

Kansas Water Plan

Enhanced Stream Corridor and Wetland Management to Address Reservoir Sedimentation

January 2009

Background

Federal reservoirs are an important source of water supply in Kansas, providing water in some manner to roughly two-thirds of the citizens of the state. The State of Kansas owns water supply storage in 14 federal reservoirs operated by the U.S. Army Corps of Engineers (Corps). This storage is being diminished over time due to sediment deposition, reducing the capacity of the reservoir.

The future demand for water supply from federal reservoirs is projected to increase. Increasing demands coupled with decreasing supplies may result in water supply shortages during severe drought conditions. Analysis by the Kansas Water Office (KWO) indicates that this could occur within the next decade in the Neosho River basin. Other basins could face similar situations in the foreseeable future. The KWO has established a [Reservoir Sustainability Initiative](#) that seeks to integrate all aspects of reservoir in-flow, operations and releases into an operational plan for each reservoir to ensure water supply storage availability long into the future. Reduction of sediment transport and deposition is part of this initiative. Wetlands and riparian areas are vital components of proper watershed function that, when wisely managed in context with a watershed system can moderate and reduce reservoir sedimentation.

Reservoir sedimentation is a result of soil erosion from the land surface and from stream channels and banks. In most Kansas watersheds, this natural process has been accelerated due to changes in land cover and the modification of stream channels to accommodate agricultural, urban and other land uses.

Historically, most erosion control programs have focused on reducing the amount of soil erosion coming from the land surface through the implementation of best management practices (BMPs) on crop land, pasture and rangeland, and construction sites. Watershed structures, which can reduce floodplain scour and trap sediment, have also been constructed in many watersheds to address rural flooding concerns.

Naturally occurring wetlands and healthy riparian areas are integral components of managing sediment in a watershed and maintaining stable streams. For over twenty years, state and federal agencies have been working together to promote voluntary participation in government cost share programs that restore, enhance, and create wetlands and riparian vegetative buffers.

Wetlands include areas with hydric soils where standing water or wet soil conditions predominate. Riparian areas include streamside and floodplain areas where the vegetation, soil, or topography are distinguishable from that on adjoining uplands, and also contain wetland resources. Concerns for the protection, restoration and enhancement of wetland and riparian areas have increased in response to greater public understanding of their ecological and economic value. However, losses of both resources continue to occur.

Numerous studies have documented the beneficial role of these resources in moderating runoff, storing excess water and reducing sediment and nutrient input into stream channels.^(1, 4) Data from the Kansas GAP⁽⁹⁾ project show the following percentages of wetlands in drainage areas of reservoirs providing public water supply: While these data likely underestimate wetland occurrence due to limitations of the method used to derive them, the percentages of coverage are low and additional wetland protection and restoration efforts are needed to achieve water quality and sediment management benefits.

Additional research in Kansas documents the effectiveness of forested riparian areas on bank stabilization and sediment trapping.^(3, 5, 6, 7) Forested riparian areas are superior to grassland in holding banks during high flows, when most sediment is transported.

The primary threats to wetlands and forested riparian areas are agