes are those that involve floodplain easement purchases of all types and changes to floodplain easement management. *Environmental Review* refers to activities that help to characterize a particular site or the process of evaluating a given site.

Effects of Alternative 2 Changes on Execution of EWP Recovery Practices

Eliminating the use of 'exigency' (Element #1) would likely have environmental benefits, as only extremely critical situations would be considered under the "urgent and compelling" designation. Previously, many sites were listed as "exigent" in order to take advantage of a more favorable cost-share ratio. This may have resulted in restoration work being completed hastily and without full coordination with other agencies, possibly resulting in less than optimal consideration of environmental resources. Allowing more extensive planning and coordination would likely result in greater environmental benefits.

The *"urgent and compelling" designation* would be added to stress critical repair work (Element #2). This could certainly affect the implementation of debris removal, streambank restoration, or any other practice that centers on structural repairs. This change would increase the emergency response nature of EWP and help to protect life and property. This quick response may have undesirable environmental impacts, as there may not be sufficient time for coordination with other agencies and environmental resources may be damaged. However, in combination with the changes described under *improving disaster readiness* (Element #6), the risk of these types of damages would be reduced, as training would help NRCS staff to recognize potential problems with T&E, 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.

Establishing cost share rates (Element #4) would likely have positive environmental impacts, as EWP can complete work for sponsors that may not have been able to afford their portion under the previous cost-share arrangement. Depending on site-specific information and the type of practices used, benefits may be generated by the restoration beyond simply restoring flows and protecting streambanks. 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 ten years.

Improving disaster readiness (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.

Repairs to agricultural lands (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 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 (Element #8) would likely have mixed environmental effects. In the short term, it is likely that more structurally flow-resistant armoring designs for individual projects (e.g., longer stretches of riprap or using gabions instead of riprap) would be used to ensure that repeated damages are avoided if possible. The solution would still meet the environmental defensibility criterion, but this element may not lead to a short-term increase in greener solutions. However, at repeatedly damaged sites, floodplain easements would become the only available option regardless of previous restoration history. Therefore, this element may provide some long-term environmental benefits, unless landowners choose not to sell an easement and perform the repairs on their own. Over both the short and longer term, however, landowner repairs may have negative effects, as there may not be equal consideration of environmental, social, and cultural values, as provided by the EWP process.

Enabling single beneficiaries (Element #9) to be eligible for EWP work may generate 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. Additionally, current policy may promote single beneficiary site owners to attempt the restoration work on their own or through private contractors. These privately funded repairs would be made without interagency review or consultation, possibly resulting in greater environmental degradation over both the short and long-term, as these groups may not have the training necessary to properly address environmental considerations.

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.

Repair of enduring conservation practices (Element #12) would likely offer positive environmental benefits, as discussed in Section 5.2.3.4. Repairing damaged or undersized conservation structures would minimize further environmental degradation of downstream habitat. These practices are installed for the purposes of environmental protection, such as the containment of agricultural runoff, erosion control, or animal waste management. Additionally, by requiring that these practices meet current NRCS standards, older or undersized practices would be replaced with more effective ones.

Partially funding expanded or improved alternative solutions (Element #13) may yield positive environmental effects, as discussed in Section 5.2.3.5. Supplemental work completed on EWP projects could yield improved water quality or habitat and would be subject to the normal environmental review process under EWP. The substitution of one practice for another could

also give rise to significant benefits, especially in cases where the sponsor wishes to employ more natural restoration methods. Where local entities wish to install more expansive or different measures, NRCS funding and technical oversight would ensure the environmental and social defensibility of the measure.

Disaster recovery work away from streams (Element #14) can lead to environmental benefits. By restoring floodplain deposition and upland areas, the areas below (floodplains, wetlands, riparian zones and aquatic communities) can realize benefits in water quality and habitat, as seen in Sections 5.2.3.2 and 5.2.3.3. Conversely, repairing these sites may discourage floodplain easements or other more natural land uses since a landowner can continue to farm the restored land.

Effects of Alternative 2 Changes on Easements

Improved disaster readiness (Element #6), as described above under *Execution of Practices*, may provide additional environmental benefits. In addition to the positive impacts listed, disaster-readiness training, coordination, and planning may 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 per decade (Element #8), as presented above, would likely encourage floodplain easement purchase of repeatedly damaged sites.

Simplification of agricultural floodplain easement purchase (Element #11) would provide some benefits and some detrimental effects, as discussed in Section 5.2.5.1. The elimination of Category 1 removes 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 (Element #15), as analyzed in Section 5.2.3.2, may provide significant environmental benefits. By removing developed land uses, the floodplain easement tract would be returned to a far more natural state and improved floodplain function.

Effects of Alternative 2 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.

3.4.1.2.3 Alternative 3 (Prioritized Watershed Planning and Management)

Alternative 3 would include all of the proposed changes described in Alternative 2, while also including *disaster-readiness and mitigation*, *prioritization of watersheds*, and *coordination of disaster planning with other stakeholders*. These three additional elements are linked to one another through a watershed-level management plan, and they can therefore be discussed jointly.

The total watershed management process of prioritization and disaster planning would yield significant environmental benefits. Using a locally led process, stakeholders would increase acceptance of environmental factors such as water quality and wildlife habitat, as well as ensure that unique environmental values in a particular watershed are considered. By ranking watersheds and focusing disaster planning in high priority areas, the cumulative impacts of the disaster/repair cycle that historically have typified these areas would begin to diminish, as short-term solutions are set aside in favor of longer term ones. Easement purchases and other longer term approaches would produce substantial environmental benefits, by changing land uses to restore natural floodplain functions, reducing the amount of recurring restoration work, and introducing management strategies that are more proactive in dealing with natural disasters instead of simply responding to them. The planning process would address much larger spatial and temporal scales for disaster impact prevention/mitigation and recovery, accounting for natural variability and processes. Although still secondary to the overall goal of protecting life and property, the process would include environmental considerations as important items, promoting improved watershed health in each of the ecosystem types. Cooperation with other programs would also serve to improve watershed health, as actions by the various stakeholders and agencies would be conducted to avoid overlapping or conflicting efforts, and with multiple goals in mind.

3.4.1.2.4 Alternative 4 (Preferred Alternative)

NRCS' Preferred Alternative (Alternative 4) includes many of the proposed changes and would cause environmental impacts similar to those described for Alternative 2, with some important exceptions. The impacts of the Preferred Alternative are described here in three general categories in parallel with the previous discussion of impacts of the Draft PEIS Proposed Action: Execution of EWP Recovery Practices, Easements, and Environmental Review.

Effects of the Preferred Alternative Changes on Execution of EWP Recovery Practices

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 ten years.

Improving disaster readiness (Preferred Alternative Element #6) should reduce adverse environmental impacts. Training would increase staff awareness of 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 were 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, and 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 that

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 Alternative 2 Proposed 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.

3.4.2 Comparison of the Impacts of the Alternatives on Watershed Ecosystems

Table 3.4-3 presents an overall summary of the impacts differences between the alternatives. More detailed alternative comparisons are presented in the following sections on watershed ecosystems, human communities, and cumulative impacts.

Sections 3.4.2.1 to 3.4.2.4 compare the impacts of the alternatives on aquatic, riparian, floodplain and wetland ecosystems. The discussion is based on proposed changes in debris removal, streambank restoration, and dam, dike, and levee repair practices, as well as on changes in floodplain easements across the alternatives. Section 3.4.2.5 discusses the implications of Program changes under the alternatives for the practices that would not change in terms of execution: protection of structures in the floodplain and critical area treatment and for proposed new practices that would be executed in the same way under Alternatives 2, 3, and 4: floodplain deposition removal, upland debris removal, repair of damaged conservation practices, and funding of improved alternative solutions.

Table 3.4-3 General Comparison of Impacts of EWP Alternatives

Impact	Alternative 1: No Action	Alternative 2: Draft PEIS Proposed Action	Alternative 4: Preferred Alternative	Alternative 3: Prioritized Management
Impacts on Aquatic, Wetland, Floodplains & Riparian Ecosystems	Greatest likelihood for local and downstream adverse effects due to continued use of armoring practices and limited use of floodplain easements	Reduced likelihood of adverse impacts due to emphasis on bio-engineering practices and broader use of floodplain easements	Reduced likelihood of adverse impacts due to emphasis on bio-engineering practices but more limited reductions from more limited use of floodplain easements than under Draft PEIS 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 floodplain	Use of non-agricultural floodplain easements encourages more restricted uses of floodplain, some older rural communities may be disrupted	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
Cumulative Impacts	Lowest likelihood of addressing watershed-wide effects—e.g., water quality	Increased likelihood of addressing watershed level effects—e.g., water quality, fisheries—using bio-engineering practices and more easements	Increased likelihood of addressing watershed level effects—e.g., water quality, fisheries—using bio-engineering practices and more easements	Greatest likelihood of planning for and addressing watershed level effects—e.g., water quality

3.4.2.1 Aquatic Ecosystem Impacts

Under Alternative 1, where no Program changes would be made, aquatic ecosystems (Table 3.4-4) would continue to benefit in the short term from restoration of channel capacity and reduction of bank erosion at EWP repair sites. The hydrology of disaster-damaged stream reaches would be restored and turbidity and sedimentation reduced, which would improve conditions for aquatic life in many respects. However, aquatic ecosystems would continue to be adversely affected in other ways, and in the longer term, as they have in the past, primarily due to the widespread emphasis on the use of armoring and removal of in-stream debris. These effects would not be offset Program-wide as much by the compensatory benefits of floodplain easements due to a lesser emphasis under this alternative on easement purchase. Generally, armoring practices, as well as repairs to levees, would continue to provide lower quality habitat for aquatic life, limit riparian vegetation growth, and redirect stream energy to downstream locations with potentially damaging consequences. Continued heavy reliance on armoring would continue to provide streambank stability at the damaged site and reduce erosion, but may also support increased flow velocities and increased turbidity in downstream reaches.

Table 3.4-4 Comparison of 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 retaining more in-stream debris and using restoration design based on the principles of natural stream dynamics. Benefits would accrue from increased use of 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 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, while 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 may 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 floodplain easement purchases may create contiguous floodplain areas, improving water quality on a large scale.

Table 3.4-4 (Continued) Comparison of 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 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.

Debris removal under the current Program would continue to consist in many cases of almost complete removal of all in-stream debris, which adversely affects aquatic communities by removing habitat, nutrients, and streamflow regulation.

Under the No Action alternative, floodplain easements would continue to be purchased under three categories and would have wide ranging environmental impacts, from closely approximating natural floodplain environments to continuation of intensive agriculture. Since, presumably, landowners would wish to continue to gain some income from use of their lands under easement, the likelihood is that a larger fraction of lands in floodplain easements would be cropped than would have the greatest use restrictions under Category 1, notwithstanding the lower easement price for lands that are cropped. Therefore, this alternative would carry with it the continued adverse impacts of cropped floodplain easement lands on water quality and aquatic ecosystems wherever those easements are purchased. [Note: Since 2001, as a result of a USDA Office of Inspector General (OIG) investigation, NRCS has operated the floodplain easement portion of the EWP Program by purchasing a single type of easement, restoration with compatible uses, which is category 2 under the previous EWP Rule categorization. This OIG-based change is fully consistent with the Preferred Alternative, Draft PEIS Proposed Action, and

Alternative 3 goal of simplifying easement purchases. Selection of the No Action alternative would be inconsistent with this OIG finding.]

Under Alternatives 2, 3, and 4, Program-wide training in and use of stream restoration design based on the principles of natural stream dynamics and floodplain easements would provide substantial benefits and reduce the severity of the types of adverse impacts to aquatic ecosystem that would likely continue to be seen under Alternative 1. Natural stream dynamics techniques employing natural structural materials and bioengineering would help restore sinuosity, regulate stream flow, create habitat, and improve water quality. Woody debris not posing any future threat may also be left in the stream to provide aquatic habitat. In combination with a greater focus on purchase of floodplain easements, natural streamflow conditions may be closely approximated in many watersheds and improvement in the quality of aquatic ecosystems likely would follow.

Under the Alternatives 2, 3, and 4, only one category of agricultural floodplain easement would be available, which would allow compatible uses such as grazing, haying or timber. While the most restrictive category of floodplain easement in terms of compatible uses would be removed, the least restrictive is also removed from the Program. In particular, this alternative would not have the potential for adverse impacts of cropped floodplain easements. Requiring a buffer strip on all floodplain easements and fencing on grazing floodplain easements will help to maintain or improve environmental conditions.

Under Alternative 3, planning and coordination at the local level would act to focus restoration efforts on high priority disaster-prone watersheds. Through watershed scale management, the benefits realized with restoration design based on natural stream dynamics, and purchase of floodplain easements could be amplified, as contiguous habitat areas and longer reaches of naturally flowing streams could be restored.

3.4.2.2 Riparian Ecosystem Impacts

Under Alternative 1, riparian communities and streambanks (Table 3.4-5) would continue to be adversely affected, again primarily due to reliance on armoring practices and continued levee repairs. While these practices do stabilize streambanks, the structures used limit or damage riparian vegetation, reduce the quality of habitat for aquatic and riparian species, redirect streamflow energy further downstream, and restrict natural floodplain function. Additionally, current methods for creating access and clearing and snagging may adversely affect streambank stability and habitat quality. Increased use of natural structural materials such as rootwads and revetments may mitigate these impacts. Easements would be eligible under each of the three categories and would continue to offer a range of benefits and adverse effects.

Under the Alternatives 2, 3, and 4, emphasis on stream restoration based on the principles of natural stream dynamics and increased floodplain easement purchases could provide considerable benefits for riparian communities. Natural stream dynamics techniques, use of natural structural materials, and bioengineering methods promote natural re-vegetation, dissipate

stream energy, establish aquatic and riparian habitat, and restore natural channel structure and morphology. Easements would serve to augment these benefits by restoring floodplain function.

Table 3.4-5 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.
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.

Table 3.4-5 (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 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.

Under Alternative 3, coordination and planning may result in contiguous segments of higher quality riparian habitat, as easements and design based on natural stream dynamics promote naturally flowing streams and the development of riparian habitat.

3.4.2.3 Impacts on Floodplain Ecosystems

Under Alternative 1, floodplain ecosystems (Table 3.4-6) would continue to be adversely affected. Armoring alters natural floodplain function and levees confine flood flows to the stream channel, protecting the lands behind them while preventing the development of natural floodplain function. Stream energy would continue to be channeled to downstream reaches and floodplain habitat would continue to be absent or underdeveloped. Easements would be eligible under each of the three categories and offer a range of benefits and adverse effects.

Under Alternatives 2, 3, and 4, inclusion of recovery measures to restore natural stream dynamics and an increased emphasis on easements would improve floodplain function, increase flood retention capabilities, and promote floodplain habitat.

Under Alternative 3, coordination and planning may lead to the establishment of large segments of contiguous, freely flowing stream and floodplain systems in priority watersheds.

Table 3.4-6 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.

3.4.2.4 Impacts on Wetland Communities

Under Alternative 1, wetland communities (Table 3.4-7) may continue to be adversely affected. Armoring and levee repair act to restrict stream hydrology and may limit the water available for wetland functions. Filtration, flood retention, groundwater recharge and wetland habitat functions may be affected. Easements eligible under three categories offer a range of benefits and adverse effects.

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 and hydrology. Easements would also likely restore wetlands and wetland functions, as periodic flooding would promote wetland growth and development.

Under Alternative 3, planning and coordination would likely lead to further improvements to wetland communities. Watersheds may be managed for natural stream flows, which may serve to establish and promote wetlands. This may also result in contiguous segments of wetland, which would augment the quality of habitat and filtration capacity.

Table 3.4-7 Comparison of Impacts to Wetlands

	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.

Table 3.4-7 (Continued) Comparison of Impacts to Wetlands

	Alternative 1: No Action	Alternative 2: Draft PEIS Proposed Action	Alternative 4: Preferred Alternative	Alternative 3: Prioritized Management
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.

3.4.2.5 Impacts of Other EWP Practice Changes

Protection of floodplain structures would be carried out as required under the EWP alternatives, regardless of which alternative is selected (See Table 3.4-8 above). However, the locally led process under Alternative 3 would provide the best forum for discussion and decision-making at the local level about placement or removal of infrastructure in the floodplain. Critical area treatment, too, would remain the same under all alternatives. See Table 3.4-8 for detailed impacts.

Floodplain deposition removal and repair of damaged conservation practices would be done under EWP in Alternatives 2, 3, and 4, and would benefit from the technical oversight of NRCS. Under the Preferred Alternative, floodplain deposition removal would be eligible only on lands not eligible for the ECP Program. Floodplain deposition removal may conflict somewhat with the goals of the EWP floodplain easement program by returning lands that would be likely candidates for floodplain easement purchase to agricultural use. Funding of improved alternative solutions would ensure that NRCS participates in design and environmental review of practice

installations that under the current Program would likely have been carried out without NRCS knowledge or oversight.

Table 3.4-8. 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 and Sediment and 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 by FSA under 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.

3.4.3 Comparison of the Impacts of the Alternatives on Human Communities

This section summarizes the impacts of the EWP Program alternatives on human communities. Brief descriptions of the findings of the impacts analysis for the different aspects of the socioeconomic environment in potentially affected communities under each alternative are given in Table 3.4-9.

3.4.3.1 Alternative 1: No Action Alternative

Continuation of the current Program would be expected to have an essentially minimal impact to the local economy of affected communities. Most of the proposed projects are relatively small in scope and, despite the smaller rural characteristics of most of the communities involved, the total dollar expenditures would not contribute substantially to the local economy.

Impacts to land use from implementation of the EWP Program would depend on the type of EWP practice installed and the speed with which the installation can be completed. The overall impact of practices that do not include the exercise of a floodplain easement would most likely be minimal. Where an easement is purchased, the previous use of the land would be altered and the value of any associated agricultural production from the affected acreage would be lost.

The structural practices used in the EWP Program are designed to restore the pre-disaster land use. The effect of the installed practices under this alternative would represent a benefit by restoring or protecting economically productive or residential properties that represent an asset to the community. EWP installed practices may result in the repair and protection of the land thereby restoring its previous value. However, this does not necessarily eliminate the need for further repair in the future. With respect to infrastructure and social resources and services, the effect of the Program is generally beneficial. Installed practices restore the previously existing condition and provide a measure of protection for important structures and resources. In some cases, visual impairment from installed practices may diminish the aesthetic quality or recreational experience associated with some properties, but in general the Program would not likely have a major adverse effect.

The primary direct effect would be beneficial in providing for the recovery of previously existing levels of service. Purchase of an agricultural floodplain easement in some cases may provide the additional benefit of protecting open space and improving the visual or recreational quality of an area. Provision of the sponsor's share of project cost may represent a serious adverse impact on some smaller, independent communities where support from county or State jurisdictions is absent. A corresponding strain on local resources may be evident, with the indirect effect of under-funding other important social efforts within the community. Because project defensibility under this alternative is based primarily on environmental and economic justification, some concern does exist from an environmental justice perspective. In socioeconomically disadvantaged areas, some property owners may be denied assistance because the cost of protecting the property is greater than the value of the property itself. However, the same project at the same cost may be justifiable in another area because property values are higher. This leads to a potential for disproportionately greater access to the benefits of the Program for more affluent communities and may be especially important in socioeconomically distressed or minority communities.

3.4.3.2 Alternative 2: Draft PEIS Proposed Action

In general, the elements of the Draft PEIS Proposed Action would be generally beneficial to affected human communities. The potential impact of the installation of engineered solutions at individual project sites does not substantially differ from that under the no-action alternative.

Expansion of the floodplain easement option to include non-agricultural and improved land would likely increase the potential for disruption of local communities or neighborhoods by the displacement of residents, but it also represents an opportunity for the community to reduce the impact of natural disasters and the associated recovery cost, especially on improved properties.

Expansion of the defensibility criteria for the project would substantially increase access to potentially beneficial effects of the project for socially disadvantaged or minority persons who may have been previously excluded. Similarly, the provision for funding up to 90 percent of the cost of EWP projects in limited resource communities also decreases the potential burden on these communities and has the effect of increasing potential access to Program benefits.

However, several proposed changes under this alternative would influence the overall impact of the Program on the human social environment and may alter the proposed solutions or the manner of participation for affected communities. Program modifications in funding, priorities, and floodplain easement purchase would create the potential for change. Additionally, the Draft PEIS Proposed Action allows for greater opportunities for cooperation with local land use plans. Where floodplain easements are purchased, there is some possibility that the easements could become part of an area's comprehensive plan for growth, by meeting a portion of the need for functional open space for the community.

Elimination of the exigency designation and the installation of a new priority ranking system would be expected to have some influence on this capability. Implementation of the priority ranking system could result in the delay or denial of protection to certain properties that may have been otherwise protected under the old system. However, the provision to provide additional financial support to areas designated as "limited resource" would have the effect of encouraging EWP participation by communities that might not otherwise have access to the Program. As an environmental justice issue, this provision reduces the potential for disproportionate access to Program benefits for socio-economically disadvantaged communities that may have previously failed to repair damage because the provision of the sponsor's share of the project cost represented too great a burden on available public funds. Inclusion of criteria for social defensibility, in addition to the economic and environmental defensibility criteria that are part of the current Program, also has implications for the consideration of environmental justice. By establishing a social rationale based on the utility of the property to the landowner, the proposed action includes a category of participant who might otherwise have been left out of the current Program, especially in circumstances where the economic value of a property may be low or difficult to calculate.

Table 3.4-9 Impacts of the EWP Program Alternatives on 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. However, repair of impairments to agricultural land potentially restores productive property to the community.	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. However, repair of impairments to agricultural land potentially restores productive property to the community.
Infrastructure	Repair and protection of previous capability, infrastructure; restores service to community. Potential benefit from the restoration of the natural floodplain.	Effects would be similar to those under the No Action Alternative.	Effects would be similar to those under the No Action Alternative.	Increased emphasis on total system maintenance could help improve infrastructure services and may mitigate threats of sudden impairment.
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.

Table 3.4-9 (Continued) Impacts of the EWP Program Alternatives on Human Communities

	Alternative 1: No Action	Alternative 2: Draft PEIS Proposed Action	Alternative 4: Preferred Alternative	Alternative 3: Prioritized Management
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 floodplain 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 floodplain 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.
Demographics	Existing community would be maintained, but some potential indirect change from in or out migration in response to level of perceived risk.	Purchase of easement may alter population mix by displacing current residents; however, existing community would be maintained in most cases.	Limited funding of buyouts of small flood-prone rural communities may alter population mix by displacing current residents; however, existing community would be maintained in most cases.	Purchase of easement may alter population mix by displacing current residents; however, existing community would be maintained in most cases.
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 break up 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.

3.4.3.3 Alternative 3: Prioritized Watershed Planning and Management

The primary effect of the proposed watershed planning and management approach proposed under this alternative is the proactive benefit of allowing watershed planning on a macro scale. Where this alternative would continue to provide funding and technical assistance similar to that proposed under the Draft PEIS Proposed Action alternative, similar impacts would be anticipated. However, the incorporation of pre-disaster planning and management of the watershed on a macro scale provides a greater understanding of a land use vision for the

community. The integration of watershed planning into the process enables environmental concerns to be addressed as part of the community's long-term growth strategies. An integrated approach to program management allows for more efficient use of capital resources and the economic potential of the watershed, while minimizing adverse environmental effects. Some potential for loss of existing community resources may be possible, but this is offset by the increased availability of watershed related recreational, educational, or other uses. An important beneficial effect associated with this approach concerns the involvement of multiple program authorities, local and State agencies, and stakeholders in the process.

Proactive use of floodplain easements in a planned approach would minimize potential problems associated with reliance on a project-by-project approach, especially where neighboring or adjoining properties are volunteered for the Program at different times and under differing circumstances. Where easements are purchased, there is the potential that open spaces can be planned as integral components of the area landscape. Similar to the Draft PEIS Proposed Action alternative, purchase of improved lands floodplain easements could alter the composition or structure of the community by displacing current residents. Easements could also alter the existing land uses or may result in the breakup of residential networks. These potentially adverse effects may be offset, however, by the more effective use of floodplain easement purchases as a part of a longer-term flood management and watershed planning approach and could reduce Federal funding outlays in the long-term.

3.4.3.4 Alternative 4: EWP Program Improvement and Expansion under the Preferred Alternative

In general, as was the case under the Draft PEIS Proposed Action, implementation of the Preferred Alternative would be beneficial to affected human communities. The potential impact of the installation of engineered solutions at individual project sites does not substantially differ from that under the No Action alternative. Expansion of the floodplain easement option to include improved lands and limited funding of buyouts of small flood-prone rural communities would likely increase the potential for disruption of local communities or neighborhoods by the displacement of some residents, but it would also present an opportunity for the community to reduce the impact of natural disasters and the associated recovery cost on improved properties.

Expansion of the defensibility criteria for the project could substantively increase access to potentially beneficial effects of the project for socially disadvantaged or minority persons who may not previously have been able to take advantage of the Program. Similarly, the provision for funding up to 90 percent of the cost of EWP projects in limited resource communities also decreases the potential burden on these communities and would have the effect of increasing potential access to Program benefits.

However, several proposed changes under this alternative would influence the overall impact of the Program on the human social environment and may alter the proposed solutions or the manner of participation for affected communities. Program modifications in funding priorities and floodplain easement purchase under the Preferred Alternative would create the potential for change. Additionally, the Preferred Alternative allows for greater opportunities for cooperation

with local land use plans. Where easements are purchased, there is some possibility that the easements could become part of an area's comprehensive plan for growth, by meeting a portion of the need for functional open space for the community.

Implementation of the priority ranking system could result in the delay or denial of protection to certain properties that might otherwise have been protected under the No Action alternative. However, the provision of additional financial support to areas designated as "limited resource" would likely encourage EWP participation by communities that might not otherwise have access to the Program. As an environmental justice issue, this provision reduces the potential for disproportionately lower access to Program benefits for socio-economically disadvantaged communities that may have previously failed to repair damage because the provision of the sponsor's share of the project cost represented too great a burden on available public funds. Inclusion of criteria for social defensibility, in addition to the economic and environmental defensibility criteria that are part of the current EWP Program, also has implications for the consideration of environmental justice. By establishing a social rationale based on the utility of the property to the landowner, the proposed action includes a category of participant who might otherwise have been left out of the current Program, especially in circumstances where the economic value of a property may be low or difficult to calculate.

3.4.4 Comparison of the Cumulative Impacts of the EWP Alternatives

CEQ regulations at 40 CFR 1508.7 define cumulative impact as *the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.* This section compares the cumulative impacts of the EWP Program alternatives at the watershed level, based on the analysis of the example watersheds, and at the national or Program level based on the general findings of the impacts analyses.

3.4.4.1 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, were minimal under all four EWP Program alternatives. However, in the East Nishnabotna River watershed, 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.

Because the requirements for protection of federally protected resources in watersheds are for the most part site specific, EWP restoration work may be one of the best ways to protect those resources that would otherwise be threatened. This is particularly true of cultural resources, where EWP work might not only remove threats to the property directly but also protect the environmental setting where the property is located. In the case of T&E species as well, EWP work may be a necessary part of habitat maintenance as a species recovers, although in the long

term, not desirable as a necessity to survival. In some instances, easements might provide a better solution for ensuring habitats are available that are conducive to a species' recovery.

Alternative 1 (No Action Alternative) would not change cumulative impacts from their present levels. For aquatic resources, there would continue to be minor turbidity, sedimentation, and flow altering effects from restoration practices. These effects would add in 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.

Human communities like the City of Buena Vista 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 flood work by the USACE and NRCS at Buena Vista have combined to help sustain the viability of the community in the face of repeated 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 that 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.

Alternative 2 (the Draft PEIS Proposed Action) involves EWP Program improvement and expansion. 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, 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 slightly different mix between agriculture and other uses as floodplain easement lands increase.

Table 3.4-10 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. Substantively expanded easement program would improve 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. Substantively expanded easement program would improve this situation in priority watersheds
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. Substantively expanded easement program would improve 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. Substantively expanded easement program would improve this situation in priority watersheds.
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 in small rural communities. 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.

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 floodplain easements would help maintain watershed integrity. NRCS and other technically cognizant agencies would need to take adequate steps during the locally-led conduct 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.

Alternative 4, the Preferred Alternative, involves many of the EWP Program improvement and expansion elements discussed under Alternative 2, and thus would cause many of the same 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 repair of enduring conservation practices. 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.

3.4.4.2 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 (see Table 3.4-11). Without the Program, both would be in jeopardy nationally.

Table 3.4-11. Summary and Average EWP Program Accomplishments, 1998 – 2003

		Average per	
General	**1998-2003 Total:**	**Year**	**Event**
Events (number)	462	77	
Number of sites	9,446	1,574	20.45
Costs* (thousands):			
Technical Assistance	61,463	15,366	133.04
Financial Assistance	279,990	69,998	606.04
Local Contribution	94,574	23,644	204.71
Floodplain Easements	98,972	24,743	214.23
Total Costs (million $):	$ 535	$ 134	$ 1.16
Benefits			
Outcomes (protected)			
Public buildings (number)	1,840	307	3.98
Private buildings (number)	183,422	30,570	397
Roads (miles)	13,305	2,218	29
Utilities (number)	2,352	392	5
Value of property (million $)	$ 11,305	$ 1,884	$ 24
Outputs			
Debris removed (thousand feet)	24,132	4,022	52.23
Streambank stabilized (thousand feet)	1,793	299	3.88
Land protected (thousand acres)	11,375	1,896	24.62
Easements purchased (thousand acres)	111	19	0.24
Public benefited (thousand)			
Elderly	2,328	388	5.04
Minorities	1,449	242	3.14
Other	2,328	388	5.04
Total Public Benefited	6,106	1,018	13.22
Total Benefits* (million $):	$ 1,587	$ 264	$
Benefit/Cost Ratio:	2.97		

*in 2003 dollars

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.

3.5 EWP PROGRAM MITIGATION

According to the CEQ NEPA regulations at 1508.20, mitigation includes:

- Avoiding the impact altogether by not taking a certain action or parts of an action
- Minimizing impacts by limiting the degree or magnitude of the action and its implementation
- Rectifying the impact by repairing, rehabilitating, or restoring the affected environment
- Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action
- Compensating for the impact by replacing or providing substitute resources or environments.

3.5.1 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.

3.5.2 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.

3.5.3 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.

3.5.4 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 fee 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.

3.5.5 Mitigation for Cultural Resources

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 or 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 any cultural resources present will mitigate adverse impacts.

Chapter 4
AFFECTED ENVIRONMENT

Affected Environment—The environmental impact statement shall succinctly describe the area(s) to be affected or created by the alternatives under consideration. (40 CFR 1502.15).

The environment affected by the Emergency Watershed Protection Program is comprised of the portions of watersheds of the United States that have been impaired by natural disasters over the years to such an extent that life or property is threatened. The impaired conditions that trigger the EWP Program make it fundamentally different from most other Federal programs because other programs are usually undertaken in relatively undisturbed environmental conditions. This chapter describes the aquatic, floodplain, wetland, riparian, and upland ecosystems of the U.S. watersheds, focusing on characteristics that indicate their general condition or health. These characteristics are used to evaluate the effects of natural disasters and of the EWP Program. The chapter then describes the characteristics of human communities in U.S. watersheds, focusing on the rural communities most likely to be affected by EWP Program activities. The chapter briefly describes typical EWP practice sites, floodplain easement sites, selected human communities, and watersheds that are used as examples of the environmental consequences of the EWP Program in the impacts assessment in Chapter 5.

4.1 OVERVIEW OF THE AFFECTED ENVIRONMENT

The environment affected by the EWP Program consists of the portions of the watersheds of the U.S. states 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 all of those of the 50 states and territories except coastal areas (including beaches, dunes, and coastlines) and Federal lands. Although EWP Program work can be performed in virtually any watershed location, a typical EWP Program restoration site is in the upper reaches of a relatively small watershed, in a rural area, or rural outskirts of an urban area. There are exceptions to this general rule, as in the case of the 1993 Upper Mississippi floods, when the EWP Program assisted in the recovery effort in many different ways, such as repairing mainstem river levees.

This PEIS addresses the impacts of the EWP Program on watershed aquatic, floodplain, wetland, and riparian ecosystems. It also addresses the impacts of certain practices, such as critical area treatment and upland debris removal, on watershed upland ecosystems. The analysis is based on the potential for both adverse and beneficial changes in the watershed ecosystems. The PEIS addresses the conditions of these ecosystems before a disaster, in the aftermath of a disaster, and after the EWP Program practice or floodplain easement is installed. It covers current EWP Program restoration practices and easements as well as proposed practices and easements.

The condition of aquatic habitats is characterized using EPA's bioassessment protocols based on aspects of in-stream habitat and channel morphology. Water quality and pollutants are also

addressed in classifying habitats according to how well they support aquatic communities, including T&E species. Similar classifications are for the before-disaster, after-disaster, and after-EWP Program conditions of floodplain, wetland, riparian, and upland watershed ecosystems. The evaluation of impacts incorporates analyses of the environmental effects of Program practices at example project sites typical of EWP Program practices.

T&E species, their habitats, and areas designated by Habitat Conservation Plans (HCPs) are federally protected and site-specific in occurrence. They are addressed before implementation of every EWP project, and they are protected, as appropriate, on a case-by-case basis. They are not 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 human communities potentially affected by the EWP Program include the economic, social, cultural, and recreational resources. These aspects of rural communities nationwide are described, and then example communities where substantial EWP work has recently been carried out are also described. The selected rural outskirts, small towns, and rural agricultural locations typify the range of human communities where the EWP Program is called in to deal with threats to life and property.

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.

The cumulative impacts of EWP Program projects and other watershed activities are described using selected minor watersheds (USGS 12-digit watersheds) and major watersheds (8-digit USGS hydrologic units).

Twenty-three individual practice or floodplain easement sites were selected in 14 watersheds (Table 4.1-1) to represent typical impairments and EWP Program practices. Of the locations (Fig. 4.1-1), 6 were chosen to represent the range of affected human communities, and 3 were selected to illustrate cumulative effects throughout the watershed.

Fig. 4.1-1. Watershed Impairment Sites Used as Examples in the Analysis of EWP Program Impacts (WS = watersheds used in cumulative impacts analysis)

Table 4.1-1 Watersheds and Project Sites Where Potential Ecosystem, Human Community, and Cumulative Impacts are Addressed in the PEIS

8-digit Watershed (code)	Site(s)/Location	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.

Table 4.1-1 (Continued) Watersheds and Project Sites Where Potential Ecosystem, Human Community, and Cumulative Impacts are Addressed in the PEIS

8-digit Watershed (code)	Site(s)/Location	Restoration Practices or Easements	Affected Human Communities	Cumulative Impacts Affected Area
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	
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		

4.2 ECOSYSTEMS AFFECTED BY THE EWP PROGRAM

The primary objective of the EWP Program is to remove threats to life and property posed by sudden watershed impairments resulting from natural disasters. The environment affected by the EWP Program's restoration practices and easements is comprised of the watersheds of the U.S. states and territories where life and property are potentially at risk from natural disasters. This definition of the Program's affected environment is important in two respects. First, it includes virtually all U.S. watersheds with a few exceptions. Second, it focuses on where the natural environment intersects with human uses and communities. Natural disasters can, and do, alter watershed characteristics rapidly and radically. However, where there are no human uses or communities that would be affected by the sudden watershed impairment, there is no threat to human life or property, and the Program would not be involved.

Federal lands not managed by the USFS and coastal areas subject to ocean wave action, including along the Great Lakes, are the only watersheds not covered by the Program. These exceptions are generally the main stems of major rivers and the cities and towns on their riverbanks. Damages to these localities are routinely handled by the USACE and FEMA, although NRCS may be requested to assist when widespread Presidentially-declared disasters occur.

This chapter presents an overview of the natural environments of watersheds and of the human communities where disasters threaten life and property.

4.2.1 Watershed Characteristics

The dynamics of watersheds and their ecosystems are the subject of extensive research and management efforts by Federal, State, and local government agencies, academia, and environmental groups. The analysis of EWP Program impacts on watershed environments in this PEIS is based on current understanding of the principles of watershed science.

4.2.1.1 Watershed Identification

Hydrologic units (HU) comprise a hierarchical coding system developed by the U.S. Geological Survey that divides the United States and the Caribbean into 21 major resource regions (2-digit units), 222 sub regions (4-digit units), 352 accounting (6-digit) units, and 2,150 8-digit cataloguing units (Fig. 4.1-1). The 8-digit units delineate river basins with drainage areas usually greater than 700 square miles (USGS, 1999) and are the basis for the:

- Watershed health data compiled by EPA
- Prioritized watershed planning and management described for EWP Program Alternative 3
- Large watershed cumulative impacts analysis of this EWP PEIS (red arrows on Fig. 4.2-1).

Smaller (11-digit and smaller) watershed subunits and reaches of 8-digit hydrologic units are the context for the smaller watershed EWP Program cumulative impacts analyses.

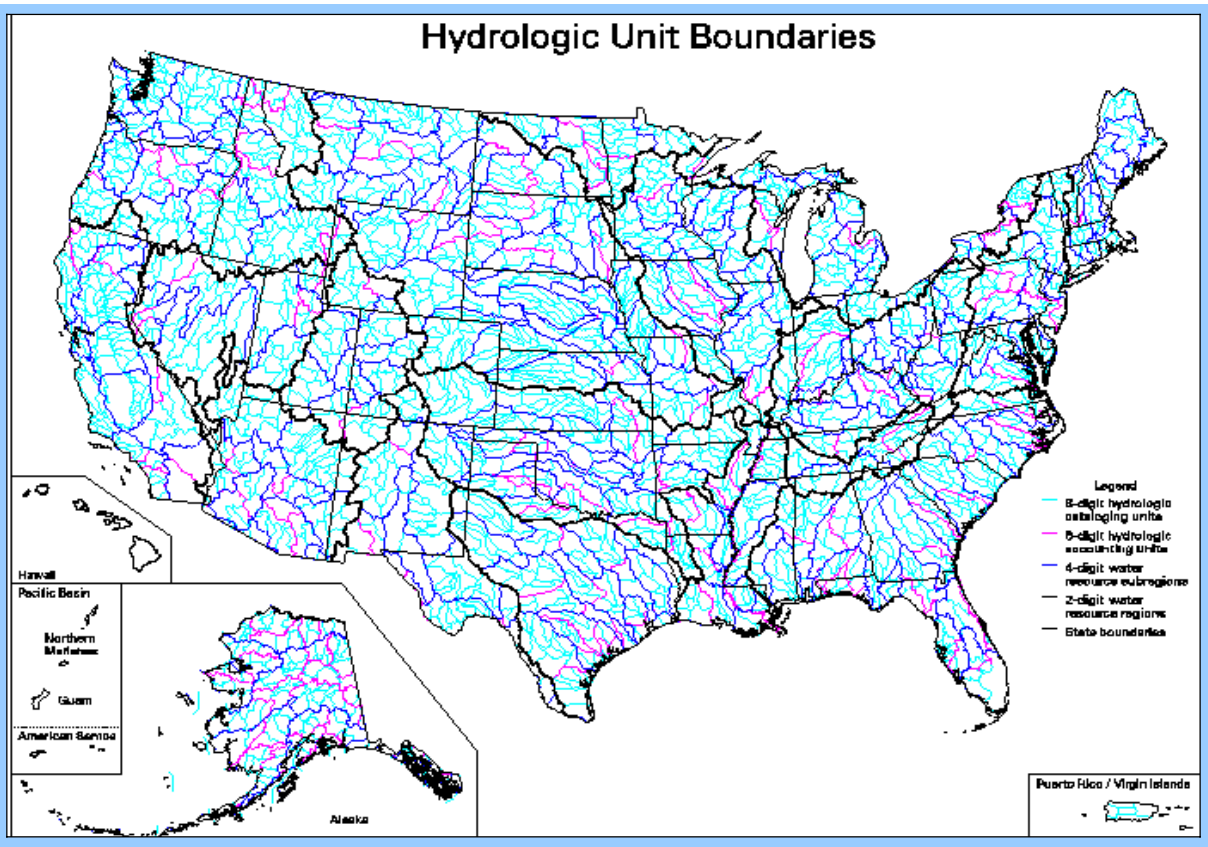


Fig. 4.2-1 U.S. Watersheds—Hydrologic Unit Boundaries based on the U.S. Geological Survey HUC System

4.2.1.2 Watershed Ecosystems

This section describes the important aspects of watershed aquatic, floodplain, wetland, and riparian ecosystems that potentially would be affected by the EWP current and proposed restoration practices. It describes important aspects of watershed upland ecosystems that might be affected by certain practices such as critical area treatment and upland debris removal.

4.2.1.2.1 Watershed Aquatic Ecosystems

For the purposes of the PEIS, the NRCS Interdisciplinary Team first considered the importance of the Program interactions of components of aquatic ecosystems that are affected by disasters with EWP Program practices. Then, the team adopted a categorization scheme to evaluate and describe Program impacts. It used an impacts network adapted from the methods of the NRCS (1977) and Sorenson (1971) as described in Canter (1996). EWP Program practice components generate impacts to and among living and non-living aquatic community components as diagrammed in Appendix B. These causal flow diagrams were reviewed and revised to ensure that all of the important components and their relationships were correctly specified. Questions were formulated to serve as comprehensive checklists for the review of the impacts analysis. To

focus the PEIS analysis on potentially significant impacts and to ease the presentation for the reader, the NRCS Interdisciplinary Team classified aquatic ecosystems according to their condition (Table 4.2-1). This classification allows a concise treatment of the range of different aquatic environments potentially affected by the Program. The classification is based largely on the EPA *Rapid Bioassessment Protocols for Use in Wadeable Streams and Rivers: Periphyton, Benthic Macroinvertebrates, and Fish* (EPA, 1999e). It facilitates the discussions of the before-event conditions of aquatic ecosystems, how they are affected by disasters, how they are affected by EWP Program practices, and how the changes proposed under the Program alternatives would alter those effects.

4.2.1.2.2 Riparian, Wetland, and Floodplain Ecosystems

Floodplains, terraces, and other features of stream systems are formed primarily through erosion, transport, and deposition of sediment by stream flow. Near-stream areas provide much of the energy for stream systems by contributing coarse particulate organic matter (CPOM). As outlined previously, riparian and floodplain areas serve an integral role in a stream's production of energy, especially in lower order streams. Floodplains and riparian systems also aid in controlling the sediment and nutrient loads of a system. The vegetation in these areas filters runoff before it reaches the aquatic environment.

The team addressed these near-stream ecosystems in the same way it addressed aquatic ecosystems. First, the basic components of the ecosystems and their interrelationships were identified in flow diagrams (Appendix B) and linked to activity components of EWP Program practices, with questions then prepared. Then, condition classifications using important aspects of the ecosystems (Tables 4.2-2 to 4.2-4) were created to focus and simplify discussions. Condition parameters were chosen to reflect habitat values important to maintaining these environments and, as important, the role the environments play in determining the condition of the aquatic systems in their watershed and the effects of disasters on aquatic systems.

Table 4.2-1 Aquatic Ecosystems Condition Classes

Condition	Primary In-stream Habitat		
	***Epifaunal Substrate (Available Cover) High and Low Gradient**	***Embeddedness – High Gradient * Pool Substrate Characterization – Low Gradient**	***Velocity/Depth Regimes – High Gradient *Pool Variability – Low Gradient**
Optimal	Greater than 70% (50% for low gradient streams) of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are not new fall and not transient).	High Gradient - Gravel, cobble, and boulder particles are 0-25% surrounded by fine sediment. Layering of cobble provides diversity of niche space. Low Gradient – Mixture of substrate materials with gravel and firm sand prevalent; root mats and submerged vegetation common.	High Gradient – All 4 velocity/depth regimes present (slow-deep, slow-shallow, fast-deep, fast shallow). (Slow is <0.3 m/s, deep is >0.5 m/s). Low Gradient – Even mix of large-shallow, large-deep, small-shallow, small-deep pools present.
Suboptimal	40-70% (30-50% for low gradient streams) mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale).	High Gradient - Gravel, cobble, and boulder particles are 25-50% surrounded by fine sediment. Low Gradient – Mixture of soft sand, mud, or clay; mud may be dominant; some root mats and submerged vegetation present.	High Gradient - Only 3 of 4 regimes present (if fast-shallow is missing, score lower than if missing other regimes). Low Gradient – Majority if pools large-deep, very few shallow.
Marginal	20-40% (10-30% for low gradient streams) mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	High Gradient - Gravel, cobble, and boulder particles are 50-75% surrounded by fine sediment. Low Gradient – All mud or clay or sand bottom; little or no root mat; no submerged vegetation.	High Gradient – Only 2 of the 4 habitat regimes present (if fast-shallow or slow-shallow are missing, score low). Low Gradient – Shallow pools much more prevalent than deep pools.
Poor	Less than 20% (10% for low gradient streams) stable habitat; lack of habitat is obvious; substrate unstable or lacking.	High Gradient - Gravel, cobble, and boulder particles are more than 75% surrounded by fine sediment. Low Gradient – Hard-pan clay bedrock; no root mat or submerged vegetation.	High Gradient – Dominated by 1 velocity/depth regime (usually slow-deep). Low Gradient – Majority of pools small-shallow or pools absent.

Table 4.2-1 (Continued) Aquatic Ecosystems Condition Classes

Condition	Channel Morphology		
	***Channel Alteration (High and Low Gradient)**	***Sediment Deposition (High and Low Gradient)**	***Frequency of Riffles (or Bends) – High Gradient *Channel Sinuosity – Low Gradient**
Optimal	Channelization or dredging absent or minimal; stream with normal pattern.	Little or no enlargement of islands or point bars and less than 5% (<20% for low gradient streams) of the bottom affected by sediment deposition.	High Gradient - Occurrence of riffles relatively frequent; ratio of distance between riffles divided by width of the stream <7:1 (generally 5 to 7); variety of habitat is key. In streams where riffles are continuous, placement of boulders or other large, natural obstruction is important. Low Gradient - The bends in the stream increase the stream length 3 to 4 times longer than if it was in a straight line. (Note - channel braiding is considered normal in coastal plains and other low-lying areas. This parameter is not easily rated in these areas.)
Suboptimal	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present.	Some new increase in bar formation, mostly from gravel, sand, or fine sediment; 5-30% (20-50% for low gradient) of the bottom affected; slight deposition in pools.	High Gradient - Occurrence of riffles infrequent; distance between riffles divided by the width of the stream is between 7 to 15. Low Gradient - The bends in the stream increase the stream length 2 to 3 times longer than if it was in a straight line.
Marginal	Channelization may be extensive; embankments or shoring structures present on both banks; and 40-80% of stream reach channelized and disrupted.	Moderate deposition of new gravel, sand, or fine sediment on old and new bars; 30-50% (50-80% for low gradient) of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent.	High Gradient - Occasional riffle or bend; bottom contours provide some habitat; distance between riffles divided by the width of the stream is between 15 to 25. Low Gradient - The bends in the stream increase the stream length 1 to 2 times longer than if it was in a straight line.
Poor	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. In-stream habitat greatly altered or removed entirely.	Heavy deposits of fine material, increased bar development; more than 50% (80% for low gradient) of the bottom changing frequently; pools almost absent due to substantial sediment deposition.	High Gradient - Generally all flat water or shallow riffles; poor habitat; distance between riffles divided by the width of the stream is a ratio of >25. Low Gradient - Channel straight; waterway has been channelized for a long distance.

*****Source: Barbour, et al., 1999. *U.S. EPA Rapid Bioassessment Protocols for Use in Wadeable Streams and Rivers: Periphyton, Benthic Macroinvertebrates, and Fish*. 2nd Edition. Office of Water, (EPA/841-B-99-002)

Table 4.2-1 (Continued) Aquatic Ecosystems Condition Classes

Condition	Water Quality			Pollutants	
	DO	Turbidity	Temperature (Examples presented for climates able to support low temperatures)	Contaminants (POLs/Metals)	Nutrients
Optimal	>7ppm	Low	Low, able to support salmonids, other cold water fish	Low – Very few occurrences	Low – moderate
Suboptimal	6-7ppm	Moderate	Moderately low, able to support some cool-water game fish	Low – Infrequent occurrences	Moderate
Marginal	4-6ppm	Moderately high	Moderate, able to support game fish	Low – more frequent occurrences	Moderate-high
Poor	<4ppm	High	High. Unable to support game fish	Frequent occurrences	High – eutrophic conditions

*****Source: Barbour, et al., 1999. *U.S. EPA Rapid Bioassessment Protocols for Use in Wadeable Streams and Rivers: Periphyton, Benthic Macroinvertebrates, and Fish*. 2nd Edition. Office of Water, (EPA/841-B-99-002)

Table 4.2-1 (Continued) Aquatic Ecosystems Condition Classes

Condition	Biota			
	Macro-invertebrates	Resident Fish (Examples presented for streams able to support sensitive game fish species)	Higher Plants/ Algae	T&E Species/ Habitat
Optimal	Stoneflies, mayflies, caddisflies, present	Salmonids/Cool water game fish present	Little vegetation; uncluttered look to stream	Excellent supporting conditions
Suboptimal	Some mayflies, caddisflies, Dragonfly nymphs, beetle larvae, damselfly nymphs, clams present	Cool-water game fish present; high diversity (Walleye Pike, etc.)	Moderate amount of vegetation	Adequate supporting conditions present
Marginal	Some damselfly and dragonfly nymphs, beetle larvae present	Warm water game fish present; High diversity (Large mouth Bass, etc.)	Cluttered, weedy conditions; seasonal algal blooms	Conditions favorable for some T&E species
Poor	Aquatic worms, leeches, midge larvae present	Few or no game fish (Suckers, Catfish, Carp dominate)	Choked, weedy, or heavy algal blooms; dense masses of algae on bottom	Inadequate temperature food, habitat conditions to support T&E species

Table 4.2-2 Riparian Habitat Condition Classes

Conditions	*Bank Stability (High and Low Gradient)	*Bank Vegetative Protection (High and Low Gradient)	*Riparian Vegetative Zone Width (High and Low Gradient)
Optimal	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	More than 90% of the streambank surfaces and immediate riparian zones covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.
Suboptimal	Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.	70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	Width of riparian zone 12-18 meters; human activities have impacted zone only minimally.
Marginal	Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.	50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Width of riparian zone 6-12 meters; human activities have impacted zone a great deal.
Poor	Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.	Width of riparian zone <6 meters: little or no riparian vegetation due to human activities.

*Source: Barbour, et al., 1999. *U.S. EPA Rapid Bioassessment Protocols for Use in Wadeable Streams and Rivers: Periphyton, Benthic Macroinvertebrates, and Fish*. 2nd Edition. Office of Water, (EPA/841-B-99-002)

Table 4.2-2 (Continued) Riparian Habitat Condition Classes

Conditions	Wildlife & Wildlife Habitat	T&E Species & T&E Species Habitat
Optimal	Diverse, high- density wildlife population and food source	Adequate food sources and habitat present to support T&E species, if present
Suboptimal	Moderate wildlife diversity; good habitat diversity; Adequate food sources	Moderate habitat and food sources available
Marginal	Moderately low wildlife diversity; lack of food sources to support higher-level wildlife populations	Lack of food sources to support T&E populations
Poor	Low wildlife diversity. Habitat unable to support wildlife populations (area affected by human activity, such as farming, urbanization, etc.)	Habitat unable to support T&E populations

Table 4.2-3 Wetland Condition Classes

Habitat Condition	Hydrology	Management	Vegetation
Optimal	Adequate storage for storm events; Slows peak velocities; allows for infiltration	No management needed to maintain quality OR is being managed continuously to maintain quality.	Diverse, dense. Provides an adequate nutrient filter.
Suboptimal	Adequate storage for storm events; Slows peak velocities; allows for infiltration	Little management needed to improve quality OR is being managed periodically to maintain quality.	Moderately Diverse. Adequately removes nutrients, pollutants from stormwater runoff.
Marginal	Minimally slows peak discharge	Moderate management needed to improve quality OR is being managed often to maintain quality.	Contains only a few species. Rather sparse; minimally aids in removing nutrients, etc.
Poor	Little or no ability to slow peak discharge	Substantial management would be needed to improve and maintain quality but is not being done.	Sparse. Does not provide a great deal of aid in removing nutrients, pathogens, etc.

Table 4.2-3 (Continued) Wetland Condition Classes

Habitat Condition	Habitat	Wildlife	T&E Species
Optimal	Diverse. Contains diverse vegetative and structural habitat.	Diverse. Adequate habitat and food sources available.	Habitat and food sources adequate to support T&E species.
Suboptimal	Moderately Diverse	Moderately Diverse. Adequate habitat and food sources available.	Habitat and food sources adequate to support T&E species.
Marginal	Less Diverse	Less Diverse. Habitat and food sources lacking for some organisms.	Habitat and food sources adequate to support only certain T&E species.
Poor	One dimensional	Habitat and food sources inadequate for many types of wildlife populations.	Habitat and food sources not adequate to support T&E species.

Table 4.2-4 Floodplain Condition Classes

Habitat Condition	Land Development & Uses	Hydrology	Vegetation
Optimal	Minimal development. Extensive timber or natural grasslands; low percentage of area is farmed; little to no impervious surface	Substantial storage for storm events; slows peak velocities; allows for substantial infiltration; little or no restriction of flood waters over floodplain	Diverse, dense. Provides an adequate nutrient filter
Suboptimal	Some development. Minor amount of impervious surface; substantial amount of natural cover; may have farming	Adequate storage for storm events; slows peak velocities; allows for moderate amount of infiltration	Moderately diverse. Adequately removes nutrients, pollutants from stormwater runoff
Marginal	Moderate development. Moderate area in impervious surfaces; may also have extensive farming	Minimally slows peak discharge. Restrictions on floodplain overflows along substantial portions of stream	Contains only a few species. Rather sparse; minimally aids in removing nutrients, etc.
Poor	Substantial development. Much area in impervious surface; farming may be moderate to major in importance	Minimally slows peak discharge. Major restrictions on floodwater flows over floodplain with levees, dikes, and dams	Sparse. Does not provide a great deal of aid in removing nutrients, pathogens, etc.

Table 4.2-4 (Continued) Floodplain Condition Classes

Habitat Condition	Habitat	Wildlife	T&E Species
Optimal	Diverse. Contains diverse vegetative and structural habitat.	Diverse. Adequate habitat and food sources available; native species abundant; exotic/invasive rare.	Habitat and food sources adequate to support T&E species.
Suboptimal	Moderately Diverse	Moderately Diverse. Adequate habitat and food sources available; native species common; exotic/invasive uncommon.	Habitat and food sources adequate to support T&E species.
Marginal	Less Diverse	Less Diverse. Habitat and food sources lacking for some organisms; native species uncommon; exotic/ invasive common.	Habitat and food sources adequate to support only certain T&E species.
Poor	One dimensional	Habitat and food sources inadequate for many types of wildlife populations; native species rare; exotic/invasive abundant.	Habitat and food sources not adequate to support T&E species.

4.2.1.2.3 Watershed Upland Ecosystems

As with aquatic, riparian, wetland, and floodplain ecosystems, the NRCS addressed the impacts of disasters and EWP Program practices on watershed uplands using the impacts flow diagram analysis and condition classification. (A flow diagram and question set are in Appendix B). The condition classification is presented in Table 4.2-5. Condition parameters were chosen to reflect habitat values important to maintenance of upland environments and, as important, the role uplands play in determining the condition of the aquatic systems in their watershed and in determining the effects of disasters on aquatic systems.

Table 4.2-5 Watershed Upland Condition Classes

Condition	Slope/ Stream Gradient	Soil Erosion Potential	Land Use/ Development	Vegetation	Wildlife	T&E Species
Optimal	Level to moderate	Low	Most land in natural cover	Extensive forest or native grass stands	Few or no introduced species; native wildlife relatively abundant	Good habitat to support presence and recovery
Suboptimal	Low gradient to moderately steep	Low to moderate	Substantial to moderate amount of land in natural cover	Substantial forest or native grass stands with corridor farming or development	A number of introduced species; native wildlife relatively common	Some habitat to support presence little to support recovery
Marginal	Low gradient to moderately steep	Moderate	Some natural cover; substantial land farmed or developed	Some forest or native grass stands in corridors with major farm or developed land	A number of introduced species; native wildlife relatively uncommon	Little habitat to support presence or recovery
Poor	Moderate to steep	Moderate to high	A high proportion of land farmed or developed or naturally damaged	Few or no forest or native grass stands or extensive invasive vine growth	Many introduced species; Native wildlife relatively rare.	Little habitat to support presence none to support recovery

4.2.1.3 Watershed Health

EPA provides in-depth data on national, regional and individual watershed health. The agency analyzed a series of data layers, which include indicators such as the number of aquatic species at risk, human population change, and drinking water quality. EPA uses 16 data layers (the Index of Watershed Indicators, or IWI) to formulate a single Overall Watershed Characterization—1 for a healthy watershed, and 6 for an imperiled watershed. These watershed indicators were used to characterize the health of EWP Program example watersheds in the

analysis of cumulative impacts of the EWP Program. The 16 measurements (Table 4.2-6) characterize the condition (the current health of a watershed) and vulnerability (potential impact of future stressors, such as pollutants) of a watershed. Both condition and vulnerability are described as good, moderate, or poor, or the data on a watershed may be insufficient. Detailed descriptions of each measurement are from the EPA website and are available in Appendix D.

Table 4.2-6 Watershed Measurements Used to Characterize Watersheds

Watershed Measurement	Range of Ratings	Description of Ratings
Condition Indicators		
Designated Use	Critical, More Serious, Less Serious, Better	< 20%, 20-50%, 50-80%, 80-100% Meeting All Uses, Insufficient Assessment Coverage
Fish & Wildlife Consumption Advisories	More Serious, Less Serious, Better	Monitored with No Active Advisory, One or More Advisories—Limits Fish Consumption, One or More Advisories—No Fish Consumption, No Recorded Monitoring or Advisories
Source Water Indicators	More Serious, Less Serious, Better	No Significant Source Water Impairment Identified, Partial Impairment Identified, Significant Impairment Identified, Data Threshold Not Met
Contaminated Sediments	More Serious, Less Serious, Better	Inconclusive Data, Moderate Degree of Concern, High Degree of Concern, No Data for Assessment
Ambient Water Quality-Toxic Pollutants	More Serious, Less Serious, Better	0-10%, 11-50%, <50% Observations in Exceedance of Selected Reference Level, Data Sufficiency Threshold Not Met
Ambient Water Quality-Conventional Pollutants	More Serious, Less Serious, Better	0-10%, 11-50%, <50% Observations in Exceedance of Selected Reference Level, Data Sufficiency Threshold Not Met
Wetlands Loss Index	More Serious, Less Serious, Better	Low, Moderate, High Level of Wetland Loss, Insufficient Data
Vulnerability Indicators		
Aquatic/Wetland Species At Risk	High, Moderate, Low	1, 2-5, >5 Species Known to be At Risk, No Recorded Data
Pollutant Loads Discharged-Toxic Pollutants	High, Moderate, Low	No DMR Requirements for All Discharges, No Aggregate Loads in Excess of Total, Up To 20%, More Than 20%, Average Load Over Permitted Limits, Insufficient Data for >10% of Major Dischargers or >50% of Minor Dischargers
Pollutant Loads Discharged-Conventional Pollutants	High, Moderate, Low	No DMR Requirements for All Discharges, No Aggregate Loads in Excess of Total, Up To 40%, More Than 40%, Average Load Over Permitted Limits, Insufficient Data for >10% of Major Dischargers
Urban Runoff Potential	High, Moderate, Low	0-1%, 1-4%, >4% Land Area Above 25% Imperviousness, Insufficient Data
Agricultural Runoff	High, Moderate, Low	Low, Moderate, High Level of Potential Impact, Insufficient Data
Population Change	High, Moderate, Low	Declined/No Change, 0-7% Increase, >7% Increase, Insufficient Data
Hydrologic Modification By Dams	High, Moderate, Low	Low, Moderate, High Volumes of Impounded Water, Insufficient Data
Estuarine	High, Moderate, Low	Low, Moderate, High Susceptibility, Insufficient Data/Non-coastal Watershed

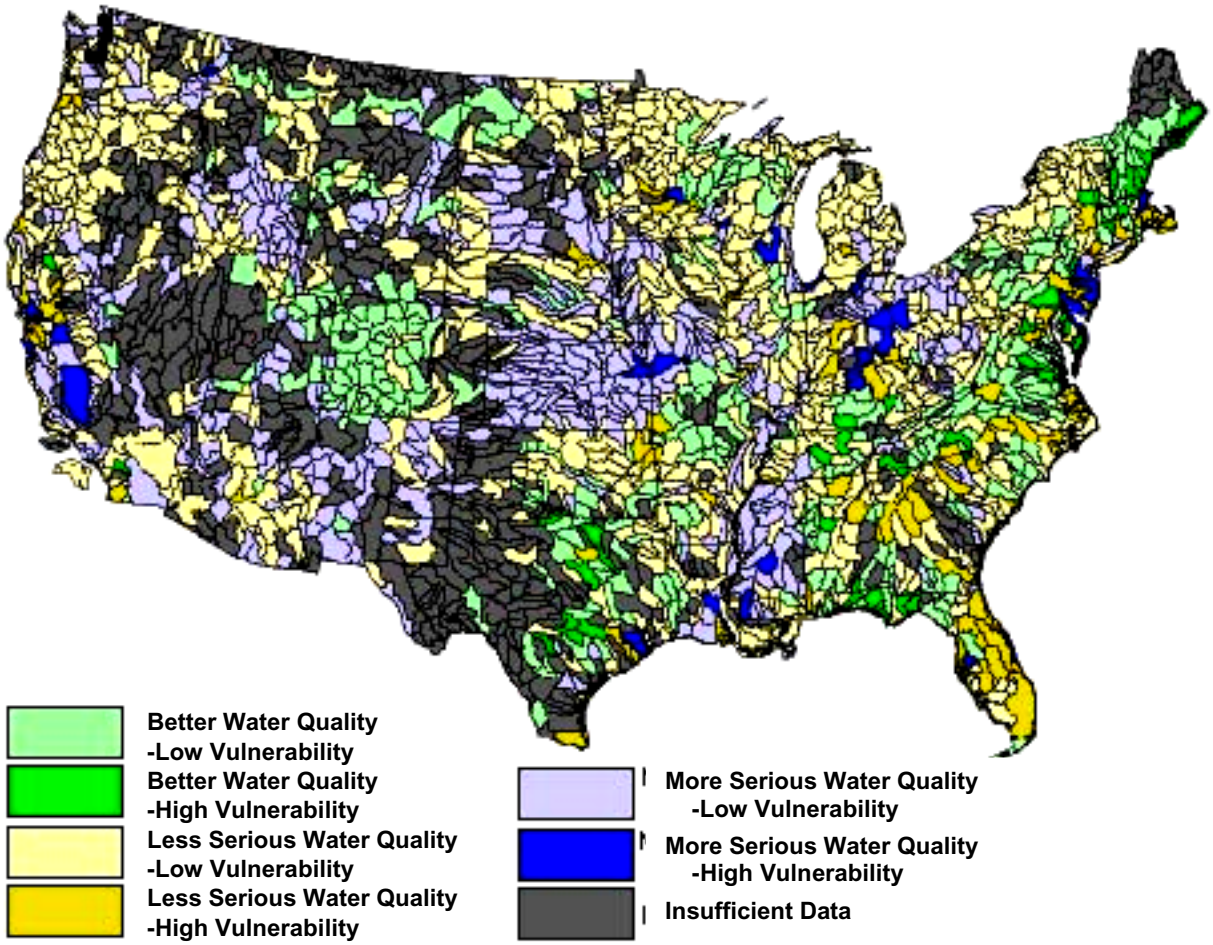


Fig. 4.2-2 EPA 8-digit HUC Watershed Ratings

EPA used a weighting methodology (see Appendix B) to construct the Overall Watershed characterization. The final product is a rating that accounts for 16 different variables, all of which indicate watershed health in a different way, summed into a single index of watershed health. This characterization resulted in six classes of watershed, with a seventh for insufficient data.

The classes, from healthy to imperiled watershed follow:

1. Watersheds with better water quality and lower vulnerability to stressors
2. Watersheds with better water quality and higher vulnerability to stressors
3. Watersheds with less serious water quality problems and lower vulnerability to stressors
4. Watersheds with less serious water quality problems and higher vulnerability to stressors
5. Watersheds with more serious water quality problems and lower vulnerability to stressors
6. Watersheds with more serious water quality problems and higher vulnerability to stressors
7. Watersheds for which insufficient data exists to assert condition or vulnerability

4.3 HUMAN COMMUNITIES AFFECTED BY THE EWP PROGRAM

The environment affected by the EWP Program includes those portions of the watersheds of the United States, including the 50 states and U.S. territories, associated with human communities or other human uses where life or property may be threatened by watershed impairments resulting from natural disasters. Natural disasters and their subsequent mitigation can affect a broad range of systems, structures, and activities within the human community. In addition to the immediate threat to human life and the potential for damage to land and associated property, natural disasters may have longer-term effects on the local or regional economy, infrastructure, the provision of social services to residents, or the structure, patterns, and quality of social life within a community.

The EWP Program can affect multiple aspects of a community and its social life. Immediately following a disaster (or where the threat of potential damage from a future disaster exists), a community's primary concern is to protect damaged infrastructure and housing, recover sources of employment and income, and to recover its economic structure (Vogel, 1999). Although the direct effect of EWP Program installed practices is to protect these vital elements of community life, the approach the Program takes in installing practices may also have important effects (both direct and indirect) on the community.

4.3.1 Characteristics of the Affected Environment

At the program-wide level, the affected environment is a generalization of the social characteristics of the communities addressed by the EWP program. Because most of the EWP Program practices are relatively small in scale, they directly affect a localized area, normally the size of a community. Indirect and cumulative effects, however, may extend to downstream communities as well. The human communities affected by the Program are also typically small and non-metropolitan in structure and social pattern.

Larger, metropolitan communities, which are normally associated with major transportation arteries such as main stem rivers, port facilities, and transportation routes, or with large commercial, production or administrative centers, are more likely to be addressed by FEMA or Army Corps of Engineers actions. These larger metropolitan communities are not typical of EWP Program activities. Furthermore, in these larger communities, the impacts of EWP activity in terms of potential effects on their economy, social fabric, and resources would invariably be "swamped" by the impacts of other economic, social, and related factors. Thus, substantial EWP impacts are extremely unlikely to occur.

4.3.2 Characteristics of Rural Communities

In contrast to metropolitan communities, rural areas are characterized by comparatively few people living in relatively large, less densely populated areas, with limited access to large cities, and a considerable travel distance to centers of employment or market activity (Hewitt, 1989). Rural government structures are generally smaller than their urban counterparts, and have

smaller financial resources per capita to address problems (Reeder, 1990). In 1990, rural areas included 83 percent of the nation's land area, 21 percent of its population, 18 percent of its employment, and contributed 14 percent of the national income (ERS, 1995). Based on data from the 1990 Census, some 2,288 individual counties in the U.S. can be classified as rural.

Program activities may also affect neighboring metropolitan areas. These larger metropolitan areas, thus, must also be considered as part of the affected environment. Metropolitan counties are defined as whole counties containing all or part of a designated Metropolitan Statistical Area (MSA). MSAs must include at least one city with a population of 50,000 or more inhabitants or an urbanized area with a total population of 100,000, or 75,000 in New England (GAO, 1993).

The rural communities affected by the EWP Program will vary in terms of their predominant economic activity, land use pattern, social structure, and administrative organization. This diversity and variation can be explained by a number of factors. Among these are the natural land forms, the relationships between physical components of the land, the political, technological, economic and social history of the region, the availability of resources and needed services, and the racial, ethnic and cultural composition of the population (McLelland, et al., 1995).

Regional variations in income level, poverty, and the size, density, and structure of the population are also important. Variations among communities may also depend on the proximity of the community to larger urban centers and the degree of economic and social integration between these centers and the rural community (ERS, 1995; Hewitt, 1989; Cromartie and Swanson, 1996). As a result, the susceptibility of individual communities to the effects of a natural disaster, and the importance of EWP activity to the continued maintenance and future development of the community, will be unique in each circumstance.

Several other important characteristics of the rural communities potentially affected by the EWP Program are important to the analysis of impacts. In recent years, rural communities have undergone what is frequently characterized as an economic restructuring (Reeder, 1990). Where agriculture was once the dominant defining rural characteristic, a single industrial mode, residential configuration, or lifestyle no longer defines the socioeconomic patterns of contemporary rural communities. Communities remain strongly influenced by their predominant economic activity, but manufacturing and service industries are now more important sectors of the rural economy. Rural communities have also become more popular as tourist and recreational centers and as residential areas for retirees and families (ERS, 1995).

One result of this restructuring process has been an increasing difficulty in maintaining the current residential and employment base and the attraction of new residents or business investment to the community. These communities have also experienced a drop in per capita income during the past two decades. As Leistritz (1998) notes, this significant loss of purchasing power through out-migration (and a general decline in employment opportunity resulting from productivity increases in primary sector industries such as agriculture and manufacturing) have reduced the communities' ability to mobilize residents and resources to address critical problems.

4.3.3 Socioeconomic Factors Identified for the Affected Environment

Rural communities are characterized by social and lifestyle patterns distinctively different from their metropolitan counterparts. The predominately rural character of the communities in the PEIS indicates that in addition to population, employment and economic effects, factors such as community history and social characteristics may also be important in the identification of potential impacts. The social environment of rural communities includes important emphasis on a sense of place and community.

Specific socioeconomic factors that may be considered important in such an analysis (Burdge, 1995; ICGP, 1994; Leistritz, 1994) include:

- The structure of the local economy including existing employment levels, the dominant economic activity of the area, and the value of potentially affected property
- Community Resources, including the patterns of natural resource and land use, the availability of housing and other land for production or investment purposes, and future community development plans
- The demographic characteristics of the local community, including population size, and composition as well as any socioeconomically sensitive population clusters
- Community/institutional arrangements, including provision of necessary services, organization of local government, and linkages to external systems
- Individual and neighborhood level characteristics such as residential stability, age of the built environment, residential networks, level of identification with the community, and the presence of significant cultural or religious institutions

These variables are used to assess the potential for impact to the social environment from EWP programs and are grouped in four categories:

1. Effects on Economic Structure (Business and the Local Economy)
2. Effects on Infrastructure, Public Health and Safety, and Community Resources
3. Effects on Community Structure and Social Patterns
4. Environmental Justice considerations

Impacts are presented in Chapter 5. A summary description for each of the impact areas is provided in Table 4.3-1 below.

Table 4.3-1 Summary of Human Community Impact Areas

Community Aspect (Impact Area)	Description
Economic Structure	
Employment and Income	Critical to the continuing viability of a community and its residents, sources of employment and income include business and commercial establishments that employ local residents and provide necessary services and products to the community, as well as individual farms and related agricultural industry, recreational or other economically productive resources. These may be affected either by the threat of potential damage due to a natural event or by project related expenditures for protection or restoration following the event.
Value and Quantity of Natural Resources	Defined economically as the stock of environmentally provided assets (land, soil, forests, minerals, water, fauna, wetland areas, etc.), natural resources represent the useful materials that are the raw input or consumable products of human production. Quantity and condition of natural resources are both important. Both are a source of investment income to the current owner and future investment in the community from outside sources. These assets may be damaged either by the natural event itself or by implementation of the proposed EWP practice.
Infrastructure, Public Health and Safety, and Community Resources	
Infrastructure	The basic and essential elements that support the modern community (i.e. water supply, waste treatment, transportation, or power systems). The existing supply and current or future demand for infrastructure elements may be affected both by the consequences of a natural disaster or the requirements of the EWP proposed practices implemented in the community or in the surrounding region.
Property	Residential housing, other important economic or culturally significant buildings or other structures may be important to the quality of life in the community. In the event of a natural disaster, the utility, or setting of these structures may be damaged. Similarly, the implementation of EWP practices would be expected to have a beneficial effect, but may in some instances alter the desired characteristics of these structures.
Public Health and Safety, and other Community Resources	The range of public revenue supported and other valued resources that may be required to support and maintain the quality of social life of the community, community resources can include public health, safety, and emergency response, social assistance, and educational and cultural facilities, as well as recreation and aesthetic facilities and landscapes, and basic services such as shopping, food, entertainment, etc. Disruptions resulting from a natural disaster, from the requirement to expend resources for disaster recovery, or during the construction of EWP installed practices may impair the quality of life for community residents.
Social Pattern and Structure	
Population Characteristics	The size and composition of the local population and any indication of its stability, racial and ethnic composition, poverty and income levels, or residence patterns may serve to define the community or influence the community's response to the proposed practice or to a given program alternative.
Land Use	Existing and planned future uses of the land area available to the community and the potential aesthetic quality or suitability of the land for certain community uses. The protection of existing land uses may be critical to a community affected by a natural disaster, whereas a more pro-active land use and growth management policy supported by EWP program alternatives may prevent or diminish losses as an alternative to simply reacting to the crisis resulting from the effects of a disaster.
Social Pattern and Structure	
Community & Neighborhood Social Patterns	The sense of community and prevailing attachment to culturally valued places may be significantly affected both by the natural disaster itself and in the implementation of the proposed EWP practice. Also important is reliance within the affected community on clubs or informal groups that provide support to residents, either economically or socially. This may also include important facilities such as churches, schools, community centers, etc, as well as commercial and retail outlets for basic services.
Environmental Justice	
Impact Equity	Executive Order 12898 requires that federal programs, including the EWP program, determine whether a proposed alternative would have a disproportionate impact on socioeconomically deprived or minority populations in the affected community. Impact may result from the specific EWP activity itself, or may be the result of denying access to program benefits or information about the proposed practice or contracting opportunities that may arise during the construction phase of the program implementation.

4.3.4 Rural Community Types used in the Analysis

In order to describe the potential socioeconomic effects of EWP projects, five rural types have been extrapolated to illustrate the typical structures of EWP project communities. For each of the five types, a specific community was selected as an example for characterizing socioeconomic impacts in Chapter 5. Results of the analysis of example communities can be generalized to other communities of the same type, under similar circumstances.

The rural community types identified for the socioeconomic analysis include:

- Individual or multiple farms in less densely populated agricultural areas (not defined as a community itself, but considered as a part of the larger community for purposes of evaluating non-physical effects)
- Rural, unincorporated, enclaves in predominately metropolitan counties (may include either communities or individual properties)
- Residential housing clusters in areas defined as rural, with populations under 500
- Census defined places including unincorporated villages and small communities in non-farm areas with populations of less than 5,000
- Incorporated cities in areas defined as rural, with populations over 5,000.

Six communities where EWP projects have been undertaken recently were identified for analysis as examples for the impacts analysis. These communities were selected to reflect important characteristics associated with each community type while also representing a varied sampling of EWP installed practices. Three of the six communities are also presented as a part of the cumulative effects analysis. Because floodplain easements represent a categorically distinct option that would not be appropriate in all settings, a separate analysis was conducted for three of the communities where easements would be considered likely possibilities. Similar to the impact analysis, the results can be generalized to other communities under like situations. A summary of the socioeconomic characteristics of each of the six communities is presented in Table 4.3-2.

Table 4.3-2 Socioeconomic Characterization of the Six Communities Identified for In-depth Assessment

Community (1) / Characteristic	Hall County, GA Bethel Rd., Community	Buena Vista City, VA	Boise, ID 8th St. Burn Area	Shenandoah IA Walnut Township Community	Rocky Run, VA	Rose River, VA
Community Type	Multiple Farms	Independent City in rural area	Rural portion of metro county	Incorporated rural community	Residential Cluster	Multiple Farms
EWP Practices	Debris Removal	Debris/ Cobble Removal	Critical Area Treatment	Levee Repair	Gabions & Rip-rap	Debris Removal

Table 4.3-2 (continued) Socioeconomic Characterization of the Six Communities Identified for In-depth Assessment

Community (1) / Characteristic	Hall County, GA Bethel Rd., Community	Buena Vista City, VA	Boise, ID 8th St. Burn Area	Shenandoah IA Walnut Township Community	Rocky Run, VA	Rose River, VA
Population size	2487	6406	14,579	1071	1181	5,672
Land Area (sq. mi.)	16.9	6.8	118.7	115.0	51.7	(1)
Rural population (%)	2487 (100%)	0.0	12.2	100	100%	100
Minority Composition (%)	19 (0.8%)	4.9	4.3	0.4	2.2%	13.6
Poverty (% at or below)	236 (9.7%)	14.4	6.5	14.2	10.3%	14.1
Per capita income	12198	$10,241	$22,200	$10,962	$11,088	$11,751
Total employment	1268	3149	7,764	474	658	2,660
Principal Economic Sectors	Service	Manufacturing, Trade, Construction	Trade, Services Manufrg.	Agriculture, Services, Trade	Manufrg, Trade Agriculture	Manufrg, Services, Trade
Housing – Median Year Constructed	1978	1957	1971	1939	1969	1966
Housing – Median value	$88,600	$43,300	$97,600	$32,500	$55,700	$70,200
Housing – Lived in same house since 1985	50.00%	62.6	47.0	73.0	71.7%	62%

Sources: U.S. Bureau of the Census: Census of Population and Housing, 1990, 1992 Economic Census, and 1992 Census of Agriculture

Notes:

(1) Represents the immediate community or a portion thereof that was directly affected by EWP action.

(2) Not determined for this community

4.4 WATERSHEDS EVALUATED FOR EWP CUMULATIVE IMPACTS

EWP Program practices carried out on sudden impairments in three example watersheds – the Buena Vista-Maury in Virginia, the Eighth Street Burn Area-Lower Boise in Idaho, and the East Nishnabotna in Iowa –were chosen for cumulative impact analysis (Table 4.4-1). They were selected because they illustrate the range of possible EWP Program practice and easement situations. Therefore, an intensive analysis for cumulative impacts was preferable to a more cursory examination of all 14 example-site watersheds. Buena Vista and Boise represented the use of Program practices in areas of potentially high interaction with a variety of land uses because of their urban settings and steep-slope environments. East Nishnabotna represented an almost totally agricultural land use context. (See Appendix D for a detailed description of each EWP practice site and the impacts of relevant disasters)

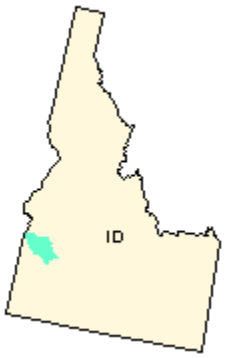
Table 4.4-1 Watersheds Evaluated for EWP Cumulative Impacts

Watershed (8-digit code)	Site(s)/Location	Restoration Practices or Easements	Affected Human Communities Analyzed	Cumulative Impacts Affected Area
Lower Boise (17050114)	8the Street Burn Boise Foothills north of Boise, ID	Critical Area Treatment of Major Burn Area in outskirts of Boise	Rural area located in a metropolitan county	Lower Boise River Watershed Ada Co.
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 Co.
	4 conservation practice locations in watershed	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.
	Riverton Easement Site, IA	Floodplain easement near Riverton		

In the Virginia and Idaho watersheds, both the immediate watersheds in which the EWP Program practices were carried out (USGS 12-digit watersheds) and the larger (8-digit) watersheds evaluated by EPA were considered relevant contexts for evaluation. The importance of setting watershed and resource boundaries in the cumulative impact analysis is discussed in Appendix B.

4.4.1 Boise, ID--8th Street Burn Area, Lower Boise River Watershed

4.4.1.1 Disaster Event



In the late summer of 1996, a wildfire burned 15,300 acres of the Boise foothills, severely impairing the area's ability to retard runoff. In the aftermath, it was estimated by the NRCS that little precipitation was needed to cause severe erosion and flooding in the floodplain within the City of Boise (BLM et al., 1996).

4.4.1.2 Site Description

The fire occurred in the region known as the Boise Front and was dubbed the "Eighth Street Burn". It contains approximately 15,300 acres of land in the Lower Boise watershed (HUC 17050114). Of that land, 4,180 acres is Bureau of Land Management (BLM) administered public land, 2,120 acres is state of Idaho land, 3,160 acres is Boise National Forest land, and the remaining 5,840 acres is split between private ownership and City of Boise and Ada County lands (BLM et al., 1996). A variety of EWP practices were installed in locations across the burned area to minimize the threat of severe erosion from subsequent rainfall events.

4.4.1.3 Human Community

The Boise Hills community is essentially rural in character (approximately 77 percent of the total acreage), but is located in a predominately metropolitan county (Cook and Mizer, 1989). A substantial rural population is contained in the areas surrounding Hulls Gulch and Crane Creek. This portion of the affected community has a considerably lower population density than other portions of the Boise Hills community. Median property values and per capita income are also noticeably lower than for the more suburban areas. Land uses include low to medium density residential, rural agricultural, and open space. Some commercial/industrial and mixed uses are also present in suburban areas closer to the City of Boise.

The northern neighborhoods and the downtown corridor within Boise are expected to benefit from EWP activity. These sections of the City include a combination of residential, commercial and some industrial properties, as well as a number of structures important to the social life of the community that might be affected in the event of a flood. Median values for housing differ substantially between the city and the surrounding region and are greatly influenced by location (NRCS, 1996). Both the City of Boise and the area affected by the 8th St. Fire have a stable population base with over 40 percent of residents living in the same house for more than five years (Census, 1992).

The regional community represented by the Lower Boise Watershed has a population base of approximately 144, 836 and includes all of Canyon and Ada counties, plus small portions of Boise and Gem Counties. The regional economy is predominately farming and manufacturing based.

4.4.2 Buena Vista, VA--Maury River Watershed

The City of Buena Vista is located in eastern Rockbridge County between the east bank of the Maury River and the west slope of the Blue Ridge adjacent to the George Washington and Jefferson National Forests. Through these forests drain four streams, eventually reaching the Maury River after passing through Buena Vista. These streams (from north to south) are Chalk Mine Run, Indian Gap Run, Noels Run, and Pedlar Gap Run.

4.4.2.1 Disaster Event

Downpours resulting from Hurricane Fran in September 1996 caused considerable damage along the streams mentioned above. Debris clogged stream outlets, resulting in the flooding of several areas of the City. Severe erosion along streambanks also threatened many homes and businesses.

4.4.2.2 Buena Vista Small Watershed and Maury River Watershed

The watershed comprises 11,850 acres: 8,900 acres of forestland (most of which is in the George Washington and Jefferson National Forests), 2,850 acres of urban land, and 100 acres of grassland (there is no cropland in the watershed). Ownership of land in the watershed is 74.3 percent Federal, 24.2 percent private, and 1.5 percent City. There are no dams on these four streams. No wetlands or threatened and endangered species have been identified in the watershed.

The Buena Vista watershed is a sub-basin of the Maury River Watershed (USGS HUC 02080202), which originates about 40 miles north of Buena Vista on the eastern slopes of the Appalachian Mountains. The Maury River has a drainage area of 835 square miles, of which 649 square miles are above Buena Vista and 184 square miles are downstream of the City (Rockbridge County, 1996).

4.4.2.3 Enduring Conservation Practice Sites in the Maury Watershed

The four enduring conservation practices represented are: a diversion, a waste storage pond, an embankment pond, and a grassed waterway. Each of these sites is fully functional and has not failed during their lifespan, even in the heavy rains that caused the severe flooding in Buena Vista. Therefore, hypothetical failures have been analyzed with available information about the sites and the possible environmental effects (Flint, 1999).

4.4.2.3.1 Diversion Site

The diversion is found on the Goodbar farm just to the south of the town of Denmark. The area is moderately steep, as it is part of the downward slope from Big House Mountain to Kerr's Creek below. The diversion is located away from existing stream channels and protects the

downslope croplands from overland flow of rainfall and subsequent erosion. The water is channeled into a waterway and routed around the croplands.

4.4.2.3.2 Animal Waste Storage Site

The waste storage pond is found on the Martin farm, to the north of the town of Fairfield. The waste from the dairy on-site is collected and dried within the pond before eventually being applied to agricultural fields. There is no outflow from the pond and no stream channels are located nearby, although intermittent portions of Marlbrook Creek are a quarter of a mile away.

4.4.2.3.3 Embankment Pond Site

An embankment pond is located on the Hickman farm, east of Horseshoe Bend in the Maury River. It is in an upslope area that drains into an unnamed intermittent stream and eventually into the Maury River approximately two miles below. It was built where two hills converge and serves to collect the runoff from each, preventing excessive runoff in the pasture and residences below.

4.4.2.3.4 Grassed Waterway Site

The grassed waterway site is found on the Moore farm to the southwest of the town of Raphine. The waterway routes runoff waters around agricultural land to prevent erosion. The grassy vegetation, a tall fescue, is used to slow flow velocities and prevent erosion of the waterway. The site drains into an unnamed tributary and eventually into Moore's Creek approximately a half mile downstream.

4.4.2.4 Human Community

Buena Vista is an incorporated, independent city, with a population of 6406 (Census, 1992). It is located in an area that is otherwise defined by its predominately rural character. The City of Buena Vista displays typical small community land uses that are primarily residential, with additional commercial and manufacturing sites evident throughout the City. There is a strong tendency toward residential stability, with over half of the residents living in the same house for more than 5 years. However, the city is also experiencing an overall decline in population estimated to result in a 7 percent decrease by the year 2010 (Census, 1997). A portion of its industrial base has been lost due to the effects of the national shift in economic production, but also due in part to the effects of the flood of 1985 (Buena Vista, 1999).

The County of Rockbridge, apart from the two independent cities of Buena Vista and Lexington, is almost completely rural by population. The economy of the county is non-specialized by industry type and is characterized by a significant population of workers (at least 40 percent) who commute to employment outside of the county (Cook and Mizer, 1989). This reflects a strong reliance on outside sources of employment for many of its residents.

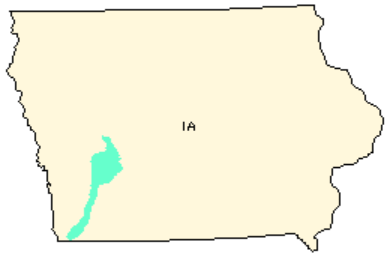
The regional area represented for the Maury Watershed includes all of Rockbridge County, as well as portions of Augusta and Bath Counties. The population of the region is approximately

34,576 persons. The specific portions of the counties that are contained by the watershed region are more rural in character, reflecting land uses that range from rural residential to more remote, sparsely populated agricultural areas and forested areas. Although the region is predominately rural in character, the primary economic activity is concentrated in wholesale and retail trade, manufacturing, and personal and professional services. Agricultural employment accounts for approximately 1,826 jobs, or 10.8 percent of the total regional employment.

4.4.3 East Nishnabotna River Watershed, IA

4.4.3.1 Disaster Event

The East Nishnabotna River originates between the towns of Manning and Templeton in Carroll County, Iowa. It flows south-southwest for 90 miles through Montgomery, Page, and Fremont counties to its confluence with the West Nishnabotna River, ten miles before they join the Missouri River. Heavy rains in 1998 resulted in flooding throughout both Freemont and Montgomery Counties. Streams and levees were impaired by the deluge in both counties.



4.4.3.2 Site Description

The East Nishnabotna River watershed has an area of 1,133 square miles. The river flows through a gently rolling portion of the Great Plains ecoregion, with nearly 100-150 feet of terrain relief from the river valley floors. The watershed is almost completely agricultural and crops occupy almost all of the land, except for some 11 percent that is covered by forest vegetation (EPA, 1999c). The watershed is not characterized as an urban one, although, several small cities are scattered throughout its area.

The appropriate watershed for cumulative impact analysis in this case was the entire East Nishnabotna River (8-digit HUC) watershed, since the EWP practices under analysis were performed on the main stem of the river itself. Particular attention was given to the specific reaches of the river on which the EWP practices took place, as well as actions affecting the river floodplain in the reaches above and below the EWP practices.

4.4.3.3 Human Community

Located near the southeast border of Walnut Township in Fremont County, the site of the EWP levee repair practice is an unincorporated rural community with a population of 1,071 persons (Census, 1992). The community is almost entirely rural, however, portions of the affected area lie near Shenandoah City. The city extends across the border from Page County into Fremont County. This area includes retail and commercial facilities (shops, hotel, airport, and entertainment), as well as some individual residences that would be affected, at least indirectly, by potential flooding in the East Nishnabotna area. Land uses are predominately agricultural with some commercial and residential areas represented in the cities.

Fremont County is classified as a completely rural county with an economy predominately influenced by agriculture. Page County, with a larger urbanized population, is characterized by a non-specialized economy (Cook and Mizer, 1989). Although manufacturing and trade represent the dominant sectors of employment, much of this economy is agriculture dependent. Housing in the immediate vicinity of the affected community and the two surrounding counties is generally older, with more than half of the units having been constructed prior to 1950. The area population is very stable with more than 60 percent of residents living in the same house for more than five years. However, both Fremont and Page Counties have also experienced a slight decline in population during the past decade.

The East Nishnabotna watershed regional area includes portions of Fremont, Page, and Montgomery Counties. The defined region contains a population of approximately 20,424. Reflecting the influence of the more urbanized areas of Montgomery County that are included in the region, somewhat less than half of the regional population (42 percent) is rural by residence.

4.4.3.4 Riverton Easement Site

The Riverton floodplain easement site is located just to the east of the town of Riverton, Iowa, along the East Nishnabotna River. The tract is approximately 655 acres of lowland and subsequently must be protected by levees. Historically, the land has been exclusively in crops but has faced levee breaches on the order of every three years, causing the landowner to spend more that a quarter of a million dollars in repairs in addition to substantial NRCS expenditures (Hanson, 1999).

Due to the repeated damage to the property, the site was a good candidate for the easement program. The property retains water each spring because it is lower in elevation than the surrounding area, so it will be restored as a wetland. There is an existing forested wetland on the northern portion of the property along the river. Runoff from the town of Riverton also contributes to the wet conditions (Hanson, 1999). Once the easement is purchased, the land will be sold to the Iowa Department of Natural Resources via a third party organization to assist in the transfer. The easement will then become part of the Riverton State Game Management Area, a large reserve with several hundred acres of wetland just upstream on the opposite bank. The contiguous area of managed lands will create a large floodplain area and substantial habitat for migratory waterfowl and other species, such as reptiles, amphibians, songbirds, and some fish (Priebe, 1999).

4.5 OTHER RURAL COMMUNITIES EVALUATED FOR EWP PROJECT IMPACTS

In addition to the human communities analyzed for EWP impacts in the preceding cumulative impacts watersheds, three other communities (Table 4.5-1) were evaluated in Georgia and Virginia. Rose River, Switzer Dam, and Bethel Road are highlighted in Table 4.5.1 below. Detailed statistics for selected characteristics of the affected environment at the immediate site and county levels are presented in Appendix D below.

Table 4.5-1 Other Communities Evaluated for EWP Program Impacts

8-digit Watershed (code)	Site(s)/Location	Restoration Practices or Easements	Affected Human Communities Analyzed
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
Rapidan-Upper Rappahannock (02080103)	Rose River site, Criglersville, Madison Co., VA	Streambank Repair Site	Independent farm near small rural community

4.5.1 Bethel Road - Hall County, GA--Debris Removal Site

Hall County is located in northeastern Georgia and lies in the foothills of the Blue Ridge Mountains. The predominant geographic feature in this moderately hilly area is the Chattahoochee River.

4.5.1.1 Disaster Event

Tornadoes destroyed homes and caused widespread damage in the forested watersheds when they struck in 1998.

4.5.1.2 Site Description

The land area is just over 80 percent rural in character. Although significantly rural, the county is also the regional center of northeast Georgia for shopping, medical services, and education. It is made up of 6 incorporated cities important for manufacturing, retail, and agriculture.

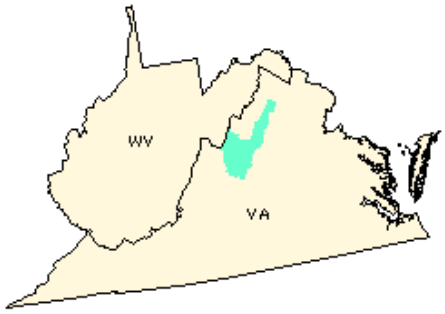
4.5.1.3 Human Community

The Bethel Road site is located in a less densely populated area of Hall County that is almost entirely rural in character. The EWP site itself represents an example of multiple farms in a less densely populated agricultural area. The affected site includes two farms, associated structures, and two local roads (DSR 001-139). Defined by census block, the area contains a population of 2,487 persons, of which an estimated 131 are classified rural by residence (Census, 1992). Minorities represent less than 1 percent of the population of the community in contrast to Hall County as a whole, which is just less than 15 percent minority.

An estimated 1268 residents were employed during 1990, with the service sector representing the primary source of income. However, manufacturing represents the largest single sector of employment accounting for 27.4 percent of all jobs. Agriculture-related employment accounted for 4.9 percent of the total. Of the 892 housing units in the community, 57.3 percent were built prior to 1980. The median year for house construction is 1978 as compared with 1975 for the

county as a whole. Over 50 percent of the population has lived in the same house for over 5 years, indicating a degree of residential stability that is reflected in both the Bethel Road community and in surrounding Hall County, as well. The median value of housing in the Bethel Road community in 1990 was $88,600, slightly higher than that for the county. Approximately 10 percent of the residents of both the Bethel Road community and the county as a whole are living at, or below, the poverty level.

4.5.2 Rocky Run, VA



Rocky Run is a stream located in Rockingham County, Virginia and is a tributary of the Dry River. Flow in the lower reaches of Rocky Run ceases during dry periods, but pools with fish remain.

4.5.2.1 Disaster Event

The stream channel originally meandered through a residential development, but was redirected by landowners years ago. The redirected channel, which wraps around 15 homes, contains several 90-degree bends that have blown out during storm events.

In 1992, stormflows eroded banks and deposited large amounts of cobble and debris in the floodplain. Eleven homes were threatened by the destabilized system.

Riprap and gabions were placed on streambanks to stabilize the channel and to protect life and property from future damage. However, in September 1996, heavy rains from Hurricane Fran swelled Rocky Run and the existing practices protecting the community failed. Rather than following the constructed channel, the stream overflowed its banks and created a new channel, which cut directly through the residential areas and emptied into the Dry River. Five homes were flooded and others endangered, while large volumes of cobble and woody debris were deposited in the floodplain.

4.5.2.2 Human Community

The community directly protected by the EWP practice at the Rocky Run site consists of 15 single-family dwellings and associated service buildings. This is an example of a residential cluster located in an unincorporated rural area. Estimated on the basis of average household size for the census block group containing the site, the population of the Rocky Run community is approximately 42 persons. The community is located in Rockingham County. The county is classified by ERS typology as having a non-specialized economy with the Federal Government representing a substantial source of income to residents (Cook and Mizer, 1989).

The community immediately surrounding the Rocky Run site is defined by census block and has a population of 1,181. Minorities comprise approximately 2.2 percent of the total population, a substantially lower figure than that for the State of Virginia, which is approximately 22.5 percent minority. A total 658 residents were employed in 1990. Manufacturing represented the single

largest sector of employment accounting for 27 percent of all jobs, followed by retail and agriculture. Of the 479 housing units located in the larger community surrounding Rocky Run, 78 percent were built prior to 1980. The median year for unit construction for both the Rocky Run community and the surrounding county was 1969. The median value of owner occupied units in the community defined by the census block was $55,700, a figure comparable to that for the houses in the immediately affected area at the Rocky Run site (DSR RC-01), but significantly lower than the State median of $90,400. Approximately half of the residents have lived in the same house since 1970, indicating a very stable residence pattern for the site area and surrounding community.

4.5.3 Rose River – Madison County, VA

The Rose River site is located in Madison County just up-stream from the town of Criglersville. At its headwaters, the Rose River is a high gradient stream that supports naturally reproducing brook trout.

4.5.3.1 Disaster Event

This area had 4 major flood events from June 1995 to December 1996. Floodwaters from these large storm events led to severe erosion, channel movement, and the heavy deposition of cobble and woody debris. The homeowner's access road was threatened, as well as some other features on the property. EWP stream restoration practices, including rock weirs, riprap, rootwads, and vegetative techniques were used to repair and protect the disturbed area.

4.5.3.2 Site Description

The floodplain surrounding the EWP site is nearly void of vegetation from heavy grazing and the disruptive floodwaters. Several marginal wetlands are located downstream of the project area, which most likely would have been inundated with sediment if the EWP work had not been completed.

4.5.3.3 Human Community

Located in an almost completely rural county, the site immediately affected by EWP practices is a sparsely populated, agricultural area that includes at least two single-family dwellings, farm buildings, other structures, and pasture land (DSR MA-200). Near the site lie multiple farms in a less densely populated agricultural area. The area immediately surrounding the site is defined by census tract and contains a population of 5,672 persons (Census, 1992). Of these, an estimated 78 households (209 persons) are classified rural by residence. Manufacturing represents the single largest sector of employment accounting for 21 percent, while agriculture accounted for 8.3 percent of the total. Of the 2301 housing units located in the tract, 69 percent were built prior to 1980. Nearly half of the residents (46 percent) have lived in the same house since 1970. Sixty-two percent of the residences in the community have been occupied by the same

householder for more than 5 years. This would indicate a stable residence pattern for the area surrounding the Rose River site.

Madison County, with a population of 11,949, is characterized by the ERS typology as having a nonspecialized economy that is commuter dependent (i.e., at least 40 percent of the workforce commutes to employment outside of the county) (Cook and Mizer, 1989). This would indicate a relatively small local economy. The median age and median values for housing in the county are similar to that for the Rose River tract. However, the county as a whole has a somewhat less stable population base, with only 38.3 percent of residents having lived in the same house for five years or more.

4.6 OTHER EWP PRACTICE & EASEMENT SITES EVALUATED

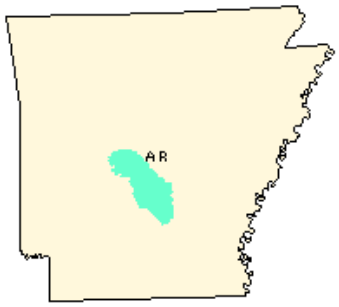
A number of additional example sites (Table 4.6-1) were included in the EWP analysis to address the effects of specific EWP practices or purchase of easements. See Appendix D for detailed site and disaster descriptions of the additional sites.

Table 4.6-1 Additional EWP Restoration and Easements Sites

8-digit Watershed (code)	Site(s)/Location	Restoration Practices or Easements
Upper Saline (08040203)	Bauxite Natural Areas AR	Debris Removal--Tornado downed trees in sensitive habitat
	Griffin site, Alexander, AR	Debris Removal-Household and woody debris from tornado
Antelope-Freemont Valleys (18090206)	Antelope Valley, CA	Critical Area Treatment --Drought with life-threatening sandstorms
San Lorenzo-Soquel (18060001)	San Lorenzo River site Santa Cruz Co., CA	Soil-Bioengineering to protect streambanks
Lower Grand (10380103)	Medicine Creek site, MO	Floodplain easement with setback levee
Lower Missouri River (10300200)	Missouri River floodplain deposition site, St. Charles Co., MO	Floodplain deposition removal/ disposal
Platte River (10240012)	Platte River, MO	Floodplain easement
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
Rapidan-Upper Rappahannock (02070005)	Switzer Dam Site, Dry River, Rockingham County, VA	Switzer Dam, Spillway damaged by Hurricane Fran

4.6.1 Bauxite Natural Areas, AR, Upland Disaster Debris

The Alcoa Corporation manages bauxite mining in central Arkansas in the vicinity of the towns of Benton, Bryant, and Bauxite, all southwest of Little Rock. In 1996, Alcoa entered into an agreement with The Nature Conservancy (TNC) to implement conservation and ecological management on 1,400 acres of land within the Bauxite Natural Areas on Alcoa lands. The region is home to several rare ecological communities and contains several federally listed species (TNC, 1998).



In March 1997, tornados ravaged central Arkansas and swept through the Alcoa/TNC managed area. The tornado was classified as an F4, with winds exceeding 200 miles per hour. An estimated 500 acres of woodlands were damaged and woody debris was widespread. Much of the debris was gathered into brush piles. The piles resulted in a threat to the rare herbaceous species and an increased danger of wildfire due to the ready supply of fuel. Invasive species (kudzu and Japanese honeysuckle) also posed a threat to plant communities (TNC, 1998).

TNC acted in place of NRCS for this EWP project and drafted a plan to remove the debris and reduce the threats in the most environmentally sensitive manner possible. TNC staff and volunteers executed a series of prescribed burns and a large amount of hand clearing over an area of 265 acres. Follow-up monitoring has shown very positive results, as T&E species are thriving, exotic species have been suppressed, and re-growth is progressing (TNC, 1998).

4.6.2 Griffin Site Alexander, AR, Tornado Household Debris Site

This site is in the same watershed as the previous site. The 5-acre plot near Alexander, Arkansas is privately owned and is a single dwelling residential plot. The land is heavily wooded.

Tornados struck in March 1997, and many households were damaged. The NRCS Chief granted an exemption from the EWP regulations that prohibit such work for NRCS to assist with the recovery from the tornado. At the Griffin site, there were approximately four acres of heavy woody debris, as well as a significant amount of household debris, such as construction materials (fiberglass insulation, shingles, etc) and personal belongings. Additionally, there was a danger to human health, as the debris piles can harbor rats, mosquitoes, and other disease vectors.

The EWP practice consisted principally of woody and household debris removal. Most debris was transported off-site to a landfill and burned. There was no on-site burning due to the close proximity of an airport. Additionally, the project area was re-vegetated and mulched.

4.6.3 Antelope Valley, Los Angeles Co., CA, Critical Area Treatment Site

The Antelope Valley site is a broad, low relief area in southern California north of the City of Los Angeles. Consisting of approximately 7,700 acres of abandoned desert farmland, the site had little remaining vegetation and is regularly subjected to high winds. Successive droughts in the late 1980s resulted in desert conditions within the region.

The site is located less than a mile from Antelope Acres, a residential development of approximately 350 homes. Numerous problems from the high winds, including multi-vehicle accidents, reductions in air quality, and sight reductions during aircraft landings at Edwards Air force Base, have occurred. The lack of vegetative cover and high wind conditions have led to a high volume of topsoil being eroded and the necessity to re-vegetate the area and enact soil management techniques to minimize future wind-erosion losses.

EWP practices that were utilized to combat the erosion conditions included aerial seeding, installing sand fences, seed drilling, furrowing, and tumbleweed disposal.

4.6.4 San Lorenzo River, Santa Cruz Co., CA, Soil Bioengineering Site

The California soil bioengineering site is located on the banks of the San Lorenzo River, near the community of Glen Arbor, in Santa Cruz County. A rainstorm on February 3rd, 1998 caused severe bank erosion spanning 450 feet on one side of the channel. It endangered 6 homes, while a landslide on the opposite bank endangered roads and businesses.

The EWP repair work involved the removal of debris from the channel, bank restoration with large riprap, and the revegetation of both banks.

4.6.5 Medicine Creek Site, MO, Floodplain Easement & Setback Levee

The Medicine Creek site is a tract of 517 acres located in Livingston County in northern Missouri. The property is just southwest of the town of Wheeling and is located between Medicine Creek and Muddy Creek, approximately 2.5 miles north of their convergence before they empty into the Grand River. The site, previously used for intensive cropping by tenant farmers, falls within the historical floodplain for both creeks and is subject to frequent flooding—seven floods in the last 10 to 12 years (Young, 1999).

In 1993 and 1995, the levees protecting the site were breached. Subsequent repairs were then made. Under the EWP Floodplain Easement Program, the landowner was offered an easement allowing for the construction of a setback levee. The newly created floodplain would then be restored as a managed wetland using water control structures and ditch plugs to maintain wet conditions and a limited amount of vegetative planting (Young, 1999).

4.6.6 Missouri River Floodplain Deposition Site

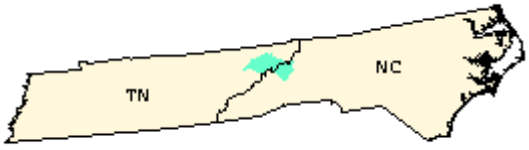
During the floods of 1993, the Missouri River carried heavy sediment loads, depositing large volumes of sand and silt in floodplain areas. The EWP site in St. Charles County, located to the west of St. Louis, Missouri, in the Lower Missouri watershed (HUC 10300200) suffered a levee break. Cropland was subsequently buried under a layer of sediment several feet thick, rendering the land impossible to farm. Deep plowing was used to reclaim these farmlands, with large equipment plowing 4 to 5 feet into the earth to bring the land back into production (Cook, 1999).

4.6.7 Platte River Floodplain Easement Site

The Platte River floodplain easement site is located in western Missouri, north of Kansas City at the confluence of the Platte River (HUC 10240012) and the Little Platte River. The easement property is greater than 100 acres and the historical use of the property is agricultural, primarily tenant farming. Flooding is very frequent in this area, with 3 to 4 short duration floods per year in the spring (Berka, 1999). Traditionally, maintaining the levee at this site has been difficult (Howard, 1999).

During the rains leading to the 1995 flooding, a breach formed along the Platte River portion of the privately constructed levee on the northern edge of the property. Existing crops were lost and damage to the levee was substantial. NRCS determined that the levee repairs would only protect one landowner and were therefore not eligible for EWP repair funds. However, NRCS was able to offer a floodplain easement. The new floodplain resulting from this easement will be managed for the creation of wetlands (Berka, 1999).

4.6.8 Plumtree NC, Debris and Streambank Damage Site



The Plumtree site is an approximately 9-mile section of the North Toe River in Avery County, North Carolina. The site is located north of the town of Plumtree and is bordered on the west by Doublehead Mountain and on the east by Mill Ridge and the Pisgah National Forest.

In 1998, heavy rain, in excess of 17 inches, caused flooding and debris blockage in portions of the North Toe River. Under the EWP Program, rock, woody debris, and trash were removed from the damaged portion of the river. The principles of natural stream dynamics were used to restore the stream profile, restoring eroding stream banks and improving trout habitat. The natural stream design included rock vanes, rootwads, log sills, point bars and re-vegetation. Materials needed to conduct the restoration were either gathered on-site or from Roaring Creek, located north of the site. A reference reach from the Toe River upstream of the site was used to best duplicate the natural stream structure.

4.6.9 Clarendon TX, Floodplain Structure Protection

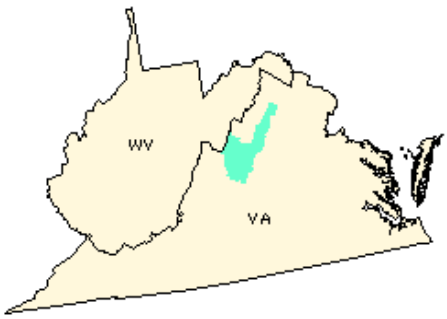
Clarendon is a town of approximately 2,000 located in the panhandle of northern Texas and is the county seat of Donley County. Just to the northeast of the city lies Clarendon Lake, a playa lake. Also located there is the municipal sewage plant, separated from the lake by a berm. Sewage is treated in holding ponds and then released into the lake.

The playa lake was rapidly filled after heavy rains struck the area in April 1997. Rainfall exceeded the 100-year rainfall event limits and the lake swelled to almost 10 times its normal area (Sears, 1999).

The EWP project used a diversion/berm to close off the plant and halt the flow of untreated sewage into the lake. This berm repair/diversion then allowed for the dewatering of the lagoon system and a return to normal operations.

4.6.10 Switzer Dam, Rockingham County, VA, Dam Spillway Repair

Flooding resulting from Hurricane Fran in September 1996 caused the destruction of two spillways on three dams located in the North River Watershed. The first earthen dam (Switzer Dam) is located at the confluence of Skidmore Fork and the Dry River Tributary. The second is located on the Dry River. The third dam is located on Dry Run, a tributary to the Dry River. The Dry River is a tributary to the North River, and the North River is a tributary to the South Fork Shenandoah River. All three dams suffered a high degree of erosion in their emergency spillways causing large amounts of sediment, cobble, and woody debris to be expelled into the Dry River. The damaged spillways caused an immediate threat to life and property should they fail and the dam suddenly breach.



The repair of the spillways involved excavating 2,100 cubic yards of storm deposited material; placing 6,000 cubic yards of fill in severely eroded areas; and grading, seeding, and fertilizing approximately 6 acres at the sites.

Chapter 5
ENVIRONMENTAL CONSEQUENCES

Environmental Consequences—This section forms the scientific and analytic basis for the comparisons under 1502.14 (Comparison of Alternatives). (40CFR1502.16).

This chapter describes the direct, indirect, and cumulative environmental impacts of the EWP Program alternatives. The chapter analyzes the impacts of current and proposed EWP restoration practices and floodplain easements—and the EWP Program alternatives in which they would be employed—on watershed aquatic, wetland, riparian, floodplain, and upland ecosystems. It analyzes EWP Program alternative effects on human communities and the cumulative impacts of the EWP Program on the natural and human aspects of watersheds.

5.1 ANALYSIS METHODS & CHAPTER ORGANIZATION

This section describes how the analysis of EWP Program impacts was conducted and how this environmental impacts chapter is organized.

5.1.1 Impacts Analysis Methods

The NRCS interdisciplinary (ID) team analyzed the environmental consequences of the EWP alternatives using a stepwise process to ensure that all relevant impacts were considered in their appropriate contexts. The details of the methodology are presented in Appendix B.

5.1.1.1 Stepwise Analytical Process

The steps in the process to address impacts on watershed ecosystems were:

1) Specify EWP practices, typical techniques, and practice components
2) Determine contexts for evaluation of direct and indirect impacts
3) Develop flow diagrams linking practice components with ecosystem components
4) Review the scientific literature for impacts studies of effects of disasters and effects of EWP practices or similar practices and construction projects
5) Adapt an ecosystem condition classification as the basis for evaluating disaster and EWP project impacts
6) Analyze impacts generically using scientific studies and using field data on recent typical techniques at example EWP sites
7) Compile impacts of EWP work in example watersheds to address cumulative impacts
8) Document analysis details in Appendices
9) Document principal findings in Chapter 5 covering practices, floodplain easements, and Alternatives
10) Compare impacts of the alternatives in Chapter 3.

The steps were similar for addressing impacts to human communities, except the analysis did not focus on specific practices but rather on how EWP work, which could be comprised of different practices to deal with the aftermath of a disaster, would affect various aspects of community life. A range of affected community types was represented by example communities that had recent EWP restoration work.

Specification of the practices, typical techniques and practice components of current practices is documented in Chapter 2. Components of proposed practices are described in Chapter 3 under the description of the elements of the Preferred Alternative.

5.1.1.2 Contexts for Environmental, Socioeconomic, and Cumulative Effects

The NRCS interdisciplinary team evaluated the impacts of the EWP current and proposed practices and the EWP Program alternatives in three applicable contexts:

- Individual practices were evaluated at the location of, and immediately adjacent to and downstream of, a series of typical EWP projects
- Multiple EWP projects were evaluated in a set of typical rural communities
- Multiple EWP projects and other NRCS, Federal, State, and local actions were evaluated in three typical rural watersheds.

In the first context, the focus of analysis was to evaluate the impacts of EWP restoration practices and floodplain easements on aquatic, wetland, riparian, floodplain, and upland ecosystems, and human activities (such as sport fishing) that rely on those resources. In the second context, the focus broadened to address how groups of different EWP practices employed to repair watershed impairments would affect the rural communities struck by a disaster event. The third even broader context took into account the fact that individual EWP projects, and groups of projects responding to a disaster event, would be undertaken while other NRCS actions and other agencies, organizations, and individuals also act in and affect the locality and larger watershed in question. In each context, the team first defined the baseline of impacts as one that had been just recently disaster-struck. The Team recognized that the sites, rural communities, and greater watershed contexts, were not ecological or human systems simply undergoing minor day-to-day adjustments to environmental inputs. Rather, they were disrupted systems responding to major environmental disturbances.

5.1.1.3 Determining the Impacts of EWP Recovery Practices and Floodplain Easements

Determining what types of environmental impacts the EWP practice components are likely to have, what environmental resources might be affected, was accomplished by developing network diagrams depicting the basic components and causal connections of affected watershed freshwater aquatic, riverine wetland, floodplain, riparian, and upland ecosystems. All major ecosystem components and their linkages were defined. Similar impact flow diagrams were created for the elements of human communities likely to be affected by EWP projects. The network diagrams were then used to develop comprehensive lists of questions that needed to be answered to evaluate the likelihood of occurrence, frequency, and magnitude of the impacts.

Flow diagrams and question sets are presented in Appendix B. The method is comprehensive in identifying the range of impacts likely to occur in a situation, so that all are demonstrably considered. The method then focuses on the more important impacts as required under NEPA.

The ID Team reviewed relevant scientific literature to determine the characteristics and intensity of the potential impacts identified in the questions and to determine which impacts were potentially significant and should be the focus of the analysis. The relevant findings of the literature review are presented in Appendix E.

The basis for addressing ecosystem impacts generically on a programmatic level was facilitated by use of condition classifications of aquatic, wetland, riparian, floodplain, and upland watershed ecosystems. The classifications are described in Chapter 4.

The literature review findings and condition classes were then used to evaluate and document the impacts of current and proposed EWP practices and floodplain easements and, based on those findings, to evaluate the impacts of the alternatives in this chapter. Example sites were used as "case studies" to supplement the broader impacts discussion by addressing the effects of typical applications of EWP practices and floodplain easements in recent disaster situations. Summarization of analysis of the impacts of the Alternatives is presented in comparative form in Chapter 3. As part of the analysis of Program alternatives, the team evaluated what would likely have occurred under the proposed action and other alternatives in the same circumstances at the example sites.

5.1.1.4 Addressing Potential Impacts to Federally Protected Resources

No attempt was made to analyze the impacts to specific federally protected T&E species or cultural resources or to specific wetlands because these resources are site specific in nature and a specific analysis at this programmatic level would be neither feasible, considering the massive data and analytical requirements, nor credible. These resources are addressed in terms of the "case study" analyses of the example sites, which bring into focus what has been done at these particular sites to assess the presence and evaluate the need to protect T&E species, cultural resources, and wetlands. Wetland resources are addressed generically in terms of likely effects of practices and floodplain easements on their general condition where they may be present. Wetlands, T&E species, and cultural resources are key resources that are highlighted in the DSR evaluation of defensibility of proposed EWP work and in agency coordination and they would continue to be so regardless of which alternative is selected.

5.1.1.5 Analyzing Cumulative Impacts

The cumulative impacts analysis focused on three example watersheds – the Buena Vista-Maury in Virginia, the Eighth Street Burn Area-Lower Boise in Idaho, and the East Nishnabotna in Iowa. These were the best examples of the range of possible EWP practice situations in an acceptable range of terrain, ecological, and human community contexts. Buena Vista, VA and Boise Hills represented the use of EWP practices in areas of potentially high interaction with a variety of other land uses because of their fringe-urban settings, steep-slope environments, and respective high-

rainfall and low-rainfall climates. East Nishnabotna represented an almost totally agricultural land use context. At the same time, the watershed also provided the opportunity to compare agricultural land use impacts with land use impacts from a group of different sized human communities along the river. Taken as a whole, these three watersheds were considered to present the best set of contexts for cumulative impact analysis because these representative interactions were present.

With this comprehensive approach, the PEIS should fulfill its purpose as the Program overview analysis, with any additional NEPA analysis to be done as appropriate and tiered to the PEIS.

5.1.2 Organization of this Environmental Consequences Chapter

This chapter has three major analytical sections. The first section describes the impacts of the individual EWP practices on the biotic environment, the second the socioeconomic and related human resources impacts of multiple EWP projects responding to natural disasters in rural communities, and the third, the cumulative impacts of EWP projects and other actions in whole watersheds.

The next section (5.2) describes the effects of the EWP practices dealing with debris removal, streambank protection, dam, dike, and levee repair, protection of floodplain structures, critical area treatment, and floodplain easements. Each subsection briefly describes the general impacts of the practices on aquatic communities, floodplain, wetland, and riparian communities, and upland biotic communities. These discussions are based on a review of the most recent scientific studies of watershed restoration methods and construction activities in floodplain environments. A more detailed review of these studies is presented in Appendix E. Because impacts on cultural resources are site-specific, they are discussed in this section as well. Then two sets of tables are given: the first lists the effects on the biotic communities of the natural disasters that cause the watershed impairments at issue; the second, the environmental impacts of the EWP practices that are employed to deal with the impairments.

Because socioeconomic effects are based on one or more EWP projects that combine a number of different practices, Section 5.3 describes overall EWP project impacts on rural communities.

Section 5.4 addresses the cumulative impact of EWP projects when considered with other NRCS actions, actions of other agencies, and other government entities and private entities and citizens. Section 5.5 describes the unavoidable impacts of the Preferred Alternative, Section 5.6 effects on productivity, resources, and energy.

5.2 IMPACTS OF EWP PRACTICES & FLOODPLAIN EASEMENTS ON WATERSHED ECOSYSTEMS

This section addresses the adverse and beneficial effects of the EWP practices and floodplain easements on aquatic, floodplain, riparian, wetland, and watershed upland environments.

5.2.1 Section Organization and Assumptions

For the practices that apply to impaired watercourses directly, such as debris removal, streambank protection, and dam, dike, and levee repair, the impacts on upland watershed communities are expected to be absent or negligible. Creating access to the impairment site might affect some minor acreage of uplands, but only in the case of T&E species or cultural resources is there reason for concern about upland impacts in these cases. Because EWP project teams would coordinate on these sensitive resources with the USFWS, and SHPO, and/or THPO as a matter of course in conducting their projects, they would still be considered. Thus, upland impacts are not evaluated for those practices here. Upland community impacts are evaluated for the practices that are employed in impaired upland situations, critical area treatment, upland debris removal, and reconstruction of enduring conservation practices.

The current EWP watershed restoration practices evaluated in this section include practices that:

- Restore stream channel capacity
- Stabilize and protect streambanks
- Repair or remove damaged dams, dikes, and levees
- Protect structures located in floodplains
- Protect damaged critical upland areas of watersheds

Effects of floodplain easements under the current Program are assessed.

EWP practices proposed under the Preferred Alternative include:

- Restoration of floodplain deposition sites
- Removal of disaster debris from watershed uplands
- Repair of damaged structural/enduring/long-life conservation practices

Effects of the changes in floodplain easements under the Preferred Alternative and purchase of floodplain easements on improved lands are also assessed.

5.2.2 Impacts of Current EWP Watershed Restoration Practices

This section evaluates the effects of disasters on stream, floodplain and associated environments, and uplands in the context of the watershed impairment situations in which EWP is involved. It evaluates the impacts on these ecosystems of current EWP practices that address debris

impairments, streambank damage, dam, dike, and levee damage, threats to structures in the floodplain, and damage to critical upland areas.

5.2.2.1 Practices that Restore Channel Capacity (Debris Removal)

This section evaluates the effects on aquatic, floodplain, wetland, and riparian ecosystems of disaster-caused debris impairments and the impacts of current EWP practice of removal and disposal of debris.

5.2.2.1.1 Effects of Disaster Debris on Stream and Related Ecosystems

Accumulation of large amounts of debris is a common result of natural disasters. Debris jams of downed trees and branches, channels clogged with sand, gravel, or cobble, and widespread floodplain deposits are typical in the aftermath of major flood events. Tornados leave widely dispersed household debris and downed trees. Debris remaining in these situations can have a wide range of effects, from blocking stream channels and altering stream flows, drastically altering stream substrate and structure, burying cropland in a thick layer of sediment, or creating public health and environmental hazards in watershed uplands. Hazardous materials may also be encountered and would be handled and removed in accordance with all applicable State and local regulations.

Effects of Disaster Debris on Aquatic Ecosystems

During flood flows, debris can cause heavy damage to in-stream and riparian areas, including scouring the streambed of benthic habitat, structurally weakening streambanks, and damaging riparian and aquatic vegetation. Debris jams can cause the water to pond behind the newly created dam, leading to saturation and destabilization of streambanks, accelerated erosion, and secondary flooding along the banks. When floodwaters recede, debris left in-stream may cause sedimentation and smothering of bottom habitat by slowing water velocities and may redirect flow to more erodable areas forming new channels and abandoning old ones (see Cooper, 1997; Darnell, 1976).

Stream systems are naturally dynamic systems forming and reforming channels with scour and fill areas, riffles and pools, and rapids and backwaters, in response to the erosive force of stream flow and the resistance of bottom substrate and debris. These dynamics vary depending largely upon a stream's gradient and flow volume and the geology of the bedrock material.

Stream habitats can benefit or be damaged by debris; both may occur simultaneously. This section focuses on the adverse and beneficial ecological effects of in-stream debris and EWP practices to remove debris. Floodplain deposition removal and watershed upland debris removal are addressed in the proposed practices sections later in this chapter.

The benefits of debris deposition include creation of new habitat for fish and wildlife with the introduction of submerged woody cover, release of nutrients from woody and other biodegradable debris, and sediment deposition along sandbars, spits and streambanks. Gravel

deposits may provide spawning habitat for anadromous salmonids, as well as provide stream channel stability (Kondolf and Swanson, 1992).

Rocky debris tends to scour the substrate, fill pools, and alter stream morphology by collecting in the stream channel. Finer debris materials may be smoother than gravel habitats. The impacts of debris on the aquatic community depend on the characteristics of the debris involved; whether woody debris, finer sediments, sand, gravel, cobble or some combination.

The impact of disaster debris on aquatic communities is evaluated here in terms of the parameters outlined in Chapter 4. *Sedimentation and turbidity* may be affected positively or negatively. Debris may be positioned such that previous areas of high turbidity are now sheltered or sediment is trapped along streambanks. Conversely, debris may be located such that sediment is trapped and covers benthic habitat or fills pools. *Temperature and dissolved oxygen* may benefit if debris creates an in-stream structure that provides shade or creates turbulence. However, debris may damage riparian and aquatic vegetation or block turbulence-causing structures that previously provided environmental benefits. When flooding due to debris jams inundates agricultural or other improved lands that contain fertilizers and other compounds, it may increase the occurrence or concentrations of *pollutants, nutrients and other chemicals*. Effects on *habitat structure* can vary greatly with the positioning of debris; some debris may improve existing cover or introduce habitat elements that were not there prior to the disaster. However, aquatic habitat may also be covered, damaged, or destroyed by the influx of debris. *Channel structure* may similarly be improved or damaged, depending on debris-induced changes in the course of the stream or in the substrate. Either situation could negatively affect biotic resources in the stream by altering stream-flow or position or changing the available habitat. Benefits might include the creation of new channels or expansion of previously minor habitats, which may increase some aquatic species populations (see Cooper, 1997; Darnell, 1976).

Effects of Disaster Debris on Riparian, Floodplains and Wetland Ecosystems

Nearby riparian areas, floodplains, and wetlands may be affected by debris in the current flood situation or by subsequent flooding resulting from debris jams, by channel course alterations and sediment deposition. Flooding from debris jams may affect habitat, vegetation, and hydrologic function in some wetlands and floodplains communities, depending on flood frequency and duration (see Keller and Swanson, 1979; Marzolf, 1978; and Cooper, 1997). Flooding can be of benefit to wetlands and aquatic ecosystems, even though it may change species composition or hydrologic function. Although debris deposition modifies topography so that some wetlands are negatively affected, new wetlands and riparian zones can develop. Additional or sustained flooding may change species composition or hydrologic function, as scouring of a riparian area may remove decadent woody vegetation, providing a substrate for seed deposition and germination. Channel course alteration could have substantial effects on streamside communities, as the former floodplain may become drier if the stream moves further away from its previous course. Wetlands and riparian zones that depend on continual or periodic exposure to streamflow will be negatively affected. Lastly, sediment deposition due to in-stream debris may improve habitat conditions, as streambank rebuilding may provide new habitat for riparian

vegetation. Deposition of coarse debris in previously fine grain sediment areas can increase structural diversity of the ecosystem and increase biological diversity.

Variability of Debris Impacts across Watersheds

The specific characteristics of debris impairments will also vary regionally. Different watersheds will exhibit different levels and types of debris based on the type and amount of material present in the watershed and the type and destructive capacity of the disaster event. For example, a mountainous, forested watershed would have an ample cover of trees and a rocky substrate. Disaster debris in such a watershed would be predominantly woody, with an additional component of cobble, gravel or other rocky materials. The high gradients and fast moving waters of mountain streams create conditions for intense erosive force and rapid, long-distance movement of relatively massive pieces of debris. In contrast, low-gradient agricultural watersheds are affected by large amounts of finer grain sediments, with a substantial component of suspended sediments and a relatively smaller contribution of woody debris. Low-gradient rivers are slower flowing and unable to move rocky debris long distances. However, their high volumes of floodwater can severely damage levees and streambanks, eventually overwhelming streamside environments. Debris in these rivers is often floating woody debris from uprooted riparian vegetation, material from damaged levees, and material from man-made structures in the floodplain.

The creation of debris is also highly dependent on the type of disaster. Floods are the most typical example of a disaster where debris impairments are prominent. Floodwaters carry rocky and woody debris, as described above. Tornados usually leave a narrow swath of damage with multiple types of debris, because they are not generally confined to prescribed paths analogous to floodplains. Damage occurs in any type of environment, from wooded areas to urban centers.

Debris Damage at Example EWP Sites

The general discussion of impacts is supported with specific recent examples of EWP debris removal projects. In-stream debris example sites are located in Rockingham County, VA, Hall County, GA, and Montgomery County, IA. Each site is briefly described below, including an assessment of the pre-disaster and post-disaster natural conditions. More detail on the impacts of the disaster and of EWP practices at these sites is presented in Appendix D.

The Buena Vista EWP site in Rockingham County, VA, comprises four streams that originate in a high gradient National Forest area above the city, flow through the city, and empty into the Maury River. The streams are intermittent or perennial and support a variety of fish species including dace, chub and suckers. Two are cold-water streams with self-sustaining populations of brook trout in the upper reaches. No T&E species are known to occur in the area (Mohn, 1999). The nearest wetland is approximately 800 feet downstream and is classified as PFO1A, a forested wetland (NWI, 1999). The Buena Vista, VA site experienced heavy rain in 1995, leading to severe floods in these high gradient streams. Cobble, and to a lesser extent woody debris, were carried in large volumes, blocking the streams' channels and causing secondary flooding of the city.

The Bethel Road site, in Hall County, GA, is a heavily wooded site with a section of the West Fork of the Little River composed primarily of riffle and pool habitat, with invertebrates and some common fish species. Woody debris in-stream serves at least a minor role in the ecosystem, providing habitat, nutrients and slowing water velocities. No game fish populations, such as trout or other salmonids, are known to be present. No T&E species are known to occur onsite, although the red cockaded woodpecker and the bald eagle are found elsewhere in Hall County. No wetlands are onsite; the nearest downstream wetland would be in the headwaters of Lake Sidney Lanier, approximately five miles downstream (Cooper, 1999). When the site was struck by the tornado, a large numbers of trees were uprooted along the West Fork of the Little River. Large woody debris predominated the site, damaging streambanks and clogging the channel.

The Montgomery County, IA, site is located in a predominantly agricultural watershed. Riparian and aquatic vegetation and habitat in the area are generally poor, as agricultural use and previous flooding has degraded these resources over time. Fish populations are typical of fair to degraded streams, comprised of hardy fish such as catfish, carp and some bass (Priebe, 1999). No salmonids or T&E species are known to be present onsite or in the near vicinity. The federally endangered Indiana bat is listed in Montgomery County but would not normally reside in this area. A mapped riparian area (classified as R2USA) and a forested wetland (PFO1A) are located immediately downstream (NWI, 1999). The EWP project site is located on a tributary of the East Nishnabotna River, where heavy rain transported a large volume of woody debris, blocking a culvert and creating secondary flooding.

5.2.2.1.2 Effects of Current Practices to Restore Hydraulic Capacity (Debris Removal)

This section describes the environmental impacts of the current EWP practice of debris removal. Chapter 2 describes the practice of debris removal, and the specific activities involved in removal, such as access creation. As with all EWP projects, the primary goal of debris removal is to reduce or eliminate threats to life and property. Threat reduction may require removing blockages in streamflow to restore the stream's hydraulic capacity and removing debris that could pose a threat to downstream areas in future disaster events.

Impacts of Debris Removal Project Activities

As described in Chapter 2, debris removal may involve a number of related activities: access creation, dewatering, heavy equipment use, establishing a low flow channel, grading and shaping, revegetation, and debris disposal. Site conditions determine which of the activities are required to execute a specific project.

To reach the stream and debris, vegetation may be removed to *create access* for equipment and workers. This may be as simple as removing a small amount of vegetation along well-established roads, or may be as complex as clearing a new road. For example, at the Bethel Road site, the project location was not easily accessible, necessitating the creation of a road, substantial removal of large woody vegetation along the streambank, and creation of an in-

stream crossing point for machinery to reach the opposite bank and complete the work. Access creation can have several adverse effects, including soil compaction and decreased infiltration, increasing the potential for soil erosion, decreased streambank stability through vegetation removal, and direct impacts such as increased turbidity, particularly in cases where machinery operates in-stream (USACE, undated).

Dewatering, the process of rerouting streamflow away from the project site so that the debris can be cleared, may be used if a debris jam impounds water behind it, including a large volume of sediment, which may need to be removed. Removal of the debris dam without dewatering could release a plug of sediment that would be detrimental to downstream resources, so this is avoided if possible. Dewatering allows for a more controlled removal of the debris jam and sediment. Diverting water can have substantial effects on aquatic life residing at the dewatered site, which depend on continual flow, such as increased mortality in salmonid embryos (Becker et al., 1983). There may also be an increase in turbidity when the streamflow is returned to its original channel. (Dewatering is discussed further in the section on streambank protection practices, which require a relatively dry work area to ensure proper installation and stability.)

In-stream work may cause a number of other effects. Operation of *heavy equipment* in-stream or along the bank can disturb bottom sediments and increase turbidity, leak pollutants in the form of petroleum, oil and lubricants (POLs) or other substances, alter channel morphology by compaction from the weight of the vehicle, and directly harm aquatic biota such as vegetation, and immotile or slow moving species (USACE undated). Working in-stream is often the most expeditious way to remove debris, but tends to have greater direct aquatic impacts. Of the effects listed above, all would come into play. Working from the streambank, on the other hand, reduces the level of impact but could increase the duration of impacts, as the work generally takes longer. See the summary of impacts to aquatic ecosystems below for more details on biotic impacts.

It is worth noting that the more important debris removal efforts, in terms of fully restoring hydraulic capacity and stream morphology, occur in-stream. This serves to magnify the importance of those removal efforts. In-stream debris may be the most urgent to remove a threat, yet it may also poses the greatest environmental risks.

Following debris removal, *grading and shaping* may be necessary to restore more natural streambank conditions, repair any damage done during the EWP work, and help reestablish riparian vegetation (see Beeson and Doyle, 1995; Karr, 1977; Sweeney, 1993; FISWRG, 1998). This work is generally done with heavy equipment and would produce similar impacts to debris removal efforts conducted from the streambank as discussed above.

Revegetation is normally accomplished through seeding, but may occasionally involve tree plantings. Restoring the riparian vegetation that was damaged or removed during the process of debris removal will reduce erosion, improve turbidity levels, and reduce temperatures in the stream. NRCS is recognized as a leader in plant materials technology and maintains a wide array of plant species that would be suitable for rapid re-establishment of bank vegetation and stability. NRCS will make every attempt to use native plants in revegetation, but introduced

(i.e., non-native) species may be used as the site conditions warrant. Invasive or weedy species will be avoided in accordance with Executive Order 13112.

Once the debris is removed it must be disposed. *Disposal* methods vary regionally and within individual watersheds. Woody debris may be hauled away to landfills or incinerators, burned onsite, chipped and left onsite, or used in EWP practices such as rootwads or tree revetments. Some landowners may wish to keep some debris as firewood or chipped as mulch. It has been suggested to use cobble and other rocky debris to create low berms to alleviate future flood effects or for streambank stabilization practices, but these uses conflict with natural flood regimes and create an onsite supply of cobble for future disasters (Darnell, 1976). Gravel removal, if excessive, may lead to downstream streambank damage as sediment is deposited to fill the voids left by removal, thus creating flows with a greater erosive potential (Kondolf and Swanson, 1992).

Disposal by burning, whether onsite or at a central location, contributes to air pollution and can create problems for sensitive areas downwind, such as homes or airports. Local burning ordinances may prohibit burning or restrict the amount and timing of burning allowed. Leaving debris onsite allows for slow release of important nutrients into the local ecosystem but can pose problems in future disaster events, as this material would again be available for transport downstream. Use in other EWP projects is an environmentally sound method, as it generates relatively little environmental impact and restores many natural functions to the stream. The volume and type of debris would determine its appropriateness for such use at the site or a nearby site. Berm creation may have both positive and negative impacts, as these structures may protect the floodplain and adjacent areas during smaller floods. However, they may also provide additional debris for larger floods, as well as altering the natural flood cycle, which may adversely affect wetlands and other flood sensitive areas. The use of cobble in streambank protection practices is virtually identical to loose rock riprap and other practices, which are discussed in greater detail later in this chapter.

Summary of Impacts on Aquatic Ecosystem Parameters

Sedimentation and turbidity: Short-term increases in sedimentation and turbidity may result from operation of equipment in or near the stream. Removal of debris may remove structures that reduce flow velocities and increase sedimentation. Removal of vegetation may increase runoff and erosion, introducing additional sediment to the stream.

Temperature and dissolved oxygen: Areas that were previously shaded or covered by debris may experience increases in temperature. Riparian vegetation removed or damaged in creating access or in completing the debris removal, may reduce vegetative cover and increase temperature. The removal of debris may alter or eliminate in-stream structures that create turbulence and/or direct flows that increase oxygen content.

Pollutants: Heavy equipment use in and around the stream may result in leaks of POLs and other mechanical fluids into the stream. Changes to the streambank structure, such as creating gullies, steep slopes, or denuded slopes, may decrease infiltration capabilities for rainfall and encourage

runoff and erosion of fertilizers, pesticides, urban runoff or other chemicals found on the lands nearby.

Habitat structure: Debris removal can remove or alter habitat structure, adversely affecting aquatic organisms. Sedimentation caused during removal can fill or bury benthic habitats and organisms. Woody debris can comprise a substantial portion of invertebrate biomass, secondary production, and prey species for fish (Benke et al., 1985).

Channel structure: Removal of woody debris can either increase or decrease the potential for bank erosion, depending on how the debris was arranged and pre- and post-removal flows are directed (either towards the bank or the stream center, see Keller and Swanson, 1979). Removal of debris can increase flow velocities, increasing bed erosion. Removal efforts may change the location of the low flow channel and have significant impacts on plant and animal communities.

Biota: Increased sedimentation and turbidity can result in decreased spawning success, gill abrasions, migration barriers, lower dissolved oxygen, and the filling of downstream riffle areas (see Berkman and Rabini, 1987; Koonce and Teraguchi, 1980; McCabe and O'Brien, 1993). Removal of woody debris may decrease available habitat.

Debris Removal at Example EWP Sites

The Buena Vista, VA debris removal efforts primarily involved cobble removal in three of the four streams. *Sedimentation and turbidity* may have been problematic, as equipment was used in-stream and from the streambank. However, the brook trout populations reside well up-gradient from these particular sections of the streams as they enter the city, so the debris removal would not affect their habitat. *Temperature and dissolved oxygen* was likely only minimally affected. Riparian vegetation is in moderate to poor condition, as urban land uses are prevalent and most work was done without creating access by removing streamside vegetation. *Pollutants* may have been introduced with equipment operation at these stream stretches, which might add to what is already affected from similar urban runoff sources. Effects to *habitat structure* would have been both positive and negative, as cobble was removed to reopen habitat for fish but may have removed some of the original rocky substrate with resident benthic species. *Channel structure* was improved with the creation of low flow channels and removal of flow impediments. *Biota* may have been adversely affected by the increased turbidity or reductions in habitat quality.

At the Bethel Road site, large volumes of woody debris were removed from the stream, chipped and left on-site. *Sedimentation* increased in the short-term, as equipment use occurred in-stream, vegetation was removed to create access to the site, and soil was compacted. *Temperature* may have increased with the removal of vegetation and increase in turbidity. *Pollutants* may have been introduced during in-stream work. *Habitat structure* may have been affected positively or negatively, as debris removal would reopen aquatic habitat, but some debris present in the stream before the disaster was likely removed as well. Future rainfall events may have washed chipped material into the stream, possibly burying benthic habitat or possibly providing organic material input for organisms. *Channel structure* could been positively or negatively affected, as storm

debris may have been blocking flow channels or may have been directing flow away from streambanks. *Biota* may have been adversely affected by the increased turbidity or reductions in habitat quality.

At the Montgomery County site, pooling of water behind the debris jam led to secondary flooding. Increased *sedimentation* may have occurred during removal and the sudden release of the sediment trapped behind the debris jam may have filled benthic habitats downstream. Turbidity is an existing problem in this watershed, to which debris removal would have contributed to a negligible to minor increase. *Temperature* increase also would have been negligible, as riparian vegetation is sparse and turbidity was already high. *Pollutants* may have been introduced by equipment and deposition or erosion of adjacent agricultural lands, or during the burning of the debris. *Habitat structure* and *channel structure* would not have been affected, as the existing stream channel has marginal habitat and tends to be wide and flat, with a silty bottom. *Biota* may have been adversely affected by the increased turbidity or reductions in habitat quality.

Effects on Floodplain, Wetland, and Riparian Community Parameters

Bank stability and erosion: Removal of vegetation to create access to site may increase runoff and erosion. Removal of debris that is protecting a bank from direct exposure to flow will likely increase streambank erosion. Debris jams that divert flows into wetlands may adversely or beneficially affect the wetland hydrology.

Vegetative cover and habitat: Removing vegetation to create site access will decrease cover and may reduce habitat quality. Equipment use from the bank may damage riparian vegetation through leaks, soil compaction or direct damage from equipment operation (Darnell, 1976).

Hydrology and water quality: Removal of debris may decrease pooling and subsequent flooding caused by debris jams, which may adversely affect floodplain and wetland ecosystems. Removal of vegetation may increase erosion from floodplain areas, increasing turbidity and input of nutrients from agricultural or other lands.

Biota: Destabilization of streambank may adversely affect riparian vegetation. Effects to wetland hydrology may decrease wetland function, adversely affecting plant and animal life.

Wetlands: Changes in hydrology, bank stability or biota may adversely affect any wetlands on-site or downstream.

Debris Removal at Example EWP Sites

At the Buena Vista, VA, site, some riparian vegetation may have been removed while creating access, reducing *bank stability*. *Vegetative cover and habitat* may have been adversely affected, as riparian shade, cover and source material for carbon and other nutrients may have been removed. *Hydrology and water quality* may have been slightly affected, as equipment use and access creation may have increased erosion near the site. *Biota* may experience some negative

effects due to the removal of riparian vegetation. The Maury River channel does have some riparian and *wetland* vegetation, according to NWI maps of the area, but adverse effects were likely minimal, as the effects to hydrology and vegetation were localized.

The Bethel Road debris removal efforts required a more substantial amount of heavy equipment use and access creation. *Riparian vegetation* may have been removed and equipment use along the bank may have reduced bank stability. Similarly, *vegetative cover* was likely reduced in both quality and quality. *Hydrology* may have been slightly impacted, as equipment use along the bank may have increased soils compaction, overland runoff, and erosion. *Biota* may have experienced some adverse effects from the removal of vegetation. There are no *wetlands* near the site, removing any possible impacts to wetland ecosystems.

The Montgomery County site is located in an area of highly erodable loess soils, which are highly susceptible to increases in *erosion* and *turbidity*. The area also has very little riparian *vegetation*, reducing the impacts from equipment use and removing the need for creating access. There are *wetlands* along the East Nishnabotna, however, that may have experienced a decline in water quality or an alteration in hydrology.

5.2.2.1.3 Comparison of the Impacts of Debris Disposal Practices

Table 5.2-1 summarizes the impacts of the various methods used to dispose of disaster debris. On-site methods may have adverse effects to the local ecosystem, over either the short or long-term. Off-site methods benefit the ecosystem at the site by transferring adverse effects to the new disposal site, which may or may not be more sensitive to these effects.

Table 5.2-1 Impacts Comparison of Debris Disposal Techniques

Use On-Site	Haul Off-Site	Burn On-Site	Burn Off-Site	Bury On-site	Bury Off-Site
Water Quality[1]					
Onsite use could allow material to re-enter the stream.	Hauling offsite could increase site disturbance by heavy equipment, increasing compaction and erosion. Removes debris from future threats to the site.	Burning onsite could cause short-term increases in pH and stream temperature. Runoff from ashes could increase turbidity.	Burning offsite could increase site disturbance by heavy equipment during removal.	Burying onsite would cause short-term site disturbance.	Burying offsite could increase site disturbance during removal by heavy equipment.
Habitat and Channel Structure					
Using the material onsite could cause runoff, which could cover or create habitat.	Hauling offsite would decrease the potential for debris to re-enter the stream and affect habitat.	Burning onsite could increase pH and temperature, decreasing habitat quality.	Burning offsite should decrease the risk of onsite chemical and biological effects.	Burying onsite would cause short-term increases in erosion.	Burying the material offsite would decrease effects on benthic habitat.
Biota					
Using the material onsite could cause the debris to reenter the stream and cover organisms or habitat.	Hauling the debris offsite should decrease the potential for debris to re-enter the stream and affect habitat.	Burning the material onsite could affect pH and temperature regimes, adversely affecting fish and invertebrates.	Burning the material offsite should decrease onsite chemical and biological effects.	Burying the material onsite could cause short-term increases in erosion, which may affect habitat.	Burying the material offsite should decrease onsite impacts to habitat.
Riparian, Floodplain and Wetland Ecosystems					
Onsite use could cause wetland filling during future disaster events or other damages from remaining debris.	Onsite use could cause wetland filling during future disaster events or other damages from remaining debris.	Onsite use could cause wetland filling during future disaster events or other damages from remaining debris.	Onsite use could cause wetland filling during future disaster events or other damages from remaining debris.	Onsite use could cause wetland filling during future disaster events or other damages from remaining debris.	Onsite use could cause wetland filling during future disaster events or other damages from remaining debris.

[1] Includes turbidity, temperature, dissolved oxygen, and pollutants

5.2.2.2 Practices that Protect Streambanks

A common result of disasters is the destabilization of streambanks through flood damage, vegetation removal, and changes in streamflow or channel location.

5.2.2.2.1 Effects of Streambank Protection on Stream and Related Ecosystems

General Discussion

Damaged streambanks are a common result of natural disasters. Excessive erosion, scour and gullying, damage from debris, uprooted riparian vegetation, and floodwaters that overtop banks and create new channels, are typical impairments to streambanks. The effects include damage to aquatic and riparian habitat and wildlife, weakening of streambank stability, and endangerment of structures or lands in the floodplain and nearby areas.

Impairments caused by streambank damage affect both in-stream and adjacent communities. Of primary concern are structures and property along the bank, which may be threatened by streambank failure, erosion, or possible changes in stream course. In the aquatic environment, damaged banks may lead to increased erosion from gullying or loss of riparian vegetation, increased sedimentation and turbidity as excess sediment is deposited in-stream, and increased stream temperatures, as vegetative cover is reduced. Stream channels may change course as flows overtop their banks. Floodplains and wetlands may also be affected by the encroaching erosion, streambank failure, or by course alterations that may drastically affect the hydrologic regimes of those communities.

Damaged streambanks may also benefit the local environment. The creation of new stream channels may create new wetlands or floodplain areas, benefiting species of those communities. The recently abandoned stream channel may also receive enough flow or have sufficient standing water to maintain a backwater supporting a wetland environment. A new stream channel may also support improved aquatic and riparian habitat due to a better substrate or improved hydrology.

Sedimentation and turbidity will increase, as vegetation may have been removed, increasing bank erosion. Increased sediment loads may fill benthic habitat and pools. Alterations in the direction of flow may route the channel into more highly erodable bed materials. *Temperature and dissolved oxygen* will increase with the removal of riparian vegetation, as well as increased turbidity. Short-term increases in temperature may be experienced if flows overtop the streambank and exhibit sheet flow before carving a new channel. Dissolved oxygen may increase or decrease, depending on the post-disaster arrangement of in-stream or streambank structures that cause turbulence. The risk of introduction of *pollutants, nutrients and other chemicals* will increase as the removal of riparian vegetation and increased floodplain erosion from floodwaters overtopping the streambanks, especially if the adjacent areas are agricultural or receive urban runoff, occurs. *Habitat structure* will be adversely affected with the removal of vegetation and increase in sedimentation. Redirected channel flows may be routed through improved habitat. *Channel structure* may be negatively affected, as flows erode damaged

streambanks and sedimentation fills pools and low flow channels. Damage may also redirect flows into the streambank, further altering the future structure.

Effects on Other Communities

Effects to adjacent communities will be similar to those experienced with debris removal (Section 5.2.2.1.1). Riparian areas, wetlands and floodplains may see increased erosion, vegetation removal, increased sedimentation, and possible changes in community type if there are directional alterations in the streamflow.

Variability of Impacts between Watersheds

Similar to the practice of debris removal, streambank impairments are largely dependent on the characteristics of the watershed. High gradient streams have faster moving waters and are less likely to meander around obstructions or bends in the stream channel. Instead, these streams may overtop the streambank, create new channels, cause heavy erosion or otherwise damage the bank structure. Flat waterbodies will be more likely to meander. However, larger rivers can accumulate flood stage waters and may overflow the streambank, destroy vegetation, or carry debris that can damage the streambank. Another possibility lies with streams that are channeled, either by natural topography or structures such as levees. These streamflows are restricted to the channel and unable to overtop the banks. They often dissipate the energy associated with flooding through increased bank erosion, the undercutting or progressive weakening of the streambank through saturation of the soil.

The type of disaster will also affect the damage to streambanks. Floods are the most common cause, as floodwaters erode or overtop banks and remove vegetation. Tornados damage vegetation by uprooting larger woody species, causing drastic changes in the streambank stability. Fires or extended drought will likely remove vegetation from the streambank and adjacent areas, increasing the potential for erosion along the banks.

Streambank Damage Situations at Example EWP Sites

Streambank repair example sites are located in Rocky Run, VA, Montgomery County, IA, Rose River VA and Santa Cruz, CA. Each site is briefly described below, including an assessment of the pre-disaster and post-disaster natural conditions. A more detailed analysis of impacts of the disaster and of EWP practices at these sites is discussed in Appendix D.

The Rocky Run EWP site is located at the outflow of Rocky Run, a high gradient stream originating in forested, rocky area. The housing community is situated where Rocky Run empties into the Dry River. The stream is intermittent, drying in summer, but still maintains wild populations of brook trout in the pools that remain during dry periods. The riparian areas along Rocky Run are heavily wooded, with substantial herbaceous cover as well, implying a significant contribution of woody debris and organic material. There are no known T&E species in the area (Mohn, 1999) and the nearest wetland is approximately one mile downstream, classified by NWI as R4SBA, a riparian area (NWI, 1999). Heavy rainfall led to flood

conditions, with cobble and woody debris deposition. Significant streambank damage occurred, as the stream overflowed its banks and created a new channel through the housing community. Riprap and gabion walls were installed to repair the streambank, direct flows around the community, and prevent future erosion and damage.

In 1998, Montgomery County, Iowa was the site of streambank damage from flooding in the East Nishnabotna River. The local environment was described in Section 5.2.2.1 under the practice of debris removal, and can be briefly described as heavily farmed with little riparian vegetation and poor aquatic habitat (Priebe, 1999). A large volume of riprap was used to restore a streambank and protect a bridge and homes downstream. As noted previously, there are no known T&E species onsite or nearby. The nearest wetlands are immediately downstream and are classified as R2USA and PFO1A, a riparian area and a forested non-tidal wetland, respectively (NWI, 1999). These wetland and riparian areas likely are the wetted areas located between the levees (Miller, 1999).

The Rose River site in Virginia is located on cattle grazing land and a moderately well-formed riparian vegetation zone composed mostly of grasses. The stream originates in a high gradient forested area several miles upstream and supports brook trout populations both upstream and downstream of the project area, and presumably in the project area itself. There are no known T&E species in the area (Mohn, 1999) and there are wetlands located onsite and are classified as R3USA and PEM1A, a riparian area and an emergent wetland (NWI, 1999). Rock weirs and rootwads were installed to protect the streambanks and to prevent sedimentation and filling of the wetlands.

The Santa Cruz bioengineering site is located in a residential area at the foot of a mountainous State park. Riparian vegetation is somewhat limited due to the development but does contain some woody species. Two Federal T&E species are known to inhabit the area: the red-legged frog and the steelhead (a salmonid fish). No wetlands are known to exist nearby (Davis, 1999). Restoration work entailed the use of riprap, geotextile fabric, and the planting of willow trees along the bank.

5.2.2.2.2 Effects of Current EWP Practices to Repair Streambanks

This section describes environmental impacts of the current EWP practice of streambank restoration. Chapter 2 describes in more detail streambank impairments, the practice of streambank restoration, and the specific activities involved. As is the case with all EWP projects, the primary goal of the repairs is to reduce or eliminate threats to life and property. Threat reduction may require stabilizing streambanks, halting erosional losses, and installing structural practices to prevent future erosion.

Impacts of Streambank Restoration Project Activities

The practice of streambank restoration is closely related to debris removal and often involves similar activities. Access creation, dewatering, heavy equipment use, and grading and shaping are employed in essentially the same activities described under the practice of debris removal. Activities unique to streambank restoration would include: borrowing of materials, installation of structural practices, and revegetation.

Borrow of materials refers to the use of natural materials either onsite or from other locations in restoring the streambank. For example, rootwads are normally constructed using downed trees from the particular project site, whereas the rock used as riprap often comes from local quarries or other suppliers. The location where materials are acquired can have both positive and negative aspects. Using debris that already exists at a site is a very efficient, natural method of site restoration, as the streambank can be restored and debris disposal is no longer an issue. However, there is a slight risk that onsite borrowing may remove important structures from other areas of the site and lead to future problems such as weakened streambanks from excavation or removed vegetation or reduced effectiveness of floodplains.

Installation of structural practices is a general description of the process of constructing streambank and in-stream structures that reduce streambank erosion and protect banks from severe erosion. These structures include streambank armoring methods such as riprap, gabions, rootwads, and stream barbs, as well as in-stream methods such as rock weirs. The installation of these practices often involves heavy equipment and substantial preparation of the exact location of the practice. For example, installing riprap normally involves heavy equipment working in-stream or from the bank, to grade, excavate, or otherwise shape a site for the placement of the rock. The impacts from these activities are similar to those from equipment operation during debris removal, including short-term increases in turbidity and impacts to riparian and aquatic vegetation.

Revegetation is the final stage of streambank restoration. Once the structural work has been completed, it is possible that the equipment operation, in combination with the disaster impacts, has left the riparian vegetation in poor condition. To increase the effectiveness of the newly installed practices, grasses and woody species can be planted to reduce erosion, stabilize streambanks, and provide cover and temperature regulation (see Sweeney, 1993; Beeson and Doyle, 1995). NRCS is recognized as a leader in plant materials technology and maintains a wide array of plant species that would be suitable for rapid re-establishment of bank vegetation and stability. NRCS will make every attempt to use native plants in revegetation, but introduced (i.e., non-native) species may be used as the site conditions warrant. Invasive or weedy species will be avoided in compliance with Executive Order 13112.

Summary of Impacts on Aquatic Community Parameters

Sedimentation and turbidity: Short-term increases in sedimentation and turbidity will be seen with equipment operation and access creation. Excavation and installation of the practices will

have similar short-term effects. Long-term effects will be beneficial, especially in sites using rootwads and rock weirs, as these structures reduce water velocity and improve turbidity levels.

Temperature and dissolved oxygen: Short-term increases in temperature and decreases in dissolved oxygen will result from equipment use and excavation. Long-term benefits will be realized as riparian vegetation is reestablished and installed structures may create turbulence. Rock weirs increase turbulence, raising dissolved oxygen levels.

Pollutants: Equipment operation introduces risks of leaks. Access creation may remove riparian vegetation and promote erosion and runoff. Reestablishment of riparian vegetation will reduce erosion and runoff of agricultural or urban lands.

Habitat structure: Sedimentation may fill benthic habitat. Access creation may remove riparian and aquatic vegetation. Some practices, such as riprap and gabions, may decrease riparian and aquatic habitat for some species and limit access to the water for terrestrial species. Some invertebrate species may find additional habitat in these structures (Bradt and Wieland, 1978). Other practices, such as rootwads and rock weirs, may increase habitat, as pools and covered areas develop (Rosgen, 1996). All practices will stabilize streambanks and provide substrates for vegetative growth.

Channel structure: Riprap and gabions may redirect energy towards other areas, increasing erosion in other parts of the channel and altering the natural meandering of the stream (USACE, 1981; Gore et al., 1995; and Stern and Stern, 1980). Gabion mattresses and other stream bottom structures may have significant effects on the location or existence of low flow channels, which may not form until sedimentation fills the pore spaces in the rock substrate and forms naturally in the stream bottom. Rock weirs and rootwads create pool areas and alter flow velocities. Rock weirs may be constructed to direct flows away from streambanks and reduce bank erosion.

Biota: Increased sedimentation and turbidity can result in decreased spawning success, gill abrasions, migration barriers, lower dissolved oxygen, and the filling of downstream riffle areas (see Berkman and Rabini, 1987; Koonce and Teraguchi, 1980; McCabe and O'Brien, 1993).

Streambank Restoration Effects on Aquatic Ecosystems at Example EWP Sites

To better illustrate the impacts of streambank restoration, each example site can be examined in terms of the above parameters. A more detailed analysis of the site-specific impacts can be found in Appendix D.

EWP activity at Rocky Run involved the installation of riprap and gabions to strengthen streambanks along part of the stream. *Sedimentation and turbidity* may have increased with equipment operation, excavation, and impacts to riparian vegetation. However, the brook trout populations lie above these reaches, removing any effects of debris removal to their habitat. *Temperature and dissolved oxygen* may have declined as riparian vegetation was removed and turbidity increased. Dissolved oxygen may increase with the addition of structures that create turbulence. *Pollutants* may have been introduced as well, with equipment operation, vegetation

removal, and the proximity of urban runoff sources. Effects to *habitat structure* could have been positive and negative, as riprap and gabions do not provide habitat preferred by fish and other species, but may benefit invertebrates. Terrestrial species will face restricted access to the stream but may gain habitat in the re-vegetated areas. *Channel structure* became poorer, as the riprap and gabions serve to force flows through turns in the channel and do not allow for natural flow regimes or floodplain development. The gabion mattress may also eliminate the low flow channel for some time until sediment fills the spaces and a new low flow channel can form naturally. *Biota* may have been adversely affected by the increased turbidity or reductions in habitat quality.

Montgomery County was the site of an extensive installation of riprap along the East Nishnabotna River. *Sedimentation and turbidity* may have increased with equipment operation and excavation, causing impacts to riparian vegetation. However, these impacts might be regarded as minimal, since turbidity was an existing problem in this river. *Temperature* may have increased as turbidity increased. *Pollutants* may have been introduced as well, with equipment operation and the proximity of agricultural runoff sources. Effects to *habitat structure* could have been positive and negative, as riprap may create additional habitat for invertebrates. Fish species in this river tend to be bottom dwellers and would likely be unaffected. Terrestrial species will face restricted access to the stream but may gain habitat in the revegetated areas. *Channel structure* remained neutrally affected, as the riprap protects the site but directs energy further downstream and natural meandering is removed. The frequent use of levees in this area mimics the installation and function of riprap. *Biota* may have been adversely affected by the increased turbidity or reductions in habitat quality.

At the Rose River site, riprap, rootwads, and rock weirs were installed. Increased *sedimentation* may have occurred during construction and excavation. The rootwads and rock weirs will act to minimize long-term turbidity impacts or even improve conditions. *Temperature* increased in the short-term as turbidity increased. The establishment of riparian vegetation, cover through rootwads, and the pooling created with rock weirs, will benefit temperatures in the long-term. *Pollutants* may have been introduced by equipment and erosion of adjacent agricultural lands. *Habitat structure* saw both positive and negative impacts, as riprap offers mixed habitat benefits and some cover and pools were created. C*hannel structure* was improved with pools and cover creation. *Biota* may have been adversely affected by the increased turbidity or reductions in habitat quality.

The Santa Cruz site employed riprap, geotextile fabric and willow tree planting to stabilize the streambank. Short-term increases in *sedimentation* were seen but long-term effects will be positive, as the geotextile and vegetation will enhance erosion resistance. *Temperature* was increased in the short-term with increased turbidity, but will benefit from vegetation establishment over the long-term. *Pollutants* may have been introduced by equipment but vegetation and bank stability may decrease future erosion and runoff potential. *Habitat structure* exhibited positive and negative effects, as riprap yields mixed benefits to habitat and riparian vegetation will benefit both aquatic and terrestrial species. *Channel structure* was neutral, as this section lies in a residential area and must remain on its present course. *Biota* may have been adversely affected by the increased turbidity or reductions in habitat quality.

Effects on Floodplain, Wetland, and Riparian Community Parameters

Bank stability and erosion: Removal of vegetation to create access to site may increase runoff and erosion. Removal of debris that is protecting bank from direct exposure to flow will likely increase streambank erosion. Soil compaction from equipment operation may decrease infiltration of soils, increasing runoff. Armoring may redirect flows to unprotected banks and lead to increased erosion of the bank at that location. Rock weirs will likely reduce erosion, as flows are directed towards the center of the stream channel.

Vegetative cover and habitat: Removal of vegetation to create access to site will decrease cover and may reduce habitat quality. Root wads may encourage riparian vegetation.

Hydrology and water quality: Removal of vegetation may increase erosion from floodplain areas, increasing turbidity and input of nutrients from agricultural or other lands. Channelization of stream may remove natural flood regime and adversely affect the formation of wetlands (Possardt and Dodge, 1978).

Biota: Destabilization of streambank may adversely affect riparian vegetation. Alteration in wetland or floodplain function may result in adverse effects to resident biota (see Darnell, 1976; Gore et al., 1995; Brode and Bury, 1984).

Wetlands: Changes in hydrology, bank stability or biota may adversely affect any wetlands on-site or downstream.

Effects on Floodplain, Wetland, and Riparian Ecosystems at Example EWP Sites

At the Rocky Run site, some vegetation may have been removed to create access to the location for gabion installation. *Bank stability, vegetative cover* and *biota* may have been adversely affected. The *hydrology* at Rocky Run is substantially different from natural stream conditions, as the stream takes several engineered turns, possibly affecting riparian and floodplain ecosystems. There are no wetland on-site or nearby that may have been adversely affected, as the effects are localized.

The Montgomery County site would have involved some heavy equipment usage, possibly impacting *bank stability and water quality*. There is very little riparian *vegetative cover* to have any substantial impacts upon. There are *wetlands* along the East Nishnabotna that may have experienced a decline in water quality or an alteration in hydrology.

The Rose River site had been degraded by prior flooding and landowner attempts to modify the stream channel. Possible impacts to *bank stability* and *hydrology* may have occurred. The work was completed in a dry channel, so *biota* would have been minimally affected. No access was created, minimizing impacts to *vegetation*, and *wetlands* just downstream actually benefited from the work, as future sedimentation would likely have filled them.

The Santa Cruz site would have shown similar effects to the Montgomery County site in terms of effects on *bank stability* and *water quality*. However, the Santa Cruz site has a substantial amount of *riparian vegetation* that may have been removed of affected in implementing streambank restoration practices. Consequently, *biota* may have been adversely affected. There are no *wetlands* on-site or nearby (Davis, 1999).

5.2.2.2.3 Comparison of the Impacts of Streambank Restoration Practices

Table 5.2-2 illustrates the impacts of the various methods used in restoring streambanks. Each practice serves the purpose of reducing erosion and protecting streambanks, but some may be more 'green' than others. Armoring is generally less functional for aquatic and vegetative species, whereas practices that employ natural materials often provide additional benefits.

5.2.2.3 Dam, Dike, and Levee Repair

The primary functions of water control structures include flood control, infrastructure protection, and land development. Dam, dike, and levee repair or removal is an EWP practice that is applied to either NRCS assisted structures, or for dams, dikes, or levees located along streams with a drainage of less than 400 square miles.

5.2.2.3.1 Impacts of Disaster-damaged Dams, Dikes, and Levees on the Environment

Dams, dikes, and levees are constructed for the purposes of impounding or re-routing stream flows. The installation of a dam is directly in the path of the stream and generally results in the formation of a reservoir. This may provide for municipal drinking water supply, recreation or simply flood protection for structures in the historical floodplain below. Dikes and levees, on the other hand, are built alongside a stream and are intended to mitigate the effects of high water levels, potentially preventing flooding in the protected areas behind.

Impacts to Aquatic and Related Ecosystems

Damages to these structures can have serious short-term impacts. The breach of a dam could lead to the release of the entire impounded volume of water into the floodplain below. The volume of water released could actually be greater than any possible flood, depending on the size of the reservoir. The downstream effects of flooding would be amplified, as water scours stream channels, streambanks are damaged, and debris torrents are propelled into the floodplain. Impacts to ecological communities could also be amplified above 'normal' flood damage.

Table 5.2-2 Impacts Comparison of Streambank Protection Techniques

Armoring	Natural Materials			In-stream flow modifications
	Dead Woody Structures	Soil Bio-engineering	Vegetative Planting and Seeding	
Sedimentation and Turbidity				
Armoring would stabilize eroded streambanks within the impaired reach, reducing erosion. Flows could be re-directed into downstream banks and increase erosion, sedimentation and turbidity. Spawning and riffle habitat could be affected.	Structures would increase bank stability and reduce erosion.	Soil bioengineering would stabilize eroded streambanks within the impaired reach and decrease sedimentation and turbidity.	Vegetation stabilization would reduce sedimentation and turbidity by filtering overland flow and decreasing erosion within the impaired reach. Bank failure during high velocity flows could occur and cause increased erosion and sedimentation.	Decreases in bank erosion would result and therefore decrease sedimentation and turbidity levels. Increased flow velocities should aid in the transport of sediments.
Temperature and Dissolved Oxygen				
Near-shore habitat could be reduced and cause reductions in cover and food sources for larger biota.	Structures would provide quality substrate for vegetation, providing cover, shade, and detrital inputs.	Soil bioengineering would provide substrate for vegetation, providing cover, shade, and detrital inputs.	Vegetation stabilization would improve habitat and eventually provide shade and cover resulting in a cool, well-fed stream system.	In-stream flow modifications would decrease erosion and increase dissolved oxygen and habitat diversity.
Pollutants				
Heavy equipment use increases risk of POL spills/leaks. Decreases in streambank vegetation would decrease the filtration of overland runoff.	Heavy equipment use increases risk of POL spills/ leaks.	Heavy equipment use increases risk of POL spills/leaks. Mixed practices would increase habitat diversity since both vegetation and hard structures are used, and should reduce runoff-based nutrient flows to stream.	Heavy equipment use increases risk of POL spills/leaks. Vegetation would filter overland flow and reduce sediment and nutrient loads.	Heavy equipment use increases risk of POL spills/leaks.
Habitat Structure				
Armoring could decrease bank vegetation and potentially inhibit future vegetation colonization. Armoring may increase attachment surfaces for invertebrates and increase food supplies within the system. Armoring likely will not provide substantial riparian habitat.	Structures would provide additional habitat for aquatic species and provide substrate for riparian vegetation, improving cover instream.	Improved riparian vegetation would provide additional cover for aquatic species and provide nutrient inputs.	Improved riparian vegetation would provide additional cover for aquatic species and provide nutrient inputs. Improved riparian vegetation would provide additional riparian habitat for amphibians, reptiles, birds, and mammals.	Flow modifications would direct flows away from banks, preventing the under-cutting of bank vegetation and would create some pools instream, providing habitat areas for aquatic species.

Table 5.2-2 (continued) Impacts Comparison of Streambank Protection Techniques

Armoring	Natural Materials			In-stream flow modifications
	Dead Woody Structures	Soil Bio-engineering	Vegetative Planting and Seeding	
Channel Structure				
Armoring banks would decrease bank erosion within the impaired reach and reduce sedimentation to downstream reaches.	Structures would reduce erosion and sedimentation, preventing the degradation of downstream reaches.	The combination of vegetation and hard structures should decrease downstream sedimentation from both overland flow and bank erosion.	Vegetation would decrease downstream sedimentation from both overland flow and bank erosion. Erosion could reoccur during high flows and fill downstream riffles and pools.	In-stream structures would improve sediment transport and protect streambanks from instream erosion.
Biota				
A reduction in near-bank habitat could cause a reduction in spawning and rearing success in fish species, food sources, and overhead cover. Invertebrates may benefit from additional habitat in armoring structures.	Additional instream habitat and vegetative cover would benefit both fish and invertebrate species.	Fish would benefit since shade, cover, and in-stream habitat would be improved over impaired conditions. Vegetation establishment would increase food sources for invertebrate populations, provide habitat and cover for fish and improve water quality.	Shade, cover, and in-stream habitat would be improved over impaired conditions. Vegetation establishment would increase food sources for invertebrate populations, provide habitat and cover for fish and improve water quality.	In-stream structures would increase dissolved oxygen rates, pool structures and water quality, benefiting fish and invertebrates.
Riparian, Floodplain, and Wetland Ecosystems				
Armoring maintains the current channel, reducing localized flooding and channel meanders, possibly adversely affecting floodplain and wetlands.	Structures may improve riparian habitat with vegetation and instream cover. Structures may encourage meanders, possibly benefiting floodplains and wetlands.	Would improve riparian habitat with vegetation and instream cover.	Would improve riparian habitat with vegetation and instream cover.	Would improve riparian areas by reducing bank erosion.

In addition to the debris torrents and streambank damage, turbidity levels would be very high, vegetation may be stripped away and many biotic organisms would be destroyed or carried away. The torrent might seriously damage or bury sensitive ecosystems downgradient, such as wetlands.

Levee breaches may have similarly harmful results. Raised floodwaters may breach the levee, carrying large volumes of water and sediment load into the flat lands behind, damaging agricultural lands. The damage is often not localized to the breach, as floodwaters may spread both upstream and downstream, creating widespread damages. Similar effects to dam breaches may be seen, as vegetation is uprooted and erosional forces are high.

Long-term impacts of dam, dike, and levee breaches are less serious, however, as these breaches would closely approximate natural floodplain functions. In cases where repairs are not made, the site acts as a floodplain easement, the benefits of which are discussed in the next section. If a dam or levee is removed, as opposed to repaired, full floodplain functions could be restored. Alternately, some positive impacts may be realized with levee repairs, such as improved retention of chemicals in the protected farmlands behind the levee and the accompanying lack of pollutant inputs.

To summarize, the parameters introduced in Chapter 4 can be discussed. *Sedimentation and turbidity* would increase greatly, as the earthen dam or levee would be a source of sediment and the force of the floodwaters would cause heavy erosion**.** However, once flows begin to slow, areas of slack water would begin to see increases in *temperature* and decreasing *dissolved oxygen*. *Pollutants* would likely have a minimal impact in dam breaches, as the volume of water would dilute the pollutant. In the case of levee breaches, though, agricultural chemicals from the lands behind the levees may be added to the water column and decrease water quality. *Habitat structure* would see negative effects, as the breaches and subsequent large flow volumes will likely cause substantive damages to the stream channel and riparian areas. *Channel structure* would also see impairments, as the floodwaters would erode streambanks, scour channels, and lead to the formation of new stream channels.

Over the long-term, these effects would be mitigated, as structures such as dams and levees would not be replaced and natural floodplain function would return (see The Cosumnes River Project, undated). These effects are further discussed in the section on floodplain easements.

Effects of Disaster-damaged Dams, Dikes, and Levees on Riparian, Floodplain and Wetland Ecosystems

Dams, dikes, and levees normally work to restrict natural floodplain dynamics and provide for other uses of the land. Breaches in these structures would have both positive and negative effects on riparian, floodplain and wetland communities, as a more natural flow regime would be returned but often in a large, unmanageable volume. Riparian and floodplain vegetation and wetlands might benefit from the more natural hydrology, as flooding in these communities is common. However, the volume of water impounded and the force of water accompanying these breaches would likely be very damaging to any community. Scour, excessive erosion, and uprooting of vegetation would be likely impacts. Sedimentation may fill wetlands, reducing their functionality or possibly destroying them.

Damage to Dams and Levees at Example EWP Sites

Repairs to a levee were made in Fremont County, Iowa along the East Nishnabotna River. The levee damage threatened several hundred acres of farmland and several residences. As noted before, the East Nishnabotna has poor water quality, little riparian vegetation, and some hardy fish species present. Also noted was the continuum of wetlands and riparian areas along the river channel, often located in the area between the levees (NWI, 1999; Miller, 1999).

The Switzer Dam is located along the Dry River near the Virginia-West Virginia border and is part of the Maury River watershed. The spillway of this earthen dam was damaged by the rains accompanying Hurricane Fran, as overflow waters passed through the spillway, causing severe erosion, gullying, and uprooted numerous trees, leading to debris blockages downstream. A second spillway on a second dam along an unnamed tributary of the Dry River was also damaged. There is no continuous flow through the spillway, so there is no aquatic community to speak of. The outflow of the dam does eventually reestablish the Dry River, which supports trout and other aquatic, wetland, floodplain and riparian ecosystems, as described in the Rocky Run discussion. Rocky Run is located approximately seven miles downstream.

5.2.2.3.2 Impacts of EWP Dam, Dike, and Levee Repair or Removal

EWP dam, dike, and levee repair or removal does not apply to structures maintained or owned by other Federal agencies. Dam, dike, or levee removal practices are used in a situation when the threat of failure is high and repair is either not economically or socially defensible or not technologically feasible. Dam, dike, and levee removal may occur in combination with floodplain easement purchasing to help restore hydrological functions and protect life and property.

Dam, Dike, and Levee Repair Practice Components

Dam, dike, and levee repair (including dam spillway repair) may consist of the following practice components:

- Creating access when needed to move heavy equipment to the site;
- Dewatering to allow operation to proceed under "dry" conditions;
- Installing armor to protect either the dam, dike, or levee, or downstream structures;
- Repairing spillways; and
- Grading, shaping, and re-vegetating affected areas by seeding or planting:
    - Fill – may cause increased runoff and affect aquatic habitat and biota. Sediment may fill in riffle habitats, turbidity may inhibit migration patterns of salmonids, turbid conditions may irritate gill structures (See Section 5.2.2)
    - Excavation – Same impacts as above
    - Compaction – See Section 5.2.2.4
    - Revegetation – See Section 5.2.2.1 (grading, shaping, and revegetating).

The impacts of creating access, dewatering, grading, shaping, and re-vegetating have previously been discussed in Section 5.2.2.1. The impacts of installing armor have been discussed in Section 5.2.2.2, actions that protect streambanks.

Summary of Impacts on Aquatic Community Parameters

Impacts would have been similar to those seen in association with other practices, such as short-term increases in *sedimentation and turbidity*, *temperature and dissolved oxygen*, and a possible risk of *pollutants*. *Habitat structure* and *channel structure* may also be affected by

sedimentation and other construction impacts. *Biota* may also be adversely affected, as previously discussed.

The impacts of dam, dike, and levee removal are discussed under floodplain easements, as the natural flow regime would be returned. Long-term impacts of dam removal would likely benefit aquatic communities, as natural stream conditions are restored. Downstream human and biotic communities would also benefit from dam removal, as the threat of dam failure would be removed.

Dam and Levee Repair at Example EWP Sites

As previously stated, the East Nishnabotna watershed is located in Southwestern Iowa and is comprised of mostly agricultural land. The natural environment, at the time of the disaster, was typical of an agricultural setting. Little or no riparian vegetation existed due to severe erosion from floodwaters. Short-term impacts to water quality occurred from heavy equipment traffic, which included an increase in *sedimentation and turbidity*. Some effects to *temperature and dissolved oxygen* may have also occurred. The risk of *pollutants* was present, and *habitat structure* and *channel structure* may have been adversely affected as previously discussed under construction impacts. *Biota* may have been adversely affected by the increased turbidity or reductions in habitat quality.

The Switzer Dam site would have experienced minimal impacts to the aquatic community due to the lack of freely flowing water. Slight impacts to *sedimentation, temperature, pollutants, and habitat* and *channel structure* may have occurred. Soil compaction and vegetation removal may have occurred. There is no aquatic *biota*.

Effects on Riparian, Floodplain and Wetland Communities

Bank stability and erosion are improved, as the previous bank condition is returned. V*egetative cover* will be restored in some cases, such as the grasses that cover levees. *Hydrology, biota* and *wetlands* will return to conditions under the altered flow regime.

The impacts of dam, dike, and levee removal approximate the conditions of floodplain easements and further discussion may be found in that section. In some cases, the natural communities are impaired by the implementation of the dam or levee itself and would benefit most by their removal.

5.2.2.4 Practices that Protect Structures in Floodplains

Floodplain diversions and sediment/debris basins are constructed to protect important public infrastructure, such as water and wastewater treatment plants, as well as other property located in floodplains.

5.2.2.4.1 Floodplain Diversions

Disaster Effects of Damaged Floodplain Diversions and Sediment/Debris Basins

Floodplain diversions are constructed and used when excessive runoff, or debris flow, is threatening to damage water or wastewater treatment or similar facilities. Sediment and debris basins cause stormwaters or floodwaters to pool, allowing for some settling of sediment and debris, reducing the downstream damages. When breached, the overland flow of water may lead to severe erosion, which can damage the municipal or other structures, fill aquatic habitat, uproot vegetation, and increase turbidity in streams. These effects to aquatic, riparian, wetland, and floodplain ecosystems are similar to those resulting from damaged dams or levees, and a more detailed discussion of these effects can be found under dam, dike and levee repair.

Damage at Example EWP Site: Floodplain Diversion Site – Clarendon, Texas

The City of Clarendon, Texas utilizes a six-lagoon system to treat its wastewater, eventually emptying the treated water into Lake Clarendon. The lagoons are protected by a system of levees which guard against inundation from Lake Clarendon, which is a playa lake. The lake may contain a small population of catfish and carp, each of which are very tolerant of fluctuations in turbidity, nutrient and dissolved oxygen levels. Lake Clarendon and its surrounding environment is a wetland (Sears, 1999). Heavy rainfall caused the lake, which is normally 40 acres, to expand to 360 acres. This caused several of the first levees to fail, and allowed untreated sewage to be expelled into Lake Clarendon.

5.2.2.4.1 Sediment/Debris Basins

Sediment and debris basins temporarily detain a portion of stormwater runoff for a specified length of time, releasing the stormwater slowly to reduce flooding and remove a limited amount of pollutants. Pollutants are removed by allowing particulates and solids to settle out of the water. The primary focus of detention basins is to reduce peak stormwater discharges, control floods, and prevent downstream flooding (NCSU, 1999). Sediment or debris detention basins also prevent down-gradient debris torrents from destroying infrastructure. Water and sediment control basins are effective for preventing downslope gully erosion, trapping sediment, and reducing peak flows downstream. The basin traps sediment and the nutrients attached to it. Infiltration through the bottom of the basin provides for groundwater recharge.

5.2.2.4.3 Effects of Current EWP Practices to Protect Structures in Floodplains

Components of Diversion Installation

The following EWP practice components are involved in installing a diversion:

- Creating access when needed to move heavy equipment to site;
- Excavating soil;
- Compacting soils for stability;

- Constructing outlets for the release of stormwater; and
- Grading, shaping, and revegetating affected areas by seeding or planting.

Components of Sediment and Debris Basin Installation

EWP practice components involved in sediment and debris basin installation include the following:

- Creating access when needed to move heavy equipment to site for short-term construction and for long-term maintenance;
- Excavating soil and shaping the basin;
- Compacting soils for basin stability and retention capabilities;
- Constructing outlets for the release of stormwater; and
- Grading, shaping, and revegetating affected areas by seeding or planting.

Impacts of Practice Components

The above practice components can lead to impacts to aquatic, riparian, wetland, and floodplain ecosystems due to the compaction of soils, creating access, clearing land, increased runoff, and sedimentation. A complete description of these practice components can be found under the practices of debris removal or streambank restoration.

5.2.2.5 Practices that Restore Watershed Uplands (Critical Area Treatment)

Watersheds are often impaired and lives and property threatened by damage done in upland areas that leaves large areas depleted of protective vegetation and susceptible to severe erosion, debris flows, and mud slides when heavy rain events next occur.

5.2.2.5.1 Impacts of Disasters that Create Critical Upland Areas

Natural disasters such as droughts, fires, or floods have the potential to denude large areas of vegetation growth. Vegetation plays a vital role in controlling wind and water erosion, groundwater infiltration, and soil productivity. Without vegetation, soils become susceptible to increased erosion, decreased infiltration, decreased soil productivity, and mass-flow events. These events can lead to decreases in wildlife habitat, water quality, and increases in threats to life and property. Areas that have been voided of vegetation often become a priority concern for entire communities or residents living adjacent to the impaired area. Unprotected soil particles carried by high winds can reduce visibility and irritate eyes and respiratory systems. Heavy rains can lead to debris torrents, which can deposit sediment, woody debris, and other materials in floodplains.

Damage at Example EWP Sites

Critical Area Planting Site – Boise 8th Street Burn

On August 26, 1996, the Boise Front experienced a devastating fire that burned nearly 15,300 acres. A principal concern of the Boise Front Watershed was the susceptibility of the area to catastrophic erosion. The combination of steep slopes and highly erodable granite soils make the area extremely sensitive to changes in the vegetative community. Ninety percent of the soils within the burned area were classified as highly erosive and the burn left no standing vegetation on approximately 95 percent of the lands within the fire boundary (BLM, 1996). There are no wetlands onsite and the downstream areas are also unlikely to have wetlands (Fink, 1999). There are no T&E species present or nearby that would have been affected. The burn area has minimal aquatic, riparian, floodplain, and wetland habitat, as streams are intermittent. However, subsequent rainfall and the ensuing erosion and debris torrents would affect both human and natural communities downstream, where the burned area gives way to the city of Boise and the Boise River.

Critical Area Planting Site - Antelope Valley Drought, CA

Due to an extended drought in California, soil was being rapidly eroded from a 7,700-acre parcel of land that had previously been farmed. Federal air quality standards were not being met in surrounding areas during high wind events, as visibility was reduced and deposition of sand was threatening roads. The site is within the historic range of the federally listed desert tortoise (*Gopherus agassizi*) and the kit fox (*Vulpes macrotis*), but as indicated by the USFWS, it is unlikely that the tortoise or fox would inhabit abandoned cropland. Therefore no impacts to T&E species should have occurred. There are no perennial streams on-site, but deposition of sediments may have affected downstream channels or riparian areas.

Upland Diversions Example Site – Boise 8th Street Burn

Upland diversions were used to divert surface flows away from areas prone to extreme erosion. The diversions utilized in the 8th Street Burn rehabilitation included contour felling and contour trenching. Site preparation activities included cutting down burned trees, excavating, filling, grading, and compacting soils. No additional roads were constructed for the creation of upland diversions, all equipment was either air-lifted by helicopter, or transported by hand to the site.

Check Dam Example Site – Boise 8th Street Burn - Hulls Gulch and Crane Creek Drainage

Numerous gravel bag and straw bale check dam sites were established in the Hull's Gulch and Crane Creek drainages in 1997 to help control soil loss in impaired areas while ground cover was being re-established.

Road Protection (BAER) Site – Boise – 8th Street Burn

Three projects areas were selected for the installation of drains and conveyances to protect roads from surface water flow and debris torrents. The three areas included a roadway in Stewart Gulch, in the Cottonwood Creek drainage, and in Upper Hulls Gulch. The structure installed in Stewart Gulch consisted of a conveyance structure that was placed under the roadway, below a detention basin. The structure installed in the Cottonwood Creek drainage included placing two major culverts under the realigned road up-slope of a flood channel. The structure installed in Upper Hulls Gulch included installing a rock armored flood diversion channel, which protects the road from wash out. Each of the structures is intended to convey water from the overflow of the detention basin under the road to protect it from washing out.

5.2.2.5.2 Impacts of EWP Practices to Restore Critical Areas

Critical area treatment involves the use of one or more practices to stabilize these priority areas of a watershed that pose a high threat to life or property. These practices tend to increase the vegetative cover, bind and retain soils, help maintain infiltration, reduce surface runoff by slowing water velocity through structures on side slopes, and improve drainage conditions to protect property (SCS, 1992). Treatments that are used to stabilize critical areas include critical area planting, installing diversions, installing grade stabilization structures, installing contour trenches, and protecting roads. All practices within critical area treatment, depending on the location of the project, may have similar short-term and long-term actions including creating access and grading, shaping, and revegetating affected areas by seeding or planting. The environmental consequences of these actions have previously been discussed in general in Section 5.2.2, and will be discussed only briefly here.

Components of Critical Area Treament Practices

Critical area planting utilizes permanent grasses and legumes to stabilize soil and reduce damage from sediment and runoff to downstream areas. It is also used to control wind erosion from exposed topsoil. Critical area planting may require creating access and preparing sites for planting, seeding with native, or non-native stock, planting native, or non-native plants, and applying fertilizers and other additives that aid in plant growth.

Preparing sites for planting may involve tilling, ripping and raking, which turn soil over to make it more conducive to vegetation growth. This is used especially in areas where soils have become hydrophobic and do not allow seeds to penetrate the surface layer.

Seeding, or planting with native, or non-native stock can be accomplished a number of ways including aerial seeding, drilling, and hand seeding. Aerial seeding involves the deposition of seeds from a plane or helicopter. Drilling involves the use of a tractor pulled drill, such as the rangeland drill, which furrows a trench and plants the seed stocks. Many times, chains are dragged behind the drill to cover the trenches, which prevents the loss of seed. As previously stated, drilling is often conducted horizontally on side slopes, which helps create terraces that slow runoff and aid in the infiltration of surface water (Vetten, 1999). Hand planting is also an

option that can be utilized to stabilize impaired areas in settings, which are not conducive to mechanical planting, or seeding. NRCS is recognized as a leader in plant materials technology and maintains a wide array of plant species that would be suitable for rapid re-establishment of bank vegetation and stability. NRCS will make every attempt to use native plants in revegetation, but introduced (i.e., non-native) species may be used as the site conditions warrant. Invasive or weedy species will be avoided in accordance with Executive Order 13112.

Applying fertilizers, additives, or ground cover such as lime and mulch, aid in the re-establishment of newly planted vegetation may impact certain compartments of the environment. During rain events, runoff containing fertilizer and additives may enter the aquatic environment and affect both the water chemistry and the biology of the system.

Grade stabilization structures are employed to reduce the effects of unchecked runoff on unprotected slopes while they are revegetating. *Check dams* are small dams constructed in drainageways, across slopes, or at the toe of slopes, to reduce downslope erosion by restricting flow velocity. Check dams are utilized in areas that have intermittent flows where it would be impractical to line an area with non-erodable materials. Check dams are usually constructed of riprap, straw bales, logs, or sandbags (Smoot and Smith, undated).

The critical area treatment process may also include the *protection of roads* from severe floodwaters, which can cause erosion and instability. EWP practice components that are involved in road protection may include access creation, installing drains and conveyance, armoring, and grading, shaping, and revegetating.

Installing drains and conveyances involve heavy construction activities, including the removal of ground cover, and excavation.

Upland diversions, including contour felling and contour trenching, are constructed and used to protect critical areas that lack vegetative cover from excessive runoff, and protect downslope communities, or structures from debris laden subsurface water flow. Contour felling involves placing cut trees in rows horizontally on side slopes to divert water. Contour trenching involves a similar practice, except that logs are replaced by excavated trenches, which are constructed on slopes of between 35 and 60 percent with moderate to deep rills. Their main purpose is to store or divert runoff thus reducing soil erosion and overland flow.

Outlet structures are utilized to conduct storm water away from developed lots, buildings, housing developments, or critically damaged areas and usually discharge into the nearest stream channel. Outlet structures are usually lined with clean stones to reduce the velocity of water exiting the structure.

Soil compaction may be required to aid in diversion stability and effectiveness. Compaction of soils decreases infiltration rates, increases in runoff, ponding of water, and decreased soil productivity.

Summary of Impacts of Critical Area Treatment Practices to Aquatic Ecosystems

Critical area treatment is more frequently used in upland areas where streams tend to be intermittent and the primary concern to aquatic systems is not construction-related, but related to storm events, where sudden erosion and vegetation uprooting may harm downstream, perennial aquatic systems.

Sedimentation and turbidity: Short-term increases in sedimentation and turbidity may be seen with equipment operation and access creation. Excavation, soil compaction, and installation of the practices may have similar short-term effects. Long-term effects may be beneficial, as revegetation stabilizes streambanks and reduces overland erosion.

Temperature and dissolved oxygen: Short-term increases in temperature and decreases in dissolved oxygen will result from equipment use, removal of vegetation, and excavation. Long-term benefits will be realized as riparian vegetation is reestablished.

Pollutants: Equipment operation introduces risks of leaks. Access creation may remove riparian vegetation and promote erosion and runoff. Reestablishment of riparian vegetation will reduce erosion and runoff of agricultural or urban lands. Use of fertilizers and other chemicals may adversely affect water quality if not absorbed before next rainfall event.

Habitat structure: Sedimentation may fill benthic habitat. Access creation may remove riparian and aquatic vegetation. Some practices, such as riprap and gabions, may decrease riparian and aquatic habitat for some species and limit access to the water for terrestrial species.

Channel structure: Sedimentation may alter channel structure. Drains or other structures may alter course or profile of stream channels.

Biota: Increased sedimentation and turbidity can result in decreased spawning success, gill abrasions, migration barriers, lower dissolved oxygen, and the filling of downstream riffle areas (see Berkman and Rabini, 1987; Koonce and Teraguchi, 1980; and McCabe and O'Brien, 1993).

Critical Area Treatment Impacts at Example EWP Sites

The 8th Street Burn restoration involved critical area planting, the installation of upland diversions, the installation of check dams, and the protection of roads. The area of the burn typically has only a few perennial streams but a larger number of intermittent channels, minimizing direct aquatic impacts. *Sedimentation and turbidity* may have increased during construction, as heavy equipment was used for some of the work and the vegetation on-site would have been removed or damaged in the burn. T*emperature, habitat structure, channel structure, and biota* would have experienced minor effects during construction, but long-term effects would be positive, as erosion would be decreased substantially by vegetation establishment. Impacts from *pollutants* were restricted to POLs from equipment, as no fertilizers or other chemicals were used.

The Antelope Valley site required tilling of the sandy soils and seeding of native grasses to establish vegetative cover. In some places, snow fences were erected to impede further erosional losses. Much like the 8th Street burn site, there is no aquatic environment on-site but concerns for downwind aquatic systems, as well as impacts to humans, prompted restoration action. *Sedimentation and turbidity* may have increased during construction, as heavy equipment was used to till the soils, possibly creating more wind-borne sand particles that may have impacted downwind streams. T*emperature, habitat structure, channel structure, and biota* would have experienced minor effects during construction, but long-term effects would be positive, as erosion would be decreased greatly by vegetation establishment. Adverse effects from *pollutants* may have resulted from equipment use and fertilizers.

Effects on Riparian, Floodplain and Wetland Ecosystems

Bank stability and erosion: Short-term effects may have included increased soil compaction from equipment use and minor vegetation removal or damage. Long-term effects are highly beneficial, as revegetation stabilizes soils in the upland and streamside areas, reducing erosion (see Karr, 1977). Aerial or hand seeding and planting may reduce short-term impacts.

Vegetative cover and habitat: Short-term adverse effects to vegetation may have occurred if vegetation were damaged or removed. Erosion and sedimentation during construction could have affected downstream vegetation. Long-term effects are likely to be highly beneficial, as revegetation returns natural grasses or woody vegetation, providing habitat and cover.

Hydrology and water quality: In the long-term, hydrology would be improved, as vegetation and structural measures would improve water flows and prevent erosion and sedimentation.

Biota: Revegetation would have restored habitat and forage for local biota. Use of native species would have promoted local diversity and discourage exotic species.

Wetlands: Reducing the overland erosion and debris flows would have reduced sedimentation and filling of wetlands downslope.

Effects on Upland Ecosystems

Erosion: Short-term adverse impacts to soil stability may have occurred from equipment usage and other construction work may have compacted soils or created ruts. Revegetation and structural practices would reduce long-term erosion substantially.

Vegetative cover and habitat: Some adverse effects may have occurred as construction of the conservation measures took place, but revegetation likely would substantially improve vegetative cover in damaged areas. Depending on the type of vegetation used, various types of habitat would be promoted.

Biota: Revegetation would have restored habitat and forage for terrestrial biota. Use of native species would promote local diversity and discourage exotic species.

5.2.2.5.3 Comparison of the Impacts of Critical Area Treatment Techniques

Table 5.2-3 below illustrates the impacts of the various methods used in treating critical areas. Natural vegetation has minimal impacts but generally takes more time than other practices, increasing the risks of further damage from new rainfall events or disasters.

Table 5.2-3 Impacts Comparison of Critical Area Treatment Techniques

Natural Revegetation	Conventional Seeding	Critical Area Planting	Structural Measures
Water Quality[1]			
Natural regeneration would help reduce peak flows once established. Vegetation could take longer to establish. Natural regeneration would not involve the use of fertilizers that may enter the stream and lower water quality.	Seeding an area should reduce peak flows once established. Seeding should have minimal site disturbance impacts. Conventional seeding could cause fertilizers and chemicals to enter waterways and affect algae and plant populations.	Critical area planting should reduce peak flows once established. Site disturbance could cause increased sedimentation in the short-term. Critical area planting could cause fertilizers to enter waterways and affect algae and plant populations.	The construction of structural measures could increase sedimentation in the short-term. Erosion and sedimentation should decrease in the long-term. Structural measures will likely reduce erosion more quickly than with vegetation establishment.
Habitat and Channel Structure			
Natural regeneration could allow sedimentation and runoff in the short-term.	Habitat should be improved over the long-term due to decreases in erosion and sedimentation.	Habitat should be improved over the long-term due to decreases in erosion and sedimentation.	Increased turbidity could occur during the construction of structural measures.
Biota			
Natural regeneration could allow sedimentation and runoff in the short-term.	Conventional seeding methods that use fertilizers could affect stream biota in the short-term. Improved habitat would benefit biotic species.	Critical area planting methods that use fertilizers could affect stream biota in the short-term. Improved habitat would benefit biotic species.	Increased turbidity could occur during the construction of structural measures.
Riparian, Floodplain and Wetland Ecosystems			
Natural regeneration would not control sedimentation until vegetation becomes established. Sites should have improved habitat once revegetation occurs.	Conventional seeding practices that utilize fertilizers could affect wetlands. Sedimentation and filling could occur until vegetation becomes established.	Conventional seeding practices that utilize fertilizers could affect wetlands. Sedimentation and filling could occur until vegetation becomes established. Critical area planting could disrupt wildlife and vegetation. Sites should have improved habitat once plantings become established.	The construction of structural measures would cause high levels of site disturbance. Immediate sediment control would occur. Structural practices would cause high initial site disturbances and could decrease wildlife habitat.
Upland Ecosystems			
Natural regeneration would not control sedimentation until vegetation becomes established. Sites should have improved habitat once revegetation occurs.	Conventional seeding practices that utilize fertilizers could affect wetlands. Sedimentation and filling could occur until vegetation becomes established.	Conventional seeding practices that utilize fertilizers could affect wetlands. Sedimentation and filling could occur until vegetation becomes established. Critical area planting could disrupt wildlife and vegetation. Sites should have improved habitat once plantings become established.	The construction of structural measures would cause high levels of site disturbance. Immediate sediment control would occur. Structural practices would cause high initial site disturbances and could decrease wildlife habitat.

[1] Includes turbidity, temperature, dissolved oxygen, and pollutants

5.2.3 Impacts of Proposed EWP Watershed Restoration Practices

This section describes the impacts of the new practices that would be implemented under the alternatives to the No Action—use of natural stream dynamics principles in streambank restoration projects, floodplain deposition site restoration, upland debris removal, repair of damaged structural/enduring/long-life conservation practices, and restoration using improved alternative treatment practices.

5.2.3.1 Restoration Using Natural Stream Dynamics Principles

The practice of streambank restoration has been analyzed in detail earlier in the Chapter. Traditionally, EWP has used armoring methods to repair damages, such as riprap or gabions. While effective for protecting the structural integrity of the streambank and property along the stream, these practices offer little to the biotic components of aquatic and riparian communities. The Preferred Alternative would promote using the principles of natural stream dynamics and the use of minimally intrusive solutions to restore self-sustaining stream corridor functions.

5.2.3.1.1 Effects of Streambank Protection on Stream and Related Ecosystems

The impacts of streambank restoration have been discussed in Section 5.2.2.2. Streambank damage and subsequent impacts at sites where the Rosgen method of classifying streams and restoring natural stream dynamics would be applied would be very similar to the impacts and sites presented in that section.

Impacts on Riparian, Floodplain, and Wetland Ecosystem Parameters

Bank stability and erosion: Removal of vegetation to create access to a site may increase runoff and erosion. Removal of debris that is protecting a bank from direct exposure to flow will likely increase streambank erosion. Soil compaction from equipment operation may decrease infiltration of soils, increasing runoff. Natural streamflows would create a meandering stream channel, decreasing flow velocity and reducing erosion.

Vegetative cover and habitat: Removal of vegetation to create access to a site will decrease cover and may reduce habitat quality. Natural stream dynamics may promote establishment of riparian, floodplain or wetland vegetation, depending on the hydrologic regime in the reach. Increased cover and vegetation may induce improvements in biotic species present.

Hydrology and water quality: Removal of vegetation may increase erosion from floodplain areas, increasing turbidity and input of nutrients from agricultural or other lands. Channelization of stream may remove natural flood regime and adversely affect the formation of wetlands. Slower stream velocities may reduce turbidity.

Biota: Improved habitat and hydrology may improve biotic resources such as wetland vegetation. Riparian vegetation will likely improve, as riparian areas would see reduced erosion and increased bank stability.

Wetlands: Returning a more natural stream flow with meanders will likely promote wetland restoration or improvement. Using the principles of natural stream dynamics may increase the prevalence of slack waters and reduces flow velocity, promoting wetland functions.

Variability of Impacts between Watersheds

The variability of impacts across different types of watershed would be similar to the analysis in Section 5.2.2.2.

Streambank Damage Situations at Example EWP Sites

The Plumtree site is located along the North Toe River in the mountains of western North Carolina, just north of the town of Plumtree. The reach has a well-developed, woody riparian area and supports a very active recreational fishery, including brook, brown and rainbow trout, as well as smallmouth bass, chubs and dace. There are no T&E species onsite or in the general vicinity. No wetlands are onsite or in the immediate downstream area (Brown, 1999), although the North Toe does show several areas classified as riparian zones (NWI, 1999). A stretch of the river approximately nine miles long was damaged by heavy rainfall, leaving woody and rocky debris and damaging streambanks. The Rosgen method of classifying streams was used to design the stream restoration, which included stabilization techniques such as rootwads, rock vanes, log sills, point bars and streambank revegetation.

5.2.3.1.2 Effects of Proposed EWP Practices to Repair Streambanks

This section describes environmental impacts of using the Rosgen method of stream restoration. Chapter 2 describes in more detail streambank impairments, the practice of streambank restoration, and the specific activities involved. As with all EWP projects, the primary goal of the repairs is to reduce or eliminate threats to life and property. Threat reduction may require stabilizing streambanks, halting erosion losses, and installing structural practices to prevent future erosion.

Impacts of Natural Stream Dynamics Project Activities

Many of the activities involved with using the Rosgen method are essentially the same as those described under streambank restoration. The primary differences are found in the *borrow of materials* and the *installation of structural practices.*

Borrow of materials, under the Rosgen method, is somewhat different than traditional EWP practices. Use of natural materials from the disaster site or areas close by are emphasized. The type of materials acquired are generally very different as well, since natural stream dynamics methods call for a greater use of rootwads, tree revetments, rock vanes and other natural uses of woody and rocky material. Often, these materials are available onsite, either as existing borrow materials or as storm debris.

The *installation of structural practices* differs from prior EWP sites. Equipment use is encouraged to be in-stream in cases where the work can be completed relatively quickly and the effects of equipment use can be temporally restricted to a short period of more intense disturbance, rather than an extended period of moderate disturbance. Installation by hand is also common at sites using the Rosgen method.

Summary of Impacts on Aquatic Community Parameters

As mentioned previously, the impacts of using the principles of natural stream dynamics in designing restoration practices are similar to impacts observed with other streambank restoration sites. Refer to Section 5.2.2.2 for details, as this section will simply address any changes in those discussions.

Sedimentation and turbidity: Sedimentation will be greatly reduced, as extensive revegetation, engineered meanders, flow control structures, and natural bank protection practices such as rootwads will improve flow conditions and decrease turbidity. The short-term increases from in-stream equipment use may be restricted to a limited time period, minimizing the temporal disturbance to aquatic species.

Temperature and dissolved oxygen: The methods used will increase dissolved oxygen and reduce temperatures by providing pool areas, as well as multiple structures that will increase turbulence.

Pollutants: Reduced time of equipment operation in-stream may reduce the risk of spills. Structural methods will decrease erosion and encourage meandering streams, reducing the inflow of runoff and pollutants.

Habitat structure: Habitat will be greatly improved, as natural materials will create cover and pool habitats. Improved water quality from more natural and more effective practices will improve habitat quality.

Channel structure: With the creation of meanders, natural flow is restored, improving the sedimentation and erosion cycle in-stream. Flow control structures can reduce bank erosion while still maintaining natural flow regimes.

Effects on Floodplain, Wetland, and Riparian Community Parameters

The following effects are similar to those experienced under streambank restoration in Section 5.2.2.2. Only the changes to the effects listed there are discussed further here.

Bank stability and erosion: There is an increased focus on leaving some debris in-stream. This will reduce the chances that a critical piece of debris that may be protecting a streambank from direct flows will be removed. Rootwads, rock weirs, and other methods increase bank stability by not only protecting the streambank, but also introducing meanders, directional controls, and pooling to slow the flow velocity and reduce erosion.

Vegetative cover and habitat: These methods leave the streambank in a more natural state, allowing for quicker re-establishment of riparian vegetation. Rootwads may also provide some limited riparian habitat for small mammals or birds.

Hydrology and water quality: The introduction of meanders and reduction of flow velocity will improve hydrology by creating some areas of slack water and promoting riparian and wetland vegetation. Water quality will likely improve, as turbidity and runoff will likely be decreased.

Biota: Riparian vegetation is likely to re-establish more quickly, favoring terrestrial biota. Access to the stream is improved, as meanders may create sandbars and other streamside habitats.

Wetlands: Improvements in hydrology and water quality, along with improved vegetation should promote wetland formation or restoration.

Impacts of Design Based on Natural Stream Dynamics at Example EWP Sites

At the Plumtree site, NRCS used a combination of rootwads, revetments, and weirs to implement the principles of natural stream dynamics. *Bank stability and erosion* were improved, as rootwads and weirs protected banks from flows. Most of the heavy equipment use was completed in-stream, reducing the impacts to riparian soils and vegetation. *Vegetative cover* was disturbed as little as possible, and the natural streambanks will likely promote rapid re-establishment. Some planting and seeding was also completed to augment natural revegetation. *Hydrology* was improved by the introduction of meanders and slack water areas, and water quality improved with the reductions in runoff and decreased turbidity. *Biota* will likely see positive effects, as riparian areas are left in a natural state, sand bars are created and vegetation will re-establish quickly. *Wetlands* are not found on-site, but the natural stream function may lead to the creation or restoration of wetland communities.

5.2.3.2 Restoration of Agricultural Uses in Floodplains (Floodplain Deposition Removal)

Larger rivers frequently carry a heavy sediment load, especially during floods. The high erosion potential of the flood and the increased velocity creates an environment for increased amounts of suspended sediment. When these floodwaters reach an area of slower velocities, this sediment can be rapidly deposited. A common example is seen during the breach of a levee, when floodwaters reach the flat land behind and deposit the suspended sediment, burying crops or structures in thick layers of silt and sand.

5.2.3.2.1 Effects of Floodplain Deposition on Stream and Related Ecosystems

Floodplain deposition generally involves the deposition of large volumes of sediments and other debris on agricultural land in floodplains. Such materials are usually coarse and infertile, and frequently destroy or smother plants and impair normal agricultural use. This is a normal

occurrence in the dynamics of floodplain systems, but can jeopardize the productivity of agricultural lands. Impacts to aquatic communities are similar to the effects under other flood events, whereas floodplains see substantially different effects.

Effects of Floodplain Deposition on Aquatic Ecosystems

The impacts of floodplain deposition would be similar to those described under dam, dike, and levee repair, most specifically under the impacts of levee breaches. *Sedimentation* increases, as floodwaters slow and begin to settle. *Temperature* increases and *dissolved oxygen* decreases over time. *Pollutants and nutrients* are very likely to increase, since most floodplain deposition sites involve active cropland. *Habitat structure* would see negative effects, as sedimentation would fill benthic habitat and vegetation may be destroyed. *Channel structure* would likely also be adversely affected, as sedimentation could partially fill the channel.

Effects of Floodplain Deposition on Riparian, Floodplains, and Wetland Ecosystems

Riparian, floodplain, and wetland communities can be devastated by floodplain sediment deposition, as the volumes of sediment involved can be incredibly large. Layers of sand and silt can reach several feet thick, burying crops and other vegetation, as well as filling wetlands. *Bank stability* is generally poor due to the levee breach or other event, but is not directly related to the deposition. *Erosion*, however, may have adverse effects, as there is an ample supply of highly erodable material in the floodplain with very little vegetation to reduce erosional flows. *Vegetative cover and habitat* are generally buried in layers of sediment, greatly reducing the quality. *Water quality* may see some negative impacts, as turbidity levels may increase with the introduction of this source of sediment. *Biota* will experience negative impacts, as habitat is degraded or destroyed and wetlands are damaged. *Wetlands* may be filled by sediment, effectively destroying them.

Floodplain Deposition at Example EWP Site

The Missouri River site is located along the Missouri River in St. Charles County, Missouri. The property lies behind levees on the northern bank of the river and is primarily used for agriculture, in a corn-soybean rotation. Historically, flooding has been frequent and severe, as the site is subjected to floodwaters from the Missouri as well as backwater from the Mississippi River. A layer of sand up to one-foot thick covered cropland, rendering it useless to further cropping (Cook, 1999). The wetlands found near the river were likely filled with sand and their function greatly reduced.

5.2.3.2.2 Effects of EWP Practices to Restore Agricultural Use to Floodplains

There are two principle methods to deal with floodplain sediment in order to restore agricultural uses: incorporating the sediment into the underlying soil by deep tilling and removing the sediment. Deep tilling involves using heavy equipment to level the sediment to an even thickness, followed by tilling the soils to mix the sediment with the topsoil buried below and restore agricultural function. Sediment removal would involve scraping the land and loading the

sediment for shipping and disposal off-site. The most effective method used depends upon many factors, including size of the deposited particles, depth of material deposited, lateral extent of the deposit, land use, and the soil type of the underlying material. In addition, floodplain easements can be offered to provide disaster relief where there is too much debris to incorporate or haul off-site or otherwise dispose of.

Impacts of Floodplain Sediment Removal Project Activities

Deep tilling, as described above, uses heavy equipment to level and mix the soils. These activities would occur after floodwaters had retreated and the floodplain was again dry. This would tend to minimize impacts to ecological communities, as no water flows, riparian areas or wetlands would be affected, and floodplain vegetation is mostly in the form of crops. The primary concern to ecological communities would be prevention of erosion, as the supply of *sediment* and *pollutants and nutrients* is high. Other functions would essentially be unaffected by the restoration efforts, as the work is intended to restore agricultural function to previously farmed land.

Sediment removal involves many of the same principles as deep tilling. Virtually no impacts would be felt in the ecological communities. Disposal of the sediment, however, may pose some problems. Many levees are constructed with sediment dredged from river channels, and floodplain sediment would be a likely source of levee materials. This may introduce erodible materials back into the floodplain, increasing *turbidity* and contributing to *sedimentation* and the degradation of *habitat and channel structure*.

Floodplain Sediment Removal at Example EWP Sites

The Missouri River site was flooded in 1993 by a breached levee and immense volumes of sand and debris were deposited in the cropland. The levees themselves are composed of sand dredged from the river, providing further material for deposition. In order to restore agricultural utility to the lands, two phases of heavy equipment operation were used. First, a scraper was used to flatten and level the sand deposits to an even layer of approximately 18 inches. Then, a deep plow was used to till the soil and mix the sand with the buried topsoil and recreate usable fields. The levees were repaired (Tummons, 1995).

Summary of Impacts on Aquatic Ecosystem Parameters

Minor effects to *sedimentation and erosion*, *pollutants*, and *habitat* and *channel structure* as described above. The scraping and deep tilling at the Missouri River site had very minimal effects on natural communities, as it mostly worked towards restoring prior cropland.

Effects on Floodplain, Wetland, and Riparian Community Parameters

There would be minor effects to *vegetation* as described above.

5.2.3.3 Restoration of Watershed Uplands (Tornado Debris Removal)

5.2.3.3.1 Effects of Upland Disasters on Watershed Ecosystems

Tornadoes and hurricanes can deposit large amounts of debris on upland areas. Such debris may cover portions of several watersheds and normally consists of downed trees, utility poles, and fence posts; livestock and poultry carcasses; or building materials, such as insulation, shingles, metal roofing, metal siding, and similar non-biodegradable materials. Ice storms may also result in debris deposition. The removal of debris will typically be associated with upland areas where the buildup of debris in a waterway will cause flooding of homes or other structures.

Disaster Impacts on Aquatic Ecosystems

The impacts of storm debris in uplands are similar to the impacts seen in critically damaged areas such as the 8th Street burn. Often, there is no aquatic environment nearby, as streams are intermittent or are located well away from the disaster site. The impacts may be felt in aquatic systems downslope of the site, as subsequent rainfall events may wash sediment or pollutants into those systems. These impacts, whether local or further away, would be similar to the impacts discussed under debris removal and critical area treatment, with one notable addition to *pollutants*, as household debris may contain paint, asbestos, insulation and other household chemicals. Hazardous materials would be handled and removed in accordance with all applicable State and local regulations. Woody debris would only be removed if it posed a threat and may be left in place, providing habitat for terrestrial species.

Upland Tornado Damage at Example EWP Sites

Upland Debris Removal Site – Bauxite National Areas, Arkansas

In 1997 a category F4 tornado devastated 500 acres of sensitive glade and woodland forest in the Blue Branch Watershed in Arkansas. Thousands of piles of blown-down trees cluttered the forest floor suppressing rare species and creating a fire hazard (TNC, 1998). Two species of aggressive, non-native plants also existed at the site further threatening the stressed communities. These species, the kudzu vine (*Pueraria lobata*) and the Japanese honeysuckle (*Lonicera japonica*) readily colonize bare soil and out-compete native vegetation, threatening a State listed threatened plant. The restoration efforts included debris removal by hand, followed by a series of prescribed burns.

Upland Debris Removal Site – Saline County, Arkansas

The tornadoes of March 1, 1997 also devastated private property. The Griffin property was an upland debris removal site on five acres of privately owned land. The project involved the cleanup and removal of 4 acres of damaged timber and 150 cubic yards of household debris, which had been scattered over the property. Debris removal involved the use of heavy equipment, and its subsequent delivery to a county landfill for burning or burial (Reitzke, 1999).

5.2.3.3.2 Impacts of Upland Debris Removal

Upland debris removal uses similar methods as debris removal in stream channels, but would likely have far less aquatic impacts. Heavy equipment and machinery is used when needed to create access to a site and gather and process the debris, creating possible impacts from erosion and soil compaction on downslope stream systems. Special technical assistance and personnel may be required to handle any hazardous materials. Debris removal may alter the overland flow of rain and runoff, possibly affecting erosion along the slope and sedimentation instream.

Upland Debris Removal at Example Sites

As mentioned above, impacts to aquatic communities would have been minimal. At both sites, streams are at least a half-mile away, minimizing any overland aquatic impacts. For a more detailed discussion of some of these possible impacts, see the impacts section of critical area treatment.

Effects on Riparian, Floodplain, and Wetland Ecosystems

Impacts to these communities would also be similar to the impacts under critical area treatment. Any portion of the area affected by the debris removal operation should be graded, reshaped, and revegetated by seeding or planting, as needed.

Effects on Upland Ecosystems

As with riparian, floodplain, and wetland ecosystems, upland ecosystems would experience similar impacts to those seen under critical area treatment. Similar exceptions to these impacts would also be experienced, as noted above.

5.2.3.4 Restoration of Damaged Structural/Enduring/Long-life Conservation Practices

Structural/enduring/long-life conservation practices eligible for repair include grassed waterways, terraces, embankment ponds, diversions, and water conservation systems. These structures are generally upland structures designed to operate on a single farm, most often for soil conservation.

5.2.3.4.1 Effects of Damaged Conservation Practices on Stream and Related Ecosystems

Practices such as diversions, ponds, and waterways are common structures on farms used to prevent soil erosion, contain wastes and runoff, and to provide a supply of water for irrigation or animal consumption. Diversions and grassed waterways are often used together and serve to redirect overland runoff and intermittent streams around valuable cropland and into existing stream channels. Animal waste storage ponds collect waste for long-term storage, and it is generally emptied periodically for application to the croplands. Embankment ponds collect

rainfall and runoff for protection against erosion, animal drinking water, and for human recreational use.

Effects of Damaged Enduring Conservation Practices on Aquatic Ecosystems

These four practices are typically placed in upland areas, away from stream channels, and should have minimal effects on aquatic communities, even when damaged. A failure in a diversion or waterway would likely result in increased erosion to croplands, as the runoff would no longer be diverted away. These effects may be localized to the damaged structure, as the volumes of water contained or diverted are rather small and may not be sufficient to reach existing waterways. The content of the runoff would be composed of water and sediment, with some contribution from pollutants and chemicals. A failed animal waste storage pond would prove highly problematic, however, as the highly concentrated waste can be devastating on aquatic communities, causing sizeable fish kills and degrading water quality. The failure of an embankment pond could also be more troublesome, depending on the volume of water impounded. The effects could be minimal and localized, or they may more closely resemble the effects seen under dam and dike repairs.

To summarize, *turbidity* may be locally increased during failures, with the possibility of larger effects during greatly elevated flows. *Temperature and dissolved oxygen* are unlikely to see substantial effects. *Pollutants* may become suspended in the runoff, degrading water quality. *Habitat structure* may be adversely affected if erosion or poor water quality negatively impacts aquatic vegetation and habitat. *Channel structure* may be negatively impacted by increased erosion and sedimentation.

Effects of Damaged Enduring Conservation Practices on Riparian, Floodplains and Wetland Ecosystems

The general effects on riparian, floodplain, and wetland ecosystems would be similar to those seen in aquatic systems. Normally, enduring conservation practices are located outside of historic floodplains and stream channels, minimizing interactions with those environments. *Bank stability and erosion* may be negatively affected if flow volumes are large, as the riparian vegetation may be damaged. *Vegetative cover and habitat* may be similarly affected. *Water quality* may experience some decreases, especially in cases where animal waste or agricultural chemicals are introduced to the stream channel. *Biota* may be adversely affected by increased erosion or reduced water quality. *Wetlands* may see some change in water flows, in water quality, or may experience some negative effects from sedimentation.

Damaged Enduring Conservation Practices at Example EWP Site

There are four enduring conservation practice sites located in the Maury River watershed, all upstream of the City of Buena Vista and on private farms. The four practices represented are: a diversion, a waste storage pond, an embankment pond, and a grassed waterway. Each of these sites is fully functional and has not failed during their lifespan, even in the heavy rains that caused the severe flooding in Buena Vista, VA. Therefore, hypothetical failures have been

analyzed with available information about the sites and the possible environmental effects. On each site, there are no wetlands present (except for one wetland upstream of the diversion site {NWI, 1999}), no T&E species are known to exist, nor are any cultural resources present.

5.2.3.4.2 Effects of EWP Practices to Repair Enduring Conservation Practices

Generally, repair of each of these conservation practices would involve the use of heavy equipment for a short time and require some grading and shaping. Much like floodplain sediment removal, the work is normally completed with very little impact to aquatic, riparian, floodplain, and wetland ecosystems.

Impacts of Repair of Enduring Conservation Practices Project Activities

The primary concern to ecological communities would be prevention of erosion, as the supply of *sediment* and *pollutants and nutrients* would likely be high. Other functions would essentially be unaffected by the restoration efforts, as the work is principally conducted in upland areas.

Repair of Enduring Conservation Practices at Example EWP Sites

Each of the four sites located within the Maury River watershed exhibit somewhat similar biotic characteristics. The terrestrial environment is generally agriculture and tends to be constructed outside of normal stream channels. Intermittent streams may be nearby and runoff channels may exist, but the aquatic environment is virtually non-existent on-site. However, each of the sites do eventually empty into stream channels and a typical stream in this area is a stable stream with a fairly high gradient. Many of the streams in the area are intermittent, but some do maintain populations of smallmouth bass and perch in the permanent reaches. Generally, there is a well-developed riparian zone and agriculture near the streambeds tends to be more haying or pasture, reducing the amount of fertilizers and other chemical inputs to the streams (Nye, 1999). There are no wetlands at these sites, except for some small wetlands near the grassed waterway site (Flint, 1999).

The diversion is found on the Goodbar farm just to the south of the town of Denmark. The area is moderately steep, as it is part of the downward slope from Big House Mountain to Kerr's Creek below. The diversion is located away from existing stream channels and protects the downslope croplands from overland flow of rainfall and subsequent erosion. The water is channeled into a waterway and routed around the croplands.

A likely scenario for the failure of the diversion would involve heavy rainfall and a breach in the diversion, allowing runoff to erode the croplands. Depending on the volume of rainfall, the erosion could damage crops and flood the field below. These effects would probably be localized to the farm, but there are also two homes nearby that might be affected by erosion and runoff flows. Possible effects would include sediment deposition and threats to structures.

The waste storage pond is found on the Martin farm, to the north of the town of Fairfield. The waste from the dairy on-site is collected and dried within the pond before eventually being

applied to agricultural fields. There is no outflow from the pond and no stream channels are located nearby, although intermittent portions of Marlbrook Creek are a quarter of a mile away.

If the waste storage pond were to receive heavy rainfall, it could overtop is walls and possibly lead to a breach in the wall of the pond. The waste would flow into and probably damage a pasture and pose a threat to water quality, as the creek may receive some of the animal waste runoff. The impacts would include increased turbidity and threats to aquatic life due to torrents of nutrients and sediment into the stream. Human health would be a primary concern, as drinking water wells may be threatened and fish may not be fit for human consumption.

An embankment pond is located on the Hickman farm, east of Horseshoe Bend in the Maury River. It is in an upslope area that drains into an unnamed intermittent stream and eventually into the Maury River approximately two miles below. It was built where two hills converge and serves to collect the runoff from each, preventing excessive runoff in the pasture and residences below.

If the embankment pond were to fail, the erosion would damage the downslope pasturelands, yards and homes. The pond is fairly small, so effects would be localized to very near the site and any additional damage would be constrained by an old railroad grade located further downslope. As the stream is intermittent, there would be no fish or wildlife effects, but vegetation may be removed by the small scale flooding.

The grassed waterway site is found on the Moore farm to the southwest of the town of Raphine. The waterway routes runoff waters around agricultural land to prevent erosion. The grassy vegetation, a tall fescue, is used to slow flow velocities and prevent erosion of the waterway. The site drains into an unnamed tributary and eventually into Moore's Creek approximately a half mile downstream.

If the waterway were to fail, damage would likely occur to the pastureland in the form of gullies and erosion. The effects would probably be local but there are several roads and houses located approximately a half mile away.

Summary of Impacts on Aquatic Ecosystem Parameters

Minor effects to *sedimentation and erosion, pollutants*, and *habitat* and *channel structure* would occur as described above.

Effects on Floodplain, Wetland, and Riparian Community Parameters

Minor effects to *vegetation* would occur as described above.

Effects on Upland Ecosystems

Minor effects to *erosion* and *vegetation* would occur as described above.

5.2.3.5 Restoration Using Improved Alternative Solutions

The implementation of improved alternative solutions would involve one of the practices introduced. A typical site where this practice may be used would be a streambank restoration site. In some cases, NRCS may find that a given amount of protection is sufficient for removing the threat of damages, yet the sponsor may wish to expand the size of the restoration. NRCS would review the plan for environmental and social defensibility, as well as technical merit, and give its approval if warranted. The positive and negative impacts of both the original alternative and the "improved alternative" will be site-specific and those impacts will have been addressed in the section of this document that discusses the impacts associated with that practice.

5.2.4 Impacts of Current EWP Floodplain Easements

Floodplain easements offer a long-term, economically, and environmentally sensible solution for floodplain management. A surprising number of EWP sites are frequently damaged, requiring repeated restoration efforts by NRCS. Recurring levee repair, streambank restoration, and debris removal work is common at these sites.

5.2.4.1 Impacts of Floodplain Easements

Floodplain easements will provide both landowners and NRCS a desirable alternative that will reduce threats to the public, protect property, reduce public expenditures, retard soil losses and erosion, allow for natural floodplain function, promote riparian and buffer areas, improve wildlife and fish habitat, and still provide for agricultural use of the floodplain lands.

5.2.4.1.1 Impacts of Floodplain Easements on Floodplain Health and Functionality

The impacts of floodplain easements can be captured in an analysis of the floodplain parameters. Six parameters have been identified for characterizing the health and functionality of a floodplain (see The Cosumnes River Project, undated). Floodplain easements will change *land development and use* to a less developed state, with more natural vegetation and minimal agricultural use. These changes will greatly improve the filtration, water storage, wildlife and fish habitat, and energy dissipation capabilities of the floodplain. *Hydrology* will be improved, as infiltration rates will increase, velocities will be reduced, filtration capacity will increase, and natural flood regimes will be returned. *Vegetation* in the floodplain will benefit greatly from floodplain easements, as the land uses will revert to more natural functions, promoting grasses, woody vegetation, and possibly wetland vegetation. This will improve habitat, slow water velocity, and improve infiltration rates. *Habitat*, as discussed, will improve markedly, as terrestrial areas will be revegetated with herbaceous and woody vegetation. Aquatic communities will also benefit, as the floodplain easements will improve water quality through better runoff filtration, reduced erosion, and floodwater retention. Floodplain easements may create additional habitat for aquatic species such as herpetiles or may open new fish spawning habitat. *Wildlife* will see similar benefits, due to the habitat improvements and the removal of

development. *T&E species* will benefit, as floodplains will return to more natural conditions and be more capable of supporting those species.

5.2.4.1.2 Impacts of Floodplain Easements on Riparian, Floodplain, and Wetland Ecosystems

Floodplain easements will have impacts on related ecosystems. Aquatic communities will benefit from the improved water quality, reduced floodplain and in-stream erosion, slower flow velocities, and improved flood storage. Riparian communities will see similar benefits, as streambank erosion will be reduced, revegetation will be encouraged, and habitat will be improved. Wetland communities will also be positively affected by improved hydrology, improved water retention, reduced erosion, and revegetation. Upland communities will see some benefits as well, as habitat will be improved, erosion reduced, and vegetation will improve.

5.2.4.1.3 Effects of the Different Floodplain Easement Categories

The current EWP floodplain easement Program is characterized by having three categories of eligible lands. All sites are agricultural land, but each category has different requirements for the subsequent use of the lands. These categories provide a gradation from more natural floodplain easements (Category 1) to fully functioning agricultural land (Category 3). All floodplain easements are perpetual in duration. A floodplain easement may be comprised of acreage from one or more categories as outlined below.

<u>Category 1 Floodplain Easements</u>

Category 1 floodplain easements are considered to be the most natural of the three categories. These floodplain easements are for use on lands where vegetative buffer areas are to be restored or where a State or Federal T&E species may benefit from restored habitat. Once established, no grazing, cropping or timber harvest is allowed. Floodplain function and habitat for fish and wildlife is to be optimized in these floodplain easements.

To the extent possible, these floodplain easements essentially return the natural floodplains to the land. All compatible uses are excluded from these properties, removing any agriculture or development. Vegetation will return and floodplain hydrology will begin to exhibit natural functions. This category of floodplain easement will return the land to a fully functional natural floodplain more quickly than other floodplain easement categories.

Category 2 Floodplain Easements

Category 2 floodplain easements are moderately natural areas and tend to be the more commonly purchased floodplain easements. They are characterized as lands that are, or historically have been, at high risk for frequent flood damages. These lands may also benefit wildlife species designated as species of Federal concern, such as anadromous fish or migratory birds. Land use on the floodplain easement will be limited to compatible uses such as managed timber harvest, haying or grazing. Cropping will not be permitted, and haying and grazing may not be authorized if the floodplain easement restoration plan calls for reestablishment of woody vegetation.

Floodplain easements created under Category 2 exhibit similar characteristics of those under Category 1. Land use is more flexible, allowing some compatible uses, but eliminates intensive agriculture. This will improve water quality in the aquatic community, floodplain habitat, and hydrology. Natural vegetation will return and wildlife will realize benefits from the improved floodplain community. The critical difference with Category 2 floodplain easements is the time required to return to more natural floodplain functions. The inclusion of compatible uses will inhibit some natural processes, the most prominent of which is revegetation of woody species and grasses. The slower recovery period will lead to smaller improvements in infiltration, sedimentation, and habitat establishment.

Category 3 Floodplain Easements

Category 3 floodplain easements are the most agricultural in nature and include only good quality farmlands that are subject to periodic flooding. These areas may remain in cropping, timber, grazing and haying.

These types of floodplain easements offer the least benefits to restoring floodplain function. By continuing with intensive cropping, natural vegetation is not restored, erosion continues at a similar rate, and no additional habitat is created. A benefit of Category 3 floodplain easements is that the capacity for floodwater retention is increased, as these lands are open to flooding, which will reduce flow velocity and improve flood storage.

[Note: Since 2001, as a result of a USDA Office of Inspector General (OIG) investigation, NRCS has operated the floodplain easement portion of the EWP Program by purchasing a single type of floodplain easement, restoration with compatible uses, which is category 2 under the previous categorization. Therefore, categories 1 and 3 are no longer part of the current EWP program and would not be part of implementing the No Action alternative.]

5.2.4.2 Impacts at Floodplain Easement Example Sites

Floodplain easement example sites are located at Medicine Creek, Missouri, Platte River, Missouri, and East Nishnabotna, Iowa. Rose River has also been included as a hypothetical example of a floodplain easement outside of the Mississippi/Missouri River corridor and

provides an example of a very different waterbody. Each site is briefly described below, including an assessment of the pre-disaster and post-disaster natural conditions.

5.2.4.2.1 Medicine Creek Site

The Medicine Creek site is a frequently flooded tract located in northern Missouri. The property is located between Medicine Creek and Muddy Creek, two heavily modified streams with levees directly adjacent to the streambank for much of the stream length. Subsequently, there is virtually no floodplain remaining in these sub-basins. Riparian areas are narrow and of poor quality. Water quality is also poor, as turbidity and agricultural runoff are common problems in this region. Aquatic habitat is of low quality, as reflected by the fisheries present: channel catfish and sunfish. Two State listed T&E species are in the area, the American bittern and the northern harrier, two migratory birds. No wetlands are on-site but NWI maps (1999) list some wetlands nearby as part of the continuum of riparian and wetland habitat along Medicine Creek. In 1993 and 1995, the levees protecting the site were breached during flooding and repairs were made. The site is now targeted for floodplain easement purchase, complete with the installation of a setback levee to reopen floodplain area and create managed wetlands (Young, 1999).

5.2.4.2.2 Platte River Site

The Platte River floodplain easement site is located in western Missouri at the confluence of the Platte River and the Little Platte River. Flooding is very frequent in this area, with 3 to 4 short duration floods per year in the spring (Berka, 1999). Traditionally, maintaining this levee has taken a great deal of effort (Howard, 1999). The Platte is a typical prairie river, being flat, wide and having muddy waters. Riparian and aquatic habitat is poor, as extensive levees and agriculture have degraded these communities. Fish populations near the site include hardy fish such as catfish and carp. There are no T&E species in the area, but some migratory waterfowl and a significant population of game mammals and game birds are in the area. There is an emergent wetland on the southeast corner of the property that has open exchange with the waterbodies. There are also several wetlands listed nearby and downstream in the Platte River corridor (NWI, 1999). During the rains leading to the 1995 flooding, a breach formed along the Platte River portion of the privately constructed levee, damaging crops. The restoration plan for this floodplain easement features wetland creation and enhancement (Berka, 1999).

5.2.4.2.3 East Nishnabotna Site

Along the East Nishnabotna, the Riverton floodplain easement site is located downriver from the other sites described under debris removal, streambank repair, and levee repair. Expectedly, flooding is frequent and levees predominate the riparian area. The river is typical of rivers in the area, with slow moving, muddy water. As with the Missouri floodplain easement sites, the aquatic and riparian habitats are poor and support very little diversity of vegetation or wildlife. No T&E species are onsite or in the area. There are wetlands onsite, along the northern portion of the property as well as across the river in the Riverton management area. The East Nishnabotna River corridor also shows several wetlands and riparian areas (NWI, 1999) both upstream and downstream of the site. The constant threat of flooding persuaded the landowner

to enter the property into the floodplain easement Program, where it will be restored with managed wetlands and turned over to the Iowa Department of Natural Resources for inclusion in the Riverton State Game Management Area on the opposite bank.

5.2.4.2.4 Rose River Site

Purchasing a floodplain easement at the Rose River site would have both beneficial and adverse impacts. As previously discussed, Rose River is a high gradient stream that has naturally reproducing brook trout in its upper reaches. The floodplain easement would allow floodwaters to overtop channel banks and increase stormwater detention times in floodplain areas. This would reduce downstream storm surges. Both aquatic and riparian biota would benefit from the establishment of a floodplain easement and vegetation establishment. Vegetation would provide food, cover, and detrital material for both the terrestrial and aquatic systems, as well as filter overland flow.

5.2.5 Impacts of Proposed Changes in Floodplain Easements

5.2.5.1 Floodplain Easement Changes Proposed under the Alternatives

Under the three alternatives to No Action, two proposed changes would affect the operation of the EWP Floodplain easement Program, a change in the types of floodplain easements eligible for purchase and a change in the lands eligible for purchase.

5.2.5.1.1 Changes in Floodplain Easement Types

Under the three action alternatives, the classification system for eligible land and floodplain easement type (Category 1 to 3) will be revised to include only Category 2 floodplain easements. Under this floodplain easement type, NRCS may, to the extent practicable, actively restore the natural features and characteristics of the floodplain through re-creating the topographic diversity, increasing the duration of inundation and saturation, and providing for the reestablishment of native vegetation. Funding for hydrology restoration and enhancement action may include removal of levees, filling of ditches, or impoundment of water for flood storage or to restore or establish floodplain features. Landowners retain several rights to the property, including the right of quiet enjoyment, the right to control public access, and the right to undeveloped recreational use such as hunting and fishing. At any time, a landowner may obtain authorization from NRCS to engage in other activities determined to be compatible with the protection and enhancement of the floodplain easement's floodplain functions and values. These compatible uses may include managed timber harvest, periodic haying, or grazing. Cropping would not be authorized as a compatible use, and haying or grazing would not be authorized as a compatible use on lands that are being returned to woody vegetation.

[Note: Since 2001, as a result of a USDA Office of Inspector General (OIG) investigation, NRCS has operated the floodplain easement portion of the EWP Program by purchasing a single type of floodplain easement, restoration with compatible uses, which is category 2 under the previous categorization. Therefore, this proposed change has already been implemented.]

5.2.5.1.2 Changes in Eligible Lands

The second major change in the floodplain easement program is that the eligible lands guidelines will be expanded to include improved lands in order to maximize floodplain function. Under the Draft PEIS Proposed Action and Alternative 3, the availability of the floodplain easements would be expanded to non-agricultural lands with a low population density, and used to relocate families and businesses that are under constant threat of flooding damage.

Under Alternative 4, the Preferred Alternative, NRCS would purchase floodplain easements on improved lands where the improvements are affecting attainment of full floodplain function of a floodplain easement; for the sole purpose of creating a manageable floodplain easement area. Under the Preferred Alternative, 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. Structures within any floodplain easement may be demolished or relocated outside the 100-year floodplain.

5.2.5.2 Impacts of Changes in Agricultural Floodplain Easements

5.2.5.2.1 Elimination of Categories 1 and 3

The elimination of Categories 1 and 3 from the current floodplain easement Program will have both positive and negative impacts. Elimination of Category 1 would likely have adverse environmental effects, as the potential benefits to the biotic and hydrologic functions of the floodplain easement will be reduced. However, the restoration/management plan will require a buffer strip along the water course and can prohibit any compatible use if a "hands off" state is desired. Category 2 floodplain easements, by allowing compatible uses, will not be as effective in reducing erosion, promoting revegetation, improving flood storage, and will also take longer to reach a restored state.

Conversely, the removal of Category 3 floodplain easements from the Program will have positive effects of the biotic and hydrologic function. By not allowing continued intensive cropping in the floodplain easement area, agricultural runoff will be reduced, habitat will improve, erosion losses will be reduced and floodwater retention will increase.

These effects may tend to be somewhat offsetting, as the most restrictive and least restrictive floodplain easement categories are eliminated. However, the benefits of eliminating cropping on floodplain easements and simplifying the floodplain easement procurement process would likely more than compensate for the lack of the most restrictive category, particularly if such restrictions can be applied, if warranted, on a Category 2 floodplain easement.

5.2.5.2.2 Impacts of Non-agricultural Floodplain Easements under Alternatives 2 and 3

To date, floodplain easements under EWP have addressed principally agricultural lands and the elimination of future expenditures for flood repairs. With the addition of improved lands floodplain easement purchases, inhabited areas that are subject to frequent flooding may be purchased and returned to natural floodplains, removing imminent threats to life and still satisfying the desire to reduce government expenditures for disaster relief. The EWP recovery practice of structure removal will have similar environmental effects as the non-agricultural floodplain easement program.

To illustrate a floodplain easement purchase, the community of Rocky Run, VA can be used as a hypothetical non-agricultural floodplain easement site. Purchasing a floodplain easement would allow the channel to return to its natural route and alleviate much of the erosion that occurs around the sharp bends. Gabion and riprap structures would no longer be needed, and the riparian vegetation would be allowed to re-establish itself. The re-establishment of the riparian vegetation would benefit the biota of the local riparian and aquatic communities by creating more habitat for biota, and providing shade and detrital material for the aquatic system. The established vegetation would also filter overland runoff, which would help reduce nutrient and sediment loads within the aquatic system. Sediment and cobble would continue to be deposited in the lower gradient regions of the stream system. This is a natural process that occurs in high gradient systems. The channel may become braided, or change course depending on the amount and location of debris deposition.

5.2.5.2.3 Impacts of Non-agricultural Floodplain easements under Alternative 4

Under Alternative 4, the addition of improved lands floodplain easement purchases would be limited to floodplain easements on non-agricultural lands where the land is adjacent to agricultural floodplain easement land, for the purposes of creating a larger sized floodplain easement area. Floodplain easements would not be purchased on lands with multiple property owners and residences for the sole purpose of relocating small flood-prone rural communities. However, the EWP recovery practice of structure removal would have similar environmental effects as the non-agricultural floodplain easement program under Alternatives 2 and 3. Under the proposed recovery practice of structure removal in floodplains, NRCS would partner with a third-party sponsor, such as a town or county, to buy-out structures on land. The third-party sponsor would be responsible for acquiring the property and taking title to the land.

Non-agricultural floodplain easement purchases under the Preferred Alternative would not be an option for the community of Rocky Run, VA, as the project would involve the relocation of multiple property owners. However, NRCS could partner with a state or local agency acting as the project sponsor and provide a cost-share for the buy-out of structures on the land. The land would then be bought by the community project sponsor and used for a stream floodplain. In this case, the effects on the watershed would be analogous to the effect of the non-agricultural floodplain easement purchase program proposed in Alternatives 2 and 3 and described in Section 5.2.5.2.2

Effects on Floodplain, Wetland, and Riparian Community Parameters

Bank stability and erosion: Bank stability is no longer of great concern, as stream channel would be allowed to meander and flood stage waters would be common. Sedimentation and erosion are normal processes in floodplains and would be allowed to proceed naturally.

Vegetative cover and habitat: Floodplain easements will improve hydrologic conditions for establishing wetland vegetation, as well as encourage other riparian and floodplain vegetation. Habitat will likely become more diverse and foster a wider variety of species.

Hydrology and water quality: Natural streamflow returns full floodplain function. Wetland establishment or enhancement will improve water filtration capabilities and improve water quality. Restriction of land uses will reduce the input of chemicals and other pollutants into the waterbody.

Biota: Improved habitat and hydrology will likely lead to improved conditions for plant and animal species. Widespread improvements to all types of biota, as natural conditions return.

Wetlands: Restoration of natural flooding regime and hydrology promotes wetland formation and enhancement.

5.2.6 Watershed Ecosystem Impacts under the EWP Alternatives

The changes to the Program described in Chapter 2 will have significant impacts in how future EWP projects are selected, prioritized, and implemented. Subsequently, the impacts to the natural environment will also vary across the alternatives. Below is an analysis of the changes to the Program and the impacts to the biotic communities within watersheds.

5.2.6.1 Alternative 1 (No Action Alternative)

The No Action Alternative would not involve any changes in the current Program. The impacts to the environment would be essentially the impacts described under each practice, in Sections 5.2.2, 5.2.3, and 5.2.4. Refer to these sections for the detailed discussions on environmental impacts of the current Program.

5.2.6.2 Alternative 2 (Draft PEIS Proposed Action)

The 15 changes proposed under the Draft PEIS Proposed Action are organized here in three general categories: Execution of EWP Recovery Practices, Floodplain Easements, and Environmental Review. *Execution of Practices* refers to changes made in the way an existing practice is planned or conducted, or the addition of a new practice. *Floodplain Easement* changes are those that involve floodplain easement purchases of all types and changes to floodplain easement management. *Environmental Review* refers to activities that help to characterize a particular site or the process of evaluating a given site.

5.2.6.2.1 Effects of Alternative 2 Changes on Implementation of EWP Practices

Eliminating the use of 'exigency' (Element #1) would likely have environmental benefits, as only extremely critical situations would be considered under the "urgent and compelling" designation. Previously, many sites were listed as "exigent" in order to take advantage of a more favorable cost-share ratio. This may have resulted in restoration work being completed hastily and without full coordination with other agencies, possibly resulting in less than optimal consideration of environmental resources. Allowing more extensive planning and coordination would likely result in greater environmental benefits.

The *"urgent and compelling" designation* would be added to stress critical repair work (Element #2). This could certainly affect the implementation of debris removal, streambank restoration, or any other practice that centers on structural repairs. This change would increase the emergency response nature of EWP and help to protect life and property. This quick response may have undesirable environmental impacts, as there may not be sufficient time for coordination with other agencies and environmental resources may be damaged. However, in combination with the changes described under *improving disaster readiness* (Element #6), the risk of these types of damages would be reduced, as training would help NRCS staff to recognize potential problems with T&E, 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.

Establishing cost share rates (Element #4) would likely have positive environmental impacts, as EWP can complete work for sponsors that may not have been able to afford their portion under the previous cost-share arrangement. Depending on site-specific information and the type of practices used, benefits may be generated by the restoration beyond simply restoring flows and protecting streambanks. 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 ten years.

Improving disaster readiness (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.

Repairs to agricultural lands (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 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 (Element #8) would likely have mixed environmental effects. In the short term, it is likely that more structurally flow-resistant armoring designs for individual projects (e.g. longer stretches of riprap or using gabions instead of riprap) would be used to ensure that repeated damages are avoided if possible. The solution would still meet the environmental defensibility criterion, but this element may not lead to a short-term increase in greener solutions. However, at repeatedly damaged sites, floodplain easements would become the only available option regardless of previous restoration history. Therefore, this element may provide some long-term environmental benefits, unless landowners choose not to sell an easement and perform the repairs on their own. Over both the short and longer term, however, landowner repairs may have negative effects, as there may not be equal consideration of environmental, social, and cultural values, as provided by the EWP process.

Enabling single beneficiaries (Element #9) to be eligible for EWP work may generate 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. Additionally, current policy may encourage single beneficiary site owners to attempt the restoration work on their own or through private contractors. These privately funded repairs would be made without interagency review or consultation, possibly resulting in greater environmental degradation over both the short and long-term, as these groups may not have the training necessary to properly address environmental considerations.

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.

Repair of enduring conservation practices (Element #12) would likely offer positive environmental benefits, as discussed in Section 5.2.3.4. Repairing damaged or undersized conservation structures would minimize further environmental degradation of downstream habitat. These practices are installed for the purposes of environmental protection, such as the containment of agricultural runoff, erosion control, or animal waste management. Additionally, by requiring that these practices meet current NRCS standards, older or undersized practices would be replaced with more effective ones.

Partially funding expanded or improved alternative solutions (Element #13) may yield positive environmental effects, as discussed in Section 5.2.3.5. Supplemental work completed on EWP projects could yield improved water quality or habitat and would be subject to the normal

environmental review process under EWP. The substitution of one practice for another could also give rise to significant benefits, especially in cases where the sponsor wishes to employ more natural restoration methods. Where local entities wish to install more expansive or different measures, NRCS funding and technical oversight would ensure the environmental and social defensibility of the measure.

Disaster recovery work away from streams (Element #14) can lead to environmental benefits. By restoring floodplain deposition and upland areas, the areas below (floodplains, wetlands, riparian zones and aquatic communities) can realize benefits in water quality and habitat, as seen in Sections 5.2.3.2 and 5.2.3.3. Conversely, repairing these sites may discourage floodplain easements or other more natural land uses since a landowner can continue to farm the restored land.

5.2.6.2.2 Effects of Alternative 2 Changes in Floodplain Easements

Improved disaster readiness (Element #6), as described above under *Execution of Practices*, may provide additional environmental benefits. In addition to the positive impacts listed, disaster-readiness training, coordination, and planning may 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 per decade (Element #8), as presented above, would likely encourage floodplain easement purchase of repeatedly damaged sites.

Simplification of agricultural floodplain easement purchase (Element #11) would provide some benefits and some detrimental effects, as discussed in Section 5.2.5.1. The elimination of Category 1 removes 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 (Element #15), as analyzed in Section 5.2.3.2, may provide significant environmental benefits. By removing developed land uses, the floodplain easement tract would be returned to a far more natural state and improved floodplain function.

5.2.6.2.3 Effects of Proposed 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.

5.2.6.3 Alternative 3 (Prioritized Watershed Planning and Management)

Alternative 3 would include all of the proposed changes described in Alternative 2, while also including *disaster-readiness and mitigation*, *prioritization of watersheds*, and *coordination of disaster planning with other stakeholders*. These three additional elements are linked to one another through a watershed-level management plan, and they can therefore be discussed jointly.

The total watershed management process of prioritization and disaster planning would yield significant environmental benefits. Using a locally led process, stakeholders would increase acceptance of environmental factors such as water quality and wildlife habitat, as well as ensure that unique environmental values in a particular watershed are considered. By ranking watersheds and focusing disaster planning in high priority areas, the cumulative impacts of the disaster/repair cycle that historically have typified these areas would begin to diminish, as short-term solutions are set aside in favor of longer term ones. Easement purchases and other longer term approaches would produce substantial environmental benefits, by changing land uses to restore natural floodplain functions, reducing the amount of recurring restoration work, and introducing management strategies that are more proactive in dealing with natural disasters instead of simply responding to them. The planning process would address much larger spatial and temporal scales for disaster impact prevention/mitigation and recovery, accounting for natural variability and processes. Although still secondary to the overall goal of protecting life and property, the process would include environmental considerations as important items, promoting improved watershed health in each of the ecosystem types. Cooperation with other programs would also serve to improve watershed health, as actions by the various stakeholders and agencies would be conducted to avoid overlapping or conflicting efforts, and with multiple goals in mind.

5.2.6.4 Alternative 4 (Preferred Alternative)

NRCS' Preferred Alternative includes many of the proposed changes and would cause environmental impacts similar to those described for Alternative 2, with some important exceptions. The impacts of the Preferred Alternative are described here in three general categories in parallel with the previous discussion of impacts of the Draft PEIS Proposed Action: Execution of EWP Recovery Practices, Easements, and Environmental Review.

5.2.6.4.1 Effects of Preferred Alternative Changes on Execution of EWP Recovery Practices

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 ten 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.

5.2.6.4.2 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.

5.2.6.4.3 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.

5.2.6.5 Differences in Actions at Example Sites under the Alternatives

A number of the sites discussed in this document may have been repaired differently had the differing elements of the current program alternatives been available. These are discussed in detail below. Some sites involve practices that are not affected by any changes to the current program and would not have been executed any differently.

Rose River, Virginia. It should be noted that the EWP floodplain easements were not part of the Program in 1996 when EWP repairs were being made following Hurricane Fran. Therefore, the current Program alternatives as they are now could not have included agricultural floodplain easements for the Rose River site. However, the area of the site along the highway that was rip-rapped would not have changed. Protection of the streambank along that section of the highway would still have been provided.

Given that the floodplain easements would now be available under the all the alternatives to the No Action (current program), one alternative for this site could have been the following:

- Purchasing a floodplain easement for the majority of the site; about 100 acres.
- Stabilizing just the 300 feet of streambank with riprap where it was encroaching on the highway.

Several new and innovative practices that were not routinely used on other EWP sites throughout the State were employed at this site. An example is the use of vortex rock-weirs to provide grade control in the stream channel and create riffle-pool structure in the stream to provide diverse aquatic habitat. Class-3 riprap was also used to reinforce the rootwad revetments and ensure their effectiveness and long-term stability. Because this site was approximately 1 mile long and the stream structure had been totally destroyed by a flood event, it required some special considerations. Design of this site was carried out in cooperation with the Virginia Department of Game and Inland Fisheries and the Virginia Department of Forestry to ensure that issues regarding aquatic and riparian habitat were properly addressed and principles of natural stream dynamics were properly employed in the restoration design. Using the defensibility criteria being proposed, the use of the innovative practices installed could be justified under any of the alternatives to No Action.

Long-term stabilization was accomplished using USDA Conservation Reserve Program funds and U.S. Army Corps of Engineers mitigation funds to purchase trees, and personnel from Trout Unlimited to plant a riparian forest buffer from which livestock were excluded. This combination of programs and practices addressed all aspects of long-term stream health for this model restoration site where both in-stream and bank stabilization practices were incorporated for a comprehensive restoration project.

Buena Vista, Virginia. It is unclear which additional practices would be needed as part of the alternatives. Floodplain easements are not an option within this urban setting because of the large number of houses and limited benefits of such an option. However, there are approximately 10 to 15 structures located in the frequently damaged areas that could be moved out of the floodplain. Under Alternatives 2 and 3 this could be accomplished by purchasing non-agricultural floodplain easements and restoring the floodplain. Under the Preferred Alternative, it could be accomplished by a cost-share to buy-out the frequently damaged structures and a local project sponsor to purchase the land for floodplain restoration. The City has applied to FEMA for assistance in relocating or elevating approximately 44 structures within the floodplain. This proposal is still viable but has not been implemented at this time.

The longer-term solution which has been selected by the city for this watershed is to construct channel improvements and sediment basins in specific areas throughout the City. NRCS has helped the community develop a flood control watershed plan under the authority of Public Law 83-566 for the community that describes the proposed practices that could be implemented. This plan is currently in the review and approval process for OMB and Congress. This plan is an example of what would be proposed under Alternative 3.

It should be noted that this watershed received EWP assistance three times from 1992-1996 because of flooding which severely damaged the entire community. The proposed limitation of 2 repairs within a 10-year period could affect the EWP Program in this community in instances where the same practice, for example the gabions installed for stream stabilization, is repeatedly damaged. Since purchase of EWP floodplain easements does not appear to be a viable option, this community would suffer with the proposed limitation if that were their only recourse. They have chosen to permanently remedy the situation through participation in the PL 83-566 program. However, there is limited funding under PL 83-566 program and it may take some time to obtain the needed funds. If Alternative 3 were an option for the local sponsors and they can secure additional funding from other sources, they may elect to construct the needed practices using EWP funds.

Rocky Run, Virginia. This site is located in a rural setting with a small 15-unit subdivision where 8-10 houses get flooded frequently. In the past, the Rocky Run was diverted and re-channeled to allow for the construction of the homes. This stream has jumped the banks several times in the last 10 years as it attempts to return to its original channel. EWP assistance has been provided to restore the channel to its pre-flood re-channeled location. This site is an ideal situation for either the use of improved land floodplain easements under Alternatives 2 and 3, or the buy-out recovery measure that would be available under the Preferred Alternative. Any of these program options would assist the residents to relocate their homes out of the floodplain and allow the stream and floodplain to be restored to a more unrestricted flow regime.

Dry River Dam, Virginia. This PL 83-566 dam was repaired using the Chief's exception to the current Codified EWP Rule. If NRCS were to repair this structure under any of the proposed alternatives, it would be done the same way. The only other choice would be to breach it in order to prevent a dam failure with potentially catastrophic results. This would negate all the benefits it was originally built to provide. No additional practices would be needed in the upstream watershed since it is forested and flows from the George Washington and Jefferson National Forests.

East Nishnabotna River, Iowa. Policies under the alternatives to the current Program would have had little effect on the execution of the East Nishnabotna restoration work. Soils in this area are highly susceptible to erosion and the channels are constricted by levees. Therefore, the work completed under the current program would remain necessary to remove the threats to the properties. Using the principles of natural stream dynamics may not be effective, as the crops generally are planted directly to the edge of the bank and a meandering stream may destroy substantial amounts of cropland. Floodplain easements, on the other hand, might have been a useful tool in mitigating the damages.

5.3 EWP PROGRAM IMPACTS ON HUMAN COMMUNITIES

An assessment of the EWP Program effects identified and evaluated the social, economic, and other "human-based" resource elements of the environment (that is, the social environment). The process included developing a meaningful description of the social setting in which the

proposed alternatives are implemented, isolating those components that may be affected, and describing the magnitude and extent of anticipated effects.

The potential socioeconomic effects of EWP Program practices in the affected communities are derived by comparing the prevailing social conditions in selected example communities before the disaster (pre-disaster) with those immediately following the event (post-disaster), as well as those following the installation of EWP Program practices (post-EWP). The prevailing social conditions before the disaster are presented by the description of the Affected Environment in Chapter 4 and further detailed in Appendix D for the communities selected as example demonstration sites for EWP Program practices. The potential effects of a natural disaster on the affected communities are addressed here as part of the impact assessment, along with a general review of the potential effects of the EWP Program and a summary description of Program effects at the selected example communities. The comparison of the effects of the EWP Program alternatives is based on a generalization of the effect of the Program alternatives on individual communities and forms the conclusion of this assessment.

5.3.1 Assessment of Human Community Effects

The economic and social effects of the EWP Program are the result of a complex interrelationship between the project activity and the existing social conditions of the affected communities. Each community's response to the changes resulting from the implementation of a particular alternative will be unique. This unique response arises from individual variations among communities in terms of their economic conditions; previous social history, population characteristics, social organization, and the prevailing culture and character.

5.3.1.1 Elements of Human Communities Assessed (Jobs, Income, Services, and Resources)

Social communities are complex and dynamic. The range of potential direct and indirect effects associated with EWP Program practices is diverse. To characterize these impacts in the context of the communities affected, it was necessary to define certain key elements, or social variables. These indicators are logically connected to actions that are a part of the EWP Program alternatives and represent direct and indirect effects of the proposed practices on the social structure and patterns of the affected communities. Changes in these variables as the result of an EWP action would reflect important changes in other aspects of the social structure as well.

Eight specific variables serve as indicators of potential effects on the socioeconomic environment from the EWP Program. The eight are grouped into three categories:

- Effects on business and the local economy;
- Effects on infrastructure, public health and safety, and community resources; and
- Effects on community, structure and social patterns.

Business and the local economy includes the potential effect on employment and income in the community as well as changes in the value and quantity of natural resources (land) available to the community that may serve as a source of investment or raw material input to production. Effects on

the *infrastructure, public health and safety, and community resources* relate to elements of the community infrastructure (utilities, energy, waste treatment, transportation, etc.), services (police, fire, hospitals, social assistance), physical property (houses, commercial and industrial buildings, other structures), and resources (cultural, educational, recreational, aesthetic). *Community structure and social patterns* are a function of the demographic composition of the community, existing land uses in the adjacent and surrounding community, and the characteristic patterns of interaction and attachment to the community that may exist among residents.

An impact, or effect, is defined as either a quantitative or qualitative change in some aspect or characteristic of the environment. This change is evaluated in terms of its potential (on balance) to result in an adverse or beneficial effect on the human social community. The magnitude and extent of the potential effect is a function of the intensity and duration of an associated activity, and the extent of the total land area or size of the community segment affected by the action.

5.3.1.2 Assessing the Effects of EWP Program Projects Nationally Using Typical Rural Communities

For the programmatic assessment of the proposed alternatives, the socioeconomic environment is defined as a generalization of the social characteristics of the communities addressed by the EWP Program. These characteristics are selected on the basis of their relevance to the assessment and comparison of the proposed Program alternatives. They reflect the anticipated effect of the Program in addressing the specific threat to life and property associated with a natural disaster.

Implementation of the selected EWP Program practice itself, however, will have additional consequences for the local community. These effects reflect necessary activities associated with the implementation of the proposed practice in the local community. Examples of these activities include those associated with Program expenditures, changes in land use or function, or the acquisition of a floodplain easement. Therefore, the potential effects of the EWP Program include both the outcome of the Program activity as it relates to the alleviation of a potential threat and those associated with the implementation of the proposed practice itself. These effects are demonstrated by the examination of specific EWP Program project impacts in selected example communities.

The assessment of the socioeconomic effects of the EWP Program practices focused on six communities selected as examples of each of the five rural community types identified in Chapter 4 (Section 4.1.3). Three of these communities also were the subject of the cumulative effects assessment described in Section 5.4. As described in Chapter 4, effects are found in both rural and metropolitan areas. One of the communities selected for this assessment, the Boise Hills community, was selected because it also demonstrates potential downstream beneficial effects in a major metropolitan area, in this case the city of Boise.

Floodplain easements represent a categorically distinct option that would not be appropriate to all settings; therefore, a separate analysis was conducted for the socioeconomic impact of floodplain easements. A sixth community, considered a plausible candidate for the potential use of the floodplain easement option, was included in the assessment along with the original five

communities. Table 5.3-1 summarizes the impact assessments that were conducted for each of the six sites described in the affected environment section of Chapter 4 and in Appendix D

Table 5.3-1 Socioeconomic Assessments Conducted for Selected Sites

Community	Bethel Road, GA	Buena Vista, VA	Boise Hills, ID	Shenandoah, IA	Rocky Run, VA	Rose River, VA
Community Type	Multiple farms	Independent city in rural area	Rural portion of metro county	Incorporated rural community	Residential cluster	Multiple farms
EWP Practices	Debris removal	Debris/ cobble removal	Critical area treatment	Levee repair	Gabions and riprap	Debris removal
Socioeconomic Impacts Practices	Yes	Yes	Yes	Yes	Yes	Yes
Socioeconomic Impacts, (Hypothetical) Floodplain easements	No	No	No	Yes	Yes	Yes
Cumulative Impacts, Watershed	No	Yes	Yes	Yes	No	No

5.3.2 Effects of Natural Disasters on Human Communities

The general social effects of a natural disaster (and also the primary criteria for defining a natural event as a disaster) are that some level of stress is placed on the economic, social, or physical infrastructure of a given community. This stress results through the direct damage or destruction of a given resource or through the creation of a continuing threat to life and property. The level of stress in these situations normally grows beyond the capability of existing institutional structures, social services, and support networks to cope, to absorb the change, or to adapt to meet future contingencies.

The specific consequences associated with a natural disaster, as well as the prevailing conditions of the individual communities affected, are unique to each event. No uniform or codifiable set of socioeconomic effects exists for natural disasters (Vogel, 1999). However, some general areas of impact can be defined. These effects are the primary result of the determination of a potential threat to human life or the potential, or actual loss, damage, or destruction of property that are the consequence of a natural disaster. They include the potential for change in the local or regional economic structure or the damage, as well as the destruction of infrastructure, housing, or other community resources. Additionally, natural disasters have the potential to be traumatic experiences for local residents, possibly leading to psychological impacts.

5.3.2.1 General Discussion

In addition to the direct physical effects of a natural disaster, the patterns and structures of social life within the community may be altered. Dislocated businesses or services may disrupt neighborhoods and communities. Local sources of employment and income may be temporarily or permanently lost. Disasters also can affect the appearance, quantity, or value of land available to the community as a source of current and future investment or as the source of productive resources. Where public revenue is required for disaster response and recovery, other socially beneficial or valued programs (such as education or recreation) may be denied funding because the money has been spent on disaster recovery (Myers, 1997). Other effects may include the temporary or permanent disruption of services to the community or the destruction of important cultural or social resources.

For individuals within the community, increased levels of tension, anxiety, and interpersonal conflict are evident (Morris-Oswald, 1997). The immediate or long-term evacuation of residents during reconstruction may require the inconvenience of living in temporary housing, sometimes far removed from the permanent place of residence. An additional source of strain for both business and residential property owners results from the time (normally uncompensated) required to clean up and repair damage or from the long-term effects of damage that is not repaired (Cushing, 1999).

The major sources of effects on individuals and communities resulting from a natural disaster can be grouped into the impact categories noted above. Table 5.3-2 presents a summary overview of the consequences of a natural disaster for the human social community.

5.3.2.2 Summary of Disaster Impacts in Six Example Communities

Each community represented to demonstrate the socioeconomic impacts of EWP Program practices in Section 5.3.2.2 has been affected by natural disasters associated with the regional watershed. Although short-term impacts normally are the greatest concern for local residents and business entities, these impacts also may have long-term consequences if repair and restoration are not accomplished. The affected areas are primarily rural in character, therefore, impacts on agricultural areas of the watershed region are especially important. In several cases however, the effects of watershed disasters also extend to large population centers in nearby urban and metropolitan communities. Table 5.3-3 presents a summary of the post-disaster impact of the natural disasters occurring in each community selected to demonstrate socioeconomic impacts.

Table 5.3-2 Summary of Socioeconomic Effects of Natural Disasters

Community Aspect	Potential Effect
Economic Structure	
Employment and Income	Loss caused by threat or damage to or destruction of individual firms, agricultural production, recreational, or other economically productive resources. May also be indirectly affected by changes in the cycle of business activity, alterations in supply demand relationships, or a change in the relationship with external firms or market sectors.
Value and Quantity of Natural Resources	Change in quantity and condition of the land and associated resources caused by loss or damage may affect both current economic value (represented as a capital loss to its owner) or its desirability as a source of future investment (especially by outside entities), potentially threatening community viability and future growth.
Infrastructure and Resources	
Infrastructure	Damage to the essential elements of community infrastructure (i.e., water supply, waste treatment, transportation, or power systems) may have both short-term consequences for the conduct of social life and long-term implications for public revenue expenditure for restoration.
Property	Loss of residential housing and other important economic or culturally significant buildings may affect the immediate quality of life in the community or in the long-term, may represent an irreplaceable loss.
Public Health and Safety and other Community Resources	Indirect effects on the community include increased demand on public revenue and other resources to assist in post-disaster recovery. Other consequences may include loss or impairment of emergency services, increased risk to public health, social assistance and basic services. Aesthetic, recreation, and other resources also may be affected.
Social Pattern and Structure	
Demographic Composition	Change in the size and composition of the local population may result from the loss of housing resources and out-migration in response to a perceived continuing threat or to the negative perception of long-range desirability of the community.
Land Use	Potential threat or actual loss may alter existing or planned uses of certain properties essential to community life or economic production. Alteration of physical appearance may diminish the value of adjacent or neighboring properties.
Community and Neighborhood Social Patterns	Loss or damage to property may result in the disruption of residential networks important to the social life of the community. Loss may also include culturally important facilities such as churches, schools, and community centers, as well as commercial and retail outlets for basic services.

Table 5.3-3 Summary of Post-Disaster Socioeconomic Effects on Rural Communities

Bethel Road, GA	Buena Vista, VA	Boise, ID	Rocky Run, VA	Rose River, VA	Shenandoah, IA
Employment and Income					
Agricultural production from two private farms lost	Potential loss of retail and manufacturing employment	Income from recreational and agriculture uses; threat to central city	Affected areas contain no economically productive facilities	Loss of production from two private farms and pasture	Potential loss of retail and commercial income
Natural Resources					
Diminished land value due to physical and visual damage	Decreased attraction for industrial and residential development	Diminished value of adjacent areas; potential threat to planned development	Value of residential properties diminished	Diminished land value due to physical and visual damage	Value of land area for development and other uses diminished
Infrastructure					
Two public roads and storm drainage structures	No disruption of services; some effect on roadway and other facilities	No significant disruption; potential threat to water quality, public roads, storm drainage	No significant disruption, some potential threat to local transportation	State Road protected with riprap at lower end	Local airport, public highway; impaired wells contaminated or collapsed
Property					
Two private dwellings and associated farm outbuildings	Residential areas and two manufacturing facilities are threatened	Limited damage from fire; flood significant threat majority of community	Fifteen residences damaged or threatened	Two residences, state road, farm buildings, and other structures	Residential areas, retail, and commercial structures affected
Public Health and Safety, and other Community Resources					
No major impact, some loss of visual quality	Visual quality of the affected area compromised	Loss of major recreational area; viewshed destroyed	No major impact to resources	No significant resources; visual quality compromised	Major effect on recreational and other significant areas
Demographic Composition					
No major change to current configuration	Slight decline in population; potential for new growth threatened	No major effect from fire; flood threat affects older neighbor-hoods, suburban areas	Potential dislocation of approximately 42 individuals	No major change to current configuration	Local residents displaced or threatened by flood damage
Land Uses					
Existing land uses threatened	Potential threat to future planned uses in the urbanized areas	Recreational uses of burned area lost; threat impedes regional plan	Threatens residential use of land in the immediate area	Existing land uses threatened	Potential threat to current uses and future development plans
Social Patterns					
No major change to current configuration	Potential disruption of neighborhood; viability of community threatened	Indirect effect from threat to neighborhood posed by subsequent flooding	Disruption of neighborhood; potential threat to viability of residential community	No major change to current configuration	Potential for disruption of residential networks and neighborhood patterns

5.3.3 Impacts of EWP Program Projects on Human Communities

The rural quality of the communities potentially affected by EWP Program activity introduces certain special characteristics unique to the rural environment. Affected communities generally are small, with populations of less than 10,000. In many cases, they consist of unincorporated villages, hamlets, and housing clusters that may lack a distinct economic base. In some cases, these communities may be integrated economically with nearby metropolitan centers or with the regional economy, while others may be self-sufficient and isolated. In general, characteristic patterns of community life, the presence of shared values and information, and a sense of community identification define each of these communities in a uniquely rural context.

The resources, institutional structures, and service delivery mechanisms of these small communities are often smaller-scale, more informal in structure, and more diversified in function. Correspondingly, local resources in the form of land, employment opportunities, natural qualities, cultural features, and the quality of social life may be more important, more highly valued, and correspondingly more difficult to replace if lost or damaged, either by a natural event, or in the process of eliminating the threat to life and property that may result from a future disaster event. In many cases, there may not be an identifiable community center where public activity (commercial, administrative, and recreational) is carried out, or specific boundaries that define the parameters of the community.

5.3.3.1 General Discussion

The socioeconomic impact assessment addresses the relationship of each impact element to the EWP Program from two perspectives. The first is the effect of the Program as it relates to the elimination of the direct or potential effects of a natural disaster by reducing the potential risk to some socially important or valued aspect of community life (such as human health, or the protection of homes, businesses, or some other important social facilities within the community).

The second is related to the requirements of the proposed EWP Program practice itself, including construction activity or physical structures required for the immediate protection of property, or the purchase of floodplain easements or title to land as a means of eliminating the object of the threat instead of the threat itself. Capital expenditures, additional employment, additional land and facilities associated with construction, physical alteration of the environment, or fiscal and administrative requirements to be met by sponsors, property owners, public entities or other elements of the community, may be considered. The EWP Program requires that the effect of the proposed action must be acceptable to the individual property holder and the community as a whole (NRCS, 1999).

5.3.3.1.1 EWP Program Impacts on Business and Local Economy

The extent of potential effects of the EWP Program is related to the potential for the reduction of risk to human health and property or protection of the value and utility of existing land, structures, or other facilities. Also related is the value of economic contribution or loss (e.g. additional employment or income) that may result from EWP Program activity in the local

community. It is reasonable to assume that the proposed Program alternatives will have the potential to affect the local economic climate of participating communities by influencing the type of practice implemented and the manner of its implementation.

The purpose of assessing potential economic effects is to estimate changes in employment, income, and levels of business activity that may result from EWP Program activities (Leistritz, 1994). Direct effects are those immediately attributable to the disaster itself, such as loss of life, injury, capital losses, crop damage, damage to public and residential structures. Indirect consequences, which follow from those immediate impacts, include such changes as interruption or alteration of business activity, changes in employment caused by a loss of capital, or changes in regional supply relationships. Two primary circuits of capital are important, one involving the circulation of capital into and out of the production/consumption cycle, and the second involving capital investment in land and infrastructure (Gottdiener, 1994).

Employment and Income

Local industry, and therefore, employment or income, may be affected by EWP Program projects thorough the expenditure of project funds, hiring of local residents for proposed work, or by noise, visual, or other impacts that interrupt business activity. To the extent that money is spent in the local community in support of the proposed action, the local trade and service sector of the economy can be expected to experience some direct and indirect increase in employment, as well as additional income from sales of products and services. This cycle of spending is the basis of an economy's multiplier effect and is predicated on the assumption that an increase in external activity (i.e., sales outside the community, in this case, in the form of contract services) will create a corresponding and amplified economic effect within the community.

The magnitude of the change is dependent on what proportion of the Federal share of EWP Program funding is actually spent locally with each new round of expenditure and what proportion is lost in the form of taxes, savings, or the purchase of products and services that are not available within the local community. Community resources flow very quickly from communities where there are limited institutions and resources to meet the requirements of local residents (LaMore, 1995). Indirect effects may include the creation or expansion of local businesses or the creation of secondary or indirect employment as a function of direct expenditure and employment. In contrast, monies or services-in-kind offered as the community share of the project may offset the local gain in the economy from Federal funds.

Because of the competitive nature of contracting operations for the EWP Program projects, and the limited resources available in most of the target communities, much of the work associated with an EWP Program project will likely be contracted to firms outside the community. As a result, much of the dollar value of a project will be lost to the community. It is reasonable to assume, however, that some increased revenue will be available to the local community in the form of money spent by temporary workers, through employment of available local workers, or by contracting portions of projects to local firms that may have the necessary resources to perform certain parts of an EWP Program project.

Changes in local employment and income also may be a result of restoring impaired facilities and resources. Smaller rural communities tend to be net exporters of labor, either to the surrounding regional area, or by commuting to nearby metropolitan centers of employment. Indigenous employment in sectors such manufacturing, agriculture, services, or construction also is important to the local economy. To the extent that EWP Program practices restore the economic productivity of land and associated facilities that might otherwise be destroyed or abandoned as a result of a natural disaster, a beneficial impact to the local economy is realized.

Value and Quantity of Natural Resources

Natural resources, defined economically, refer to the stock of environmentally provided assets (land, soil, forests, minerals, water, fauna, wetland areas, etc.) that represent the useful materials that are the raw input or consumable products of human production. The quantity and condition of natural resources are both important. In addition to their utility value, these assets also represent a source of investment income to the current owner and a source of future investment in the community by outside sources. Natural resource assets may be damaged either by the disaster or by implementation of the proposed EWP Program practice.

Protecting property such as land for investment becomes an important beneficial impact of the Program, while potential loss of productive agricultural, commercial or residential property, or diminishment of its attractiveness, may represent a serious negative impact, even though the overall benefit of the project is positive. A change in the quantity or condition of land may decrease agricultural production and will affect the local economy. For many communities, potential income from recreation and tourism, and additional income realized from a growing base of retiree in-migration may be an important contribution to the local economy.

The value and quantity of natural resources may change with the restoration or improved condition of land, the damage or destruction of land during construction, the removal of threat to a designated property, or the removal of existing productive (or residential) land from the economic base through the exercise of a floodplain easement on the property. A floodplain easement will permanently remove land from production or investment, thereby diminishing the available capital stock of land as part of the economic base of the community.

Removing a potential threat to the land or property may increase its value, or at minimum, restore it to its original value before the disaster. With residential property, Fridgen and Shultz (1999) found that flood risk was a significant factor in the valuation of residential property. Several studies have found that floodplain property values are lower than those land values outside the floodplain (e.g., Damianos and Shabman, 1976; Donnelly, 1989), while others found no variation in value. Two studies concluded that residential land values within floodplains were nearly 12 percent lower than land outside the area (Holway and Burby, 1993). Similar results were found for vacant lands.

Correspondingly, the property itself and any adjacent properties may be subject to increased value and subsequent development pressure should the immediate threat of a natural disaster be removed. Early studies of flood control programs indicated that, “for every six dollars in potential flood damage savings, at least five dollars was lost through increased floodplain occupancy” (Moore and

Moore, 1989). Much of the early justification for funds was due to eventual habitation of these areas. However, studies conducted on the values of land protected by such programs and practices as the EWP Program implements have varied results.

5.3.3.1.2 EWP Program Impacts on Infrastructure, Public Health, and Community Resources

Although economic factors are a primary aspect of the decision to implement one or another of the Program alternatives, certain social and community factors also become important. The characteristics of the proposed project may have the potential to impair or disrupt the local community through changes in the associated property, infrastructure, public health and safety, or other resources important to the local community. These changes, either beneficial or adverse, can substantially alter residents' perception of the quality of life in the community or threaten the continued viability of the community itself.

Property

Changes may result from the removal or perpetuation of a threat to specific properties, the restoration of damaged or unusable properties to productive use, or the exercise of a right of way or floodplain easement for the construction of a practice. Using a floodplain easement as a mechanism to restore watershed areas to a much better natural condition is another area of potential influence. Removing a threat contributes to the protection of valued structures and community settings, thereby enhancing the character and desirability of the community.

The potential loss of a structure due to a floodplain easement or failure to restore has the potential to disrupt local social life and may have an adverse impact on important cultural events. Apart from direct project-related actions, the effect of a change is also influenced by the character of the community setting, the presence of informal support systems and mechanisms, the current value and age of the structure, and considerations of existing vacancy rates.

Infrastructure

EWP Program project activities have the potential to increase or decrease the requirements for basic infrastructure services within the community. Elements of the local infrastructure can be jeopardized by the existing watershed impairment, if not removed. Likewise, the requirements of the project (water, land, transportation, and temporary workers) may place additional stresses on existing infrastructure resources or, as in the case of local transportation, block or obscure essential services. Infrastructure impacts on the cost and quality of public services has an influence on residents' sense of well being and satisfaction with the community (Burdge, 1995).

The existing and future water supply, municipal waste treatment and discharge, sewer lines, power lines and substations, natural gas pipelines, or transportation facilities are of concern both for the comparison of EWP Program alternatives and for the impact of specific projects on participating communities. Potential demands that are increased beyond existing capacity or

service that is impeded will have an adverse impact. Conversely, where project actions restore or protect infrastructure resources, a beneficial impact may be offsetting.

Community Resources

The availability of social services such as those related to public health and safety, emergency response, social assistance, and other basic services are especially important to the maintenance of the social life of rural communities. However, they may be either temporarily or permanently affected by the implementation of EWP Program practices. Similarly, community resources, cultural, educational, civic, or recreational and aesthetic opportunities may be lost or impaired. Both the existing watershed impairment and the project efforts to restore the watershed and reduce the existing threat to life and property may result in a change.

The most important effect of a natural disaster is to increase the level of risk to the life and health of the residents of the affected community. EWP program measures have the potential to reduce the potential level of risk both directly through the repair and restoration of damaged land, and the corresponding removal of threat to life and property, and indirectly by restoring the operation of local public health and emergency response services. In addition to the direct threat to residents or users of affected properties, natural disasters may cause impairment to the normal operation of public health and safety systems. EWP practices that protect vital infrastructure, or transportation routes, hospitals and other medical facilities have the additional benefit of contributing to the general health and welfare to the community at large.

Apart from direct impacts on the land and physical structures, project-related employment may affect local demand for basic services such as shopping, food, and entertainment, as well as for necessary social services, public assistance entities, and educational or social support services. Other concerns may exist for potential changes in local government services or anticipated increases in local tax rates to provide needed temporary service or the sponsor's share of proposed projects. The ability to provide these services affects the availability of public capital for investment in social development. Sensitive local buildings and structures such as museums, churches, cemeteries, theaters, or nursing homes, public housing, or retirement facilities also may be affected.

One of the key components of quality of life for many people is the availability of open space, parks, and recreational facilities (Hollis et al., 1999). The level and reliability of service, as well as the level of satisfaction of local residents may be directly affected. Either the beneficial removal of an existing threat or the requirement to alter the quality or appearance of a viewscape or other facilities such as trails, parks, or natural recreation features such as rivers or lakes, may have an impact. For many communities, these resources represent a source of economic income from tourism as well as a recreational resource for local residents.

Where community facilities are protected or the previous use of a damaged facility is restored, a beneficial effect of the program can be anticipated. The potential for a negative impact also exists as a result of the potential increased demand on or impairment of these resources that may be related both to the manner of the project execution or to project activity in the form of the

proposed practice at a specific site. Questions related to who bears responsibility for the cost of maintenance or repair, and to the source and availability of additional resources necessary to restore damaged services or to create additional service capability, become important.

5.3.3.1.3 EWP Program Impacts on Community Structure and Social Patterns

Determining the potential effect of the program on the character and social structure of the local community depends on consideration of potential changes in a number of social characteristics. For some projects, construction-related activity, the protection of land through installation of protective mechanisms, or the exercise of floodplain easements have the potential of affecting the demographic composition of the local community. Also important is the potential to disrupt historic or established neighborhoods within the community, unique residential networks, or communities (Cantor, 1993).

Demographic Composition

Population-related consequences of the project on the local community may include changes in the size, age, racial and ethnic composition, poverty and income levels, or residence patterns of the community. Effects may be short-term in the case of temporary workers present in the community during the construction phase of the project, or the temporary displacement of local residents. Long-term effects may result from permanent in-migration or out-migration in response to project-related activity. These changes may indirectly influence other aspects of social life, including the community setting and character, the size and structure of local government services, the availability of housing and community services, and alterations in the patterns of natural resource use. Of particular interest for the implementation of EWP Program practices is the presence of sensitive populations in the immediate area of the project.

Land Use

Changes in land uses resulting from EWP Program implementation are possible where potential threats are eliminated, previous land uses are restored, or alternative development options change the attractiveness of existing land. The magnitude of any effect will be influenced by certain community factors such as the general character of the community setting and the importance of the previous land use (recreational, income producing, residential, open space, etc.) to the social life of the community or the maintenance of the watershed.

At the site level, the physical alteration of the environment may affect visual appearance or other characteristics, altering the suitability of the land for certain uses. Alterations to the land used as a staging area or to provide access to the project during construction or for subsequent maintenance requirements, must be considered in addition to any new changes to land uses. Exercise of a floodplain easement affects the land's potential use irrespective of any other physical change.

On a large scale, the EWP Program may affect several pieces of land use regulation: local zoning, comprehensive planning, farmland preservation, and the control of urban development. Each element can be addressed on the local level through land use planning mechanisms already in place. While Alternatives 1,2, and 4, discussed in Sections 5.3.5.1, 5.3.5.2, and 5.3.5.4, respectively,

address more localized land use decisions such as zoning ordinances and comprehensive planning, Alternative 3 encompasses land use decisions and planning tools on a larger scale. See Section 5.3.5.3 for a discussion of those decisions.

Local land use decisions that are applicable to EWP Program components differ, encompassing legislative, administrative, and quasi-judicial ones. Administrative decisions require objective standards for decision-making and can be made by a planning officer of the jurisdiction. A legislative body, such as a County Council, has the final power to make policy and zoning decisions. Their decisions are subjective and can be influenced by politics. Quasi-judicial bodies such as a board of adjustment will hear facts about a case, often an appeal of a zoning decision, and make a judgment. The type of land use decision will dictate the amount and type of evidence and information needed to make local decisions (Callies et al., 1994).

The EWP Program practices would be closely related to current zoning within the affected community. One commonly occurring example is that of a floodplain ordinance regulating development within a designated area. This ordinance could be part of the local zoning code or may exist as a separate regulation. Floodplain ordinances are often based on FEMA-delineated floodplains and floodways. The ordinances usually prohibit all development in the area, or they impose building elevation requirements for structures. EWP Program components should be checked against existing regulations to identify potential conflicts.

Land use and comprehensive plans also are important considerations for EWP Program coordination. The practices should be compatible with the long-term vision of the community's spatial structure. The standing comprehensive plans could influence EWP Program decisions regarding particular practices in designated areas. The need to demonstrate how a development application follows the intent of the comprehensive plan is required in many legislative and quasi-judicial decisions.

The legality of floodplain ordinances has been challenged in takings claims. Regulatory takings are those where a land use regulation is so restrictive that it constitutes a taking of private property. This can sometimes be a concern with floodplain easements as well as any land use regulation. The following case is an example of a land use regulation challenged on its 'over-regulation'.

In *Responsible Citizens v. City of Asheville*, the validity of the floodplain ordinance was upheld. The court used two tests for determining if a taking had occurred through the enactment of this floodplain ordinance. The first test was whether the end goal of the floodplain ordinance was within the police power granted to the local government; the second, whether the means by which this goal was obtained were reasonable. The court found that protecting the public safety is a permissible objective, and preventing floodway obstructions and requiring flood-proofing of structures is a reasonable means of achieving this (Owens, 1999).

Community Structure and Social Patterns

Project-related effects might result in the breakup or isolation of specific neighborhoods, affecting the sense of community and disrupting important networks that support local residents. Disruption may result from the maintenance of important social networks and from necessary economic functions (such as the barter exchange of construction or mechanical skills among neighbors, or the exchange of services like transportation or child-care). Also potentially affected may be significant cultural and social institutions such as churches, social centers, public buildings, or unique structures that have special meaning to local residents even though they are not specifically eligible for consideration as historic or cultural resources. Consequently changes in the patterns of interaction of local residents can occur (Gramling and Freudenburg, 1992).

The potential for relocation or temporary dislocation of significant segments of the population, either because of land requirements for new construction or floodplain easement purchase, also represents a significant potential for disruption to local community life. It may also threaten the continuing viability of the community, especially in smaller rural areas. Land acquisition may disrupt social networks, both for families that may be relocated and for those that remain in the affected area. Burdge (1987) found that the resiliency of large family-based communities was lost when the families that comprised the community lost land or were forced to relocate.

A high level of social cohesiveness often characterizes rural communities. Cohesion in this sense refers to the forces or attractions that hold members of a community together and is based on the quality of social life within the community. Anything that may decrease the desirability of the community itself, or the desirability of associating with or identifying with the community, may have a detrimental effect on the level of cohesion and the corresponding sense of community (Finsterbusch, 1980). Local change, the loss of stability, or a sense of traditional identity can significantly affect this level of cohesion, especially in small, traditional, rural communities. Correspondingly, the protection of these elements may be considered a uniquely beneficial impact, depending on the specific characteristics of the individual community.

5.3.3.1.4 EWP Program Impacts on Environmental Justice

Executive Order 12898 (1994), "Federal Actions to Address Environmental Justice in Minority and Low-Income Populations," requires that Federal agencies consider as a part of their action any disproportionately high and adverse impacts on minority or low-income populations. This consideration has three components: 1) a demographic assessment to identify minority and low-income communities that may be present in the affected area; 2) an integrated assessment of disproportionately high and adverse impacts on these communities; and 3) the increased involvement of the affected public in decision making and potential mitigation strategies (Wilkinson, 1998).

A primary objective of the EWP Program is its equitable administration: the accessibility of information about the EWP Program components, the availability of project assistance to individuals and local communities, and the consequences of project implementation. Of

essential concern is the identification of those who benefit and those who are disadvantaged by the implementation of one or another of the proposed alternatives and whether the individuals or populations involved are representative of either a recognized minority or socioeconomically disadvantaged (poverty) status. Also of concern is the presence or absence of small, local businesses and small farm operators, especially minority contractors who may be present and who could perform required EWP Program construction work.

The potential effect of the proposed alternatives on limited-resource farmers, ranchers, and communities is another area of concern. Limited resource farmers and ranchers are defined as those having a distinct disadvantage in obtaining USDA program assistance (NRCS, 1998). Limited-resource communities are defined as those where average housing value is less than 75 percent of the State housing value average, where the average per capita income is 75 percent or less than the national per capita income and where current unemployment is at least twice the national average over the past 3 years based on annual unemployment figures (USDA, 1988). The capability of the community as a whole to provide local sponsorship and to absorb the costs associated with sponsorship is also important considerations in determining local effects.

5.3.3.2 Impacts in Typical Affected Communities

To demonstrate the potential socioeconomic effects of the EWP Program at the community or site level, an assessment was made of the potential impact of the installed practices on six example communities. These communities were selected to reflect the more important characteristics associated with each community type and represented a varied sampling of EWP Program installed practices, (e.g., streambank stabilization, debris removal, revegetation, levee repair).

For purposes of the demonstration assessment, the result of the No Action alternative (Alternative 1) is described for each community to serve as a basis of comparison with the other alternatives. The results of the analysis from each of five communities, while not strictly a representative sampling, can be generalized to other communities of the same type. Under similar conditions, the anticipated effects of EWP Program actions would be similar to those identified here for the six communities.

In general, the primary effect of EWP Program practices in the watershed communities selected for this assessment is evident in the beneficial aspect of repairing and restoring the affected area to its pre-disaster condition and use. Protected land areas are regained by the community as part of the economic base or as residential, investment, or natural use areas. From a programmatic perspective, the primary consequence of EWP Program action is to mitigate the effects of natural disasters in the subject communities. This mitigation often results in a potential for increased human habitation and higher levels of social and economic dependence on these disaster-prone areas of the watershed region. An adverse effect on the associated watersheds can be anticipated where increased development results in an increase in urban or agricultural runoff.

5.3.3.2.1 Effects on Business and the Local Economy

For each of the six sites included in the assessment, direct effects on the local economy resulting from potential employment or project expenditures in the local community are minimal. With the exception of the Boise Foothills project, the scope of the EWP Program practices in the other five communities was relatively small and the time required for the construction phase of the project relatively short. The smaller community size also limited the institutional and commercial entities that might be present to supply goods and services to the projects, thereby limiting the communities' ability to absorb project expenditures. This is especially true for the Rocky Run community, which is entirely residential and for the smaller, single, or multiple-property projects such as Rose River, VA, or Bethel, GA. However, some demonstrable income may have been created in the larger community settings such as Buena Vista, VA, and in the Shenandoah, IA, projects. The larger effort in the Boise Foothills project, in conjunction with the increased economic capacity of the larger community, enhances the ability of the community to capture additional income and employment from the project.

The primary benefit to each community examined is related to the effect of the installed practices in restoring or protecting the existing value and utility of natural resources, in this case the quantity and appearance of land and other resources in the community. In the case of the smaller projects, this benefit is confined to one or two agricultural properties, whereas the effect on communities such as Buena Vista, VA and Shenandoah is experienced more as a benefit to the entire community. This is especially true in the case of the Boise Foothills where the outcome of the project provided a significant benefit in restoring the value of the mostly residential and commercial land adjacent to the burn area. The project also provided additional protection to the central business district of Boise. In all cases, the land disturbed or permanently withdrawn from the community base was minimal compared to the total land area available. Most of the disruption to land was temporary.

For the communities affected, minority or socioeconomically disadvantaged residents do not represent a substantial portion of the affected populations. However, because of local concern for the physical appearance and land requirements associated with the Boise Foothills project, some concern may exist. In some cases, the visual appearance and character of more remote, rural areas may have been compromised to provide increased protection and remove the potential threat to residential and commercial neighborhoods in the close-in suburbs and downtown core. A potential for a disproportionate effect on minority and small landholders in the Eighth Street Fire community is therefore a consideration. The presence of minority populations in the area is not high and examples of a disproportionate impact are not evident. The project also was preceded by a number of public meetings to address local residents' concerns.

5.3.3.2.2 Effects on Infrastructure, Public Health and Community Resources

With the exception of the Rocky Run, VA and Rose River, VA communities, all remaining communities included in the assessment experienced some benefit from the protection or restoration of infrastructure services. Benefits included restoration of stormwater drainage and improved flood control, water quality improvements, and restoration of secondary roads. In the East Nishnabotna, IA watershed, where EWP Program activity is complemented by other flood-control and disaster-recovery efforts, the protection of wells and sewers represents a major contribution of the Program. EWP Program activity in each of the six sites was not significant in impairing or disrupting existing infrastructure elements.

In all cases studied, some benefit from EWP Program activity extended to elements of property. At three of the sites, Rose River, VA, Shenandoah, IA, and Bethel Road, GA, the primary protection was extended to one or two residences in low-density rural/agricultural settings. In the case of Rocky Run, VA and Buena Vista, VA, however, multiple residential properties and some commercial residences were protected. As a result of the program, the overall risk to the health and safety of the residential population was significantly reduced. In Rocky Run, VA the overall viability of a small and isolated community was enhanced by project activity. For the Boise project, the EWP Program action protected as many as 4,500 residences and 760 commercial and business establishments in suburban and downtown areas downstream from the site of EWP Program activity. For all six sites, the execution of the EWP Program installed practices represented no significant effect on any existing elements of property.

EWP Program activity at the six sites did not substantially affect social services or other basic services to local residents. In the Boise Foothills, ID project, a substantial benefit was realized from the increased protection of public buildings and commercial establishments in the central core of the city. The EWP Program effect on local resources is somewhat more defined. In Boise, ID and Shenandoah, IA the areas affected represent substantial resources for recreation or educational uses. In the Rose River, VA and Rocky Run, VA communities, there was some improvement in the visual quality of the area. The overall effect of the EWP Program was not substantial, although some visual impairment might be associated with installed practices in the Rocky Run, VA and Boise Foothills, ID projects.

5.3.3.2.3 Effects on Community Structure and Social Patterns

The relatively small size and the short duration of most of the EWP Program projects under consideration had no effect on the demographic composition of the community associated with increased employment or other project-related activity. In Rocky Run, VA and Buena Vista, VA the project was significant in protecting a residential community and thereby maintaining the existing residential character of the area. In all cases, one indirect effect of EWP practices in protecting the affected area was to increase the possibility that additional development in the floodplain may be encouraged. Floodplain easements could be utilized to keep these “open tracts” from being developed. Particularly in the areas around Boise, ID and Shenandoah, IA, where additional development is planned, this may have the effect of increasing the extent of the cost and potential damage associated with a subsequent natural disaster.

EWP Program practices within the highlighted communities have different effects on an area's land use, depending on the type of practice used. The practices differ in the amount of change they create. For example, the use of riprap and gabions are practices primarily within a stream and its bed. Debris removal is also concentrated in a more localized area. On the other end of the spectrum, floodplain easements and levees require larger tracts of land and have broader-reaching impacts.

Using floodplain easements and setback levees as EWP Program practices often have a larger impact on land use decisions than practices focused on smaller areas. In the East Nishnabotna, IA, watershed, the use of floodplain easements and setback levees are decisions affecting the land use of areas throughout the watershed, as well as near the town of Shenandoah, IA. The purchase of floodplain easements throughout the watershed affect not only the inundation of agricultural land zoned for that purpose, but downstream properties that may wish to maintain the integrity of current land use. Placing a floodplain easement on one parcel without acquiring the rights on adjacent properties would affect the neighboring landowners. In addition, the development plans of a city such as Shenandoah may be affected by the purchase of a floodplain easement and subsequent inundation. Levees would have an impact on the development plans of an urban area in a similar manner, protecting some land upstream, and having negative effects on downstream uses.

Critical area treatment uses a combination of armoring practices on a larger scale. Practices such as vegetation planting and grade stabilization structures can produce impacts on a large scale. However, the land use impacts are not as significant as the biotic or landscape ones. Preventing erosion on susceptible slopes such as in the Boise Foothills project protects residential and recreational land uses. The revegetation alone would not cause large disruptions in existing land uses. As in Boise, the revegetation and erosion prevention practices protected existing land uses.

On a smaller scale, practices such as riprap and gabions in streambeds and on streambanks affect a small area of adjacent land uses. Use of these armoring practices in communities such as Buena Vista, VA protects the developed areas within the city, allowing adherence to a master plan. Immediate flooding of susceptible land also is prevented by these structures. Without practices regulating the streamflow and integrity of the bank, land uses within the immediate area would be threatened.

Lastly, removing post-disaster debris within waterways is a practice influencing the uses of adjacent land as well as further into the community. The amount of flooding is largely dependent on the amount of stream blockage. The flooding of land, by water prohibited from flowing in its course, can affect lands on various scales. As in Hall County, GA and Rose River, VA, adjacent farmland was threatened; however, no immediate threat to any surrounding communities or developed area existed. In Buena Vista, VA, however, developed areas were threatened by imminent flooding. The extent of the EWP Program practice will largely depend on the location of debris blockage and its proximity to developed land rather than open space or farmland.

Preserving the existing community structure and social patterns of the affected communities is an important beneficial effect of the EWP Program. Particularly in the case of the three projects, Bethel, Rose River, and Shenandoah, where the affected area was primarily agricultural, EWP Program activity protects existing farm operations. In the more residential areas, especially Buena Vista, VA and Rocky Run, the continuing viability of the local community or neighborhood depends on the ability to control the effects of flooding. For the Boise Foothills project, EWP Program practices reduce the effect of the original disaster and facilitate the continued development of the community. Although each project required minimal disruption of the local environment during project construction, only the Boise project resulted in a substantial temporary loss of access to neighborhood parks or other recreational locations. No permanent disruption of community was experienced. In all cases, the overall effect of the project was essentially beneficial in protecting or restoring the previously existing community structure and patterns of interaction.

5.3.3.2.4 Environmental Justice Effects

The communities studied do not have substantial minority populations; therefore, environmental justice effects related to these populations are minimal. In the cases presented no communities or neighborhoods were identified that were predominately minority in character. Several of the states involved have existing programs to encourage minority and small and disadvantaged businesses to participate in contracting opportunities. Minority contractor participation was identified in at least one of the projects, Rose River, VA. Minority participation in the other projects could not be determined from the information provided for this assessment. In the case of the Boise project, a substantial participation of the local community was evident in facilitating acceptance of the proposed practices by local residents.

5.3.3.2.5 Summary of Socioeconomic Effects of the EWP Program at Six Selected Example Communities

Table 5.3-4 presents a summary of impacts on the communities selected for this analysis. A summary description for each site follows the table.

Table 5.3-4 Summary of Post-EWP Program Socioeconomic Effects on Rural Communities

Bethel Road, GA	Buena Vista, VA	Boise Hills, ID	Rocky Run, VA	Rose River, VA	Shenandoah, IA
Employment and Income					
Small potential for increased income	Some benefit from project expenditure, significant benefit from protection of businesses	Substantial income from project-related expenditure; benefit from the removal of threat to commercial and retail areas	No commercial or business entities present in the community	Restoration of income potential from affected properties; small business benefits from project expenditure	Income from agricultural production; indirect benefit to retail and commercial areas

Table 5.3-4 (continued) Summary of Post-EWP Program Socioeconomic Effects on Rural Communities

Natural Resources					
Utility and value of affected land area restored	Repair and removal of threat enhances value as investment	Restoration and improved value of affected areas	Property value maintained by threat removal	Utility and value of affected land area restored	Agricultural value of land affected; some increased development potential
Infrastructure					
Restoration of drainage culverts in the affected environment	Some benefit derived from threat removal	Flood control benefits to agricultural areas; water quality improvement	No significant infrastructure features affected	No significant infrastructure features affected	Repair reduces threat to local wells and sewage system
Property					
Two residential properties protected from immediate threat	Protection of residential properties and business areas; some benefit to important structures	Reduction of threat to 4,500 residences and 760 commercial properties; major impact from protecting important structures	15 residential properties protected by installation of flood-control structures	Two single-family dwellings and state road protected; several buildings nearby indirectly benefited	Residential dwelling and a number of buildings significant to the community social life protected
Public Health and Safety, and other Community Resources					
No expected effect	Provision of sponsor's share represents noticeable expense for small community	Restoration of recreational and other watershed uses; some visual impairment from engineered structures	Some visual impairment associated with riprap and gabion structures, but improved over post-disaster condition	Some improved visual quality over post-disaster appearance, no other resources significantly affected	Adjacent areas are important for recreation uses and provision of basic services
Demographic Composition					
No change in the local community	No change; restoration may increase growth potential	Restoration increases potential growth of new communities in suburban areas	Maintains population that may otherwise be displaced by flood	No change in the local community	Maintains population that may otherwise be displaced by flood
Land Uses					
No anticipated change in land uses	No change in anticipated land uses	Restoration of pre-disaster uses in burned area; some change may result from potential new development	Some loss of land for new structures; otherwise no change in existing uses	No change in anticipated land uses	Protects existing land uses; some development potential from reduction of potential threat
Social Patterns					
Minimal disruption during construction; threat removal benefits local church	Significant benefit to maintenance of continuing viability and attractiveness of community	Enhanced viability of new development; established neighborhoods protected	Continuing viability of community depends on control of periodic flooding	Immediate area is sparsely populated; some potential for disruption during construction	Benefit to the maintenance of community activities; nearby residential neighborhood protected

Bethel Road Neighborhood – Hall County, GA

The requirement for debris removal and stream bank stabilization in the Bethel Road area of Hall County is the result of flood damage in the West Fork Little River Watershed. The area affected is a less-densely populated rural portion of Hall County. The potential for a significant impact on the local economy is small. Immediate effects on the local community would be expected to be beneficial, but not major. Only two private properties are affected and the result of the action in of restoring land and protecting of structures is generally beneficial. The project is in a rural land use zone, considered in the county's comprehensive plan as accommodating slow residential growth without the provision of water and sewer. The project site is within about 700 feet of existing structures. In the absence of the EWP Program installed practice, the roadway and adjacent rural lands would be threatened with inundation. Residences within the immediate vicinity would not be directly threatened. The impacts of the Program practices are primarily beneficial to undeveloped lands.

Apart from access roads to the two properties affected, construction-related disturbances are essentially temporary. Impact on the local community from noise or other construction-related activity is minimal. Any adverse visual impact associated with the newly installed structures is offset by the improved appearance of the restored area. The sparsely populated area surrounding the site would be expected to minimize any local impacts on community life or social structure.

Buena Vista, VA

In general, any potentially adverse effects of EWP Program project activity on the socioeconomic conditions of the Buena Vista, VA community are balanced against potential benefits. EWP Program practices in the area respond to flood damage that potentially threatens residential and commercial areas of the city. The community's continuing viability and its attractiveness to current and potential new residents and investors depends to a great extent on its ability to control flooding or protect local property from the effects of the flood plain. Although the project contributes additional EWP Program support money to the local economy, provision of the local sponsor's share represents a noticeable expenditure for a smaller community of an independent city such as Buena Vista, VA.

The developed areas near the EWP Program sites are primarily residential. These are the areas most affected by the direct impact of stream blockage. Commercial uses and industrial areas are indirectly affected. The comprehensive plan acknowledges the conservation of naturally sensitive areas as important, specifically targeting development within the floodplains, on steep slopes, and in areas with drainage problems (Buena Vista Comprehensive Plan, 1995). Potential impact on the immediate local neighborhood from project-related construction includes some physical disruption, as well as increased noise levels. A benefit to the immediate community is an improved visual aspect as well as increased protection of local residents in the event of another flood. The affected properties also are restored to their previous value. No substantial alteration of the pre-existing social community or demographic characteristics would be expected from a project of this level and this short duration.

Boise Foothills, ID

Although the area immediately affected by the Eighth Street Burn is primarily agricultural and open space with few residential and commercial areas, it lies adjacent to a major suburban expansion of the City of Boise. The affected area is also the watershed for the greater Boise area. The potential of flood and flood runoff to affect these adjacent suburban communities and the older residential and commercial areas of the central portion of Boise represents a major adverse impact on the maintenance of the quality of life that may be associated with any subsequent natural disasters. EWP Program practices were directed primarily at decreasing the threat of massive slides and erosion from burned hillsides. Although the EWP Program project resulted in no net increase in the total acreage available for human uses beyond that which existed before the fire, the installed practices removed the immediate potential hazard associated with flooding and restored the utility and visual qualities associated with the original condition of the land before the event. In addition to a number of important public buildings and other structures of cultural importance, the protected area also includes approximately 4,500 residences and 760 commercial buildings. Although no significant loss of residential or commercial property occurred as a result of the fire, the burn area extended into residential areas north of the city and produced a significant visual impact (NRCS, 1996). The rural quality of the watershed also provides access to recreational facilities for a substantial portion of the area populations.

Some potential for temporary disruption (noise, other physical disturbance, and some loss of access to recreational areas) from project-related construction activity was likely during the two-year duration of the project. The project was preceded by a number of public meetings to address local resident concerns. Despite initial concerns, the overall evaluation of the completed project by local residents is generally favorable. Although some permanent impairment of the land resulted from these practices, the impact on adjacent property holders has been minimized and no disproportionate impact on minority, socioeconomically disadvantaged, or sensitive populations is evident. The EWP Program practices installed to mitigate the effects of the Eighth Street Burn allow Boise to continue development within the city. Without these mitigative practices, both the urbanized areas and foothills would be threatened for future development.

Rocky Run, VA

Flooding of the Rocky Run area has resulted in substantial damage to a residential community, affecting 15 single-family dwellings and associated service buildings. No other significant structures (e.g., churches, schools, public buildings,) were affected. The effect of the EWP Program project is generally beneficial in terms of an improved visual aspect (compared to the unrestored condition), but permanently alters the visual qualities of the stream. Some temporary disruption of the surrounding area may have occurred during the construction phase of the project. The community at the Rocky Run site is not large enough to benefit economically from the EWP Program project expenditures, apart from the protection of property that may result from the action.

The project site in Rocky Run lies within the planning jurisdiction of the county and is currently zoned as general agricultural with single-family residences permitted. The comprehensive plan for the County envisions that current land uses will continue in the project area. The County also has a floodplain ordinance, restricting new development within the floodplain and floodway. Currently, the residential subdivision protected by the EWP Program project improvements is a nonconforming use under the zoning ordinance.

The conditions of the Rocky Run site are conducive to consideration of an improved land floodplain easement option. Removal of the existing residential community and returning the stream to its original condition would eliminate the requirement to maintain and continually repair the existing structures that are required to reroute the stream around the 15-house cluster that represents the community. Apart from economic costs, however, the potential for significant disruption of the current community and the near improbability of being able to reconstruct the community and its social relationships at some other site are serious considerations.

Rose River, VA

The area immediately affected by EWP Program project actions is primarily rural in character. The flood-related threat to the area is centered on two farm properties and includes two single-family dwellings, farm buildings, associated structures, a state road, and pastureland. Since the site had already been damaged by floodwaters and heavy equipment use by the landowner before the EWP Program action, any potentially adverse visual impact associated with the newly installed structures is offset by the improved appearance of the restored area. The sparsely populated area surrounding the site would be expected to minimize any local impacts on community life or social structure. The potential for a significant impact to the local economy is small. There are several important structures, including three churches, a school and two cemeteries, near the restored area. Although not directly threatened, these facilities benefit from the improved setting.

The site lies within various zones defined by the county zoning ordinance, including agricultural use, single-family homes, and other miscellaneous uses such as a greenhouse or airport with special use permits. The comprehensive plan for the County envisions the same long-term uses within this area (Grayson, 1999). The practices installed in Rose River allow these existing land uses to remain intact. Since the Rose River project restores a naturally functioning floodplain, the alternative use of an agricultural floodplain easement might also be considered. The purchase of a floodplain easement would have the beneficial effect of removing the requirement to continue to provide and maintain protective measures and would reduce the potential demand on the local sponsor, especially if the Federal role is reduced. Use of a floodplain easement however, would require the removal of agricultural land from crop production and could involve one or two immediately adjacent dwellings.

Shenandoah, IA

Since 1993, three major floods have had a significant effect on the community surrounding the EWP Program sites at Shenandoah and in the East Nishnabotna Watershed. In addition to the destruction of cropland and damage to physical structures, wells in several areas have been contaminated, affecting sources of water for local residents. For the affected sites, the unrepaired condition of the levee represents a potential loss of cropland and a significant negative impact on the local community. The scope of the EWP Program actions was relatively small and did not involve either a substantial capital expenditure in the region or a major change in land area and uses. The principal benefit to the local community is associated with the restoration and protection of potentially productive cropland and the restoration of the value of existing buildings and other structures that would result from removal of the potential threat. Short-term, construction related effects would be expected to be minimal and confined to the areas immediately surrounding the sites. Long-term effects of the levee repair do not significantly alter the appearance of the local area, compared to its condition before the flood.

Various EWP Program projects installed within the East Nishnabotna Watershed could have beneficial effects on the land use decisions of the City of Shenandoah. While the practices occur at many points upstream of the City, their effects will noticeably permit certain land use and development decisions. Levee repairs upstream from Shenandoah, as well as the levees nearest to the city limits, allow agricultural land to remain. In the absence of the levee, agricultural land to the northwest of the city would be flooded, possibly jeopardizing current pockets of development. The revised county comprehensive plan anticipates zoning changes to allow commercial industry in this area (Marker, 6/15/99). Without the protective levee, changes such as those proposed would not likely occur. The continuing potential for flood-related damage to this area would, however, indicate that floodplain easements might be considered as one of the EWP Program options. Other flood response programs (FEMA, USACE) in the community include consideration of the removal of individual residences, farm structures, and other facilities from the most seriously affected areas of the floodplain. Purchase of floodplain easements on agricultural land, as the EWP Program considered for the Shenandoah sites, would support or complement the actions of other programs in the area.

5.3.4 Impacts of Floodplain Easements on Human Communities

The most important characteristic of a floodplain easement is that it gives the private landowner and the public an alternative to using public funds to restore disaster-prone property to pre-disaster condition and function. In addition to reducing risks to lives and property, the purchase of a floodplain easement eliminates the need for future disaster payments.

The floodplain easement, a perpetual legal interest in a property, restricts the owner's use of the land as a mechanism to reduce flood damage claims and protect wildlife habitat or floodplain hydrology. In contrast to expensive, and sometimes temporary, conservation practices, the impacts of a floodplain easement and reconstruction of a floodplain may benefit an area both ecologically and socioeconomically. Similar to the floodplain easement, the setback levee adds the element of protection of neighboring property.

Incorporated as part of all four EWP Program alternatives, the exercise of floodplain easements is structured differently according to the alternative, the requirements of project, and the type of land involved. Where floodplain easements replace other recovery practices on non-improved land, local sponsorship would be possible, but not required since the USDA would hold the floodplain easement. This option would be voluntary on the part of the landowner and would require minimal local revenue contribution. USDA would fund the establishment of the floodplain easement and any environmental measures required. Floodplain easements on agricultural land differ categorically from those on other unimproved or improved floodplain easements. Depending on the application, restrictions may allow the use of natural vegetation only or compatible uses by the landowner (e.g., haying, grazing, and timbering).

Exercise of a floodplain easement on both agricultural and improved lands is possible under Alternative 2 and Alternative 4, the Preferred Alternative, and would be expanded to include multiple floodplain easements in priority watersheds under Alternative 3. Floodplain easements may include developed and commercial property in which residential relocation may be necessary. Where improved land floodplain easements are exercised, the participation of a local sponsor, specifically a government entity or administrative district with authority to hold property, is required. Local sponsorship increases obligations on a local government, as well as the potential for community disruption caused by relocating the current tenant of the property.

5.3.4.1 Current Agricultural Floodplain Easements

Repeated cycles of damage and repair to agricultural land as a result of periodic flooding adversely affect rural communities located in flood-prone areas. Protective practices and engineered substitutes for the normal functioning of the watershed cost not only the local community, but also larger public entities (State and Federal agencies) that provide resources and funding for disaster assistance. Constructing protective practices includes a social cost in terms of the alteration of the environment and setting of the community.

The use of a floodplain easement offers a cost-effective alternative to more traditional flood control approaches. Traditional approaches usually involve a tradeoff between flood control and damage reduction, and the continued health of ecological resources (Williams, 1996). These approaches reduce the threat of flooding but do not eliminate it. Flood control practices may also compromise the character and aesthetic quality of a setting. However, the exercise of a floodplain easement on flood-prone properties also is a trade-off between the economic and social value of the land in its current use and the beneficial effect of restoring the land to its natural condition and minimizing future costs of natural disasters and flooding.

The purchase of floodplain easements through the EWP Program in a location such as the East Nishnabotna, IA watershed would benefit the landowner and community alike. The purchase of floodplain easements in land designated as open space would allow land uses to remain unchanged. If land were designated agricultural, their uses could potentially be minimally impacted. In Iowa, the proposed floodplain easements are in areas designated for agriculture. Using the floodplain easement for constructed open space improvements could, however, have some impact. The

improvements would then be susceptible to recurring floods. If floodplain easements were purchased in developed areas, however, impacts would be different.

The socioeconomic effect of the exercise of floodplain easements is a combination of beneficial and adverse changes that affect the critical aspects of the social community. Table 5.3-5 summarizes these potential effects on the socioeconomic indicators identified in this section.

Table 5.3-5 Summary of Socioeconomic Effects of Floodplain Easement Acquisition

Community Aspect	Impact Area	Potential Effect
Economic Structure	Employment and Income	• Purchase price of floodplain easement represents income to the landowner; • Marginally productive land becomes a one-time asset to owner; • Income generated from recreational and other permitted uses of the protected property; • Benefit associated with restoration of watershed condition: loss of economic or agricultural production-associated employment; • Future cost of damage recovery and flood protection minimized, but also income lost to community from periodic disaster payments.
	Value and Quantity of Natural Resources	• Loss of value of affected lands for investment or as part of the economic base; • Value and development potential of adjacent land may be improved; • Enhancement of ecological value.
Infrastructure and Resources	Infrastructure	• Improved function minimizes cost of associated flood protection strategies; • Potential for improved water quality, especially in areas serviced by wells.
	Property	• Where floodplain easement is purchased on improved land, associated residential or commercial structures are demolished or removed; • Value and use of adjacent structures improved.
	Public Health & Safety and other Community Resources	• Change in value of floodplain easement property represents a small tax advantage to owner, but reduces the revenue base to local government; • Improved recreational and other uses of the land.
Social Pattern and Structure	Demographic Composition	• Relocation of residents may change demographic distribution of certain social characteristics in the population.
	Land Use	• Tradeoff between value of existing uses to social community and benefit of reducing continuing need to respond to flood conditions; • Some potential for conflict with existing community land use plans.
	Community and Neighborhood Social Patterns	• Permanent disruption of neighborhood or community networks; • Potential threat to ongoing viability; • Floodplain easement on agricultural land may enhance community desirability.

Effects on the Local Economy

Employment and Income. Apart from the benefit of reducing the continuing cost of flood control and damage recovery, the community experiences a number of additional beneficial economic effects. The purchase price of the floodplain easement supplies income to the landowner and by extension to the community, as the income is re-spent within the community. By volunteering

land for floodplain easement, a landowner, especially in agricultural areas, may realize income from land that otherwise would be costly to maintain and that may not have furnished regular income from production (NRCS, 1999).

Purchasing floodplain easements on agricultural land could provide local farmers with some tax breaks; however, they would not be an economic windfall. Every state except Michigan has deferred assessment programs for agricultural lands (AFT-Deferred, 1998). A deferred assessment program, also referred to as use-value, taxes land at its agricultural value instead of its market value. The use-value of agricultural land is often a small percentage of the full market value. In Orange County, North Carolina, for example, farmers pay taxes equaling an average of 6 percent of market value on land enrolled in the program (Belk, 1999). Thus, direct tax savings of a floodplain easement to the average farmer are not substantial due to the small amount already paid. Only the benefits gained through reducing the estate tax burden by selling a floodplain easement would be substantial to most farmers.

While an individual farmer might not realize great economic benefits, the community would. Through the purchase of floodplain easements to preserve open space or flood-prone areas, the community would maintain a solid tax base. When land is developed, police, fire, schools, water, sewer and after services must be provided. The cost of these services burdens a tax base. Communities with primarily residential development often incur heavy debt, destroying credible bond credit ratings.

Open space is an affordable use of land from the perspective of providing community services. Studies on the costs of community services have been conducted around the country. The median costs (per tax dollar of revenue raised) of providing services for commercial/industrial use is $0.28, for farm/forest use is $0.37, and for residential use is $1.15 (AFT-COCS, 1999). Floodplain easements purchased under the EWP Program could contribute to a sound economic strategy for a community; protecting flood-prone areas from development will prevent economic losses while strengthening the local tax base.

Floodplain easements may be the best use of land within a watershed from social, ecological, and economic standpoints. Although losing the previously productive land may carry adverse effects, the community could benefit from changes in income and employment associated with increased recreational and other permitted uses of the land. An associated benefit is derived from the improved condition of the watershed itself.

Exercise of a floodplain easement on the land does reduce income to the community that was previously derived from disaster payments. These payments often represent a boon to the property owner and by extension to the local community in the form of compensation for damaged crops or structures (Philippi, 1995) and resources to construct and maintain flood control devices.

Value and Quantity of Natural Resources. Any loss of productive agricultural, commercial, or residential property represents a potentially significant impact to a community. The exercise of floodplain easements removes the land from the economic base of the community and potentially

decreases its value. Schueler (1999) cites several studies indicating that the value of wetland and floodplain areas lying within a protected region in which development is restricted may be 10 to 36 percent of the original.

However, the return of watershed land to its natural function contributes significant economic benefit such as increased seasonal water availability for agricultural, municipal, and industrial uses, reduced downstream sedimentation and pollution, increased biodiversity, and improved habitat for fisheries, plant life, and animals (Williams, 1996). Additionally, economic benefit also accrues to the local community because of an increase in the attractiveness of properties adjacent to protected floodplains as potential development areas (EPA, 1995). Thus, although some land is lost to the local economic base, remaining adjacent property may increase in value and desirability.

Effects on Infrastructure, Public Health and Community Resources

Infrastructure. By imposing use restrictions on an affected property, a floodplain easement reduces both the requirement for and associated cost of implementing extensive flood-control practices. Restoring the natural function of the watershed may also improve water quality as well as reduce runoff and the associated costs for treatment that would otherwise be borne by local government. An improvement in water quality is often associated with improved property values particularly in areas served by wells (Schueler, 1999).

Property. A floodplain easement on improved property results in the loss of the value and use of any structures, except where they can be relocated outside the floodplain. Assistance to the local community from State and Federal sources may afford some compensation, but the loss of these structures is usually irreversible. Less important to a floodplain easement on agricultural land, the loss of residential, commercial, or other structures significant to the social life of a community may be an important impediment to exercising a floodplain easement. This is especially true where the cost greatly exceeds the cost of maintaining flood control structures, or where the structures involved are culturally or socially important to the life of the community and are not easily replaceable.

Public Health and Safety and other Community Resources. The exercise of a floodplain easement, especially on non-agricultural or improved land has the effect of removing the potential risk to the health and safety of resident or other user populations. By relocating human activity away from flood prone areas, the floodplain easement removes the object of any potential harm from natural disasters and thereby eliminates any subsequent risk. In addition to removing the direct threat to immediately affected populations, floodplain easements also benefit the community as a whole. Elimination of the population at risk contributes to the overall effectiveness of disaster emergency services by reducing the number of sites that must be addressed in the event of a future disaster and allowing a more efficient use of disaster resources.

A change in the value and use of the land designated as part of a floodplain easement will give a tax advantage to the landowner, but also causes loss of revenue to the local government. Floodplain easement areas are typically assessed at a much lower value than other property. Removing too much land from the local tax base could undermine the revenue source for other

important local governmental services. However, this effect is at least partially offset by the improved value of neighboring parcels and the reduced cost of providing infrastructure services to the local community that may result from restoring the natural function of the watershed. The potential for use of the restricted land for parks or other recreational uses represents a corresponding benefit.

Social Pattern and Structure

Demographic Composition. Demographic changes are not an important consideration for the use of a floodplain easement on agricultural land. However, one exception is the potential for a floodplain easement to reduce the total amount of agricultural land available to the community. Such a reduction changes land availability and price, which may restrict the establishment of new farms or make the operation of existing farms more difficult. Depending on the scale of the floodplain easement Program, this may have a tendency to reduce the demographic diversity of agricultural communities as fewer owners control a greater portion of the remaining land.

Land Use. Exercising a floodplain easement is a meaningful tradeoff between the social value of the current use of the land and reducing potential flood-related damage and any associated impediment to the full utility of the affected land. The condition and use of the land before a disaster and the effect of the disasters on the continued use of the land must be considered. In many cases, the desirability of a "naturalized" landscape may increase the value of the land over current uses such as agriculture, particularly when the current value is offset by the cost of maintaining the land or repairing flood damage. The community benefits when the exercise of a floodplain easement is part of an overall land use plan that includes watershed management to ensure environmental and flood protection and where land uses on adjacent parcels are compatible with the proposed floodplain easement restrictions.

Community and Neighborhood Social Patterns. Purchasing floodplain easements has the potential to disrupt important social patterns and neighborhood networks. In agricultural areas, the acquisition of a farm property may affect the individual farm family, and in the case of marginal farms, the economic and cultural diversity of the community by concentrating the remaining farmland in the hands of fewer owners. Burdge (1998) notes that the process of creating a single-family farm business often requires the participation of multiple other families and the intergenerational transfer of property among interconnected families. To determine the full impact of a floodplain easement purchase, therefore, the full range of impacts resulting from the intergenerational effect and the immediate relocation of the tenant must be taken into consideration. Changes in land availability and price in the immediate area may increase the floodplain easement owner's difficulty in acquiring land to compensate for the lost acreage or in establishing a new farm.

5.3.4.2 Proposed Non-agricultural Floodplain Easements

The purchase of a floodplain easement on improved land, or the outright purchase of title to the land, expands the potential range of impacts associated with Alternatives 2 and 3. Although not a significant issue on agricultural land, exercise of a floodplain easement in residential areas or on

improved lands can change the size and composition of the local population. Under Alternatives 2 and 3, non-agricultural floodplain easements could be applied for the purposes of relocating small, flood-prone communities. As residents move and relocate, the characteristics of neighborhoods may change. Especially important is any permanent differential change affecting minority or low-income households. Similar impacts can result from the EWP recovery practice of structure removal proposed under Alternative 4, the Preferred Alternative, where NRCS would coordinate with a third-party project sponsor who would then purchase the land. Under the Preferred Alternative, however, only improved lands in rural areas adjacent to agricultural lands would be considered for direct floodplain easement purchase by the NRCS. Multiple residency areas would not be purchased or demolished, and small communities would not be relocated, minimizing the impacts to a community.

In residential areas or on improved lands, removing or relocating a population under Alternatives 2 and 3 may significantly alter the local environment. Where a sufficient number of residents are involved and the community is sufficiently small, the disruption could be significant and could threaten the viability of the community itself. Also important is the availability of suitable residences nearby for persons displaced by floodplain easement purchase. Where land values in the displaced neighborhood are substantially lower than in the immediately surrounding areas (particularly with respect to low-income neighborhoods), residents may have to move to distant locations, thus permanently disrupting social networks.

If a floodplain easement were to result in the loss of an important structure or place within a community such as a park, monument, or gathering place for residents, the potential effect may be disruptive, at least temporarily. However, in order for a restoration measure, including floodplain easements, to be eligible for program funding the measure has to be socially defensible which means that the measure cannot cause unmitigated or disproportionate harm to a valued social resource. This would minimize the disruption that a non-agricultural floodplain easement would have on a community resource.

The floodplain easements proposed under the EWP Program alternatives preserve a community's environmental and economic resources. Through the use of floodplain easements, open space is preserved, the tax burden of providing community services is reduced, and flood-prone lands are restored to their natural state as floodplains.

Structural flood-control projects often create a false sense of security in the community. They increase the potential for development of flood-prone areas if land use zoning is not properly implemented. Rather than reducing the threat of damage from catastrophic flooding, structural practices may actually increase the risk of damage and loss by increasing the population density and the number of structures in the floodplain areas that could be affected if the protective practices fail. If not coordinated with local planning ordinances to prohibit development, residents could move back into the protected area. Development also increases the stress on the watershed itself. Despite protection efforts flood losses cost $4 billion annually (Faber, 1997). The use of an improved land floodplain easement would eliminate increased development and reduce the need to return and continue to make repairs after disaster.

Floodwaters often cause losses in the short-term, but landowners receive disaster assistance from Government agencies and insurance policies. This disaster assistance can exceed profits from the use of the land. The purchase of floodplain easements on these lands will reduce repair expenditures and disaster funding.

Although landowners participate voluntarily in the purchase of improved-land floodplain easements some participation of the local government is required as sponsor and holder of the land title. For some communities, this represents an administrative burden that may not be supportable without additional resources. This is especially true when tax revenue is lost because the property is withdrawn from the tax base.

Because the use of floodplain easements is a relatively new Program practice, the number of actual sites to demonstrate potential impacts is limited. Two sites, Rose River and East Nishnabotna, were therefore selected for hypothetical consideration under the current Program, Alternative 1, and one, Rocky Run, was considered under alternatives to the current Program (Alternatives 2, 3, and 4). All are summarized in Table 5.3-6. The improved-land floodplain easement option would have impact on land uses often residential in nature, returning the land to its natural use as a floodplain. The floodplain easement purchase could conflict with the long-term development visions of a community and require analysis on a case-by-case basis. However, community impacts are not anticipated to occur on a large scale under any of the Program alternatives, as it is the intention of the alternatives to minimize negative social impacts. In communities such as Rocky Run, VA, the purchase of floodplain easements would require the relocation of residences in the floodplain. These residences lie within an area zoned as general agriculture, but permitting single-family residences (Grayson, 1999). Thus, the official land use category would not change while actual use would change from residential to open space.

Table 5.3-6 Summary of Effect of Floodplain Easement Option on Three Example Communities

Impact Area	Rocky Run, VA	Rose River, VA	Shenandoah, IA
Employment and Income	Community is residential and employment and income is from outside sources. Therefore, no effect.	Depending on restrictions, floodplain easement could result in the loss of value of agricultural production.	Income from agricultural land lost. Some commercial areas may be affected.
Natural Resources	Loss of the value of 15 properties currently used for residential dwelling. *(Note: This scenario would be highly unlikely to occur under the Preferred Alternative).*	Agriculture value of land jeopardized by repeated flooding and repair attempt. Acreage loss may be compensated by increased value of adjoining land.	Loss of land area may be compensated by enhanced value of adjacent land for additional development by the community.
Infrastructure	Improved drainage to the remaining community, some improvement in water quality anticipated.	No major disruption. Some improvement expected from enhanced watershed function.	Improved water quality in an area serviced by wells. Transportation facilities located nearby may be affected.
Property	Loss of 15 single-family dwellings; no other significant structures. *(Note: This scenario would be highly unlikely to occur under the Preferred Alternative).*	Two single-family residences may lie in the designated floodplain easement area. Minimal effect to other farm buildings and structures.	Potential loss of residential units and service structures in the area.

Table 5.3-6 (continued) Summary of Effect of Floodplain Easement Option on Three Example Communities

Impact Area	Rocky Run, VA	Rose River, VA	Shenandoah, IA
Public Health & Safety and other Community Resources	Potential use of affected area as park or other recreational area.	No real effect on community resources. Some improvement to the overall visual quality of the land anticipated.	Removal of major responsibility for the maintenance and repair of levee. Floodplain easement area is a potential recreational resource.
Demographic Composition	Relocation of approximately 42 residents could substantially change composition of community. *(Note: This scenario would be highly unlikely to occur under the Preferred Alternative).*	No significant change to community composition. Only two households directly affected.	Some relocation of residents, but substantial change in population size and composition.
Land Uses	Change in current use from residential to nonresidential would not impact surrounding land uses. Restores a naturally functioning floodplain.	Change in current use is compatible with surrounding uses and enhances open space quality of the setting.	Change in current land uses may enhance development plan for other areas. Repeat flooding inhibits many uses of floodplain easement area.
Social Patterns	Relocation would have a significant effect and could threaten future viability. Housing values lower than surrounding area could require relocation. *(Note: This scenario would be highly unlikely to occur under the Preferred Alternative).*	No change in community social patterns anticipated.	Affected area is primarily nonresidential. Some potential for effect on current residents.

5.3.5 Human Community Impacts under the EWP Alternatives

5.3.5.1 No Action-Continue Current EWP Program (Alternative 1)

In general, the effect to the human social community of continuing the current Program would be similar to that described for the six example sites in Section 5.3.3.2. In addition to the reduction of any potential risk to public health and safety that may result from repair of the affected site, EWP program measures have the beneficial effect of protecting the use and social value of any associated property. Thus, the beneficial effects of program implementation would extend to owners, residents, or other users of the recovery site and the area protected and, indirectly, to the local community as whole. On a programmatic basis, the primary beneficial effect can be represented as the aggregate reduction of risk to human health and safety and protection of the value of threatened property in all of the communities nationwide that are potentially affected by damage from natural disasters.

Continuing the current Program would create no change in the technical and financial assistance provided to local communities or to the administrative approach to the Program. Program-related impacts to local economies would be minimal. Most proposed projects are relatively small in scope and, despite the smaller rural characteristics of most of the communities involved, the total dollar expenditures would not contribute substantially to the local economy.

Under the current EWP Program, land use decisions are affected largely by the type and timeliness of post-disaster repair. The practices used by the EWP Program are often structural, intended to restore pre-disaster land use. However, current uses should correspond with the local long-term land use plan. Although the land use plan is not a legally binding document, it is important to ensure that current EWP Program practices correspond with the intent of local land use plans to avoid possible policy conflicts with local jurisdiction. Without coordination with local planning and development ordinances, pre-disaster land use cannot be guaranteed. In the absence of these regulations, post-disaster land uses may fluctuate.

The effects of the practices under this alternative would, however, benefit the community by restoring or protecting economically productive or residential properties. Program practices may repair and protect land, thereby restoring the value of its use to the local community. Although program practices provide a substantial benefit to the local community in the short-term, this does not necessarily eliminate the need for additional repairs over the longer term.

In some cases, the effect of EWP Program practices may be to create a false sense of security and may actually encourage development in flood-prone areas. This has the effect of providing an immediate benefit to the health and safety of affected populations and the protection of the affected property. But, in the longer term, the frequency and cost associated with another natural disaster may be increased. The immediate risk is reduced, but the future risk remains as long as human uses of flood-prone land continue unchanged. Purchase of floodplain easements on agricultural land minimizes this effect, but since no similar option for improved land floodplain easement exists, the potential for perpetuating cycles of damage and repair on residential, industrial, and commercial areas remains high.

Floodplain easements allowed under the current Program do not always protect high-value agricultural land. Thus, depending on the type of agricultural land affected by the disaster, the land may or may not return to its former use. For example, a high-value vineyard may be destroyed by a disaster, and financial hardship could cause the owner to sell his land. None of the project sites had high-value crops, so an example of a landowner selling due to financial difficulties is not available. However, the diversity of crops throughout the country allows such a situation to occur.

With respect to infrastructure and social resources and services, the Program's effects are generally beneficial. The immediate threat to the safety and health of residents and users is reduced, and in many cases, the longer term risk to the property itself may be reduced as a result of EWP practices. Installed practices restore the previously existing condition and provide a measure of protection for important structures and resources. In some cases, installed practices may diminish the aesthetic quality or recreational experience associated with some properties, but in general, the Program does not appear to have a major adverse effect. The primary direct effect is beneficial by providing for the recovery of previously existing levels of service. Exercise of an agricultural floodplain easement in some cases may provide the additional benefit of protecting open space and improving the aesthetic or recreational quality of an area.

The sponsor's share of project costs may present obstacles to some smaller, independent communities that do not have support from county or State jurisdictions. The economic strain placed on local resources may cause other important social efforts within the community to be underfunded.

The immediate effect of the EWP Program is to provide for the restoration and protection of communities through either the installation of armored structures or the exercise of floodplain easements on agricultural lands. Both of these approaches support the existing community structure. In smaller communities, such as the Buena Vista, VA and Rocky Run examples, EWP Program assistance may be critical to continuing viability of the community. Exercising the floodplain easement option on unimproved agricultural lands does not have a serious impact on the community, but may result indirectly in a long-term change if land becomes less available and the viability of smaller farms is compromised.

Because project defensibility under the No Action alternative is based primarily on environmental and economic justification, environmental justice may not always be served by Program projects. In socioeconomically disadvantaged areas, some property owners may be denied assistance because the cost of protecting the property is greater than the value of the property. However, the same project at the same cost may be justifiable in another area because property values are higher. This leads to a potential for disproportionate access to benefits from the Program and may be especially important in socioeconomically distressed areas.

5.3.5.2 Draft PEIS Proposed Action (Alternative 2)

Under Alternative 2, direct effects to the local economy, infrastructure, community resources, and social patterns of affected communities would remain substantially unchanged from those identified for the No Action Alternative. However, several changes proposed under this alternative would influence the overall impact of the EWP Program on the human social environment and may alter the solutions proposed or the manner of participation for the affected communities.

Under this alternative, the beneficial effect of reducing the risk to human health and safety evident under the current program would be further enhanced by the addition of an immediate response mechanism for "urgent and compelling" situations. These situations often represent a high risk to human life or substantial damage to property that require a more immediate response. By providing a spending allocation of up to $25,000 based on local authorization for these "urgent and compelling" conditions, Alternative 2 substantially increases the ability of the Program to respond more quickly and directly in circumstances where an immediate threat to life and property is apparent. As a result, the overall benefit of risk reduction associated with the program would be significantly enhanced.

Changes to the cost-share rate from 80 to 75 percent Federal would minimally increase the cost burden for some communities. However, the 90-percent Federal cost share proposed for areas designated as "limited resource" would encourage EWP Program participation by communities that might not otherwise be able to afford to participate in the Program. This provision would

help address environmental justice concerns, by improving access to Program benefits for socioeconomically disadvantaged communities

Program modifications in funding, priorities, and floodplain easement regulations could potentially affect post-disaster land uses. Additionally, this alternative allows for greater opportunities for cooperation with local land use plans. Floodplain easement purchases could be integrated into an area's comprehensive plan for growth and provide functional open space for a community.

A landowner's ability to restore the land to pre-disaster uses depends largely on the elements of the proposed Program changes and the economic incentives available to him. The elimination of the exigency designation and a new priority ranking system are expected to influence this ability. The priority ranking system could delay or deny protection to properties that would have been protected under the old system. The proposed Program changes under Alternative 2 also include a change in the cost-share ratio for reconstruction activities. Although changing the cost share ratio would reduce the maximum funding available to sponsors, the potential effect of the change is minimal because the higher rate has fallen into disuse already under the current Program.

Adding social defensibility criteria to the ecological and environmental defensibility criteria used in the current Program in reviewing EWP recovery measures also addresses environmental justice issues. By establishing a social rationale based on the utility of the property to the landowner, Alternative 2 includes participants who might have been left out of the current Program. This is especially true when the economic value of a property may be low or difficult to calculate, but the importance of the property to the landowner as a place of residence or business, or to the community as a vital part of its social or cultural life, is recognized. Criteria for social defensibility provide another perspective on the justification to carry out a project with the result that additional segments of the population (especially minority or low-income) have access to Program benefits.

Alternative 2 would also allow for the buyout (under a floodplain easement) of residential or improved lands. This would convert previously residential, commercial, or industrial land to open land. Converting developed land to open space would reduce the need to provide public services, relieving the burden on the tax base associated with providing these relatively expensive services. The reversion of land to its "natural use" after two repairs in ten years also would encourage the conversion of developed land to open space. The end result would be increased open space in the community, a lower tax burden, and improved natural capabilities to fight disasters.

By expanding floodplain easements to include non-agricultural or improved land, Alternative 2 addresses an important long-term effect associated with the current program. Relocation of people and structures away from flood-prone areas eliminates any potential future risk and has the beneficial aspect of reducing the cost of future disaster recovery. The short-term impacts and cost of exercising floodplain easements on improved land may be greater than those associated with the immediate repair of land and protection of existing property under the Current Program. However, a longer term benefit from eliminating the potential for future risk to people and

property and a subsequent reduction in the cost and resource commitment necessary for future disaster recovery can be anticipated to offset the higher short-term cost of the program under this alternative.

Participation in the floodplain easement purchase program under the Draft PEIS Proposed Action would be voluntary; however, the proposed limitation of two repairs in ten years encourages property owners to consider the floodplain easement option. The floodplain easement may appear to be the only solution, and therefore, a somewhat less-than-voluntary alternative. Although this provision may have an adverse impact if a property owner opposes the floodplain easement option, (because of financial considerations or a particular attachment to the property), it does have beneficial consequences for the community at large. By encouraging floodplain easements, this provision reduces the potential for continuing cycles of damage and recovery and tends to discourage additional development in frequently flooded areas. The overall effect of this provision would not be substantial because frequent damage to the same site is relatively uncommon.

The exercise of a floodplain easement option on a property withdraws the property from the revenue base of the community and eliminates a source of capital investment. In the case of agricultural floodplain easements, this may not have a substantial impact unless the total floodplain easement area is a substantial portion of the total agricultural land in the community. Although not likely when only a few properties are involved, a shortage of agricultural land may drive up the price of remaining land. Community structures may also change if marginal farms are unable to compete and are forced to sell out.

In the case of improved-land floodplain easements, both the land and its associated structures may be lost to the community. Floodplain easements alter the character of community by breaking up social networks. Where only a few properties are involved, the loss of investment value is not likely to be great; however, floodplain easements may be too costly in terms of property values and the costs of relocating the residential, structural or social function associated with the property.

On balance, Alternative 2 would have a generally beneficial impact. The potential impact of the installation of EWP recovery measures would not differ substantially from that of the No-Action Alternative. The expansion of the floodplain easement option to include non-agricultural and improved land increases the potential to disrupt communities or neighborhoods by displacing residents, but it also offers an opportunity for the community to reduce the impact of natural disasters and the associated recovery cost, especially on improved properties. Expanding the defensibility criteria would substantially increase access to potentially beneficial effects of the Program for economically disadvantaged or minority persons who may have been previously excluded. Similarly, the provision for funding up to 90 percent of the cost of EWP Program projects in limited-resource communities also decreases the potential burden on these communities and increases potential access to Program benefits.

5.3.5.3 Prioritized Watershed Planning and Management (Alternative 3)

The watershed planning and management approach proposed under this alternative allows watershed planning on a macro scale while providing the project funding and technical assistance outlined in the proposed action. This alternative includes pre-disaster planning and watershed management to help form a long-term vision of a community's land use priorities. The pro-active approach under this alternative could be expected to further enhance the benefit of reducing the risk to human health and property presented under Alternative 2 and included as part of the Preferred Alternative, Alternative 4.

This long-term vision would be achieved through a comprehensive planning process, integrating watershed management with land use planning. The process addresses environmental concerns as part of a community's long-term growth strategies. Coordinating floodplain/open space protection and comprehensive long-term growth plans will formulate better land use policies. Proactive approaches to land use and comprehensive planning, such as suggested by Berke (1998) are essential to prevent further disaster-induced loss. Tools such as floodplain easements and development regulating ordinances would help ensure that losses are minimized by preventing development on these lands.

Determining a taking, whether regulatory in nature or not, is a difficult task. The coordination of EWP Program components with land use regulation must be well managed. To avoid possible takings violations, the specific floodplain ordinances and floodplain easement purchases within the Program area should be carefully crafted. Takings claims must be reviewed case-by-case and definitive rules for judgment on them are lacking. Most closely resembling a standardized rule is the need to prove a "rational nexus" between public purpose and benefits received. Without proof of this connection, takings claims will be less defensible by the defendant (Owens, 1999).

Allowing farmers to continue using land with floodplain easements for haying is a form of farmland preservation. Permitting haying and/or other agriculture on lands with floodplain easements allows farmers to continue reaping some benefit from their land, aiding their operations fiscally. Typically using Purchase of Development Rights (PDR) programs, farmers with land in disaster-susceptible areas may find new options in the EWP Program. Without relying on the selection process of many local governments and nonprofits that administer many PDR programs, farmers may be able to sell floodplain easements under the EWP Program.

Potential conflicts with the EWP Program may arise with the use of PDRs in floodplain areas. Farmers may sell agricultural easements to preserve the right to farm, thus prohibiting the return of the floodplain to its natural state. Farmers who are repeatedly flooded out may seek any type of easement offered to them. The floodplain easements could be from the EWP Program or through a traditional PDR program. Neither program will provide assistance in the case of future disasters. Depending on the valuation method used by the EWP Program, offers for the floodplain easements from competing bidders could be very similar or substantially different. An entity bidding for the floodplain easement under a traditional PDR program will usually use the difference between the market value and agricultural value to determine the asking price.

Every floodplain easement negotiated under PDR programs is unique, and the restrictions vary depending upon the entity holding the floodplain easement.

If the entity purchasing the floodplain easement is a non-profit whose goal is farmland preservation, the floodplain easement will most likely allow continued farming and cropping. Thus, the farmer could continue to reap financial benefit from the crops while tempting fate for the next disaster to strike. If the non-profit or government entity has a different motive for protection, e.g., wetland protection or open space, the terms of the floodplain easement will vary and potentially have greater restrictions.

If a farmer chooses to purchase floodplain easements through a PDR program instead of EWP, it is likely that the land could continue to be cropped. Many agricultural floodplain easements allow the continued farming of land as the main premise behind farmland preservation efforts. This cropping could occur in an area where EWP is attempting to return the floodplain to its natural state. Thus, EWP might view the agricultural floodplain easements allowing cropping as incompatible. Also inherent in farmland preservation efforts is the desire to use agricultural floodplain easements to curb development and urban growth. While cropping is not a natural state, it is more compatible with EWP goals than a developed floodplain.

The overall urban development of an area can be affected by the EWP Program practices. Most relevant to Alternative 3, this planning, coordinated with local comprehensive plans as outlined above, would help reduce future risk to the community. Targeting a community's urban development to a location outside the floodplain, in coordination with regulations encouraging compact growth, would reduce overall risk from natural flooding hazards.

Using floodplain easements and a comprehensive watershed planning approach enables a community to maintain open space while managing urban growth. Open space advocates use the purchase of floodplain easements, through the PDRs or Transfer of Development Rights (TDRs), to limit the developable area within a community (Daniels and Bowers, 1997). These tools, coupled with regulations governing the type of development by area, help an urban area contain growth while protecting the natural areas needed to support the human population. The provision of adequate community services, including a clean water supply, results from watershed planning that incorporates a natural floodplain, wetlands, and habitat.

A planned approach to exercising floodplain easements minimizes problems associated with a project-by-project approach, such as when neighboring or adjoining properties are volunteered for the Program at different times under differing circumstances. Instead, with this alternative open spaces can be planned as integral elements of the area landscape.

Purchase of floodplain easements under this alternative may alter the composition or structure of a community by displacing residents. Floodplain easements could also alter land uses or break up residential networks. These potentially adverse effects may be offset, however, by the more effective use of floodplain easement purchases as a part of a longer-term flood management and watershed planning approach.

An integrated approach to Program management allows for more efficient use of capital resources and the economic potential of the watershed, while minimizing adverse environmental effects. Existing community resources may be lost, but these losses are offset by increased recreational and educational use of the watershed. An important beneficial effect of this alternative is that it involves multiple Federal programs, local and State agencies, and stakeholders early in the planning process, increasing the potential for acceptance of a watershed management plan. This is especially important where multiple floodplain easements may be required as part of the proposed solution.

5.3.5.4 Preferred Alternative (Alternative 4)

The impacts of the Preferred Alternative on the local economy, infrastructure, community resources, and social patterns of affected communities would be similar to the impacts of the Draft PEIS Proposed Action. Several changes proposed under the Preferred Alternative would potentially affect what restoration solutions are proposed at a site or the manner of participation for the affected communities. Under the Preferred Alternative, the option to participate in the EWP program would be emphasized to relevant low-income or minority populations that may not be aware of the program, as an aspect of the expanded role of environmental justice.

Changes to the cost-share rate from 80 to 75 percent Federal would minimally increase the cost burden for some communities. However, the 90-percent Federal cost share proposed for areas designated as "limited resource" would encourage EWP Program participation by communities that might not otherwise be able to afford to participate in the Program. This provision would help address environmental justice concerns, by improving access to Program benefits for socioeconomically disadvantaged communities.

Program modifications in funding, priorities, and floodplain easement regulations could potentially affect post-disaster land uses. Additionally, this alternative allows for greater opportunities for cooperation with local land use plans. Floodplain easement purchases could be integrated into an area's comprehensive plan for growth and provide functional open space for a community.

Applying cost-share rates to sites irrespective of their priority designation is anticipated to assist areas more efficiently where threats to life or property are the most imminent, while extending the response time to address an exigency from 5 to 10 days would allow for more planning and community coordination.

Similar to Alternative 2, under the Preferred Alternative social defensibility criteria would be added to the current Program environmental and economic defensibility requirements. If a proposed EWP practice or some aspect of an EWP project could potentially seriously harm an important social element of a community, mitigation to reduce any adverse affects or redesign of the project would be required. If neither mitigation nor redesign would be adequate to offset such adverse effects, the project would not be considered socially defensible and would not be allocated project funding. Additionally, a project not considered economically defensible could still be eligible for EWP funding if there is a compelling social or environmental justification for the work. By establishing a social rationale meant to address the value of a community property,

or based on the utility of a property to the landowner, the proposed action includes participants who might have been left out of the EWP Program in the past. This is especially the case when the economic value of a property may be low or difficult to calculate but the importance of the property to the community as a vital part of its social or cultural life, or to the landowner as a place of residence or business, is recognized.

The Preferred Alternative expands the current EWP program to a limited extent to provide assistance for the removal of sediment and debris, including windblown debris, from agricultural land (croplands, orchards, vineyards, and pastures), particularly in areas considered environmentally sensitive. This would contribute to the restoration of a community's productive agricultural land and be a source of capital investment following a natural disaster. However, debris removal, and the provision of repairing structural/enduring/long-life conservation practices, would be limited to sites not eligible for assistance under the Emergency Conservation Program (ECP) administered by the Farm Service Agency. This would limit the number of instances where these provisions would be used, especially on agricultural lands cultivating commodity crops under the jurisdiction of the ECP. Thus, the potential benefits realized from these program measures could be significantly reduced when compared to such benefits accruing under Alternatives 2 or 3.

Although it would not allow Federal purchase of floodplain easements in small rural communities, the Preferred Alternative would allow for the restoration of flood-prone rural areas through buyout of residential or improved lands, either directly through a floodplain easement or indirectly through funding of structure removal where a project sponsor, such as a town or county, assumes the floodplain easement. Converting such developed land to restored floodplain uses would reduce the need to provide public services, relieving the burden on the tax base associated with providing any relatively expensive services that might have been associated with developed uses, such as water, sewer, solid waste disposal, and fire response. Incorporating a limit of two repairs in ten years to EWP structures damaged from the same type of natural disaster and repaired with EWP assistance will encourage the purchase of floodplain easements and the conversion of developed land to open space. The end result will be increased open space in the community, a lower tax burden, and improved natural capabilities to fight disasters.

The effects of agricultural floodplain easements are the same in all of the current Program alternatives, and are detailed in Section 5.3.5.1. The Preferred Alternative expands the purchase of floodplain easements to include non-agricultural or improved lands, but only where such land is in a rural, agricultural setting and multiple residences are not relocated solely for the purpose of flood avoidance. The structure buy-out practice proposed under the Preferred Alternative, however, could have similar effects on a community as the non-agricultural floodplain easement program proposed under Alternative 2, and detailed in Section 5.3.5.1. Relocation of people and structures away from flood-prone areas eliminates potential future risk and has the beneficial aspect of reducing the cost of future disaster recovery. The short-term impacts and cost of exercising floodplain easements on improved land may be greater than those associated with the immediate repair of land and protection of existing property under the Current Program. However, a longer term benefit from eliminating the potential for future risk to people and property and a subsequent reduction in the cost and resource commitment necessary for future

disaster recovery would be expected to offset any higher short-term cost of the program under this alternative.

Participation in the floodplain easement purchase program would remain completely voluntary under the Preferred Alternative. Although this provision would directly affect property owners who sell easements, it does have indirect consequences for the community at large. By encouraging floodplain easements, this provision reduces the potential for continuing cycles of damage and recovery and tends to discourage additional development in frequently flooded areas. Adverse effects of floodplain easements on a community may include a decrease in the community's capital investment source because of loss of productive agricultural land, or, a change in the community's social networks from the loss of an important social property.

Overall, the Preferred Alternative would have several beneficial impacts on the human community. These beneficial impacts are anticipated to offset any adverse effects associated with the potential increase of community disruption and/or resident displacement from structure buy-out practices or the expansion of the floodplain easement option. Expanding the defensibility criteria to include social defensibility, and including provisions for limited-resource communities, would substantially increase access to potentially beneficial effects of the Program for economically disadvantaged or minority persons who may have been previously excluded.

5.4 CUMULATIVE IMPACTS OF THE EWP PROGRAM

In addition to considering direct and indirect effects, the CEQ NEPA regulations require that an EIS consider "cumulative impacts." Cumulative impacts are the combined impacts on the environment from the incremental effects of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. The C-E-Q method used to evaluate cumulative impacts of the EWP Program alternatives is the same methodology that was used to analyze direct and indirect effects. The methodology used to determine which potential actions were included and how their incremental and cumulative effects were determined is discussed in detail in Appendix B.

NRCS determined that it was not feasible to evaluate Program impacts in every watershed in the United States where EWP practices might be employed. Consequently, EWP practices carried out as a result of sudden impairments in three example watersheds–the Buena Vista-Maury in Virginia, the 8th Street Burn Area-Lower Boise in Idaho, and the East Nishnabotna in Iowa–were chosen for cumulative impacts analysis. The rationale for their selection (explained more fully in Appendix B) was that these three EWP sites were examples of the range of possible EWP practice situations. Buena Vista, VA and Boise represented the use of EWP practices in areas of potentially high interaction with a variety of land uses because of their interface between undeveloped, Federal, and State agency-managed land and urban settings and their steep-slope environments. East Nishnabotna represented an almost totally agricultural land use context.

The analysis below begins by describing what "other" types of actions were considered. Then, cumulative impacts are considered for each of the alternatives. For each alternative, that analysis begins by considering the cumulative impacts in each example watershed. Finally, the Program-wide

implications of the watershed-specific analysis are discussed. The cumulative impacts of the alternatives are compared in Chapter 3.

5.4.1 Description of Other Actions

Choosing and evaluating the other Federal and non-Federal actions to be considered in the cumulative impacts analysis first involved defining spatial and temporal boundaries for the actions to be considered in the analysis. After this "scoping" process, the affected environment for cumulative impacts was described. The cumulative environmental consequences were determined for the appropriate spatially-and-time-bounded actions in the same way the direct and indirect effects were analyzed.

Most EWP practices are stream or floodplain-specific. Therefore, many of the "other" governmental actions that interact with them are also stream or floodplain-specific. Because of the regulated nature of floodplains and watercourses, many of these actions are associated with the actions of NRCS and other Federal agencies, and with State or local government actions. The major exceptions are private actions that increase runoff or modify the hydraulic regime in the same watershed as the EWP activities. Typically, these are upland land-disturbing activities associated with agriculture and commercial and residential activities. Each of these types of other actions is described briefly below.

Other NRCS Actions. Other NRCS actions include past EWP activities in the same watershed as a current EWP action, particularly those on the same reach as the current EWP activity. Also included are past, present, or planned actions of other NRCS programs in the same watershed as the current EWP action, particularly those on the same reach as the current EWP practice.

Other USDA Actions. Other USDA actions include past, present, or planned actions of other USDA agency programs *(i.e.,* not including NRCS programs) in the same watershed as the current EWP action, particularly those on the same reach as the current EWP practice.

Other Federal Agency Actions. Other Federal agency actions include past, present, and planned actions of other Federal agency programs (i.e., not including USDA programs) in the same watershed as the current EWP action, particularly those on the same reach as the current EWP practice. Chapter 2 and Appendix E contain information on these Federal programs.

State and Local Government Actions. State government actions often result from State delegation of some or all aspects of the Federal programs discussed above. However, many other State actions, and most local government actions, are smaller and even more site-specific than the Federal governmental program actions discussed above. Again, the actions considered are those occurring in the same watershed as the EWP action, particularly those on the same reach as the current EWP practice.

Private Actions. Private actions can include all nongovernmental actions that increase runoff or modify the hydraulic regime in the same watershed as the EWP activities. Such private actions are the most site-specific of all actions considered in the cumulative impact analysis. However, because

they are ubiquitous, all such actions in a watershed tend to interact and to be reflected in the overall characterization of the watershed's water quality. Therefore, all such actions are considered in the cumulative impact analysis.

5.4.2 Cumulative Impacts under the Current Program (Alternative 1)

Cumulative impacts for the three example watersheds under the Current Program are analyzed on a watershed by watershed basis in 5.4.3.1. Program-wide implications are discussed in 5.4.3.2

5.4.2.1 Cumulative Impacts in the Example Watersheds

Cumulative impact analysis in each example watershed starts with describing the relevant impacts for the EWP practice or practices and determining the relevant watershed ecosystem components for biological resources in the watershed. The analysis then determines what other actions should be considered. Determining the cumulative impacts is accomplished through analyzing the spatial and temporal interaction between the impacts of these actions. Finally, areas of uncertainty that may affect the analysis are discussed.

5.4.2.1.1 Buena Vista and Maury River Watersheds, Virginia

The affected environment information for the Buena Vista-Maury River watersheds is presented in Chapter 4, Section 4.2. Additional, detailed environmental information about the watershed is found in Section D.3.2 of Appendix D.

Relationship between Cumulative Impacts in the Buena Vista Watershed and the Maury River Watershed

As noted in Chapter 4, the two watersheds differ significantly in that the Buena Vista watershed is primarily urban and recreational or part of the George Washington and Jefferson National Forests, while the Maury River watershed is primarily agricultural. EPA has characterized the Maury River watershed as having "less serious water quality problems" and "low vulnerability to stressors" (EPA, 1999a). In the absence of any demonstrated impairment of the Maury River watershed downstream of the four streams that constitute the Buena Vista watershed, there do not appear to be any significant cumulative environmental impacts from the actions in the Buena Vista watershed downstream in the Maury River watershed. Similarly, there do not appear to be sufficiently intense agricultural impacts upstream from the reach of the Maury River that flows through Buena Vista, VA, and constitutes the receiving stream for the four streams that comprise the Buena Vista watershed, to cause any significant cumulative biotic impacts in the Maury River.

Cumulative Biological Impacts

The relevant EWP impacts for beginning this analysis are those associated with cobble and tree-slide debris removal. These impacts can be divided into two categories: (1) impacts associated with site preparation and (2) impacts associated with sediment and cobble or tree-slide removal

and disposal. Impacts associated with site preparation include the removal of vegetation and topsoil, which may increase stream temperature, decreased habitat, increased turbidity and sedimentation, increased pollution from heavy equipment, and modification of water chemistry through the addition of sediment, nutrients, and other pollutants. Impacts associated with debris removal include the direct effects of the removal of bottom materials, such as disturbance of habitat and nesting, turbidity and sedimentation impacts, migration blockage, and physical and chemical water quality reduction (see Darnell, 1976). These impacts are described more fully in Section 5.2.2.

Biological Watershed Ecosystem Components

Based on the types of impacts described above, the following biologic watershed ecosystem components were identified at the locations indicated within the watershed and downstream: (1) warm-water fisheries in the extreme lower reaches of the four tributary streams and in the Maury River; and (2) sedimentation and turbidity in the four streams and into the Maury River and, possibly, downstream. No wetlands or T&E species were found in the relevant portions of these watersheds.

Analysis of Cumulative Biological Environmental Consequences

The governmental and nongovernmental actions that have the potential to interact cumulatively with the EWP practices performed in the Buena Vista watershed are outlined in *Table 5.4-1 -- Cumulative Actions–Buena Vista Watershed*. Cumulative biological environmental consequences of the proposed activities and the related actions are summarized below in *Table 5.4-2 -- Summary of Cumulative Impacts for the Buena Vista Watershed,* found at the end of Section 5.6. The overall cumulative biological significance of all of the actions analyzed is discussed in the paragraph entitled *Summary of Biological Cumulative Environmental Consequences* following Table 5.4-1.

Table 5.4-1 -- Cumulative Actions – Buena Vista Watershed

Federal Actions	State Actions	Local Actions	Private Actions
Other EWP Practices (Bank Armoring and Debris Removal) Elsewhere in Watershed NRCS Buena Vista Public Law 566 Project (flood control) USFS George Washington National Forest Mgmt. Plan Corps of Engineers Flood Wall Project (incl. Flood protection of City STP) FEMA Disaster Assistance Program	Virginia Dept. of Emergency Services Flood Mitigation Activities Virginia Dept. of Transportation post-flooding road and infrastructure repair and construction	City post-flooding CDBG block grant for drainage repair City post-flooding riprapping City post-flooding street and utility repair City school construction project ; borrow area for floodwall project	Flood repair Riparian area construction and modification Upland construction and ground disturbing activity Commercial, industrial, agricultural, forestry, recreational, and residential land use activities

Summary of Cumulative Biological Environmental Consequences

As Table 5.4-2 at the end of this section indicates, because of either time frame separation or spatial separation within the watershed, under the No Action Alternative (the Current Program) cumulative environmental consequences of the EWP practices are modest. No indication has been found of any cumulative interaction that would adversely affect any of the fisheries or watershed ecosystem components identified in either watershed. No wetlands or T&E species were found in the project area, or are thought to be adversely affected. Very little interaction was found for the turbidity and sedimentation watershed ecosystem components, and that interaction was found to be only short-term in nature. The overall contribution of the EWP practices to water quality and habitat degradation in the watershed was small and far less influential cumulatively than the other actions, particularly the private actions, which were too numerous to evaluate individually. Overall, the contribution of all actions to water quality and habitat degradation in the watershed were modest. This is consistent with the EPA watershed characterization summarized in *Table 4.5-2* in Chapter 4, which indicates that the Buena Vista and Maury River watersheds exhibit "low vulnerability to stressors" (EPA, 1999a).

Therefore, from a biological standpoint, neither watershed would appear to be highly enough stressed environmentally to demand extensive coordination of future EWP practices with other potentially interactive actions. Nor does it appear that it is necessary to favor less environmentally impacting practices, such as floodplain easements or critical area treatment, over the more traditional structural EWP practices used in 1995 in either watershed in order to maintain cumulative biological impacts at an acceptable level in either watershed.

For example, because of the highly urban nature of floodplain usage in the Buena Vista watershed, it is less likely that floodplain easements will play as important role there than they potentially may play in the more rural Maury River watershed. On the other hand, the possibilities of Program coordination presented by the interaction of the various activities would appear to offer mutual Program benefits and savings that should not be discounted in either watershed (see also the discussion of socioeconomic impacts that follows). See Table 5.4-2 for a summary of cumulative impacts in Buena Vista, VA.

Socioeconomic and Other Human Resource Cumulative Impacts

Socioeconomic and other human resources are analyzed separately from biological impacts because their interactions are not limited to the watersheds in which they occur.

Socioeconomic Impacts in the City of Buena Vista, VA

In general, any potentially adverse effects of EWP project activity on the socioeconomic conditions of the Buena Vista, VA community are balanced against potential benefits. Some potential for disruption of the local neighborhoods surrounding specific project sites is possible. However, the primary effect of these actions is the general benefit of protecting the residential and commercial properties immediately surrounding the project sites, restoration of damaged

land areas, and the improved appearance of the surrounding area following restoration and repair activity.

The cumulative effect of EWP activity on the socioeconomically defined region corresponding to natural boundaries of the Maury Watershed is influenced by a number of factors. These include the economic value of the watershed as a source of production (agriculture and industry), tourism and other recreational uses, and residential use of the land. The direct economic contribution of construction related expenditures associated with EWP activity in the Buena Vista, VA community is not expected to have a noticeable effect when arrayed against the regional economy of the watershed area. Similarly, any direct physical effect would not be expected to extend beyond the immediate community. In its current configuration, the project does not change or alter the physical condition of the site beyond what existed prior to the flood event. As a result, the project represents no net loss or acquisition of economically productive land, or land that may be converted to desired social uses.

However, the overall effect of the project is to reduce the potential threat to existing property posed by the potential for additional flooding in the future and to improve the general appearance and utility of available land. The potential for increased development in the Buena Vista, VA area and by extension, other areas of the watershed region does follow from the effect of EWP activity. The direct benefit of the project is the enhancement of the desirability of the region as a place to live and invest for local residents. At the same time, the project contributes, along with other locally based programs, to the attractiveness of the area for new residents and investors, thus increasing development pressures on the watershed.

Table 5.4-2 -- Summary of Cumulative Impacts of the Buena Vista Watershed

Actions for Cumulative Impact Analysis	Action Time Frames	Geographic Relationships to EWP Practices	Summary of Individual Action Environmental Impacts	Cumulative Impact Contribution of Individual Action
EWP Practice on Chalk Mine Run, Pedlar Gap Run, and Lowry Run	1995	Not applicable	Minor short-term increases in turbidity and sedimentation confined to lower reach of Chalk Mine Run; long-term impacts to environment should be positive as a result of reestablishing the flow regime and reducing the impacts of flooding	Minor short-term increases in turbidity and sedimentation; long-term reduction in nonpoint source runoff
Other EWP Practices in Watershed (bank armoring on Pedlar Gap Run and Debris removal on Pedlar Run and Indian Gap Run)	1996	On same and nearby streams in Buena Vista watershed	Minor short-term increases in turbidity and sedimentation confined to lower reaches of streams; long-term impacts to environment should be positive as a result of reestablishing the flow regime and reducing the impacts of flooding	Unlikely – actions not sufficiently time-linked
Buena Vista Watershed Public Law 566 Project	Near Future	On same streams in Buena Vista watershed	Potential short-term adverse impacts to fisheries during construction; long-term impacts should be positive as a result of the reduction of nonpoint source runoff into the watershed	Unlikely – actions not sufficiently time-linked

Table 5.4-2 (continued) -- Summary of Cumulative Impacts of the Buena Vista Watershed

Actions for Cumulative Impact Analysis	Action Time Frames	Geographic Relationships to EWP Practices	Summary of Individual Action Environmental Impacts	Cumulative Impact Contribution of Individual Action
George Washington and Jefferson National Forests Management Plan	Ongoing	Upstream of all EWP practices in Buena Vista watershed	Maximization of natural vegetation on the high relief topography, this management should minimize runoff from the headwaters and reduce the likelihood of interactive impacts on the lower reaches of the streams	Unlikely – minimal nonpoint source runoff; no interaction with trout fishery sensitive indicator because of spatial separation
U.S. Army Corps of Engineers Floodwall Project	1992-1997	Immediately downstream from EWP practice on lower Chalk Mine Run and approximately 1 mile downstream from other EWP practices	Loss of 0.6 acres of subaqueous bottom and associated benthos; modification of 25 acres of terrestrial habitat, including the removal of some riparian vegetation, which was subsequently revegetated for wildlife and aesthetic benefits; widening and improvement of riparian habitat at Glen Maury Park across the Maury River; temporary water quality deterioration during the construction of the floodwall (but improvement of water quality in the long-term through addition of pools and riffles for fishery enhancement and terrestrial vegetation for wildlife values)	Minimal – actions time-linked but short-term increases in turbidity are minor and siltation spatially separated except on Lower Chalk Mine Run; long-term reduction in nonpoint source runoff
FEMA Disaster Assistance for Hurricane Fran Flood	1996	In same areas of the Buena Vista watershed as the EWP practices	Short-term increases in turbidity and sedimentation during the repair and construction phases of these activities; long-term impacts should be positive as a result of the overall long-term reduction of nonpoint source runoff into the watershed	Unlikely – actions not sufficiently time-linked
Virginia Department of Emergency Assistance Hurricane Fran Flood Assistance	1996	Same as above	Same as above	Unlikely – actions not sufficiently time-linked
Virginia Department of Transportation Post-Flooding Road and Infrastructure Repair	1996	Same as above	Same as above	Unlikely – actions not sufficiently time-linked
City of Buena Vista CDBG Block Grant for Neighborhood Flood Repair	1996	Same as above	Same as above	Unlikely – actions not sufficiently time-linked
City of Buena Vista Post-Flood Riprapping	1996	Same as above	Same as above	Unlikely – actions not sufficiently time-linked
City of Buena Vista Post-Flood Street and Utility Repair	1996	Same as above	Same as above	Unlikely – actions not sufficiently time-linked
City of Buena Vista School Construction at Floodwall Borrow Pit Area	Near Future	Upslope from EWP practices on Pedlar Gap Run	Same as above	Unlikely – actions not sufficiently time-linked
Flood Protection for City Sewage Treatment Plant	1992-1997	Downstream on Maury River from EWP practices	Same as above	Minor short-term increases in turbidity and sedimentation; long-term reduction in point and nonpoint source runoff

Table 5.4-2 (continued) -- Summary of Cumulative Impacts of the Buena Vista Watershed

Actions for Cumulative Impact Analysis	Action Time Frames	Geographic Relationships to EWP Practices	Summary of Individual Action Environmental Impacts	Cumulative Impact Contribution of Individual Action
Flood Repair Activities	Ongoing	In same areas of the Buena Vista watershed as the EWP practices	Short-term increases in turbidity and sedimentation during the repair and construction phases of these activities; long-term impacts should be positive as a result of the overall long-term reduction of nonpoint source runoff into the watershed	Minor short-term and long-term increases in turbidity and sedimentation
Riparian Area Construction and Modification	Ongoing	Same as above	Same as above	Minor short-term and long-term increases in turbidity and sedimentation
Upland Construction and Ground Disturbing Activity	Ongoing	Same as above	Same as above	Minor short-term and long-term increases in turbidity and sedimentation
Commercial, Industrial, and Residential Land Use Activities	Ongoing	Same as above	Same as above	Minor short-term and long-term increases in turbidity and sedimentation
Flood Related Business Closures	Ongoing	Downstream in the Buena Vista watershed from the EWP practices	Significant reduction in manufacturing out put and employment in Buena Vista community	Unlikely – EWP practices have very minor employment input into Buena Vista economy
Railroad Bridge Modifications to Remove Flow Restrictions	Near Future	Downstream on same reaches as EWP practices	Same as above	Unlikely – actions not sufficiently time-linked

Total watershed management utilizing a non-engineered approach, such as that proposed under Alternative 3, would have the potential to significantly affect both the patterns of land use in the local community and the social and economic structure of the community, as well. Essentially, the cumulative social effect becomes a value-based trade off between maintaining the status quo of the local community through short-term, engineered solutions and potentially altering the natural characteristics of the watershed; or restoring the natural qualities of the watershed and potentially altering land uses and social practices in the watershed community.

Land Use Impacts

The effects of the EWP practices within Buena Vista will be more significant on a localized level. However, the combination of the floodwall and increased flow from unimpeded streams within the city may result in greater flooding downstream in the watershed. The land outside of Buena Vista, in Rockbridge County, is primarily rural agricultural (Rockbridge County Comprehensive Plan, 1996). Any downstream effects of flooding in the City will cause damage to agricultural and rural residential areas rather than major population centers. The closest population center to Buena Vista is the town of Glasgow, situated approximately 11 miles downstream. In that location, both industrial and residential uses are near the Maury River.

However, it is unlikely that any major land use decisions in that community will be altered due to the diversion of waters from Buena Vista.

Upstream from Buena Vista lie primarily agricultural and forested lands. The portion of Rockingham County within the greater watershed is very low density. Its agricultural land is zoned at approximately 1 dwelling unit (DU)/75 acres, encompassing a large amount of the area within the study watershed. In addition to the agriculture, much of the land is national forest and has prohibitions on development. Approximately 20 percent of the land in the study area is rural residential, with the densities averaging 1 DU/acre. Development within the area is prohibited within 500 feet of the 100-year floodplain, resulting in a relatively unencumbered riverbank. According to the County, activity in that area is relatively nonexistent, thus presenting little threat to Buena Vista downstream (Crowder, 1999).

The portion of Augusta County within the watershed is also comprised of primarily agricultural land and national forest. Only a small pocket of relatively concentrated development within the watershed exists, centered on Criglersville. However, nearly all the development is residential in nature, with a small amount of commercial also present. The area is zoned for agricultural uses with minimum lot sizes of one acre. Some of the area is also designated as agricultural conservation. No formal regulations are part of this designation; it merely demonstrates the intent of maintaining the agricultural nature of the land. The development potential of the lands within the watershed is primarily limited by the provision of water and sewer. Currently, the utilities are at their maximum capacity, so future development is not likely. The comprehensive plan does not include any changes to the area; the current level of development is expected to remain the same (Earhart, 1999).

Augusta County also has a floodplain overlay district article governing development and activity within this area. Due to its location upstream from the EWP sites in Buena Vista, any activities regarding damming or relocation of watercourses could be detrimental. However, the article prohibits any such action within the floodplain, flood fringe, or floodway. (Augusta County Floodplain Article, Undated) Thus, any downstream effects on Buena Vista in this portion of Augusta County shall be nearly non-existent.

Impacts to Historic, Cultural and Recreational Resources

The EWP DSRs did not note any historic properties located in the project areas. However, this does not mean that historic resources were not present, since several historic sites have been identified on Indian Gap Run and Chalk Mine Run (NRCS DSRs, 1995a). Also, as noted in Chapter 4, significant historic and cultural resources are found in the City of Buena Vista, and abound in Rockbridge County (Rockbridge County, 1996). Nevertheless, given the lack of any specific impacts to historic and cultural resources identified in carrying out the EWP practices, and the relatively modest impacts to these resources from the other actions identified for cumulative impact analysis, it does not appear that any significant interaction between the actions resulted in any significant cumulative impacts to historic and cultural resources. Further, it does not appear that any recreational resources were adversely affected by the cumulative affects of the actions analyzed.

Areas of Uncertainty that Affect the Cumulative Impacts Analysis

At least some areas of uncertainty were identified regarding most of the actions considered in the cumulative impact analysis. Most importantly, the environmental analysis performed on the EWP practice under review (NRCS DSRs, 1995a) was very rudimentary, consisting essentially of only an economic justification of the practice. In addition, EWP practices that were carried out in 1992 could not be analyzed because the records of those projects are no longer available (Biddix, 1999).

Environmental baseline information required for the analysis initially was drawn from the EPA evaluation of the Maury River watershed, of which the Buena Vista watershed is a subwatershed (EPA, 1999a). This information is more general in nature than would be ideal. Fortunately, much of the more specific information needed was available from the NRCS Buena Vista Watershed Final Plan-Environmental Impact Statement (NRCS, 1999b), the U.S. Army Corps of Engineers Environmental Assessment and Supplemental Environmental Assessment (USACE, 1990 and 1992), and the County of Rockbridge Comprehensive Plan (Rockbridge County, 1996).

The major problem in the Buena Vista watershed was in the area of private land use actions, where more specific information would be useful. In addition, a comparable level of comprehensiveness of information was not as available for the Maury River Watershed as for the Buena Vista watershed. Thus, the relationship of impacts in the Buena Vista watershed to impacts in the Maury River watershed is less well documented than would be ideal.

5.4.2.1.2 Eighth Street Burn Area-Lower Boise River Watersheds, Idaho

The affected environment information for the 8th Street Burn Area-Lower Boise River watershed is presented in Subsection 4.5.2. Additional, detailed environmental information about the watershed is found in Section D.3.3 of Appendix D.

Relationship of Cumulative Impacts in the Burn Area Watershed and the Lower Boise River Watershed

As noted in Chapter 4, the two watersheds differ significantly in that the Eighth Street Burn Area watershed was used primarily for grazing and recreation prior to the fire (with some mining, forestry, and residences in the area), while land use in the adjacent portion of the Lower Boise River watershed is primarily a commercial and residential urban area. However, even before the fire, and increasingly since, the private property portions of the area are under significant development pressures. As noted, EPA has characterized the Lower Boise River watershed as having "more serious water quality problems, but with "low vulnerability to stressors" (EPA, 1999b). Thus, in the absence of any demonstrated impairment of the Lower Boise River watershed downstream of Boise, there do not appear to be significant cumulative environmental impacts from the actions in the Boise watershed further downstream than perhaps in the immediate portion of the Lower Boise River watershed in the city itself.

Cumulative Biological Impacts

The relevant EWP impacts for beginning the analysis are those associated with "critical area treatment" practices (upland diversion, grade stabilization structures, critical area seeding, and the construction of debris basins). These practices have short-term and long-term impacts similar to those of debris removal, including creating access and grading, shaping, and re-vegetating affected areas by seeding or planting. The environmental consequences of all of these actions have been discussed in Sections 5.2.2, 5.2.3, 5.2.4, and 5.2.5.

Biological Watershed Ecosystem Components

Based on the types of impacts described above, the following biologic watershed ecosystem components were identified at the locations indicated within the watershed and downstream: (1) warm water fisheries in the Lower Boise River; and (2) sedimentation and turbidity in the subwatershed streams, the Lower Boise River and, possibly, downstream.

Analysis of Cumulative Biological Environmental Consequences

The actions that have the potential to interact cumulatively with the EWP practices performed in the Boise watershed are outlined in Table 5.4.3. Cumulative biological environmental consequences of the proposed activities and related actions are summarized in Table 5.4-4. The overall cumulative biological significance of all of the actions analyzed is discussed in the paragraph following Table 5.4.3.

Table 5.4-3 -- Cumulative Actions – Boise Watershed

Federal Actions	State Actions	Local Actions	Private Actions
Boise National Forest post-fire salvage timber sale Boise National Forest Management Plan BLM Boise Front ACC Plan Boise National Forest BAER Plan BLM Emergency Fire Rehabilitation Plan NPS Emergency Fire Rehabilitation Plan BIA Emergency Fire Rehabilitation Plan	Department of Disaster Services fire rehabilitation activities Department of Water Resources fire rehabilitation activities Department of Fish and Game fire rehabilitation activities Department of Lands fire rehabilitation activities Department of Agriculture fire rehabilitation activities Department of Transportation fire rehabilitation activities Department of Parks and Recreation fire rehabilitation activities Department of Veterans Affairs fire rehabilitation activities	Boise City Foothills Policy Plan Repair and reconstruction of Eighth Street road Other road and utility construction and repair projects	Grandfathered subdivisions in and adjacent to Burn Area Private fire repair activities Other upland construction and ground disturbing activity Commercial, industrial, mining, grazing, forestry, off-road vehicle recreational, and existing residential land use activities

Summary of Cumulative Biological Environmental Consequences

As Table 5.4-4 indicates, because of time frame linking and spatial proximity within the subwatersheds and in the reach of the Lower Boise River immediately downstream of the subwatersheds, cumulative impacts are potentially significant in both watersheds under the No Action alternative (the current Program). However, because of "low vulnerability to stressors" characterization in the EPA watershed characterization summarized in Table 4.5-4 in Chapter 4, there is no indication that such cumulative interaction would adversely affect any of the fisheries watershed ecosystem components identified in either watershed (EPA, 1999b). No wetlands were found in the project area, or are thought to be adversely affected. Where sensitive or T&E species were found in the project area, mitigative measures were taken to ensure that no adverse impacts occurred (BLM et al., 1996). Very little interaction was found for the turbidity and sedimentation watershed ecosystem components and that interaction was found to be only short-term in nature. The overall contribution of the EWP practices to water quality and habitat degradation in the watershed was small and far less influential cumulatively than the other actions, particularly the private actions, which were too numerous to evaluate individually. Overall, the contribution of all actions to water quality and habitat degradation in the watershed were modest. This is consistent with the "low vulnerability to stressors" characterization in the EPA watershed characterization.

Table 5.4-4 -- Summary of Cumulative Impacts for the 8th Street Burn Area and Lower Boise River Watersheds

Actions for Cumulative Impact Analysis	Action Time Frames	Geographic Relationships to EWP Practices	Summary of Individual Action Environmental Impacts	Cumulative Impact Contribution of Individual Action
EWP Practices on Cottonwood, Crane, Curlew, and Dry Creeks and Freestone and Hulls Gulches	1996-97	Not applicable	Minor short-term increases in turbidity at and downstream of all practices; long-term impacts to environment should be positive as a result of reestablishing the vegetation and reducing the impacts of runoff	Minor short-term increases in turbidity; long-term reduction in nonpoint source runoff
Bureau of Land Management (BLM) Salvage Timber Sale	1997	BLM Burn Area lands (in Burn Area watershed)	Minor short-term increases in turbidity; long-term impacts to environment should be positive as a result of reestablishing the vegetation and reducing the impacts of runoff	Same as above
BLM Boise Front Areas of Critical Environmental Concern (ACEC) Plan	Ongoing	BLM Boise Front lands (including part of Burn Area watershed)	Short- and long-term impacts should be positive as a result of more natural management resulting in the reduction of nonpoint source runoff into the watershed	Short- and long-term reduction in nonpoint source runoff should result in long-term positive interaction
Boise National Forest Management Plan	Ongoing (current plan adopted in 1990)	Boise National Forest (including part of Burn Area watershed)	Minor short-term increases in turbidity from runoff associated with limited grazing, hardrock mining, timber harvest, and off-road vehicle use; long-term impacts to environment should be positive as a result of increased efforts to combat the effects of these uses resulting in reestablishing vegetation and reducing the impacts of runoff	Minor short-term increases in turbidity; long-term reduction in nonpoint source runoff (livestock grazing removes flammable materials and reduces fire hazards)

Table 5.4-4 (continued) Summary of Cumulative Impacts for the 8th Street Burn Area and Lower Boise River Watersheds

Actions for Cumulative Impact Analysis	Action Time Frames	Geographic Relationships to EWP Practices	Summary of Individual Action Environmental Impacts	Cumulative Impact Contribution of Individual Action
Boise National Forest Burned Area Environmental Rehabilitation (BAER) Plan	1996-97	In National Forest portion of Burn Area watershed	Short-term increases in turbidity during the repair and construction phases of these activities; long-term impacts to environment should be positive as a result of the overall long-term reduction of nonpoint source runoff into the watershed	Minor short-term increases in turbidity; long-term reduction in nonpoint source runoff
BLM Emergency Fire Rehabilitation Plan	1996-97	In Burn Area watershed	Short-term increases in turbidity during the repair and construction phases of these activities; long-term impacts should be positive as a result of the overall long-term reduction of nonpoint source runoff into the watershed	Minor short-term increases in turbidity; long-term reduction in nonpoint source runoff
NPS Emergency Fire Rehabilitation Plan	1996-97	Same as above	Same as above	Same as above
BIA Emergency Fire Rehabilitation Plan	1996-97	Same as above	Same as above	Same as above
Idaho Department of Disaster Services fire rehabilitation activities	1996-97	Same as above	Same as above	Same as above
Idaho Department of Water Resources fire rehabilitation activities	1996-97	Same as above	Same as above	Same as above
Idaho Department of Fish and Game fire rehabilitation activities	1996-97	Same as above	Same as above	Same as above
Idaho Department of Water Resources fire rehabilitation activities	1996-97	Same as above	Same as above	Same as above
Idaho Department of Fish and Game fire rehabilitation activities	1996-97	Same as above	Same as above	Same as above
Idaho Department of Lands fire rehabilitation activities	1996-97	Same as above	Same as above	Same as above
Idaho Department of Agriculture fire rehabilitation activities	1996-97	Same as above	Same as above	Same as above
Idaho Department of Transportation fire rehabilitation activities	1996-97	Same as above	Same as above	Same as above

Table 5.4-4 (continued) Summary of Cumulative Impacts for the 8th Street Burn Area and Lower Boise River Watersheds

Actions for Cumulative Impact Analysis	Action Time Frames	Geographic Relationships to EWP Practices	Summary of Individual Action Environmental Impacts	Cumulative Impact Contribution of Individual Action
Idaho Department of Parks and Recreation fire rehabilitation activities	1996-97	Same as above	Same as above	Same as above
Idaho Department of Veterans Affairs fire rehabilitation activities	1996-97	Same as above	Same as above	Same as above
Boise City Foothills Policy Plan	Ongoing	Non-Federal Boise Front Foothills lands (including part of Burn Area watershed)	Short- and long-term impacts depend on level of buildout in Foothills area; should be slightly negative to mildly positive depending on success of attempts to encourage more natural management, which could result in the reduction of nonpoint source runoff into the watershed	Short- and long-term increase or reduction in nonpoint source runoff depending on success of Plan; could result in either long-term positive or negative interaction
Repair and reconstruction of Eighth Street Road	1996-97		Short-term increases in turbidity during the repair and construction phases of these activities; long-term impacts should be positive as a result of the overall long-term reduction of nonpoint source runoff into the watershed	Minor short-term increases in turbidity; long-term reduction in nonpoint source runoff
Other road and utility construction and repair projects	Ongoing	Developed and developing portion of Burn Area and areas downslope	Same as above	Minor short- and long-term increases in turbidity
Private fire repair activities	1996-97	Developed portion of Burn Area	Short-term increases in turbidity during the repair and construction phases of these activities; long-term impacts should be positive as a result of the overall long-term reduction of nonpoint source runoff into the watershed	Minor short-term increases in turbidity; long-term reduction in nonpoint source runoff
Private upland construction, ground disturbing activity, and commercial, mining, grazing, forestry, recreational, and residential land use activities	Ongoing	Developed and developing portion of Burn Area and areas downslope	Short- and long-term impacts depend on level of buildout in Foothills area (particularly the buildout in two large grandfathered subdivisions); could be negative to mildly positive depending on success of attempts to encourage more natural management, which could result in the reduction of nonpoint source runoff into the watershed	Short- and long-term increase or reduction in nonpoint source runoff depending on success of Plan; could result in either long-term positive or negative interaction

Because both watersheds are relatively highly stressed environmentally, the extensive coordination of past (and hopefully future) EWP practices with other potentially interactive actions appears well warranted, in order to reduce the likelihood of significant cumulative

impacts. Less environmentally impacting practices, such as the critical area treatments employed, appear to have been the appropriate choice over more traditional structural EWP practices in order to maintain cumulative biological impacts at an acceptable level in either watershed. Floodplain, or perhaps more properly "floodway" floodplain easements, or other similar land use controls, may also be useful practices in this context, particularly in the rapidly developing areas where "grandfathered" subdivisions occur. See Table 5.4-4 at the end of Section 5.6 for a summary of the cumulative impacts in the Boise Foothills area.

Socioeconomic and Other Human Resource Cumulative Impacts

Socioeconomic and other human resources are analyzed separately from biological impacts because their interactions are not limited to the watersheds in which they occur.

Socioeconomic Impacts in the City of Boise

The communities that lie within the Lower Boise Watershed represent a mix of urban and non-urban residential patterns identified with the City of Boise, its suburban expansion, and the more rural qualities of the upper drainage area of the watershed. In addition to the economic value of agricultural products, the watershed represents a significant economic and social influence on the surrounding communities in the form of recreation and tourism income that is supported by a number of parks, trails, and educational facilities located within the watershed. Especially sensitive, though more indirectly affected, the continuing viability of the city's northern suburbs and downtown core is dependent on the management and control of potential flooding.

The primary economic benefit associated with the watershed lies in the value of the private and public uses that have been made of the watershed region for the benefit of the local community. The installed EWP practices require some permanent commitment of land to flood control requirements and do not recover any additional land beyond what had existed prior to the 1996 fire. However, the improved visual quality of the affected area in conjunction with the increased value of the existing restored natural acreage and protected urban residential and commercial areas represents a significant beneficial contribution to the continuing viability of the watershed communities. Installed EWP practices contribute to existing plans for local development by restoring and protecting the residential communities north of the city in the Boise Foothills region. An increased potential for urban runoff may be associated with this expansion.

The Upper Boise Watershed region is representative of a situation in which the installed EWP practices are implemented in the more rural areas of otherwise metropolitan counties. The need to intervene in these rural and natural areas of the watershed in order to protect and enhance the value of urban property downstream is comparable to the situation found in the Antelope Valley of California. Here, another relatively rural area, located within the metropolitan county of Los Angeles, is also the subject of EWP activity. In both cases, the need to alter the natural contours of the watershed region in order to protect land and the existing property of major urban centers is a consideration. Also of importance is the potential for a differential impact on small rural landholders in order to assure the social investment in higher valued residential, commercial and industrial properties in the developed urban core.

Restoration of the land through revegetation, along with the elimination of potential threat through flood control practices, increases the desirability of the land for expanded urban development and subsequently the expanded growth of the city of Boise into the more natural areas of the watershed.

Land Use Impacts

Land development patterns in Boise are typical of many cities, sprawling into open space areas surrounding the urban core. Both residential and commercial development are encroaching on the naturally sensitive areas of the Boise watershed. The foothills surrounding the city, as well as the floodplain bisecting the urban core, both warrant protection from further development and degradation. Land use decisions in the watershed rest on policy to protect and strengthen the natural reserves. The EWP practices in place affect the types of development throughout the watershed. Without these practices, coupled with policy plans of local governments, the expansion of Boise would be threatened. The EWP practices positively impact the overall land use of the area, allowing residential and commercial areas of Boise to be protected from further disaster.

Boise has taken several steps to protect the natural areas, thus safeguarding the future of the urbanized uses. Through its comprehensive plan, Boise has identified the protection of the floodplains and foothills as primary environmental concerns. Several methods, such as floodplain conservation floodplain easements, are proposed as potential policy action points for conserving these resources. In addition to these policies, the EWP practices aid in the protection of the resources from an engineering perspective. Projects are aimed at engineering solutions to reduce erosion and runoff.

Boise has adopted a Foothills Policy Plan in order to control the amount of development in the foothills areas surrounding the city, thus preventing further degradation of the natural vegetative cover. The Plan was initiated and developed by the City of Boise in the early 1990s. The primary impetus for the policy plan was the massive burn in the 1950s that consequently resulted in mass wasting and flooding of the City. At the time of the Eighth Street Burn, the Foothills Policy Plan was not formally adopted, yet it was nearly complete (Eggleston, 6/15/99). It is a formal amendment to the comprehensive plan, and it is the primary guiding force for development within the area to the east/northeast of the city (Foothills Plan, 1997).

The Plan establishes policies to control the amount and location of development within the Foothills area. Keeping development out of environmentally sensitive areas such as steep sloped hillsides, floodplains, and animal habitat is a primary goal aimed at preventing future degradation of the area. In protecting the entire watershed through stricter development controls, the likelihood of future fire-induced disasters is less likely. These controls will limit the development options for some land uses, while others will be encouraged. The limiting of employment, office, and commercial centers within the foothills area will hopefully result in a higher concentration of the uses in the established urban core of Boise. According to Ada

County, Boise is attempting to prevent further sprawl into the foothills and concentrate growth in the developed areas of the city (Nilsson, 6/25/99).

A majority of the land addressed under the plan lies outside of the City of Boise. Yet neighboring jurisdictions such as Ada County have also adopted the Plan until separate plans addressing individualized development circumstances can be developed. Ada County wants to discourage growth in the foothills, and supports the city's strategies for focused growth. Ada County is currently near the adoption process of its own policy plan. The plan would limit the size of developments, prohibiting large planned developments within their jurisdiction (Nilsson, 6/25/99). The County will withhold the provision of urban services to areas within the Foothills in order to discourage development.

Cumulatively, the EWP practices aid in the protection of the foothills ecosystem and the City of Boise. The impacts on areas adjacent to the foothills may inconvenience adjacent residential areas for the short-term; however, the long-term result of a vegetated watershed outweighs any negatives incurred through the clean-up process after the disaster event. The long-term effect of the EWP practices in the Boise watershed is best reflected in the different policy plans developed by different jurisdictions throughout the region. The plans envision the protection and return of natural vegetation to the foothills in order to protect all of the Boise area. These plans were developed through inter-jurisdictional efforts in many cases, and reflect similar goals. While Boise's Foothills Policy Plan does not provide for complete protection of the foothills area, it balances the needs of a growing city with increased natural disaster planning.

Areas of Uncertainty That Affect the Cumulative Impacts Analysis

At least some areas of uncertainty were identified regarding most of the actions considered in the cumulative impact analysis. However, the environmental analysis performed on the EWP practices under review (NRCS DSRs, 1995b) in the Interagency Fire Rehabilitation Report (BLM et al., 1996) was carried out in a NEPA format and therefore was relatively thorough. Several environmental groups raised questions about the adequacy of NEPA consideration of the fire and fire rehabilitation impacts, particularly the visual and recreational impacts of proposed sediment detention dams, and threatened NEPA litigation (Eastman, 1997; Feldman, 1997; Lucas, 1996). NRCS correspondence with the individuals and groups involved, and the lack of ensuing litigation, indicates that those concerns were largely eliminated (Kiger, 1997a; 1997b).

In addition, the major source of information on affected environment of in-stream water quality, from the EPA watershed analysis (EPA, 1999c), is also relatively general in nature. As a result, the environmental baseline information required for the analysis, while generally sufficient for the qualitative level of analysis performed here, ideally would have been more detailed. This is particularly the case in the lower Eighth Street Burn Area above the Lower Boise River, where more specific information on the private land-use actions would be beneficial. In this regard, the most useful information on private actions came from discussions of land use issues with the City Planning Department (Eggleston, 1999).

5.4.2.1.3 East Nishnabotna River Watershed, Iowa

The affected environment information for the East Nishnabotna River watershed is presented in Subsection 4.5.3. Additional, detailed environmental information about the watershed is found in Section D.3.4 of Appendix D.

Cumulative Biological Impacts

The relevant cumulative impacts for analysis are those associated with levee repair and woody debris removal. These impacts can be divided into two categories: (1) impacts associated with site preparation and (2) impacts associated with construction and dredging (soil disturbance, debris removal, and disposal). These impacts are described in Sections 5.2.2, 5.2.3, and 5.2.5 above.

Biological Watershed Ecosystem Components

Based on the types of impacts described above, the following biologic watershed ecosystem components were identified at the locations indicated within the watershed and downstream: (1) warm water fisheries in the East Nishnabotna River; (2) wetlands in the East Nishnabotna River; and (3) sedimentation and turbidity in the East Nishnabotna River (and possibly downstream after its confluence with the West Nishnabotna River). The location of these watershed ecosystem components and their areas of influence within the watershed are shown on *Figure 5.4-3 -- Map of the East Nishnabotna River Watershed*.

Analysis of Cumulative Biological Environmental Consequences

The connected, similar, and cumulative governmental and nongovernmental actions that have the potential to interact cumulatively with the EWP practices performed in the East Nishnabotna watershed are outlined in *Table 5.4-5 -- Cumulative Actions – East Nishnabotna River Watershed*. Cumulative biological environmental consequences of the proposed activities and the related actions are summarized at the end of Section 5.6 in *Table 5.4-6 -- Summary of Cumulative Impacts for the East Nishnabotna River Watershed.* The overall cumulative biological significance of all of the actions identified is discussed in the paragraph entitled *Summary of Cumulative Biological Environmental Consequences* following Table 5.4-5.

Table 5.4-5 -- Cumulative Actions – East Nishnabotna River Watershed

Federal Actions	State Actions	Local Actions	Private Actions
Public Law 566 projects in Fremont County (flood control) FEMA levee repair and floodplain structure removal and relocation NRCS Floodplain easements	Emergency Management Agency levee repair, floodplain structure removal and relocation activities Department of Transportation bridge, culvert, highway, and road replacement, construction, and repair	City and Drainage District levee repair, floodplain structure removal, and drainage modification activities	Development in Fremont County in vicinity of levee repair EWP Private flood repair Riparian area construction and modification Upland construction, ground disturbing activity, and commercial, industrial, agricultural, forestry, recreational, and residential land use activities

Summary of Cumulative Biological Environmental Consequences

As Table 5.4-6 indicates, because of either same or similar time frames or spatial positioning within the watershed, under the No Action Alternative, cumulative environmental contributions of the EWP practices themselves are not significant. Moreover, their interaction with other actions in the watershed have not caused significant measurable overall watershed environmental deterioration at the present time (EPA, 1999c). No indication has been found of any cumulative interaction that would adversely affect any of the fisheries watershed ecosystem components identified. No T&E species were found in the project area so none would have been adversely affected. While debris was burned on site, there is no indication of any significant air pollution condition to have resulted in any cumulative effect. In addition, the EPA watershed characterization summarized in Table 4.5-5 in Chapter 4 indicates that the East Nishnabotna River watershed exhibits "low vulnerability to stressors" (EPA, 1999c).

Table 5.4-6 -- Summary of Cumulative Impacts in the East Nishnabotna River Watershed

Actions for Cumulative Impact Analysis	Action Time Frames	Geographic Relationships to EWP Practices	Summary of Individual Action Environmental Impacts	Cumulative Impact Contribution of Individual Action
EWP Practices on East Nishnabotna River	1998	Not applicable	Minor short-term increases in turbidity at and downstream of all practices; long-term impacts to environment should be positive as a result of reestablishing the vegetation and reducing the impacts of runoff	Minor short-term increases in turbidity; long-term reduction in nonpoint source runoff
NRCS Floodplain easements	Ongoing	In same watershed, adjacent to and downstream from Riverton State Game Mgmt Area	Short-term and long-term reductions to turbidity and sedimentation as a result of reestablishing the vegetation and reducing the impacts of runoff	Modest but significant improvement in wetlands and riparian habitat; enlargement and improvement to wildlife habitat in Riverton State Game Management Area
FEMA, State, and local government efforts to remove structures from floodplain	Ongoing	Upslope from the EWP practices, both upstream and downstream	Positive short-term and long-term impacts resulting from more natural vegetation and less land disturbing activity in floodplain	Modest but significant improvement in aquatic, wetlands, and riparian habitat if activities continue
Agricultural land uses	Ongoing	Upslope from the EWP practices, both upstream and downstream	Predominant agricultural use of watershed (approximately 90% of land area) results in short- and long-term soil runoff that contributes to turbidity and sedimentation upstream and downstream of all practices, as well as wetland and riparian vegetation losses; many activities have significantly modified hydrologic regime of stream	Significant short- and long-term increases in turbidity and sedimentation, loss of aquatic habitat and wetlands through hydrologic modification of river and tributary streams
Commercial and residential land uses	Ongoing	Upslope from the EWP practices, both upstream and downstream	Very minor land use in watershed (less than 1% of land area, but concentrated in floodplain area) results in short- and long-term contribution to turbidity and sedimentation upstream and downstream of all practices (one potential development in and near floodplain is in close proximity to levee repair project near city of Shenandoah)	Modest but potentially significant short- and long-term increases in turbidity and sedimentation
Public Law 566 Projects	Ongoing	At various locations in the East Nishnabotna River Watershed	Minor short-term increases in turbidity and sedimentation at and downstream of all practices; long-term impacts to environment should be positive as a result of reducing the impacts of runoff	Minor short-term increases in turbidity and sedimentation; long-term reduction in nonpoint source runoff

Thus, the cumulative impacts of the EWP levee repair practices and the debris removal do not appear significant at the watershed level. The overall contribution of the EWP practices to water quality and habitat degradation in the watershed was small in and of itself and far less influential cumulatively than the other actions, particularly the private actions, which were too numerous to evaluate individually. Overall, the contribution of all actions to water quality and habitat degradation in the watershed were modest. This is consistent with the EPA characterization that the watershed exhibits "low vulnerability to stressors."

However, wetlands losses from both intentional and unintentional actions of numerous individual farmers in the watershed appear to be a serious concern. These impacts result from drainage system modification and wetlands filling and draining, and from agricultural runoff as well. These impacts appear to be cumulative both in the short-term and long-term.

Therefore, from a biological standpoint, the watershed would appear to be highly enough stressed environmentally to recommend extensive coordination of future EWP practices with other potentially interactive actions. In addition, it appears that less environmentally impacting practices, such as floodplain easements or critical area treatment, are preferable to the more traditional structural EWP practices used in 1998 in order to maintain cumulative biological impacts at an acceptable level in either watershed.

The possibilities of Program coordination presented would appear to offer a high degree of mutual Program benefits and savings that should not be discounted. In particular, the combined efforts of FEMA, its Iowa emergency management organization, and the local drainage districts to purchase land in the floodplain for the removal of structures and the reestablishment of normal floodplain hydrology and riparian vegetation would appear to be well suited for augmentation by a floodplain easement purchase program similar to the pilot project carried out by NRCS in Jasper County, IA.

However, while these actions should be beneficial to the watershed, it is not possible to predict from the information available at this time whether these improvements in the EWP Program in combination with other Federal, State, and local programs would reduce the wetlands losses below the level of significance. Therefore, implementation of this alternative should include sufficient monitoring of the environmental resources that are significantly affected at present to determine how well they recover as the current stresses are reduced. See Table 5.4-6 at the end of Section 5.6 for a summary of the cumulative impacts in the East Nishnabotna watershed.

Socioeconomic and Other Human Resource Cumulative Impacts

Socioeconomic and other human resources are analyzed separately from biological impacts because their interactions are not limited to the watersheds in which they occur.

Socioeconomic Impacts in the East Nishnabotna Watershed Communities

In the present decade, flooding and flood related damage has had a significant impact on the economic and social life of the community defined by the East Nishnabotna Watershed. The individual cities and residential settlements in this predominately rural area are generally smaller and have fewer resources available to address emergency related conditions. Although older and more stable in terms of growth and residence patterns, the continuing viability of these communities, as well as their attractiveness as a place to live and invest, is potentially threatened by the impact of repeated flooding.

The cumulative impact of the EWP practices within the watershed region, considered as a whole, does not represent a major change to the social environment. Including debris removal efforts in Montgomery County, bank erosion practices in Page County, and levee repair in Fremont County, EWP actions were primarily directed toward restoration of the affected communities to pre-flood conditions and contributed to the recovery of economically productive, agricultural acreage that is important to the local economy. The direct benefit of the project is to remove the potential threat to the areas affected. EWP installed practices contribute, along with other regional efforts, to the continuing viability of the local community.

In addition to EWP practices within the watershed, efforts are being made to remove and relocate the most severely damaged residential and other properties. These efforts have the potential to significantly affect social conditions in the local communities by removing residents, or altering the structure or patterns of everyday life. By contrast, EWP practices are less intrusive in the social life of the community, but do require a long-term commitment of resources to maintenance. In addition, while the immediate threat is removed, a potential does exist for future damage to residential, agricultural, or other economically productive land that may result if these structures should fail in the future. Because communities in this region are more established and have deep historical roots, short-term, less intrusive practices may be especially attractive. However, in coordination with other agencies active in flood control efforts in the East Nishnabotna region, EWP floodplain easement practices also represent a viable alternative.

Land Use Impacts

The EWP practices in the E. Nishnabotna watershed have several different effects on land use decisions of various jurisdictions. Levee repair and debris removal within the watershed are both aimed at creating natural, unimpeded flow of the E. Nishnabotna. Different development decisions by the various counties and cities along the river will largely depend upon the integrity of the EWP practices. The level of land use planning varies between the jurisdictions, some having more progressive policies towards environmental area protection.

The central portion of the watershed encompasses three different counties and several small rural communities. The majority of the communities' economies rely on agriculture, situated on or near the river and its floodplain (Page County Comp Plan, 1996). This close proximity to the river causes the effects of the EWP practices to play a major role in the stability of the land uses within the communities. While much of the land near the floodplain is primarily agricultural,

other uses also appear in various locations throughout the watershed. Industrial, commercial, and residential uses are all within close proximity to the potentially affected areas. If EWP practices were not in effect, these areas could flood more easily, causing adverse impacts to life and property.

Montgomery County is one jurisdiction lacking any development regulations regarding floodplains. Recognizing this deficiency, the County states that development in these hazardous areas is at one's own risk (Montgomery County Comp Plan, 1996). Without intact levees and unimpeded river flow, this flooding would increase, further endangering the community within the area. Despite lacking these regulations, the County does not appear to be considering major changes in its land use policy. Some land in and around the floodplain is currently zoned for industrial development, permitting various uses. The comprehensive plan does not address any intended changes to protect the lands near the river; thus, EWP practices will continue to expand.

Neighboring Page County's land use policies address building within the floodplain and its immediate area. While most land near the floodplain is zoned agricultural, industrial and residential uses also exist (Page County Zoning Map, 1997). The County's comprehensive plan addresses the need to keep inappropriate development out of the floodplains, while also promoting the preservation of prime agricultural soils for agricultural use. Most areas along the E. Nishnabotna in the county are used as agriculture, yet some locations between the cities of Shenandoah and Essex are zoned industrial. The plan envisions reverting some of the lands zoned as industrial back to agricultural. However, some industrial uses will remain in this corridor (Page Comp Plan, 1996). Due to the presence of these industrial locations, the integrity of the EWP practices is necessary for protection during natural events. Without the nearby EWP practices, industrial lands could be inundated during a flood, resulting in a loss of property.

The protection of lands near Shenandoah in Fremont County also largely depends upon the adjacent EWP practices. As previously mentioned, lands intended for industrial development may possibly expand when the comprehensive plan update is complete. The rezoning of agricultural land to industrial uses would result in possible detrimental effects to new development occurring near the river. Thus, the EWP levee repair would be necessary to protect any possible losses of developed property.

Areas of Uncertainty That Affect Cumulative Impacts Analysis

Some areas of uncertainty were identified with respect to most of the actions considered in the cumulative impact analysis. Most importantly, the environmental analysis performed on the EWP practice under review (NRCS DSRs, 1998) was very rudimentary, consisting essentially of only an economic justification of the practice. The most useful information on private actions came from discussion of land use issues with the regional planning agency (Hall, 1999). Unfortunately, at this time no specific information has not been gathered on the Public Law 83-566 projects carried out by NRCS in the watershed. Thus, the cumulative relationship of impacts in the entirety of the East Nishnabotna watershed is more problematic than would be desirable.

5.4.2.2 General Implications of Cumulative Impacts (Alternative 1) Program-Wide

Under the No Action Alternative (Current Program), cumulative environmental contributions of the EWP practices themselves in the three example watersheds typically were not significant because of the absence of either same or similar time frames and/or spatial positioning within the watershed relative to the occurrence of the other actions. Moreover, the interaction of EWP practices with other actions in their respective watersheds typically was found to have not resulted in significant measurable overall watershed environmental deterioration. This is consistent with the respective EPA watershed characterizations (EPA, 1999c).

The overall contribution of the EWP practices to water quality and habitat degradation in all three watersheds was found to be small in and of itself and far less influential cumulatively than the other actions. This was particularly the case with regard to the many small private actions that were found to be far too numerous to evaluate individually but relatively important cumulatively.

However, where a watershed is significantly stressed from other sources, the contribution of EWP practices, though small, could contribute to significant negative cumulative impacts. The wetlands losses from both intentional and unintentional actions of numerous individual farmers in the East Nishnabotna watershed are instructive with regard to this potential. In the East Nishnabotna watershed, drainage system modification, wetlands filling and draining, and agricultural runoff have led to significant wetlands losses that appear to be cumulative both in the short-term and long-term. The sediment and turbidity contributions of EWP practices, while not significant themselves, were found likely to have interacted with the other actions to contribute to the wetlands losses.

Therefore, from a biological standpoint, where a watershed appears to be highly enough stressed environmentally to be found "vulnerable" by EPA, coordination of future EWP practices with other potentially interactive actions would appear highly advantageous. In addition, it appears that less environmentally impacting practices, such as floodplain easements or critical area treatment, would be preferable in these situations to the more traditional structural EWP practices that have been used in the past, in order to maintain cumulative biological impacts at acceptable levels.

5.4.3 Cumulative Impacts under the Draft PEIS Proposed Action (Alternative 2)

Alternative 2 contains 15 elements designed to improve the EWP Program and incorporate new restoration practices. These elements would be expected to influence cumulative impacts as follows:

Eliminating the terms "exigency" and "non-exigency" would be intended to speed up the overall EWP process while allowing more time for the DSR team to evaluate EWP site. This could result in a reduction of the short-term negative EWP contribution to cumulative impacts.

However, this change would work in combination with the next requirement, which might tend to limit its application.

Stipulating that "urgent" and "compelling" situations be addressed immediately upon discovery would allow immediate action when life- or property-threatening situations occur. This might result in a slightly greater short-term negative EWP contribution to cumulative biological impacts from the immediacy of applying the EWP practice selected and a slightly larger positive EWP contribution to socioeconomic impacts from the perspective of reduced losses and increased contribution of funds to the local economy. Long-term impacts would likely remain the same.

Setting priorities for funding of EWP practices would place some additional emphasis on T&E species and cultural resources, thus tending to lessen the short-term negative EWP cumulative impact contribution to cumulative biological impacts. However, since NRCS would still follow FEMA and State emergency agency direction, these potential lessened impacts might not materialize. Long-term impacts would likely remain the same.

Establishing a cost-share of up to 75 percent for all EWP projects (up to 90 percent for projects in limited resource areas) would make the Program more readily available in lower income communities. This could result in higher short-term positive EWP cumulative socioeconomic benefits to communities, particularly low-income communities. Long-term benefits could be positive as well.

Stipulating that practices be economically, environmentally, and socially defensible (with criteria for meeting these requirements) would tend to lengthen the process over that of the Current Program, which is less extensive in this respect. While conforming with these requirements should result in more environmentally beneficial decisions, the decisions might take more time. Thus, short-term impacts of the EWP practices might be increased and the long-term impacts decreased by this requirement.

Improving disaster-recovery readiness through training, interagency coordination, and planning would likely result in decreased short-term and long-term effects through improving the response capabilities of NRCS and other personnel charged with implementing EWP practices.

Allowing repair of impairments to agricultural lands using sound conservation alternatives would likely result in a short-term increase in runoff-related impacts and a long-term decrease in such impacts. However, the emphasis on structural solutions might result in slight decreases in downstream wildlife habitat values.

Limiting repair of sites to twice in a ten-year period would likely result in diminished damage if the landowner chooses to sell a floodplain easement. However, damages may increase if landowners opt to repair disaster sites with their own funds, as environmental, social, and cultural considerations may not receive equal consideration in restoration designs.

Eliminating the requirement of multiple beneficiaries would likely result in quicker and more efficient use of available resources and allow those resources to be more environmentally protective than at present. This could reduce both short-term and long-term impacts from EWP practices.

Applying natural stream dynamics and bioengineering to EWP practice design would likely have much more positive effects on reducing short-term erosion impacts. Long-term impacts should be slightly less as a result of more environmentally sensitive conservation practice implementation.

Simplifying purchase of agricultural floodplain easements should result in greater usage of such floodplain easements. The more natural uses encouraged by these floodplain easements should result in reduced short-term and long-term water quality impacts and improved habitat.

Repairing enduring conservation practices would be likely to result in reduced short-term and long-term erosion but, as a result of likely associated bank-hardening, aquatic, wetland, and floodplain habitat values might be somewhat reduced.

Cooperatively funding parts of projects would likely result in greater cooperation between the various agencies involved. This could result in more efficient use of available resources and allow those resources to be more environmentally protective than at present. This could reduce both short-term and long-term impacts from EWP practices.

Allowing certain EWP practices to be performed away from streams and in uplands would be limited to allowing the removal of floodplain deposition on cropland and tornado debris from uplands. Therefore, this change would not be likely to result in more natural uses of the floodplain and more emphasis overall on repairing upland flood damage. However, this change could be beneficial both to upland and floodplain habitat protection and upgrade in the limited circumstances where it applies.

Purchasing floodplain easements on non-agricultural lands would tend to place more protection in those areas. This could have positive impacts on protecting such areas. However, this might result in more intensive use of the associated agricultural lands, which could increase both short-term and long-term runoff impacts from those lands.

While some of the elements would continue to favor structural, engineering methods and rapid response to sudden impairments, the net thrust of the Program improvements would favor the evolution of a more nonstructural, environmental approach. A substantial majority of the components would appear to directly favor the latter approach. Thus, the thrust of the EWP Program would continue to evolve in this direction.

5.4.3.1 Cumulative Impacts of Alternative 2 in the Example Watersheds

Applying the Program changes proposed in Alternative 2 to the example watersheds, the likely changes in context and intensity of impact can be estimated qualitatively.

5.4.3.1.1 Buena Vista-Maury River Watersheds, Virginia

The lack of time-linking of the identified actions in the Buena Vista watershed makes it unlikely that measurable decreases in cumulative impacts would be able to be found for those actions. Moreover, the disproportionate impacts of the other actions in the watershed in relation to the impacts of EWP practices makes it difficult to reduce cumulative impacts in the watershed through the EWP changes included in Alternative 2 alone.

However, there may be measurable decreases in cumulative interaction with the ongoing construction and ground disturbing activity and commercial, industrial, and residential land use activity in the riparian and upland areas of the Buena Vista watershed. These decreases could result from better DSR evaluation of the need for bank armoring that might result in the establishment of stream buffers in floodplain easement areas as EWP funds become available for non-agricultural lands.

There also might be a slight reduction in the short-term impacts of debris removal through the employment of less intrusive techniques of natural stream dynamics and bioengineering approaches to these practices. More cooperation between the various agencies involved in flood restoration could result in floodplain critical areas determinations and removal of structures and reestablishment of natural vegetation in key areas, which could reduce the cumulative contribution of future EWP practices. Such approaches might lead to greater socioeconomic short-term impacts as a result of increased resettlement. However, the long-term socioeconomic impacts could be more positive as a result of increased property values on property that becomes less flood-prone.

5.4.3.1.2 Eighth Street Burn Area-Lower Boise Watersheds, Idaho

The potentially cumulative actions were considerably more time-linked in the 8th Street Burn Area watershed than in the Buena Vista watershed discussed above. Again, the disproportionate impacts of the other actions in the watershed in relation to the impacts of EWP practices makes it difficult to reduce cumulative impacts in the watershed through the EWP changes included in Alternative 2 alone.

However, despite the greater potential for interaction of impacts in this watershed, there would be a high likelihood of measurable decreases in cumulative interaction with the other Federal agency actions (BLM, NFS, NPS, BIA) and State actions (Department of Disaster Services, Department of Water Resources, Department of Fish and Game, Department of Lands, Department of Agriculture, Department of Transportation, Department of Parks and Recreation). Moreover, this decrease could occur despite the higher than normal coordination that developed between the Federal and State agencies in this instance as a result of local public pressure and congressional interest in the effects of the fire.

In particular, there might be a significant reduction in the short-term impacts of special area treatment through the employment of less intrusive fluvial geomorphological and bioengineering approaches to these practices. However, given the extensive development pressure in this watershed, it might be very difficult to apply these less environmentally intrusive EWP approaches, despite the efforts of the Boise Foothills Policy Plan. The development of the two large, grandfathered subdivisions could establish precedent that would be difficult to overcome through local government land use control. More successful growth-slowing efforts in the watershed would result in a different development scenario, which might have extensive cumulative socioeconomic implications. However, it is unlikely that these changed growth patterns would adversely affect the overall growth prospect, and if the Foothills Policy Plan resulted in a perception of better quality of life in the community and enhanced recreation potential, economic growth might be spurred.

Thus, despite these potential difficulties outlined above, the incremental Program changes should reduce long-term cumulative impacts in all but the most severe natural disasters. However, activities that are not included in Alternative 2, such as limiting of uses that may result in man-induced fires in this area and instituting more effective natural range fire reduction strategies, might be required to reduce the threat of catastrophic fires to the point where long-term cumulative impacts would be measurably more unlikely.

5.4.3.1.3 East Nishnabotna Watershed, Iowa

All of the other actions identified in the East Nishnabotna watershed were time-linked and the potential for significant cumulative detrimental impacts to wetlands were identified under the No Action Alternative. The incremental Program changes proposed for Alternative 2 could help reduce the EWP practice contributions to cumulative impacts in the watershed. The most beneficial aspect of the Alternative 2 changes to the EWP Program would likely result from potentially greater usage of floodplain easements in the watershed. In particular, simplifying floodplain easement purchase requirements and purchasing floodplain easements on both agricultural and non-agricultural land, in conjunction with local government efforts to move structures out of the floodplain could substantially improve the buffering of upslope sediment loss that is having a significant effect in producing wetlands loss in the main stream and tributaries.

Allowing repair of impairments to agricultural lands using sound engineering alternatives could be used in this watershed in a similar manner to a floodplain easement taken in Missouri, where a setback levee was used to create wetlands while at the same time protecting adjacent agricultural lands. This type of combination of protecting natural and agricultural land uses may be necessary in intensely agricultural watersheds like the East Nishnabotna.

Other elements of Alternative 2, such as setting more conservation-oriented priorities for EWP practices, requiring environmental defensibility, improving disaster-recovery readiness, and limiting repair of sites to twice in a ten-year period would likely result in reducing the use of structural practices even more and thereby reduce the short-term impacts of implementing structural practices.

However, the sheer magnitude of the differential between EWP practice impacts in the watershed and the impacts of the other practices, particularly the nearly ubiquitous agricultural practices, would make it impossible for the reduction of the EWP practice impacts to have a substantial impact on reducing cumulative impacts, even with the modest coordination of the EWP Program with other emergency and watershed-related that would occur in this Alternative.

5.4.3.2 General Implications of Alternative 2 Cumulative Impacts Program-Wide

It does not appear that the Program changes that would be incorporated in Alternative 2, which would be incremental rather than programmatic, would either enlarge or reduce the context in which cumulative impacts would be experienced. Thus, cumulative impacts of the EWP practices would, as under the Current Program, still occur in the 8-digit HUC Buena Vista and Eighth Street Burn Area watersheds and the 12-digit HUC East Nishnabotna watershed. As a result of the Program elements that would be incorporated in Alternative 2, the reduced cumulative inputs from the EWP practices would produce smaller impacts in the example watersheds, particularly at the 8-digit HUC levels, as discussed in the three example watershed analyses above.

Those lessened impacts would have a higher likelihood of being measurably positive in ecologically stressed watersheds, such as the East Nishnabotna watershed. However, it is important to stress that the disproportionate impacts of the other actions in the watershed in relation to the impacts of EWP practices would make it impossible to reduce cumulative impacts in the watershed through the EWP changes included in Alternative 2 alone.

The results of the analyses of the three example watersheds cannot be scaled up to a National analysis. However, the results of the analysis in the three example watersheds lead to several implications for the overall EWP Program. First, the Alternative 2 Program elements would result in overall improvement in the environmental performance of EWP practices themselves. Second, the additional coordination between NRCS and other Federal, State, and local agencies under this alternative would result in more efficient use of both NRCS resources and the resources of the other agencies where detrimental impacts to watersheds are concerned. Third, NRCS might find it advantageous to take the differences that the three example watersheds exhibit into account in formulating its plans. This is implicit in the Alternative 2 Program elements, which deal with a larger mix of agricultural and non-agricultural uses than has the traditional EWP Program.

5.4.4 Cumulative Impacts under Prioritized Watershed Planning and Management (Alternative 3)

Alternative 3 contains 5 elements designed to integrate the EWP Program into the broader NRCS mission and mandate of watershed management. These elements would be expected to influence cumulative impacts as follows:

- *Continuing to deliver EWP project funding and technical assistance to address immediate threats to life and property* would continue to allow immediate action when life- or property-threatening situations occur. This might result in a slightly greater short-term negative EWP contribution to cumulative biological impacts from the immediacy of applying the EWP practice selected and a slightly larger positive EWP contribution to socioeconomic impacts from the perspective of reduced losses and increased contribution of funds to the local economy. Long-term impacts would likely remain the same.

- *Instituting the 15 improvements and expansion of Alternative 2 noted above* would have the effects on cumulative impacts discussed in Section 5.4.3.

- *Facilitating locally led pre-disaster planning efforts* would address recurrent EWP practices in watersheds with a history of frequent disasters by categorizing such watersheds as high in a high-medium-low hierarchy of all of a State's watersheds. This should result in a preplanning effort that would reduce the short- and long-term impacts of the EWP practices in those high risk, high impact watersheds. To the extent that Alternative 2 level disaster-recovery planning in medium- and low-priority was not adversely affected, the effects should be positive in those watersheds as well.

- *Funding priority watersheds in each state for pre-disaster planning and management* would coordinate EWP preparation and implementation better in these priority watersheds, which should substantially reduce the short- and long-term impacts from future natural disasters if the preventive measures of the following element were successfully implemented.

- *Coordinating pre-disaster planning and management efforts with Federal, State, and local agencies and interested stakeholders* would implement preventive and restorative practices that take watershed functions and values into account and integrate NRCS programs with the overall EWP Program goals. This effort would involve purchasing floodplain easements on a stepwise, proactive, risk-reducing basis as an integrated part of overall watershed management, combining the EWP Program with other programs that enhance watershed values. Those watershed values would include fish and wildlife habitat improvements.

This alternative is a comprehensive approach that would fully address cumulative impacts in a NEPA-based analysis approach. Unlike the incremental approach found in Alternative 2 and 4, Alternative 3 would approach watershed environmental impacts programmatically and cumulatively. This approach should result in substantial reductions, not only of EWP contributions to cumulative watershed impacts, but of potentially all of the other actions as well, depending on how well local government and private stakeholders are involved.

5.4.4.1 Cumulative Impacts in the Example Watersheds

Applying the Program changes proposed in Alternative 3 to the example watersheds, the likely changes in context and intensity of impact can be estimated qualitatively.

5.4.4.1.1 Buena Vista-Maury River Watersheds, Virginia

Under Alternative 3, minimum short-term turbidity impacts would occur to aquatic and wetlands and floodplains resources. This would result from improvements to both impairment minimization and restoration practices as NRCS improvements in expanded EWP practices and the P.L. 566 Project made increased use of techniques to create and maintain more natural conditions in these areas. If other Federal and State agency programs (e.g., USFS, USACE, FEMA, Virginia Discharge Elimination System (VDES), Virginia Department of Transportation, and City of Buena Vista) were implemented in a more coordinated manner, these impacts should be reduced even more. This emphasis on planning should improve terrestrial habitat on a larger scale. Thus, areas outside of the floodplain and stream corridors might be converted into natural areas. This could enhance overall property values in the City (particularly those properties adjacent to these improved environmental amenities) to a greater extent than under the other alternatives. Where impacts to socioeconomic and other human resources are concerned, as discussed in more detail above, shifts in Program emphasis might result in a markedly different mix between agriculture and other uses in the larger Maury River watershed, as more extensive use might be made of conservation practices in both flood-prone and non-flood-prone areas. Thus, under this alternative, more extensive areas outside of the floodplain and stream corridors might be converted into natural areas. This, in turn, combined with watershed prioritization, could lead to lessened damages to watersheds from sudden impairments in future natural disasters. The Buena Vista watershed would clearly be high priority watershed in this hierarchy.

5.4.4.1.2 Eighth Street Burn Area-Lower Boise Watersheds, Idaho

Under Alternative 3, minimum short-term sedimentation and turbidity impacts would occur to aquatic and wetlands and floodplains resources. This would result from improvements to both impairment minimization and restoration practices as NRCS improvements in expanded EWP practices made increased use of techniques to create and maintain more natural conditions in these areas. If other Federal and State agency programs (e.g., USFS, BLM, FEMA, NPS, Bureau of Indian Affairs, and City of Boise) were implemented in a more coordinated manner, these impacts should be reduced even more. This emphasis on planning should improve terrestrial habitat on a larger scale. Thus, areas outside of the floodplain and stream corridors might be converted into natural areas. This could enhance overall property values in the City (particularly those properties adjacent to these improved environmental amenities) to a greater extent than under the other two alternatives. Where impacts to socioeconomic and other human resources are concerned, as discussed in more detail below, these shifts in Program emphasis might result in even more development pressure on the watershed, as discussed below. Thus, under this alternative more extensive areas outside of the floodplain and stream corridors might be converted into natural areas. This, in turn, combined with watershed prioritization, could lead to lessened damages to watersheds from sudden impairments in future natural disasters. However, under this alternative, implementation of viable development management plans, such as the Boise Foothills Policy Plan, would be vital to help control induced growth. The Eighth Street Burn Area watershed would clearly be high priority watershed in this hierarchy.

5.4.4.1.3 East Nishnabotna Watershed, Iowa

Under Alternative 3, minimum short-term sedimentation and turbidity impacts would occur to aquatic and wetlands and floodplains resources. This alternative would be the most likely to reduce or eliminate the significant wetlands loss currently being experienced in the watershed. This would result from improvements to both impairment minimization and restoration practices as NRCS improvements in expanded EWP practices (particularly a greatly expanded use of conservation floodplain easements throughout the watershed) and Public Law 566 projects made increased use of techniques to create and maintain more natural conditions in these areas. If other Federal and State agency programs (e.g., Corps of Engineers, FEMA, Iowa Department of Transportation, and local governments) were implemented in a more coordinated manner, these impacts should be reduced even more. This emphasis on planning should improve terrestrial habitat on a larger scale. Thus, areas outside of the floodplain and stream corridors might be converted into natural areas. This could enhance overall property values in the small communities (particularly those properties adjacent to these improved environmental amenities) to a greater extent than under the other alternatives. Under this alternative, more extensive areas outside of the floodplain and stream corridors might be converted into natural areas. This, in turn, combined with watershed prioritization, could lead to lessened damages to watersheds from sudden impairments in future natural disasters. Improvements in existing land use planning are vital, and would be more likely to occur under this alternative. The East Nishnabotna watershed would probably be a high priority watershed in this hierarchy; given the stressed nature of the watershed, indicated by the wetlands losses it continues to experience, it should be afforded high priority under proactive Alternative 3 whether or not it has a history of past EWP or not simply for its cumulative impacts situation.

5.4.4.2 General Implications of Alternative 3 Cumulative Impacts Program-Wide

As with the incremental changes involved in Alternative 2, it does not appear that the programmatic changes that would be involved in Alternative 3 would either enlarge or reduce the context in which cumulative impacts would be experienced. There also was no indication in any of the example watersheds that the changes in intensity that the Alternative 3 Program improvements would institute would result in impacts being experienced outside of the example watersheds. However, there is a possibility that the direct and indirect impacts of the improved EWP practices would be reduced enough not to interact with other actions even inside the 8-digit HUC watersheds.

Those reduced impacts would have a still higher likelihood of being measurably positive in ecologically stressed watersheds, such as the East Nishnabotna watershed. However, it is still important here to note that the disproportionate impacts of the other actions in the watershed, in contrast to the impacts of EWP practices, would make it difficult to reduce cumulative impacts in the watershed, even if direct and indirect EWP impacts would be reduced under Alternative 3 coordination efforts.

The results of the analyses of the three example watersheds cannot be scaled up to a national analysis. However, the results of the analysis in the three example watersheds lead to several implications for the overall EWP Program. First, the proposed Program elements would result in the best overall improvement in the environmental performance of EWP practices themselves. Second, the additional coordination between NRCS and other Federal, State, and local agencies under this alternative would result in the most efficient use of NRCS resources and the resources of the other agencies where detrimental impacts to watershed are concerned. Third, NRCS should reap benefits by taking the differences that the three example watersheds exhibit into account in formulating its plans in Alternative 3 to prioritize watersheds not only according to their disaster risks, but also to factor in the extent to which the watershed already exhibits stress from other actions, as the East Nishnabotna watershed demonstrates.

5.4.5 Cumulative Impacts under the Preferred Alternative (Alternative 4)

The Preferred Alternative is expected to have similar effects on cumulative impacts as described in Section 5.4.3 under each of the elements of Alternative 2, with the following exceptions:

Retaining the term exigency would have the same effects that the use of "urgent and compelling" would have under Alternative 2. Emergencies requiring immediate action would be considered exigencies and given a higher funding priority in the EWP Program. The time to respond to exigencies will be lengthened from 5 days to 10 days to allow additional time for sponsors to secure their cost-share amount and to conduct appropriate procurement procedures. The additional 5 days should provide a sufficient amount of time for sponsors to secure any necessary emergency permits and for the NRCS to ensure compliance with any and all applicable laws and regulations. This is anticipated to result in both a short term and long term positive EWP contribution to both socioeconomic and environmental cumulative impacts.

All non-exigencies will be referred to as emergencies. A cost-share rate of up to 75 percent would be applied to all emergencies, whether they are exigencies or not. Applying cost-share rates to sites irrespective of their priority designation is anticipated to assist areas more efficiently, where threats to life or property are the most imminent. Changes to the cost-share rate would increase the cost burden for some communities. However, the provisions to provide additional financial support to limited resource areas, or to *provide a waiver with up to 100 percent cost-share* for limited resource areas, situations involving environmental justice, or for projects protecting a community's social values, encourages EWP Program participation by communities that might not otherwise be able to afford to participate in the Program. This provision coupled with increased Program awareness would improve access to Program benefits for socioeconomically disadvantaged communities, and result in positive long-term EWP contribution to cumulative socioeconomic impacts.

Improving disaster-recovery readiness through training, interagency coordination, and planning would not involve the implementation of the DART teams included in Alternative 2, though technical advisory assistance would be made available from the national office if requested. This

change is not anticipated to alter the overall impact of this program provision, however, which would likely continue to result in decreased short-term and long-term negative cumulative effects through improving the response capabilities of NRCS and other personnel charged with implementing EWP practices.

Limiting repair of sites to twice in a ten-year period would be restricted to sites that are eligible for the purchase of a floodplain easement, and would not include repeated debris removal from the same location. For those sites where repeated damage occurs and the landowner does not want a floodplain easement, any continued and unrepaired damage would likely contribute minimally to negative cumulative impacts.

Allowing certain EWP practices to be performed away from streams and in uplands would include the removal of sediment and debris, including windblown debris, from agricultural lands and uplands. As in Alternative 2, this change would not likely result in more natural uses of the floodplain. However, in addition to both upland and floodplain habitat and cultural resources protection, this change could be beneficial to a community's economic resources if fertile agricultural land is restored. Under Alternative 4, only sites not eligible for assistance under the Farm Service Agency's Emergency Conservation Program (ECP) would be eligible for these practices. This change in eligibility requirements from Alternative 2 is anticipated to impact the reach of this provision, and as a result limit the potential positive effects of the provision, especially on agricultural lands cultivating commodity crops under the jurisdiction of ECP.

The Preferred Alternative further would emphasize, as introduced in Alternative 2, the increased use of environmental bioengineering techniques as a favored watershed impairment restoration practice, where such techniques are technically sound and sufficient. Additionally, floodplain easements are a strongly encouraged restoration option when possible. Both of these restoration methods promote the increase of natural floodplain area and riparian habitat as not only a favored watershed impairment solution but also a preventive method to minimize future area impairments. This approach will result in long-term positive EWP program contributions to cumulative impacts on the environment.

5.4.5.1 Cumulative Impacts of Alternative 4 in the Example Watersheds

Applying the Program changes proposed in Alternative 4 to the example watersheds, the likely changes in context and intensity of impact can be estimated qualitatively.

5.4.5.1.1 Buena Vista-Maury River Watersheds, Virginia

The cumulative impacts of the Preferred Alternative in the Buena Vista-Maury River Watersheds are the same as those described under Alternative 2, in Section 5.4.3.1.1. Again, as non-agricultural lands become eligible for floodplain easement or structure buy-out practices, and more natural techniques of stream restoration and bioengineering restoration practices are promoted, reductions in the effects that EWP program implementation have on cumulative impacts are anticipated. However, the disproportionate impacts of the other actions in the

watershed in relation to the impacts of EWP practices makes it difficult to reduce cumulative impacts in the watershed through the EWP changes included in the Preferred Alternative alone.

5.4.5.1.2 Eighth Street Burn Area-Lower Boise Watersheds, Idaho

The cumulative impacts of the Preferred Alternative in the Eighth Street Burn Area-Lower Boise Watersheds are the same as those described under Alternative 2, in Section 5.4.3.1.2. In particular, the promoted use of less intrusive fluvial geomorphological and bioengineering practices under the Preferred Alternaitve might result in a significant reduction in the short-term impacts of special area treatment. Again, however, the disproportionate impacts of the other actions in the watershed in relation to the impacts of EWP practices makes it difficult to reduce cumulative impacts in the watershed through the EWP changes included in this alternative alone.

5.4.5.1.3 East Nishnabotna Watershed, Iowa

The cumulative impacts of the Preferred Alternative in the East Nishnabotna Watershed are the same as those described under Alternative 2, in Section 5.4.3.1.3. The program changes proposed under the Preferred Alternative could reduce the EWP practice contributions to cumulative impacts in the watershed. Again, the most beneficial aspect of the proposed changes to the EWP Program would likely result from potentially greater usage of floodplain easements in the watershed. Simplifying floodplain easement purchase requirements, purchasing floodplain easements on both agricultural and non-agricultural land, and adding the structure buy-out practice could substantially improve the buffering of upslope sediment loss that is having a significant effect in producing wetlands loss in the main stream and tributaries.

5.4.5.2 General Implications of Alternative 4 Cumulative Impacts Program-Wide

As in all of the current Program alternatives, the changes proposed under the Preferred Alternative do not appear to have a significant effect on the cumulative impacts experienced in the example watersheds. It does not appear that the proposed Program changes would either enlarge or reduce the context in which cumulative impacts would be experienced. Cumulative impacts of the EWP practices would continue to occur in the 8-digit HUC Buena Vista and Eighth Street Burn Area watersheds and the 12-digit HUC East Nishnabotna watershed. As a result of the proposed Program elements, the reduced cumulative inputs from the EWP practices would produce smaller impacts in the example watersheds, particularly at the 8-digit HUC levels, as previously discussed.

The reduced impacts would continue to have a higher likelihood of being measurably positive in ecologically stressed watersheds, such as the East Nishnabotna watershed. Again, however, the disproportionate impacts of the other actions in the watershed in relation to the impacts of EWP practices would make it impossible to reduce cumulative impacts in the watershed through the proposed EWP Program changes.

As with the other three alternatives, the results of the analyses of the three example watersheds cannot be scaled up to a national analysis. However, the results of the analysis in the three example

watersheds lead to several implications for the overall EWP Program. First, the program elements of this alternative would result in overall improvement in the environmental performance of EWP practices themselves. Second, the additional coordination between NRCS and other federal, state, and local agencies under this alternative would result in more efficient use of both NRCS resources and the resources of the other agencies where detrimental impacts to watersheds are concerned. Third, NRCS can take advantage of the differences that the three example watersheds exhibit into account in formulating its plans. This is implicit in the elements proposed under the Preferred Alternative, which deal with a larger mix of agricultural and non-agricultural uses than has the current EWP Program.

5.4.6 Summary of the Cumulative Impacts of the Alternatives

Table 5.4-7 summarizes the cumulative impacts of the EWP alternatives. The contribution of the effects of EWP practices to cumulative impacts on watershed ecosystems, based on the analysis of the example watersheds, were minimal under all four EWP Program alternatives. However, in the East Nishnabotna River watershed, 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.

Because the requirements for protection of Federally-protected resources in watersheds are for the most part site specific, EWP restoration work may be one of the best ways to protect those resources that would otherwise be threatened. This is particularly true of cultural resources, where EWP work might not only remove threats to the property directly but also protect the environmental setting where the property is located. In the case of T&E species as well, EWP work may be a necessary part of habitat maintenance as a species recovers, although in the long-term, not desirable as a necessity to survival. In some instances, floodplain easements might provide a better solution for ensuring habitats are available that are conducive to a species recovery.

Alternative 1 (No Action Alternative) would not change cumulative impacts from their present levels. For aquatic resources, there would continue to be minor turbidity, sedimentation, and flow altering effects from restoration practices. These effects would add in 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.

Human communities like the City of Buena Vista 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 that 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.

Alternative 2 (the Draft PEIS Proposed Action) 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, 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 slightly different mix between agriculture and other uses as floodplain easement lands increase.

Alternative 3 (Prioritized Watershed Planning and Management) 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 floodplain easements would help maintain watershed integrity. NRCS and other technically cognizant agencies would need to take adequate steps during the locally-led conduct 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.

The Preferred Alternative (Alternative 4) involves many of the EWP program improvement and expansion elements discussed under the Draft PEIS Proposed Action and would share the majority of its cumulative impacts. Under the Preferred Alternative, NRCS would again emphasize implementation of EWP practices such as bioengineering, streambank protection with

natural materials, and stream restoration using the principles of natural stream dynamics, all of which would reduce the potential for adverse environmental effects. NRCS also would expand the types of watershed impairments the program would address to include floodplain sediment deposition, upland debris sites, and enduring conservation practices where these impairments are not eligible for restoration under other Federal programs such as ECP. 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. Purchase of floodplain easements would also reverse this 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 and buyouts of rural residents as a recovery measure should provide better long-term solutions than repetitive repair work where repeated damages occur. Shifts in program emphasis may result in slightly different mix between agriculture and other uses as floodplain easement lands increase.

Table 5.4-7 Summary of Cumulative Impacts of the EWP Alternatives

Environmental Resource	Alternative 1 –No Action Alternative – Continue the Current Program	Alternative 2 – Draft PEIS Proposed Action – EWP Program Improvement and Expansion	Alternative 4 – Preferred Alternative	Alternative 3 – Prioritized Watershed Planning and 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. Floodplain 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 floodplain 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. Expanded floodplain easement program would also help slow or reverse this situation in some 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 floodplain easement program could be used as an integrated part of watershed restoration program.
Impacts to Wetlands 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 floodplain easement program would help slow or reverse this situation in some watersheds.	Upgrade in restoration practices would reduce the rate of habitat loss, and loss of natural floodplain functioning and value. In some portions of watersheds EWP work may reverse such a trend. Expanded floodplain easement program would help slow or reverse wetland and floodplain size and function declines in some 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 floodplain easement program could be used as an integrated part of watershed restoration program.

Table 5.4-7 (continued) Summary of Cumulative Impacts of the EWP Alternatives

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. Minor income would be derived from performing restoration practices. Shifts in program emphasis may result in slightly different mix between agriculture and other uses. Social resource protection would be emphasized.	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.

5.5 UNAVOIDABLE IMPACTS OF THE PREFERRED ALTERNATIVE

Certain effects cannot be avoided if the Preferred Alternative is implemented. Affected streams, floodplains, and certain watershed upland areas will be altered by EWP restoration practices. In certain instances, to remove threats to life and property, some adverse environmental and/or social consequences may result. Any substantial adverse impacts would be limited to the immediate site and nearby environments and limited to the short-term. Procedures to ensure the economical, environmental, and social defensibility of EWP practice designs should minimize the likelihood of these effects occurring.

Certain structural practices, including armoring and woody structures, would be used for bank restoration where the circumstances warrant their use. These sites may remain as undesirable visual elements of the outdoor environment for a short period until the sites again support vegetation. Some of the hard-engineered structures may not re-vegetate. The shift in emphasis under the Preferred Alternative to employment of bioengineering practices and the incorporation of vegetative components to structures should minimize the number of instances where this is a long-term effect.

Impacts of purchasing floodplain easements on agricultural lands and on improved lands should be beneficial, restoring portions of floodplain environments to their natural functions. These purchases may disrupt the socioeconomic situation of some rural communities in the short-term

and may introduce minor changes in the longer-term. However, in broader economic terms, this shift should tend to diminish demands on the Federal and State governments, and local communities to pay for flood fighting and to repair or compensate for disaster damage.

5.6 EFFECTS ON PRODUCTIVITY, RESOURCES, AND ENERGY

5.6.1. Short-Term Use versus Long-Term Productivity of the Environment

EWP restoration practices are employed to protect life and property, and as such, incorporate designs that attempt to restore a locality to pre-disaster conditions and forestall the erosive forces of the natural environment. They are employed to maintain land and improvements that are of value to human communities, that otherwise would be altered by natural forces. The natural environmental productivity of these protected locations is not achieved so long as their use is continued for human endeavors. The floodplain easement portion of the EWP Program is an attempt to mitigate that use to restore the long-term productivity of floodplain and related environments.

5.6.2 Irreversible or Irretrievable Commitments of Resources

Money and staff-hours used to implement the EWP Program are an irretrievable commitment of Federal resources regardless of which alternative is selected. However, decisions on the commitment of these resources are made on a case-by-case basis, with the option available in every case to not commit the resources.

5.6.3 Energy Requirements and Conservation Potential of Various Alternatives & Mitigation Practices

Fossil fuels are used to power the trucks and heavy equipment used to clear debris and install EWP restoration practices. Because the level of required disaster response is unpredictable from year to year, it is not possible to predict what the energy requirements would be. To the extent that floodplain easements are purchased that eliminate repetitive repair requirements at sites, the overall energy demands of the EWP Program would diminish.

5.6.4 Natural or Depletable Resource Requirements & Conservation Potential of Various Alternatives & Mitigation Practices

The natural or depletable resource requirements of the EWP Program, other than the fossil fuel requirements, include rock for riprap and gabions, trees for rootwads and log revetments, and live trees and shrubs for plantings. These are obtained as available from local sources, and if necessary, from more distant suppliers. The supply of these materials far outweighs the demands that are likely to occur.

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Appendix A

None given

Appendix B

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EWP DRAFT PEIS COMMENTS AND RESPONSES

Summary of Changes to the Draft PEIS

Changes to the document have been made since the publication of the Draft PEIS. A majority of these changes were minor or editorial in nature, but several changes merit mention as significant changes to the document:

1. NRCS evaluated the environmental and socioeconomic impacts of three alternatives for future administration of the EWP Program in a Draft Programmatic Environmental Impact Statement (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. The 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. The Preferred Alternative was developed based on comments from other agencies and the public on the Draft EWP PEIS, on comments on the Proposed EWP Rule (7 CFR 624) published in November 2003, and on internal agency considerations concerning management, funding, and implementation feasibility. 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.
2. The habitat condition classes used in Chapter 4 (see Section 4.2.1.2) have been updated to reflect the most current EPA guidance regarding stream classification.

Agency and Public Comments

The following sections contain the agency and public comments received by NRCS during the public review period for the Draft PEIS. Comments are organized as noted below:

The comment letters and accompanying responses are presented as follows:

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

FEB 7 2003

OFFICE OF
ENFORCEMENT AND
COMPLIANCE ASSURANCE

Mr. Bruce Julian
Acting Director
Wetlands and Wetlands Division
U.S. Department of Agriculture
Natural Resources Conservation Service
PO Box 2890
Washington, DC 20013

Dear Mr. Julian:

The Environmental Protection Agency (EPA) has reviewed the Natural Resources Conservation Service's Draft Programmatic Environmental Impact Statement (EIS) for the Emergency Watershed Protection Program, pursuant to the National Environmental Policy Act (NEPA), Council on Environmental Quality (CEQ) regulations (40 CFR Parts 1500-1508), and Section 309 of the Clean Air Act (CAA).

EPA supports the proposed efforts by the NRCS to improve implementation of the Emergency Watershed Program (EWP), and is encouraged by many of the changes in the Proposed Alternative (Alternative 2 - "EWP Program") to reduce environmental impacts. These changes will reduce adverse environmental impacts and allow for more environmentally appropriate responses to watershed impairments. Despite our support, we also believe that Alternative 3 ("Prioritized Watershed Planning and Management") provides even more benefits and apparently does not have any significant adverse impacts. Alternative 3 would incorporate all of the program changes from Alternative 2 and also provide for additional disaster readiness and mitigation planning and management efforts to priority watersheds.

1 Alternative 3 appears to be the most consistent with the goals of the Administration's Clean Water Action Plan, which envisions a collaborative effort by federal, state, tribal, and local governments; the public; and the private sector to restore and sustain the health of watersheds. There is little, if any, information in the Draft Programmatic EIS to support why Alternative 2 was selected as the Proposed Alternative. In fact, the Draft Programmatic EIS provides the best reason for why Alternative 3 should be selected as the Proposed Alternative:

"[T]his alternative offers a comprehensive approach that would most fully address the impacts of the broad variety of activities in a watershed, the natural processes at work in shaping the watershed and the risk of threats to life and property from floods, and other disaster events. It would form a sound basis for ongoing NEP-related analyses and documentation of cumulative watershed effects. Environmental aspects of EWP Program projects and of other NRCS projects in the watershed would be considered in relation to each other in the context of a specific watershed. (Draft Programmatic EIS, page 3-23).

We strongly suggest that unless the Final Programmatic EIS provides information as to why its implementation is not feasible or desirable, Alternative 3 should be adopted by NRCS as the Proposed Alternative.

1 Based on the poorest list Alternative 3 to better deal with watershed management in the context of responses to watershed impairments and the lack of information as to why it was not selected as the Proposed Alternative, we have assigned the Draft EIS a rating of **EC-2 (Environmental Concerns-Insufficient Information)** (see enclosed "Summary of EPA Rating System" for explanation and definition of the ratings). Additional, more detailed comments regarding the Draft Programmatic EIS are enclosed.

We appreciate the opportunity to review this Draft EIS. If you have any questions, please call me or Cliff Rader of my staff at (202) 564-7159.

Sincerely,

Richard E. Sanderson
Director
Office of Federal Activities

Enclosures

cc: EWP Draft PEIS Comments
PO Box 745
Falls Church, VA 22040-0075

Emergency Watershed Protection Program Programmatic Environmental Impact Statement
Responses to Comments on the Draft EWP PEIS

USEPA page 1	USEPA page 2
1) NRCS recognizes that Alternative 3 "Prioritized Watershed Planning and Management" would likely be the environmentally preferable alternative. However, the agency continues to support Alternative 2 "EWP Program Improvement and Expansion" as its preferred alternative because: a. Current law, as interpeted by NRCS legal counsel, limits activities conducted under EWP primarily to disaster recovery work. Alternative 3 would add a substantial increment of preventative measures to reduce future flood damages. Legislative authority would be required to implement such a major expansion of the purpose of EWP under Alternative 3. b. All EWP work now accomplished by the agency primarily uses existing NRCS staff who are shifted from their normal ongoing work on NRCS non-emergency programs mandated by Congress. It is estimated that a minimum of 600 staff would be required to meet added EWP requirements under Alternative 3, assuming 15 percent of the nation's watersheds are rated as priority watersheds. Without a substantial staff increase, Alternative 3 would require a much greater commitment of current staff time to EWP and result in an unacceptable decrease in the delivery of non-emergency NRCS programs. c. EWP funding is provided through supplemental appropriations, not an annual line item in the budget. Funding is sporadic and an unreliable source to pay the salaries of personnel that would be needed to sustain EWP efforts under Alternative 3.	1) NRCS has expanded the discussion of Alternative 3 in Section 3.2.3 of Chapter 3 to include the rationale of the page 1 response #1.

In landscape format, comment letters were reduced in size and consolidated to two letter pages per page. NRCS' responses to the commenter's concerns are presented on the corresponding facing page.

Federal Comments and Responses

Comments were received from the following Federal agencies:

U.S. Environmental Protection Agency (EPA)
U.S. Environmental Protection Agency (Supplement)
U.S. Department of the Interior (DOI)
Federal Emergency Management Agency (FEMA), Region 10
National Marine Fisheries Service (NMFS)
Seattle District Emergency Management Branch, U.S. Army Corps of Engineers (USACE)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

FEB 7 2000

OFFICE OF
ENFORCEMENT AND
COMPLIANCE ASSURANCE

Mr. Bruce Julian
Acting Director
Watersheds and Wetlands Division
U.S. Department of Agriculture
Natural Resources Conservation Service
PO Box 2890
Washington, DC 20013

Dear Mr. Julian:

The Environmental Protection Agency (EPA) has reviewed the Natural Resources Conservation Service's Draft Programmatic Environmental Impact Statement (EIS) for the Emergency Watershed Protection Program. Our review is pursuant to the National Environmental Policy Act (NEPA), Council on Environmental Quality (CEQ) regulations (40 CFR Parts 1500-1508), and Section 309 of the Clean Air Act (CAA).

EPA supports the proposed efforts by the NRCS to improve implementation of the Emergency Watershed Program (EWP), and is encouraged by many of the changes in the Proposed Alternative (Alternative 2 - "EWP Program Improvement and Expansion"). These changes will minimize adverse environmental impacts and allow for more environmentally appropriate responses to watershed impairments. Despite our support, we also believe that Alternative 3 ("Prioritized Watershed Planning and Management") provides even more benefits and apparently does not have any significant adverse impacts. Alternative 3 would incorporate all of the program changes from Alternative 2 and also provide for additional disaster-readiness and mitigation planning and management efforts in priority watersheds.

1 Alternative 3 appears to be the most consistent with the goals of the Administration's Clean Water Action Plan, which envisions a collaborative effort by federal, state, tribal, and local governments; the public; and the private sector to restore and sustain the health of watersheds. There is little, if any, information in the Draft Programmatic EIS to suggest why it was not selected as the Proposed Alternative. In fact, the Draft Programmatic EIS provides the best reason for why Alternative 3 should be selected as the Proposed Alternative:

> *[T]his alternative offers a comprehensive approach that would most fully address the impacts of the broad variety of activities in a watershed, the natural processes at work in shaping the watershed and the risk of threats to life and property from floods and other disaster events. It would form a sound basis for ongoing NEPA-based analyses and documentation of cumulative watershed effects. Environmental aspects of EWP Program projects and of other NRCS projects in the watershed would be evaluated and reviewed within the context of a specific watershed.* (Draft Programmatic EIS, page 3-23).

We strongly suggest that unless the Final Programmatic EIS provides information as to why its implementation is not feasible or desirable, Alternative 3 should be adopted by NRCS as the Proposed Alternative.

1 Based on the potential for Alternative 3 to better deal with watershed management in the context of responses to watershed impairments and the lack of information as to why it was not selected as the Proposed Alternative, we have assigned the Draft EIS a rating of **EC-2 (Environmental Concerns-Insufficent Information)** (see enclosed "Summary of EPA Rating System" for a more detailed definition of the ratings). Additional, more detailed comments regarding the Draft Programmatic EIS are enclosed.

We appreciate the opportunity to review this Draft EIS. If you have any questions, please call me or Cliff Rader of my staff at (202) 564-7159.

Sincerely,

Richard E. Sanderson
Director
Office of Federal Activities

Enclosures

cc: EWP Draft PEIS Comments
PO Box 745
Falls Church, VA 22040-0075

1) NRCS recognizes that Alternative 3 "Prioritized Watershed Planning and Management" would likely be the environmentally preferable alternative. However, the agency supports Alternative 4 as its Preferred Alternative because: a. Current law, as interpreted by USDA legal counsel, limits activities conducted under EWP primarily to disaster recovery work. Alternative 3 would add a substantial increment of preventative measures to reduce future flood damages. Legislative authority would be required to implement such a major expansion of the purpose of EWP under Alternative 3. b. To a large extent, NRCS has integrated the management of its watershed programs as described in Alternative 3 within the Water Resources Branch of the NHQ Financial Assistance Programs Division working closely with the NHQ Easement Programs Branch. Together they oversee the recovery practices and floodplain easements portions of EWP and provide funding and technical assistance and training to the NRCS State Offices. But NRCS is limited in fully implementing the scope of Alternative 3 primarily by funding constraints. Several NRCS watershed programs currently exist under P.L. 566 and P.L. 534 that address watershed planning and management and include measures for watershed protection and flood prevention, as well as the cooperative river basin surveys and investigations. Under the new Watershed Rehabilitation Program, NRCS works with local communities and watershed project sponsors to address public health and safety concerns and potential adverse environmental impacts of aging dams. NRCS so far has undertaken 118 projects in 20 States to assess the condition of and repair of more than 10,000 upstream flood control structures built since 1948. The structural and non-structural practices implemented and the easements purchased under those programs have greatly reduced the need for future EWP measures in project watersheds. Nevertheless, EWP must remain available to deal with the aftermath of major disasters regardless of improvements under the other watershed programs.	1) NRCS has expanded the discussion of Alternative 3 in Section 3.2.3 of Chapter 3 to include the rationale of the page 1 response #1.

SUMMARY OF RATING DEFINITIONS AND FOLLOW-UP ACTION

Environmental Impact of the Action

LO--Lack of Objections
The EPA review has not identified any potential impacts requiring substantive changes to the proposal. The review may have disclosed opportunities for application of mitigation measures that could be accomplished with no more than minor changes to the proposal.

EC--Environmental Concerns
The EPA review has identified environmental impacts that should be avoided in order to fully protect the environment. Corrective measures may require changes to the preferred alternative or application of mitigation measures that can reduce the environmental impact. EPA would like to work with the lead agency to reduce these impacts.

EO--Environmental Objections
The EPA review has identified significant environmental impacts that must be avoided in order to provide adequate protection for the environment. Corrective measures may require substantial changes to the preferred alternative or consideration of some other project alternative (including the no action alternative or a new alternative). EPA intends to work with the lead agency to reduce these impacts.

EU--Environmentally Unsatisfactory
The EPA review has identified adverse environmental impacts that are of sufficient magnitude that they are unsatisfactory from the standpoint of public health or welfare or environmental quality. EPA intends to work with the lead agency to reduce these impacts. If the potential unsatisfactory impacts are not corrected at the final EIS stage, this proposal will be recommended for referral to the CEQ.

Adequacy of the Impact Statement

Category 1--Adequate
EPA believes that draft EIS adequately sets forth the environmental impact(s) of the preferred alternative and those of the alternatives reasonably available to the project or action. No further analysis or data collection is necessary, but the reviewer may suggest the addition of clarifying language or information.

Category 2--Insufficient Information
The draft EIS does not contain sufficient information for EPA to fully assess environmental impacts that should be avoided in order to fully protect the environment, or the EPA reviewer has identified new reasonably available alternatives that are within the spectrum of alternatives analyzed in the draft EIS, which could reduce the environmental impacts of the action. The identified additional information, data, analyses, or discussion should be included in the final EIS.

Category 3--Inadequate
EPA does not believe that the draft EIS adequately assesses potentially significant environmental impacts of the action, or the EPA reviewer has identified new, reasonably available alternatives that are outside of the spectrum of alternatives analysed in the draft EIS, which should be analyzed in order to reduce the potentially significant environmental impacts. EPA believes that the identified additional information, data, analyses, or discussions are of such a magnitude that they should have full public review at a draft stage. EPA does not believe that the draft EIS is adequate for the purposes of the NEPA and/or Section 309 review, and thus should be formally revised and made available for public comment in a supplemental or revised draft EIS. On the basis of the potential significant impacts involved, this proposal could be a candidate for referral to the CEQ.

Enclosure 2: EPA Detailed Comments
Natural Resources Conservation Service
Draft Programmatic Environmental Impact Statement
Emergency Watershed Protection Program
February 2000

Assessment Methodology

- The Draft Programmatic EIS uses sample sites to help evaluate potential programmatic impacts of the alternatives. Only three sample sites are located west of Texas. Watersheds in the west can have unique and very different characteristics to those of the east. For instance, fluvial geomorphology and hydrological cycles can be very different encompassing flash floods, desert geomorphology and hydrology, and tropical island conditions (e.g., Hawaii). Thus, potential impacts of the alternatives could be very different in these ecosystems. We recommend expanding the list of sample sites to ensure full representation of the diverse conditions in the US. For instance, consider sample sites in Hawaii, the Rocky Mountain Region, and the Nevada/Arizona/California deserts.

1

Elements of the Proposed Action

2

- Element 5 stipulates that practices must be economically, environmentally, and socially defensible and identify the criteria to meet those requirements. We suggest that it would be useful if this discussion included recognition of the societal values of a properly functioning watershed in addition to a requirement to review alternatives in the social context of the "ideals and background of the community and individuals" directly affected.

3

- Element 7 would remove the current restriction on the use of long-term structural protective measures such as rip-rap to protect agricultural lands. The Draft Programmatic EIS indicates that even with this lifting of the restriction, less rip-rap would be installed. It is not clear how this conclusion was reached; we suggest that the Final EIS make it clear that the use of armoring measures to protect agricultural lands are not preferred, and will only be used when other measures are determined not to be feasible.

4

- Element 8 discusses a proposal to limit EWP activities to twice in a 10-year period. We strongly support this general concept. However, since this proposal is primarily for replacement of hard structures, we recommend that the time period be lengthened to at least 25 years. Standard engineering practices should assure that hard protective structures such as rip-rap and levees be designed to withstand relatively frequent events. We would not expect any structure implemented under the EWP to fail in a 10 year event.

5

We also have concerns with the approach in this element that indicates that repeated repair of a single levee can be made as long as the repair occurs at a different place on the levee each time. Again, the entire levee should be originally constructed and maintained to withstand a specific design event.

No response required. **USEPA Page 4 Response Begins Below**	3) In the past, EWP did use structural measures to protect agricultural lands, but riprap was too often the method of choice. Because of this over-use of riprap, NRCS decided to cease structural protection of agricultural lands. More recently, in response to concerns about disaster threats to high value crops and in order to offer a reasonable level of protection to all landowners, use of structural measures to protect agricultural land is being reintroduced to the Program. The Preferred Alternative will offer better options for repair methods. The intent of this Program Element is not to resume use of riprap for all high-value agricultural land, but as would be the case for the improved EWP Program in general, to emphasize use of restoration design based on natural stream dynamics and bioengineering. Nevertheless, riprap may prove to be the only technically feasible solution on certain sites, particularly where high flow velocities occur. It is anticipated that the emphasis on using the principles of natural stream dynamics will help offset any increase in hard structures (see Draft PEIS Proposed Action and Preferred Alternative Elements 5 and 10). The description of Program Element 7 in Chapter 3 has been revised to clarify the fact that riprap is not the only solution, nor is it the preferred solution, for repairs to agricultural lands, but only one of the possible solutions that may be used. 4) NRCS believes that Element 8 of both the Preferred Alternative and the Draft PEIS Proposed Action strikes a reasonable balance between the goals of reducing repetitive spending by the government and fairness in responding to the needs of landowners. 5) Levee failures at previous breaks could be considered repetitively damaged and would be repaired only if approved by the State Conservationist who would have discretion in this matter. In cases where the levee was not maintained or designed properly, it would not be eligible for EWP assistance. Specific procedures will not be provided at the national level. Headquarters will provide guidance in the EWP Manual and EWP Handbook, but the State Conservationist will continue to be responsible for determining specific procedures for their state in coordination with various Federal and State agencies to comply with the requirements of applicable Federal, State, and local rules and regulations.
1) The PEIS uses a representative sample of sites and States where a major portion of recent EWP work has been performed. The sample does incorporate a variety of geographic conditions although it does not represent every region of the U.S. NRCS believes this level of analysis is sufficient to cover the range of typical EWP situations for the purposes of comparing the environmental and socioeconomic impacts of the Program alternatives. NRCS believes that adding more sites in more States to represent all regional conditions would not change the results of the Program alternatives analysis because the Program improvements are generic in nature and do not specify that any particular practice, practice element, or installation technique is to be used agency-wide or in any region. These installation decisions are to be made at the project level and NRCS State Office staff would adapt their use of specific restoration practices and easements to the conditions in their region. 2) The intent of the EWP Program is not to be a watershed management program, but rather is limited to removal of threats to life and property that remain in the Nation's watersheds in the aftermath of natural disasters. To that limited extent the Program does implicitly acknowledge the societal value of a properly functioning watershed. The floodplain easement portion of EWP has as its goal the restoration of floodplain function that is clearly a recognized societal value. Other NRCS programs such as WRP and EQIP more broadly focus on restoration and enhancement of watershed functions. ***(response continued at top of next column)***	

1 - Element 9 proposes to eliminate the requirement that there be multiple beneficiaries of an action. The current practice for the need for multiple beneficiaries has been in place, according to the Draft Programmatic EIS, to "avoid windfall benefits to a single landowner and to ensure that the general public benefits from the Federal funds spent." We believe the current practice makes the most sense regarding federal expenditures, and since most projects do benefit multiple landowners, it is unclear why this requirement would be eliminated. We recommend retaining the current practice without modification.

Clean Water Act/Section 404

2 - We suggest including a single section in the Final Programmatic EIS that discusses the various permits and licenses that would be necessary to implement program practices. We are especially concerned over the need for coordination with EPA and the Corps of Engineers on ensuring compliance with Section 404 of the Clean Water Act for program practices.

Miscellaneous Comments

3 - Explain more thoroughly the integration and overlap of the EWP Program and other federal disaster relief programs (we suggest including a table in the EIS that includes all agencies and jurisdictions).

4 - Include affected tribes in all planning and review procedures.

5 - Replace the term "streamside buffer" with "riparian corridor" to denote the connectivity of the areas along streams to the streams itself and the hydrologic and biologic importance of the corridor area.

6 - Base decisions to restore versus purchase easements on a cost/benefit analysis (rather than a least cost practical benefit analysis) that assigns environmental values and is focused on the floodplain restoration.

7 - Additional emphasis should be placed on analyzing the effects and impacts that the proposed action may have on low income and/or minorities populations in light of the Executive Order on Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations.

1) Multiple beneficiaries are implicit in the type of work performed. NRCS has recognized in the past, and will continue to fully recognize EWP benefits to downstream landowners and environmental resources. The only substantive Program change would be that downstream beneficiaries would be assumed to exist and no longer would need to be individually identified and documented on the Damage Survey Report (DSR). 2) The description of Draft PEIS Proposed Action Element 6 in Section 3.2.2.1 of Chapter 3 has been revised to include the U.S. Environmental Protection Agency (EPA) with U.S. Army Corps of Engineers (USACE) and to specifically refer to Section 404 of the Clean Water Act. Under Draft PEIS Proposed Action Element 6, improvements would be made in inter-agency coordination for disaster response, including ensuring acquisition of proper permits. This aspect of Element 6 is wholly adopted under the Preferred Alternative. In addition, under the Preferred Alternative, NRCS has lengthened the timeframe to accomplish exigency measures from 5 to 10 days. The additional 5 days would provide time for project sponsors to secure any necessary permits for NRCS and sponsors to comply with all Federal laws and regulations. A list of applicable Federal laws and regulations has been added to the Consultation and Coordination Chapter of the PEIS. Each NRCS State Office would address applicable laws, permits, and other requirements for their State. 3) Section 2.1.1 of PEIS Chapter 2 outlines the important Federal agency programs dealing with disaster emergencies and how EWP interacts with the agencies and programs. NRCS does not consider discussing individual state emergency programs appropriate for a programmatic level document. 4) The description of Draft PEIS Proposed Action Element 6 in Section 3.2.2.1 of Chapter 3 has been revised to include tribal governments as participants in the Emergency Recovery Plan (ERP) process. This aspect of Draft PEIS Proposed Action Element 6 has been wholly adopted under the Preferred Alternative. ***(response continued at top of next column)***	5) Streamside buffers and riparian corridors refer to different features. Riparian forest buffers, NRCS practice code 391, are perennial plantings installed along streams to provide a minimum level of protection from runoff from nearby agricultural fields. Riparian corridor is a broader term applied to the land adjacent to a stream course, which may support natural or planted streamside vegetation as well as other natural or man-made features. The PEIS has been reviewed to ensure it uses appropriate terminology for the feature described. 6) The decision on whether or not to implement a project, and what type of restoration measures should be used (i.e., restoration practices verses easement purchases) is done on a cost/benefit analysis basis. Where two or more possible measures will produce similar watershed effects, a least-cost approach will often be used. However, costs alone would not dictate which solution is selected, as the solution must also be environmentally and socially defensible. Solutions are only considered acceptable if they do not harm social and environmental resources. All conservation easements and practices must be economically, environmentally, socially, and technically defensible. The costs of restoration of lands and structures, costs associated with the repeat of future disasters, and the costs of efforts that would be required to prevent a repeat of such events may be considered in the analysis of cost-efficiency of the easement alternative. The easement alternative must be cost- effective in comparison with other traditional measures. 7) Please refer to Section 3.4.3 of Chapter 3, Section 4.3.3 of Chapter 4, Section 5.3.3 in Chapter 5, and the Draft PEIS Proposed DSR form in Appendix C, which demonstrate NRCS' awareness and consideration of environmental justice concerns. Environmental justice has been added to the bulleted list of items that will be addressed in the ERP in Draft PEIS Proposed Action Element 6 of Section 3.2.2.1. This aspect of Draft PEIS Proposed Action Element 6 has been wholly adopted under the Preferred Alternative. In addition, under the Preferred Alternative, in areas qualifying as limited resource areas, NRCS would apply a higher cost-share rate (up to 90 percent) for the implementation of Program measures. Waivers may also be granted allowing up to 100 percent cost-sharing in limited resource areas, or situations involving environmental justice.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

FEB 11 2000

OFFICE OF
ENFORCEMENT AND
COMPLIANCE ASSURANCE

Mr. Bruce Julian
Acting Director
Watersheds and Wetlands Division
U.S. Department of Agriculture
Natural Resources Conservation Service
PO Box 2890
Washington, DC 20013

Dear Mr. Julian:

Please accept the following comments as a supplement to our earlier comments (February 7, 2000) to you regarding the Draft Programmatic Environmental Impact Statement (EIS) for the Emergency Watershed Protection Program. Unfortunately we received some additional comments from other EPA reviewers after our original letter had already been sent to you.

Environmental Defensibilty and Cumulative Impacts

1 We strongly recommend that the standard for determining whether proposed work under the EWP is "environmentally defensible" explicitly require than an analysis of the potential for cumulative adverse impacts upon the aquatic ecosystems be conducted. In addition, we recommend that NRCS provide guidance on how to determine when and under what conditions an unacceptable cumulative adverse impact threshold has been reached/crossed.

The consideration of cumulative impacts is important because of the nature of EWP activities – generally small in scope, but often numerous within a particular waterbody/watershed. For example, we are aware of a one-mile reach of the White River in Vermont where there are at least 10 EWP projects. While a state/federal workgroup was recently formed in New England (partially in response to the above example) to address EWP issues more comprehensively, we believe it is essential that overall programmatic guidance deal with how the cumulative effects of EWP projects will be considered.

Use of Natural Stream Dynamics and Bioengineering in Designing EWP Projects

1 We are encouraged that NRCS proposes to incorporate the principles of natural stream dynamics and bioengineering when designing EWP projects, and to be more sensitive to the environment in the design and installation of EWP practices. However, we are concerned that Element 10 of the Proposed Action would apparently limit this approach to only those cases where it represents the "least-cost" solution. We strongly recommend that NRCS revise this element to make clear that when designing EWP projects, the principles of natural stream dynamics and bioengineering should always be considered and environmentally-sensitive measures should be utilized unless the costs are unreasonable. The guidance should also make clear that regardless of what specific practices are utilized, they must always be environmentally defensible.

We appreciate the opportunity to review this Draft EIS. If you have any questions, please call Cliff Rader of my staff at (202) 564-7159.

Sincerely,

B. Katherine Biggs

B. Katherine Biggs
Acting Director
NEPA Compliance Division
Office of Federal Activities

1) NRCS will require that event-wide cumulative impact analyses be performed. NRCS is currently engaged in a pilot program in Oregon that studies watershed level cumulative impacts of all NRCS programs operating in the watershed. Because all agency actions are at issue, responsibility for cumulative impacts assessment would not reside in any one individual program; rather the analysis would be agency wide and cover all NRCS programs. As a first step in adapting this process for EWP, NRCS would develop and maintain mapped data on EWP activity to better gauge where cumulative impacts may be an important issue and would provide guidance for these activities in the EWP manual and handbook. Headquarters will provide guidance in the EWP Manual and EWP Handbook, but the State Conservationist will continue to be responsible for determining specific procedures for their state in coordination with various Federal and State agencies to comply with the requirements of applicable Federal, State, and local rules and regulations.	1) Upon consideration of the fundamental goals of the Program improvement, NRCS has changed its basic approach to approval of EWP work. The title of Draft PEIS Proposed Action Element 10 of Section 3.2.2.1 of Chapter 3 has been revised. The term "least-cost" has been eliminated and the Element now reads: "Apply the principles of natural stream dynamics and, where appropriate, use bioengineering in the design of EWP restoration practices." Hydrogeomorphic design and use of bioengineering would be among the solutions considered in all cases. Costs alone would not dictate which solution is selected, as the solution must also be environmentally and socially defensible. NRCS believes these changes reflect the intent of the comment, as the focus is no longer on least cost solutions. Other factors, such as environmental resources, also would be used to determine the best solution as indicated in the related revision to Draft PEIS Proposed Action Element 5, paragraph 2. These aspects of Draft PEIS Proposed Action Elements 5 and 10 have been wholly adopted under the Preferred Alternative.

Rec'd 2/23/00

United States Department of the Interior

OFFICE OF THE SECRETARY
Washington, D.C. 20240

ER 99/1080

FEB 16 2000

Mr. Bruce A. Julian, Acting Director
Watersheds and Wetlands Division
Natural Resources Conservation Service
U.S. Department of Agriculture
P.O. Box 2890
Washington, D.C. 20013

Dear Mr. Julian:

The U.S. Department of the Interior has reviewed the Draft Programmatic Environmental Impact Statement on the (Nationwide) Emergency Watershed Protection Program (PDEIS). We offer the following comments for your consideration.

GENERAL COMMENTS

1

The Department strongly supports the efforts of Natural Resources Conservation Service to improve the Emergency Watershed Protection Program. We are pleased to see many of the changes that NRCS is proposing, which should address a number of concerns that the Fish and Wildlife Service has had with the Emergency Watershed Protection Program over the years. We particularly support the objectives listed in Chapter 1 which were determined by the Oversight and Evaluation Team as needing attention. The O&E Team focused on the apparent lack of consistency in how the EWP Program was administered from state to state, including interpretation of the policy on exigency situations, and its application to situations that were not truly urgent. The FWS has long had concerns over the "exigency" classification and program consistency. We also support efforts to increase the consideration of environmental concerns and restoration opportunities. The movement toward more environmentally desirable methods of responding to emergency situations has been dramatically demonstrated in several areas of the country. NRCS is to be commended for reevaluating the program and expanding its coverage.

The Proposed Action (Alternative 2, EWP Program Improvement and Expansion) represents an improvement over the current practices in a number of its components, as does Alternative 3 (Prioritized Watershed Planning and Management). Both the Proposed Action and Alternative 3 place greater emphasis on bioengineering, purchase of easements, and working with natural

stream dynamics than do current practices. Alternative 3 places even more emphasis on easements and would include prioritized watershed planning and management. The NRCS states in the EIS that Alternative 3 may result in contiguous easement sections and contiguous riparian areas. The Proposed Action would probably not result in the contiguous areas, although it would increase natural areas along streams and improve wildlife access to the streams.

We recommend the selection of Alternative 3 as the Proposed Action. This alternative would include all the improvements contained in the Proposed Action. Its provision for actions on a prioritized watershed basis is consistent with the watershed approach being implemented by many agencies including the FWS. Under this Alternative, which would be more proactive and comprehensive, prioritized watershed planning would combine the specific Program improvements and expansion of the Proposed Action with program-neutral disaster readiness and mitigation planning for selected high-priority watershed. As such, the selection of Alternative 3 would go further toward accomplishing EWP Program goals while also emphasizing watershed with the greatest needs.

The greatest benefit of some of the key components of Alternative 3 would be restoring native habitats and the populations of sensitive species associated with them. The majority of species in the United States currently listed as threatened and endangered are associated with aquatic, wetland, and riparian ecosystems. Alternative 3 could help restore lost habitats and recover these species. Alternative 3 offers the greatest funding for floodplain easements. The emphasis placed on removing high-risk human activities from high-risk areas will result in improved resource conditions since natural disasters are part of the ecological processes.

1

If the NRCS elects to retain Alternative 2 as the Proposed Action, we recommend that the Proposed Action be expanded to provide for at least a portion of the pro-active work, as described under Item 5 for Alternative 3 on pages 3-22 and 3-23 (Coordinate disaster-readiness and mitigation planning and management efforts with Federal, State and local agencies and interested stakeholders). For example, a watershed analysis may identify undersized culverts under a county road just above some rural residences. With pro-active cooperation, such culverts could be replaced before a disaster occurred. Such a program would provide great opportunities for cost sharing among counties, states, private landowners, and many federal agencies, thereby significantly leveraging federal dollars and improving watershed protection.

Program Implementation

2

In the past, lack of coordination with the FWS on the natural resource issues, and failure to consult with the FWS pursuant to Section 7 of the Endangered Species Act of 1973 have been major concerns. While the basic concept of the EWP Program has always had merit, it has been used inappropriately in some locations. In some instances, work performed has not appeared to be "Emergency," in that no threats to life or property were identified. In some areas, work performed involved clearing and snagging that went beyond the scope of the EWP Program, with whole segments of rivers and streams were stripped of riparian vegetation resulting in excessive

1) NRCS recognizes that Alternative 3 "Prioritized Watershed Planning and Management" would likely be the environmentally preferable alternative. However, the agency supports Alternative 4 as its Preferred Alternative because: a. Current law, as interpreted by USDA legal counsel, limits activities conducted under EWP primarily to disaster recovery work. Alternative 3 would add a substantial increment of preventative measures to reduce future flood damages. Legislative authority would be required to implement such a major expansion of the purpose of EWP under Alternative 3. b. To a large extent, NRCS has integrated the management of its watershed programs as described in Alternative 3 within the Water Resources Branch of the NHQ Financial Assistance Programs Division working closely with the NHQ Easement Programs Branch. Together they oversee the recovery practices and floodplain easements portions of EWP and provide funding and technical assistance and training to the NRCS State Offices. But NRCS is limited in fully implementing the scope of Alternative 3 primarily by funding constraints. Several NRCS watershed programs currently exist under P.L. 566 and P.L. 534 that address watershed planning and management and include measures for watershed protection and flood prevention, as well as the cooperative river basin surveys and investigations. Under the new Watershed Rehabilitation Program, NRCS works with local communities and watershed project sponsors to address public health and safety concerns and potential adverse environmental impacts of aging dams. NRCS so far has undertaken 118 projects in 20 States to assess the condition of and repair of more than 10,000 upstream flood control structures built since 1948. The structural and non-structural practices implemented and the easements purchased under those programs have greatly reduced the need for future EWP measures in project watersheds. Nevertheless, EWP must remain available to deal with the aftermath of major disasters regardless of improvements under the other watershed programs.	1) Coordination for disaster readiness will take place, but this suggestion relates to flood prevention, not flood recovery. Local sponsors might seek assistance for such needs from NRCS under the PL-566 program. 2) Please refer to the Purpose and Need. The past performance of EWP was admittedly lacking in coordination, which was part of the impetus for initiating the process of re-evaluating the program and preparing the PEIS. Under the Preferred Alternative, time to respond to exigent situations is lengthened from 5 to 10 days, allowing for more time to conduct appropriate agency coordination. Clearing and snagging of the extent you describe would not likely be judged environmentally defensible by project reviewers.

bank failure and erosion causing stream widening and permanent changes in stream morphology that ultimately had negligible effect on recurrent flooding. The result has been loss of certain riverine and stream habitats including deeper runs and pool habitats, and shifts in species composition in affected streams.

1 This situation has been changing in recent years in some areas. For example, in States such as North Carolina, NRCS is utilizing environmentally sensitive techniques implemented in coordination with other agencies, resulting in vastly improved projects. Effective implementation of either the Proposed Action or Alternative 3 will depend on conscientious implementation of formal procedures, guidelines and policies at the local level with substantive oversight at the Washington level. Projects are identified, planned, coordinated, and implemented at the lowest level of the NRCS organization. Without a way to ensure consistent application throughout the country, change may be slow in some areas.

2 Specific coordination procedures, protocols and mandates developed at the national level for evaluating various project elements will help to ensure consistency in the program nationwide. Topics should include how to determine if significant, unacceptable adverse impacts to the environment would occur, and defining how the determination of environmental defensibility will be made. NRCS should develop protocols and procedures for addressing ESA and other environmental and fish and wildlife coordination and analyses. They should include information on additional requirements such as those in the EWP Program rules. Procedures should be developed for advance coordination with agencies to address "urgent and compelling" emergency actions. NRCS will need to ensure that adequate safeguards are in place to ensure that the "urgent and compelling" designation is not misused. Guidance on these aspects should be provided by the DART Teams during training. Local procedures would be developed by the disaster readiness teams and included in the Emergency Action Plan.

Item 6 of the Proposed Action provides for improved disaster-recovery readiness through interagency coordination, planning and training. We applaud this proposal, and have made some suggestions on this element in the comments below.

National Environmental Policy Act

3 The process that NRCS proposes to use seems out of sequence and reduces the value of NEPA to the decision making process. NRCS is planning on completing a record of decision by March 4, 2000. NRCS should recognize that this will not be possible, as the FEIS must first be published and distributed and, after a 30-day period, the record of decision is then issued. Further, we believe the record of decision should not be issued until the final rulemaking stage, since the public review of the proposed rule could result in changes to the Proposed Action, affecting the analysis in the EIS. The rulemaking, which was to have been included in the PDEIS, will now be proposed at a later date. This creates a disconnect that could complicate the process and necessitate changes to the EIS.

Endangered Species Act

1 Section 7(a)(1) of the ESA, as amended requires that Federal agencies shall, in consultation with and with the assistance of the Secretary, utilize their authorities in the furtherance of the purposes of this Act by carrying out programs for the conservation of listed species and the ecosystems on which they depend. Section 7(a)(2) of the ESA requires each Federal agency to insure that any action it either funds, authorizes or carries out will not jeopardize the continued existence of any listed species or result in the destruction or adverse modification of critical habitat, unless such agency has been granted an exemption under section 7(h). Further, section 7(d) of the ESA states that, after initiation of consultation, the Federal agency must not make any irreversible or irretrievable commitment of resources with respect to the agency action which has the effect of foreclosing the formulation or implementation of any reasonable and prudent alternative measures which would not violate subsection 7(a)(2). These guiding principles of the ESA direct our agencies to work in concert to protect federally listed species and the ecosystems on which they depend. We believe these principles should be incorporated into the NRCS proposed action to provide for the conservation and recovery of listed, proposed and candidate species and their habitats throughout their range and we would be happy to work with the NRCS to address this.

The FWS recommends that a proactive approach be taken to address effects on listed threatened and endangered species and their critical habitats by EWP prior to the actual occurrence of a disaster. This should be done through early coordination and development of guidance through the pre-disaster planning process. Thus during the emergency, steps can be taken to minimize and avoid adverse effects to listed species, and information can be gathered to assess the extent of unavoidable effects. In 50 CFR §402.05, emergency consultation procedures are defined. This provision applies to situations involving acts of God, disasters, casualties, and national defense or security emergencies, among others. In other words, emergencies where there is an imminent threat to health and human safety. In these situations, formal consultation is initiated as soon as practicable after the emergency is under control. The federal agency responsibility is to submit information on the nature of the emergency action(s), the justification for the expedited consultation, and the impacts to endangered or threatened species and their habitats. While consultation as described in the PDEIS would be on a case by case basis, the FWS also recommends periodic state-level consultation to develop procedures to comply with the ESA during pre-disaster planning and update their list of endangered and threatened species.

2 The document should correct the sections describing the responsibilities of NRCS in consulting with the FWS under the ESA, as amended. The document states in several locations that NRCS would consult with the FWS in any situation where there is a potential for jeopardy to a threatened or endangered species. However, the regulations for Interagency Cooperation - ESA, as amended, relating to formal consultation (50 CFR 402.14) specify that:

1) NRCS is committed to implementing the training elements of Element 6 of the Preferred Alternative as described in Chapter 3 of this Final EWP PEIS across the nation. The following steps will be used to ensure consistent application of the procedures, guidelines and policies in the field: a. Training workshops will be held frequently; the next in Spring 2005 b. Regional Oversight & Evaluation (O&E) staff will continue oversight reviews c. Draft PEIS Proposed Action Element 6 will be stressed throughout—pre-disaster planning will provide the forum to help develop the protocols for a given disaster situation d. Additional technical advisory assistance would be made available from the National Office, if requested, to train State NRCS employees 2) Specific procedures will not be provided at the national level. Headquarters will provide guidance in the EWP Manual and EWP Handbook, but the State Conservationists will continue to be responsible for determining specific procedures for their state in coordination with various Federal and State agencies to comply with the requirements of applicable Federal, State, and local rules and regulations. 3) Since publication of the Draft EWP PEIS, NRCS has conducted rulemaking for the EWP program and has taken public comments on a Proposed EWP rule. The final EWP rule will address comments on the Proposed rule. Comments relevant to the NEPA process have also been considered in preparation of this Final EWP PEIS. The final rule will be published when the Final EWP PEIS Record of Decision (ROD) is published, at least 30 days after publication of the Final EWP PEIS. The final EWP rule will be fully consistent with the Final EWP PEIS Preferred Alternative.	1) NRCS recognizes its responsibilities under the Endangered Species Act (ESA) and the Draft PEIS Proposed Action and the Preferred Alternative (especially Element 6) note that ESA needs and requirements will be met. Specific procedures would be established in pre-disaster coordination at the State level. Specific procedures will not be provided at the national level. Headquarters will provide guidance in the EWP Manual and EWP Handbook, but the State Conservationist will continue to be responsible for determining specific procedures for their State in coordination with various Federal and State agencies to comply with the requirements of applicable Federal, State, and local rules and regulations. 2) The use of the ESA terminology has been corrected in the PEIS.

"Each Federal agency shall review its actions at the earliest possible time to determine whether any action may affect listed species or critical habitat. If such a determination is made, formal consultation is required...."

The regulations also provide for exceptions to this requirement. We recommend the text be changed to reflect this rule. Designated critical habitat and habitat areas protected through Habitat Conservation Plans, as defined in Section 10(a)(1)(B) of the ESA should also be protected components of the EWP process. The Environmental Evaluation worksheet should collect more information for the evaluation and documentation of environmental impacts and the effects to threatened and endangered species. The FWS recommends using a Section 7 consultation checklist as a guide for collecting information.

1 NRCS should include by reference all of the listed species potentially affected by its action. For an action area of the entire US, reference should be the latest FWS compilation of listed species for the United States. During site-specific consultation, a request for a species list that contains a map or specific geographic details of the project area should be transmitted to the appropriate Fish and Wildlife Field Office.

2 It is suggested that NRCS coordinate with the Federal Emergency Management Agency on a model relating to its section 7 consultation responsibilities. FEMA is currently working with the FWS in California to address effects of its actions. Funding has been provided to the Sacramento, Ventura, and Carlsbad Fish and Wildlife Offices to take a programmatic approach in dealing with FEMA funding of repairs associated with various disasters. The intent of this effort is to: (1) assemble a packet of ESA materials to provide applicants for FEMA funding with information on their responsibilities for minimizing and avoiding effects to sensitive species and their habitats when proposing repair projects; (2) assemble teams including state and federal emergency staff to address ways of (a) streamlining a process for consulting on individual projects having effects on listed species and their habitats and (b) preventing or lessening future disasters through restoration of naturally functioning ecosystems; (3) funding conservation banks through land acquisition and conservation easements that will help to recover listed species and their habitats and provide replacement habitat for projects that destroy or adversely affect habitat.

Program Implementation Criteria

3 The PDEIS discusses criteria contained in the existing rules that are applicable to the EWP Program. However, the discussion is incomplete when compared to the rules. For example, the rules provide that measures are to be limited to the minimum that will reduce applicable threats to a level not to exceed that which existed before the impairment of the watershed. They also state that EWP measures are to be accomplished using the least damaging construction techniques and equipment that will retain as much of the existing characteristics of the channel and riparian habitat as possible. Since the rules for the program will be revised, all significant

requirements should be addressed in the EIS, along with an indication of which will be changed and criteria for insuring that those included will be met. Material changes to the environment as a result of these rule changes should be addressed in the EIS.

Discontinue use of Non-native plant materials in revegetation efforts

1 We believe that emphasis in the EWP Program should be placed on restoration with native vegetation. The introduction of non-native plants during revegetation efforts should be discontinued, especially in light of the recent Executive Order 13112, dated February 3, 1999. This Executive Order requires Federal agencies to prevent the introduction of invasive species and to not authorize, fund, or carry out actions that it believes are likely to cause or promote the introduction or spread of invasive species. It further defines invasive species as an alien species (alien in respect to what is native to a particular ecosystem) whose introduction does or is likely to cause economic or environmental harm or harm to human health. Introduction of non-native plant species as part of revegetation projects often has far-reaching, long-term adverse effects.

Protection of Anadromous Fish

2 Anadromous fish that cross watershed boundaries may be overlooked in the Proposed Action. The Proposed Action should include compliance with and reference to the Anadromous Fish Conservation Act, a trust authority that was enacted to protect anadromous fish moving in and out of watersheds to the ocean. In addition, a supporting trust authority, the Inter-jurisdictional Fisheries Act of 1986, provides for protective management of inter-jurisdictional commercial fishery resources, i.e., anadromous sea-going fish, many of which are Federally listed salmonids. This is in addition to the requirements of the ESA and consultation with the FWS and NMFS.

Corps of Engineer Permits

3 In some instances, potential adverse impacts of EWP projects are avoided only as a result of the Clean Water Act permit process (i.e., the EWP project is not authorized). In some cases, EWP projects have been implemented that were identical to projects for which the local sponsors had themselves previously failed to gain Clean Water Act authorization. The emergency nature of the EWP program can even provide a means to circumvent the normal permitting process of the Clean Water Act utilizing Nationwide Permit 37.

We recommend that the training provided on the EWP changes address this issue, including NWP 37. Misuses of NWP 37 have occurred because of 1) a misunderstanding of NWP 37 by NRCS staff, or 2) a misunderstanding of the EWP Program by Corps staff. NWP 37 is only applicable to "exigency" (soon to be called "urgent and compelling") situations. However, NRCS sometimes automatically applies for NWP 37 authorization. For example, one Corps District recently found that the projects they have authorized over the years under NWP 37 were seldom true emergencies. With so little time to respond under NWP 37, it is important that it be properly applied only to exigency or urgent and compelling actions.

1) The most recent listing of federally listed threatened and endangered (T&E) species has been incorporated by reference in the PEIS as described in revised Section 2.2.2.3 of Chapter 2, Draft PEIS Proposed Action Element #6 and Preferred Alternative Element #6 in Chapter 3.

2) NRCS will review the FEMA ESA model to determine applicability for the EWP program. However, due to limited and sporadic funding of the EWP Program, it is unlikely NRCS would provide funding to the U.S. Fish and Wildlife Service (USFWS) for the development of an ESA information packet. NRCS will continue to use available ESA information and ESA coordination requirements with the USFWS and NMFS.

3) A table has been added in PEIS Chapter 3 that compares the existing rule with the proposed rule.

DOI Page 6 Response Begins Below

DOI page 6

1) PEIS Chapter 5 Section 5.2.2 has been revised to reflect information on invasive and non-native plant species. The Executive Order 13112, dated 3 February 1999, deals with invasive species that are "alien" or introduced from other ecosystems. NRCS is in agreement that introduced invasive plants should not be used for restoration purposes. It is important to recognize however, that a non-native plant is not the same as an invasive one. There are many introduced plants that are not invasive.

Introduced plants can be used for solving conservation problems, especially when suitable native species are not readily available. Condemning all introduced plants, i.e., non-native species, would eliminate worthwhile species choices while making practical species selection very difficult. With respect to the Wetlands Reserve Program (WRP), for example, "Streamco" willow has been widely used for stream stabilization, and it hasn't posed invasive threats. No other plant has been found which has the attributes of "Streamco": shoot density, vigor, lack of spreading, and utter reliability.

(response continued at top of next column)

From a management standpoint, it is important to maintain flexibility in making species selection decisions. When dealing with situations that involve different soils, climatic regimes, moisture conditions, and growing seasons, managers need an arsenal of tools to successfully achieve revegetation. One of these tools needs to be the option of using introduced species. In some circumstances, it may be critical to use introduced species to achieve success in establishing a quick, soil-stabilizing ground cover.

The NRCS Plant Materials Program is recognized as an expert in providing critical plant science technology with practical applications. The program primarily evaluates native species, but it also considers some introduced species when appropriate. The outcome of the program's effort is to provide sound land management options with economic and environmental benefit. Native or introduced plants that present environmental and/or invasive problems are eliminated. NRCS also uses a risk assessment process where plants with invasive characteristics may be required. An Environmental Assessment/Environmental Impact Statement (EA/EIS) is prepared to document the impacts of introducing those species.

For the reasons outlined above, NRCS feels strongly that the flexibility to use non-native plant species needs to be maintained. Specific applications need to be judged on their own merit, and one option that should be available is the use of non-native plant species that are non-invasive.

2) NRCS will continue to comply with all applicable Federal and State laws, including the Anadromous Fish Conservation Act (AFCA). A reference to the AFCA has been added to the text in Section 2.2.2.3 and Draft PEIS Proposed Action Element 6 of Section 3.2.2.1.

3) In the past, the EWP Program was admittedly lacking in coordination, but the process of re-evaluating the program is what led to the Draft PEIS Proposed revised procedures and preparation of this PEIS. Implementation of the Preferred Alternative will lead to the determination of specific procedures for declaring "exigency" situations and how to proceed in those cases. Headquarters will provide guidance in the EWP Manual and EWP Handbook, but the State Conservationist will continue to be responsible for determining specific procedures for their State in coordination with various Federal and State agencies to comply with the requirements of applicable Federal, State, and local rules and regulations.

Abandoned Mine Land Inventory System

1 Our Office of Surface Mining believes the program should also apply to flood prevention and mitigation projects that are associated with or that may be aggravated by, abandoned or reclaimed coal mine lands where there is not a responsible company of person. The Abandoned Mine Land Inventory System has hundreds of "clogged streams" in its inventory of problem areas. These clogged streams often cause flooding and property damage. The NRCS program should provide funding to help correct these problems before a disaster occurs.

2 Both Federal agencies and non-government organizations are increasingly concerned with flood repair and mitigation work that ignores natural habitat conditions. Many federally-assisted flood repair projects have needlessly destroyed prime habitat for trout and other gamefish by ripping out stream substrate, straightening natural meanders, removing vegetation, and hardening the stream cross section with engineered structures. All projects under this program, including emergencies, should be constructed with the consultation of fisheries biologists or other professionals. The EIS should reference the 1998 publication, "Restoring Streams to Reduce Flood Loss" by Trout Unlimited and National Park Service.

SPECIFIC COMMENTS

3 **Sensitive Resources:** Throughout the document, there is a tendency to equate "sensitive resources" with threatened and endangered species. While listed species and their critical habitats fit this designation, there are other fish and wildlife resources that may also be important in an area and sensitive to the adverse impact of a project. These could include wetlands, anadromous and resident and anadromous fisheries, and important wildlife populations. The document should be revised to clarify this point and provide a more inclusion definition of what is meant by the term.

4 We also recommend that a clear definition of the term "emergency" be provided with an explanation of how this term compares to definitions of this term by other agencies and a "disaster" as declaration by the President.

Summary: The following comments on the Summary section of the PDEIS apply in many instances also apply to later chapter of the PDEIS where these factors are discussed in greater detail.

5 **Page S-9, Section S.5:** The statement is made that "potentially affected watersheds include those of the 50 States and territories, except coastal areas and Federal lands not managed by the U.S. Forest Service." The applicability of EWP work to Forest Service lands but not other Federal lands should be explained.

1 **Page S-12, Figure S.5-1, Map of location of EWP sites used to evaluate impacts:** The 14 sites used in impact evaluation do not appear to geographically represent all areas the United States. Major portions of the country (New England, the Southeast, the Mountain-Prairie Area and the Southwest have no or limited coverage. The sites used are all located in just 9 States within the coterminous United States. There was greater national coverage both by the reviews conducted by the Oversight and Evaluation Teams and in Table 2.5-6.

2 **Page S-12, last sentence:** The statement is made that General Administration changes are "simply procedural in nature and have no environmental impacts." The individual components of the General Administration group should be listed and an explanation provided of why they would have no environmental impact.

3 **Page S-13:** "Urgent and compelling" needs to be clarified by adding, "imminent threat to life or property that affects the health and safety of people." Further, improving disaster readiness can be improved by developing protocols established at the national level.

4 **Page S-14: Use of natural stream dynamics:** One approach to "the use of natural stream dynamics" would be to take no action. Often, the NRCS has felt the need to act immediately and implement actions without allowing natural processes to reestablish an equilibrium. This "do nothing" alternative is often not analyzed, yet may be the best long term solution and the least expensive. It is important to clarify that restoring channel capacity is not a form of restoration if it does not take into consideration natural stream dynamics.

5 In the discussion of the components of the Proposed Action, use of natural stream dynamics receives little more than passing reverence, and bioengineering is not mentioned at all. This discussion should be expanded to include all components of the Proposed Action, as this change in approach and philosophy is one of the most significant, increasing environmental benefits and reducing adverse impacts of EWP projects.

6 **Page S-23:** The cumulative impacts of the EWP program alternatives should include a discussion of impacts to upland vegetation or potential change in plant communities from the introduction of non-native species.

7 **Page 1-3, Section 1.2, Proposed Action and Purpose and Needs Specified:** A set process for review and certification, with required documentation, developed at the national level would strengthen the recommendation of the Oversight and Evaluation team recommendation to ensure more accurate site eligibility determinations.

8 **Page 2-2, Section 2.1.1, EWP Coordination with Other Agencies:** The FWS should be included as one of these agencies. Section 624.8 of the EWP regulations and section 509.30 of Part 509 to the National Watershed Manual provide for FWS involvement. The FWS should be a key player in EWP activities with regard to Section 7 consultation on Federally-listed threatened and endangered species and in making resource impact evaluations and

1) The clogged streams mentioned are pre-existing conditions and are not a result of natural disasters. While they may threaten property, these blockages that are not disaster-related are not under the purview of EWP. 2) Please refer to the comments from page 1 of 19 (comment #1) and page 2 of 19 (comment #2) regarding the selection of Alternative 4 and the past performance of the EWP program, respectively. The EIS does make extensive use of the Stream Restoration Handbook, published by the Federal Interagency Stream Working Group. 3) NRCS agrees. The PEIS text has been reviewed and revised where appropriate to clarify this distinction. 4) Definitions of the terms "emergency" and "disaster" are provided in Section 2.2.1 of Chapter 2—EWP Project Implementation Criteria. From the Draft EWP Final Rule: Watershed emergency means adverse impacts to resources exist when a natural occurrence causes a sudden impairment of a watershed and creates an imminent threat to life or property. Natural occurrence includes, but is not limited to, floods, fires, windstorms, ice storms, hurricanes, typhoons, tornadoes, earthquakes, volcanic actions, slides, and drought. 5) As of the date of publication of the Draft EWP PEIS, a Memorandum of Understanding (MOU) was in place between NRCS and the U.S. Forest Service (USFS) indicating that NRCS would fund EWP Program work conducted on USFS lands. That MOU expired in July 2003, and no other agreement between the NRCS and USFS has since been signed. Currently, the USFS does not go through NRCS to fund watershed projects, including EWP Program work. NRCS currently funds only its own EWP Program work, and will continue to do so in the future. However, NRCS still provides overall administrative direction and guidance to the USFS for EWP Program work. This information has been added to Chapter 2; however, this depth of information was not deemed appropriate for the Executive Summary.	1) The PEIS used a representative sample of 23 sites in 9 states where a majority of recent EWP work has been performed and does incorporate a variety of geographic conditions (also see the response to USEPA page 4, comment #1). NRCS believes this is an appropriate level of analysis for a programmatic level NEPA document. The Oversight and Evaluation (O&E) team performed a fundamentally different type of evaluation, involving no environmental impacts analysis. 2) The "General Administration" category was erroneously noted in the Summary and has been deleted from it and Section 5.2.6 of Chapter 5, because no elements of the Draft PEIS Proposed Action fell into this category. 3) A full definition of "urgent and compelling" under Alternative 2 (Draft PEIS Proposed Action) is provided earlier in the Summary on page S-5. It was deemed unnecessary to continue to carry this full definition throughout the document. 4) The primary goal of EWP is to protect life and property threatened by sudden watershed impairments. This goal may conflict with allowing the time necessary to re-establish a natural equilibrium for stream restoration. However, efforts are being made to incorporate natural stream dynamics into design of restoration measures wherever possible. 5) The description of using the principles of natural stream dynamics has been expanded to define more clearly the methods used. 6) Table S.6-4 has been expanded to include uplands analysis and critical area treatment. 7) The PEIS does not address the eligibility or certification criteria. The revised EWP Manual and Handbook will describe the criteria and the Draft PEIS Proposed DSR in PEIS Appendix C will be used to document the process. Headquarters will provide guidance in the EWP Manual and EWP Handbook, but the State Conservationist will continue to be responsible for determining specific procedures for their state in coordination with various Federal and State agencies to comply with the requirements of applicable Federal, State, and local rules and regulations. 8) Section 2.1.1.6 has been added to include the USFWS in the description of coordinating agencies.

recommending mitigation measures. The FWS and NRCS have been partners in a number of EWP projects in recent years involving bioengineering techniques, streambank restoration, restoration of streams to include anadromous fishery measures, and use of easements to protect flood plain habitat important to fish and wildlife resources. (In the section on mitigation, the FWS should also be referenced as a source of information).

1 **Page 2-8, Section 2.2.1.2, Eligibility Criteria:** Several major criteria of the existing program are not included. Section 624.6(a)(4) of the existing regulations states that measures must be limited to the minimum that will reduce applicable threats to a level not to exceed that which existed before the impairment of the watershed. Section 624(c)(1) provides that measures must be the least expensive and environmentally sound. It further provides that measures are to be accomplished using the least damaging construction techniques and equipment that will retain as much of the existing characteristics of the channel and riparian habitat as possible. Section 624(c)(2) provides that measures needed to offset adverse impacts should be planned for installation concurrent with installation of the emergency measures, or within 30 days. The status of these requirements and those already listed in this section should be discussed for the alternative considered.

2 **Page 2-11, Section 2.2.2.3, Environmental Review and Inter-Agency Coordination:** Paragraph 2 references notification of FWS area and field offices. The FWS no longer has Area Offices. Under the ESA, consultation is required with the FWS and the National Marine Fisheries Service on listed species and critical habitats (see section on the ESA above). For example, the existing coordination mechanisms identified in paragraph 2 does not exist in Oregon.

3 **Page 2-13, Section 2.3.1, Practices that Restore Stream Channel (Hydraulic) Capacity:** The need for debris removal from streams needs to be carefully weighed against the need to retain stream debris as an important component of aquatic and fish habitats. This is particularly true as you move upstream into smaller streams. Watershed analyses being completed by many of the federal land management agencies often indicate that streams have been oversimplified, leading to degradation of aquatic and fish habitats. Agencies are actively involved in adding debris to streams through management actions such as tree pulling or placing of in-stream structures. The need to protect structures (such as bridges) is recognized and important. Interdisciplinary work with other agency fish biologists and hydrologists is encouraged when it comes to on-the-ground implementation. (The EIS does briefly discuss the benefits of debris deposition on page 5-6).

4 **Page 2-21, Section 2.3.5.1 Critical Area Planting:** The document provides emphasis on the use of natural materials, live plantings, and soil bioengineering for streambank stabilization, where appropriate. This emphasis is well placed. When considering live plantings, emphasis should be directed toward the use of native plants rather than exotics, when native materials are available. The use of non-native species and aerial seeding should be limited. (The EIS, page 2-22 discusses native and non-native plants without

emphasis on the native component). A concerted effort among all federal agencies to use native plants for stabilization-restoration projects will help encourage the private sector to develop a ready supply of such materials. They are currently often in short supply.

1 **Page 2-28, Economic Justification:** When assessing the cost associated with easements (and other EWP measures), all short-term and long-term costs and benefits should be considered. These should include the benefits to the environmental and natural resources from restoring the ecosystem and the application of methods that consider stream dynamics, bioengineering, and use of vegetation.

2 **Page 3-4, NRCS Proposed Action, Eliminate the term "exigency " and "non-exigency, and Stipulate the "urgent and compelling" situations be addressed immediately upon discovery:** The new "urgent and compelling" designation would have to be addressed immediately upon discovery and completed within 5 days of the site becoming accessible. The General Comments above address this issue.

The third paragraph on this page states that other agencies would be notified as quickly as possible after the fact. An explanation should be provided here or under coordination procedures of how this approach fits with the FWS's emergency ESA procedures for projects that may affect listed species, as described above.

3 **Page 3-6, Table 3.2-3, Priority Order of EWP Funding:** We believe that endangered and threatened species and the critical habitats would need to be addressed in priorities 1-3, since many actions taken for these priorities may impact listed species, especially those with limited distributions and low population numbers.

4 **Page 3-7, et seq., NRCS Proposed Action, Stipulate that practices be economically, environmentally and socially defensible and identify the criteria to meet those criteria:** The addition of a review process to insure that project implementation is socially defensible is a positive step. We understand that NRCS needs a tool which can be applied in a relatively quick manner due to the nature of the nature of the EWP. However, the proposed social/socioeconomic checklist would seem to be an oversimplification of this effort, unless interested local parties are involved in the development of the checklist.

The portion of this element on pages 3-7 and 3-8 that stipulates that practices be environmentally defensible may have significant environmental value; we recommend it be reflected in paragraph 2 of this section, which currently discusses only economic and social Defensibility.

5 **Page 3-8, Discussion and Figure 3.2-1:** The table presents the flow logic for Defensibility review of EWP practices. The social and environmental components of the chart can modify or stop the process. Placing these steps higher in the decision process may save money on design and implementation because NRCS would have input on social and environmental issues before the project is designed, reviewed, and determined technically sound. Under the process as

1) A table has been added to Chapter 3 that compares the existing rule with the Proposed rule. 2) Section 2.2.2.3 of Chapter 2 was modified to remove references to USFWS Area Offices. 3) The benefits of retaining instream woody debris are discussed in Chapter 5 and summarized in Chapter 3. 4) Please see the response to page 6 of 19, comment #1 for NRCS' explanation of the agency's policies on invasive and non-native plant species. **DOI Page 10 Response Begins Below**	2) Comment noted. NRCS' Preferred Alternative retains the terminology "exigency" and would not replace it with "urgent and compelling". In addition, under the Preferred Alternative, time to respond to exigent situations is lengthened from 5 to 10 days, allowing for more time to conduct appropriate agency coordination. Headquarters will provide guidance in the EWP Manual and EWP Handbook, but the State Conservationist will continue to be responsible for determining specific procedures for their state in coordination with various Federal and State agencies to comply with the requirements of applicable Federal, State, and local rules and regulations. 3) Table 3.2-3 lists priorities for funding of projects not priorities for environmental consideration. Threatened & endangered (T&E) species and their critical habitat would continue to be addressed in project environmental reviews under all priorities. 4) This standardized National Program checklist ensures consideration of relevant social values during DSR reviews. It is designed to be completed with local information when filled out at the project level by NRCS field personnel. NRCS field personnel enter specific local information and considerations unique to a particular community at the project level. Thus, DSR review ensures that local social considerations are factored into the design and implementation of projects. Draft PEIS Proposed Action Element 5 from Section 3.2.2.1 has been revised to include environmental factors in addition to the mentioned social factors for determining defensibility. "Environmental values" has also been added to "community values." This aspect of Element 5 is wholly adopted under the Preferred Alternative. 5) Any defensibility review must start with a technically sound project plan. The environmental and social defensibility review steps are concurrent with technical design as part of the DSR process.
DOI page 10 1) Upon consideration of the fundamental goals of the Program improvement, NRCS has changed its basic approach to approval of EWP work. The title of Draft PEIS Proposed Action Element 10 of Section 3.2.2.1 of Chapter 3 has been revised. The term "least-cost" has been eliminated and the Element now reads: "Apply the principles of natural stream dynamics and, where appropriate, use bioengineering in the design of EWP restoration practices." The purchase of floodplain easements or the use of bioengineering would be among the solutions considered in all cases. Costs alone would not dictate which solution is selected, as the solution must also be environmentally and socially defensible. NRCS believes these changes reflect the intent of the comment, as the focus is no longer on least cost solutions. Other factors, such as environmental resources, also would be used to determine the best solution as indicated in the related revision to Draft PEIS Proposed Action Element 5, paragraph 2. These aspects of Draft PEIS Proposed Action Elements 5 and 10 have been wholly adopted under the Preferred Alternative. ***(response continued at top of next column)***	

currently proposed, the project would be designed, reviewed, and determined technically sound before being evaluated for social and environmental Defensibility; therefore, if the project is found lacking in either area, the project would have to be redesigned and go through the process all over again. If would be helpful if agencies that would be consulted in conjunction with the flow logic outlined were also referenced in the figure.

1 We assume that the tiered review process discussed on page 3-8 would be used for "urgent and compelling" situations. If it would not, the rationale for not doing so should be provided. The third paragraph on page 3-8 references checklists as part of the Tier 1 environmental and social Defensibility reviews. We recommend samples of these checklists be provided in an appendix.

2 **Page 3-9:** The statement is made that "EWP work would be environmentally defensible if 1) the proposed recovery work would not adversely affect the environment or 2) any adverse effects would be adequately mitigated". We recommend that this statement be revised to say that EWP work would be environmentally defensible if 1) the proposed recovery work contains benefits for sensitive species and their habitats, 2) would not adversely affect the environment or 3) any adverse effects would be adequately mitigated.

3 This change recognizes NRCS's section 7(a)(1) federal agency responsibility to "utilize their authorities in furtherance of the purposes of the ESA by carrying out programs for the conservation of endangered species and threatened species listed pursuant to section 4 of the Act." Any EWP work should be scrutinized for opportunities to provide beneficial actions for listed species and their habitats and to proactively restore normal functioning to ecosystems.

4 **Page 3-9, NRCS Proposed Action, Training:** We agree that adequate training of emergency response personnel in issues pertaining to sensitive species and their habitats is critical. We recommend that this element include the advance identification of natural resources of importance as well as threatened and endangered species, as discussed above. We are pleased to see the provision of EWP disaster-readiness teams to participate in the development of Emergency Action Plans. The FWS can help NRCS identify sensitive natural resources as well as listed threatened and endangered species and critical habitats. In each geographic area, training should occur on methods of minimizing/avoiding affects on these species and their habitats. An example that has been used is development of a packet of waterproof, informational cards could be provided to each team that contain pictures of sensitive species and provide strategies for minimizing/avoiding impacts. Additionally, this packet could contain a tally sheet where location and level of impact on sensitive species is recorded so that after-the-fact consultation may be facilitated. In addition, consideration should be given to potential impacts of EWP projects on other Federal lands such as those under the National Wildlife Refuge System.

5 The section on Interagency Coordination does not mention the Bureau of Land Management nor the U.S. Forest Service. Both of these agencies are actively preparing watershed analyses - sometimes with significant input from large and small private landowners. This information

could be very useful in the implementation of the EWP, particularly if there are pro-active efforts undertaken for watershed protection.

1 **Page 3-11, NRCS Proposed Action, Allow repair of impairments to agricultural lands using sound conservation alternatives:** This item is confusing and seems to contradict itself between paragraphs. In addition, the FWS recommends that this provision require use of bioengineering and vegetative techniques to the greatest extent possible. NRCS technical specialists should be encouraged to use natural stream dynamics and seek ways of restoring natural stream processes such as reversing the effects of channelization, placement of in-streams structures, gravel replenishment, and return of natural flow regimes in conjunction with armoring, bioengineering, and vegetation to protect streambanks where appropriate. This would be consistent with the overall goal of the expanded program. The Consultation and Coordination section notes that a large part of the improvement that NRCS proposes to make includes protecting T&E species, cultural resources, wetlands, and other sensitive resources and helping in general to restore watershed health.

2 **Page 3-12, NRCS Proposed Action, Eliminate Requirement for Multiple Beneficiaries:** The PDEIS notes that NRCS policy has required multiple beneficiaries primarily to avoid windfall benefits to a single landowner and to ensure that the general public benefits from the Federal funds spent. It is stated that program experience indicates that only rarely does EWP site work result in substantial benefits to a single landowner. It is also stated that NRCS recognizes that natural resource issues affect areas that are not bounded by property ownership lines. Areas downstream of repaired sites benefit from repairs in ways that include sediment reduction and habitat preservation. These reasons argue against eliminating multiple beneficiaries. By keeping it, the program would not be subject to providing the windfall benefits discussed in those "rare" instances when they might occur.

3 **Page 3-12, NRCS Proposed Action, Application of Principles of Natural Stream Dynamics and Bioengineering to the design of EWP Practices:** We strongly support this item in the Proposed Action and commend NRCS for designating the document, "Stream Corridor Principles, Processes and Practices." We suggest that NRCS also reference Chapters 13, 16 and 18, in its Engineering Field Handbook, which deal with restoration and protection activities.

This element of the Proposed Action indicates that natural stream dynamics and bioengineering will be applied where they constitute the least cost defensible solution. This evaluation should include the costs of repetitive repairs and subsequent easement purchase, if applicable. The sum total could be more expensive than creating a stable and functioning stream segment through the application of hydrogeomorphic principles and use of bioengineering that will not be as subject to repeat damages.

4 We also recommend this section explain how "least-cost" is determined and the extent to which long-term protection (i.e., likelihood of the practice persisting over the long-term, thereby educing costs in the future) is factored into the equation. If long-term protection is not factored

1) The evaluation criteria for reviewing individual sites for environmental and social defensibility are included in Appendix C, in the Proposed DSR. 2) Draft PEIS Proposed Action Element 5 of Section 3.2.2.1 has been revised to include further explanation of the Tier 1 and 2 reviews. This aspect of Element 5 is wholly adopted under the Preferred Alternative. Any proposed EWP project must be environmentally defensible, meaning that it cannot adversely affect T&E/sensitive species or their designated critical habitats. Benefits to sensitive species or their habitats are not part of the defensibility review, but would be considered as part of the Tier 2 review, where those benefits could add to the economic or social benefits of protecting property in judging whether to proceed with project installation. 3) As noted above, the discussion of the tiered reviewing system in Draft PEIS Proposed Action Element 5 of Section 3.2.2.1 has been revised. Please refer to response #2 above. Under the Preferred Alternative, NRCS would proactively work to restore pre-disaster watershed functions in affected areas. It should also be noted that the EWP program is proposing increased use of bioengineering. 4) NRCS will consider these recommendations in implementing EWP training. DART teams were not adopted as part of the Preferred Alternative (Alternative 4). However, the Preferred Alternative does include several provisions to increase and facilitate agency coordination, including coordination with the USFWS to identify sensitive resources. Impacts of EWP projects on other Federal lands, including National Wildlife Refuge System lands, are considered as part of the environmental defensibility review. 5) Draft PEIS Proposed Action Element 6 of Section 3.2.2.1 has been revised to add USFS and BLM to the list for agency coordination. This aspect of Element 6 is adopted under the Preferred Alternative.	1) Draft PEIS Proposed Action Element 7 of Section 3.2.2.1 has been revised to clarify the discussion and to include reference to improved restoration practices. This aspect of Element 7 is adopted under the Preferred Alternative. 2) The only substantive change in policy is that downstream beneficiaries are assumed to be present and no longer need to be documented on the DSR. Any adverse impact associated with the "rare" instances in which windfall benefits to a single landowner occur are considered to be more than offset by the beneficial effects realized from the valuable time saved by NRCS staff to document downstream landowners. NRCS has recognized and will continue to recognize the benefits to downstream landowners and environmental resources. 3) Draft PEIS Proposed Action Element 10 of Section 3.2.2.1 has been revised to include the recommended references. 4) The EWP Program is a recovery program and not a program to solve watershed problems or develop long-term solutions. NRCS EWP projects are typically designed to promote near-term damage reduction and repair to the pre-disaster condition. To undertake a project beyond that level would be considered a betterment of the conditions that previously existed prior to the natural disaster and would not be eligible under the EWP Program.

in, we recommend that it be considered as a new element of Alternatives 2 and 3. In addition, it is possible that NRCS could use EWP funds in conjunction with actions under other emergency and non-emergency programs that, in combination, could be used to restore and protect natural functioning systems that have been extensively manipulated. In this way, stream ecosystems could be restored to a greater extent that allowed by EWP alone, creating naturally functioning ecosystems that can buffer and decrease the magnitude of flood and other catastrophic events at the same time.

1 The last sentence of the first paragraph on page 3-13 states that techniques that are more sensitive to the environment are effective only in certain situations and that sites would be evaluated individually. We recommend NRCS provide clarification of situations where environmentally sensitive treatments are not appropriate, taking into consideration long-term benefits.

2 **Page 3-13, NRCS Proposed Action, Purchase of Agricultural Easements:** The Proposed Action revises the classification system for eligible land and easement type to eliminate Categories 1 and 3 and include only Category 2. We recommend that only Category 3 be eliminated and that Categories 1 and 2 be retained. By eliminating Category 1, the NRCS would prevent full restoration of lands protected under an easement, and a floodplain may not fully recover. The EWP program would not provide adequate protection for fish and wildlife resources, particularly for the FWS's trust resources if Category 1 lands are excluded. Further, the lands under Category 1 often represent the most valuable to fish and wildlife resources. Including Category 1 lands for easements would be consistent with the purposes and restrictions on easements for non-agricultural land that would also be added under the Proposed Action.

3 NRCS should also reconsider the restrictions applied to the Category 2 easements. Landowners would be able to request authorization to use the purchased easements for compatible uses which would including managed timber harvest, periodic haying, or grazing. Cropping would not be authorized and haying and grazing would not be allowed on lands that are being returned to woody vegetation. While the prohibition against cropping would protect these areas, the rest of the allowable authorizations could result in reduced benefits from lands under easement. The language in an easement should require management that promotes restoration of ecosystem functioning and is beneficial to sensitive species and habitats. In some cases, this management may be more intensive and the purchase price for the easement may need to be commensurately higher. The long term benefits of this type of management far outweigh the short term additional costs that may be accrued. This section states that NRCS would make the final decision relative to the amount, method, timing, intensity, and duration of any compatible use that might be authorized. We recommend the language be modified to include consultation with the FWS when our trust resources may be affected before a decision is made because of our expertise and responsibilities under a variety of authorities.

Page 3-13, NRCS Proposed Action, Repair of Enduring Conservation Practices: This provision would allow for the repair of PL 566 project structures that are damaged beyond routine operation and maintenance capabilities. This provision would allow for the upgrading of

damaged or undersized structures and measures (such as a damaged levee). This provision should not be used to allow structures to be modified so that they provide greater protection than what existed before the impairment of the watershed (current regulations, section 624.6(a)(4)).

1 We also recommend that the language in the third paragraph be modified to include, and even emphasize, advances that make the structures more environmentally friendly. Consideration should be given in this section to abandoning structures when appropriate for environmental benefits. Environmental rehabilitation criteria should also be established for structures that have been in place for decades that do not meet current environmental standards. The environmental review should require that the structures meet environmental standards and needs when repaired.

2 **Page 3-14, NRCS Proposed Action, Partially Fund Improved Alternative Solutions:** This provision would allow NRCS to provide planning assistance to a sponsor who wanted to construct a more extensive project than that determined by NRCS to be necessary. Substitution of one practice for another would be allowed if benefits were not reduced and the sponsor paid additional costs. NRCS would discourage sponsors from going out on their own after completion of an EWP project and "adding to it" to ensure protection of EWP work integrity.

Several elements of this provisions are of concern. If the sponsor wishes to conduct work in addition to that identified as necessary by NRCS, then the sponsor should have to pay for the additional planning and environmental evaluation. Further, substitution of one practice for another could result in the substitution of "hard" engineering practices for a project that NRCS planned to include natural stream dynamics and bioengineering features. Sponsors may not understand the concepts involved in "greener" techniques and opt for traditional "hard" structural techniques. Lastly, NRCS should discourage additional actions by land owners on top of EWP projects not only where they jeopardize the EWP work, but also where they would be environmentally or socially unacceptable.

3 **Page 3-15-16, NRCS Proposed Action, Allow disaster-recovery work in floodplain areas away from streams and in upland areas; EWP Floodplain Deposition Recovery Practices:** This section states that decisions on what practices to use would be made by first considering removal of sediment or incorporating into underlying soil, then encouraging a floodplain easement where neither of these options is feasible. We recommend that the floodplain easement be considered first, or at least equally with the other two listed options. In addition, the measures discussed here should include revegetation of areas after sediment disposition and grading and shaping have taken place.

4 **Page 3-16, EWP Upland Debris Removal Practices:** Included in the measures under this provision is the removal of vegetation and wood debris. Consideration should be given to leaving woody debris that does not create a hazard. Fallen timber in wooded areas provide habitat for various forms of wildlife and eventually decays, replacing the organic matter of the forest floor.

5 **Page 3-17, Section 3.2.2.1., NRCS Proposed Action, Purchase easements on non-agricultural lands:** The last sentence, second paragraph, states that the purchase of easements

1) Draft PEIS Proposed Action Element 10 of Section 3.2.2.1 has been revised to state "There may be some situations where bioengineering would not be effective, and in these instances, structural engineering may be required." This eliminates the connotation of limited utility or applicability of bioengineering. These provisions are wholly adopted under Element 1 of the Preferred Alternative. 2) Although Category 1 easements are eliminated, there will be a requirement for maintaining buffer strips along waterways. The time, costs, and often small acreages involved with Category 1 easements necessitate this change. Surveys are required for Category 1 easements, driving up costs. To offset this, streamside buffers are required of all easements and will provide similar benefits. The width of these buffers will be maintained at a set width, even when the stream channel meanders. The PEIS text describing Draft PEIS Proposed Action Element 11 has been revised to make note of these points. This provision is adopted under Element 11 of the Preferred Alternative. 3) The objective of easements is to reduce the Federal expenditure for recurring damages and restore the hydrologic function of the floodplain, to the extent possible, to natural conditions. It is not intended that structural improvements will be made to the ecosystem. However, some improvements will occur as a result of the land treatment carried out to allow the floodplain to function properly. The required streamside buffer strip will provide additional habitat and should other organizations desire to partner with NRCS, there may be opportunities for them to fund practices which would not interfere with the primary objective of the easement purchase. Landowner compatible uses are only authorized if they do not conflict with the protection and enhancement of the easement's floodplain functions and values. The USFWS or National Marine Fisheries Service (NMFS) will be consulted in any instance where a federally listed T&E species may be affected by NRCS on an easement.	1) Draft PEIS Proposed Action Element 12 of Section 3.2.2.1 has been revised to remove references to "undersized practices" and to reflect that NRCS will only rebuild structures to pre-disaster condition, except in cases where State or local permits require further measures. All structural work will be performed with the intent of minimizing environmental impacts. 2) Improved alternative solutions carry the stipulation that a sponsor's cost-share rate substantially increases. By conducting the environmental evaluation and design work on any sponsored EWP restoration projects, NRCS would ensure the use of natural stream dynamics and bioengineering features, wherever possible whereas, if NRCS did not aid the sponsor in the design of these restoration practices, consideration of "greener" techniques could not be assured. Draft PEIS Proposed Action Element 10 of Section 3.2.2.1 has also been revised to stress that design based on natural stream dynamics will be used whenever feasible. This should eliminate concerns over sponsors using only structural engineering in improved alternative solutions. This aspect of Element 10 is wholly adopted under the Preferred Alternative. 3) Under the Preferred Alternative, NRCS would consider floodplain deposition removal or incorporation only for practices not eligible under the ECP Program. Easement purchase, removal of sediment, and incorporation of debris into underlying soil are all considered equally viable alternatives for floodplain restoration. Actual practices used would be determined on a site-specific basis. Floodplain easements would be the first option where a landowner is willing to sell their rights. The floodplain easement restoration plan would determine what seeding or other activity would take place. 4) Upland debris will be removed only when it poses a threat and the removal is defensible. Draft PEIS Proposed Action Element 14 of Section 3.2.2.1 has been revised to include: "consideration should be given to leaving woody debris that does not create a hazard." 5) NRCS retains the easement after purchase even if land title is transferred. NRCS would not allow any structural improvements. Draft PEIS Proposed Action Element 15 of Section 3.2.2.1 has been revised to reflect "the Secretary of Agriculture retains the easement but the fee title is owned by the locality." Compatible uses for floodplain easements would be determined on a site-specific basis and after a site-specific evaluation.

would include deed restrictions that would permit uses compatible with natural floodplain functions as determined by NRCS. The document should: 1) List the types of compatible uses NRCS would allow on easements, and 2) explain, if title for floodplain easements is given to the local town or municipality, what type of restrictions would accompany the deed transfer to assure the habitat remains free of development and permits natural floodplain functions.

1 **Page 3-20, Table 3.2-4 Economic, Environmental, and Social Defensibility:** The table states that actions would take into consideration threatened and endangered species. Please see our earlier comments on this subject.

2 **Pages 3-22 and 3-23 Integration of Alternative 3:** Parts 4 and 5 might be easily integrated into the proposed action, particularly in western states or counties with significant federal ownership. These parts of Alternative 3, which deal with a comprehensive watershed approach in high priority watersheds, could take advantage of the significant efforts already in place (completed watershed analyses, functioning watershed councils, etc.).

3 **Page 3-28, Aquatic Ecosystem Impacts:** Under the Proposed Action, the statement is made that aquatic ecosystems would continue to benefit in the short term from restoration of channel capacity and reduction of bank erosion at EWP repair sites. The hydrology of disaster-damaged stream reaches would be restored and turbidity and sedimentation reduced, which would improve conditions for aquatic life in many respects. This statement is in need of qualifications. Where environmentally acceptable methods are used and natural stream dynamics and bioengineering taken into consideration, this may be true. However, where increased capacity is restored through creation of uniform and straight stream channels and hard engineering on streambanks, measures taken may have an adverse impact of aquatic resources through increased velocity, removal of in-stream habitat and diversity, and instability as the stream attempts to reach a state of hydrologic equilibrium.

4 **Page 3-30, Riparian Ecosystem Impacts:** This discussion should apply to Streambank Impacts, including the riparian zone. It should also address the impacts associated with conducting EWP work. Equipment access and clearing and snagging activities often remove or adversely impact streambanks and riparian habitat.

5 **Page 3-44, Mitigation for [Impacts to] Aquatic Community Resources:** It is stated that adverse impacts could be mitigated through reducing the dependence on structural practices that harden stream banks, remove protective riparian vegetation and generally increase runoff and non-point source pollution. This section should also discuss mitigation of the physical impacts to the aquatic community that result from clearing and snagging activities, changes in channel morphology and the use of heavy equipment in streams. These factors are often major contributors to impacts to the aquatic community, particularly where the channel is gouged out and sized without consideration to the hydrology of the stream.

We recommend wording the first sentence of the first paragraph as follows:

> "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."

The second paragraph states that "NRCS would continue to consult with the FWS in any situation where there is a potential for jeopardy to a T&E aquatic species . . . ." This should be changed to read "NRCS would continue to consult with the FWS or NMFS in any situation where there is a potential to affect T&E species and critical habitat, and anadromous fish species . . . " Under the authority of the Anadromous Fish Conservation Act, the EIS language could be expanded to include anadromous species. As an example, spawning runs of adult salmon (coming into a watershed) and out-migrating runs of juvenile salmon (leaving the watershed) need to be considered in jeopardy situations. Also, other T&E species as such as grizzly bears, eagles, amphibians etc., that depend upon aquatic resources, need to be considered.

1 **Chapter 4 - Affected Environment:** The description of the projects that were analyzed for cumulative impacts, EWP practices and easements should be improved to provide a consistent description of the projects, impacts and measures used. The headings used vary from project to project, and the information contained under each section is not the same from project to project.

2 The analytical approach used through the application of Condition Classes discussed in the chapter and outline in Table 4.2-1 and 4.2-2 is so general that it does not account for the regional differences that would be inherent in the evaluation of a program that is nationwide in scope. For example, in Table 4.2.1 Aquatic Ecosystems Condition Classes, the criteria designating "excellent" conditions appears to be biased toward cold water streams. In some parts of the country, even the best streams would probably fall into the poor category for many of the conditions. In particular the Water Quality and Biota sections would seem to relegate most warmwater streams to the "poor" category. For example, Prairie streams in the West are often naturally very warm and shallow in the summer, and are favorable to the native species adapted to these conditions. However, the coldwater conditions that are ranked generally as favorable in the Table would be detrimental to warmwater species. We also have concerns with the "able to support gamefish" and "gamefish present" criteria. A similar condition would be true for many streams and rivers in the Southeastern United States. In addition, if the gamefish listed were present in prairie streams, many of the native minnows would be eliminated due to predation.

Similarly, Table 4.2-2 Riparian Habitat Condition Classes is also biased against prairie environments. Historically, the dominant streamside vegetation along most prairie streams was grass and forbs. Relatively recent human induced changes have allowed trees to become the dominant vegetation along many prairie streams, however, most of our highest quality prairie streams still retain grass and forb dominated streambank vegetation which would throw them into the "fair" category.

1) Comments regarding T&E species were previously addressed (please see responses to page 4 of 19, responses #1 and #2, as well as page 5 of 19, response #1). Additional information regarding T&E species was not deemed necessary for inclusion in Table 3.2-4. 2) Please refer to page 1 of 19, response #1 for the rationale for the selection of Alternative 4 as the Preferred Alternative. The EWP Program is administered on a national level. States or counties with significant Federal ownership are encouraged to develop their own specific watershed management plans. Additionally, the level of planning proposed in the comment has merit, but any personnel and funding required for such work would be at the expense of other NRCS programs, making such additional planning impractical at this time. 3) The reviewer appears to have the Draft PEIS Proposed Action and the No Action alternative confused. The reviewer states that, under the Draft PEIS Proposed Action, aquatic ecosystems would continue to benefit in the short-term from restoration of channel capacity and reduction of bank erosion. This statement is actually made under the discussion for Alternative 1, which is the No Action alternative. The discussion of aquatic ecosystem impacts is provided in Section 5.2.3 of this Final EWP PEIS. 4) Final EWP PEIS Section 3.4.2.2 has been expanded to address those impacts. A further discussion of riparian ecosystem impacts is provided in Section 5.2.3 of this PEIS. 5) The text has been revised to include a discussion of mitigation practices for aquatic resources.	1) Inconsistencies between projects are noted; however, only the most relevant information was included in Chapter 4 for each project. 2) The analytical approach and habitat/ecosystem condition classes used for the PEIS analysis are general but are deliberately chosen to be most useful as broadly applied to the ecological principles under consideration Program-wide. They are broad enough to account for the general range of regional differences in conditions that need to be addressed in the evaluation of this nationwide program. This is a programmatic document designed to give the reader a general understanding of the processes involved in implementing the NRCS EWP Program. It is to be used as guidance for State Conservationists; however it must be understood that the methods and procedures described in this document must be adjusted based on regional conditions. The habitat condition classes and other biological indicators are not intended for use by NRCS field staff in making detailed biological assessments at each EWP site. They are included as general guidelines to the biological conditions that NRCS staff need to be cognizant of when surveying disaster sites.

1 **Page 4-2, Section 4.1, Second Paragraph**: Designated critical habitat and areas under Habitat Conservation Plans, as defined by the ESA, should also be protected in the EWP process.

2 **Pages 5-6 and 5-8, Section 5.2.2.1.1. Impacts of Current EWP Watershed Restoration Practices. Practices that Restore Channel Capacity (Debris Removal). Effects of Disaster Debris on Stream and Related Ecosystems:** We recommend the paragraph on page 5-7 on effects of disaster debris on riparian, floodplains, and wetland ecosystems include the following:

"Flooding can be of benefit to wetlands and aquatic ecosystems even though it may change species composition or hydrologic function. Although debris deposition modifies topography so that some wetlands are negatively affected, new wetlands and riparian zones can develop. Scouring of a riparian area may remove decadent woody vegetation, providing a substrate for seed deposition and germination. Deposition of coarse debris in previously fine grain sediment areas can increase structural diversity of the ecosystem and increase biological diversity."

3 **Pages 5-0 to 5-13, Section 5.2.2.1.1. Impacts of Current EWP Watershed Restoration Practices. Practices that Restore Channel Capacity (Debris Removal). Effects of Current EWP Practices to Restore Hydraulic Capacity (Debris Removal):** This and other sections of Chapter 5 frequently mention that the EWP practice involved seeding or tree plantings. The FWS recommends that the EIS specify that native plant species indigenous to the area are used and that the goal of the planting (bank stabilization, habitat restoration, etc.) be established during the planning phase.

4 **Page 5-11, Summary of Impacts on Aquatic Ecosystem Parameters:** We recommend the section on biota indicate that removal of coarse woody debris may decrease the habitat created by the disturbance.

5 **Page 5-12, Effects on floodplain, wetland, and riparian community parameters:** We recommend that the paragraph on bank stability and erosion mention that, although debris jams that divert flows into wetlands may adversely affect the wetland hydrology, there are situations in which wetland hydrology may benefit.

6 **Pages 5-23 and 5-24, Table 5.2-2, Impacts Comparison of Streambank Protection Techniques:** We recommend that the sections of the table that discuss habitat structure and biota emphasize impacts to aquatic systems with include discussion of effects on riparian wildlife. Armoring would provide very little habitat for riparian ecosystem terrestrial species, whereas vegetative planting and seeding would have the potential to restore the riparian community, thereby providing habitat for amphibians, reptiles, birds, and mammals. We are particularly interested in improving habitat conditions for migratory birds, and use of natural materials would achieve this result.

1 **Page 5-26, Section 5.2.2.3.2. Impacts of EWP Dam, Dike, and Levee Repair or Removal:** The portion of this section entitled Summary of Impacts on Aquatic Community Parameters should mention that the long-term effects of dam removal on aquatic ecosystems would likely be positive, and that removal of the threat of dam failure could be beneficial to downstream communities as well.

2 **Consultation and Coordination:** This section is intended to comply with Section 40 CFR 1502.25 of the Council on Environmental Quality NEPA regulations. The NEPA document should make clear what environmental laws and Executive Orders must be complied with, and how that has or will be done. No information is provided that demonstrates how the activities carried out under the various alternatives would comply with state water quality standards including antidegradation, state and federal permits for stream alteration activities (dredging, riprap or other filling), endangered species consultation and watershed plans including total maximum daily loads (TMDLs) for water bodies on the 303(d) list of impaired waters. Where as here, the proposed action is a broad Federal action, the environmental document should have a focus on the method or methods of implementation. This would by necessity include mechanisms to ensure that NRCS program staff know what permits, consultations or authorizations are required for activities contemplated in each of the 50 states. This list required by sections 1502.4 and 1502.25(b) is not included.

The second paragraph, last sentence states that a large part of the improvement that NRCS proposes to make involves better communication, coordination, and planning with Federal, State, and local agencies in implementing EWP restoration work and easements and in protecting T&E species, cultural resources, wetlands, and other sensitive resources and helping in general to restore watershed health. The FWS recommends adding "...in protecting listed threatened and endangered species and critical habitats species through site-specific consultations ...". This summarizes NRCS's strategy for dealing with its section 7(a)(2) responsibility with the FWS.

3 NRCS should solicit more input from Indian Tribes. During the scoping process, only one Tribe provided comments. This may indicate that the Tribes have poor access to the program. The document should include a section on the federal trust responsibility and what steps will be taken to facilitate Tribal participation in the program.

Appendix B– Impact Analysis Methods

Section B.1.4.2 Impacts Flow Diagrams:

4 *Aquatic Impacts Flow chart* – The box titled Associated Vertebrates (black outline) includes: Fish-eating mammals, fish-eating birds, and others. Listed threatened and endangered species and critical habitats should be added to this list.

1) The text has been modified to refer to T&E species protected under Habitat Conservation Plans (HCPs). As outlined in previous comments (page 4 of 19, comments #1 and page 5 of 19 comment #1), pre-disaster planning and coordination will provide USFWS and other agencies the opportunity to help develop the emergency response protocols for sites involving T&E species. 2) The text has been modified to include further discussion of the benefits of flooding. 3) Please refer to page 6 of 19, comment #1 for information on NRCS' policies on the use of invasive and non-native plant species. 4) Section 5.2.2.1.2 has been revised to include additional discussion on the benefits of woody debris. 5) Section 5.2.2.1.2 has been revised to include additional discussion on the benefits of debris jams on wetland hydrology. 6) Table 5.2-2 has been revised to include additional discussion on the impacts to riparian habitat.	1) Section 5.2.2.3.2 has been revised to include additional discussion on the benefits of dam removal. 2) A table has been added to the Consultation and Coordination section, listing the applicable laws and Executive Orders that will be complied with in executing the EWP program. 3) Tribal organizations were contacted with regard to the scoping sessions described in Appendix A and were invited to participate. Many of these organizations chose not to attend or submit comments. NRCS has worked with many tribes and tribal organizations under the EWP program to protect homes, ceremonial grounds, and other culturally significant resources. 4) The Aquatic Impacts Flow Chart in Appendix B has been revised to include T&E species and critical habitat.

1 *Aquatic Impacts Question sheet* - Under Short-term effects, in the Fish Box (lt. blue box) Add two questions to this box: Will construction activities be permitted when anadromous fish are migrating out of the watershed or returning to the watershed? If so, how will these runs be protected? Salmon and steelhead are protected under the authority of the Anadromous Fish Conservation Act and the Interjurisdictional Fisheries Act of 1986. Construction activities that might interfere in these crucial life stages of salmon need to be evaluated.

Thank you for the opportunity to provide these important comments.

Sincerely,

Willie R. Taylor, Director
Office of Environmental Policy
and Compliance

cc: Mangi Environmental Group
EWP - PDEIS Comments
P.O. Box 745
Falls Church, VA 22040-0075

COMMENTS ON THE EMERGENCY WATERSHED PROTECTION PROGRAM DRAFT PROGRAMMATIC ENVIRONMENTAL IMPACT STATEMENT PREPARED BY THE NATIONAL RESOURCE CONSREVATION SERVICE
January 31, 2000

FEMA Region 10 has the following comments:

Alternative actions presented in the draft PEIS include:

1) No Action, which would continue the program and program goals as they are now implemented;
2) EWP Program Improvement and Expansion, which would improve program delivery and expand the EWP Program to include disaster work that is not now eligible and include improved property in the easement purchase program;
3) Prioritized Watershed Planning and Management, which, combined with alternative #2 measures, emphasizes coordinating, prioritizing and funding for local watershed planning efforts, including watershed disaster readiness and mitigation.

1 We recommend Alternative #3, Prioritized Watershed Planning and Management for implementation. This alternative is more in line with the goals outlined in the FEMA Project Impact initiative, Flood Mitigation Assistance Program (FMA) and the post planning emphasis of the Hazard Mitigation Grant Program (HMGP). All these programs share the goal of planning and coordinating elements that would prepare a community for future disasters and involves "interested stakeholders" (private and corporate) in the process of disaster readiness planning and mitigation. Additionally, increased funding for the purchase of floodplain easements with improvements is in line with most, if not all, state/local hazard mitigation plans and with the goals of the FEMA HMGP and FMA. Although the NRCS' preferred alternative is presented as #2, Alternate #3 would best complement FEMA's mission and goals.

2 2) Only one site in Region 10 was used as an example site to determine impacts of the proposed actions. This site was an upland burn site in Boise, ID that required revegetation to prevent erosion and did not involve anadromous fish species. Additionally, the sites in California do not address the impacts on anadromous fish species. This precluded an evaluation of the analysis of the proposed measures regarding in-stream and/or riparian project impacts on salmon and steelhead species designated as threatened or endangered in Washington, Oregon, Idaho, and California.

3 3) The only indication that the National Marine Fisheries Service (NMFS) was consulted is found in App. A. The NMFS has jurisdiction over the salmon and steelhead species that are listed as threatened or endangered, and regulatory authority over actions taking place in the species range. Recommend, subject to the absence of their input, that the document include the NMFS with the USFWS for any reference regarding Threatened and Endangered Species.

1) The Aquatic Impacts Question Sheet in Appendix B has been revised to include anadromous fish.	b. To a large extent, NRCS has integrated the management of its watershed programs as described in Alternative 3 within the Water Resources Branch of the NHQ Financial Assistance Programs Division working closely with the NHQ Easement Programs Branch. Together they oversee the recovery practices and floodplain easements portions of EWP and provide funding and technical assistance and training to the NRCS State Offices. But NRCS is limited in fully implementing the scope of Alternative 3 primarily by funding constraints. Several NRCS watershed programs currently exist under P.L. 566 and P.L. 534 that address watershed planning and management and include measures for watershed protection and flood prevention, as well as the cooperative river basin surveys and investigations. Under the new Watershed Rehabilitation Program, NRCS works with local communities and watershed project sponsors to address public health and safety concerns and potential adverse environmental impacts of aging dams. NRCS so far has undertaken 118 projects in 20 States to assess the condition of and repair of more than 10,000 upstream flood control structures built since 1948. The structural and non-structural practices implemented and the easements purchased under those programs have greatly reduced the need for future EWP measures in project watersheds. Nevertheless, EWP must remain available to deal with the aftermath of major disasters regardless of improvements under the other watershed programs.
FEMA Region 10 Response Begins Below	
FEMA Region 10 page 1	2) The environmental analysis does generally address salmonid species. Please see Table 4.2.1 for information on the aquatic ecosystem condition classes. Additionally, Draft PEIS Proposed Action Element 6 of Section 3.2.2.1 addresses pre-disaster coordination with wildlife agencies, and would include coordination on specific measures to protect salmonids or other sensitive species. This coordination is adopted under the Preferred Alternative.
1) NRCS recognizes that Alternative 3 "Prioritized Watershed Planning and Management" would likely be the environmentally preferable alternative. However, the agency supports Alternative 4 as its Preferred Alternative because:	3) Draft PEIS Proposed Action Element 6 of Section 3.2.2.1 has been revised to include NMFS in the list of coordinating agencies. This coordination is adopted under the Preferred Alternative.
a. Current law, as interpreted by USDA legal counsel, limits activities conducted under EWP primarily to disaster recovery work. Alternative 3 would add a substantial increment of preventative measures to reduce future flood damages. Legislative authority would be required to implement such a major expansion of the purpose of EWP under Alternative 3.	
(response continued at top of next column)	

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
777 Sonoma Ave, Suite 325
Santa Rosa, CA 95404

FEB 14 2000 F/SWR4:JD

EWP Draft PEIS Comments
P.O. Box 745
Falls Church, Virginia 22040-0075

To Whom it May Concern,

This letter serves to provide comments on the draft programmatic environmental impact statement (DPEIS), prepared by the Natural Resources Conservation Service (NRCS), which describes the Emergency Watershed Protection Program (EWP). The purpose of the EWP program is to protect lives and property largely in the event of flooding and its related processes such as stream bank erosion. In cases of imminent threats to someone's life or property, the NRCS is authorized to conduct emergency repairs to waterways. Throughout the document, the plan refers to consultations with the USFWS in cases where threatened and endangered (T&E) species may be impacted by their actions in this program. The requirement for these consultations comes from the Endangered Species Act of 1973, section 7 (a)(2) which states "Each Federal agency shall . . . insure that any action authorized, funded, or carried out by such agency . . is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of habitat of such species . . ." The National Marine Fisheries Service (NMFS) is the consulting agency for the species that fall in our jurisdiction. Here in California this most often refers to anadromous salmonid species, coho and chinook salmon and steelhead trout. This is a minor point since NRCS recognizes that consultations are a part of the current EWP process and will continue to be so in the proposed revisions. The vast majority of EWP work in this region is conducted in the dry months and requires these consultations in all cases. Even during a storm event, NRCS proposes a sequential checklist that must be completed before a project can begin (page 3-5, second paragraph). An emergency consultation with NMFS or The United States Fish and Wildlife Service (USFWS) needs to be added to this list for NRCS to be in compliance with their Endangered Species Act (ESA) responsibilities described at 50 CFR 402.05.

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The proposed action (alternative #2) is acceptable to the NMFS's interests. It involves streamlining current parts of the program to eliminate confusion, expedite processing and boost eligibility for participation. It also seeks to expand the EWP program to incorporate greater use of property easements for floodplain development or restoration. The proposed action would allow continuing use of the purchased properties for agriculture, silviculture or grazing on a case-by-case basis only. Currently the program allows for three different types of easements. NMFS and/or USFWS must

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be consulted in those locations that contain T&E species before granting use rights if NRCS determines that such uses might affect listed species.

The proposed plan would also eliminate sites from funding consideration which are impacted more than twice in a ten year period. This could help encourage the retirement of these lands and the development of floodplains in these obviously flood prone areas. These actions have the potential to greatly benefit our T&E species.

All actions in the proposed action must be considered in a watershed context. We believe NRCS is incorporating this approach into the program through element five of the proposed action. Element five calls for proposed EWP emergency actions to be environmentally defensible. Language explicitly recognizing effects of proposed actions on the watershed and the anticipated effectiveness of the action based on watershed conditions should be incorporated into this section. This type of consideration would be automatic under alternative three.

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Alternative three in the DPEIS calls for large scale watershed planning and management to allow the NRCS to proactively address watershed problems. Most of this plan is similar to the preferred alternative (#2). NMFS would prefer to see this alternative adopted as the advance planning could prove beneficial to T&E species. EWP project priorities should be determined through conjunction with other watershed based programs to maximize benefits. Other programs or plans that should be consulted include the Clean Water Action Plan, states' TMDL programs and unified watershed assessments, the National Estuary Program and state nonpoint source pollution prevention plans. This level of analysis could allow NRCS and its partner agencies, such as NMFS, USFWS and EPA, to protect human lives and property while making improvements to watersheds that provide critical habitat to T&E species. In essence the EWP could solve multiple problems at one time. NMFS recognizes that the scale of the endeavor may require deployment of significantly more resources by the NRCS. We also know that planned activities may be delayed due to unforeseen emergencies which take funding priority. Still the analysis could be used as a tool by other agencies to determine their funding priorities, where applicable, and build strong partnerships between federal, state and local agencies.

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Specific Page and Section Comments:

1. Page S-5 - Number 10
Natural stream dynamics and bioengineering should be the first choice in designing EWP measures whether they are the lowest cost practical solution or not. We recognize that during some storm situations there will not be time to choose these methods. However it must be noted that allowing the stream to function naturally is generally the best manner to avoid repeated problems at the site while avoiding the creation of problems downstream. The DPEIS itself makes this point and recognizes the benefit of using bioengineering techniques and natural stream dynamics instead of armoring practices such as riprap and gabions to threatened and endangered species on page S-15 and in other locations in the proposal. It should also be recognized that

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1) The PEIS cannot specifically state what procedures will be followed for each disaster at each site, but the pre-disaster coordination and planning outlined in Draft PEIS Proposed Action Element 6 in Section 3.2.2.1 would determine what response would be taken for sites involving T&E species, cultural resources, and other sensitive resources. This aspect of Element 6 is adopted under the Preferred Alternative. Headquarters will provide guidance in the EWP Manual and EWP Handbook, but the State Conservationist will continue to be responsible for determining specific procedures for their state in coordination with various Federal and State agencies to comply with the requirements of applicable Federal, State, and local rules and regulations. 2) NRCS complies with Endangered Species Act (ESA) Section 7 consultation requirements in all cases. This language has been added to Draft PEIS Proposed Action Elements 11 and 15 of Section 3.2.2.1. These aspects of Elements 11 and 15 are wholly adopted under the Preferred Alternative. The EWP Manual will address easements and how compatible uses will be reviewed so as to not affect T&E species or other protected resources. NRCS would consult with USFWS and the National Marine Fisheries Service (NMFS) on compatible uses if protected resources are found at the easement site. Specific procedures will not be provided at the national level. Headquarters will provide guidance in the EWP Manual and EWP Handbook, but the State Conservationist will continue to be responsible for determining specific procedures for their state in coordination with various Federal and State agencies to comply with the requirements of applicable Federal, State, and local rules and regulations. **NMFS CA Page 2 Response Begins Below** **NMFS CA page 2** 1) The event-wide DSR and cumulative impacts discussion (as described in response to EPA Supplement page 1, response #1) will address watershed level impacts. 2) NRCS recognizes that Alternative 3 "Prioritized Watershed Planning and Management" would likely be the environmentally preferable alternative. However, the agency supports Alternative 4 as its Preferred Alternative because: ***(response continued on top of next column)***	a. Current law, as interpreted by USDA legal counsel, limits activities conducted under EWP primarily to disaster recovery work. Alternative 3 would add a substantial increment of preventative measures to reduce future flood damages. Legislative authority would be required to implement such a major expansion of the purpose of EWP under Alternative 3. b. To a large extent, NRCS has integrated the management of its watershed programs as described in Alternative 3 within the Water Resources Branch of the NHQ Financial Assistance Programs Division working closely with the NHQ Easement Programs Branch. Together they oversee the recovery practices and floodplain easements portions of EWP and provide funding and technical assistance and training to the NRCS State Offices. But NRCS is limited in fully implementing the scope of Alternative 3 primarily by funding constraints. Several NRCS watershed programs currently exist under P.L. 566 and P.L. 534 that address watershed planning and management and include measures for watershed protection and flood prevention, as well as the cooperative river basin surveys and investigations. Under the new Watershed Rehabilitation Program, NRCS works with local communities and watershed project sponsors to address public health and safety concerns and potential adverse environmental impacts of aging dams. NRCS so far has undertaken 118 projects in 20 States to assess the condition of and repair of more than 10,000 upstream flood control structures built since 1948. The structural and non-structural practices implemented and the easements purchased under those programs have greatly reduced the need for future EWP measures in project watersheds. Nevertheless, EWP must remain available to deal with the aftermath of major disasters regardless of improvements under the other watershed programs. 3) Upon consideration of the fundamental goals of the Program improvements, NRCS has changed its basic approach to approval of EWP work. The title of Draft PEIS Proposed Action Element 10 of Section 3.2.2.1 of Chapter 3 has been revised. The term “least-cost” has been eliminated and the Element now reads: “Apply the principles of natural stream dynamics and, where appropriate, use bioengineering in the design of EWP restoration practices.” Hydrogeomorphic design and use of bioengineering likely would not be the least cost solution in all cases. However, costs alone would not dictate which solution is selected, as the solution must also be environmentally and socially defensible. NRCS believes these changes reflect the intent of the comment, as the focus is no longer on least cost solutions. Other factors, such as environmental resources, also would be used to determine the best solution as indicated in the related revision to Draft PEIS Proposed Action Element 5, paragraph 2. These aspects of Elements 10 and 5 have been wholly adopted under the Preferred Alternative.

the use of bioengineering for stabilization may allow for subsequent planting in the riparian areas. The plants may provide shade to the stream to help keep temperatures lower, provide debris to the waterway and habitat for important riparian species.

2. Page S-8 - bottom of page

1 Repairing roads in watersheds where the roads are a main cause of the flooding problem (e.g. logging or ranch roads which have caused excessive erosion that reduces the carrying capacity of the stream) should be considered, particularly for the preventative work proposed under alternative three. These roads should be decommissioned where possible or hydrologically disconnected from the streams in other cases.

3. Page S-9 - 1st paragraph

2 A better definition of coastal areas would be helpful. We are assuming that it refers to the actual beach and shoreline areas and not the entire coastal river or stream watershed. We also assume that lands under the control of the Bureau of Land

3 Management are not eligible for consideration in this program. An explanation of this would be helpful.

4. Page S-17 - 4th paragraph

4 "Streamside buffers would be required on all easements." This is consistent with NMFS requirements with respect to critical habitat for listed salmonids. The DPEIS should describe in more detail how streamside buffers are designed. For instance, do they incorporate a margin of safety for waterways containing T&E species? Riparian zones are critical habitat areas for salmonids. They provide stabilization to the stream banks and are a source of food and the large woody debris required by salmonids for cover and pool formation. They also aid in regulating stream temperature not only by shading the stream but also serving as wind buffers. In sufficiently thick riparian zones this maintains higher humidity around the streams which reduces temperature fluctuations. The ESA requires NRCS to consult with NMFS and/or USFWS for all funded projects which may impact T&E species. Buffer design on newly acquired federal lands could fall under this clause.

5. Page 1-3 - Last paragraph

5 In limiting the use of the term "exigent", include consideration that the work can only qualify if T&E species are not present or an emergency consultation is acquired from NMFS and/or USFWS, as appropriate.

6. Page 1-4 - 3rd paragraph

6 Revise policy to emphasize restoration and consider bioengineering and natural stream dynamics as the first option for planning and design.

7. Page 2-2 - 6th paragraph

7 Consider authorizing improvements while repairing and restoring flood-control structures. For example if a check dam washes out, it should be replaced by a structure that has fish ladders or some other means of passage available. The additional cost for minor or well known improvements that benefit T&E species may be negligible or covered by another entity. Consider these improvements at upstream sites even if structures downstream do not yet allow passage. This can increase the possibility of restoring the waterway downstream of the repair site and NRCS could get the credit for starting the process on the impaired waterbody.

8. Page 2-26 - 6th paragraph

1 NRCS must consult with the NMFS or USFWS on possible compatible uses and their intensities where T&E species are present and when NRCS determines that such uses may affect listed species or critical habitat.

9. Page 3-5 - 2nd paragraph

2 Include an emergency consultation concerning T&E species in your list of actions. There is plenty of time available (can be a same day phone call for many situations) if all of the other actions are taken. Consultations may help avoid worst case scenarios for T&E species in these situations, if at all possible. We are concerned that the urgent and compelling designation would be used to circumvent the permitting process for T&E species concerns in some cases without NRCS personnel being aware of possible conflicts. The emergency consultation provision (50 CFR 402.05) describes the emergency consultation process under section 7 of the ESA. The objective is to facilitate emergency work needed to preserve lives and property while ensuring that adverse impacts will be remedied.

10. Page 3-9 - Paragraph 3

3 We are pleased that this section recognizes that EWP actions may be affected by T&E species considerations including the possibility that work may not be able to be conducted. Minimization of impacts is required in all situations involving T&E species. Mitigation is typically thought of as creating habitat at a location in response to altering or destroying it in another location. Mitigation of impacts to habitat may be approved on a case-by-case basis by the consulting agency. However the loss of T&E species themselves cannot be mitigated and must be avoided or minimized as much as possible. Where "take" of listed species occurs pursuant to EWP actions, such take will be addressed in the Incidental Take Statement produced by the emergency consultation conducted according to 50 CFR 402.05.

11. Page 3-13 - Element 11

4 As mentioned elsewhere, NRCS may need a T&E consultation for these easement situations to determine appropriate compatible land uses.

12. Page 3-14 - Element 13

5 Even if the sponsor chooses not to pay for an upgrade or additional work, consider looking to outside sources for that funding if an upgraded project can benefit a T&E species. In no situation should an improperly functioning structure or a structure with a flawed design (whether known at the initial time of installation or not) be reinstalled just because it was previously in place. Any structure installed will need to meet NMFS and/or USFWS criteria.

1) The EWP program has no authority to decommission roads, unless the road falls within a floodplain easement. Additionally, EWP would not be repair any roads, paved or unimproved. Not repairing these roads will serve much of the same function as decommissioning them, since future use of the road will be discouraged. 2) The assumption is correct. The definition of coastal areas has been revised to include beaches, dunes, and coastlines. 3) Chapter 2 and the Executive Summary have been revised to clarify that NRCS does not fund EWP Program work on any lands administered by other Federal agencies, including the Bureau of Land Management. 4) In the case of salmonids, consultation on certain conservation practices (including buffers) has been initiated. Please refer to Appendix C for the conservation practice standard for buffer strips (listed as forested conservation buffer strip). Each state has the authority to modify the national standards, and can incorporate concerns that individual states may have, such as salmonids. NMFS, USFWS, and the public are all provided an opportunity to comment on the development of these state standards. Draft PEIS Proposed Action Element 6 of Section 3.2.2.1 also outlines the pre-disaster planning process, where such concerns could be raised. This aspect of Element 6 is wholly adopted under the Preferred Alternative. 5) Chapter 1 discusses the current program and the Purpose and Need for the Draft PEIS Proposed Action. These sections are simply stating the results of the Oversight and Evaluation (O&E) team results. 6) Chapter 1 discusses the current program and the Purpose and Need for the Draft PEIS Proposed Action. These sections are simply stating the results of the O&E team results. 7) The comment refers to activities under the purview of the USACE. These activities are not subject to NRCS review. Any improvements done during the repair of enduring, structural, or long-life conservation practices would be considered on a case-by-case basis.	1) NRCS would continue to comply with Section 7 consultation requirements in all cases of compatible use determination on floodplain easements. 2) The PEIS will not specifically state what procedures will be followed for each disaster site, but the pre-disaster coordination and planning outlined in Draft PEIS Proposed Action Element 6 in Section 3.2.2.1 will help determine what response will be taken for sites involving T&E species, cultural resources, and other sensitive resources. The interagency coordination and planning aspects of Element 6 are wholly adopted under the Preferred Alternative. Any site eligible for EWP Program work under the Preferred Alternative, whether an exigency or emergency, would be required to be environmentally and socially defensible. 3) No response required. 4) Please see the response to page 4, comment #1 (above) for NRCS' explanation of the consultations required under Section 7 of the ESA. 5) NMFS and USFWS will be consulted in compliance with the ESA if any solution may possibly result in adverse effects to T&E species. In these cases, NMFS and USFWS would help develop improved alternatives.

13. Page 4-9 - Table 4.2.1 (continued)
Under the dissolved oxygen column - Excellent should be >7ppm (looks like a typo)
For the fair and poor categories, consider 5-6 ppm and <5 ppm respectively. This may seem to be a minor change, but anytime the dissolved oxygen is below 5 ppm, the water quality is considered poor for our salmonid species. Not only is there insufficient oxygen for the fish that are present, but the low levels also serve as a block to further migration and are detrimental to developing eggs and alevin. It may be necessary to determine the beneficial uses of each individual water body before determining the appropriate dissolved oxygen for that body due to the different habitat requirements for cool and warm water fish.

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If you have any questions regarding these comments, please contact Mr. Joe Dillon at the above address or by telephone at (707) 575-6093.

Sincerely,

James R. Bybee
Northern California
Habitat Manager

cc: J. Slawson
J. Ambrosius

NWS-OD-EM

15 Feb 2000

Memorandum For: OD-EM, ERS, Natural Resources Conservation Service (NRCS), Interagency Levee Vegetation Management Committee

Subject: Seattle District Emergency Management Branch Comments: Draft Programmatic Environmental Impact Statement, Emergency Watershed Protection (EWP) Program

1. Background. Thank you for the opportunity to comment on the NRCS Emergency Watershed Protection DPEIS. Reviewers noted that the EWP Program resembles the U.S. Army Corps of Engineers (COE) Public Law (PL) 84-99 Emergency Response authority, in that the NRCS EWP Program also responds to "life and property-threatening watershed impairments caused by natural disasters". Local sponsors, such as counties and conservation districts, that request EWP assistance, must provide at least 20% funding of any EWP watershed repair practices, the same cost-share as PL 84-99. Damage Survey Reports (DSR) are also prepared to evaluate the site damage and estimate repairs. NRCS may provide up to 80% of the funding and technical assistance for EWP practices that remove disaster debris, repair damaged streambanks, dams and dikes, protect floodplain structures, and restore critical watershed uplands. Flood damaged streambanks are protected by combinations of hard armoring, the use of woody structural materials, soil bioengineering, restoration of stream dimension, pattern and profile, vegetative plantings and seeding. Streambanks may also be indirectly protected by in-stream flow modifications. Similar design considerations as well as the physical activities of creating access to damaged sites, use of heavy equipment, materials disposal, grading, shaping and revegetation of project sites are similar to many COE levee repair projects. NRCS also coordinates with Federal and State agencies, tribal governments and local communities, and is charged with endangered species protection and the preservation of cultural and historic resources, including National Register properties. There appear to be many similarities in current NRCS and COE flood repair projects. In addition, NRCS administers a voluntary floodplain easement purchase program on agricultural lands. In small rural watersheds. It is noted that this aspect of the EWP Program may be considered one of the most responsive to local needs. The use of such easements, in suitable locations, would compliment other flood protection measures. (S-2, 3)

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2. The DPEIS describes no Recent Activities for Washington or Montana, however, Seattle District also includes the Idaho Panhandle and the 1996 EWP work documented in Boundary, Bonner, Kootenai, Shoshone, Benewah and Latah counties. It is, therefore, possible that NRCS EWP work could affect COE water resource projects. Furthermore, it appears that the NRCS and COE have simultaneously developed many similar mission profiles and practices. The Proposed Action reflects current Seattle District COE policies in several areas, particularly improved interagency coordination, clarification of eligibility requirements, consideration of non-structural alternatives, environmentally sensitive construction practices and the selective use and management of vegetation. Reviewers noted that the Disaster Assistance Recovery Training (DART) Teams described in Alternative 2 appear to be ideal for conducting interagency coordination and training missions with the COE and FEMA, as well as State and local agencies. The appropriate State Conservationists and affected COE Districts should meet to coordinate future activities. (S-5)

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3. There is some question regarding NRCS eligibility requirements for repairs to " agricultural dikes less than six feet high or nonagricultural dikes less than ten feet high, depending on individual state agreements with the USACE ". The only known written agreement is an MOA, dated 11 Mar 91, between the Soil Conservation Service and the Department of the Army. This document divides responsibilities and establishes coordination procedures as well as common eligibility requirements. The practice of dividing NRCS and COE flood response activities based on levee height or watershed size may require further coordination between the NRCS, COE, and other Federal, State and local agencies to accomplish restoration work in the most beneficial and cost-efficient manner. EWP work is typically conducted in small watersheds, often in the upper reaches and usually in rural or rural outskirts of urban areas, whereas the COE is usually involved in larger, more developed watersheds. Damages which do not exceed a certain

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1) The habitat condition classes used in Chapter 4 (see Section 4.2.1.2) have been updated to reflect the most current EPA guidance regarding stream classification.	1) No response required. 2) Draft PEIS Proposed Action Element 6 of Section 3.2.2.1 addresses pre-disaster planning and allows states and other outside parties to raise issues of particular concern. DART teams were not adopted as part of the Preferred Alternative. However, the Preferred Alternative includes several provisions to enhance and facilitate agency coordination. 3) Draft PEIS Proposed Action Element 6 of Section 3.2.2.1 addresses pre-disaster planning and would include allocation of duties among agencies as needed. Under the Preferred Alternative, NRCS would implement the interagency coordination and planning described in the Draft PEIS Proposed Action. However, training by DART teams would not be implemented, although technical advisory assistance would be made available from the National Office if requested. NRCS believes the commenter is referring to the Memorandum of Agreement (MOA) between the Soil Conservation Service (SCS) and Corps of Engineers (USACE) dated May 1986, found in Appendix J of the USACE Natural Disaster Procedures (ER 500-1-1), dated 11 March 1991. According to this MOA, the USACE "is responsible for repair of flood damage to non-Federal water projects installed for the purpose of controlling flood waters…This will normally include repairs to non-Federal flood protection projects (channels, levees, or similar works) in urbanized areas regardless of watershed size…" The SCS (now NRCS) is "responsible for repair of flood damage to non-Federal water projects that were installed 1) in small watersheds of 400 square miles or less for the purpose of flood prevention, or 2) for preventing erosion or damage caused by the products of erosion wherever located, except damages to features that are appurtenant to projects which are the responsibility of the [USACE]." In addition, the MOA stipulates that other assignments to the SCS and USACE may be made by FEMA under the provisions of P.L. 93-28B when a major disaster or emergency has been declared. For any non-Federal flood control project damaged by a natural disaster other than flood (e.g., fire, tornadoes, earthquakes, etc.), where assistance from the USACE under P.L. 39-28B is not authorized, the SCS will have primary responsibility for responding to applications for emergency assistance.

minimum cost level are not usually addressed by COE PL 84-99 repair work, however. It is hoped that the EWP may be adapted to such situations. Development of a precoordinated plan would provide consistent guidance for Federal emergency work, in the context of large-scale, long-term, riverbasin management. Some flood events could allow opportunities for cooperation and coordination between NRCS, the COE, state, tribal and local project sponsors to address specific local issues together. (S-9)

4. The EWP's Affected Environment includes "all States and territories except for coastal areas and Federal lands, which are not managed by the U.S. Forest Service". For the most part, this involves smaller, rural watersheds and tributary streams. The 1993 Midwest Floods were an exception, and demonstrated the ability of NRCS to repair larger levees on the Mississippi, a potentially valuable resource to COE Emergency Management personnel during periods of catastrophic flooding. Since COE authorities include coastal areas as well as the continental United States and the USFS has often requested COE assistance, there appears to be an opportunity for mutual benefit to further increase and improve coordination and cooperation between NRCS, the COE and other agencies.
The issues of Threatened and Endangered Species listings and Cultural Resources were addressed generically in this document, noting that ESA/CR considerations were handled on a case-by-case, site specific basis, with suitable protection measures developed for individual projects. This is an area of common interest that could be improved by increased interagency coordination and the development of consistent Federal watershed management practices. Examples of typical projects incorporating the issues of human community and cumulative impacts are displayed in Table S-3. Sharing of such long-term watershed assessments in a common GIS database could benefit other agencies, such as the COE, as well as the affected communities. (S-9, 10, 11)

5. Watershed Impacts range from existing practices, i.e, the " No Action Alternative" which have the greatest potential for adverse effects, would continue to protect all current uses of the flood plain and have the lowest likelihood of addressing watershed level effects such as water quality; to the "Prioritized Watershed Planning and Management Alternative", which is expected to reduce adverse impacts, increase beneficial effects and courage best use of the floodplain, while having the highest potential for community disruption and providing the greatest likelihood of addressing watershed level effects. The Proposed Action emphasizes improved habitat values and increases the use of easements to increase the level of watershed management beyond that of the current program. Although the wider use of easements would tend to disrupt older rural communities, restricted use of the floodplain would also reduce future property damages. The change in definition of 'exigency' to 'urgent and compelling' would hopefully reduce the number of qualifying projects, improve planning and coordination for critical repair work and allow NRCS to better protect life and property. Improving disaster readiness is another area that could be coordinated with FEMA, COE Emergency Management, State and local Emergency management, tribes and resource agencies. Limiting repairs to twice per decade appears to be a reasonable approach to preventing repeated repairs to the same structure if easements are not purchased. The Repair of Enduring Conservation Practices in concert with funding of Alternative Solutions and disaster recovery work away from streams, combined with the aforementioned interagency coordination, would likely improve overall riverbasin management. (S 12-14)

6. Effects of EWP Alternatives. Improved disaster readiness, identification of potential problems, simplification of regulations, limiting repairs in the same area, and the increased use of easements may lead to more efficient land use practices, reduced costs, and improved habitat values, particularly by removing developed land uses and returning the easement tract to a more natural state. The protection of Federally-protected resources would then require priority funding. There should be some clarification, particularly additional funding to address ESA considerations. Social Considerations would be added to a project Defensibility Review, the requirements for eligibility being determined in part by " socially compelling reasons". Environmental benefits could be enhanced or diminished by this factor. (S 14, 15)

7. General Comparison of Alternatives; The existing EWP Plan addresses the needs of many, predominantly rural, residents for flood control. Alternative 1, No Action (existing program) continues these traditional levee repair and maintenance practices, which, combined with Floodplain easements, would result in the maintenance of existing land use practices, with consequent effects on riparian vegetation, fish and wildlife habitat. Alternative 2, the Proposed Action, addresses many issues in contemporary flood control. The increasing use of selected vegetation and use of large organic debris, along with the purchase of additional floodplain easements would encourage a more natural riparian zone and help restore hydrologic and biological function. Alternative 3, Prioritized Watershed Management, emphasizes planning and coordination as well as increased purchase of easements. This is also the most complex and costly alternative, although long -term benefits may also be expected to increase with time. Although the Proposed Action would address current EWP Program deficiencies, timely incorporation of Prioritized Watershed Planning and Management goals into other agencies planning efforts could result in an enhanced version of the Proposed Action. The Impacts to Affected Human Communities describes a number of conditions which would be affected by current and proposed EWP practices. Short term benefits from disaster payments, restoration of previous use and benefits to public health and safety are balanced by loss of employment and income, disrupted community networks, loss of agricultural production and the potential for ongoing repair activities. The Proposed Action and Prioritized Watershed Alternatives provided for more easements, fewer repairs and a reduced need for disaster assistance. Land use would be shifted from farming and commercial use to recreation, education and other non-consumptive activities. The criteria for 90% cost share in limited resource communities may be useful in areas where COE cost-benefit ratios do not allow smaller communities to qualify for PL 84-99 assistance. Watershed planning on a macro scale was mentioned as a benefit of the Prioritized Watershed Alternative. If possible, NRCS, together with the affected community and other involved agencies, should conduct such coordinated planning as a logical continuation of current land use planning. (S 16-21)

8. Cumulative Impacts would not change under the No-Action Alternative, with minor effects on water quality and habitat values. The Proposed Action would emphasize environmentally sensitive implementation of EWP practices. Overall, conditions would be expected to improve over time, with easements, reduced erosion and sedimentation leading to improving water quality. Long term solutions would be implemented to reduce habitat loss and restore floodplain function. The proactive and integrative Alternative 3 would provide the greatest environmental benefits by concentrating resources to restore the most heavily damaged or disaster-prone watersheds. The "adequate steps" described for locally led conduct of the watershed plan is another area where benefits may result from increased interagency coordination. Mitigation of EWP Program Impacts involves use of natural design and bioengineering. Reduced armoring of streams, where practicable, would result in improved riparian habitat and mitigation for construction impacts. Continued coordination with USFWS and other Federal, state and local agencies as well as the landowning public would ensure adequate resource planning and the mitigation of adverse project impacts. Human communities impacted by EWP activities could be mitigated by adequate consideration of local priorities. This could include selection of local contractors, preservation of community structures, local meetings or obtaining local funds from other agencies. Reviewers stated that restoration programs without sufficient funding support are not likely to provide lasting community benefits. Cultural Resources Impacts are addressed through coordination with the appropriate State Historic Preservation Office. Mitigation for Cultural Resources is determined on a site-specific basis during the defensibility review. (S 22-26)

Section 2.1.1.1 Page 2-2 Under " The USACE provides..." please add, " Temporarily raising the height of levees with sandbags"; and "Strengthening flood control works with armor rock". Under " The criteria for USACE..." please add that Federally constructed projects are repaired at 100% of the Federal cost. On Page 2-5, The National Engineering Handbook and National Engineering Field Handbook, as well as some state-prepared handbooks are referenced as standards for EWP engineering practices. " Steam Corridor Restoration, Principles, Processes and Practices" is also referenced. The initial phase of a revised EWP should incorporate dissemination, interagency review and coordination of these documents as a high priority.

Section 2.3.1 Practices to Restore Hydraulic Capacity addresses a number of aspects related to the repair of flood control structures. These relationships are depicted in Fig. 2.3-3. The practices described resemble many COE projects, with the use of LWDs, Planting and Seeding, riprap, gabions, and natural materials. The use of these materials and techniques to protect streambanks has become common, however, COE reviewers noted that there is little research describing the effects of in-stream structures or vegetation. In Section 2.3.5.1, seeding and planting techniques are described, however, there is no mention of Exotic, Noxious and Toxic Weeds, an issue of significant importance in the maintenance of flood control structures

1) Draft PEIS Proposed Action Element 6 of Section 3.2.2.1 addresses pre-disaster planning and would allow for coordination between EWP and the USACE. The Preferred Alternative adopts the interagency coordination and pre-disaster planning described in Element 6. 2) Chapter 3, Section 3.2.4 describes the NRCS Preferred Alternative and what aspects of the Draft PEIS Proposed Action were adopted in defining it. Note, the Preferred Alternative adopts most of the elements mentioned. However, the term exigency would be retained and easements on small rural communities would not be a part of the EPW Program under the Preferred Alternative 3) Benefits attributable to enhancement of T&E habitats could be included in evaluating overall project benefits in decisions on funding but would not be considered alone as justification for installing an EWP practice. **Seattle District Emergency Mgmt. Branch Page 4 Response Begins Below** **Seattle District Emergency Management Branch page 3** 1) NRCS recognizes that Alternative 3 would likely be the environmentally preferable alternative. However, the agency supports Alternative 4 as its Preferred Alternative because: a. Current law, as interpreted by USDA legal counsel, limits activities conducted under EWP primarily to disaster recovery work. Alternative 3 would add a substantial increment of preventative measures to reduce future flood damages. Legislative authority would be required to implement such a major expansion of the purpose of EWP under Alternative 3. b. To a large extent, NRCS has integrated the management of its watershed programs as described in Alternative 3 within the Water Resources Branch of the NHQ Financial Assistance Programs Division working closely with the NHQ Easement Programs Branch. Together they oversee the recovery ***(response continued on top of next column)***	practices and floodplain easements portions of EWP and provide funding and technical assistance and training to the NRCS State Offices. But NRCS is limited in fully implementing the scope of Alternative 3 primarily by funding constraints. Several NRCS watershed programs currently exist under P.L. 566 and P.L. 534 that address watershed planning and management and include measures for watershed protection and flood prevention, as well as the cooperative river basin surveys and investigations. Under the new Watershed Rehabilitation Program, NRCS works with local communities and watershed project sponsors to address public health and safety concerns and potential adverse environmental impacts of aging dams. NRCS so far has undertaken 118 projects in 20 States to assess the condition of and repair of more than 10,000 upstream flood control structures built since 1948. The structural and non-structural practices implemented and the easements purchased under those programs have greatly reduced the need for future EWP measures in project watersheds. Nevertheless, EWP must remain available to deal with the aftermath of major disasters regardless of improvements under the other watershed programs. 2) No response required. 3) The suggested changes have been made. 4) Public and interagency review is currently included as part of NRCS' technical development process. Stream Corridor Restoration, Principles, Processes, and Practices is an interagency document developed by multiple Federal agencies, including NRCS, EPA, FEMA, NMFS, USACE, BLM, USFWS, and USGS. New NRCS practices are made available for comment when they are published in the Federal Register. The National Engineering Field Handbook is an internal NRCS document developed by NRCS personnel, staff from the Agricultural Research Service, universities, and other professionals and reflects the most current, efficient techniques and procedures. 5) Sections 5.2.2.1.2, 5.2.2.2.2, and 5.2.2.5.2 of Chapter 5 have been revised to reflect NRCS' policies on invasive and non-native plant species. Also see DOI page 6, comment #1 for further information.

adjacent to riparian zones. Seattle District maintains the State of Washington Noxious Weed List and states that local project sponsors must comply with their local Noxious Weed Control Board's requirements.

Chapter 3 describes the Alternatives in detail. The use of " Exigency" and "Non-Exigency" is cited in USACE regulatory documents which apply to instream work under nationwide Section 404 Authority. These are currently issued without individual site permits. The COE will likely need to coordinate with NRCS if wording is changed to " urgent and compelling". NRCS also notes that the COE Regulatory staff have been quite helpful in providing Nationwide 37 permits. Page 3-4 Section 1

Improvement of Disaster-recovery readiness through interagency coordination, planning and training is a goal of many agencies. During preparation of NRCS Emergency Action Plans, it is anticipated that the State Conservationists will coordinate with the appropriate Districts of the COE to initiate joint planning and training activities. Seattle District's Point of Contact for Emergency Work is Emergency Management Branch, 206-764-3406. Page 3-9

These review comments have been prepared by Seattle District Emergency Management Branch to meet the original 15 February comment period, further comments may be received later from other COE offices.

for

Paul E. Komoroske, P.E.
Chief, Emergency Management Branch

No response required.	

State Comments and Responses

Comments were received from the following State agencies:

Montana Historical Society
Maine Historic Preservation Commission
Maryland Division of Historical and Cultural Programs
West Virginia Division of Culture and History
Idaho State Historical Society
Oklahoma Historical Society
Maryland Department of Natural Resources
Michigan State Historic Preservation Office
Virginia Department of Environmental Quality
Mississippi Department of Archives and History
Virginia Chesapeake Bay Local Assistance Department
Washington State Department of Ecology
Kansas Department of Wildlife and Parks
Wyoming State Historic Preservation Office
Iowa State Historic Preservation Office
Arizona Game and Fish Department
Minnesota State Historic Preservation Office
New York Department of Environmental Conservation
Rhode Island Historical Preservation and Heritage Commission
New Jersey Department of Environmental Protection

State Historic Preservation Office
Montana Historical Society

1410 8th Avenue • PO Box 201202 • Helena, MT 59620-1202 • (406) 444-7715 • FAX (406) 444-6575

December 16, 1999

EWP DRAFT PEIS COMMENTS
POB 745
FALLS CHURCH VA 22040-0075

Dear Sir or Madame:

We have reviewed the above referenced draft document as requested. We believe several elements in the proposed action could result in more effective consideration of Historic Properties under the National Historic Preservation Act. Perhaps most important could be the refinement of the "urgent and compelling situation" concept rather than the current use of exigency/non-exigency categories.

1 However the document is very vague regarding just how consultation regarding Historic Properties would or could be carried out. For example, increased coordination among various agencies is suggested but no mechanism are described. The EWP manual and policy are described as containing directions for completing the DSR but I could not find those contents or steps described (for example, when to request SHPO information, when the NRCS Cultural Resource Specialist reviews proposed actions, when inventory would occur for what kinds of actions, agency-SHPO consultation of adequacy of identification efforts, eligibility, avoidance or effect findings, etc.). When this level of nonspecificity is combined with statements such as "The NRCS state cultural resources specialist or coordinator *may* recommend consultation with the State Historic Preservation Office (2-11) . . . " it is difficult to see just how Historic Properties would be identified, recorded and assessed relative to NRCS EWP sponsored projects.

2 This is all the more disquieting since we have expressed strong concern over the apparent lack of project review for cultural resources by at least 50% of the NRCS county field offices in Montana for at least three years under the NRCS-NCSHPO state protocol. It is difficult to envision from this document how additional undertakings could improve this situation unless there are basic changes in the way the NRCS handles cultural resources and section 106 in Montana to begin with.

There is no question that several EWP practices have the potential to affect Historic Properties in non "urgent and compelling situations" where straightforward, regular, if expedited, consultation with SHPO would be appropriate. Where and how is that consultation conducted in the EWP program? At the DSR stage, a later environmental review stage? - where alternatives have already been identified - likely without regard to Historic Properties? Efforts to have state agencies complete NRCS sponsored practices will likely confound NRCS 106 responsibilities unless the guidance manuals are extremely clear, firm and supportive of meeting those responsibilities. We would be happy to provide comment and recommendations concerning cultural resource assessment procedures when and if the EWP Manual, regulations, handbook DSR or other guidance is revised.

Sincerely,

Stan Wilmoth

Stan Wilmoth, Ph.D.
State Archaeologist/Deputy State Historic Preservation Officer

File: NRCS/99

MAINE HISTORIC PRESERVATION COMMISSION
55 CAPITOL STREET
65 STATE HOUSE STATION
AUGUSTA, MAINE
04333

ANGUS S. KING, JR.
GOVERNOR

EARLE G. SHETTLEWORTH, JR.
DIRECTOR

December 22, 1999

EWP Draft PEIS Comments
PO Box 745
Falls Church, VA 22040-0075

Project: MHPC #2160 - Draft PEIS EWP Program Improvements and Expansion
Location: Statewide, Maine

Dear Agency Representative:

In response to your recent request, I have reviewed the information received December 15, 1999 to initiate consultation on the above referenced project. Our office is reviewing this document as it relates to Section 106 of the National Historic Preservation Act of 1966 (as amended).

1 Our office concurs with statements made in S.7.3 and 3.5.5 (Mitigation for Cultural Resources) regarding consultation with our office as part of the EWP planning and coordination function before disaster occurs and before actions at EWP are taken. This planning and consultation should include activities affecting National Register of Historic Places listed or eligible historic properties which can include standing structures, archaeological sites, viewsheds, historic landscapes and cultural places. Training at the state level in the types and prevalence of all cultural resources that might be encountered in each region of the state is encouraged.

Please contact Dana R. Vaillancourt of my staff if you require further assistance in this matter.

Sincerely,

Earle G. Shettleworth, Jr.
State Historic Preservation Officer

EGS/drv

PHONE: (207) 287-2132

FAX: (207) 287-2335

1) Refer to the "Special Environmental Concerns" Evaluation Procedure Guide Sheets in the Appendix 610.71 of the NRCS National Environmental Compliance Handbook for directions for completing the DSR. These guide sheets are also provided in Appendix C of this Final PEIS. NRCS does not consider it appropriate to describe detailed procedures for each state within this nationwide programmatic document. Procedures are State-specific and stipulated in the Emergency Recovery Plans (ERP). ERPs will specify how historic properties and other cultural resources would be identified, recorded, and assessed relative to NRCS EWP sponsored projects. The State Level Agreement (SLA) and AOP procedures are required to be consistent with the Advisory Council on Historic Preservation's regulatory procedures for implementation of the National Historic Preservation Act (NHPA) of 1966, as amended, found at 36 CFR Part 800; appropriate treatments will, therefore, be determined on a case-by-case basis in consultation with the State Historic Preservation Officer (SHPO) and/or Tribal Historic Preservation Officer (THPO). 2) We are forwarding a copy of your comment letter to the State Conservationist. We urge you to discuss your concerns about cultural resources directly with the Montana State Conservationist's office.	1) We appreciate your concern that our field personnel be trained regarding the nature and extent of all cultural and historic resources that may be affected by natural disasters. While EWP training focuses on ensuring that all consultations and identifications are conducted in a manner that effectively and efficiently treats all potentially affected resources, NRCS mandatory modular cultural resources training for field personnel provides the tools needed for recognizing the full range of resources in the State. We appreciate your office's willingness to work with us in providing the latter training, and updates, thereby enabling our field and State office personnel and cultural resources staff to make informed decisions.

Maryland Department of Housing and Community Development

Division of Historical and Cultural Programs

100 Community Place
Crownsville, Maryland 21032

410-514-7600
1-800-756-0119
Fax: 410-987-4071
Maryland Relay for the Deaf:
1-800-735-2258

http://www.dhcd.state.md.us

Parris N. Glendening
Governor

Raymond A. Skinner
Secretary

Marge Wolf
Deputy Secretary

January 10, 2000

DWP Draft PEIS Comments
P.O. Box 745
Falls Church, VA 22040-0075

RE: U.S. Department of Agriculture Natural Resources Conservation Service Emergency Watershed Protection (EWP) Program, Draft Programmatic Environmental Impact Statement (Section 106 Review – USDA)

Dear Sir or Madam:

Thank you for your 15 December 1999 package, which the Maryland Historical Trust received that same day regarding the above-referenced draft EIS. Trust staff have reviewed the package and below are our comments.

1

As we understand, the EWP Program provides protection and restoration to damaged watersheds following flooding or other storms. The program will account for historic resources within any project area on a case-by-case basis. The Trust is of the opinion that this will allow the Agriculture Department through the EWP Program to work with our office to account for all historic properties which are in the project area. To that end, we would encourage the EWP to identify any dams or other structures that exist within any Maryland river or stream. Once a particular project is identified, we will be able to work with you to identify other standing structures or archeological sites which have been affected.

Thank you for providing us this opportunity to comment. Should you have any questions regarding the review of the project, please contact Ms. Anne Bruder (for structures) at 410-514-7636 or Dr. Gary Shaffer (for archeology) at 410-514-7638.

Sincerely,

Anne E. Bruder
Preservation Officer
Project Review and Compliance

GDS:AEB:199903429

WEST VIRGINIA DIVISION OF
CULTURE AND HISTORY

January 12, 2000

United States Department of Agriculture
EWP Draft PEIS Comment
P.O. Box 745
Falls Church, Virginia 22040

RE: Emergency Watershed Protection Program
FR#: 00-252-MULTI

To Whom It May Concern:

We have received and reviewed the Emergency Watershed Protection Program Draft Programmatic Environmental Impact Statement. As required by Section 106 of the National Historic Preservation Act, as amended, and its implementing regulations, 36 CFR 800: "Protection of Historic Properties," we submit our comments.

1

We concur with the National Resources Conservation Service's broader definition for Area of Potential Effect (APE) as proposed in Section 3.5.5 "Mitigation for Cultural Resources." The current NRCS definition of APE often only encompasses the immediate site location and does not take into account important considerations such as archaeological sites, viewsheds, historic landscapes, and cultural places. In each case, an adverse effect can occur without the undertaking taking place in the nearby vicinity of a significant resource.

The Advisory Council on Historic Preservation defines APE as "the geographic area or areas within which an undertaking may directly or indirectly cause changes in the character or use of historic properties, if such properties exist" (36 CFR 800.16(d)). In West Virginia we have quantified this statement by describing the Area of Potential Effect as within a radius of 1,000 feet from the undertaking or extending to where the undertaking can be viewed from an historic resource.

We appreciate the opportunity to be of service. If you have questions regarding our comments or the Section 106 process, please call Marc Holma, Structural Historian, or Joanna Wilson, Senior Archaeologist, at (304) 558-0220.

Sincerely,

Susan M. Pierce
Deputy State Historic Preservation Officer

SMP: mh

THE CULTURAL CENTER • 1900 KANAWHA BOULEVARD, EAST • CHARLESTON, WEST VIRGINIA 25305-0300
TELEPHONE 304-558-0220 • FAX 304-558-2779 • TDD 304-558-3562
EEO/AA EMPLOYER

1) A list of the locations of all NRCS assisted structures built under PL 83-566 and PL 78-534 is available from the State Conservationist. EWP funding resources do not allow the Program to do more than provide this inventory of such structures. The EWP program depends upon SHPOs to provide assistance in identifying the locations of protected resources. As Described in Draft PEIS Proposed Action Element 6 of Section 3.2.2.1, pre-disaster planning and coordination will provide an opportunity for specific procedures to be developed for cultural and other sensitive resources. The Preferred Alternative retains the interagency coordination and pre-disaster planning described in Element 6.	1) Because Section 106 compliance will be carried out in accordance with the Advisory Council's Procedures found at 3 CFR Part 800, we are confident that your concern for resources within the watershed restoration project's area of potential effect (direct and indirect) will be addressed. We have found that the viewsheds of most of our restoration projects are not adversely affected by our restoration activities; however, we will continue to work in consultation with all SHPOs and THPOs offices to address this and other concerns.

IDAHO STATE HISTORICAL SOCIETY

Our mission: to educate through the identification, preservation, and interpretation of Idaho's cultural heritage.

Dirk Kempthorne
Governor of Idaho

Steve Guerber
Director

Administration
1109 Main Street, Suite 250
Boise, Idaho 83702-5642
Office: (208) 334-2682
Fax: (208) 334-2774

Archaeological Survey
210 Main Street
Boise, Idaho 83702-7264
Office: (208) 334-3847
Fax: (208) 334-2775

Historical Museum and Education Programs
610 North Julia Davis Drive
Boise, Idaho 83702-7695
Office: (208) 334-2120
Fax: (208) 334-4059

Historic Preservation Office
210 Main Street
Boise, Idaho 83702-7264
Office: (208) 334-3861
Fax: (208) 334-2775

Historic Sites Office
2445 Old Penitentiary Road
Boise, Idaho 83712-8254
Office: (208) 334-2844
Fax: (208) 334-3225

Library/Historical Collection
450 North Fourth Street
Boise, Idaho 83702-6027
Office: (208) 334-3356
Fax: (208) 334-3198

Library/Genealogical Collection
450 North Fourth Street
Boise, Idaho 83702-6027
Office: (208) 334-3863
Fax: (208) 334-3198

Oral History
450 North Fourth Street
Boise, Idaho 83702-6027
Office: (208) 334-3863
Fax: (208) 334-3198

Memberships and Outreach and Development
1109 Main Street, Suite 250
Boise, Idaho 83702-5642
Office: (208) 334-3956
Fax: (208) 334-2774

Publications
450 North Fourth Street
Boise, Idaho 83702-6027
Office: (208) 334-3428
Fax: (208) 334-3198

State Archives Manuscripts
2205 Old Penitentiary Road
Boise, Idaho 83712-8250
Office: (208) 334-2620
Fax: (208) 334-2626

January 13, 2000

EWP Draft EIS Comments
P.O. Box 745
Falls Church, VA 22040-0075

RE: Draft Programmatic Environmental Impact Statement-EWP Program Improvement and Expansion

Thank you for requesting our views on the draft Programmatic Environmental Impact Statement for the Emergency Watershed Protection Program, a program administered by the Natural Resources Conservation Service (NRCS). After reviewing the document, we have only a few comments:

1. Section 3.5.5. (p. 3-45): A significant problem for all NRCS cultural resource management in Idaho is that the NRCS state office does not have a cultural resource specialist on staff to provide day-to-day expertise. Such expertise is particularly important in emergency situations. Idaho's NRCS cultural resource specialist, Alan Spencer, works out of Portland, Oregon, and our state is only one of several states under his supervision. Given this lack of expertise at the state level, we strongly recommend that at least one cultural resource specialist be hired within the Idaho NRCS state office. We also feel that cultural resource training for NRCS field personnel is an ongoing need. Therefore, we wholeheartedly support your recommendations for more comprehensive training at the state level as a component of this program.

2. Section 4.1 (p. 4-2) We also agree that cultural resources cannot be addressed programmatically under a program like this, but should be handled on a case-by-case basis.

3. At an appropriate point, reference should be made to the nationwide Programmatic Agreement (PA) among NRCS, the Advisory Council on Historic Preservation, and National Conference of State Historic Preservation Officers. Reference should also be made to the state agreements developed under the nationwide PA. These are the documents that govern how NRCS meets its obligations under Section 106 of the National Historic Preservation Act and 36 CFR 800, even in emergency situations.

We appreciate the opportunity to comment. If you have any questions, feel free to contact me at 208-334-3847.

Sincerely,

Susan Pengilly Neitzel
Deputy SHPO

cc: Joyce Swartzendruber, NRCS Idaho
Alan Spencer, NRCS, Portland, Oregon

Oklahoma Historical Society *Founded May 27, 1893*

State Historic Preservation Office • 2704 Villa Prom • Shepherd Mall • Oklahoma City, OK 73107-2441
Telephone 405/521-6249 • Fax 405/947-2918

January 14, 2000

EWP Draft PEIS Comments
P.O. Box 745
Falls Church, VA 22040-0075

RE: File #0732-00; Draft PEI Statement for Emergency Watershed Protection Program

We have received and reviewed the Draft PEI Statement for the above referenced project.

1. We find that cultural resources are not adequately addressed in the draft. In addition to our comments, the recommendations of the Oklahoma Archeological Survey regarding this project should be included in the final document.

We appreciate the opportunity to comment on this project and look forward to working with you in the future.

Should further correspondence pertaining to this project be necessary, the above underlined file number must be referenced. If you have any questions, please contact me at 405/521-6381. Thank you.

Sincerely,

J. Marshall Gettys
Historical Archaeologist

JMG:pm

1) NRCS does not have a full-time archaeologist on staff in Idaho because of the broad management requirements and limited resources available to the State Conservationist. However, NRCS is confident that, as agreed upon in the Idaho State Level Agreement, the in-state availability of expertise from the U.S. Forest Service, coupled with access to two archaeologists from Oregon and the oversight of our experienced coordinator, are providing both sound and consistent consideration of historic and cultural resources within Idaho. 2) No response required. 3) The PEIS text of Chapter 3 Draft PEIS Proposed Action Element 6 has been expanded to refer to the nationwide Programmatic Memorandum Of Agreement with its primary focus on technical assistance activities, the State agreements with SHPOs and the ongoing Memorandum of Understanding. This element is adopted under the EWP Preferred Alternative.	1) While you do not provide specifics on your broad concern, we believe that our revised language in Chapters 2 and 3 does adequately describe our intent to comply with Section 106 of the NHPA as implemented by the Advisory Council on Historic Preservation's (ACHP) Procedures found at 36 CFR Part 800. However, detailed discussion of site-specific procedures was not deemed appropriate for this nationwide programmatic document and specific procedures will not be provided at the national level. Headquarters will provide general guidance in the EWP Manual and the EWP Handbook, but the State Conservationist will be charged with determining specific procedures. The State Conservationist is the responsible Federal official and will develop procedures with various Federal and State agencies to comply with the requirements of applicable Federal and State rules and regulations.

EWP

From: Dintaman, Ray <RDintaman@dnr.state.md.us>
To: <ewp@mangi.com>
Cc: Romano, Bill <BROMANO@dnr.state.md.us>; Lubbers, Larry <LLUBBERS@dnr.state.md.us>
Sent: Wednesday, January 19, 2000 9:58 AM
Subject: Draft PEIS - Emergency Watershed Protection Program

Thank you for providing the Maryland Department of Natural Resources with the opportunity to review and comment on the Draft Programmatic Environmental Impact Statement for the Emergency Watershed Protection Program.

We concur that the improvements shown in the Draft PEIS should allow NRCS to better meet the needs of persons requiring emergency assistance. This is an excellent document and we offer only the following comments:

1 The Maryland Department of Natural Resources encourages the United States Department of Agriculture, Natural Resources Conservation Service, Emergency Watershed Protection Program to adopt Alternative 3 - Prioritized Watershed Planning and Management. Alternative 3 would encourage the use of corrective measures that result in greater environmental benefits, such as restoring natural floodplains versus building dams and levees, than either of the alternative proposals. Any projects undertaken in the Chesapeake Bay watershed by the emergency Watershed Protection Program should rely on remedies that restore the ecosystem to natural conditions.

Thank you again for the opportunity to comment on this document. If you should have any questions concerning these comments, please call me at 410-260-8331.

Sincerely,

Ray C. Dintaman, Jr., Director
Environmental Review Unit

MICHIGAN DEPARTMENT OF STATE
Candice S. Miller, Secretary of State
Lansing, Michigan 48918-0001

STATE HISTORIC PRESERVATION OFFICE
Michigan Historical Center
717 West Allegan Street
Lansing, Michigan 48918-1800

January 26, 2000

EWP DRAFT PEIS COMMENTS
P.O. BOX 745
FALLS CHURCH VA 22040-0075\

RE: ER-00-141 Emergency Watershed Protection Program, , MI General (USDA)

To Whom It May Concern:

We have reviewed the draft Environmental Impact Statement for the Emergency Watershed protection Program. Section 3.5.5, Mitigation for Cultural Resources, notes the NRCS tendency to focus on standing structures and to define the Area of Potential Effects as the immediate site location. It goes on to point out possible consequences of these tendencies: "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."

1 We want to reinforce the concern expressed in these statements. EWP work takes place along waterways, which tend to be high sensitivity areas for cultural resources, including historic structures, archaeological sites, viewsheds, historic landscapes and cultural places. Many of these resources are far less obvious than structures and thus are in even greater danger of being affected, both directly and by ancillary activities.

Section 3.5.5 suggests that more comprehensive training at the state level may help mitigate potential effects on cultural resources. It also points out that consultation with the SHPO is part of EWP planning and coordination, and that the SHPO is contacted before EWP actions are taken. We applaud these steps as part of the EWP plan and we look forward to close cooperation with the NRCS in implementing the program.

If you have any questions, please contact Martha MacFarlane, Environmental Review Coordinator, at (517) 335-2721. Thank you for your consideration.

Sincerely,

Brian D. Conway
State Historic Preservation Officer

BDC:DLA

1) NRCS recognizes that Alternative 3 "Prioritized Watershed Planning and Management" would likely be the environmentally preferable alternative. However, the agency supports Alternative 4 as its Preferred Alternative because: a. Current law, as interpreted by USDA legal counsel, limits activities conducted under EWP primarily to disaster recovery work. Alternative 3 would add a substantial increment of preventative measures to reduce future flood damages. Legislative authority would be required to implement such a major expansion of the purpose of EWP under Alternative 3. b. To a large extent, NRCS has integrated the management of its watershed programs as described in Alternative 3 within the Water Resources Branch of the NHQ Financial Assistance Programs Division working closely with the NHQ Easement Programs Branch. Together they oversee the recovery practices and floodplain easements portions of EWP and provide funding and technical assistance and training to the NRCS State Offices. But NRCS is limited in fully implementing the scope of Alternative 3 primarily by funding constraints. Several NRCS watershed programs currently exist under P.L. 566 and P.L. 534 that address watershed planning and management and include measures for watershed protection and flood prevention, as well as the cooperative river basin surveys and investigations. Under the new Watershed Rehabilitation Program, NRCS works with local communities and watershed project sponsors to address public health and safety concerns and potential adverse environmental impacts of aging dams. NRCS so far has undertaken 118 projects in 20 States to assess the condition of and repair of more than 10,000 upstream flood control structures built since 1948. The structural and non-structural practices implemented and the easements purchased under those programs have greatly reduced the need for future EWP measures in project watersheds. Nevertheless, EWP must remain available to deal with the aftermath of major disasters regardless of improvements under the other watershed programs.	1) We appreciate your comments and believe that our current mandatory cultural resources training program for field personnel serves to reinforce the nature, range, and diversity of resources in each state. Additionally, we are confident that case-by-case consultation with SHPOs and THPOs will enable our decisions regarding cultural resources within the direct and indirect impact areas to be well informed and to encompass concerns beyond standing structures.

COMMONWEALTH of VIRGINIA
DEPARTMENT OF ENVIRONMENTAL QUALITY

James S. Gilmore, III
Governor

John Paul Woodley, Jr.
Secretary of Natural Resources

Street address: 629 East Main Street, Richmond, Virginia 23219
Mailing address: P.O. Box 10009, Richmond, Virginia 23240
Fax (804) 698-4500 TDD (804) 698-4021
http://www.deq.state.va.us

Dennis H. Treacy
Director

(804) 698-4000
1-800-592-5482

January 27, 2000

EWP Draft PEIS Comments
P.O. Box 745
Falls Church, Virginia 22040-0075

RE: Draft Programmatic Environmental Impact Statement, Emergency Watershed Protection Program; Proposed by the USDA Natural Resources Conservation Service; DEQ 99-132F

Dear Sir/Madam:

The Commonwealth of Virginia has completed its review of the draft programmatic EIS on the above referenced project. The Department of Environmental Quality is responsible for coordinating Virginia's review of federal environmental documents and responding to appropriate federal officials on behalf of the Commonwealth. The following agencies and planning district commission participated in this review:

Department of Environmental Quality
Department of Agriculture and Consumer Services
Department of Mines, Minerals, and Energy
Department of Forestry
Hampton Roads Planning District Commission

The Chesapeake Bay Local Assistance Department, the Virginia Marine Resources Commission, the Virginia Institute of Marine Science, the Department of Conservation and Recreation, and the Northern Virginia, RADCO, Northern Neck, Richmond, Mid Peninsula, Crater, Accomack-Northampton Planning District Commissions were also invited to comment.

The proposed program consists of improving and expanding the existing emergency watershed protection program. The program helps remove threats to life and property that remain in the nation's watersheds in the aftermath of natural disasters (i.e. floods, hurricanes, tornadoes, and wildfires).

Environmental Impacts and Mitigation

1 The Commonwealth of Virginia concurs with the findings and conclusions of the draft EIS and supports the selection of alternative # 3. The proposal is likely to result in less impact to wetlands and possibly in an increase in wetland acreage through the application of bioengineering techniques and the establishment of easements.

2 During execution of the projects, all wastes generated must be disposed in accordance with the Virginia Solid Waste Management regulations and the Virginia Hazardous Waste regulations. NRCS should notify DEQ if hazardous materials are encountered. DEQ should be contacted, Melissa Porterfield at (804) 698-4238, for additional information.

3 The Department of Mines, Minerals, and Energy (DMME) commented that the proposal does not adequately address the natural processes that modify the earth's surface. In some areas restoration to the pre-disaster condition may exacerbate the impacts of future natural disasters. DMME should be contacted, Eugene Rader at (804) 293-5121, for additional information.

Pursuant to the Coastal Zone Management Act of 1972, as amended, the proposed project must be conducted in a manner that is consistent with the Virginia Coastal Resources Management Program (VCP). Therefore, the Natural Resources Conservation Service must receive all applicable permits and approval listed under the Enforceable Programs of the VCP (attached). Please contact Silvia B. Gazzera of DEQ's Office of Environmental Impact Review at (804) 698-4488 for more information.

Thank you for the opportunity to review the DEIS.

Sincerely,

Michael P. Murphy, Director
Division of Environmental Enhancement

Enclosures
cc: Ellen Gilinsky, OWPP
Melissa Porterfield, DEQ-DVPC
John Foreman, DOF
Eugene Rader, DMME
Arthur Collins, Hampton Roads PDC

No response required.	b. To a large extent, NRCS has integrated the management of its watershed programs as described in Alternative 3 within the Water Resources Branch of the NHQ Financial Assistance Programs Division working closely with the NHQ Easement Programs Branch. Together they oversee the recovery practices and floodplain easements portions of EWP and provide funding and technical assistance and training to the NRCS State Offices. But NRCS is limited in fully implementing the scope of Alternative 3 primarily by funding constraints. Several NRCS watershed programs currently exist under P.L. 566 and P.L. 534 that address watershed planning and management and include measures for watershed protection and flood prevention, as well as the cooperative river basin surveys and investigations. Under the new Watershed Rehabilitation Program, NRCS works with local communities and watershed project sponsors to address public health and safety concerns and potential adverse environmental impacts of aging dams. NRCS so far has undertaken 118 projects in 20 States to assess the condition of and repair of more than 10,000 upstream flood control structures built since 1948. The structural and non-structural practices implemented and the easements purchased under those programs have greatly reduced the need for future EWP measures in project watersheds. Nevertheless, EWP must remain available to deal with the aftermath of major disasters regardless of improvements under the other watershed programs.
Virginia Department of Environmental Quality page 2	
1) NRCS recognizes that Alternative 3 "Prioritized Watershed Planning and Management" would likely be the environmentally preferable alternative. However, the agency supports Alternative 4 as its Preferred Alternative because: a. Current law, as interpreted by USDA legal counsel, limits activities conducted under EWP primarily to disaster recovery work. Alternative 3 would add a substantial increment of preventative measures to reduce future flood damages. Legislative authority would be required to implement such a major expansion of the purpose of EWP under Alternative 3. ***(Response continued at top of next column)***	2) The text of PEIS Chapter 2, Section 2.3.1 and Chapter 5, Section 5.2.2 has been expanded to clarify the general EWP precautions taken in dealing with hazardous materials but NRCS does not consider it appropriate to reference State-specific requirements in a national PEIS. Instead, compliance with specific State requirements would be determined through inter-agency coordination (as outlined in Chapter 3 Draft PEIS Proposed Action Element #6) and would differ from state to state. 3) Greater emphasis on purchase of floodplain easements and increased use of EWP restoration design based on the principles of natural stream dynamics are Program improvements that have been proposed to more fully adapt the Program's measures to the normal processes which sculpt the earth's surface.

COMMONWEALTH of VIRGINIA
DEPARTMENT OF ENVIRONMENTAL QUALITY

Peter W. Schmidt
Director

P O Box 10009
Richmond, Virginia 23240-0009
(804) 762-4000

Enforceable Regulatory Programs comprising Virginia's Coastal Resources Management Program

a. Fisheries Management - The program stresses the conservation and enhancement of finfish and shellfish resources and the promotion of commercial and recreational fisheries to maximize food production and recreational opportunities. This program is administered by the Marine Resources Commission (Virginia Code §28.1-23.1) and the Department of Game and Inland Fisheries (Virginia Code §29-13 and §29-125).

The State Tributyltin (TBT) Regulatory Program has been added to the Fisheries Management program. The General Assembly amended the Virginia Pesticide Use and Application Act as it related to the possession, sale, or use of marine antifoulant paints containing TBT. The use of TBT in boat paint constitutes a serious threat to important marine animal species. The TBT program monitors boating activities and boat painting activities to ensure compliance with TBT regulations promulgated pursuant to the amendment. The MRC, DGIF, and VDACS share enforcement responsibilities.

b. Subaqueous Lands Management - The management program for subaqueous lands establishes conditions for granting or denying permits to use state-owned bottomlands based on considerations of potential effects on marine and fisheries resources, wetlands, adjacent or nearby properties, anticipated public and private benefits, and water quality standards established by the Department of Environmental Quality, Water Division. The program is administered by the Marine Resources Commission (Virginia Code §62.1-13.1 et. seq.).

c. Wetlands Management - The purpose of the wetlands management program is to preserve tidal wetlands, prevent their despoliation, and accommodate economic development in a manner consistent with wetlands preservation. This program is administered by the Marine Resources Commission (Virginia Code §62.1-13.1 through §62.1-13.20).

d. Dunes Management - Dune protection is carried out pursuant to The Coastal Primary Sand Dune Protection Act and is intended to prevent destruction or alteration of primary dunes. This program is administered by the Marine Resources Commission (Virginia Code §62.1-13.21 through §62.1-13.28).

629 East Main Street, Richmond, Virginia 23219 - Fax (804) 762-4500 - TDD (804) 762-4021

e. Non-point Source Pollution Control - Virginia's Erosion and Sediment Control Law requires soil-disturbing projects to be designed to reduce soil erosion and to decrease inputs of chemical nutrients and sediments to the Chesapeake Bay, its tributaries, and other rivers and waters of the Commonwealth. This program is administered by the Department of Conservation and Recreation (Virginia Code §10.1-560 et seq.).

f. Point Source Pollution Control - The point source program is administered by the State Water Control Board pursuant to Virginia Code §62.1-44.15. Point source pollution control is accomplished through the implementation of:

(i) The National Pollutant Discharge Elimination System (NPDES) permit program established pursuant to Section 402 of the federal Clean Water Act and administered in Virginia as the VPDES permit program.

(ii) Water Quality Certification pursuant to Section 401 of the Clean Water Act.

g. Shoreline Sanitation - The purpose of this program is to regulate the installation of septic tanks, set standards concerning soil types suitable for septic tanks, and specify minimum distances that tanks must be placed away from streams, rivers, and other waters of the Commonwealth. This program is administered by the Department of Health (Virginia Code §32.1-164 through §32.1-165).

h. Air Pollution Control - The program implements the federal Clean Air Act to provide a legally enforceable State Implementation Plan for the attainment and maintenance of the National Ambient Air Quality Standards. This program is administered by the State Air Pollution Control Board (Virginia Code §10-17.18).

No response required.	No response required.

If you cannot meet the deadline, please notify SILVIA GAZZERA at 804/698-4488 prior to the date given. Arrangements will be made to extend the date for your review if possible. An agency will not be considered to have reviewed a document if no comments are received (or contact is made) within the period specified.

REVIEW INSTRUCTIONS:

A. Please review the document carefully. If the proposal has been reviewed earlier (i.e. if the document is a federal Final EIS or a state supplement), please consider whether your earlier comments have been adequately addressed.

B. Prepare your agency's comments in a form which would be acceptable for responding directly to a project proponent agency.

C. Use your agency stationery or the space below for your comments. **IF YOU USE THE SPACE BELOW, THE FORM MUST BE SIGNED AND DATED.**

Please return your comments to:

DR. SILVIA B. GAZZERA
DEPARTMENT OF ENVIRONMENTAL QUALITY
OFFICE OF ENVIRONMENTAL IMPACT REVIEW
629 EAST MAIN STREET, SIXTH FLOOR
RICHMOND, VA 23219
FAX #804/698-4319

JAN 11 2000

Silvia B. Gazzera
Environmental Program Planner

COMMENTS

The proposed action will result in needed improvements to the Emergency Watershed Protection Program, and should not affect compliance with Section 404 or 401 programs. The proposed use of natural methods of stream restoration will result in less impacts to wetlands, and possible increases to wetland acreage from natural plantings and easements, as well as encouraging wetland restoration.

(signed) Ellen Gilinsky (date) 1/10/2000

(title) Virginia Water Protection Permit Program Manager

(agency) DEQ

PROJECT # 99-132F

8/98

If you cannot meet the deadline, please notify SILVIA GAZZERA at 804/698-4488 prior to the date given. Arrangements will be made to extend the date for your review if possible. An agency will not be considered to have reviewed a document if no comments are received (or contact is made) within the period specified.

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629 EAST MAIN STREET, SIXTH FLOOR
RICHMOND, VA 23219
FAX #804/698-4319

JAN 19 2000

Silvia B. Gazzera
Environmental Program Planner

1 COMMENTS - For areas in Virginia all wastes generated must be disposed of in accordance with the Virginia Solid Waste Management Regulations and the Virginia Hazardous Waste Regulations. NRCS should notify DEQ if hazardous materials are found since this plan states that the states are responsible for removal of these materials.

(signed) Melissa Porterfield (date) 1-19-00

(title) Environmental Program Planner

(agency) DEQ-Waste

PROJECT # 99-132F

8/98

No response required.	1) The PEIS text of Chapter 2, Section 2.3.1 and Chapter 5, Section 5.2.2 has been expanded to clarify the general EWP precautions taken in dealing with hazardous materials but NRCS does not consider it appropriate to reference State specific requirements in a national PEIS. Instead, compliance with specific State requirements would be determined through inter-agency coordination (as outlined in Chapter 3 Draft PEIS Proposed Action Element #6) and would differ from state to state.

DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION OF AIR PROGRAM COORDINATION

DOCUMENT REVIEW CHECKLIST

JAN [illegible] 2000

TO: Silvia B. Gazzera

DATE: 1/12/00 **DEQ-OEIA PROJECT NUMBER:** 99-132F

___ STATE EIR ___ FEDERAL EA/FONSI _X_ FEDERAL EIS ___ GRANT/SCC
___ CONSISTENCY DETERMINATION/CERTIFICATION

PROJECT TITLE: Emergency Watershed Protection Program Draft Programmatic EIS sponsored by USDA/Natural Resources Conservation Service

PROJECT DETAILS: Expand the program by adding floodplain sediment deposition, upland disaster debris, and damaged structural conservation practices.

AIR PROGRAM COORDINATION DIVISION FINDINGS:

___ CONCURS WITH THE FONSI ___ CONCURS WITH THE CONFORMITY FINDING

___ SEE APPLICABLE REGULATORY REQUIREMENTS _X_ NO COMMENTS

THE PROJECT SITE IS LOCATED IN A:

___ OZONE/CARBON MONOXIDE NONATTAINMENT AREA

___ OZONE/CARBON MONOXIDE MAINTENANCE AREA

___ STATE VOLATILE ORGANIC COMPOUND & NITROGEN OXIDES EMISSION CONTROL (VOC/NO_xEC) AREA

REGULATORY REQUIREMENTS MAY APPLY TO:

___ CONSTRUCTION ___ OPERATION

STATE AIR POLLUTION CONTROL BOARD REGULATIONS FOR THE CONTROL AND ABATEMENT OF AIR POLLUTION THAT MAY APPLY:

1. ___ 9 VAC 5-40-5200 C and 9 VAC 5-40-5220 E - Stage I.
2. ___ 9 VAC 5-40-5200 C and 9 VAC 5-40-5220 F - Stage II Vapor Recovery.
3. ___ 9 VAC 5-40-5490 et seq. - Cut-back Asphalt Usage Restriction.

4. ___ 9 VAC 5-40-5600 et seq. - Open Burning.
5. ___ 9 VAC 5-50-60 et seq. - Fugitive Dust Emissions.
6. ___ 9 VAC 5-50-130 et seq. - Odorous Emissions; applicable to the _____.
7. ___ 9 VAC 5-50-160 et seq. - Standards of Performance for Toxic Pollutants.
8. ___ 9 VAC 5-50-400 Subpart ___, Standards of Performance for New Stationary Sources, designates standards of performance for the _____.
9. ___ 9 VAC 5-80-10 et seq. of the regulations - Permits for Stationary Sources.
10. ___ 9 VAC 5-80-1700 et seq. of the regulations - Major or Modified Sources located in PSD areas. This rule may be applicable to the _____.
11. ___ 9 VAC 5-80-2000 et seq. of the regulations - New and Modified Sources located in nonattainment areas. This rule may be applicable to the _____.
12. ___ 9 VAC 5-80-800 et seq. of the regulations - Operating Permits and Exemptions. This rule may be applicable to _____.

OTHER REQUIREMENTS (R) AND/OR CONSIDERATIONS (C):

PLEASE CONTACT THE _____ OFFICE FOR ANY TECHNICAL AND/OR PERMIT ASSISTANCE.

James P. Ponticello
Office of Air Data Analysis

1-12-00
Date

No response required.	No response required.

If you cannot meet the deadline, please notify SILVIA GAZZERA at 804/698-4488 prior to the date given. Arrangements will be made to extend the date for your review if possible. An agency will not be considered to have reviewed a document if no comments are received (or contact is made) within the period specified.

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B. Prepare your agency's comments in a form which would be acceptable for responding directly to a project proponent agency.

C. Use your agency stationery or the space below for your comments. **IF YOU USE THE SPACE BELOW, THE FORM MUST BE SIGNED AND DATED.**

Please return your comments to:

DR. SILVIA B. GAZZERA
DEPARTMENT OF ENVIRONMENTAL QUALITY
OFFICE OF ENVIRONMENTAL IMPACT REVIEW
629 EAST MAIN STREET, SIXTH FLOOR
RICHMOND, VA 23219
FAX #804/698-4319

JAN 5 2000

Silvia B. Gazzera
Environmental Program Planner

COMMENTS: I concur with the proposed alternative 3 action. This would be a significant improvement in the manner in which the EWP Program is functioning.

(signed) J. M. Foreman (date) 1/4/00
(title) Forest Management Team
(agency) VA. Department of Forestry

PROJECT # 99-132F 8/98

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OFFICE OF ENVIRONMENTAL IMPACT REVIEW
629 EAST MAIN STREET, SIXTH FLOOR
RICHMOND, VA 23219
FAX #804/698-4319

JAN 7 2000

Silvia B. Gazzera
Environmental Program Planner

COMMENTS: Based on information in our database, we do not anticipate this project will have any adverse impacts as it relates to VDACS' responsibilities for the preservation of agricultural lands and the protection of listed endangered or threatened plant and insect species.

Thank you for the opportunity to comment and if you have any questions or need additional information, please contact me at (804)786-3515.

(signed) [signature] (date) 1/5/2000
(title) Endangered Species Coordinator
(agency) Virginia Department of Agriculture and Consumer Services

PROJECT # 99-132F 8/98

1) NRCS recognizes that Alternative 3 "Prioritized Watershed Planning and Management" would likely be the environmentally preferable alternative. However, the agency supports Alternative 4 as its Preferred Alternative because: a. Current law, as interpreted by USDA legal counsel, limits activities conducted under EWP primarily to disaster recovery work. Alternative 3 would add a substantial increment of preventative measures to reduce future flood damages. Legislative authority would be required to implement such a major expansion of the purpose of EWP under Alternative 3. b. To a large extent, NRCS has integrated the management of its watershed programs as described in Alternative 3 within the Water Resources Branch of the NHQ Financial Assistance Programs Division working closely with the NHQ Easement Programs Branch. Together they oversee the recovery practices and floodplain easements portions of EWP and provide funding and technical assistance and training to the NRCS State Offices. But NRCS is limited in fully implementing the scope of Alternative 3 primarily by funding constraints. Several NRCS watershed programs currently exist under P.L. 566 and P.L. 534 that address watershed planning and management and include measures for watershed protection and flood prevention, as well as the cooperative river basin surveys and investigations. Under the new Watershed Rehabilitation Program, NRCS works with local communities and watershed project sponsors to address public health and safety concerns and potential adverse environmental impacts of aging dams. NRCS so far has undertaken 118 projects in 20 States to assess the condition of and repair of more than 10,000 upstream flood control structures built since 1948. The structural and non-structural practices implemented and the easements purchased under those programs have greatly reduced the need for future EWP measures in project watersheds. Nevertheless, EWP must remain available to deal with the aftermath of major disasters regardless of improvements under the other watershed programs.	No response required.

If you cannot meet the deadline, please notify SILVIA GAZZERA at 804/698-4488 prior to the date given. Arrangements will be made to extend the date for your review if possible. An agency will not be considered to have reviewed a document if no comments are received (or contact is made) within the period specified.

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Please return your comments to:

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DEPARTMENT OF ENVIRONMENTAL QUALITY
OFFICE OF ENVIRONMENTAL IMPACT REVIEW
629 EAST MAIN STREET, SIXTH FLOOR
RICHMOND, VA 23219
FAX #804/698-4319

JAN 7 2000

Silvia B. Gazzera
Environmental Program Planner

COMMENTS

1 The EWPP Draft Programmatic EIS adequately addresses restoration after a "natural disaster". However, the document fails to consider the normal processes which sculpt the earth's surface. In some areas restoration to the pre-disaster condition may exacerbate a future "natural disaster".

(signed) Eugene K. Rader (date) 01-05-2000
Eugene K. Rader
(title) Geologist Supervisor
(agency) DMME/DMR

PROJECT # 99-132F 8/98

If you cannot meet the deadline, please notify SILVIA GAZZERA at 804/698-4488 prior to the date given. Arrangements will be made to extend the date for your review if possible. An agency will not be considered to have reviewed a document if no comments are received (or contact is made) within the period specified.

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DEPARTMENT OF ENVIRONMENTAL QUALITY
OFFICE OF ENVIRONMENTAL IMPACT REVIEW
629 EAST MAIN STREET, SIXTH FLOOR
RICHMOND, VA 23219
FAX #804/698-4319

Silvia B. Gazzera
Environmental Program Planner

JAN 14 2000

COMMENTS

No adverse impact on our program.

(signed) (date) 1/12/2000
(title) Asif K. Malik, P.E.
Chief of Technical Services
(agency) Division of Wastewater Engineering
Virginia Department of Health

PROJECT # 99-132F 8/98

1) Greater emphasis on purchase of floodplain easements and increased use of EWP restoration design based on the principles of natural stream dynamics are Program improvements that have been proposed to more fully adapt the Program's measures to the normal processes which sculpt the earth's surface. These measures would be considered in all cases under the Preferred Alternative.	No response required.

JAN 2 1 200

HAMPTON ROADS
PLANNING DISTRICT COMMISSION

ROBERT C. CLAUD, SR., CHAIRMAN • JACK D. EDWARDS, VICE-CHAIRMAN • MYLES E. STANDISH, TREASURER
ARTHUR L. COLLINS, EXECUTIVE DIRECTOR/SECRETARY

January 19, 2000

Ms. Silvia B. Gazzera
EIR Program Planner
Department of Environmental Quality
Post Office Box 10009
Richmond, Virginia 23219

Re: Emergency Watershed Protection Program Draft Programmatic EIS
DEQ #99-132F (ENV:GEN)

Dear Ms. Gazzera:

Pursuant to your request of December 28, 1999, the staff of the Hampton Roads Planning District Commission has reviewed the Emergency Watershed Protection Program Draft Programmatic Environmental Impact Statement.

Generally speaking, it seems that an expansion of the Emergency Watershed Protection Program, as proposed in the EIS, may potentially help to improve natural disaster recovery efforts in our region. Thus, we are in support of the proposed program expansion.

We appreciate the opportunity to review this project. If you have any questions, please do not hesitate to call.

Sincerely,

Arthur L. Collins
Executive Director/Secretary

HRV:fh

HEADQUARTERS • THE REGIONAL BUILDING • 723 WOODLAKE DRIVE • CHESAPEAKE, VIRGINIA 23320 • (757) 420-8300
PENINSULA OFFICE • HARBOUR CENTRE, 2 EATON STREET • SUITE 502 • HAMPTON, VIRGINIA 23669 • (757) 728-2067

Mississippi Department of Archives and History

Historic Preservation Division
Post Office Box 571 • Jackson, Mississippi 39205-0571 • Phone 601 / 359-6940 • Fax 601 / 359-6955

February 3, 2000

U. S. Department of Agriculture
Natural Resources Conservation Services
EWP Draft PEIS Comments
P. O. Box 745
Falls Church, Virginia 22040-0075

Dear Madam or Sir:

RE: Emergency Watershed Protection Program
Draft Programmatic Environmental Impact Statement

1 We have reviewed the referenced document with the intent of providing comments. However, we cannot actually find anything contained therein which is substantially related to cultural resources, archaeology, or history upon which to offer meaningful comments. Perhaps it is a comment to observe that the document reflects the almost total omission of anything related to cultural resources, which is our area of expertise and responsibility.

If you need additional information, please do not hesitate to contact me at 601-359-6946.

Sincerely,

Thomas H. Waggener
Review and Compliance Officer

No response required.	1) Please refer to Chapter 2, Section 2.2.2.3; Chapter 3 Draft PEIS Proposed Action Element #6, and Section 3.5.5 for discussions of consultation regarding cultural resources. Also please refer to the responses to other cultural resource-related comments in this appendix for further clarification.

COMMONWEALTH of VIRGINIA

CHESAPEAKE BAY LOCAL ASSISTANCE DEPARTMENT

James S. Gilmore, III
Governor
John Paul Woodley, Jr.
Secretary of Natural Resources

James Monroe Building
101 North 14th Street, 17th Floor
Richmond, Virginia 23219
FAX: (804) 225-3447

Michael D. Clower
Executive Director
(804) 225-3440
1-800-243-7229 Voice/TDD

January 28, 2000

EWP Program Director
USDA-NRCS Watershed and Wetlands Division
P.O. Box 745
Falls Church, Virginia 22040-0075

RE: Draft PEIS – Emergency Watershed Protection Program
CBLAD Project Review No. FSPR-NRCS-01-00

Dear EWP Program Director:

We have reviewed the Draft Programmatic Environmental Impact Statement for the Emergency Watershed Protection Program and offer the following comments.

1 The Proposed Action appears to be an improvement over the existing program. We are pleased that the proposed program would place greater emphasis on bioengineering solutions for stream restoration, expands the use and number of easements, and promotes floodplain restoration practices as well. While Element #10 promotes the use of bioengineering practices, this would only be the case "where they constitute the least-cost defensible solution". In comparison to the costs of traditional stream restoration practices (i.e., rough channelization and debris removal) of the NRCS it is unclear under what circumstances bioengineering would be the least costly alternative. Bioengineering should be encouraged as a preemptive measure as well as follow-up measure to more extreme emergency practices that may be necessary. It would be helpful if the Final EIS more fully explained this matter and described specific implementation goals.

Thank you for the opportunity to comment on this document. Should you have any questions please do not hesitate to call us at 1-800-CHESBAY.

Sincerely,

Catherine M. Harold
Environmental Engineer

Cc: Scott Crafton, CBLAD
H. Shepard Moon, CBLAD
Sylvia Gazzera, VDEQ

1) Upon consideration of the fundamental goals of the Program improvement, NRCS has changed its basic approach to approval of EWP work. The title of Draft PEIS Proposed Action Element 10 of Section 3.2.2.1 of Chapter 3 has been revised. The term "least-cost" has been eliminated and the Element now reads: "Apply the principles of natural stream dynamics and, where appropriate, use bioengineering in the design of EWP restoration practices." Hydrogeomorphic design and use of bioengineering would be among the solutions considered in all cases. Costs alone would not dictate which solution is selected, as the solution must also be environmentally and socially defensible. NRCS believes these changes reflect the intent of the comment, as the focus is no longer on least cost solutions. Other factors, such as environmental resources, also would be used to determine the best solution as indicated in the related revision to Draft PEIS Proposed Action Element 5, paragraph 2. These aspects of Draft PEIS Proposed Action Elements 5 and 10 have been wholly adopted under the Preferred Alternative.	No response required.

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
P.O. Box 47600 • Olympia, Washington 98504-7600
(360) 407-6000 • TDD Only (Hearing Impaired) (360) 407-6006

February 10, 2000

EWP Draft PEIS Comments
PO Box 745
Falls Church, VA 22040-0075

Dear Sir or Madam:

Thank you for the opportunity to comment on the draft programmatic environmental impact statement (PEIS) for the Emergency Watershed Protection Program. The Department of Ecology has been designated to coordinate Washington State agency review and response for documents issued under the National Environmental Policy Act. In that capacity we enclose a comment letter received from Washington Department of Fish and Wildlife (WDFW).

WDFW has comments related to the merits and disadvantages of Alternatives 2 and 3. They wish also to encourage the Natural Resources Conservation Service to coordinate with state programs before emergency responses are put into action.

If you have any questions, please contact Ms. Cynthia Pratt with WDFW at (360) 902-2575.

Sincerely,

Rebecca J. Inman

Rebecca J. Inman
Environmental Coordination Section

EIS #998035

Attachment (1)

cc: Cynthia Pratt, WDFW

State of Washington
DEPARTMENT OF FISH AND WILDLIFE
Mailing Address: 600 Capitol Way N - Olympia, Washington 98501-1091 - (360) 902-2200, TDD (360) 902-2207
Main Office location: Natural Resources Building - 1111 Washington Street SE - Olympia, WA

February 4, 2000

Rebecca Inman
Environmental Coordination Section
P.O. Box 47600
Olympia, Washington 98504-7600

Dear Ms. ~~Inman~~:Rebecca

RE: NRCS Federal Emergency Watershed Protection Program,
Draft Programmatic Environmental Impact Statement, Dated
December 15, 1999, Comments for Inclusion in NEPA Comment
Letter by the State

The following are my comments concerning the Emergency Watershed Protection Program Draft Programmatic EIS. I will first address the choice of alternatives, and then discuss briefly the need to emphasize state coordination with emergency responses by the NRCS.

Alternatives

1

While the preferred alternative, Alternative 2, is certainly better than the present program as described in the No Action alternative (Alternative 1), it only goes half-way to address returning the hydrological processes of the watershed to a more natural functioning system. Alternative 3 would instigate a proactive response to maintaining contiguous watershed corridors.

Alternative 3 was not selected, it appears, because of 1) cost to NRCS and 2) disruption of older rural communities. However, actively working toward improving watersheds that are most likely to have risks to property and lives will, once implemented, reduce costs. After a stream or river begins to establish a more natural meander, and the floodplain functions to absorb flooding events, streambanks stabilize with good riparian buffers. Costs would only occur when there is an extreme event (>100 year event). Natural flooding events are part of the hydrology of the watershed: floods move sediment throughout the system, and move logs and debris so that large woody debris is deposited for aquatic habitat. Current practices encourage turbidity and erosion, and leads to further downstream emergencies, while not addressing long-term fixes as the DEIS points out. Establishing long-term contiguous floodplain areas would reduce the extreme flooding event, and reduce erosion and water quality issues, as well as benefit fish and wildlife. The need to respond to an emergency in those areas would be decreased. Thus, high costs due to emergency responses would be reduced.

No response required.	1) NRCS recognizes that Alternative 3 "Prioritized Watershed Planning and Management" would likely be the environmentally preferable alternative. However, the agency supports Alternative 4 as its Preferred Alternative because: a. Current law, as interpreted by USDA legal counsel, limits activities conducted under EWP primarily to disaster recovery work. Alternative 3 would add a substantial increment of preventative measures to reduce future flood damages. Legislative authority would be required to implement such a major expansion of the purpose of EWP under Alternative 3. b. To a large extent, NRCS has integrated the management of its watershed programs as described in Alternative 3 within the Water Resources Branch of the NHQ Financial Assistance Programs Division working closely with the NHQ Easement Programs Branch. Together they oversee the recovery practices and floodplain easements portions of EWP and provide funding and technical assistance and training to the NRCS State Offices. But NRCS is limited in fully implementing the scope of Alternative 3 primarily by funding constraints. Several NRCS watershed programs currently exist under P.L. 566 and P.L. 534 that address watershed planning and management and include measures for watershed protection and flood prevention, as well as the cooperative river basin surveys and investigations. Under the new Watershed Rehabilitation Program, NRCS works with local communities and watershed project sponsors to address public health and safety concerns and potential adverse environmental impacts of aging dams. NRCS so far has undertaken 118 projects in 20 States to assess the condition of and repair of more than 10,000 upstream flood control structures built since 1948. The structural and non-structural practices implemented and the easements purchased under those programs have greatly reduced the need for future EWP measures in project watersheds. Nevertheless, EWP must remain available to deal with the aftermath of major disasters regardless of improvements under the other watershed programs.

1 While Alternative 3 may disrupt older rural communities, so does flooding and other emergency events. Which is more traumatic: a community which loses large sections of farms, businesses, and housing, including the lose of lives to a natural disaster, or planned easements and buyouts?

NRCS and State Coordination

2 Which ever Alternative is finally chosen, it is imperative to coordinate with other state programs before responses begin. Washington State Fish & Wildlife has provisions for emergency responses to flooding, and can give verbal approval for emergency repair activities. Emergency repairs are considered to be temporary. It is important to consult with state biologists because of their familiarity with their areas, and because of the concern for cumulative impacts. There is also need to set up some procedures for monitoring and for follow-up activities that will address long-term fixes.

3

4 Washington State Fish & Wildlife biologists are extremely concerned with use of armoring along streambanks. Revegetation and 'softer' approaches should be used where ever possible. Armoring only exacerbates erosion downstream, reduces absorption of flow, and eliminates insect habitat and detritus contributions to the streambed which benefits fish.

5 The DEIS discusses removal of downed trees and other material during flooding, hurricanes and other disasters. While it is beneficial to remove man-made structures that are damaging property or would risk lives, downed trees and snags contribute to large woody debris to streams. They also provide habitat in upland areas for raptors (i.e., eagles, osprey) and small mammals. Care should be taken when deciding which downed trees and snags to remove and which to leave. Again, contacting state Fish and Wildlife personnel would be able to help with those decisions.

Sincerely,

Cynthia K. Pratt

SEPA/NEPA Coordinator
Regulatory Section
Environmental Services Division

Kansas Department of Wildlife & Parks
Environmental Services Section
512 SE 25th Ave.
Pratt, KS 67124
February 14, 2000

EWP Draft PEIS Comments
P.O. Box 745
Falls Church, VA 22040-0745

Dear Sir:

1 We have reviewed the Draft Programmatic Environmental Impact Statement (PEIS) for the Emergency Watershed Protection (EWP) program. The description of threatened and endangered species in this document appears to refer exclusively to federally-listed species. In the 404(b)1 guidelines, threatened and endangered species are defined as being both on lists maintained by individual states and federally at 50 CFR 17.11. The Kansas Nongame and Endangered Species Conservation Act places the responsibility for identifying and undertaking appropriate conservation measures for threatened and endangered species directly upon the Department of Wildlife and Parks. Therefore, pursuant to Kansas Statute Annotated 32-961 and Kansas Administration Regulation 115-15-3 of the Kansas Nongame and Endangered Species Act, our agency would like to review the projects prior to their initiation. We would like to see

2 language incorporated into section 2.2.2.3 Environmental Review and Inter-Agency Coordination page 2-11 that allows state Natural Resource agencies the opportunity to protect state T&E species. Natural resource agencies could be included in the list of examples that are associated with state agencies in the first paragraph of 2.2.2.3.

We have no objections to the draft PEIS for the EWP program; however, we would like to see language incorporated so that our agency can be notified of these types of proposed activities to preserve the threatened, endangered, and SINC species of the State of Kansas.

Thank you for the opportunity to provide these comments and recommendations.

Sincerely,

Mark A. Shaw, Aquatic Ecologist
Environmental Services Section

xc: NRCS, Ourada

1) In those simplified terms the desirable tradeoff is obvious. Nevertheless, NRCS is committed to consideration of the social impacts of its actions. Easements are a voluntary solution, so the disruptions mentioned will not be forced upon communities. Please refer to previous response to your page 2 comment for rationale for not selecting Alternative 3. 2) Please refer to Draft PEIS Proposed Action Element 6 of Section 3.2.2.1. Pre-disaster coordination will incorporate other agencies and their programs. The Preferred Alternative retains the interagency coordination and pre-disaster planning described in Element 6. 3) Installed EWP measures are designed to be long-term not temporary solutions to watershed impairments. However, in "exigency" situations, a short-term "stopgap" solution might be implemented to address an immediate threat to life or property with a permanent solution installed as soon as practicable afterward that would address longer term considerations including environmental and social defensibility. Therefore, monitoring of temporary "stop-gap" solutions would not be necessary. However, NRCS State Offices are required to implement appropriate methods for tracking installed measures to, at a minimum, determine when repeated repairs are being considered. These methods offer the opportunity for such longer-term monitoring of solutions. 4) Please refer to Draft PEIS Proposed Action Element 10 of Section 3.2.2.1. Element 10 of Section 3.2.2.1 has also been revised to stress that bioengineering would be considered for all situations and used whenever feasible. This aspect of Element 10 has been wholly adopted under the Preferred Alternative. 5) Section 3.5.1 has been revised to include the value of instream woody debris, the increased use of natural stream dynamics, and to state that floodplains and upland debris will not be removed unless it poses a future threat.	1) Chapter 2 has been revised to include discussion of the protection of State-listed T&E species. Draft PEIS Proposed Action Element 3 of Section 3.2.2.1 has been revised to add State-listed species. Draft PEIS Proposed Action Element 6 of Section 3.2.2.1 has been revised to include State-listed species. These elements would be adopted under the Preferred Alternative. 2) Current EWP policy requires that NRCS work with the States to protect State-listed species. Section 2.2.2.3 of the PEIS has been expanded to describe those requirements.

WYOMING

DEPARTMENT OF STATE PARKS & CULTURAL RESOURCES
STATE HISTORIC PRESERVATION OFFICE

Barrett Building
2301 Central Ave.
Cheyenne, WY 82002

(307) 777-7697
FAX (307) 777-6421

February 10, 2000

EWP Draft PEIS Comments
P.O. Box 745
Falls Church, VA 22040-0075

RE: Draft Programmatic Environmental Impact Statement for the Emergency Watershed Protection Program; SHPO #0200RLC012

Dear Comment Reviewer:

Our staff has received information concerning the aforementioned Draft Programmatic Environmental Impact Statement (PEIS). Thank you for allowing us the opportunity to comment.

Management of cultural resources on U.S.D.A. Natural Resources Conservation Services (NRCS) projects is conducted in accordance with Section 106 of the National Historic Preservation Act and Advisory Council regulations 36 CFR Part 800 (800 Regs). In particular, for this PEIS, 36 CFR 800.12. These regulations call for survey, evaluation and protection of significant historic and archeological sites prior to any disturbance. Provided the NRCS follows the procedures established in the regulations, and makes the following changes, we have no objections to the proposals within the Emergency Watershed Protection Program PEIS.

1 -In section 2.2.2.3, the PEIS states that "The NRCS state cultural resources specialist or coordinator may recommend consultation with the state historic preservation officer". We request that this be changed to indicate that the cultural resource specialist or coordinator "shall enter into consultation with the State Historic Preservation Officer".

2 -In table 3.2-3, priority 4, it is indicated that sites will be included in this priority only if they are contained in, or in proximity to, cultural resources which are listed on the National Register of Historic Places (NRHP). However, sites which have been determined to be eligible for the NRHP, as well as those listed on the NRHP, are defined at 36 CFR Part 800.16(l) as "historic properties", and are afforded the same protection. It should also be noted that sites must be evaluated for eligibility to the NRHP if they are located within the Area of Potential Effect for a specific project (36 CFR 800.4[c][1]) prior to a determination of project effect. Therefore, sites which are currently

unevaluated for the NRHP must be protected from project effects until NRHP evaluations can be completed. We request that this section be modified by replacing the phrase "listed on the National Register of Historic Places" with "historic properties", and to include sites which are currently unevaluated for NRHP eligibility. Additionally, this section should include designated National Landmarks.

1

Please refer to SHPO project control number #0200RLC012 on any future correspondence dealing with this project. If you have any questions contact Richard Currit at 307-777-5497 or me at 307-777-6311.

Sincerely,

Judy K. Wolf
Deputy State Historic Preservation Officer

JKW:RLC:jh

cc: Wyoming State Clearinghouse, Office of Federal Land Policy

1) No response is required, because the section the commenter references describes the process under the Current Program. However, please refer to Elements 5 and 6 of Section 3.2.2.1, which address defensibility and pre-disaster coordination. These changes to EWP will help to improve the consultation process. These aspects of Elements 5 and 6 have been wholly adopted under the Preferred Alternative. 2) NRCS is committed to compliance with Section 106 of the National Historic Preservation Act (NHPA), as amended, and as implemented by 36 CFR Part 800. We agree that strict adherence to the regulations might require consultation with the SHPO and THPO for every EWP response. However, under Proposed Action Element 6 in Section 3.2.2.1 Interagency Coordination, we propose to develop coordination and consultation protocols with the SHPOs and THPOs under the Emergency Recovery Plan (ERP). This aspect of Element 6 has been wholly adopted under the Preferred Alternative. Thus, the NRCS would have a plan, in which the SHPO and THPO have concurred, that would provide guidance as to when consultation would or would not be necessary.	1) Table 3.2-3 has been revised to include historic and cultural properties listed in or eligible for listing in the National Register of Historic Places (NRHP). The NRHP includes all National Historic Landmarks.

February 14, 2000

In reply refer to:
R&C#: 991200087

EWP Draft PEIS Comments
P.O. Box 745
Falls Church, VA 22040-0075

RE: USDA/NRCS – STATEWIDE – EMERGENCY WATERSHED PROTECTION PROGRAM – DRAFT PROGRAMMATIC ENVIRONMENTAL IMPACT STATEMENT

Dear Sir or Madam:

This letter is to inform you that the Iowa State Historic Preservation Office (SHPO) has received a copy of the above-referenced Programmatic Environmental Impact Statement (PEIS) for review and comment. Several members of our Historic Preservation staff have had an opportunity to review the proposed provisions for the Mitigation of Cultural Resources as defined in Section 3.5.5 of this document. The consensus among our staff is that, as written, the policies set forth in this draft are vague and inconclusive with respect to the agency's compliance obligations mandated under Section 106 of the National Historic Preservation Act of 1966 and 36 CFR Part 800 and are therefore unacceptable to this office.

1 If the agency's objective is to legitimize a policy that coordinates the NHPA and NEPA reviews pursuant to 36 CFR Part 800.8, then the NRCS should clarify, point by point, its procedures toward this end either within the text, in an appendix, or in an addendum to the PEIS. The agency has provided no account of how it intends to coordinate these two separate review processes in Emergency Watershed Protection (EWP) situations.

Furthermore, we find that the wording of Section 3.5.5 is tentative, hypothetical, and avoids the issues of how the agency will initiate consultation, identify and evaluate historic properties, and determine and mitigate project impacts. It appears that the purpose of Section 3.5.5 is to convey to the reader the agency's license for discretionary latitude in its interpretation of the applicable Federal regulations and its responsibilities mandated under Federal law.

Of particular concern to us are the agency's statements regarding the Area of Potential Effect (APE) and how project APE are defined by NRCS Cultural Resource Coordinators during EWP projects. Section 3.5.5 states:

> "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 historic properties nearby or downstream. The Cultural Resources 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."

This viewpoint contradicts the definition provided in 36 CFR 800.16 (d), which states:

> "The Area of potential effect means the geographic area or areas within which an undertaking may directly or indirectly cause changes in the character or use of historic properties, if any such properties exist. The area of potential effects is influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking."

It is our opinion that the agency has to consider all properties as defined in the NHPA, the Secretary standards, and the regulations. These include archaeological sites, traditional cultural properties, buildings, structures, objects, cultural landscapes, and districts. Furthermore, the delineation of the project APE is not left to the discretion of the Agency Official, Agency Cultural Resource Coordinators, or Field Representatives. 36 CFR 800.4 (a) (1) specifically states that "The Agency Official shall consult with the SHPO/THPO to determine and document the area of potential effects as defined in 36 CFR 800.16(d)."

Our office has found that this document raises more questions than answers and would be problematic if implemented using the current language. It should be stated here that the Iowa SHPO would not endorse, nor be a party to a programmatic agreement that would allow a Federal agency to disregard the adverse effects of its undertakings on historic properties. We recommend that Section 3.5.5 of the proposed Programmatic Environmental Impact Statement be rewritten in such a way as to address the Section 106 review process; and, that it outline the appropriate measures to be taken by NRCS Field Offices to assure the agency's compliance during EWP projects.

We would be pleased to review and comment on any future drafts issued by your agency and would be willing to consult with NRCS policymakers regarding the details of its structure and implementation. If you have any questions please feel free to contact me at (515) 281-8744.

Sincerely,

Daniel K. Higginbottom, Archaeologist
Community Programs Bureau, State Historical Society of Iowa

cc: Bruce Julian, National Watershed Policy Coordinator, NRCS
Don Klima, Director, Advisory Council of Historic Preservation
Patricia Ohlerking, Deputy State Historic Preservation Officer
Leroy Brown, State Conservationist, NRCS/USDA

1) This Final EWP PEIS discusses the nationwide implementation of EWP Program improvements. NRCS does not consider it appropriate to outline detailed procedures for treatment of cultural resources within any specific State. However, the PEIS does state that the EWP program will be carried out in a manner consistent with the ACHP's regulatory procedures for implementation of the NHPA of 1966, as amended, found at 36 CFR Part 800. When EWP solutions are being considered, appropriate identification and evaluation of potential impacts to cultural resources will be determined on a case-by-case basis by means of consultation between the NRCS State Office specialist and the SHPOs and/or THPOs. We agree that strict adherence to the regulations might require consultation with the SHPOs and THPOs for every EWP project. However, under Draft PEIS Proposed Action Element 6 in Section 3.2.2.1 Interagency Coordination, NRCS proposes that each State Office develop coordination and consultation protocols with the SHPOs and THPOs under the Emergency Recovery Plan (ERP). This aspect of Element 6 has been wholly adopted under the Preferred Alternative. The language in Section 3.5.5 is not tentative but broad and cautionary. However, in response to comments we have modified the language to ensure that it is clear that EWP solutions are to be identified and designed in consultation with the SHPOs and THPOs, taking into account the nature and values of identified resources on a case-by-case basis. NEPA is integrated into the EWP process by completion of the Environmental, Social, and Economic Evaluation portions of the DSR which incorporates the environmental evaluation process in the NRCS NEPA regulations at 7 CFR 650.5. This process considers alternatives to any EWP action and all impacts resulting from those alternatives.	No response required.

February 14, 2000

Mr. Bruce Julian
Director, Watersheds and Wetlands Division
USDA-NRCS
Post Office Box 2890
Washington, DC 20013-2890

Re: Draft Programmatic Environmental Impact Statement (PEIS) for the Emergency Watershed Protection Program

Dear Mr. Julian:

The Arizona Game and Fish Department (Department) appreciates the opportunity to review the draft PEIS for the Natural Resources Conservation Service's (NRCS) Emergency Watershed Protection (EWP) Program. Watersheds provide very important habitats for fish and wildlife. We believe there are opportunities for cooperative watershed management and restoration work, through the EWP Program, that can support this program and the Department's mission. The following comments are provided for your consideration.

1 The Department supports the EWP Program and the NRCS's efforts to improve and expand activities to address watershed impairments. The Proposed Action includes several new elements, including environmental impact analyses and development of mitigation to avoid or minimize potential adverse effects to fish and wildlife that could result from EWP Program activities. The Department would like to emphasize the importance of involving the state agencies early in the EWP Program process. This level of coordination between NRCS and the state wildlife agencies should be required for all EWP Program activities that have the potential to impact fish and wildlife resources. The Department requests that the Proposed Action include the state wildlife agency as one of the main agencies with which the NRCS should work closely with to avoid problems with environmental compliance and impacts to fish and wildlife resources.

2 In addition, the Department would appreciate the NRCS's consideration of incorporating the following elements, including specific elements of Alternative 3 (Prioritized Watershed Planning and Management) in the Proposed Action. These elements include:

- working with the Department to ensure that fish and wildlife resources and needs are addressed during EWP Program activities;

- investigating the causes of watershed impairments and impacts to watersheds based on floodplain, wetland and riparian community parameters;

- and components of Alternative 3 (#3-5) which address proactive planning and locally led disaster-readiness and mitigation planning, planning and management of priority watersheds, and combining the EWP Program with other program authorities to enhance watershed values, including fish and wildlife habitat improvements.

Again, we appreciate the opportunity to review and comment on the draft PEIS. If you have any questions regarding this letter, please contact me at (602) 789-3602.

Sincerely,

John Kennedy
Project Evaluation Program Supervisor
Habitat Branch

JK:am

cc: Tom Fresques, Habitat Specialist, Region III, Kingman
Bill Knowles, Habitat Specialist, Region IV, Yuma
Tim Wade, Habitat Specialist, Region VI, Mesa
Bill Werner, Aquatic Habitat Coordinator, Habitat Branch
Michael Somerville, State Conservationist, NRCS

AGFD# 12-16-99(02)

1) Please refer to Draft PEIS Proposed Action Element 6 of Section 3.2.2.1. Pre-disaster coordination would become part of the EWP program. The Preferred Alternative retains the interagency coordination and pre-disaster planning described in Element 6. 2) NRCS recognizes that Alternative 3 "Prioritized Watershed Planning and Management" would likely be the environmentally preferable alternative. However, the agency supports Alternative 4 as its Preferred Alternative because: a. Current law, as interpreted by USDA legal counsel, limits activities conducted under EWP primarily to disaster recovery work. Alternative 3 would add a substantial increment of preventative measures to reduce future flood damages. Legislative authority would be required to implement such a major expansion of the purpose of EWP under Alternative 3. b. To a large extent, NRCS has integrated the management of its watershed programs as described in Alternative 3 within the Water Resources Branch of the NHQ Financial Assistance Programs Division working closely with the NHQ Easement Programs Branch. Together they oversee the recovery practices and floodplain easements portions of EWP and provide funding and technical assistance and training to the NRCS State Offices. But NRCS is limited in fully implementing the scope of Alternative 3 primarily by funding constraints. Several NRCS watershed programs currently exist under P.L. 566 and P.L. 534 that address watershed planning and management and include measures for watershed protection and flood prevention, as well as the cooperative river basin surveys and investigations. Under the new Watershed Rehabilitation Program, NRCS works with local communities and watershed project sponsors to address public health and safety concerns and potential adverse environmental impacts of aging dams. NRCS so far has undertaken 118 projects in 20 States to assess the condition of and repair of more than 10,000 upstream flood control structures built since 1948. The structural and non-structural practices implemented and the easements purchased under those programs have greatly reduced the need for future EWP measures in project watersheds. Nevertheless, EWP must remain available to deal with the aftermath of major disasters regardless of improvements under the other watershed programs.	No response necessary.

Minnesota Historical Society
SHPO
February 15, 2000

EWP Program Director
EWP Draft PEIS Comments
PO Box 745
Falls Church, VA 22040-0075

Re: Draft Programmatic Environmental Impact Statement
NRCS Emergency Watershed Protection Program
SHPO Number: 2000-0838

Dear EWP Program Director:

Thank you for the opportunity to review and comment on the above programmatic EIS. It has been reviewed pursuant to the responsibilities given the State Historic Preservation Officer by the National Historic Preservation Act of 1966 and the Procedures of the Advisory Council on Historic Preservation (36CFR800).

1. We appreciate the mention of cultural resource issues on pages S-3, S-22, and S-26 of the Summary section on page 2-11 of Chapter 2, and on page 3-45 of Chapter 3. This discussion acknowledges the need for consultation with the SHPO. However, there needs to be more discussion of the need for specific procedures to be followed when an emergency situation arises. The consultation process often gets bogged down when such procedures have not been carefully formulated beforehand.

1

2. The discussion on page 3-45 (section 3.5.5) is a good example of the type of issues that can be worked out in the context of specific response procedures.

3. It appears that the impact analysis for historic and cultural resources on page 5-104 could be used to justify limiting consideration of cultural resource impacts to areas where there are known sites. This would not be appropriate.

Contact us at 651-296-5462 with questions or concerns.

Sincerely,

Dennis A. Gimmestad
Government Programs & Compliance Officer

New York State Department of Environmental Conservation

Division of Water, Room 310C

50 Wolf Road, Albany, New York 12233-3500
Phone: (518) 457-7464 · FAX: (518) 457-0625

Website: www.dec.state.ny.us

February 15, 2000

EWP-PEIS
P.O. Box 475
Falls Church , Va. 22040-0745

RE: USDA Soil Conservation Service Emergency Watershed Protection Programmatic Environmental Impact Statement (EWP-PEIS) - Comments and Recommendations.

Comments:

1. The New York State Department of Environmental Conservation (DEC) commends the Soil Conservation Service efforts toward the "greening" of the Emergency Watershed Protection program. Items we particularly endorse are the declaration of intent to attain a greater degree of interagency coordination, making Disaster Assistance Recovery Teams (DART) available to state and local entities for watershed protection training, and the expanded role of floodplain easements to be used in lieu of "recovery work".

2. However as DEC staff worked through the PEIS, it was apparent that while the "proposed alternative" makes several improvements over the traditional program and should promote soil conservation, and protection of fish and wildlife habitats while protecting human life and property, the proposed alternative is not the alternative we would have preferred. In our previous comments on the "Notice of Intent to Prepare a Draft PEIS", DEC stated the importance of long term watershed planning with respect to interagency coordination. DEC advocated for allocating some percentage of EWP funds toward long-range planning and implementation of work that would be of lasting positive benefit and would include purchase of flood-way easements. Alternative #3 satisfies these objectives, yet it is not the adopted alternative.

1

DEC understands that sometimes trade-offs must be made between such things as "affordability" and "protection of environmental and cultural resources" but the PEIS does not state why the proposed alternative is selected over the more comprehensive "Alternative #3".

1) This PEIS is discusses nationwide implementation of the NRCS' EWP Program. We refer you to the discussion of ERPs (Emergency Recovery Plans) under Draft PEIS Proposed Action Element 6 in Section 3.2.2.1 Planning. Through these plans, NRCS will be developing coordination and consultation protocols with the SHPO and THPO, prior to disasters, thereby facilitating this process during actual field operations. This aspect of Element 6 has been wholly adopted under the Preferred Alternative.	1) NRCS recognizes that Alternative 3 "Prioritized Watershed Planning and Management" would likely be the environmentally preferable alternative. However, the agency supports Alternative 4 as its Preferred Alternative because: a. Current law, as interpreted by USDA legal counsel, limits activities conducted under EWP primarily to disaster recovery work. Alternative 3 would add a substantial increment of preventative measures to reduce future flood damages. Legislative authority would be required to implement such a major expansion of the purpose of EWP under Alternative 3. b. To a large extent, NRCS has integrated the management of its watershed programs as described in Alternative 3 within the Water Resources Branch of the NHQ Financial Assistance Programs Division working closely with the NHQ Easement Programs Branch. Together they oversee the recovery practices and floodplain easements portions of EWP and provide funding and technical assistance and training to the NRCS State Offices. But NRCS is limited in fully implementing the scope of Alternative 3 primarily by funding constraints. Several NRCS watershed programs currently exist under P.L. 566 and P.L. 534 that address watershed planning and management and include measures for watershed protection and flood prevention, as well as the cooperative river basin surveys and investigations. Under the new Watershed Rehabilitation Program, NRCS works with local communities and watershed project sponsors to address public health and safety concerns and potential adverse environmental impacts of aging dams. NRCS so far has undertaken 118 projects in 20 States to assess the condition of and repair of more than 10,000 upstream flood control structures built since 1948. The structural and non-structural practices implemented and the easements purchased under those programs have greatly reduced the need for future EWP measures in project watersheds. Nevertheless, EWP must remain available to deal with the aftermath of major disasters regardless of improvements under the other watershed programs.

3. We note that the list of elements comprising the "proposed action" includes the following (p.3-9)

"**Interagency coordination**. NRCS would evaluate and implement ways to improve coordination between the EWP Program and other emergency programs. Coordination would help each agency understand better the roles and responsibilities of the other agencies. This would entail working more closely with EPA, FWS, USACE, and state emergency response and recovery agencies to avoid problems with permits, regulatory consultation, and duplication of work."

1 This element description does not include long term planning efforts, nor does it explain how or when improved coordination would take place. In addition, key flood control related agencies were excluded. The Federal Emergency Management is the designated lead federal agency dealing with disaster relief. FEMA and the State National Flood Insurance Program Coordinator should be included in the list of agencies.
2

Recommendations:

3 1. Adopt Alternative #3 as the preferred alternative: Our previous recommendations requested that you adopt long term planning efforts. Since "**long term watershed planning**" distinguishes "alternative #3" from the "proposed alternative", we recommend that you either incorporate at least minimum features of alternative three in the proposed alternative or adopt alternative #3.

4 2. **Discussion of alternative 3 on page 3-21 should include more description of what elements of Alternative 3 of the EWP program are common with the broader mission and mandate of NRCS relative to watershed management and restoration.** What kinds of overlapping program elements exist between these two programs? We suggest that the document describe how much of alternative 3 of the EWP program would be included in the implementation of NRCS's watershed management and restoration mission.

5 (3) **The final PEIS should feature a comprehensive comparison of the alternatives with specific discussion of the rationale for choosing the preferred or proposed alternative over the other alternatives.**

The Draft PEIS provides a description and evaluation of each alternative, however it does not provide any explanation of why the proposed alternative was chosen. Throughout the Draft PEIS, "Alternative 3" is touted as being the best alternative from both natural and cultural resources perspectives, but there is no discussion concerning why that alternative was not selected.

6 (4) **DEC recommends soliciting state and other agency recommendations for improved coordination between SCS -EWP staff and the other agencies, particularly with respect to state and if applicable, local permitting requirements.**

Ensuring that funded work is permissible under state and local laws is crucial.

1 (5) **DEC advocates that no "cap" be placed on funding for purchase of easements. Reiterating item 1 above, we advocate long range planning within the program to ensure that easement purchases are maximally effective with respect to natural resource objectives that may lie beyond the purview of simple watershed protection.**

It may be beneficial to plan purchase of easements to acquire an entire reach of stream, achieving benefits to open space, wildlife, fisheries and even cultural objectives that could not be achieved without planning.

2 (6) While the proposed NRCS actions contain elements of sound floodplain management, there should be a general statement that all activities within federally mapped floodplains must comply with National Flood Insurance Program development requirements. In particular, debris should not be deposited within regulatory floodways. The NRCS document does not contain anything contrary to these suggestions. However, the statements be made more overt.

DEC appreciates this opportunity to comment on the Draft PEIS.

Sincerely,

N.G. Kaul, Director
Division of Water

1) Please refer to Draft PEIS Proposed Action Element 6 of Section 3.2.2.1. NRCS would seek improved coordination between EWP and other emergency programs and request that State Conservationists prepare ERPs that detail working relationships with other groups on the Federal, State, and local levels. Under the Preferred Alternative, time to respond to exigency situations is increased from 5 to 10 days, allowing for more time to conduct appropriate agency coordination and consultation. 2) Draft PEIS Proposed Action Element 6 of Section 3.2.2.1 has been revised to include FEMA as a disaster agency. Also note that FEMA is charged with handling Presidentially declared disasters. NRCS does not routinely operate on such a scale; EWP responses tend to be more "localized." 3) Please see the response to page 1, comment #1 for NRCS' explanation of why the agency supports Alternative 4 as the Preferred Alternative. 4) The overall mission of NRCS is to conserve resources and includes several elements. NRCS has the responsibility to administer two watershed protection and flood prevention programs: PL 78-534 and PL 83-566. These programs authorize the Federal government to cooperate with states and their subdivisions and others for the purposes of preventing flood damages and furthering the conservation, development, utilization, and disposal of water. The EQIP program (PL 104-127) is designed to carry out the installation of "best management practices" (BMPs) to reduce erosion in critical areas and implement other natural resource conservation measures. Under the leadership of local organizations, Alternative 3 would utilize these and other programs to provide financial and technical assistance to implement measures needed to reduce and/or minimize the chance of flood damage occurring in the future. Other Federal agency programs that might be applicable would also be used to assist in bringing about better watershed management. 5) The Final PEIS text has been revised to clarify why Alternative 3 was not the Draft PEIS Proposed Action or the Preferred Alternative. When NRCS publishes its Record of Decision (ROD), the rationale for selecting the alternative that is ultimately chosen will be detailed. 6) Please refer to Draft PEIS Proposed Action Element 6 of Section 3.2.2.1 for information on pre-disaster coordination with other agencies and to response #1 above. . Also refer to Appendix A for information on the public scoping for this PEIS. The document was also made available for public comment and hundreds of copies were distributed nationwide for comment.	1) EWP has no pre-defined cap or limit on either the number of acres or the dollars spent for easements. The Wetland Reserve Program (WRP) does have a statutory limit on the number of acres that may be purchased, but EWP does not have such restrictions. Please refer to Figure 3.4-1 for the projected funding for EWP floodplain easements. 2) PEIS Section 2.1.1.2 has been revised to reflect National Flood Insurance Program requirements regarding activities in federally mapped floodplains, specifically debris removal and disposal.

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
HISTORICAL PRESERVATION & HERITAGE COMMISSION
Old State House • 150 Benefit Street • Providence, R.I. 02903-1209
Preservation (401) 222-2678 FAX (401) 222-2968
Heritage (401) 222-2669 TDD (401) 222-3700

February 11, 2000

EWP Draft PEIS Comments
P. O. Box 745
Falls Church, VA 22040-0075

Dear EWP Staff:

The Rhode Island Historical Preservation and Heritage Commission staff has reviewed the draft PEIS for the proposed improvements and expansion of the Emergency Watershed Protection Program. We have the following comments regarding the proposed action and the implications for cultural resource management.

1 The draft document properly identifies cultural resources as significant aspects of the environment affected by EWP activities. It also cites the need to consult with the SHPO as part of EWP planning before as well as in the aftermath of disasters. This need should be stated more emphatically in Section 2.2.2.3, paragraph 2, where the text now reads that the "NRCS state cultural resources specialist or coordinator **may** recommend consultation with the SHPO..." "Should recommend" would be a more appropriate statement.

It appears that the proposed action would increase the areas of potential effect for EWP activities and thereby increase the likelihood that cultural resources might be affected by those activities. Table S-4-2 indicates that sites with cultural resources would receive high priority ranking for EWP actions, which would be beneficial for cultural resources. However, there is also the increased potential for adverse impacts to cultural resources through various means, including a too-narrow definition of the APE, as described in Section 3.5.5. In order to reduce such avoidable impacts, the NRCS will need to develop appropriate plans and disaster protocols in coordination with the SHPO to insure that known sites and areas of high sensitivity are properly identified and areas of potential affect are defined to encompass the full range of effects to resources.

These comments are provided in accordance with Section 106 of the National Historic Preservation Act. If you have any questions or comments, please contact Richard E. Greenwood, Project Review Coordinator of this office.

Very truly yours,

fer Richard E. Greenwood

Edward F. Sanderson
Executive Director
Deputy State Historic
Preservation Officer

(B5)

1) NRCS is committed to compliance with the Section 106 of the NHPA, as amended, as implemented by 36 CFR Part 800. We agree that strict adherence to the regulations might require consultation with the SHPO and THPO for every EWP response. However, in Draft PEIS Proposed Action Element 6 in Section 3.2.2.1, we present a plan to develop pre-disaster coordination and consultation protocols with the SHPOs and THPOs under ERPs (Emergency Recovery Plans). Thus, the NRCS State Office would have a plan that would provide guidance when consultation is or is not necessary. We have modified the language in Section 2.2.2.3, paragraph two, to ensure that consultation would take place as necessary. The development of ERPs, in consultation with SHPOs, THPOs, and other concerned partners, would also ensure that appropriate areas of potential effect (APEs) would be defined and considered for each activity. We have also modified the language in Table 3.2-3 to include historic and cultural properties listed in or eligible for listing in the NRHP.	No response required.

State of New Jersey

Department of Environmental Protection

Christine Todd Whitman
Governor

Robert C. Shinn, Jr.
Commissioner

Office of Program Coordination
PO Box 418
Trenton, NJ 08625-0418
Phone 609-292-2662
Fax 609-292-4608
E-mail: lschmidt@dep.state.nj.us

February 16, 2000

EWP Draft PEIS Comments
P.O. Box 745
Falls Church, VA 22040-0075

RE: DPEIS Comments – Emergency Watershed Protection Program

Dear Sir:

The Office of Program Coordination of the New Jersey Department of Environmental Protection (NJDEP) has completed its review of the Draft Programmatic Environmental Impact Statement (DPEIS) for the Emergency Watershed Protection (EWP) Program of the Natural Resources Conservation Service (NRCS), United States Department of Agriculture. We commend the NRCS for the development of a through and well-presented document. The EWP is a valuable Program and our Department is aware of the positive impacts it has had in watersheds in New Jersey. We offer the following comments regarding plans of the NJDEP to protect the watersheds of New Jersey, impacts to natural resources, and impacts to open space.

The NJDEP's Division of Watershed Management is currently moving forward with initiating development of Watershed Management Area Plans in all New Jersey watersheds within the year 2000. This effort includes extensive watershed coordination efforts with local citizens, local units of government, other State agencies, and federal agencies. The EWP Program is one of the federal mechanism for watershed restoration that will be key to coordinate policy with both now and in the future for the NJDEP to be fully successful in achieving mandated water quality goals.

Several points within the proposed 15 elements of the EWP expansion are of particular interest to the Division of Watershed Management. They concur with the spirit of the expansion and feel that the proposed changes represent a positive correlation with priorities developed by the NJDEP. In particular, the Division of Watershed Management commands the NRCS on the elements stating that:

- The restoration measures be of a "greener" variety whenever possible;
- Permanent easements will be emphasized to a greater degree;
- Restoration in the stream channel will be in line with natural stream dynamics;
- Greater coordination with local stakeholders will be part of alternatives selection;
- The restoration measures will be more cost effective; and
- The restoration measures will be more sensitive to threatened and endangered species, cultural resources, and watershed wide implications.

1 The Division of Watershed Management's primary technical concern with the EWP Program (which is also noted in the following comments from the Division of Fish and Wildlife) is that selected measures, both structural and vegetative, be consistent with the native ecology at the site or watershed. The measures should mesh with ecological criteria of watershed restoration action strategies of our Department.

2 NJDEP's Division of Fish and Wildlife (DFW) also concurs that in general the Proposed Action (Alternative 2) appears to be a logical next step from the current EWP Program, and does provide for additional direction toward bio-engineering and floodplain reclamation/restoration initiatives. However, the DFW would, of course, favor those aspects of the Prioritized Watershed Planning and Management (Alternative 3) that is yet another step further toward greener methods and broad-based purchases of disaster-prone watershed areas.

3 One major concern of the DFW is if particular recognition and value will be placed on State watershed areas that harbor special natural resources (e.g. State threatened or endangered species or New Jersey Category 1/FW-1 Waters). The document notes that federally listed species will receive protection on a case-by-case basis, but does not necessarily reflect the same consideration for State species or other special resources for a given State/region/watershed reach. The Final PEIS should

4 address how adequate coordination will take place to insure that their value is properly assessed in the EWP Program, and how trout waters or other aquatic resources, for example, will be evaluated beyond the *EPA Rapid Bioassessment Protocols for Use in Streams and Rivers*, which may not adequately reflect State priority resources.

The EWP Program may offer opportunities in New Jersey to coordinate acquisition of conservation, agriculture and floodplain easements to the benefit of flood and open space protection. With respect to disaster recovery, our Department's Green Acres Program would review each instance on a case by case basis to determine if the parcels involved are encumbered by the Green Acres Program's rules and regulations and to what degree the NJDEP has jurisdiction.

Thank you for the opportunity to review the DPEIS.

Sincerely,

Lawrence Schmidt
Director
Office of Program Coordination

C: Barbara Hirst, NJDEP
Robert McDowell, NJDEP
Jeanne Donlon, NJDEP

No response required.	a. Current law, as interpreted by USDA legal counsel, limits activities conducted under EWP primarily to disaster recovery work. Alternative 3 would add a substantial increment of preventative measures to reduce future flood damages. Legislative authority would be required to implement such a major expansion of the purpose of EWP under Alternative 3. b. To a large extent, NRCS has integrated the management of its watershed programs as described in Alternative 3 within the Water Resources Branch of the NHQ Financial Assistance Programs Division working closely with the NHQ Easement Programs Branch. Together they oversee the recovery practices and floodplain easements portions of EWP and provide funding and technical assistance and training to the NRCS State Offices. But NRCS is limited in fully implementing the scope of Alternative 3 primarily by funding constraints. Several NRCS watershed programs currently exist under P.L. 566 and P.L. 534 that address watershed planning and management and include measures for watershed protection and flood prevention, as well as the cooperative river basin surveys and investigations. Under the new Watershed Rehabilitation Program, NRCS works with local communities and watershed project sponsors to address public health and safety concerns and potential adverse environmental impacts of aging dams. NRCS so far has undertaken 118 projects in 20 States to assess the condition of and repair of more than 10,000 upstream flood control structures built since 1948. The structural and non-structural practices implemented and the easements purchased under those programs have greatly reduced the need for future EWP measures in project watersheds. Nevertheless, EWP must remain available to deal with the aftermath of major disasters regardless of improvements under the other watershed programs.
New Jersey Department of Environmental Protection page 2 1) Please refer to Draft PEIS Proposed Action Elements 6 and 10 in Section 3.2.2.1. These items refer to the pre-disaster planning process and an increased use of the principles of natural stream dynamics and bioengineering practices. These aspects of Elements 6 and 10 have been wholly adopted under the Preferred Alternative. Pre-planning would allow for other agencies to raise ecological concerns. 2) NRCS recognizes that Alternative 3 "Prioritized Watershed Planning and Management" would likely be the environmentally preferable alternative. However, the agency supports Alternative 4 as its Preferred Alternative because: ***(response continued at top of next column)***	3) The PEIS has been revised to include State-listed T&E species. 4) Draft PEIS Proposed Action Element 6 of Section 3.2.2.1 addresses pre-disaster planning and allows states to raise issues of particular concern. The Preferred Alternative retains the interagency coordination and pre-disaster planning described in Element 6.

Local Agency and Tribal Government Comments and Responses

The following comments were received from other entities. A listing of those entities providing comments is below:

Tehama County Flood Control and Water Conservation District
Tribal Historic Preservation Office, Narragansett Tribe
California Regional Water Quality Control Board
Orange County Planning and Development Services Department

January 14, 2000

W-00-32

EWP Draft PEIS Comments
P.O. Box 745
Falls Church, VA 22040-0075

ATTN: Lawrence E. Clark, Deputy Chief for Programs

RE: Comments Regarding the Draft Programmatic Environmental Impact Statement (PEIS), EWP Program Improvement and Expansion, Dated December 15, 1999

Dear Mr. Clark:

Tehama County Flood Control and Water Conservation District (TCFC&WCD), Tehama County California, offers the following comments in regard to NRCS and their Draft PEIS on the EWP Program.

By reference, we include our previously submitted comments to the Notice of Intent (NOI) which discuss our location and general concerns (see attached). The following are our specific comments regarding the current Draft PEIS.

We have enjoyed a great working relationship with NRCS through its EWP Program for many years. We have experienced four state and federally declared disasters since 1995 and NRCS has always been there to aid in protecting life and property. It is encouraging to read in the summary (S-1) that this is ....."A comprehensive proposal by NRCS to **improve and expand** the EWP Program." Followed by (S-2) ....." to provide EWP with assistance **more effectively and efficiently**....."

COMMENTS RELATIVE TO ALTERNATIVE 1 - NO ACTION

It goes without saying that we feel that the existing EWP Program functions very well. As echoed many times at the Sacramento California hearing on the NOI "If it isn't broke - don't fix it!" However, as we are all aware, some interest groups may feel that change is necessary. Caution is always warranted, however, as is seen in California's CALFED efforts, the unbalanced environmental approach is being brought back toward the middle ground by an outcry from citizens and legislative concerned with life and property in proper balance with nature.

COMMENTS RELATIVE TO: ALTERNATE 2-EWP PROGRAM IMPLEMENT AND EXPANSION AND THE 15 ELEMENTS TO IMPROVE THE DELIVERY AND DEFENSIBILITY OF THE PROGRAM.

ELEMENT 7.

We concur that you allow repairs be made using "sound engineering alternatives." With the requirement that we maintain repairs for a three (3) year period it is essential that when we commit our county to maintenance, that the repair was completed with proven, sound engineering.

ELEMENT 8.

1. If you propose to limit repair of a site to twice in a ten-year period, it is understood that the time period would begin upon adoption of this Programmatic Environmental Impact Statement for the EWP Program. Is this correct?

2. If a site experienced damage for a third time in the ten-year period and was threatening life and property, such as a private levee break, what agency would step in to fund repairs?

ELEMENT 10

3. Proposing to use "Bioengineering" where they make up the "least-cost practical solution" must be carefully implemented. Bioengineering solutions are relatively new and unproven over the test of time technique. They certainly have a place, but when we are required to commit tax payer dollars to a three-year maintenance of repaired locations, it is imperative that we not be asked to experiment in critical locations.

ELEMENT 11

4. Would Category 2, Easements Purchase, be funded 100%?

5. Also, we recommend that cropping be allowed for some period of time, say four to six years, to allow the farmer a chance to transition onto other acreage, etc.

ELEMENT 15

6. This states that demolition or relocation of structures to outside the floodplain would be at "no additional cost to the Government." However, on Page 3-17, it states that it would be based on a 75/25 cost share (which we hope it is). Please clarify.

ADDITIONAL COMMENTS:

7. Many agencies are pursuing purchasing easements along streams and in watersheds. Issues of concern to local communities are loss of tax revenue and the effect of introducing riparian forests in floodplains which may ultimately reduce the floodway capacity. Also, new riparian forests may introduce threatened or endangered species which could affect adjoining property. Please address these issues.

8. Table S.4-1 points out how the proposed action and/or combined with prioritized watershed planning and management results in an "accelerated shift to greener methods" and reduces the number of "armoring" practices contracted. Again, we reiterate the need for sound engineering judgement and practice when considering the "greener" approach.

9. We commend your efforts in Alternate 3 to Prioritize Watershed Planning and Management. This

10.

No response required.

Tehama County Flood Control and Water Conservation District Page 2
Response Begins Below.

Tehama County Flood Control and Water Conservation District page 2

1) Yes, the limitation would begin with the adoption of the new program. There will be no "grandfathering."

2) The intent is to achieve one of the principal goals of program improvement: to reduce taxpayer funding of repetitive repairs at the same location. NRCS would encourage purchase of floodplain easements if a site were damaged for the third time within ten years. However, there may be other State or local programs that may be able to assist or the landowner could perform the repairs with their own funds.

3) Please refer to Proposed Action Element 10 of Section 3.2.2.1. This aspect of Element 10 is wholly adopted under the Preferred Alternative. Bioengineering is a well-founded restoration method, not an experimental technique. NRCS would encourage its use in situations where it is a technically sound restoration method as a substitute for the more frequently used methods that are much less desirable from an environmental perspective. Also note that the NRCS approach and references to the least-cost solution have been revised so the selected method, if it is bioengineering, need not be the least-cost design because it will most likely have environmental benefits that offset higher cost (please see response to USEPA page 5, response #6).

4) Under the Draft PEIS Proposed Action and Preferred Alternative, there would no longer be categories of floodplain easements. All NRCS-funded easements under these alternatives would provide 100 percent of the restoration costs.

5) Allowing a gradual transition from cropping to easement would not be consistent with the purposes of the easement program and would not be allowed. There are compatible uses that might be allowed to the landowner that would bring an economic return, other than cropping.

(continued at top of next column)

6) The Summary and main text have been revised to ensure consistency regarding the cost share ratio which is 75%/25%.

7) a. Please refer to the socioeconomic discussions in Chapter 5, Section 5.3 for a discussion of the potential for loss of tax revenue.

b. The consensus in the scientific community is that introduction of riparian forests improves the floodplain function. Riparian vegetation acts to slow water velocities, leading to a longer flood retention time, as well as a decrease in streambank erosion. While the longer retention time may cause minor increases in floodwater levels, the benefits of the retention far outweigh the detrimental effects. Primarily, the duration of flooding is extended, reducing the velocity and volume of floodwaters in downstream areas, further reducing threats to downstream residents. Also, turbidity is reduced, as water velocity slows and drops the sediment load and soil infiltration is greater, leading to improved groundwater recharge and soil moisture levels for vegetation. Please refer to Section 5.2.5 of Chapter 5 and Section E.1.2 of Appendix E for further information.

8) Recolonization of riparian areas by T&E species is consistent with the NRCS floodplain easement goal of floodplain hydrologic function recovery (see PEIS Chapter 2, Section 2.4) and the broad mandate of all Federal agencies to help further T&E species conservation, as required under the Endangered Species Act. Adjacent landowners, as well as the local sponsor who would own the easement property, could be eligible for Federal assistance under the Safe Harbor policy from the USFWS. Safe Harbor provides technical and financial assistance to landowners for the purposes of promoting T&E species and their critical habitats. Land uses at the time (including grazing and haying) would be permitted to continue for the duration of the agreement.

9) see response to comment 3 above

10) Please refer to Proposed Action Element 10 of Section 3.2.2.1 and response #3 to the left. NRCS would not promote or approve the use of bioengineering in situations where it is not technically sound.

pro-active approach combined with funding for pre disaster planning and management is a step in the right direction to prevent flood related damage in the future. The stated locally led involvement is excellent.

We appreciate the opportunity to participate in your proposed changes to the EWP Program. If you have any questions please feel free to call me at 530-385-1462.

Sincerely,

Ernie Ohlin
Water Resources Manager

John Brown
Tribal Historical Preservation Officer, Narragansett Tribe
12/16/99 via EWP 1-800 Message Line

1 "I just received the EWP draft in the mail. I just got it in my hands not more than 15 minutes ago. In going over it, I see no mention of Indian tribes at all in context of the proposal. I see no mention of tribal HPOs or tribal lands under many of the acts cited in the Acronyms. Tribes are required ponder and have their own authority to initiate these sorts of programs, yet in your evaluation, I see no mention of Indian tribes whatsoever. Very strange. I will probably call tomorrow. I have not had a chance to read for content but there is a complete lack of referencing to Indian tribes and a complete lack of tribal involvement that would come at a federal level, state level, and ultimately the private level."

No response required.	1) Your points are well taken and we have expanded the text to include discussion of consultation with THPOs, federally recognized tribes, and concerned communities. Please refer to Proposed Action Element 5 of Section 3.2.2.1 regarding environmental and social defensibility for additional information. THPOs were added to lists of coordinating agencies where applicable. These aspects of Element 5 have been wholly adopted under the Preferred Alternative.

Winston H. Hickox
Secretary for Environmental Protection

California Regional Water Quality Control Board
Lahontan Region

Internet Address: http://www.mscomm.com/~rwqcb6
2501 Lake Tahoe Boulevard, South Lake Tahoe, California 96150
Phone (530) 542-5400 • FAX (530) 544-2271

Gray Davis
Governor

February 11, 2000

Director, Watersheds and Wetlands Division
USDA Natural Resources Conservation Service
P.O. Box 2890
Washington, D.C. 20013

Dear Director:

COMMENTS ON DRAFT PROGRAMMATIC ENVIRONMENTAL IMPACT STATEMENT FOR THE EMERGENCY WATERSHED PROTECTION (EWP) PROGRAM

Staff of the Regional Water Quality Control Board, Lahontan Region (RWQCB) have reviewed the above-referenced draft environmental impact statement (DEIS). Through the EWP program, the Natural Resources Conservation Service (NRCS) provides technical and financial assistance to landowners whose property is threatened after natural disasters. The EWP program typically facilitates projects such as removal of debris and sediment from channels and floodplains, hardening of streambanks via engineered structures, and repair of damaged structures (e.g., dams, dikes, levees). The alternatives evaluated in the DEIS would implement changes to the EWP program that have been recommended by a federal review panel, including: (1) improve disaster-recovery readiness through interagency coordination, planning, and training; (2) limit repair of sites to twice in a 10-year period; (3) provide for simplified purchase of floodplain easements to preclude the need for future repair(s) of structures built within floodplains; and (4) apply the principles of natural stream dynamics and bioengineering to the design of EWP practices.

State law assigns responsibility for protection of water quality within the Lahontan watershed basin to the RWQCB. The RWQCB implements and enforces the federal Clean Water Act, the Porter-Cologne Water Quality Control Act (California Water Code Section 13000 et seq.) and the *Water Quality Control Plan for the Lahontan Region* (Basin Plan). Activities that may be regulated as discharges by the RWQCB are not limited to the pumping or pouring of effluent through a pipe, ditch or other point source. Deposits of fill material and any other activities that may contribute to nonpoint sources of pollution (e.g., erosion, surface runoff) are also covered.

1 The Basin Plan contains prohibitions and restrictions on activities that may take place within certain floodplain areas. Given that construction and repair activities conducted under the EWP may pose the potential for adverse effects to water quality, as described in the DEIS, please note that it may be necessary for project proponents to obtain approvals

from this office prior to implementing EWP projects within the Lahontan Region of California.

Staff of the RWQCB support the goals of the proposed action (Alternative 2) to increase proactive disaster planning, reduce development in floodplain areas, and apply 'softer' engineering approaches to stream channel construction projects as appropriate. Accomplishing these goals would restore and improve water quality by reducing the direct, indirect, and cumulative effects of floodplain encroachment and channel hardening.

1 The DEIS presents an alternative to the proposed action that would even further increase proactive disaster planning and the use of floodplain easements. That alternative (Alternative 3) would provide even greater improvements to water quality than the proposed action. We recommend that your agency give full consideration to Alternative 3, in order to facilitate planning efforts that would proactively optimize the use of floodplain easements to reduce the environmental and economic costs of repairing floodplain developments. While the DEIS discloses that Alternative 3 would have higher short-term costs, there would be long-term economic savings and environmental benefits due to the reduced need to repair developments within floodplain areas.

Thank you for this opportunity to comment. Please call Tom Suk, Environmental Specialist, at (530) 542-5419, if you have any questions regarding this letter.

Sincerely,

Harold J. Singer

HAROLD J. SINGER
EXECUTIVE OFFICER

TS/shT:nrcs-ewp

1) All applicable State and local requirements regarding permitting would be met. NRCS would seek improved coordination between EWP and other emergency programs and require that State Conservationists prepare ERPs that detail working relationships with other groups on the Federal, State, and local levels. These issues would also be dealt with in the pre-disaster planning outlined in Proposed Action Element 6 of Section 3.2.2.1.	1) NRCS recognizes that Alternative 3 "Prioritized Watershed Planning and Management" would likely be the environmentally preferable alternative. However, the agency supports Alternative 4 as its Preferred Alternative because: a. Current law, as interpreted by NRCS legal counsel, limits activities conducted under EWP primarily to disaster recovery work. Alternative 3 would add a substantial increment of preventative measures to reduce future flood damages. Legislative authority would be required to implement such a major expansion of the purpose of EWP under Alternative 3. b. To a large extent, NRCS has integrated the management of its watershed programs as described in Alternative 3 within the Water Resources Branch of the NHQ Financial Assistance Programs Division working closely with the NHQ Easement Programs Branch. Together they oversee the recovery practices and floodplain easements portions of EWP and provide funding and technical assistance and training to the NRCS State Offices. But NRCS is limited in fully implementing the scope of Alternative 3 primarily by funding constraints. Several NRCS watershed programs currently exist under P.L. 566 and P.L. 534 that address watershed planning and management and include measures for watershed protection and flood prevention, as well as the cooperative river basin surveys and investigations. Under the new Watershed Rehabilitation Program, NRCS works with local communities and watershed project sponsors to address public health and safety concerns and potential adverse environmental impacts of aging dams. NRCS so far has undertaken 118 projects in 20 States to assess the condition of and repair of more than 10,000 upstream flood control structures built since 1948. The structural and non-structural practices implemented and the easements purchased under those programs have greatly reduced the need for future EWP measures in project watersheds. Nevertheless, EWP must remain available to deal with the aftermath of major disasters regardless of improvements under the other watershed programs.

County of Orange
Planning & Development Services Department

THOMAS B. MATHEWS
DIRECTOR

300 N. FLOWER ST.
SANTA ANA, CALIFORNIA

MAILING ADDRESS
P.O. BOX 4048
SANTA ANA, CA 92702-4048

January 6, 2000

Bruce Julian, EWP Program Director
EWP Draft PEIS Comments
Natural Resource Conservation Service
PO Box 745
Falls Church, VA 22040-0075

RE: NRCS EWP Program Improvement and Expansion Draft PEIS

Dear Mr. Julian:

The Natural Resources Conservation Service (NRCS) has a sterling reputation for assisting local agencies and watershed groups in the restoration of natural communities throughout the western United States. In my attendance at conferences as well as in watershed specific meetings, the NRCS is continually referenced as the one federal agency that has stepped up to help. Aside from localized and somewhat unique efforts from certain other agencies (the Los Angeles District of the U.S. Army Corps of Engineers has been extremely supportive of watershed projects here in Orange County) the NRCS is the first name that I have heard mentioned in assistance programs. It is from this perspective that I have reviewed the Draft PEIS for the EWP Program.

1 The Proposed Action (Alternative 2) identified in the PEIS, if implemented, would continue to increase funding and assistance for needed watershed projects utilizing current recommended practices (the "greener" approach) as opposed to "old school" hard-lining techniques for managing streams. Alternative 3 for Prioritized Watershed Planning and Management would accelerate this high profile and important role to an even greater extent. Our experience is that local agencies and Congress are supportive of the new approach to watersheds and the NRCS should accelerate its activities through implementation of Alternative 3 to meet the increasing interests of local agencies for its assistance programs.

If you have any questions, please feel free to contact me at (714) 834-2486.

Very truly yours,

Michael Wellborn
Senior Planner

1) NRCS recognizes that Alternative 3 "Prioritized Watershed Planning and Management" would likely be the environmentally preferable alternative. However, the agency supports Alternative 4 as its Preferred Alternative because: a. Current law, as interpreted by NRCS legal counsel, limits activities conducted under EWP primarily to disaster recovery work. Alternative 3 would add a substantial increment of preventative measures to reduce future flood damages. Legislative authority would be required to implement such a major expansion of the purpose of EWP under Alternative 3. b. To a large extent, NRCS has integrated the management of its watershed programs as described in Alternative 3 within the Water Resources Branch of the NHQ Financial Assistance Programs Division working closely with the NHQ Easement Programs Branch. Together they oversee the recovery practices and floodplain easements portions of EWP and provide funding and technical assistance and training to the NRCS State Offices. But NRCS is limited in fully implementing the scope of Alternative 3 primarily by funding constraints. Several NRCS watershed programs currently exist under P.L. 566 and P.L. 534 that address watershed planning and management and include measures for watershed protection and flood prevention, as well as the cooperative river basin surveys and investigations. Under the new Watershed Rehabilitation Program, NRCS works with local communities and watershed project sponsors to address public health and safety concerns and potential adverse environmental impacts of aging dams. NRCS so far has undertaken 118 projects in 20 States to assess the condition of and repair of more than 10,000 upstream flood control structures built since 1948. The structural and non-structural practices implemented and the easements purchased under those programs have greatly reduced the need for future EWP measures in project watersheds. Nevertheless, EWP must remain available to deal with the aftermath of major disasters regardless of improvements under the other watershed programs.	

Private Individual Comments and Responses

Mr. James Marple submitted a series of six email transmittals. An explanation of how NRCS responded to these comments is provided on the following page.

Responses to Mr. James Marple

The majority of the text discussion, provided by Mr. James Marple in his six e-mail transmittals, reiterated in numerous ways Mr. Marple's concern that NRCS was remiss in not evaluating a separate program alternative of "rainfall storage" as a viable alternative for reducing flood damages. NRCS provides a response to this general issue of lack of consideration of the alternative on the page to the right (James Marple page 1); responses to Mr. Marple's comments on other specific issues in the PEIS apart from his proposed alternative can be found at the end of this section, following the remaining text of his comments.

EWP

From: James H. Marple <jesl@carolina.net>
To: <ewp@mangi.com>
Sent: Wednesday, February 16, 2000 12:10 AM
Subject: EWP PEIS COMMENT

COMMENTS RE SPECIFIC PROVISIONS OF PROPOSED EMERGENCY WATERSHED PROTECTION PROGRAM CHANGES

James Marple 2793 Hwy 20 E St Pauls NC Feb 2000 <ewp@mangi.com>

My comments about proposed changes derive in part from hundreds of interviews with NRCS district conservationists and their staffs, in part from discussions with other government officials and private interests, in part from over 30,000 hours of research in files and libraries. My advisors include highly qualified engineers, economists, educators and researchers.

I offer no apology for my obviously meager material organizing and writing skills because the scope of this task greatly exceeds the abilities of any one person to assemble, correlate and illustrate all information in a timely manner. It is hoped that useful insights might be found by those who manage to wade through the following mass of observations.

*** * ***

General Response

The fact that the subject of water resource management cuts across every discipline makes it imperative that planners have a broad range of general knowledge, so that they may properly assess each element in relation to all others and to the whole. My discussions with Chief Reed ten years ago revealed that he had such knowledge and was capable of integrating the many elements into programs that would address the public's needs effectively and equitably. The fact that USDA's California office still has no adequate comprehensive natural resource management or drought mitigation programs has given cause for concern about his effectiveness and motivation, however.

What conclusions should be drawn from presentation of this proposed change in the EWP program without a full and impartial examination of the costs and public benefits that flow from comprehensive watershed management plans which incorporate suitable levels of upland rainfall retention? Does this omission indicate that the NRCS has altered its policy and no longer prefers to deal with flood problems at their source, preventing rainfall runoff from accumulating as floodwaters? Does it suggest that special interests have applied undue pressure upon the USDA through captive politicians?

It is understandable that an agency leader would make certain compromises in order to blunt the budget threats orchestrated by campaign contributors who exploit the ignorance and self-interest of politicians. It is well-known that a virtual army of land speculators, water/energy suppliers, bankers, agribusinesses, environmental activists, engineers, contractors and other profiteers depends upon continued use of drainage-oriented planning and design and will go to any lengths to protect their sources of wealth. Yet it is unclear why Chief Reed would let his

General Issue Response: EWP is a disaster response program, not a flood prevention program. Section 216, P.L 81-516 (as amended) that pertains to NRCS EWP Program states that: "The Secretary of Agriculture is authorized to undertake emergency measures, including the purchase of floodplain easements, for runoff retardation and soil erosion prevention, in cooperation with landowners and land users, as the Secretary deems necessary to safeguard lives and property from floods, drought, and the products of erosion on any watershed *whenever fire, flood, or any other natural occurrence is causing or has caused a sudden impairment* of that watershed." Other NRCS programs—specifically the P.L. 78-534 and P.L. 83-566 programs—address flood prevention. Alternative 3, which would further integrate and coordinate EWP with the functions of these other programs for watershed planning, was considered by NRCS but not selected as the Preferred Alternative because:

a. Current law, as interpreted by NRCS legal counsel, limits activities conducted under EWP primarily to disaster recovery work. Alternative 3 would add a substantial increment of preventative measures to reduce future flood damages. Legislative authority would be required to implement such a major expansion of the purpose of EWP under Alternative 3.

(continued at top of next column)

b. To a large extent, NRCS has integrated the management of its watershed programs as described in Alternative 3 within the Water Resources Branch of the NHQ Financial Assistance Programs Division working closely with the NHQ Easement Programs Branch. Together they oversee the recovery practices and floodplain easements portions of EWP and provide funding and technical assistance and training to the NRCS State Offices. But NRCS is limited in fully implementing the scope of Alternative 3 primarily by funding constraints. Several NRCS watershed programs currently exist under P.L. 566 and P.L. 534 that address watershed planning and management and include measures for watershed protection and flood prevention, as well as the cooperative river basin surveys and investigations. Under the new Watershed Rehabilitation Program, NRCS works with local communities and watershed project sponsors to address public health and safety concerns and potential adverse environmental impacts of aging dams. NRCS so far has undertaken 118 projects in 20 States to assess the condition of and repair of more than 10,000 upstream flood control structures built since 1948. The structural and non-structural practices implemented and the easements purchased under those programs have greatly reduced the need for future EWP measures in project watersheds. Nevertheless, EWP must remain available to deal with the aftermath of major disasters regardless of improvements under the other watershed programs.

Staff present a document that did not at least give adequate reason for defying Congressional instruction that every reasonable alternative be fully explored in environmental impact documents.

In summary; The final document should include a thorough exploration of the costs and benefits of modifying each watershed's upland to retain the amount of stormwater that would reduce runoff enough to achieve the same objective as proposed repair and buyout programs. If it does not it should at least give a full explanation of why this alternative was not explored.

Comment on specific elements of the proposed changes:

1 ***Element 2 of Alternative 2 bears careful scrutiny in that it could present opportunities for clever misleaders to do major damage to the public interest by misusing their authority.*** The "horrible example" of California's Riverside County Chief Engineer pushing through channelization of Murrieta Creek (a major branch of the Santa Margarita River) as an emergency project should be sufficient to make any conscientious planner leery of handing emergency powers to local officials. This project violated every precept of public input to planning and destroyed the centerpiece of this river's watershed as it achievedthe goal of hugely magnifying the value of private properties along its length.

2 It is often argued that flood damage is not predictable. NRCS should consider that if its employees were not able to envision each potential flood damage scenario and formulate reasonable responses before the damage occurred, they certainly would not be capable of authorizing corrective work appropriately.

Element 5 of Alternative 2 does not include pre-evaluating the "defensibility" of corrective measures, making it as open to abuse as Element 5.

3 By definition, "urgent and compelling" situations would require corrective action within a time frame that would eliminate appropriate public response to proposed actions. NRCS employees would be put in a fiduciary position for which they are neither properly paid or trained and in which they would be unacceptably vulnerable to the deception, coercion and bribery of profiteers. An atmosphere of crisis is not conducive to sensible, equitable decisions. Only when pre-programmed responses that have been adequately reviewed by the public are available should public servants be given broad powers.

It should be noted in this context that Congress has instructed the ACOE to discover the "Least Environmentally Damaging" alternative in every application for a permit to alter Waters of the US and has oredered that this agency require that this "LED" be chosen unless there is compelling evidence of significant economic or social harm. Does the NRCS propose to override ACOE responsibility at the whim of a local employee or is it prepared to work with ACOE in protecting natural resource rights of the general public from arbitrary actions of individuals? The NRCS must produce clear and unequivocal guidelines for what constitutes "compelling" evidence before it hands local personnel authority to take actins that might be overly influenced by special interests.

- This Draft PEIS provides no indication to readers that NRCS has considered how land development made necessary by floodplain buyouts will do enormous environmental damage wherever regulations that minimize the runoff of stormwater and pollutants are not adopted and enforced. Have NRCS planners fully considered this and adjusted their program to provide incentive for communities that apply Best Management Practices in dealing with stormwaters? It seems self-

evident that applying stormwater retention programs which reduce flooding to acceptable levels and allow continued use and enjoyment of the floodplain properties is a far more environmentally friendly solution to flooding problems. This solution also does not improperly persuade residents to abandon their homes to please preservationists and land speculators..

According to NRCS records of upstream management programs these are considerably quicker to implement and provide more public benefit at far less cost than the drainage-based programs required under present land use regulatory programs of most watersheds. With this in mind;

- Does NRCS management accept the thesis that floodplain damage has been exacerbated by increased rates, volumes and frequencies of runoff in upstream areas?

- Does NRCS management recognize that the enlargement and expansion of drainage systems to accommodate the new homesites made necessary by a buyout would generate even greater runoff and so enlarge the floodplain area and necessitate more buyouts?

- Does NRCS deny that increases in flood frequency and severity could be compensated for wi th rigorously implemented onsite retention planning such as that of Fresno or Phoenix?

- How does NRCS reconcile the enormous success of upstream retention in the Sandstone Creek (OK) watershed, upstate Missouri/Iowa, and in Florida with its proposed downstream repair and buyout programs?

- Did NRCS planners factor in the fact that when new developments are designed to retain all runoff with surface and underground detention/infiltration structures (such as those required in Florida) or guide it to remote storage facilities (constructed surface basins that percolate runoff to natural underground reservoirs as in Fresno) there will be a reduction in floodwater accumulations in direct ratio to the amount of this development?

- Do NRCS planners reject the assumption that areas now designated as floodplain will gradually cease to merit this description as the inevitable adoption of sensible onsite retention regulations becomes standard procedure throughout each watershed?

- If NRCS planners accept the validity of a rainfall storage-oriented approach to watershed management that applies the practices they advocate, how do they justify spending public funds to buy land that will once again become suitable for habitation?

- If NRCS planners reject this approach to watershed management, how do they reconcile this rejection with the successes of Sandstone Creek and similar onsite/upstream retention programs for which they are advocating reinvestment?

* * *

Over one hundred hours of discussion with local residents over the past several months generated so many notes that I have chosen to provide a list of the points they made and voice my own views separately. The following is a summary of opinions voiced.

- The most universally accepted view, so widespread that it should be considered a "conventional wisdom", was that floodplain buyouts are just another subsidy intended to bring votes to the

politicians who most loudly claim credit.

- Most persons perceived an excess of pressure by preservation extremists who seek to gain large tracts of land for wildlife habitat. Several suggested that this was a product of collusion between these activists and profiteers so that both could achieve their aims.

- Few persons accepted the NRCS Draft EIS information as complete, accurate or free of a bias dictated by personal goals of its leaders.

4 - Most persons questioned the basic premise of this EIS, that public funds should be used to provide addtional wildlife habitat and

5 - Several qualified civil engineers asserted that floodplain storage of runoff would have little positive impact on groundwater recharge, as suggested by the PEIS, but could accelerate building foundation, road and utility failure and magnify seismic damage.

6 - Almost no one believed that people who give up their homes for federal dollars would be better off in the long run, for a variety of reasons.

a) Some thought this because the amount received would not buy an equivalent property outside the floodplain.

b) Others thought the "easy dollars" would most likely be spent carelessly, leaving the recipients as poor as before but now homeless.

c.) Many saw the buyout program as a weapon of land development profiteers aimed at coercing people into accepting a huge load of lifetime debt for a new home.

- All were firm in their belief that tax money should not be spent buying land that is flooded by major storms and repairing damage if the same amount would prevent flooding.

- All who examined both alternatives at length chose to have flood prevention derive not from deeper and wider drains but from catching and storing rainwater wherever it falls.

- Two persons suggested that this document puts the NRCS in inappropriate competition with other bureaus for control over public funds.

EWP

From: James H. Marple <jesl@carolina.net>
To: <ewp@mangi.com>
Sent: Wednesday, February 16, 2000 12:13 AM
Subject: EWP PEIS COMMENT 2

EMERGENCY WATERSHED PROTECTION PROGRAM

PROGRAMMATIC ENVIRONMENTAL IMPACT STATEMENT
http://www.mangi.com/pdf/Welcome.pdf

COMMENTS RE SPECIFIC PROVISIONS OF PROPOSED EMERGENCY WATERSHED PROTECTION PROGRAM CHANGES J Marple Feb 2000

<ewp@mangi.com>

There were no references cited for Chap3 "Alternatives Including the Proposed Action"

Does this indicate that only the listed preparers arrived at stated alternatives or did others within USDA dictate that only these alternatives would be considered?

I ask because there is no discussion of the alternative of reducing floodwaters with onsite retention planning to a level that would prevent disastrous flooding.

Without this information those who wish to comment may only guess at whether the civil engineers listed were the sole source of this glaring omission or political considerations dictated the lack of discussion of a rainfall storage alternative.

CEQA and NEPA guidelines call for exploration of every reasonable alternative.

Did the three NRCS Civil Engineers, with a maximum experience of 30 years, dictate that the rainfall storage alternative not be given full and fair evaluation? If so, I wish to suggest that my 35 years of hands-on rainwater drainage management and over 31,000 hours of intensive research and discussion with experts nationwide are adequate qualification to validate my disagreement with their conclusion.

I see no good reason why the draft PEIS did not contain an in-depth assessment of the rationale for reducing floodwaters to levels that existing watercourses could handle without excessive overbank flooding.

This assessment should have included examination of the following:

1. Vegetative management programs that would maximize infiltration to reduce runoff.

2. Soil treatment procedures that would promote percolation.

3. Grading programs that would maximize detention/infiltration.

3. Groundwater flow modeling programs that would optimize detention storage, pollutant removal and permanent storage conditions.

4. Identification of appropriate upstream infiltration/storage areas.

5. Planning techniques that will produce the necessary comprehensive watershed management plans.

6. Management of runoff from point of rainfall impact to point of use or disposal.

7. Comparison of the costs for retaining roughly 20% of a major storm and the costs for defending downstream properties against this much floodwater.

8. Examination of indirect costs and benefits of onsite retention in rural and urban areas.

It is likely that the Professional Engineers who advise NRCS planners will be scornful of my non-technical terminology but I find their jargon inappropriate for communicating with people who apply common sense to conceptual planning. The training of engineers produces a tunnel vision which, together with an innate tendency to perpetuate their employment, does not allow most to contribute appropriately to conceptual planning. Persons who lack formal training are more able to apply common sense to a comparison of basic concepts such as drainage-oriented versus storage-oriented rainwater management. Their view is not clouded by visions of grandiose schemes to channelize, dam or transport water so they can appreciate the savings that come with low-tech modes for eliminating floods by retaining most stormwater where it falls. .

Table3.4-10, Cumulative Impacts of the EWP Program Alternatives, presents some questionable premises that would, if accepted, divert readers of this document from examination of flood prevention alternatives.

Alternatives 2 and 3 are aimed at "upgrading" restoration practices to slow declines in quality of habitat.

There is no discussion of halting or reversing these declines, goals that seem more appropriate. There is no discussion of preventing the flooding and polluted runoff that causes this decline.

Why is it assumed that declines must occur?

Why is "repeated damage" referred to as a given condition when it could be prevented by a program of floodwater reduction?

It seems to be assumed that disaters are inevitable and so restoration programs will continue to be

needed. Is it inconceivable that adequate selective upstream retention could prevent disastrous flooding and so make this program unnecessary?

The EWP is aimed at removing threats in the aftermath of disasters. These threats are termed "watershed impairments" **By adopting this definition NRCS limits perceptions of the scope of its alternatives to its preferred domain**. This definition should not accepted as a limiting factor by commenters to the PEIS because every acre of land in a watershed may contribute to or reduce flooding depending on its natural characteristics and how planners modify it. An acre may be part of a preventive measure if modified to retain excess flows or if its runoff is guided to remote retention. A roof may be considered a "watershed impairment" because it hastens the flow of water downstream. A parking lot that is not designed to guide its rainfall to storage must be considered an "impairment" because it causes a greater peak flow and volume of stormwater runoff, and increased frequency of polluted daily streamflows.

It is obvious that if the parameters implied by this summary are observed there will be no comment about the advisability of NRCS doing what it does best, guiding and aiding landowners to reduce rainwater runoff so that downstream residents do not need to react defensively.

7

True, floodplain buyouts, the primary goal of this proposed action, will mitigate damage, but the cost of these buyouts is certain to be far greater than the amount that is paid directly to property owners from public funds. The total cost must be reckoned in environmental damage done by the development of additional land and in the consumption of natural resources that will be needed to provide new homes for residents whose homes are demolished.

If, for example, we assume that 1,000 homes are bought out then we know that another 1,000 must be built. This means, under present land development modes, that another 60 million gallons of sewage effluent will be partially cleaned and released into the public water supply, 20 more tons of pollutants will be added to daily flows into rivers, more rainfall will be wasted than these homes will use.

S-7 Mitigation of EWP Impacts

While it is of course desirable to minimize damage from EWP activities such as armoring streambanks, planners should recognize that such mitigation would not be needed if the upstream retention alternative is applied.

We might ask how far planners are prepared to go in building and maintaining mitigation features, then compare the costs of this with those of an upstream retention system.

PROGRAM PURPOSE

The stated purpose of proposed changes, to improve the delivery and defensibility of the EWP program and deal with concerns that are not now covered, seems appropriate. It is proper that the NRCS should make every effort to improve the deliverability of their services since Congress has made its intent clear that this be done as long as this does not interfere with citizens rights to use and enjoyment of their property and as long as the public is given proper opportunity to comment on every aspect of planning that impacts public welfare.

8 But when NRCS planners state an aim to improve the defensibility of their program they raise questions about the actual need for these services and about bureaucratic motivation. A sound and properly executed program should need no defense, as it would not cause undue negative environmental, economic or social impacts. Properly motivated planners would ideally give little thought to a need to sell their program in a sensible political climate. Defensibility should not imply an intent to counter criticism that might diminish their opportunities to expand agency powers and individual incomes.

Some questions that were asked and answered in the course of discussions with local and distant concerned citizens may shed light on the issue of whether this document is accurate, complete and fair.

- Should our taxes be spent buying land that is flooded by major storms and repairing damage or should our wealth be used to prevent flooding?

- If we choose to prevent flooding rather than compensate for it do we want the prevention to derive from deeper and wider drains or from catching and storing rainwater wherever it falls?

9 - Has this document placed the NRCS in an unseemly competition with other agencies for the power to spend public funds?

- Is the NRCS wasting energy by competing with other agencies for funds?

10 - Have other agencies been fully involved in formulating this proposed changes?

11 - Was scoping of the PEIS and this document adequately advertised?

Where have NRCS planners provided their answers to these questions?

EWP

From: James H. Marple <jesl@carolina.net>
To: <ewp@mangi.com>
Sent: Wednesday, February 16, 2000 12:20 AM
Subject: EWP PEIS COMM 3

COMMENTS RE SPECIFIC PROVISIONS OF PROPOSED EMERGENCY WATERSHED PROTECTION PROGRAM CHANGES <ewp@mangi.com>

COMMENT 1

- The following rough draft of a letter was not sent due to committee disagreement about its timeliness in relation to the EWP-PEIS.

* * *

DRAFT comment to EWP Program Director --- http://www.nrcs.usda.gov/

Watersheds and Wetlands Division USDA-NRCS Washington DC

A casual scrutiny of this site has persuaded several sensible folks who advise me about how their neighbors view the NRCS that there is confusion within the agency about its agenda. These persons see a conflict between developing the world's most comprehensive collection of water resource management information and advising the public it should be supportive of efforts to mitigate flood damage. They believe that an agency should focus either on preventing flood damage or on correcting damage from flooding, that it cannot in good conscience do both because this creates a conflict of interests that would inevitably lead to inadequate discovery and/or biased correlation and dissemination of information.

It appears to me that this view has merit, as the goals of planners who advise politicians about the most appropriate methods for preventing floods will certainly clash with the goals of planners who wish to persuade politicians to fund larger programs for the correction of flood damage. Ideally a public servant could merge these goals but there is no way in this real world of ours that both can be served properly within a single agency.

The NRCS PEIS does not lay out a program in which its efforts and funding was divided between flood prevention and flood damage correction according to a rigid schedule of priorities. Without this, there is no real be some basis upon which to hope that NRCS planners are looking at all sides of this issue.

Watersheds and Wetlands Division

USDA-NRCS Washington DC

The following are condensed from notes and tapes of informal discussions with concerned citizens.

* * *

COMMENT 2

...From an attorney and an economic professor:

The basic premise that our taxes should buy floodplain land in order to prevent further damage has at least three inherent flaws.

1. Buybacks may indeed make floodplain lands available to public enjoyment and provide floodwater detention, but these uses of land that has been under cultivation are unlikely to constititute "highest and best" usage.

2. Equally productive land is rarely available at the same cost so that the displaced persons may at least be no worse off than they are at present.

3. Moving people from floodplains to higher land creates more flooding that will further enlarge the floodplains, just as they have been enlarged by past land development that failed to apply onsite retention technologies with due rigor.

4. Why buy flood-prone land when it is less costly and more beneficial to the public as a whole to prevent this land from being flooded?

We are well aware that most floodplains have suffered progressively worse flooding because public officials have not properly regulated upstream land uses. If ordinary retention planning, like that promoted by the Soil Conservation Service for a half-century, is adopted each new land development project would shrink the floodplain until it received no more than nuisance flooding.

Landowners who suffer damages as a result of failed planning by upstream residents are entitled under US law to compensation for this damage. Few of them realize this, however, and so prefer to suffer in silence or accept buyouts such as the one proposed in this document. Those few who do recognize that their problem is a result of the actions of others are unlikely to have the resources to push their case through to an appropriate settlement. Their need for powerful and therefore expensive legal help comes not because they lack evidence of the cause of their problems, this is plentiful in NRCS-ACOE_EPA-USGS-FEMA files, but because they must battle the combined power of public agency managers and the profiteers who collaborate with them. This combine has proven its willingness to go to great lengths to perpetuate the drainage-oriented planning that brings job security to the bureaucrats and enormous unearned profit to the profiteers.

Public civil engineers and planners have cooperated in defeating efforts by flood victims to win court cases that would lay the blame for flooding where it belongs (on persons who alter runoff regimes of their land) because their jobs are tied directly to their ability to prevent the public from discovering how grossly it has been misled by bureau managers and profiteers. The blacklist of those who step out of line extends into every major government agency and private firm. Every competent agency manager, engineer, planner, legal professional and politician knows that a landowner is entitled to protection from actions of others that interfere with the use and enjoyment of their land. When they

refuse to use their office to protect this right they become derelict in their duty.

There are a few cases where upstream drainage was directly tied to downstream flooding and victims won compensation, but these are too few and poorly reported by a media that is overly "sensitive to the needs of business". I know of no documentary that has exposed the whole picture of influence that profiteers exert over politicians, agency managers, engineers, planners and associated professionals. Claims by the news media to due diligence in searching out and illustrating criminal activities ring hollow where water resource planning is concerned. This profession turned a deaf ear to every report of the massive mismanagement of California's water and shows little sign of changing its attitude where the rest of the nation is concerned. The tens of billions in unearned profit that flow from public pockets to major profiteers each year through manipulation of water-related planning are sufficient incentive for the profiteers to use every weapon of misinformation, obfuscation, diversion, distraction, coercion, character assassination and outright bribery they can invent to ensure that this carefully disguised refusal to investigate and expose corruption will continue.

Flooded folks obviously have a right to sue all jurisdictions that failed to apply latest and best planning and design with due diligence. There can be no reason except negligence for increased flooding as many communities have adopted onsite retention planning that cumulatively reduces stormwater runoff as more land is developed. These folks stand little chance of winning their cases, however, as many powers of government are certain to be used to discredit and defeat them. The many persons whose jobs depend on continued obstruction, distortion and delay of rainwater storage-based technologies will collude with brazen impunity to attack testimony, assemble contrary information and manufacture false perceptions of this alternative to present planning.

The power of private interests is formidable to the point of omnipotence because it extends to the very top of government, warping decisions made by the Nation's primary elected and appointed officials. (The mindless rejection of rainwater storage planning by California's Carlos Madrid, the brazen budget threats of Congressman Packard and the recent coercion of Babbitt by Cohen re Atlantic Salmon are prime examples.) As long as profiteers continue to prevent the news media from fully and fairly illustrating this chain of power and only a few in the general public are willing to look past the news media for information, the public will continue to elect persons who can be deceived, coerced and bribed into allowing profiteers to dictate major water resource planning decisions at all levels of government.

...From brief discussions with concerned citizens:

COMMENT 3

The argument that floodplain lands should be purchased with public funds to prevent damage from flood events is specious in a variety of ways.

First; The supposition that damage will occur is based on assuming that the public will not recognize that it is a result of inadequate retention of rainwater and elect officials who take the steps needed to correct this deficiency. This is not necessarily a valid assumption, as shown by the replacement of County planners by competent ones after Fresno's formation of its own water district and adoption of 100% rainfall retention.

Second; Every capable planner knows that it is far cheaper to prevent floods by retaining a portion of stormwater where it falls than to deal with this resource after it accumulates in watercourses. (The

amount that causes flooding is a small percentage, usually about 20%, of the total) When faced with a choice of buyouts or flood prevention they cannot in good conscience support buyouts.

12 Third; Removing floodplain lands from cultivation increases the cost of food production and increases the need for irrigation, leading to greater environmental damage.

13 Fourth; Buyouts force the construction of replacement homes that exacerbate flooding besides magnifying damage from pollution (contaminated runoff, air/water pollution from energy production-related activities) and waste/loss of water supplies.

14 Fifth. The need of flooded land owners for immediate relief would be exploited by this program. This is clearly a "taking", a denial of their right to use and enjoy their land.

COMMENT 4

It is clearly not in the public interest to for public servants to spend $2,000 buying an acre of floodplain land to detain a million gallons of water instead of spending $100 upstream to retain this same amount with agricultural BMPs. (NRCS records reveal that earthworks to retain an acre-foot of water and its pollutant load for percolation to groundwater through cleansing soil costs roughly $35 to construct.. Most watersheds have more than enough land that can be modified in this manner to retain the roughly 20% or stormwater that is needed to prevent overbank flooding.)

Downsteam detention does little for water supply needs, more often than not provides a long-term decrease in wildlife populations, and has minimal pollution control capability in comparison to onsite retention of rainwater. In contrast to this approach, the underground flows of rainwater retained by upstream onsite retention BMPs will gradually be released as year-round stable streamflow that replenishes reservoirs, enhances riparian habitat and expands recreational opportunities.

Public servants are obligated to put public funds to best use. Buybacks not preceded by full exploration of upstream retention alternatives clearly do not fulfill this obligation.

(Any normally competent planner who exercises due diligence in researching altternatives will discover the same facts and figures I have found and will draw similar conclusions from them, although I admit that my 35 years of field experience and 31,000 hours of research gave me a distinct advantage over public servants constrained by budgets, inappropriate instructions from ignorant/dishonest politicians, and job security concerns.)

COMMENT 5

At best. floodplain buybacks are mere appeasements of overzealous preservationists who are not fully cognizant of the ways in which animal populations, rainwater utilization, flood prevention and aesthetic concerns can be best served. At worst, floodplain buybakes constitute a theft of public funds to enrich overly influential land speculators.

It is not difficult to understand why even honest public servants are misled into approving projects such as floodplain buybacks. One need only examine misinformation such as the California Water Atlas, the SCMWD website or the many products of "WESTCAS" and the "Water Education Foundation" to understand how profiteers have arranged to corrupt the public database through government offices and the news media.

COMMENT 6

NRCS-ACOE and other civil engineers are competent enough to design most watersheds so that they retain enough stormwater in upstream areas to prevent flooding. Why, then, are floodplain buybacks proposed as a central feature of this EWP instead of as a secondary tool for use where upstream DRI plans [Detention-Retention-Infiltration] are not practical or cost-effective?

When conceptual planners attempt to balance intangible benefits such as watershed-wide wildlife habitat enhancement, recreational opportunities and aesthetic values by assigning arbitrary figures to each the planning process becomes vulnerable to abuse to suit their ends, as their judgment may conflict with that of the majority of residents. These residents themselves should be both the focus and the source of conceptual plans.

If we suppose that a sensible person discovered that the rainwater falling on his property could be guided underground to be available for his use at less cost than disposing of it, would he decide to line a ditch with concrete to channel it away instead of building a berm for temporary detention that allows this water to soak into the soil?

It the majority of landowners in a watershed were given an incentive, such as a rebate on their taxes or a flat per-acre payment, how many would modify their land with NRCS help so that it retains most or all of its stormwater and allows this to soak into the soil to replenish the the public water supply?

Has the NRCS derived figures for various scenarios that would permit this planning?

Are these figures not a part of the retention alternative to the preferred alternative of floodplain buybacks and/or damage repair?

COMMENT 7

It appears that Congress provided the terms "emergency" and "exigency" in order to allow conisiderable latitude in dealing with each circumstance. While this comment is not intended to address political affairs, the amount of this latitude is crucial in determining whether or not upstream retention to prevent flooding should be part of the EWP Program. The "probability of damage" will of course remain as long as floodwaters are not intercepted and guided to storage and will, in fact, increase daily with the continued development of upstream areas in ways that reduce onsite retention of rainwater.

The question of how best to reduce this probability of damage requires no great expertise of those who consider it. Common sense is sufficient, if backed by knowledge of the basic costs and benefits of both drainage-oriented and storage-oriented rainwater management approaches. It amounts, in essence, to; should taxpayers subsidize buybacks of land as a primary means to reduce flood damage or should they reduce flooding? Put another way; Is it wiser to take land out of production, allowing distant agribusinesses to reap higher profits and exert even greater control over the public food and fiber supply, or to make this land even more productive by reducing flood probability to insignificance?

COMMENT 8

Some questions for the Committee to consider:

- Is the real driving force behind floodplain buybacks influential private interests who will abuse the system to reap unearned profits?

- Are these persons aided and abetted by cynical "environmentalists" who seek personal recognition or power through manipulation of public emotions regarding disasters?

- Do these groups commonly collaborate to mislead genuinely concerned citizens who are overzealous in attempts to protect the natural environment?

The central problem that I have with this document is its preoccupation with correcting flood symptoms instead of curing the disease of flooding.

A typical case of such inappropriate planning can be found in Murrieta, CA, where fifteen years ago officials proposed a "flood control" program that would cost $112 million and consist of channelizing all watercourses. Residents of this area who recognized the foolishness of wasting $15 million worth of rainwater yearly (the cost of replacing outflows of clean water with the equivalent in imported water) insisted that local officials examine the retention alternative. This was done, using grotesquely distorted costs and premises, and produced a $325 million cost for the same retention capacity that NRCS figures estimated at $600,000. This project remains unfinished, with officials still trying to push complete channelization through despite over $100 million damage done to Camp Pendleton in 1993.

Would it make sense for NRCS to apply buybacks and corrective measures in this case?

Does it seem unreasonable to expect that the NRCS should instead provide immediate planning and design aid to the California Resource Conservation Districts of this area, bodies that have not provided comprehensive watershed management plans as ordered by the State Legislature? When "flood control" costs $5,500 per acre-foot of water while retention costs $35 per acre-foot there seems to be no reasonable excuse for addressing watercourse and floodplain modification instead of upstream retention.

While this may seem an extreme case, studies of thousands of similar local programs will show similarly absurd planning. If the NRCS is to perform its duties fully and fairly it will recognize the value of upstream rainwater retention, as proven in Oklahoma's Sandstone Creek project, and direct its efforts toward source correction instead of band-aid solutions.

It is noteworthy that the Murrieta project cited took place in the bailiwick of US Rep Packard who has enormous control over both the ACOE and the NRCS budgets. Land development and water supply profiteers who provide most of his campaign funding and political influence have reaped enormous profits from their manipulation of government in the Murrieta area and can be expected to direct him to use his power in preventing upstream retention planning, as this would threaten their continued extortion of wealth from the badly informed public of this region.

It should be considered that if the NRCS proposals to buy out enormous acreages of floodplain go forward they will cause additional development of upstream areas. This will lead to increased flooding and enlargement of the areas that need to be bought out. In essence, success of the buyout

program will force expansion of it, with no end in sight. Is this end sought by NRCS management as a means to expand and perpetuate their power? Are these officials no better than the self-interested Professional Engineers who counsel drainage-oriented planning where retention methodologies would obviously be superior but would reduce the need for their services?

EWP

From: James H. Marple <jesl@carolina.net>
To: <ewp@mangi.com>
Sent: Wednesday, February 16, 2000 12:38 AM
Subject: EWP PEIS COMMENT 4

COMMENTS RE SPECIFIC PROVISIONS OF PROPOSED EMERGENCY WATERSHED PROTECTION PROGRAM CHANGES Feb 2000 4

<ewp@mangi.com>

CRWM - E-mail version

USDA-NRCS Emergency Watershed Protection Program Programmatic Environmental Impact Statement

A COMPARISON OF SOME MAJOR FLOODPLAIN BUYOUT IMPACTS

Positive impacts

1. Reduced need for building repair.

2. Reduced flood-associated hazards.

3. Reduced infrastruture maintenance/repair costs. elsewhere with buyout funds.

4. Provide additional habitat for large species.

5. Improved recreational opportunities in buyout area.

6. Improved land values around buyout area.

7 Reduced water pollution by agricultural chemicals.

8. Increased profits for farmers outside buyout area.

9. More efficient operation of a public agency.

Negative Impacts

15 1. Reduce taxation income of local government.

16 2. Displaced persons unlikely to find equivalent land.

3. Displaced persons typically locked into long-term debt for extravagant homes.

4. Displaced persons generally must accept less living space.

17 5. Reduced wildlife populations/diversity over long term.

18 6. Diminished recreational opportunities from new development to house displaced residents.

19 7. Increased cost of land around buyout areas.

8. Land development needed to house displaced persons causes greater flooding, water pollution.

20 9. Increased water pollution where replacement farming takes place.

The identification of all beneficiaries from an expanded EWP program is an appropriate first step in deciding whether it is an appropriate use of public funds.

- The victims of flooding are obvious, so improvements to their health, safety and welfare can easily be identified.

- The businesses that participate in removing floodplain structures and building features of the EWP program are also easily identified so at least a part of their input and financial contributions to planning can be assessed.

- Many of the chief beneficiaries of floodplain buyouts are difficult to identify because their benefit are achieved indirectly. Their influence upon planners, politicians can only be recognized after meticulously tracing funds from the public pocket to the bank account of each. To properly assess this influence it is necessary to examine how buyouts will affect the whole picture of agribusiness profit, land speculation, utility manipulation and the fortunes of all who support these elements of the business community.

Thoroughly researched answers to the following questions would lead to a better understanding of the structure of special interest groups that expect unearned profit from floodplain buyouts: Has the NRCS examined the potential of these groups to mislead planners from the most publicly beneficial planning?

1. To what extent has the buyout program been promoted as a tool of social engineers to modify living conditions for low-income residents?

2. To what extent have local land speculators inappropriately influenced planners of this program through hearings, workshops and deception or coercion of planners?

3. Will the buyout program reduce or increase the overall cost to society of coping with extreme natural events over the long term?

4. How much influence have major corporate profiteers exerted upon federal and state government politicians through campaign contributions, profit-sharing "investments" and offshore bank accounts to orchestrate the planning of this program?

5. To what extent have profiteers deceived with, connived with financially supported environmental extremists in pressuring planners to produce this program?

6. How have personal agendas of bureaucrats and private organization managers who seek to perpetuate and expland their income and influnence been reflected in the development of this program?

The answers to these and related questions about inordinate influence by special interests cannot be found in the PEIS, yet deserve diligent research and impartial expert illustration. It is certain that NRCS planners are so constrained by political considerations of top-level management that they cannot produce an impartial evaluation of special interest influences upon their planning process. It is also certain that these planners have been prevented from making full use of news services and direct mailouts to foster maximum input to the EWP PEIS by the public. Those who are using this program for personal gain would obviously not wish to have larger turnouts at public forums, greater direct input to elected and appointed officials or better-informed voters making more intelligent political choices.

Every ordinarily well-informed observer can see that the public's primary sources for information have been instrumental in misleading concerned citizens from common-sense alternatives to conceptual plans presented by government agencies. Many of the false conventiona wisdoms that keep the public from recognizing patently foolish plans were spawned by agents of profiteers and environmental extremists. Many others can be traced to misinformation released by government

agencies and parroted by journalists too naive to seek out facts to balance what they are fed by much cleverer wordsmiths.

While environmental activists have shown considerable energy in seeking to identify improper planning and false information, their inquiry into abuses of power by government are so limited by excessive selectivity in presenting their findings that much of their input is made relatively meaningless. Despite these severe limitations they have become a primary source of information for those in the public who rely upon the major news media, due to the desire of journlists for controversial news. Because of this unwarrantedly high profile, magnified by news media shills of the profiteers, bureaucracies within these organizations have been exploited by profiteer agents to produce false perceptions of resource management options within their members and the general public. An additional extremely damaging misperception lies in the fact that most people prefer to believe that the activists are effectively protecting public resources from exploitation by profiteers.

Few local citizen groups have shown notable capability to examine the full range of influences upon government planning, due to their generally narrow focus upon local issues and to the apathetic attitude of most Americans toward protecting their family's health, safety and welfare through personal efforts to discover, correlate and disseminate and discuss information and ideas. While these groups constitute the most appropriate source for correction of false information, the willingness of most citizens to let someone else manage their financial and natural resource wealth has kept them relatively powerless.

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In summary; NRCS planners cannot be expected to deal fully and impartially with questions such as those above due to political pressures, journalists have a wide variety of reasons for not producing complete and accurate presentations on this subject, and major environmental activist groups have demonstrated an excess of selectivity in presentations of their research. It is this combinations of weaknesses in a democratic society that profiteers and opportunists, who together make up a hierarchal society of robber barons and shills within America, have been able to exploit to enormous personal benefit. Their insatiable desire for profit and power has given us grotesquely inappropriate water and energy planning that has done enormous damage to our natural environment while bleeding away wealth that could have given us a far healthier, safer and more prosperous nation. The final PEIS would be a far better document than the public has come to expect from its government if it contained a wide-reaching and impartially presented discussion of the rationales that produced this effort to improve and expand the Emergency Watershed Protection Program.

CRWM DRAFT COMMENT 2/5/00

USDA-NRCS Emergency Watershed Protection Program

Programmatic Environmental Impact Statement

EWP

From: James H. Marple <jesl@carolina.net>
To: <ewp@mangi.com>
Sent: Wednesday, February 16, 2000 12:52 AM
Subject: COMMENTS RE EWP PEIS PROGRAM

Judith Stacy

1672 Reedy Meadow Rd

Tarheel, NC 28352

Dear Director:

The Draft EIS for the Emergency Watershed Management Protection Program purports to present all alternatives yet ignores the most obvious one, that of applying upstream retention planning that reduces peak flows to below flood levels. Do NRCS planners have good cause to presume that upstream retention could not achieve this goal? If so, why wasn't this cause presented in the Draft EIS?

If NRCS planners have determined that onsite retention of rainfall throughout a watershed will not produce reliable and cost-effective flood reduction, to make buyouts of floodplain land unnecessary, they have an obligation to present this information. It seems logical to collect and store stormwater at or near to where it falls rather than just trying channelize it flow after it has accumulated in unmanageable quantities.

Do NRCS planners deny that the cheap rainwater-trapping methods developed by their agency would, if applied by normally capable technicians, reduce runoff to less-than-flood amounts? Or have they, like so many Professional Engineers who fear that the use of low-tech, low-cost because it threatens their job security, chosen to ignore common-sense truths and deliberately ignore planning technques that would cause their agency to work itself out of a job over the long term?

Madlyn Creekmore

32750 Rome Hill Road

Lake Elsinore, CA 92530

Dear Director:

Those of us who have made use of Soil Conservation Service plans and services and become acquainted with its unmatched body of data regarding water management know that personnel of this agency cannot in good conscience support a program as long as it flagrantly defies CEQA and NEPA rules. These require full consideration to all reasonable alternatives as a means to formulate the most effective and productive management of public resources.

The fiduciary capacity of every public servant requires that they examine every aspect of alternatives to proposed action programs. This involves using NRCS capabilities to the fullest in applying the best available planning and design techniques to achieve "upstream" retention wherever this is the most appropriate approach.

Should you who have the task of presenting a new program fail to exercise due diligence in identifying and evaluating costs and benefits of this approach you will, according to clearly stated instructions of Congress, be derelict in your duty. The considerable value of "upstream" retention to the public's health, safety and welfare make such dereliction more than mere negiligence, as NRCS personnel have been reminded of this value. Deliberate neglect of this alternative despite the fact that SCS files prove it reasonable must

be considered criminal, as it affects every American in some way.

From a previous project with the same PEIS requirements:

Robert McCoy, P.E.

Sun City, CA

It seems to me that the people who wrote this statement should have at least mentioned the environmental damage that will be done by land development that will become necessary when people are forced to move out of floodplains. It has come to my attention that the US Army Corps of Engineers is instructed by Congress to choose the "least environmentally damaging alternative", not just the least costly one, whenever someone proposes a project that impacts Waters of the US. The damage attending these moves should be factored into this Report.

Streambed alteration, debris collection and sediment removal operations may do more environmental damage than revegetation, runoff diversion and infiltration procedures that eliminate the need for defense of floodplains or repair of flood damages. For this reason alone the [agency] is obligated to explore all aspects of a rainwater storage approach to dealing with flooding problems.

In addition: US-SCS records show that watershed plans focused on saving rainfall so that it fills wells instead of running downstream to cause flooding cost much less in total than those which try to control floodwater.

The [agency] ignored its own findings by failing to compare the costs and the benefits of its proposed actions with those that would be taken within comprehensive watershed management plans that it recommends. We whose taxes support this bureau and would be spent by it for land of questionable value to us deserve to see a comparison of the costs and benefits of the proposed work and a watershed management program that halts flooding at its source, where raindrops fall.

Edward White

Lake Elsinore, CA 92530

Director,

While it makes political sense to focus on floodplain buyouts instead of flood prevention, it certainly does not make sense from a practical standpoint. In many states just three acres of land may provide a million gallons of runoff during a major storm but every capable and honest civil engineer would affirm that most properties can be designed to retain a major percentage of this rainfall using NRCS agricultural BMPs and that this would cumulatively reduce flooding to acceptable levels at less cost than drainage planning.

If this DPEIS is adopted without being modified to stress achieving flood prevention by means of retaining a portion of stormwater in headwater areas, the people of this Nation will have been duped again by the officials they trust to provide appropriate programs.

EWP

From: James H. Marple <jesl@carolina.net>
To: <ewp@mangi.com>
Sent: Wednesday, February 16, 2000 1:30 AM
Subject: EWP PEIS COMMENT 5

COMMENTS RE SPECIFIC PROVISIONS OF PROPOSED EMERGENCY WATERSHED PROTECTION PROGRAM CHANGES Feb 2000 5 ewp@mangi.com

COMMENT B ***common-sense comparisons of storage-drainage approaches***

I asked several dozen persons who advise me regarding water management issues for a "lightning-quick capsulization of their views on several core features of the PEIS. Their responses are summarized as follows:

- The summary description of the current EWP program tells us that "Sediment or debris basins trap materials up-gradient before they can damage structures." It is clear that NRCS planners comprehend cause and effect clearly enough. It is not clear why their analysis does not include comparative cost estimates so that readers may see the benefits of onsite rainwater retention in upstream areas. It seems to me that CEQA and NEPA guidelines call for providing such evaluation of alternatives.

- Readers who apply common sense to evaluating this document will recognize that sediment and debris will not be carried downstream if enough water is diverted to storage upstream. With this observation in mind they will wonder why there is only token discussion of diverting most stormwater to surface or underground storage so that it is incapable of carrying significant amounts of sediment or debris downstream. A storage-based approach to rainwater management is almost inevitably more practical, publicly beneficial and economical than a drainage-oriented one.

- A review of NRCS files will show that they this agency has made full use of the World's best researchers and planners of rainwater management. Why, then, have those who now control this agency chosen to downplay the retention-based planning it excels at to propose a program that is a knee-jerk reaction to flooding? Why was there no comprehensive look at the economy and effectiveness of saving enough stormwater in upstream areas to reduce flooding to a level that does not threaten homes or cause undue sediment and debris transport to floodplains.

- The PEIS does not examine all cost/benefit factors in retaining rainfall so that reservoirs and wells will not run dry. Multi-purpose centered on this planning brings many appurtenant benefits to the general public when designed by experts instead of by local planners and engineers who rarely possess sufficient vision to plan and implement

Some citizens who are concerned about sensible application of public funds yet overly impressed by arguments of self-serving officials argue that the legislative authority for proposed changes deals only with responses to disaster, not with preventive measures. If this were true, however, NRCS would not be proposing buybacks of flooded land, as the primary intent of this is to prevent further losses, not to restore the land to productive use.

Anonymous attorney

USDA NRCS proposal to improve services to the public and expand the scope of their aid to flood victims is equitable in light of the fact that past flawed planning exacerbated flooding considerably in most watersheds. Many people who were prudent enough to build outside the floodplain or to elevate their homesites above it have found their precautions were inadequate because upstream land development was not properly regulated so that it would not add to the volume of floodwaters. These persons deserve full compensation for their losses and perhaps even punitive damages because public servants did not properly plan all land use within the watershed.

Courts have found landowners liable for their actions that increase runoff in a manner that causes damage to downstream properties. The same principle applies to communities that elect officials whose planners knowingly permit development to cause increased runoff. This amounts to willful magnification of flood flows.

My primary objection to the NRCS PEIS is its failure to illustrate an upstream retention alternative to flood damage repair and floodplain buyouts. Without this I had to search out and study a great number of documents relating to the Best Management Practices that collect and store rainwater to keep wells full, prevent flooding and reduce water pollution by intercepting and treating pollutants. These should have been available in clear and comprehensive form in the PEIS.

watershed management.

The economic and social value of retention-based alternatives makes them an alternative that is almost invariably preferred by well-informed citizens who reject the notion of disposing of rainwater by spending huge sums on single-purpose drainage systems.

- The NRCS would cannot in good faith abdicate its responsibility to fully inform the public about the costs and benefits of saving enough stormwater to prevent flooding.

- This document briefly describes practices that stabilize critical upland areas where rainwater infiltration capacity has been lost, but it does not present a program for modifying large percentages of uplands so that they retain enough rainfall to reduce flooding to nuisance levels. Was this omission intentional, a response to the recognition that presenting such a program would invalidate its premise in this report that flooding is an inevitably recurring problem?

- Retention of rainwater will obviously eliminate severe flooding if pursued with sufficient rigor, Boulder Dam has proven this beyond question, as have millions of small dams planned and funded by the Soil Conservation Service.

Why, then, does this Report focus upon reacting to floods instead of preventing them with the simple,

- Assuming that flooding will occur and that buyouts of floodprone land are justified is a false premise. Every capable civil engineer knows that when enough rainwater is stored at or near to where it falls flooding will not occur. Of course there is room for disagreement about the precise level of storage that is needed to minimize flooding to relative insignificance. just as there is room for disagreement about when flooding passes the level of nuisance and reaches the level of hazard. Yet there can be no defensible argument that flooding is inevitable, therefore this false premise cannot properly be used to justify massive expenditures of public wealth and major displacement of established communities.

- People whose homes have become subject to flooding due to misplanning and inadequate enforcement of regulations do not deserve the additional damage of thinly-disguised pressure to force them from their homes and land.

Appointed officials should not be allowed to coerce the public to suit special interests who wish to use land that will be bought with public funds. They should not be open to deception by the profiteers who seek to reap enormous profits by misleading low-level public servants into paying far more than land is worth. They should not, in short, be tools of land speculators and the overzealous self-appointed protectors of wildlife habitat who collaborate with them to raid the public treasury.

- Every thoughtful person can see that when government persuades some people who are

in dire straits to sell their land, the pressure upon those who remain is escalated due to the fact that no taxes will be paid to the community from these lands that become public property. Presently viable communities lose the tax base that supports their infrastructure because those who remain must bear the entire burden. This adds up to an uncompensated taking of land, a flagrant violation of citizens rights.

Such misuse of government powers will not offend the profiteers whose unseen influence has produced the buyout scheme, they are able to manipulate land purchases in such a way as to gain huge profits from the proposed program. Individual landowners do not have this advantage, however, and cannot avoid tremendous personal and financial losses.

- Many communities have applied this planning technique and proven its value by restoring their floodplains to productive use, raising their water tables so that wells no longer run dry and streams regain the stable, year-round flows.typically found before early colonists exterminated the beavers that had dammed almost every stream in the nation. (When the beaver-bison-burrower equation is clearly understood by planners the value of upstream retention of rainwater can no longer be ignored.)

Excess flows of water are the villains, sediment and debris are merely tools it uses to wreak havoc. The alternative of reducing runoff by modifying vegetation cover, building retention terraces and berms, diverting small flows to offstream basins and damming streams will be as effective as the competence and motivation of its planners allow. The cost of these modifications is so relatively minor in comparison to their impact on reducing the volume of water reaching floodplains that cost constraints certainly cannot be a cause for the failure of NRCS planners to evaluate them fully.

NRCS planners can be certain that few concerned citizens will look beyond their presentation of environmental impacts of the program that would result from proposed improvements and expansion of the EWP. It is well-known

that the general public generally accepts that its servants in government have done adequate research into alternatives, are fully qualified to digest and correlate this information, and will illustrate and present it properly. The reasons for this often unfounded faith range from a lack of personal expertise in the many fields that water resource management covers, through a belief that these servants are completely qualified for their jobs, to excessive trust in the ability and willingness of elected officials to choose honest managers instead of merely picking among candidates offered by profiteers.

The fact that the public's faith in the ability and honesty of appointed officials is all too often unfounded is clearly shown by the predominance of drainage-oriented water planning nationwide. Able officials would get second opinions from impartial experts on every critical aspect of planning and so be equipped to recognize false testimony from

engineers and consultants. Honest officials would not allow the false testimony of engineers and consultants to dictate their presentations to agency directors.

If most officials were both honest and able they would have supplied adequate accurate information to their directors and these would have chosen common-sense rainwater retention alternatives, and the public would not be fed a steady diet of garbage information beneath constant headlines about flooding, water shortages, and water pollution.

COMMENT C

The following discussion has a bearing on the scope of this draft document. It may be argued that it is too late to broaden this scope but every public servant who accepts a personal responsibility to ensure to the best of their ability that public funds are well-spent will reject this argument. If further evaluation of a reasonable alternative is in order then conscientious planners will see that such work be done.

* * *

Forty years ago SCS Watershed Planning Specialist J. G. Politka presented a prototype system for retaining enough rainwater to supply irrigation needs and prevent flooding. His model of multiple small dams provided major-event flood protection at costs ranging from $17 to $45 dollars yearly per million gallons of water retained, roughly one-half the value of these waters for irrigation and many times less than the value of water furnished to households.

The cost of floodwater reduction achieved with SCS retention programs such as that of Politka et al may be directly compared to the cost of drainage-oriented flood control. It is only necessary to identify the portion of a design flood that causes damage and plan onsite retention structures that would withhold this amount, then find the costs of intercepting this volume before it reaches watercouses.

It must be noted that the cost of SCS-type structures, revegetation and onsite retention planning is typically far less than the incidental benefits apart from flood elimination that these practices generate. The same cannot be said for floodwater drainage structures because these provide no direct benefit, claim many lives and continue to drain the public purse throughout their life through operational costs..

Much can be learned by examining one example of a case where planners had a clear choice between retaining enough water to prevent flooding and disposing of excess rainfall by dumping it downstream:

The Riverside, California Flood Control & Water Conservation District was faced with the problem of recurrent and escalating flooding caused by new development of several thousand acres of land in upstream areas of the Murrieta Creek watershed. Its Chief

Engineer proposed to correct this flooding by straightening and enlarging the drainage system so that it would carry rainwater away more efficiently.

His estimate of the cost for conveying away the 21,000 acre-feet of stormwaters that would create overbank flooding: $112,000,000.

His estimate for the cost of retaining this much water: $325,000,000

A comparison of these figures made the choice of drainage "improvements" an automatic one for politicians and citizens who believed his figures.

The multiple small dams proposed by Politka would have required an investment of from $735,000 to $2.1 million to retain the 21,000 acre-feet of rainfall runoff identified by RCFC & WCD as floodwaters. This retention would have refilled empty natural underground reservoirs each year with water enough for twice its population, worth $19 million if supplied by State systems but much cleaner than this Sacramento/Las Vegas sewage effluent.

The County Supervisors chose the drainage plan but could not persuade the public to finance it. With no action taken as a result of false information provided to planners, several predictable negative impacts have occurred:

1. The heavy rains of 1993 caused more damage to downstream properties than the proposed drainage project would have cost,

2. Residents of the watershed have lost more water to runoff than they used, creating an appearance of water shortage that caused them to approve massive new water importation facilities that will bury them in debt.

3. These new facilities created the potential for a disaster of epic proportions. (The failure of a Domenigoni Reservoir dam could produce more than 100 times as many victims as did the similar St Francis Dam scheme.)

4. Residents have ingested damaging amounts of complex chemical compounds from the heavily contaminated water imported by SCMWD,

5. This major tributary Southern California's last-remaining free-flowing river was channelized to an extent that destroyed its natural features and divided the natural habitat of this Valley into remnant zones.

This example can readily be examined from economic, social and naturalistic viewpoints due to efforts by concerned citizens to expose the bureaucratic distortion of information by County and municipal officials.

The flood control alternative of retaining water upstream was clearly delineated by a

citizen's group but their presentations were vigorously attacked by a coalition of profiteer's agents and bureaucrats who flagrantly abused their powers of office to discredit both these persons and the information that was presented.

Does it seem amazing that a flood prevention system could pay back its entire cost in less than two years? Is the combined economic and environmental cost of drainage alternatives too enormous to believe?

As with any proposition where opposite views are held, the truth lies somewhere in between.

Under ideal conditions such as those present in about a quarter of this nation's watersheds and with honest and capable officials directing the action, a retention-based flood control system could pay back its entire costs in two years or less. In heavily populated watersheds where a majority of the land is steeply sloped or relatively impervious to infiltration of rainfall, roughly one/fifth of US watersheds, the payback time for retention-based planning could approach or even exceed a decade. In the remaining watersheds where conditions are between these extremes payback times will vary with the skill of planners and the desire of residents for additional benefits.

In the Murrieta Creek example noted above, the high cost and low quality of imported water makes rainwater worth over $1,800 per acre-foot (when all importation, dilution, distribution, wastewater disposal, and environmental mitigation costs are factored in), an unnecessary burden of about $900 per household yearly. When this amount is combined with the costs of bottled water - home filtration - appliance replacement - plumbing repair - drainage system construction/flood control (necessitated by bureaucratic refusal to retain this volume of water) the public's average household cost for deliberate misplanning is about $2,100 yearly.

This is obviously an extremely high price to pay for ignorance of the simple techniques that would guide the area's abundant rainfall to its immense natural underground reservoirs but Southern Californians have been cleverly deluded for an entire century into believing that they are too proudly "laid back" to take part in managing their economic and natural resource wealth. Most also seem to accept the fiction that they lack sufficient conceptual planning ability to understand how to manage rainwater and to provide meaningful comment.

While other states have allowed huge water resource management scams to raid the public treasury, California has gained a unique position by creating the largest, most efficient and least recognized method for channeling public funds into private bank accounts. Not only does the public subsidize agribusiness profiteers by paying over 90% of water costs, it supports the army of bankers, bureaucrats, contractors, suppliers, and associated business that build and maintain the drainage systems which enable some of the same profiteers to operate the worlds grandest land development schemes. (Drains

magnify land values enormously, allowing insiders to buy floodplain land at minimal cost and resell it to tract home builders for huge unearned profit, often through the misuse of redevelopment powers and funds.)

This example can be considered atypical for Southern California because the Chief Engineer was found to be primarily concerned with providing drainage systems that would maximize profits for private interests. (Whose political influence had brought him to Riverside County after Phoenix area citizens groups forced him from office for similar scheming.) The facts and results of this gross mismanagement of the public's economic and natural resources are easily identified, making it an excellent "horrible example" of how planners and engineers may flatly refuse to properly evaluate alternatives to drainage-oriented rainfall management.

ENGINEERING MISDIRECTIONS

Most agency managers let engineers select water resource planning alternatives and then have planners test these for economic feasiblity. This ludicrously inappropriate procedure has prevented rainfall retention from being included among options presented to elected officials. (Rainwater conservation alternatives are routinely buried or discredited by the engineers because these threaten their job security.) Few politicians accept that conceptual planning cannot properly begin with tunnel-visioned specialists and most have been misled by the same specialists into doubting their own conceptual planning ability.

Whenever senior planners prevent full evaluation of every reasonable alternative in defiance of NEPA and CEQA guidelines, lower-level planners have a moral obligation to expose this lawbreaking to public view. When any public servant recognizes deliberate falsification of data or distortion of premises in a presentation of plans to elected officials or the public, they have a duty to make their perceptions known.

On the flip side of this:; When citizens take so little interest in how their public affairs are managed that they will not support a public servant who exposes deliberate mismanagement or false or distorted information, they have only themselves to blame when forced to pay tax and utility bills that are many times higher than necessary.

1) Proposed Action Element 2 would not hand emergency powers to local officials. As with all of the other proposed elements, the "exigency" action would be undertaken only by NRCS personnel and for this element, only in dire circumstances where immediate action must be taken to avoid loss of life or property. As with all such work, it would be reviewed and approved by the NRCS State Conservationist. 2) NRCS has a well developed and field proven array of emergency restoration practices and NRCS staff are fully prepared to implement them. Each of the practices is broad enough in applicability to address what might be termed a "damage scenario" which would encompass the range of circumstances of a watershed impairment under which the practice or a group of practices might be employed for disaster recovery. However, each actual emergency recovery situation requires a site-specific solution for which the general engineering and biologic principles of the practice would be adapted to the specific hydrologic and related environmental conditions at the site. This requirement for readiness to employ appropriate practices and flexibility to adapt them to the conditions at hand was part of the impetus for Proposed Action Element 6 of Section 3.2.2.1 for pre-disaster planning and coordination. 3) The complexities of the watershed environments across the U.S. and the variety of potential impairments that might result from the range of natural disasters the EWP Program addresses make it impractical to attempt to define exactly what response will be made in every conceivable emergency situation beforehand and to evaluate the defensibility of each and every possible course of action. NRCS staff are trained to make equitable decisions in just such crisis situations when and where they occur and they do factor in the views of affected members of the public. Part of the emergency measure review process is coordination with the U.S. Army Corps of Engineers to ensure that their permitting requirements are fulfilled. Further, NRCS plans to continue to improve its outreach to communities, individuals, and other interested parties by having them become more involved in pre-disaster planning to ensure that Emergency Recovery Plans meet their needs. Part of NRCS' effort to identify and address the concerns of the public is this PEIS process itself.	4) The basic premise of the PEIS is that the public funds that are used to achieve the principal mission of the EWP Program—safeguarding lives and property when a natural occurrence causes a sudden impairment of a watershed—should be spent effectively, efficiently, economically, and with full consideration of environmental and social concerns. Easements are purchased in conjunction with the overall EWP Program mission of dealing effectively with disaster recovery and are designed to restore natural floodplain function and reduce repeated Federal disaster repair payments in the longer-term. Restoration of wildlife habitat is an important but ancillary benefit of floodplain easement purchase. 5) EWP is a disaster response program, not a flood prevention program. Section 216, P.L 81-516 (as amended) that pertains to NRCS EWP Program states that: "The Secretary of Agriculture is authorized to undertake emergency measures, including the purchase of floodplain easements, for runoff retardation and soil erosion prevention, in cooperation with landowners and land users, as the Secretary deems necessary to safeguard lives and property from floods, drought, and the products of erosion on any watershed *whenever fire, flood, or any other natural occurrence is causing or has caused a sudden impairment* of that watershed." Other NRCS programs—specifically the P.L. 78-534 and P.L. 83-566 programs—address flood prevention. In watersheds where EWP practices restore floodplain function, the purchase of easements are encouraged. NRCS would stipulate what uses are compatible with the purpose of the easement and, in particular, would not allow any structural improvements. No buildings and generally no utility infrastructure would be allowed in the easement so that they would not be subject to damage. Easement purchase would not be made where public roads or community infrastructure might be jeopardized; they would continue to be protected. 6) Participation in the EWP easement program is completely voluntary on behalf of the landowner. NRCS will pay the fair market value (pre-disaster value) for the home, enabling the homeowner to purchase a comparably priced home in the community outside the 100-year floodplain.

James Marple page 7	James Marple page 8
7) There should be no net environmental damage, no net gain in impervious surfaces. Many relocated residents would likely find homes in existing dwellings. Others may have their floodplain-located homes moved to higher ground. Any new homes that might be built should be offset by demolition of the residences in the floodplain that are at risk. And stormwater management units which would retain all potential floodwaters except extreme peak flows would necessarily be part of any such new development. There would be no increase in sewage effluent or water supply requirements because no new people are being introduced to the locality; they are simply being moved out of the floodplain where they currently have those same water and wastewater treatment requirements.	8) There have been situations in the past where there was a conflict between achieving the mission of the program, to quickly eliminate a threat to life or property, and related goals of protecting the environment or considering the social implications of a proposed emergency measure. Part of the impetus for the proposed EWP Program Improvement is to structure the Program and promulgate guidance that will ensure those potential conflicts are better addressed in the future. NRCS is committed to ensuring the environmental and social defensibility of its EWP work. In repairing flood damages, NRCS proposes to implement solutions that consider all relevant social and environmental factors as well as technical and economic factors. 9) Within the broader context of the Congressional appropriations process, all Federal agencies compete with each other for public funds. With respect to ECP, the particular program mentioned in the PEIS, NRCS does not anticipate a conflict with ECP (an FSA program) and the Federal government would certainly not pay twice for the same practice. As for other Federal programs, NRCS anticipates no duplication of effort in duties for emergency repair work. 10) Yes, other Federal, State, and local agencies were involved in the drafting of this PEIS. USFWS, USEPA, USFS, FEMA, OMB, CEQ, USACE, and the Office of the General Council (OGC) contributed to the document while it was in the draft stages, prior to its publication. Comments on the published Draft EWP PEIS were solicited from Federal agencies, State emergency management offices, SHPOs, American Indian tribal governments, State departments of natural resources, non-profits, private companies, and concerned individuals. A list of the groups who were sent a copy of the Draft PEIS is provided in the "Distribution List" section of the document. 11) NRCS believes that the scoping conducted for the EWP PEIS was adequate, including the advertising done to inform the public that NRCS was preparing the PEIS, that public meetings were being held to solicit their comments, and that they could also submit comments through a number of other means. Please refer to Chapter 3 and Appendix A for a full description of the scoping process. Scoping for this project was conducted in accordance with the Council on Environmental Quality (CEQ) regulations and USDA and NRCS regulations and policy.

James Marple page 12	James Marple page 16
12) The anticipated loss of crop or grazing acreage is likely to be small, minimizing any nationwide or localized impacts to the costs of food production. It could be argued that catastrophic flood damages to crops will be reduced, lowering the risks of large financial losses by individual farmers. 13) Please refer to response to page 7 response # 1 14) The proposed easement purchases would be voluntary.	15) Please refer to Section 5.3.4 in Chapter 5, which discusses the impacts of easements to the local tax base. 16) NRCS will pay the fair market value (pre-disaster value) for the home, enabling the homeowner to purchase a comparably priced home in the community outside the 100-year floodplain. 17) Wildlife diversity may actually increase substantially with easement purchases. Riparian areas are an incredibly diverse ecosystem, with abundant aquatic and vegetative communities. Terrestrial organisms also frequent these areas for feeding and habitation. By significantly improving the habitat in streamside lands, these ecosystems and their component plant and animal species should see benefits over the long-term. 18) Any such diminishment in upland areas is likely to be more than offset by the increased opportunities in the restored natural floodplain areas.

James Marple page 17	James Marple page 18
19) NRCS agrees that land values may indeed increase in areas near buyouts, which would benefit the current landowners but adversely affect other potential buyers. NRCS has addressed these positive and negative effects in the socioeconomic impacts analysis in the PEIS. Additionally, NRCS will pay the fair market value (pre-disaster value) for the home, enabling the homeowner to purchase a comparably priced home in the community. 20) Similar to page 12, comment #1, there is no guarantee that acreage removed from agricultural production will automatically be replaced. The purpose of an easement is to remove these lands from production, thus reducing the Federal expenditures for disaster damages. The easement purchase also serves to supplement the landowner's income to mitigate the loss in crop revenues.	21) The rationale behind the selection of Alternative 4, the Preferred Alternative, has been outlined in previous comments (see for example, USEPA page 1, response #1). This rationale will also be published in the Record of Decision.

Comments Not Requiring a Response

The following comments were received from various Federal and State agencies, but did not require a response from NRCS. A listing of commenting agencies is below:

National Oceanic and Atmospheric Administration, Headquarters
Alabama Historical Commission
Florida Division of Historical Resources
Georgia Historic Preservation Division
Hawaii Office of the Director of Civil Defense
Kentucky Department of Natural Resources
Kentucky Heritage Council
North Carolina State Historic Preservation Office
South Carolina Department of Natural Resources
South Carolina Office of State Budget
Virginia Department of Conservation and Recreation
Virginia Marine Resources Commission
Wyoming Fish and Game Department

Rec'd 2/22/00
RP

UNITED STATES DEPARTMENT OF COMMERCE
Office of the Under Secretary for
Oceans and Atmosphere
Washington, D.C. 20230

February 9, 2000

To Whom It May Concern
EWP Program Director
Watersheds and Wetlands Division
USDA-NRCS
Washington, DC 20020

Dear EWP Program Director:

Enclosed are comments on the Draft Environmental Impact Statement for Emergency Watershed Protection Program. We hope our comments can assist you. Thank you for giving us an opportunity to review this document.

Sincerely,

Susan B. Fruchter

Susan B. Fruchter
Acting NEPA Coordinator

Enclosure

Printed on Recycled Paper

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Silver Spring, Maryland 20910

FEB 7 2000

MEMORANDUM FOR: Susan B. Fruchter
Acting NEPA Coordinator

FROM: Dail Brown, Chief
Watershed Division
Office of Habitat Conservation

SUBJECT: DEIS-9912-03-Emergency Watershed Protection Program

We reviewed the subject document which describes the intent of the Natural Resources Conservation Service, USDA, to expand its activities under the Emergency Watershed Protection (EWP) Program. That program provides technical and financial assistance to 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.

While the purpose of the EWP Program is not to protect or restore habitat, it can indirectly accomplish such activities when protecting life or property. For example, funds have been used to remove debris from streams in order to maintain water flow and to stabilize streambanks. We believe that expansion of the EWP Program as detailed in the DEIS could increase those beneficial activities with proper precautions taken to protect the ecological functions of aquatic habitats.

FEB 9 2000

STATE OF ALABAMA
ALABAMA HISTORICAL COMMISSION
468 SOUTH PERRY STREET
MONTGOMERY, ALABAMA 36130-0900

LEE H. WARNER
EXECUTIVE DIRECTOR

TEL: 334-242-3184
FAX: 334-240-3477

January 11, 2000

EWP Draft PEIS Comments
P.O. Box 745
Falls Church, Virginia 22040-0075

Re: AHC 00-0390
NRCS Draft Programmatic EIS
Statewide

Dear Sirs:

Upon review of the draft programmatic EIS, the Alabama Historical Commission has determined that we can agree with the document provided our office will be contacted regarding cultural resources on a case by case basis before EWP actions are taken, as stated in the report.

We appreciate your efforts on this project. Should you have any questions or comments, please contact Stacye Hathorn or Greg Rhinehart of our office.

Sincerely,

Thomas O. Maher, Ph.D.
State Archaeologist

for: Elizabeth Ann Brown
Deputy State Historic Preservation Officer

EAB/TOM/SGH/GCR

DIVISIONS OF FLORIDA DEPARTMENT OF STATE
Office of the Secretary
Office of International Relations
Division of Elections
Division of Corporations
Division of Cultural Affairs
Division of Historical Resources
Division of Library and Information Services
Division of Licensing
Division of Administrative Services

MEMBER OF THE FLORIDA CABINET
State Board of Education
Trustees of the Internal Improvement Trust Fund
Administration Commission
Florida Land and Water Adjudicatory Commission
Siting Board
Division of Bond Finance
Department of Revenue
Department of Law Enforcement
Department of Highway Safety and Motor Vehicles
Department of Veterans' Affairs

FLORIDA DEPARTMENT OF STATE
Katherine Harris
Secretary of State
DIVISION OF HISTORICAL RESOURCES

January 7, 2000

EWP Program Director
Watersheds and Wetlands Division
USDA - NRCS
Washington, D.C.

RE: DHR Project File No. 999213
Cultural Resource Assessment Request
Draft Programmatic Environmental Impact Statement for the
Emergency Watershed Protection Program

To Whom It May Concern:

In accordance with the procedures contained in 36 C.F.R., Part 800 ("Protection of Historic Properties"), we have reviewed the referenced project for possible impact to historic properties listed, or eligible for listing, in the *National Register of Historic Places*. The authority for this procedure is the National Historic Preservation Act of 1966 (Public Law 89-665), as amended.

We have reviewed the final draft programmatic environmental impact statement for the United States Department of Agriculture (USDA) project referenced above. We look forward to future coordination between USDA and this office with regards to this action. Conditioned upon early and sufficient consultation with the State Historic Preservation Office the proposed undertakings will be consistent with the historic preservation laws of Florida's Coastal Management Program and the National Historic Preservation Act of 1966.

If you have any questions concerning our comments, please contact Scott Edwards, Historic Preservation Planner, at 850-487-2333 or 800-847-7278. Your interest in protecting Florida's historic properties is appreciated.

Sincerely,

Janet Snyder Matthews, Ph.D., Director
Division of Historical Resources
State Historic Preservation Officer

JSM/Ese

Lonice C. Barrett, Commissioner

Georgia Department of Natural Resources

Historic Preservation Division

W. Ray Luce, Division Director and Deputy State Historic Preservation Officer
500 The Healey Building, 57 Forsyth Street, N. W., Atlanta, Georgia 30303
Telephone (404) 656-2840 Fax (404) 651-8739

January 11, 2000

EWP Draft PEIS Comments
P.O. Box 745
Falls Church, Virginia 22040-0075

RE: Emergency Watershed Protection Program (EWP)
Statewide, Georgia
HP991215-001

To Whom It May Concern:

The Historic Preservation Division has reviewed the information submitted concerning the proposed Emergency Watershed Protection Program (EWP) for the state of Georgia. Based on the information provided (specifically that on page 5-3), it is our understanding that cultural resources will be considered on a case-by-case basis. We therefore have no concerns about the implementation of the EWP.

It is important to remember that any future changes to this project as it is currently proposed may require additional steps for Section 106 compliance. HPD encourages federal agencies and project applicants to discuss such changes with our office to ensure that potential effects to historic resources are adequately considered in project planning.

Please refer to project number HP991215-001 in any future correspondence. If we may be of further assistance, please contact Serena Bellew, Environmental Review Associate Planner, at (404) 651-6624.

Sincerely,

David R. Bennett

David Bennett
Environmental Review Coordinator

DB:kec

BENJAMIN J. CAYETANO
GOVERNOR

BRIGADIER GENERAL EDWARD L. CORREA, JR.
DIRECTOR OF CIVIL DEFENSE

EDWARD T. TEIXEIRA
INTERIM VICE DIRECTOR OF CIVIL DEFENSE

STATE OF HAWAII
DEPARTMENT OF DEFENSE
OFFICE OF THE DIRECTOR OF CIVIL DEFENSE
3949 DIAMOND HEAD ROAD
HONOLULU, HAWAII 96816-4495

PHONE (808) 733-4300
FAX (808) 733-4287

January 21, 2000

TO: EWP Draft PEIS Comments
P.O. Box 745
Falls Church, VA 22040-0075

FROM: Edward T. Teixeira
Interim Vice Director of Civil Defense

SUBJECT: DRAFT PROGRAMMATIC ENVIRONMENTAL IMPACT STATEMENT FOR THE EMERGENCY WATERSHED PROTECTION PROGRAM

We appreciate the opportunity to review your Draft Programmatic Environmental Impact Statement for the Emergency Watershed Protection Program. We have no comments or recommendations with regard to the draft.

We will continue to work closely with your Hawaii Offices in addressing emergency watershed protection issues in Hawaii.

Please contact Mr. Larry Kanda, State Hazard Mitigation Officer at (808) 733-4300, if you have any questions or need additional information.

James E. Bickford
Secretary

Paul E. Patton
Governor

COMMONWEALTH OF KENTUCKY
NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION CABINET
DEPARTMENT FOR NATURAL RESOURCES
DIVISION OF CONSERVATION
663 TETON TRAIL
FRANKFORT, KENTUCKY 40601

February 4, 2000

EWP Program Director
Watersheds and Wetlands Division
USDA Natural Resources Conservation Service
P.O. Box 745
Falls Church, VA 22040-0075

SUBJECT: Comments-Programmatic Environmental Impact Statement/Alternatives

Dear EWP Program Director:

The Kentucky Division of Conservation appreciates the opportunity to review and comment on this NRCS program that affects communities and watersheds in Kentucky. The proposed action and alternatives developed from the responses at the public meetings and recommendations of the Oversight and Evaluation Team clearly outline the alternative options.

I strongly concur with Alternative 2 and the 15 proposed elements incorporated within the EWP Program Improvement and Expansion. Improvement of program delivery and accretion of conservation practices to be included is overdue. Brief comments on some of these elements are as follows:

- Immediate response to declared disaster sites or to "urgent and compelling" situations would allow NRCS personnel to react appropriately and quickly. Interpretation of the "exigency" and "non-exigency" terminology is too varied.

- Defensibility of EWP practices may not always be expressed in terms of cost benefit ratios. Although this is a primary consideration, locally led community values, social factors and cultural values must be a fraction of the criteria used in defending the implementation of the restoration process.

- Elimination of the "multiple beneficiaries" current policy guidelines reinforces the fact that natural resources are not bounded by property lines, fences or county lines. Benefits will be derived for all downstream parties for locally identified resource concerns and future protection.

EDUCATION PAYS

Phone (502) 564-3080 Fax (502) 564-9195
EQUAL OPPORTUNITY EMPLOYER M F D

- I fully support the proposed changes to include enduring (structural or long-life) conservation practices as eligible for EWP assistance.

Adoption of the proposed action in the EWP program to Improvement and Expansion, Alternative 2 will enable NRCS to functionally and programmatically administer a program that can be defended to the public and environmental groups. This action will also allow the population of project areas to benefit from a locally led basis in addressing restoration efforts within EWP Improvement and Expansion programmatic guidelines.

If you have any questions concerning these comments, please feel free to contact me.

Sincerely,

Stephen A. Coleman

Stephen A. Coleman, Director
Division of Conservation

SAC/tls

c Commissioner Hugh Archer

Education, Arts and Humanities Cabinet

KENTUCKY HERITAGE COUNCIL
The State Historic Preservation Office

Paul E. Patton
Governor
Marlene M. Helm
Cabinet Secretary

David L. Morgan
Executive Director and
SHPO

January 12, 2000

EWP Draft PEIS Comments
P. O. Box 745
Falls Church, VA 22040-0075

Dear Sirs:

The Kentucky Heritage Council has reviewed the Natural Resources Conservation Services's document entitled "Draft Programmatic Environmental Impact Statement, Emergency Watershed Protection Program". The proposed action by the Natural Resources Conservation Services is an effort to improve the delivery and defensibility of the Emergency Watershed Protection Program and to address additional concerns about natural disaster caused threats to life and property. Our review of the document indicates that the Emergency Watershed Protection Program has made provision to consult with SHPOs to ensure that potential impacts to cultural resources are adequately addressed. We look forward to seeing the Final Programmatic Environmental Impact Statement.

Should you have any questions, feel free to contact Charles Hockensmith of my staff at (502) 564-7005.

Sincerely,

David L. Morgan, Director
Kentucky Heritage Council and
State Historic Preservation Officer

cc: Mr. Alex Barber

300 Washington Street
Frankfort, Kentucky 40601
An equal opportunity employer M/F/D

EDUCATION PAYS

Telephone (502) 564-7005
FAX (502) 564-5820
Printed on recycled paper

North Carolina Department of Cultural Resources

State Historic Preservation Office
David L. S. Brook, Administrator

James B. Hunt Jr., Governor
Betty Ray McCain, Secretary

Division of Archives and History
Jeffrey J. Crow, Director

January 21, 2000

EWP Program Director
EWP Draft PEIS Comments
PO Box 745
Falls Church, VA 22040-0075

Re: Programmatic Agreement, Emergency Watershed Protection Program, ER00-8327

Thank you for the copy of the Programmatic Agreement, Emergency Watershed Protection Program for our review. We are satisfied with your proposed treatment of historic properties and cultural resources.

The above comments are made pursuant to Section 106 of the National Historic Preservation Act and the Advisory Council on Historic Preservation's Regulations for Compliance with Section 106 codified at 36 CFR Part 800.

Thank you for your cooperation and consideration. If you have questions concerning the above comment, please contact Renee Gledhill-Earley, environmental review coordinator, at 919/733-4763.

Sincerely,

Renee Gledhill-Earley

for David Brook
Deputy State Historic Preservation Officer

DB:scb

	Location	Mailing Address	Telephone/Fax
ADMINISTRATION	507 N. Blount St., Raleigh NC	4617 Mail Service Center, Raleigh NC 27699-4617	(919) 733-4763 • 733-8653
ARCHAEOLOGY	421 N. Blount St., Raleigh NC	4619 Mail Service Center, Raleigh NC 27699-4619	(919) 733-7342 • 715-2671
RESTORATION	515 N. Blount St., Raleigh NC	4613 Mail Service Center, Raleigh NC 27699-4613	(919) 733-6547 • 715-4801
SURVEY & PLANNING	515 N. Blount St., Raleigh NC	4618 Mail Service Center, Raleigh NC 27699-4618	(919) 733-6545 • 715-4801

February 15, 2000

EWP Draft PEIS Comments
Post Office Box 745
Falls Church, Virginia 22040-0745

REF: Draft Programmatic Environmental Impact Statement (PEIS)
Emergency Watershed Program

Dear Sir/Madam:

Personnel with the South Carolina Department of Natural Resources have reviewed the above referenced Draft Programmatic Environmental Impact Statement (PEIS) and evaluated its potential impact on wildlife and fisheries habitat, wetlands, floodplains, water quality, recreation and other factors relating to the conservation of natural resources.

We recognize the value of the Emergency Watershed Protection (EWP) Program in providing funding and assistance to address watershed impairments that are caused by natural disasters and that pose a threat to life and property. In the past, the Natural Resources Conservation Service (NRCS) has allowed us to assist in developing watershed restoration projects that accomplish protection goals in an environmentally sensitive manner. We believe that the environmental, economic and technical soundness of the EWP Program can be improved by implementation of the proposed action alternative and we support the action alternative for the following reasons.

1) The purchase of floodplain easements could serve the dual purpose of attenuating flood while providing riparian habitat for fish and wildlife.

2) We agree that all measures to be installed must be environmentally defensible and that all measures must have predetermined criteria to meet that requirement.

3) We support a quick response for emergency restoration measures to minimize adverse effects to the environment.

We appreciate the opportunity to be involved in projects such as this and hope that our comments will be helpful in the development of a Final PEIS

Sincerely,

Robert E. Duncan
Environmental Programs Director
cc: Mark Berkland - NRCS/SC

STATE OF SOUTH CAROLINA
State Budget and Control Board
OFFICE OF STATE BUDGET

1122 LADY STREET, 12TH FL OOR
COLUMBIA, SOUTH CAROLINA 29201
(803) 734-2280

LES BOLES
DIRECTOR

January 10, 2000

EWP
Director, Watersheds & Wetlands Division
EWP Draft - USDA-NRCS
Post Office Box 745
Falls Church, VA 22040-0075

Project Name: Natural Resources Conservation Service Emergency Watershed Protection (EWP)Program Draft Programmatic Environmental Impact Statement EWP Program Improvement and Expansion

Project Number: EIS-9912012-012

Dear EWP,

The Office of State Budget, has conducted an intergovernmental review on the above referenced activity as provided by Presidential Executive Order 12372. All comments received as a result of the review are enclosed for your use.

The State Application Identifier number indicated above should be used in any future correspondence with this office. If you have any questions call me at (803) 734-0485.

Sincerely,

Omegia Burgess
Grants Services Coordinator

Enclosures

Fax (803) 734-0645

Office of State Budget

South Carolina Project Notification and Review System

1122 Lady Street, 12th floor
Columbia , SC 29201

State Application Identifier
EIS-9912012-012
Suspense Date
1/16/00

Michael LeFever
Governor's Division of Health & Human Services

The Office of State Budget is authorized to operate the South Carolina Project Notification and Review System (SCPNRS). Through the system the appropriate state and local officials are given the opportunity to review, comment, and be involved in efforts to obtain and use federal assistance, and to assess the relationship of proposals to their plans and programs.

Please review the attached information, mindful of the impact it may have on your agency's goals and objectives. Document the results of your review in the space provided. Return your response to us by the suspense date indicated above. Your comments will be reviewed and utilized in making the official state recommendation concerning the project. The recommendation will be forwarded to the cognizant federal agency.

Should you have no comment, please return the form signed and dated.

If you have any questions, call me at (803) 734-0485.

- ☐ Project is consistent with our goals and objectives.
- ☐ Request a conference to discuss comments.
- ☐ Please discontinue sending projects with this CFDA# to our office for review.
- ☐ Comments on proposed Application are as follows:

Signature: _____ Date: 12-28-99

Title: _____ Phone: _____

Office of State Budget

South Carolina Project Notification and Review System

1122 Lady Street, 12th floor
Columbia , SC 29201

State Application Identifier
EIS-9912012-012
Suspense Date
1/16/00

Elliot E. Franks, III
S.C. Jobs-Economic Development Authority

The Office of State Budget is authorized to operate the South Carolina Project Notification and Review System (SCPNRS). Through the system the appropriate state and local officials are given the opportunity to review, comment, and be involved in efforts to obtain and use federal assistance, and to assess the relationship of proposals to their plans and programs.

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Should you have no comment, please return the form signed and dated.

If you have any questions, call me at (803) 734-0485.

- ☑ Project is consistent with our goals and objectives.
- ☐ Request a conference to discuss comments.
- ☐ Please discontinue sending projects with this CFDA# to our office for review.
- ☐ Comments on proposed Application are as follows:

Signature: _____ Date: 12/20/99

Title: CEO Phone: 737-0075

Office of State Budget

South Carolina Project Notification and Review System

1122 Lady Street, 12th floor
Columbia, SC 29201

State Application Identifier
EIS-9912012-012
Suspense Date
1/16/00

Steve Davis
S.C. Department of Health and Enviromental Control

The Office of State Budget is authorized to operate the South Carolina Project Notification and Review System (SCPNRS). Through the system the appropriate state and local officials are given the opportunity to review, comment, and be involved in efforts to obtain and use federal assistance, and to assess the relationship of proposals to their plans and programs.

Please review the attached information, mindful of the impact it may have on your agency's goals and objectives. Document the results of your review in the space provided. Return your response to us by the suspense date indicated above. Your comments will be reviewed and utilized in making the official state recommendation concerning the project. The recommendation will be forwarded to the cognizant federal agency.

Should you have no comment, please return the form signed and dated.

If you have any questions, call me at (803) 734-0485.

RECEIVED
JAN 06 2000
Budget & Control Board
OFFICE OF STATE BUDGET

- [X] Project is consistent with our goals and objectives.
- [ ] Request a conference to discuss comments.
- [ ] Please discontinue sending projects with this CFDA# to our office for review.
- [ ] Comments on proposed Application are as follows:

Signature: _____ Date: 1/4/00

Title: _____ Phone: _____

Office of State Budget

South Carolina Project Notification and Review System

1122 Lady Street, 12th floor
Columbia, SC 29201

State Application Identifier
EIS-9912012-012
Suspense Date
1/16/00

DEC 20 1999

James Hugh Ryan
S. C. Forestry Commission

The Office of State Budget is authorized to operate the South Carolina Project Notification and Review System (SCPNRS). Through the system the appropriate state and local officials are given the opportunity to review, comment, and be involved in efforts to obtain and use federal assistance, and to assess the relationship of proposals to their plans and programs.

Please review the attached information, mindful of the impact it may have on your agency's goals and objectives. Document the results of your review in the space provided. Return your response to us by the suspense date indicated above. Your comments will be reviewed and utilized in making the official state recommendation concerning the project. The recommendation will be forwarded to the cognizant federal agency.

Should you have no comment, please return the form signed and dated.

RECEIVED
JAN 04 2000
OF... STATE BUDGET

If you have any questions, call me at (803) 734-0485.

- [ ] Project is consistent with our goals and objectives.
- [ ] Request a conference to discuss comments.
- [ ] Please discontinue sending projects with this CFDA# to our office for review.
- [ ] Comments on proposed Application are as follows:

None

Signature: Joe M Ruhlmann Date: 12/31/99

Title: DIVISION DIRECTOR, ADMINISTRATION Phone: (803) 896-8800

ce of State Budget

Carolina Project Notification and Review System

Lady Street, 12th floor
lumbia , SC 29201

State Application Identifier
EIS-9912012-012
Suspense Date
1/16/00

RECEIVED
DEC 17 1999
Emergency Preparedness Division
Office of the Adjutant General

Offi. ıtant General

The Office of State Budget is authorized to operate the South Carolina Project Notification and Review System (SCPNRS). Through the system the appropriate state and local officials are given the opportunity to review, comment, and be involved in efforts to obtain and use federal assistance, and to assess the relationship of proposals to their plans and programs.

Please review the attached information, mindful of the impact it may have on your agency's goals and objectives. Document the results of your review in the space provided. Return your response to us by the suspense date indicated above. Your comments will be reviewed and utilized in making the official state recommendation concerning the project. The recommendation will be forwarded to the cognizant federal agency.

Should you have no comment, please return the form signed and dated.

RECEIVED
JAN 04 2000
Budget and Control Board
OFFICE OF STATE BUDGET

If you have any questions, call me at (803) 734-0485.

- [x] Project is consistent with our goals and objectives.
- [ ] Request a conference to discuss comments.
- [ ] Please discontinue sending projects with this CFDA# to our office for review.
- [ ] Comments on proposed Application are as follows:

Signature: Stan M. McKinney Date: December 30, 99

Title: Director Phone: 734-8020

Office of State Budget

South Carolina Project Notification and Review System

1122 Lady Street, 12th floor
Columbia , SC 29201

State Application Identifier
EIS-9912012-012
Suspense Date
1/16/00

Mr. Larry Boyleston
South Carolina Department of Agriculture

The Office of State Budget is authorized to operate the South Carolina Project Notification and Review System (SCPNRS). Through the system the appropriate state and local officials are given the opportunity to review, comment, and be involved in efforts to obtain and use federal assistance, and to assess the relationship of proposals to their plans and programs.

Please review the attached information, mindful of the impact it may have on your agency's goals and objectives. Document the results of your review in the space provided. Return your response to us by the suspense date indicated above. Your comments will be reviewed and utilized in making the official state recommendation concerning the project. The recommendation will be forwarded to the cognizant federal agency.

Should you have no comment, please return the form signed and dated.

RECEIVED
JAN 04 2000
Budget and Control Board
OFFICE OF STATE BUDGET

If you have any questions, call me at (803) 734-0485.

- [x] Project is consistent with our goals and objectives.
- [ ] Request a conference to discuss comments.
- [ ] Please discontinue sending projects with this CFDA# to our office for review.
- [ ] Comments on proposed Application are as follows:

Signature: Larry J. Boyleston Date: 12/22/99

Title: Assistant to the Commissioner Phone: 803/734-2193

James S. Gilmore, III
Governor

John Paul Woodley, Jr.
Secretary of Natural Resources

COMMONWEALTH of VIRGINIA

David G. Brickley
Director

DEPARTMENT OF CONSERVATION AND RECREATION
203 Governor Street, Suite 326
TDD (804) 786-2121 Richmond, Virginia 23219-2010 (804) 786-2556 FAX (804) 371-7899

January 26, 2000

Emergency Watershed Program Director
Watersheds and Wetlands Division
United States Department of Agriculture-
Natural Resources Conservation Service
Washington, D. C. 20005

Re: Draft Programmatic Environmental Impact Statement for the Emergency Watershed Protection Program

Dear Emergency Watershed Program Director:

Comments are provided herein on the above referenced project.

The Department of Conservation and Recreation (DCR) supports the activities of the Natural Resources Conservation Service (NRCS) in the implementation of this program. NRCS has improved the program to implement projects that consider floodplain improvements and proper streambank and channel stabilization techniques.

Thank you for the opportunity to comment on this project.

Sincerely,

Derral Jones

Derral Jones
Planning Bureau Manager

COMMONWEALTH of VIRGINIA

James S. Gilmore, III
Governor

John Paul Woodley, Jr.
Secretary of Natural Resources

Marine Resources Commission
2600 Washington Avenue
P.O. Box 756
Newport News, Virginia 23607-0756

William A. Pruitt
Commissioner

February 10, 2000

EWP Draft PEIS Comments
P.O. Box 745
Falls Church, VA 22040-0075

Dear Sir or Madam:

This is in response to your request for comments regarding the Draft Programmatic Environmental Impact Statement for the Emergency Watershed Protection (EWP) Program.

The Virginia Marine Resources Commission, pursuant to Section 28.2-1204 of the Code of Virginia, is authorized to issue permits for encroachments in, on, or over State-owned submerged lands throughout the Commonwealth. As such, many of the instream activities associated with EWP Program activities require authorization from our agency. In order to facilitate review and expedite our approval of identified projects, our agency (and others) signed a Memorandum of Understanding (MOU) in 1993 with the NRCS (then SCS) to establish a framework for cooperation. In 1998 the Commission also promulgated a general permit to authorize certain EWP Program projects.

These efforts have been well received and any changes that are made in the EWP Program will need to be incorporated into our current coordination practices to ensure we continue to review and evaluate projects in a timely manner to address needed disaster relief and environmental protection. Since it appears the identified alternatives will result in an improved EWP Program that incorporates principles of natural stream dynamics and bioengineering, which have been included in numerous projects in Virginia, such changes should present little problem. The only exception may be that the terms "exigency" and "non-exigency" are used within both the existing MOU and our General Permit. Although the terms, and the types of projects the terms represent, seem to be well understood in Virginia, hopefully any changes in terminology can be easily accommodated.

Please do not hesitate to contact us should you have any questions regarding our comments.

Sincerely,

Tony Watkinson
Deputy Chief, Habitat Management

TW/bac
HM
cc: Ms. Silvia Gazzera, DEQ
Mr. Wade Biddix, NRCS

WYOMING
GAME AND FISH DEPARTMENT

Jim Geringer, Governor — John Baughman, Director

"Conserving Wildlife —Serving People"

February 1, 2000

WER 9608
Natural Resources Conservation Service
Draft Programmatic Environmental Impact Statement
Emergency Watershed Protection Program

EWP Draft PEIS Comments
P.O. Box 745
Falls Church, VA 22040-0075

Dear Sir/Madam:

The staff of the Wyoming Game and Fish Department has reviewed the Draft Programmatic Environmental Impact Statement for the Emergency Watershed Protection Program. We have no terrestrial or aquatic concerns with this program or with the environmental document.

Thank you for the opportunity to comment.

Sincerely,

BILL WICHERS
DEPUTY DIRECTOR

BW:TC:as
cc: Julie Hamilton-State Clearinghouse
USFWS

LIST OF PREPARERS

The following NRCS personnel were involved with the development of the EWP PEIS.

Inter-Disciplinary Team

Name	Title	Education
Ron Page	National EWP Program Coordinator, DC	B.S. Geology, M.S. Geology, 37 years experience
Sarah Bridges	National Cultural Resources Specialist	M.S. Anthropology and History, 20 years experience
Andree DuVarney	National EUT Coordinator	B.A. Psychology, J.D., 6 years experience
Gordie Klofstad	National Construction Engineer	B.S. Civil Engineering, P.E., 30 years experience
David Thackerey	National Civil Engineer	B.S. Civil Engineering, P.E., 24 years experience
Dennis Miller	Resource Economist Des Moines, Iowa	B.S. Agricultural Engineering, 31 years experience
Hank Henry	Terrestrial Ecologist	B.S. Biology, B.S. Forestry, 20 years experience
Ken Krug	Resource Biologist Rapid City, South Dakota	B.S. Biology, 24 years experience
Wade Biddix	Planning Coordinator, VA	B.S. Agriculture, 19 years experience
Alica Ketchum	Planning/Environmental Engineer and Environmental Specialist, Virginia	B.S. Civil Engineering, M.S. Agricultural Engineering, P.E., 15 years experience
Gary Sole	Contract Specialist (Ret.)	B.S. Soils, 15 years experience
Howard Hankin	National Aquatic Biologist	Contributor
Larry Hughes	USDA Attorney	Contributor

State Representatives, Site Contacts, and Contributors

Name	Title	Role
Alabama		
Mason Dollar	EWP Program Manager	State Representative
Arkansas		
Jimmy Rietzke	Watershed Planner	Site Contact
Bob Price	Biologist	Contributor
Arizona		
Noller Herbert	State Conservation Engineer	Contributor
Wayne Killgore	Watershed Planner	Contributor
California		
Charles Davis	State Conservation Engineer	State Representative
Georgia		
Mac Hayes	EWP Program Manager	State Representative
Cran Upshaw	Economist	Contributor
Iowa		
Marty Adkins	EWP Program Manager	State Representative
Angi Hanson	Wetland Specialist	Site Contact
Carl Priebe	Wildlife Management Biologist	Contributor
Idaho		
Terrill Stevenson	EWP Program Manager	State Representative
Frank Fink	Biologist	Contributor
Illinois		
Renee White	Economist	Contributor
Maryland		
Denise Darby	Contracts Specialist	Contributor
Missouri		
Mike Wells	EWP Program Manager	State Representative
Doug Berka	Soil Scientist	Site Contact
Renee Cook	District Conservationist	Site Contact
Bill Goodwin	Area Wildlife Services Biologist	Contributor
David Howard	Resource Soil Scientist/Wetland Team Leader	Contributor
Mike McClure	Wetland Biologist	Contributor
Richard Tummons	Soil Scientist	Contributor
Steve Young	State Agency Biologist	Site Contact
North Carolina		
Mike Hinton	EWP Program Manager	State Representative
Bob Brown	Biologist - North Carolina Wildlife Resources Commission	Contributor
Vermont		
Hollie Umphrey	Sociologist	Contributor

Pennsylvania		
Bill Bowers	State Conservation Engineer	Contributor
Texas		
Alan Colwick	EWP Program Manager	State Representative
Calvin Sanders	Cultural Resources Specialist	Contributor
Weldon Sears	District Conservationist	Site Contact
Virginia		
Roger Flint	Natural Resource Conservationist	Site Contact
John Myers	Biologist	Contributor
Tom Nye	Professor of Biology, Washington and Lee University	Contributor
Tish Toomer	Resource Economist	Contributor
West Virginia		
Ben Horter	Cultural Resources Specialist	Contributor

Agency Consultation

The following Federal agency personnel participated in the interagency review process that preceded the Draft EIS.

Name	Agency
Dinah Bear	Council on Environmental Quality
Cliff Rader	Environmental Protection Agency
Andrew Lenard	Federal Emergency Management Agency
Kimberly Miller	Office of Management and Budget
Robb Grubbs	U.S. Army Corps of Engineers
Clayton Furukawa	USDA - Farm Service
Max Copenhagen	USDA - Forest Service
John Nordin	USDA - Forest Service
Stuart Shelton	USDA - Office of General Counsel
Eleanora Badij	USDI – U.S. Fish and Wildlife Service
Dan Smalley	USDI – U.S. Fish and Wildlife Service
Don Peterson	USDI – U.S. Fish and Wildlife Service

Mangi Environmental Group Staff

The following personnel from the Mangi Environmental Group prepared the PEIS.

Name	Role In PEIS	Education
Dr. Philip Sczerzenie	Project Director	Ph.D. Wildlife Biology, M.S. Biology, B.S. Biology
Roger Windschitl	Environmental Impacts Analysis	M.S. Environmental Studies, B.S. Environmental Studies
Bud Watson	Legal Resources, Cumulative Impacts	J.D., M.S. Environmental Science, A.B. Geology
Rick Heffner	Socioeconomic Analysis	M.A. Sociology, B.A. Sociology
Kelly Meadows	Impacts Analysis, Research and Project Support	Masters of Environmental Management (MEM), B.A. Environmental Science, Astronomy
Sarah Magruder	Land Use/Planning Analysis and Project Support	Masters of Regional Planning (MRP), B.A. Geography, Environmental Studies
Kathleen Schamel	Cultural Resources	M.A. Anthropology, B.A. Anthropology
Suzanne Stewart	Research and Project Support	B.S. candidate, Civil Engineering
Sarah Nardotti	Research and Project Support	B.S. Environmental Studies, Political Science
Lee Bigger	Research and Project Support	B.S. Environmental Studies, Political Science
Brian Ray	Research and Project Support	M.A. candidate, Geography, B.L.A. Landscape Architecture
Robin Olsen	Research and Project Support	B.A. Biology and Psychology
Anna Lundin	Research and Project Support	M.S. Environmental Engineering, B.S. Soil and Water Science
Dr. James Mangi	Project Oversight	Ph.D. Biology, B.S. Biology, Certified Environmental Professional

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CONSULTATION AND COORDINATION

Council on Environmental Quality NEPA regulations at 40 CFR 1502.25 require that *to the fullest extent possible, agencies shall prepare draft environmental impact statements concurrently with and integrated with environmental impact analyses and related surveys and studies required by the Fish and Wildlife Coordination Act (16 U.S.C. 661 et seq.), the National Historic Preservation Act of 1966 (16 U.S.C. 470 et seq.), the Endangered Species Act of 1973 (16 U.S.C. 1531 et seq.), and other environmental review laws and executive orders. The draft environmental impact statement shall list all Federal permits, licenses, and other entitlements, which must be obtained in implementing the proposal. If it is uncertain whether a Federal permit, license, or other entitlement is necessary, the draft environmental impact statement shall so indicate.*

At the programmatic level, NRCS is not seeking the site-specific studies or individual project permits noted in the regulations, but in a more general way has involved other agencies in development of the EWP PEIS and integration of environmental requirements in its decisionmaking, which will affect decisions made at EWP sites in the future. NRCS has involved other Federal agencies, including the U.S. Forest Service, U.S. Fish and Wildlife Service, EPA, CEQ, FEMA, and the U.S. Army Corps of Engineers, in defining the EWP Proposed Action and alternatives and in reviewing early drafts of the PEIS. NRCS has taken care to ensure that the concerns of those agencies have been well considered in all aspects of the proposed Program. A large part of the improvement NRCS proposes to make in the EWP Program is in terms of better communication, coordination, and planning with Federal, State, and local agencies in implementing EWP restoration work and easements and in protecting T&E species, cultural resources, wetlands, and other sensitive resources and helping in general to restore watershed health. Table C&C-1 lists applicable laws and regulations relevant to the analysis of EWP project impacts

Coordination with other agencies in emergency restoration work is described in the PEIS in Chapter 2, improvements in coordination in Chapter 3. Appendix A presents the details of agency participation in the scoping process for the PEIS and presents the programs and responsibilities of other agencies that are relevant to NRCS meeting its coordination and consultation responsibilities. The cumulative impacts analysis presented in Chapter 5 describes how actions of other agencies factor into the cumulative impacts of the EWP Program in selected example watersheds and Alternative 3 proposes a watershed based program that would involve an enhanced level of coordination with other agencies. Consistent with its mission and resources, NRCS will continue to seek ways to improve its programs in terms of agency consultation and coordination.

Table C&C-1 -- Relevant Federal Statutes and Regulations

Environmental Resource	Principal Legal and Regulatory Authority
Environmental Quality	National Environmental Policy Act, 42 U.S.C. 4321 et seq. (Council on Environmental Quality (CEQ) Policy Regulations, 40 CFR 1500-1508; Department of Agriculture NEPA Regulations, 7 CFR Parts 1b, 3100; Natural Resources Conservation Service Compliance with NEPA, 7 CFR Part 650.)
Soils	Flood Control Act of 1950, 33 U.S.C. § 701b-1, Section 216, Public Law 81-516, as amended; Agricultural Credit Act of 1978, 16 U.S.C. § 2203, Public Law 95-334; Federal Agricultural Improvement and Reform Act of 1996, 16 U.S.C. § 2203, Public Law 104-127 (Emergency Watershed Protection Regulations, 7 CFR Part 624).
Water Quality and Resources	Clean Water Act, 33 U.S.C. 1251 et seq.; Wild and Scenic Rivers Act, 16 U.S.C. § 1271 et seq.(Clean Water Act Wetlands Regulations, 33 CFR Parts 220-230, 40 CFR Part 320; Wild and Scenic Rivers Act Regulations, 36 CFR Part 297 Subpart A; see also Executive Order 11988, Floodplain Management; Executive Order 11990, Protection of Wetlands.)
Air Quality	Clean Air Act, 42 U.S.C. § 7401 et seq. (Clean Air Act Regulations, 40 CFR Parts 50-53, 60, 61 67, 81, 82.)
Biota	Endangered Species Act, 16 U.S.C. § 1531 et seq.; Fish and Wildlife Coordination Act, 16 U.S.C. § 661 et seq.; Wild and Scenic Rivers Act, 16 U.S.C. § 1271 et seq. (Endangered Species Act Regulations, 50 C.F.R. Parts 17 and 23 ; Wild and Scenic Rivers Act Regulations, 36 CFR Part 297 Subpart A.)
Recreation	Wild and Scenic Rivers Act, 16 U.S.C. § 1271 et seq. (Wild and Scenic Rivers Act Regulations, 36 CFR Part 297 Subpart A.)
Cultural Resources	National Historic Preservation Act of 1966, 16 U.S.C. § 470(f); Archaeological and Historic Preservation Act of 1974, 16 U.S.C. § 469-469c; Archaeological Resources Protection Act of 1979, 16 U.S.C. § 470aa-470ll; Native American Graves Protection and Repatriation Act, 16 U.S.C. §470aa et seq.; Wild and Scenic Rivers Act, 16 U.S.C. § 1271 et seq. (National Historic Preservation Act Regulations, 36 CFR Parts 60, 61, 63, 65, 68, 79, and 800; Archaeological and Historic Preservation Act Regulations, 36 CFR Part 800; Native American Graves Protection and Repatriation Act Regulations, 43 CFR 10; Wild and Scenic Rivers Act Regulations, 36 CFR Part 297 Subpart A; see also Executive Order 13007, Access to Sacred Sites.)

Environmental Resource	Principal Legal and Regulatory Authority
Socioeconomics, Including Effects on the Local Economy and Social Resources	Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, 42 U.S.C. § 4601.
Infrastructure	Federal Highway Act, 23 U.S.C. § 138; Intermodal Surface Transportation Efficiency Act, as amended, 23 U.S.C. §§ 101(a) and 133.
Aesthetics	Wild and Scenic Rivers Act, 16 U.S.C. § 1271 et seq. (Wild and Scenic Rivers Act Regulations, 36 CFR Part 297 Subpart A.)
Land Use, Land Valuation, Prime and Unique Farmland, and Zoning Conflicts	Farmland Protection Policy Act, 7 U.S.C. § 420l et seq.; Land and Water Conservation Fund Act of 1974, 16 U.S.C. §§ 4601-4604; Coastal Zone Management Act, 16 U.S.C. § 1451, et seq. (Farmland Protection Policy Act Regulations, 7 CFR Parts 657 and 658; see also CEQ Memorandum of August 1, 1980: Analysis of Impacts on Prime or Unique Agricultural Lands in Implementing the National Environmental Policy Act.)
Hazardous Substances, Regulated Materials, and Solid and Hazardous Waste	Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) (as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA)), 42 U.S.C. § 9601 et seq.; Resource Conservation and Recovery Act of 1976 (RCRA) as amended by the Solid Waste Disposal Act of 1980 and the Hazardous and Solid Waste Amendments of 1984, 42 U.S.C. § 6901 et seq. (CERCLA Regulations, 40 CFR Parts 300, 302, 355, 370, and 373; RCRA Regulations, 40 CFR Parts 240-280.

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DISTRIBUTION LIST

Name/Title	Agency/Organization	State/ Country
James Connaughton	Council on Environmental Quality	DC
Kimberly Miller	Office of Management and Budget	DC
Anne Norton Miller, Director	U.S. EPA, Office of Federal Activities	DC
Cliff Rader	U.S. EPA Headquarters	DC
Bill Hoffman, Environmental Review Coordinator	U.S. EPA, Region 3	PA
Richard Parkin, Environmental Review Coordinator	U.S. EPA, Region 10	WA
Robert Hargrove, Environmental Review Coordinator	U.S. EPA, Region 2	NY
Heinze Mueller, Environmental Review Coordinator	U.S. EPA, Region 4	GA
c/o Kathy Matthews	U.S. EPA, Region 4, Wetlands, Coastal & Water Quality Grants Branch	GA
c/o Lynn Kring	U.S. EPA, Region 7	KS
c/o Kraft	U.S. EPA, Region 7	KS
Joe Cothern, Environmental Review Coordinator	U.S. EPA, Region 7	KS
Chris Gebhardt	U.S. EPA, Region 10	WA
c/o Dave Farrel, Environmental Review Coordinator	U.S. EPA, Region 9	CA
Sherry Kamke, Acting Environmental Review Coordinator	U.S. EPA, Region 5	IL
Cindy Cody, Environmental Review Coordinator	U.S. EPA, Region 8	CO
Mike Jansky, Environmental Review Coordinator	U.S. EPA, Region 6	TX
Betsy Higgins, Environmental Review Coordinator	U.S. EPA, Region 1	MA
Charles Adams, Acting Regional Conservationist	USDA, NRCS, South Central Regional Office	TX
c/o Judith Johnson, Regional Conservationist	USDA, NRCS, Northern Plains Regional Office	NE
Joan Perry, Regional Conservationist	USDA, NRCS, West Regional Office	CA
Humberto Hernandez, Regional Conservationist	USDA, NRCS, East Regional Office	MD
Charles Adams, Regional Conservationist	USDA, NRCS, Southeast Regional Office	GA

Richard Swenson, Regional Conservationist	USDA, NRCS, East Regional Office	MD
Roger Flint	USDA, NRCS, Lexington Service Center	VA
Billy Teels, Director	USDA, NRCS, Wetlands Institute	MD
Bruce Newton, Acting Director	USDA, NRCS, Water and Climate Center	OR
c/o Jon Warner, Director	USDS, NRCS, Water and Climate Center	MD
Carolyn Adams, Director	USDA, NRCS, Watershed Science Institute	NC
Lyn Townsend, Forest Ecologist	USDA, NRCS, Watershed Science Institute	OR
Betty McQuaid, Soil Ecologist	USDA, NRCS, Watershed Science Institute	NC
Kerry Robinson, Hydraulic Engineer	USDA, NRCS, Watershed Science Institute	NC
Hank Henry, Terrestrial Ecologist	USDA, NRCS, Watershed Science Institute	NC
Barry Rosen, Water Quality Specialist	USDA, NRCS, Watershed Science Institute	VT
Stefanie Aschmann, Agroecologist	USDA, NRCS, Watershed Science Institute	NE
David Anderson, Agricultural Engineer	USDA, NRCS, Watershed Science Institute	NE
Frank Clearfield, Director	USDA, NRCS, Social Sciences Institute	NC
Steve Higgins	USDA, NRCS, Milan Service Center & Interstate RC&D	IL
c/o Larry Butler	USDA, NRCS, Grazing Lands Technology Institute	TX
Mike Sullivan, Director	USDA, NRCS, Water Management Center	AR
M. Darrel Dominick, State Conservationist	USDA, NRCS, State Office	OK
Francis M. Keeler, State Conservationist	USDA, NRCS, State Office	VT
Rick Van Klaveren, State Conservationist	USDA, NRCS, State Office	IA
Marty Adkins	USDA, NRCS, State Office	IA
c/o Dennis Miller	USDA, NRCS, State Office	IA
Sylvia A. Gillen, State Conservationist	USDA, NRCS, State Office	UT
Anthony J. Kramer, State Conservationist	USDA, NRCS, State Office	NJ
Richard Sims, State Conservationist	USDA, NRCS, State Office	ID
Michael Somerville, State Conservationist	USDA, NRCS, State Office	AZ
Livia Marques, State Conservationist	USDA, NRCS, State Office	NV
Robin E. Heard, State Conservationist	USDA, NRCS, State Office	PA
Stephen Chick, State Conservationist	USDA, NRCS, State Office	NE
Lincoln Burton, State Conservationist	USDA, NRCS, State Office	WY
Janet L. Oertly, State Conservationist	USDA, NRCS, State Office	SD
Kalven Trice, State Conservationist	USDA, NRCS, State Office	AR

Dave White, State Conservationist	USDA, NRCS, State Office	MT
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Leonard Jordan, State Conservationist	USDA, NRCS, State Office	GA
Joyce A. Swartzendruber, State Conservationist	USDA, NRCS, State Office	ME
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M. Denise Doetzer, State Conservationist	USDA, NRCS, State Office	VA
Robert Graham, State Conservationist	USDA, NRCS, State Office	OR
Theresa Chadwick, State Conservationist	USDA, NRCS, State Office	NH
Lillian Woods, State Conservationist	USDA, NRCS, State Office	WV
Lawrence T. Yamamoto, State Conservationist	USDA, NRCS, State Office	HI
Donald Gohmert, State Conservationist	USDA, NRCS, State Office	LA
William Hunt, State Conservationist	USDA, NRCS, State Office	MN
Wayne Wiggs, Soil Conservationist	USDA, NRCS, State Office	FL
Harold Klaege, State Conservationist	USDA, NRCS, State Office	KS
Cecil Currin, State Conservationist	USDA, NRCS, State Office	MA
David Sawyer, State Conservationist	USDA, NRCS, State Office	KY
Margo Wallace, State Conservationist	USDA, NRCS, State Office	CT
Virginia L. Murphy, DE State Conservationist	USDA, NRCS, State Office	DE
Kevin Brown, State Conservationist	USDA, NRCS, State Office	OH
Dr. Larry D. Butler, State Conservationist	USDA, NRCS, State Office	TX
Robert Jones, State Conservationist	USDA, NRCS, State Office	AL
c/o Craig Ditzler	USDA, NRCS, State Office	IA
T. Niles Glasgow, State Conservationist	USDA, NRCS, State Office	FL
J.R. Flores, State Conservationist	USDA, NRCS, State Office	ND
JoDean Nichols	USDA, NRCS, State Office	ND
Patricia Leavenworth, State Conservationist	USDA, NRCS, State Office	WI
Allen Green, State Conservationist	USDA, NRCS, State Office	CO
Roger Hansen, State Conservationist	USDA, NRCS, State Office	MO
Walt Douglas, State Conservationist	USDA, NRCS, State Office	SC
Charles Davis	USDA, NRCS, State Office	CA
c/o William Kiddy, Jr.	USDA, NRCS, State Office	CA

William Gradle, State Conservationist	USDA, NRCS, State Office	IL
David Doss, State Conservationist	USDA, NRCS, State Office	MD
Cran Upshaw	USDA, NRCS, State Office	GA
Chuck Bell, State Conservationist	USDA, NRCS, State Office	CA
Robyn Myers, Landscape Ecologist	USDA, NRCS, State Office	CA
Mary K. Combs, State Conservationist	USDA, NRCS, State Office	NC
Joe DelVecchio, State Conservationist	USDA, NRCS, State Office	NY
Jane Hardisty, State Conservationist	USDA, NRCS, State Office	IN
Judith Doerner, State Conservationist	USDA, NRCS, State Office	RI
James Ford, State Conservationist	USDA, NRCS, State Office	TN
Shirley Gammon, State Conservationist	USDA, NRCS, State Office	AK
Jimmy Rietzke	USDA, NRCS, State Office	AR
Gus Hughbanks, State Conservationist	USDA, NRCS, State Office	WA
c/o Angi Hanson	USDA, NRCS, Sidney Field Office	IA
Weldon Sears	USDA, NRCS, Clarendon Service Center	TX
Marty Comstock	USDA, NRCS, USDA Service Center, Project Office	MO
c/o Doug Berka	USDA, NRCS, Platte City Field Office	MO
Renee Cook	USDA, NRCS, St Peters Field Office	MO
Tish Toomer	USDA, NRCS, VSU, Agriculture Research Station	VA
Bill Bowers	USDA, NRCS	PA
Ronald Hemmer	USDA, NRCS	AZ
Wayne Killgore	USDA, NRCS	AZ
Hollie Umphrey	USDA, NRCS	NH
Noller Herbert	USDA, NRCS	AZ
Karl Otte	USDA, NRCS	VA
c/o Denise Darby	USDA, NRCS	MD
c/o Dave Detullio	USDA, NRCS	NV
Terrill Stevens	USDA, NRCS	ID
c/o Alan Colwick	USDA, NRCS	TX
Calvin Sanders	USDA, NRCS	TX
Peter Bautista, District Conservationist	USDA, NRCS	Guam
Wade Biddix	USDA, NRCS	VA
Alica Ketchum	USDA, NRCS	VA
John Myers	USDA, NRCS	VA
c/o Mike Fisher	USDA, NRCS	VA
c/o Karen Huff	USDA, NRCS	NE

c/o Ben Horter	USDA, NRCS	WV
Wayne Bogovich, State Conservation Engineer	USDA, NRCS	CT
Helen Denniston	USDA, NRCS	AR
Dave Hiatt	USDA, NRCS	IL
c/o Mavis Johnson	USDA, NRCS	SD
Mason Dollar	USDA, NRCS	AL
c/o Terri Ruch	USDA, NRCS	NY
Gerald Hubatka	USDA, NRCS	CA
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c/o Neil Fuller	USDA, NRCS	NM
James Snyder	USDA, NRCS	CA
John Harryman	USDA, NRCS	IL
c/o Gary Kobyliski	USDA, NRCS	WI
Charles Whitmore, Regional Conservationist	USDA, NRCS	WI
c/o Steve Young	USDA, NRCS	MO
Executive Secretary	USDA, Office of Advocacy and Enterprise	DC
Stuart Shelton	USDA, Office of General Counsel	DC
Laurie Fenwood	USDA, Federal Regional Center	CA
c/o Matt Campbell	Federal Emergency Management Agency (FEMA) - Mitigation	DC
Catherine Pomerantz	FEMA, Region III, Office of the Regional Director	PA
c/o Kathryn Humphrey	FEMA, Region II	NY
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Bob Cox	FEMA, Region VIII	CO
Mark Eberlein	FEMA, Region X	WA
Alessandro Amaglio	FEMA, Region IX	CA
Clayton Furukawa	USDA, Farm Service Agency, Conservation Programs Branch	DC
c/o Max Copenhagen	USDA, Forest Service (USFS), Watershed Staff	DC
c/o Russel A. Lafayette	USDA, USFS, Watershed, Fish, Wildlife, Air, and Rare Plants	DC
Karen Solari, Watershed Coordinator	USDA, USFS, Watershed and Air Management	DC

c/o John Nordin	USDA, USFS, Division of Cooperative Forestry	DC
Norm Heintz, NEPA Regional Coordinator	USDA, USFS, Southern Region (R8)	GA
c/o Dick Andrews, NEPA Regional Coordinator	USDA, USFS, Pacific Southwest Region (R5)	CA
c/o Rob Griffith	USDA, USFS	CA
c/o Kris Lee, NEPA Regional Coordinator	USDA, USFS, Northern Region (R1)	MT
c/o David Sire, NEPA Regional Coordinator	USDA, USFS, Southwestern Region (R3)	NM
c/o Don Murphy, NEPA Regional Coordinator	USDA, USFS, Intermountain Region (R4)	UT
c/o Geneen Granger, NEPA Regional Coordinator	USDA, USFS, Alaska Region (R10)	AK
c/o Paul Momper, NEPA Regional Coordinator	USDA, USFS, Rocky Mountain Region (R2)	CO
Dain Maddox, NEPA Regional Coordinator	USDA, USFS, Eastern Region (R9)	WI
Richard Carkin, NEPA Regional Coordinator	USDA, USFS, Pacific Northwest Region (R6)	OR
Max Copenhagen	USDA, USFS, Watershed Staff	DC
John Hansel, NEPA Coordinator	U.S. Department of Commerce, National Oceanic and Atmospheric Administration (NOAA)	MD
c/o Susan B. Fruchter, Acting NEPA Coordinator	U.S. Department of Commerce, NOAA	DC
Cynthia Burbank, Associate Administrator	U.S. Department of Transportation, Planning, Environment, and Realty	DC
Richard Broun, Director	U.S. Department of Housing and Urban Development, Office of Community Viability/CPD	DC
Office of the Chief Counsel - CECC-Z	HQ, U.S. Army Corps of Engineers (USACE)	DC
COL Robert F. Taylor, Commander	USACE, Mobile District, CESAM	AL
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COL Wally Z. Wa, Commander	USACE, Little Rock District, CESWL	AR
Robb Grubbs	USACE	DC
Lance Wood	USACE, Chief Counsel's Office	DC
L Michael F. Pfenning, Commander	USACE, St. Paul District, CEMVP	MN
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COL Robert Rowlette, Commander	USACE, Louisville District, CELRL	KY
COL Jeffrey J. Dorko, Commander	USACE, Southwestern Division, CESWD	TX
COL Gary E. Johnston, Commander	USACE, Chicago District	IL
Commander	USACE, Great Lakes & Ohio River Division Lakes Region	IL
COL Mark S. Heid, Commander	USACE, Savannah District, CESAS	GA
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COL John R. Minahan, Commander	USACE, Fort Worth District, CESWF	TX
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Willie R. Taylor, Director	U.S. Department of the Interior, Office of Environmental Policy and Compliance	DC
Secretary Gale A. Norton, Secretary of the Interior	U.S. Department of the Interior	DC
Director	U.S. Department of the Interior, Office of Environmental Project Review	DC
c/o Dan Smalley	U.S. Department of the Interior, Fish and Wildlife Service (USFWS), Division of Habitat and Resource Conservation	VA
c/o Eleanora Badij	U.S. Department of the Interior, USFWS, Division of Endangered Species	DC
Phillip Johnson	U.S. Department of the Interior, USFWS, Ecological Services Office	AK
c/o Karen L. Mayne	U.S. Department of the Interior, USFWS, Ecological Services	MN
Deputy Assistant Director for Fisheries and Habitat Conservation	U.S. Department of the Interior, USFWS	VA
	U.S. Department of the Interior, USFWS, Division of Fisheries and Habitat Conservation	VA
Greg Brown	U.S. Department of the Interior, USFWS	MN
Environmental Review Coordinator/ Watershed Specialist	Nebraska Department of Environmental Quality	NE
Environmental Review Coordinator/ Watershed Specialist	Georgia Department of Natural Resources	GA
Environmental Review Coordinator/ Watershed Specialist	Guam Environmental Protection Agency	GU

Environmental Review Coordinator/ Watershed Specialist	Arkansas Game and Fish Commission	AR
Environmental Review Coordinator/ Watershed Specialist	Louisiana Department of Environmental Quality	LA
Environmental Review Coordinator/ Watershed Specialist	Connecticut Department of Environmental Protection	CT
Environmental Review Coordinator/ Watershed Specialist	Oregon Department of Environmental Quality	OR
Environmental Review Coordinator/ Watershed Specialist	Delaware Department of Natural Resources and Environmental Control	DE
Environmental Review Coordinator/ Watershed Specialist	Massachusetts Department of Environmental Protection	MA
Environmental Review Coordinator/ Watershed Specialist	West Virginia Department of Environmental Protection	WV
Environmental Review Coordinator/ Watershed Specialist	Wisconsin Department of Natural Resources	WI
Environmental Review Coordinator/ Watershed Specialist	North Dakota Game and Fish Department	ND
Environmental Review Coordinator/ Watershed Specialist	California Department of Water Resources	CA
Environmental Review Coordinator/ Watershed Specialist	Hawaii Department of Land and Natural Resources, Public Information Office	HI
Environmental Review Coordinator/ Watershed Specialist	Texas Commission on Environmental Quality	TX
Environmental Review Coordinator/ Watershed Specialist	Montana Department of Environmental Quality	MT
Environmental Review Coordinator/ Watershed Specialist	North Carolina Department of Environment and Natural Resources	NC
Environmental Review Coordinator/ Watershed Specialist	Missouri Department of Natural Resources, Division of Environmental Quality	MO
Environmental Review Coordinator/ Watershed Specialist	Utah Department of Environmental Quality	UT
Environmental Review Coordinator/ Watershed Specialist	Maine Department of Environmental Protection	ME
Environmental Review Coordinator/ Watershed Specialist	Ohio Department of Natural Resources	OH
Environmental Review Coordinator/ Watershed Specialist	Illinois Department of Natural Resources	IL
Environmental Review Coordinator/ Watershed Specialist	Arizona Game & Fish Department	AZ
Environmental Review Coordinator/ Watershed Specialist	Rhode Island Department of Environmental Management	RI

Environmental Review Coordinator/ Watershed Specialist	Mississippi Department of Environmental Quality	MS
Environmental Review Coordinator/ Watershed Specialist	Nevada Department of Environmental Protection	NV
Environmental Review Coordinator/ Watershed Specialist	Washington State Department of Ecology	WA
Environmental Review Coordinator/ Watershed Specialist	Florida Department of Environmental Protection	FL
Environmental Review Coordinator/ Watershed Specialist	Tennessee Department of Environment and Conservation	TN
Environmental Review Coordinator/ Watershed Specialist	New Jersey Department of Environmental Protection	NJ
Environmental Review Coordinator/ Watershed Specialist	Alaska Department of Environmental Conservation	AK
Environmental Review Coordinator/ Watershed Specialist	Colorado Department of Public Health and the Environment	CO
Environmental Review Coordinator/ Watershed Specialist	Iowa Department of Natural Resources	IA
Environmental Review Coordinator/ Watershed Specialist	Maryland Department of Natural Resources	MD
Environmental Review Coordinator/ Watershed Specialist	Vermont Department of Environmental Conservation	VT
Environmental Review Coordinator/ Watershed Specialist	Indiana Department of Environmental Management	IN
Environmental Review Coordinator/ Watershed Specialist	South Dakota Department of the Environment and Natural Resources	SD
Environmental Review Coordinator/ Watershed Specialist	Virgin Islands Department of Planning and Natural Resources	VI
Environmental Review Coordinator/ Watershed Specialist	Pennsylvania Department of Conservation and Natural Resources	PA
Environmental Review Coordinator/ Watershed Specialist	South Carolina Department of Natural Resources	SC
Environmental Review Coordinator/ Watershed Specialist	Michigan Department of Natural Resources	MI
Environmental Review Coordinator/ Watershed Specialist	New York State Department of Environmental Conservation	NY
Environmental Review Coordinator/ Watershed Specialist	Minnesota Department of Natural Resources	MN
Environmental Review Coordinator/ Watershed Specialist	Wyoming Game and Fish Department	WY
Environmental Review Coordinator/ Watershed Specialist	New Hampshire Department of Environmental Services	NH

Environmental Review Coordinator/ Watershed Specialist	Kansas Division of Environment	KS
Environmental Review Coordinator/ Watershed Specialist	Kentucky Department of Environmental Protection	KY
Environmental Review Coordinator/ Watershed Specialist	New Mexico Environment Department	NM
Environmental Review Coordinator/ Watershed Specialist	Puerto Rico Department of Natural Resources	Puerto Rico
Environmental Review Coordinator/ Watershed Specialist	Idaho Department of Fish and Game	ID
Environmental Review Coordinator/Watershed Specialist	Virginia Department of Environmental Quality, Office of Environmental Impact Review	VA
Environmental Review Coordinator/ Watershed Specialist	Alabama Department of Conservation and Natural Resources	AL
Environmental Review Coordinator/ Watershed Specialist	Oklahoma Department of Environmental Quality	OK
James C. Hanna	State of Maryland, DHCD	MD
J. Rodney Little	Maryland Historical Trust	MD
Robert J. Coomer, Director	Illinois Historic Preservation Agency	IL
Ronald James, SHPO and Historian	Nevada Historic Preservation Office	NV
Elbert Hilliard, Director	Mississippi Department of Archives & History	MS
J. Randy Young, PE, Executive Director	Arkansas Soil & Water Conservation Commission	AR
Gregory Parker, SHPO	Historic Preservation Division	DC
Barbara Childs-Pair, Director	District of Columbia Emergency Management Agency	DC
John W. Droneburg, Director	Maryland Emergency Management Agency	MD
Gene J.P. Walker, Director	Territorial Emergency Management Agency	VI
Albert L. Lewis, Director	Vermont Emergency Management Agency	VT
Thomas Gates	Yurok Tribe	CA
Michael Cline, State Coordinator	Virginia Department of Emergency Management	VA
c/o Gerri Hobdy	Louisiana Department of Culture, Recreation & Tourism	LA
Bruce B. Cheney, Director	New Hampshire Bureau of Emergency Management, Division of Emergency Services, Communications, and Management	NH
	Natural Resources Defense Council, Inc.	NY
Legislative Representative	National Wildlife Federation	VA
	Sierra Club	DC
Charles Gauvin, President and CEO	Trout Unlimited	VA
William C. Burke, Director	Illinois Emergency Management Agency	IL

Dan W. McGowan, Administrator	Montana Department of Military Affairs, Disaster & Emergency Services Division	MT
Steve Guerber, Executive Director and SHPO	Idaho State Historical Society	Steve Guerber
c/o Deborah Slossen	Adams County Office of Planning and Development	PA
Tim Wood, Acting Director	Oregon State Parks & Recreation Department	OR
c/o Omeagia Burgess	South Carolina Office of State Budget	SC
Peter T. Young, Chairperson	Hawaii Department of Land & Natural Resources	HI
Dr. Kenneth B. Taylor, Director	North Carolina Division of Emergency Management	NC
Daniel Griffith, SHPO	Delaware Division of Historical and Cultural Affairs	DE
Radford Anderson, Deputy Chief, Hazard Mitigation Program	New York SEMO	NY
James W. Tuffey, Director	New York State Emergency Management Office	NY
Susan LaGrande, Vice President of Government Relations	California Cattlemens Assoc.	CA
Bette Vidrine, Environmental Quality Manager	Lafayette Consolidated Government	LA
Georgianna Contiguglia, SHPO	Colorado Historical Society	CO
Major General Roger Lempke, Assistant Director	Nebraska Emergency Management Agency	NE
c/o James W. Garrison	Arizona State Parks	AZ
	Natural Resources Defense Council, Inc.	DC
Dr. Mark F. Baumler, SHPO	Montana State Historic Preservation Office	MT
Robert Latham, Director	Mississippi Emergency Management Agency	MS
Legislative Representative	National Wildlife Federation	VA
Milford Wayne Donaldson, SHPO	California Department of Parks & Recreation, Office of Historic Preservation	CA
Ronald C. Osborne, Director	Office of the Adjutant General, South Carolina Emergency Management Division	SC
Lawrence Sommer	Nebraska State Historical Society, State Historic Preservation Office	NE
Charles Gauvin, President	Trout Unlimited	VA
Tommy Grier, Director	Colorado Division of Emergency Management	CO
Lawerence Oaks, SHPO	Texas Historical Commission	TX
Reece Cordi, President	Sutter County RCD	CA
James J. Kahl	Maryland Department of the Environment	MD
Jamie Turner, Director	Delaware Emergency Management Agency	DE
N. Wayne Ruthven, Director	Arkansas Department of Emergency Management	AR

James M McConaha, SHPO	New Hampshire Division of Historical Resources	NH
Nancy Herholdt, SHPO	West Virginia Division of Culture & History	WV
Kristin Mullen, Planner	New Hampshire Department of Environmental Services	NH
c/o Ruth Mascri	Maryland Emergency Mgt Agency	MD
John W. Droneburg, Director	Maryland Emergency Management Agency	MD
Barbara Childs-Pair, Director	District of Columbia Emergency Management Agency	DC
Adrienne Wojciechowski	The Nature Conservancy	VA
c/o John Welch	White Mt. Apache Tribe	AZ
Stephen Mahfood	Missouri Department of Natural Resources	MO
Gary D. Baclesse	Missouri Department of Natural Resources, SWCP	MO
Dr. Bob L. Blackburn, SHPO	Oklahoma Historical Society	OK
James L Kraft, Director, Emergency and General Services	Yellowstone County, Montana	MT
Cara Metz, Executive Director	Massachusetts Historical Commission	MA
c/o John Kennedy, Project Evaluation Program Supervisor	Arizona Game and Fish Department, Habitat Branch	AZ
Senior Environmental Engineer	Mactec	VA
Katherine Slick, SHPO	New Mexico Office of Cultural Affairs	NM
Richard Curritt, SHPO	Wyoming Department of State Parks & Cultural Resources, State Historic Preservation Office	WY
Jerry B. Uhlmann, Director	Wyoming Emergency Management Agency	MO
Administrator	Wisconsin Emergency Management	Wl
Albert Ashwood, Director	Oklahoma Department of Civil Emergency Management	OK
John Gulserian, Emergency Services Officer	Butte County OES	CA
Alan Miller, Senior WRCE	California Regional Water Quality Control Board	CA
Frank Siracusa, Chief	Nevada Division of Emergency Management	NV
Craig Fugate, Director	Florida Division of Emergency Management	FL
David M. Sanko, Director	Pennsylvania Emergency Management Agency	PA
Michael Shaver	Big Valley Rancheria	CA
Henry Renteria, Director	Governor's Office of Emergency Services	CA
c/o Lloyd E. Kras	Kansas Division of Emergency Management	KS
Kathleen S. Kilpatrick, SHPO	Virginia Department of Historic Resources	VA
Environmental Review Coordinator	Association of State Floodplain Managers	WI
Shipley, Executive Director	Ohio Emergency Management Agency	OH
Stephen Tomasik	LJ Gonzer Associates	NY

Joe Boles, Director	New Iberia Public Works Department	LA
Michael Wellborn, Senior Planner	Orange County, Planning Department	CA
Wilson G. Martin, SHPO	Utah State Historical Society	UT
Mary Jean Atchison	Kentucky Heritage Council	KY
Bob Rosenbush, Regional Planner	Maryland Office of Planning	MD
Luther J. Taylor Sr., Executive Director	Indiana Emergency Management Agency	IN
Carolyn Candelaria/Dan Sullivan	Montana Department of Agriculture, Agricultural Sciences Division	MT
James Bassham, Director	Tennessee Emergency Management Agency	TN
Cathie Matthews, SHPO	Department of Arkansas Heritage	AR
Bob Hokanson	New York Farm Bureau	NY
Dr. Nina Archabal, SHPO	Minnesota Historical Society	MN
Kerry L. Flaherty, Director	Connecticut Department of Public Safety, Office of Emergency Management	CT
Judith Bittner	Alaska Department of Natural Resources, Office of History & Archeology	AK
Edward Teixeira, Vice Director of Civil Defense	Hawaii State Civil Defense	HI
Cristine McCombs, Director	Massachusetts Emergency Management Agency	MA
Captain John Ort, Deputy State Director	Michigan State Police, Division of Emergency Management	Ml
c/o Milton Hamilton	Tennessee Department of Environment and Conservation	TN
c/o Robert C. Shinn	New Jersey Department of Environmental Protection	NJ
Raymond T. Fernald	Virginia Department of Game and Inland Fisheries	VA
John Goss, Director	Indiana Department of Natural Resources	IN
William H. Bishop, Director	Bureau of Homeland Security	ID
	Sierra Club	DC
Dr. Allyson Brooks, SHPO	Washington Office of Archeology & Historic Preservation	WA
Alex Mohajer, Stormwater Manager	Dekalb County. DeKalb County Roads and Drainage	GA
John Brown	Narragansett Indian Tribal Office	RI
Timothy Manning, Director	New Mexico Department of Public Safety, Office of Emergency Management	NM
Patricia A. Hrabik Sebby	Lac du Flambeau	WI
Todd Manley	Northern California Water Association	CA
Dr. Jeffrey J. Crow	North Carolina Office of Archives & History	NC

Dr. Lee Warner, SHPO	Alabama Historical Commission	AL
Sandra L. Allen, Director	New York State Department of Environmental Conservation, Division of Water	NY
Mike Stankiewicz	New York State Department of Environmental Conservation, Flood Protection Structural Programs	NY
Edward Blackmer, Region 6 Solid and Hazardous Materials Engineer	New York State Department of Environmental Conservation	NY
Kristi Turman, Director	South Dakota Office of Emergency Management	SD
Earle Shettleworth, Jr., SHPO	Maine Historic Preservation Commission	ME
Joe Moore, Director	Wyoming Office of Homeland Security/Emergency Management	WY
Frank F. Navarrete, Director	Arizona Division of Emergency Management	AZ
Rachel Tooker, SHPO	Ohio Historic Preservation Office	OH
Lonice C. Barrett, SHPO	Georgia Department of Natural Resources	GA
Larry Lubbers	Maryland Department of Natural Resources, Chesapeake and Coastal Watershed	MD
Jack Colley, State Coordinator	Texas Department of Public Safety, Division of Emergency Management	TX
Bruce Baughman, Director	Alabama Emergency Management Agency	AL
J. Paul Loether, Acting SHPO	Connecticut Historical Commission	CT
Ken Murphy	Oregon Office of Emergency Management	OR
Merl E. Paaverud, SHPO	State Historical Society of North Dakota	ND
Mike Brown, Assistant Director	Louisiana Office of Homeland Security and Emergency Preparedness	LA
Robert G. Burnley, Director	Virginia Department of Environmental Quality	VA
Terry W. Marmet, Interim SHPO	Kansas State Historical Society	KS
Albert A. Scappaticci, Executive Director	Rhode Island Emergency Management Agency	RI
Environmental Review Coordinator	National Audubon Society	NY
Jim Lashley	Allegany County DPW, Roads Division	MD
Brian D. Conway, SHPO	Michigan Historical Center, State Historic Preservation Office	MI
Al Bataglia, Director	Minnesota Homeland Security and Emergency Management	MN
Dean N. Williams	Dekalb County, Department of Water and Sewer	GA
Joyce Ambrosius	National Marine Fisheries Service	CA
Dr. Michael E. Stevens, SHPO	Wisconsin State Historical Society	WI
Brett Forrester	Municipal Services Agency, County of Sacramento	CA
Dr. Rodger E. Stroup	South Carolina Department of Archives & History	SC

Fred M. Boger, Planning Director	Nelson County	VA
Sarah Robinson	Environmental Services Inc.	FL
Patrick Fridgen	North Dakota State Water Commission	ND
Jay D. Vogt, SHPO	South Dakota State Historical Society	SD
Wayne F. Maresch	Land Improvement Contractors of America	MD
Dan Brown	Georgia Emergency Management Agency	GA
Mike Sherberger, Director	Georgia Emergency Management Agency	GA
Ernie Ohlin	Tehama County Flood Control & Water Conservation District	CA
c/o Monza V. Honga	Hualapai Tribe	AZ
Lisa Burcham, SHPO	District of Columbia Office of Planning, Historic Preservation Division	DC
c/o Tom Noonan, Water Resource Planner/ Economist	West Virginia Division of Natural Resources	WV
c/o Tim Mentz	Standing Rock Sioux Tribe	ND
Mrs. Bernadette Castro, SHPO	New York Parks, Recreation & Historic Preservation	NY
Epiphanio E. Cabrera , Jr., SHPO	Department of Community & Cultural Affairs	MP
John Enright, Territorial Historic Preservation Officer	American Samoa Historic Preservation Office	American Samoa
Malcolm Franklin, Director	Kentucky Division of Emergency Management	KY
Elizabeth Sola Oliver, SHPO	State Historic Preservation Office	Puerto Rico
Director	Alaska Division of Homeland Security and Emergency Management	AK
Anita Walker, Acting SHPO	State Historical Society of Iowa	IA
Dean C. Plaskett, Esq., SHPO	Department of Planning & Natural Resources	VI
Poppy Hanover	ADI Technology Corp.	VA
Douglas C. Friez, Director	North Dakota Division of Emergency Management	ND
Caryn Arlene Day, Director of Tribal Operations	Mille Lacs Band of Ojibwe Indians	MN
David L. Miller, Administrator	Iowa Homeland Security & Emergency Management	IA
William Day	Tunica-Biloxi Indians of Louisiana	LA
Dr. Alan Downer, Director	Historic Preservation Department Navajo Nation	AZ
c/o Marcia Cross	Confederated Salish and Kootenai Tribes	MT
Jaime Valentin, District Conservationist	Caguas USDA Service Center	Puerto Rico
	County of San Mateo, Watershed Protection Services	CA

Stephen S. Kappa, Director	West Virginia Office of Emergency Services	WV
Jane Lendway, Interim SHPO	Vermont Division for Historic Preservation, Agency of Commerce & Community Development	VT
Lt. Colonel Albert J. Kernagis, Deputy Superintendent of Operations	New Jersey State Police, Office of Emergency Management	NJ
Frederick C. Williamson, SHPO	Rhode Island Historic Preservation & Heritage Committee	RI
c/o Mark A. Shaw	Kansas Department of Wildlife & Parks, Environmental Services Section	KS
Director	Territorial Emergency Management Coordinating Office	AS
c/o Victoria N. Kanai	Ministry of Community & Cultural Affairs	PW
c/o Hazime Telei, NEMO Coordinator	Office of the Vice President	PW
c/o Kenneth Bonga	Spokane Tribes of Indians	WA
Rudolfo M. Pua, Director	Office of the Governor, Capitol Hill, Emergency Management Office	MP
Barbara Franco, Executive Director	Pennsylvania Historical & Museum Committee	PA
Fred Debrum, Secretary of Interior and Outer Islands Affairs	Republic of the Marshall Islands	RMI
Phil Kabua, Civil Defense Coordinator	Republic of the Marshall Islands	RMI
Camille Pleasants	Confederated Tribes of the Colville Reservation, History and Archaeology	WA
Joe G. Javellana III, Administrator	Guam Emergency Services Office, Civil Defense	GU
Richard Howard, Saipan Director		Guam
Rick George	Confederated Tribes of the Umatilla Reservation	OR
Robert Brunoe	Confederated Tribes of Warm Springs	OR
Midion G. Neth, Special Assistant to the President for Disaster Coordination	Office of the President, Disaster Control	FM
Dr. Rufino Mauricio, Historic Preservation Officer	FSM National Government, Office of Administrative Services	FM
Glenn L. Brasseaux, Mayor	City of Carencro	LA
Richard Davis, Historic Preservation Officer	Department of Parks & Recreation, Historic Resources Division	Guam
Miguel Santini, State Director	Civil Defense Agency	Puerto Rico
Frederick Gaske, Acting SHPO	Florida Division of Historical Resources	FL
Earl Morris, Director	Utah Division of Emergency Services and Homeland Security	UT
c/o Rose A. Kluth	Leech Lake Reservation, Heritage Sites	MN
Arthur Cleaves, Director	Maine Emergency Management Agency	ME

Jim Mullen, Director	Emergency Management Division, Washington State Military Department	WA
Kallie Kull, Program Director	Fishnet	CA
c/o Jonathan Berkey	Resource Conservation District, Monterrey County	CA
c/o Tom Wilcox	Virginia Department of Game and Inland Fisheries	VA
Carol Roalkzam, Compliance Branch Manager	Washington State Department of Transportation, Environmental Affairs Office	WA
Danny Johnson	South Carolina Department of Natural Resources, Earth Sciences/Environmental Conservation	SC
c/o Alex Barber, State Environmental Review Officer	Kentucky Department of Environmental Protection	KY
Rebecca Inman	Washington Department of Ecology	WA
Ellie Irons, Program Manager	Virginia Department of Environmental Quality, Office of Environmental Impact Review	VA
c/o Roy Seward	Virginia Department of Agriculture	VA
c/o Derral Jones	Virginia Department of Conservation & Recreation	VA
c/o Asif Malik	Virginia Department of Health	VA
Arthur L. Collins, Executive Director	Hampton Roads PDC	VA
Thomas Barnard	Virginia Institute of Marine Science	VA
c/o Douglas Beisch Jr.	Chesapeake Bay Local Assistance Department	VA
c/o Dr. James Hassinger	Richmond Regional PDC	VA
G. Mark Gibb, Executive Director	Northern Virginia PDC	VA
Stephen Manster, Executive Director	RADCO PDC	VA
Jerry W. Davis, Executive Director	Northern Neck PDC	VA
Dan Kavanagh, Executive Director	Middle Peninsula PDC	VA
Dennis K. Morris, Executive Director	Crater PDC	VA
Paul F. Berge, Executive Director	Accomack-Northampton PDC	VA
Robert Grabb	Virginia Marine Resources Commission	VA
Michael Foreman	Virginia Department of Forestry	VA
Eugene K. Rader	Virginia Department of Mines, Mineral & Energy	VA
c/o Michael Napolitano	RWQCB	CA
Donna Meyers, Executive Director	Coastal Watershed Council	CA
c/o Lisa Ekers	County of San Mateo, Department of Public Works	CA
David Conrad, Water Resources Specialist	National Wildlife Federation	DC
Water Quality Technician	Moapa Band of Paiutes Environmental Program	NV
Brad Munson	Perkins Coie	WA

Mary Jo Elpers	Nevada Fish and Wildlife Office	NV
c/o Bryan Winton	San Pablo Bay NWR	CA
Supervisor	San Mateo County Sheriff's Office, Office of Emergency Services	CA
Clayton Penniman	Central Connecticut State University, Biology Department	CT
c/o Ms. Lamaire		LA
Chip Westly		HI
Vicki Freyholtz		MT
Marge Welch		TN
Tony Danzig		CA
Judith Stacy		NC
Mary Ann Tremblay		WY
Gary Smith		PA

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GLOSSARY

Agricultural Land — Any land in agricultural uses such as crops, pasture, or haying.

Armoring — The practice of installing erosion control and stream bank protection measures. Examples include loose rock riprap, gabions, rootwads, and revetments.

Beneficiary — Recipient of the advantages, tangible or intangible, gained by the installation or construction of a system or works for one or more given purposes.

Benthos — The community located at the bottom of a body of water.

Benthic — Relating to organisms or processes in the benthos.

Biota — Collectively, the plants, microorganisms, and animals of a certain area or region.

Brush Mattress — A live construction that places living branches close together to form a mattress-like cover over the ground. This mattress is intended to grow and protect the bank from erosion.

Causal Flow Diagram — Flowchart that illustrates a series of actions and the cascade of effects from those actions.

Channel — A natural or artificial waterway that periodically or continuously contains moving water. It has a definite bed and banks that confine the water.

Channel Capacity — Volume of water a stream channel can transport.

Channel Structure — The physical components of a stream channel such as a low-flow channel, sinuosity, stream gradient and substrate type.

Check Dam — A small dam constructed in a drainageway across a slope or at the toe of a slope to reduce downslope erosion by restricting flow velocity.

Cobble — Sediment particles larger than pebbles and smaller than boulders. Usually 64-256 mm (3-8 inches) in diameter.

Codified Rule — A regulation in the Code of Federal Regulations implementing a law. The EWP rule is a codified rule.

Community Services — Services provided by a local government funded by tax revenues. Examples include police, water, sewer, recreation, schools, and fire protection.

Comprehensive Plan — A general policy plan that guides a jurisdiction in its future policy decisions; some include, but are not limited to — land development, protection of the environment, provision of housing, transportation, and recreation; document is not legally binding, and is merely a policy guideline.

Contour Felling — Cut tree placed in horizontal position on side slope to divert and slow water flow.

Contour Trenching — Ditch-like trenches dug in horizontal position on side slope to divert and slow water flow and store accelerated soil erosion.

Conveyances — A means of transport (such as drainage ditches or pipelines).

Cost Sharing — A publicly financed program through which society, as a beneficiary of environmental protection, shares part of the cost of pollution control with those who must actually install the controls; in Superfund, the Government may pay part of the cost of a cleanup action with those responsible for the pollution paying the major share.

Cultural Resources — (also **Heritage Resources**) Remains or records of districts, sites, structures, buildings, neighborhoods, objects, and events from the past; may be historic, prehistoric, archeological, or architectural in nature; cultural resources include historic properties as defined by the National Historic Preservation Act, but also include other tangible and intangible resources such as traditional cultural places and practices, folkways, traditions, landscapes, etc.

Dam — Any artificial barrier which impounds or diverts water. A dam is generally considered hydrologically significant if it is (1) one and one quarter feet (0.4 meters) or more in height from the natural bed of the stream and has a storage of at least 15 acre-feet, or (2) has an impounding capacity of 50 acre-feet or more and is at least six feet (2 meters) above the natural bed of the stream.

Damage Survey Report (DSR)— A summary document of the evaluation conducted for an EWP practice (it is not intended to be a substitute for that evaluation).

Debris — Any material, organic, or inorganic, floating or submerged, moved by a flowing stream or water body.

Debris Basin — Structure used in stream channels to control large flows of water and debris. The debris basin causes ponding, which slows the water velocity and allows debris to settle out.

Defensibility — The extent to which an alternative action is (1) more beneficial than adverse in the extent and intensity of its environmental and economic effects; (2) in compliance with Federal, State, and local laws; (3) Acceptable to affected individuals and communities; (4) effective in restoring or protecting the natural resources; (5) complete with all the necessary components included; and (6) efficient in achieving the desired outcome.

Deferred Assessment (use-value) — Farmland assessed at the agricultural value rather than market value.

Deposition — The settlement of material out of the water column and onto the streambed or floodplain. Occurs when the flowing water is unable to transport the sediment load.

Dewatering — Diverting water so operations can be completed in-stream under relatively dry conditions.

Dike — An artificial embankment constructed to prevent flooding.

Disaster Assistance Recovery Training Team (DART)— A national team established to provide training to states to enable a state to effectively and efficiency respond to a watershed emergency.

Disaster Prone — A watershed would be considered disaster-prone if it is repeatedly damaged by similar disasters. Recurring flood damages would be the most common example in this case.

Diversion — The taking of water from a stream or other body of water into a canal, pipe, or other conduit.

Easement — The right of a person, government agency, or public utility company to use public or private land owned by another for a specific purpose.

Eligibility — Qualified to participate or be chosen; something warranting EWP action, meeting criteria of impairment and defensibility.

Eligible Impairment — Impairment that warrants EWP action.

Eligible Practice — Practice meeting eligibility requirements that is funded for installation.

Eligible Site — Site meeting criteria of impairment and defensibility; a threat to life and property exists under a disaster declared by the State Conservationist.

Emergency Measures — Actions implemented to remove or reduce hazards created by a natural disaster to safeguard life and property.

Environmental Impacts — The likely effects of a natural occurrence or proposed project, activity, or policy on the environment, both positive and negative.

Environmental Justice — Fair treatment of all races, cultures, incomes, and educational levels with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies, fair treatment implies that no population of people should be forced to

shoulder a disproportionate share of the negative environmental impacts of pollution or environmental hazards due to a lack of political or economic strength levels.

Erosion — The wearing down or washing away of soil and land surface by the action of water, wind, or ice.

Estate Tax — A tax levied on one's personal estate at the time of death.

Exigency — Those situations that demand immediate action to avoid potential loss of life or property, including situations where a second event may occur shortly thereafter that could compound the impairment, cause new damages or the potential loss of life if action to remedy the situation is not taken immediately.

Farmland Preservation — The use of conservation easements and economic programs to maintain the continued viability of agricultural operations and protect farmland from being sold for development.

Fasine — A securely bound, thick roll consisting of live or dead branches, coir, or other organic or inorganic material.

Federal Disaster Assistance — Assistance available to communities through several federal programs for post-disaster needs.

Field Office Technical Guide — Technical reference source used by field offices in providing guidance to owners and operators of agricultural land.

Financial Assistance — Money used to build an NRCS practice.

Fine Sediment — Mineral and organic particles smaller than 6.3 millimeters.

Fishery — A population of fish or shellfish in a waterbody. It may be naturally self-sustaining or augmented by hatchery-raised fish. The species may or may not be of recreational value.

Floodplain — The lowland which borders a river, usually dry but subject to flooding. Also the portion of a river valley which has been inundated by the river during historic floods.

Floodplain Conservation Easement — Permanent legal agreement between a landowner and a public agency or private, non-profit conservation organization; residential, industrial, and commercial development and subdivisions are not allowed in a floodplain; these restrictions are binding on all future owners if the property and are enforced by the agency or conservation organization which holds the easement.

Floodplain Deposition — The settlement of material out of the water column floodplain.

Floodplain Easements — Acquisition of a perpetual, legal interest in property that limits owner's use of the land in order to reduce flood damage claims and provides benefits for wildlife habitat and floodplain hydrology.

Floodplain Ordinance — Local ordinance, often part of a zoning ordinance that establishes restrictions for development and uses within the designated floodplain and/or floodway.

Floodplain Restoration — Returning natural floodplain function by removing or not repairing structures that impede flooding. It may also include changes in land use and vegetation planting in the floodplain easement.

Flood-proofing — Often referring to elevation building requirements. Elevating structures within an existing floodplain to FEMA-designated one foot above flood stage.

Fluvial — Of or pertaining to rivers; produced by river action.

Gabion — A large wire-mesh basket filled with stone and placed along streambanks and streambeds of smaller streams for stabilization and grade control.

Geomorphology — The science that treats the general configuration of the earth's surface; specifically the study of the classification, description, nature, origin, and development of landforms and their relationships to underlying structures, and of the history of geologic changes as recorded by these surface features.

Geotextile Fabric — Material used in soil bioengineering to stabilize banks and to retard soil erosion, often used beneath riprap or with vegetative plantings.

Gravel — Sediment particles larger than sand and ranging from 2 to 64 mm in diameter.

Groundwater — Water found in that portion of the soil that is always saturated or below the water table.

Habitat — A place where a biological organism lives. The organic and non-organic surroundings that provide life requirements such as food and shelter.

Habitat Structure — The organization of an animal, plant, or human's natural surroundings in which they live.

High Density Development — Higher number of dwelling units per unit of land.

Hydraulic Capacity — *see channel capacity*

Hydrologic Units — System used by the United States Geologic Survey to divide the United States and the Caribbean into 21 major resource regions (2 digit units), 222 sub-regions (4 digit

units), 352 accounting units (6 digit units) and 2,150 cataloging units delineating river basins usually greater than 700 square miles (8 digit units).

Hydrology — The applied science concerned with the waters of the earth, their occurrences, distribution, and circulation through the unending hydrologic cycle (precipitation, consequent runoff, infiltration, and storage; evaporation; and condensation). It is concerned with the physical and chemical reaction of water with the rest of the earth, and its relation to the life of the earth.

Imminent Threat — A substantial natural occurrence that could cause significant damage to property and/or threaten human life.

Immotile — Not moving or not intended to be moved.

Impoundment — A water body that is formed by the construction of a dam or a dike system.

Infiltration — Movement of water through the soil surface into the soil.

In-kind Services — A barterlike arrangement by sponsors to provide their portion of the cost share in labor or materials, as opposed to cash.

Installed Practice — *see practice*

In-stream Flow — Pertaining to the flow of water in a river or stream.

Interdisciplinary Team — The NRCS team of preparers of the EWP PEIS who analyzed EWP Progam impacts on watershed ecosystems and human communities. The ID Team fulfills the requirements of CEQ regulations at 40 CFR 1502.6 Interdisciplinary preparation--Environmental impact statements shall be prepared using an inter-disciplinary approach that will insure the integrated use of the natural and social sciences and the environmental design arts (section 102(2)(A) of the Act). The disciplines of the preparers shall be appropriate to the scope and issues identified in the scoping process (Sec. 1501.7).

Land Management Plan — Policy plan that details the long-term vision of land uses and their ecological effects for a natural area.

Levee — An embankment built along a watercourse to prevent high water from flooding the adjacent land.

Limited Resource Area or Community — A unit of government or a group of people within a bounded geographical area who interact within shared institutions, and who possess a common sense of interdependence and belonging, where (1) housing values are less than 75 percent of the State housing value average, and (2) per capita income is 75 percent or less than the national per capita income, and (3) unemployment is at least twice the U.S. average over the past three years based upon the annual unemployment figures. This can be determined in the pre-disaster

planning phase and applies to the entire county regardless of the income of the particular community.

Locally-led Measure — Actions for which the impetus lies in the hands of the local community.

Low Density Development — Lower number of dwelling units per unit of land.

Natural Occurrence –- Includes, but is not limited to, floods, fires, windstorms, hurricanes typhoons, tornadoes, earthquakes, volcanic actions, slides, and drought.

Non-agricultural Land — Land not classified as agricultural in the EWP Program or local planning ordinances.

Non-exigency — Situation when the near-term probability of damage to life or property is high enough to constitute an emergency but not sufficiently high to be considered an exigency.

Non-point Source Discharge — A source of water pollution that originates from a broad area, such as agricultural chemicals applied to fields or acid rain.

Nutrient — Any substance assimilated by living things that promotes growth; term is generally applied to nitrogen and phosphorus in wastewater, but is also applied to other essential and trace elements.

Operation and Maintenance — Once a practice is installed, a responsibility exists for maintenance.

Overburden — (a) The upper part of a sedimentary deposit, compressing and consolidating the materials below. (b) The loose soil or other unconsolidated material overlying bedrock, either transported or formed in place.

Overwash Area — Water that flows behind structures such as dams, dikes, or levees. The water gets out of its "confinement."

Planned Development — Development usually in whole or in part residential, as one unit on one parcel of land.

Point Source Discharge — A source of water pollution that originates from a single point, such as an outflow pipe from a factory.

Pollutant —Something that makes one's surroundings physically impure or unclean.

Practice — A particular action used in the EWP Program at a site to mitigate effects of natural disasters.

Presidentially-declared Disaster — The President of the United States declares a disaster, invoking the Federal Emergency Management Agency (FEMA). Some of these disasters trigger the affected State Conservationist to invoke the EWP Program.

Preventative Measure — Measures undertaken to minimize damage to a watershed should a natural disaster occur in the future.

Project Sponsor — A legal subdivision of a State government, a State agency, any other governmental entity, a qualified Native American tribe or tribal organization as defined in section 4 of the Indian Self-Determination and Education Assistance Act (25 U.S.C. 450b), that has a legal interest in or responsibility for the values threatened by a watershed emergency, is capable of obtaining necessary land rights, and is capable of carrying out any O&M responsibilities that may be required. A sponsor is not required for the purchase of the floodplain easements.

Property — Permanent improvements such as homes, businesses, farmsteads, and conservation practices.

Quasi-judicial Decision — Land use decision that requires a fact-finding hearing of the case. Decisions must be made on evidence.

Rational Nexus — This is determined between the ends of a goal and the means by which it is achieved. Benefits must be related to the way in which they were achieved.

Reach — The length of a river between two gauging stations. More generally, any length of a river.

Reach and Flow — The unimpeded, out-of-bank flow of the river over the floodplain.

Recovery Measure — A restoration practice

Recovery Work — Work done to install restoration practice.

Revetment — A facing of stone, wood, or natural materials, placed on a bank as protection against wave action or currents.

Riffle — A rocky shoal or sandbar lying just below the surface of a waterway; choppy water created by such sandbars and shoals is also referred to as a riffle.

Riffle-pool Structure — Physical structure of a stream channel, as flows pass through reaches of faster moving, turbulent riffles and slower moving pools.

Riparian — Pertaining to rivers and their banks.

Riparian Stream Border — (also **Riparian Zone**) The border or banks of a stream; although this term is sometimes used interchangeably with floodplain, the riparian zone is generally regarded as relatively narrow compared to a floodplain; duration of flooding is generally much shorter, and the timing less predictable, in a riparian zone than in a river floodplain.

Riprap — A layer, facing, or protective mound of stones placed to prevent erosion, scour, or sloughing of a structure or embankment. Also refers to the stone used.

Road - Arterial Road — Provides vehicle access to large land areas, and usually connects with other arterial (major) roads or public highways.

Road - Collector Road — Intermediate links that connect major heavily traveled, multiple-purpose arterial routes with a single resource local road.

Road - Local Road — Connects terminal facilities such as log landing and recreation sites with forest collector roads or public resource local roads.

Rock Weir — An in-stream structure consisting of a series of boulders placed across a channel and anchored to the streambed or streambank to control water flow.

Rootwad — The root mass of the tree, often embedded in streambanks for stabilization and grade control.

Runoff — Drainage or flood discharge which leaves an area as surface flow or as pipeline flow, having reached a channel or pipeline by either surface or sub-surface routes.

Sand — Mineral particles ranging from 0.0625 to 2mm (0.0025 to 0.08 inch) diameter; 0.03 inch is the normal lower limit at which the unaided human eye can distinguish an individual particle.

Scope — The range of actions, alternatives, and impacts to be considered in an EIS.

Scoping — Process used to determine, through public involvement, the range of issues that the planning process should address.

Scour — Concentrated erosive action of flowing water in streams that removes material from the bed and banks.

Sediment — Soil particles that have been transported and/or deposited by wind or water action.

Sedimentation — When soil particles (sediment) settle to the bottom of a waterway.

State Historic Preservation Office (SHPO) — Office that supports the State Historic Preservation Officer, appointed by the governor to oversee the State Historic Preservation Program.

Silt — Slightly cohesive to noncohesive soil composed of particles that are finer than sand but coarser than clay, commonly in the range of 0.004 to 0.0625 mm.

Single-Family Development — The development of land consisting entirely of single-family residential units. Single family is often defined as a dwelling in which no more than 2 or 3 unrelated people reside together.

Soil-bioengineering — Technique of using live plantings for stream and watershed stabilization.

Special Use Permit — Permit required in order for a special use to be allowed in a zone not regularly allowing such a use. (e.g. airport in a general agricultural zone)

State Conservation Engineer — A registered professional engineer who has authority over all NRCS-conducted engineering work.

State Conservationist — NRCS principal responsible for all NRCS activities in the state.

State Office — State NRCS headquarters.

State Technical Committee — Representatives of USDA, other federal and state agencies, and local groups interested in agriculture that help set priorities and provide guidance for NRCS programs. Members are invited by the State Conservationist.

Streambank — The portion of the channel cross-section that restricts lateral movement of water. A distinct break in slope from the channel bottom.

Subdivision — The division of land, lot, tract, or parcel into two or more lots, parcels, plats, or sites, or other divisions of land for the purpose of sale, lease, offer, or development, whether immediate or future. The term shall also include the division of residential, commercial, industrial, agricultural, or other land whether by deed, metes and bounds description, lease, map, plat or other instrument.

Sudden Impairment — Result of natural occurrence or short-term combination of occurrences.

Taking — The taking of private property for a public use without the owner being "justly compensated" (usually, paid fair market value) for his or her loss.

Tax base — Fiscal base in a community from which services are provided. Different land uses contribute and demand varied amounts to the tax base.

Technical Assistance — The labor and expertise of NRCS used to build a practice.

Terrace — A flat adjacent to the river in alluvial valleys created by the abandonment of the floodplain.

Threat — The endangerment of life and property.

Tiles — Sub-surface drainage structures placed in agricultural fields to reduce opportunity for ponding and to stabilize soil to prevent saturation.

Timber Cribbing Structure — A structure of logs placed along streambanks and streambeds of smaller streams for stabilization and grade control.

Tribal Organization — Any American-Indian tribe defined in section 4 of the Indian Self-Determination and Educational Act.

Turbidity — The reduction of transparency in water due to the presence of suspended particles.

Upgradient — Upstream or uphill.

Urban Core — Center of urban activity with in a metropolitan area.

Urban Services Area — Area within an urban jurisdiction which planning studies show to be most adaptable to the extension of municipal services such as street, sewers, and water.

Urbanized Area — Geographic area with a population of 2,500 or more; number of people used in this definition may vary, with some countries setting minimum number of people anywhere from 10,000 to 50,000.

Urbanizing Development — Shifting of rural communities to more urban ones, demanding increased levels of urban services. The process involves linking timing and sequencing development to capital improvements and integrating the development plan, the capita improvement budget, and zoning ordinance.

Urgent and Compelling Situation — A situation where immediate response is required to protect against an imminent threat to lives and/or property.

Watershed — Land area that drains into a stream; area of land that contributes runoff to one specific delivery point; large watersheds may be composed of several smaller "subsheds", each of which contributes runoff to different locations that ultimately combine at a common delivery point.

Watershed Emergency — Adverse impacts to resources exist when a natural occurrence causes a sudden impairment of a watershed and creates an imminent threat to life and/or property. For the watershed to be eligible for assistance, the imminent threat to life and/or property must exceed what existed before the event occurred.

Watershed Impairments — The situation that exists when the ability of a watershed to carry out its natural function is reduced to the extent where an imminent threat to health, life, or property is created. This impairment can also include sediment and debris deposition in floodplains and upland portions of the watershed.

Watershed Uplands — Portions of watershed that do not directly adjoin a permanent stream channel but may lie near intermittent streams or groundwater.

Watersheds and Wetlands Division — USDA, NRCS Headquarters Division with oversight and disbursement authority for Emergency Watershed Protection Programs.

Wetland — Any number of tidal and non-tidal areas characterized by saturated or nearly saturated soils most of the year that form an interface between terrestrial (land-based) and aquatic environments; includes freshwater marshes around ponds and channels (rivers and streams), brackish and salt marshes; other common names include swamps and bogs.

Willow Stake — Live willows that are tampered or inserted into the earth to take root and produce vegetative growth.

Woody Debris — Debris caused by a natural disaster affecting wooded areas such as forests or other vegetation.

Zoning — A mechanism that seeks to establish different land uses in different areas of a community in order to minimize conflict between them; the technique is used to establish the authorized use for different parcels of land (e.g., residential, industrial, commercial) throughout a community.

INDEX OF TERMS

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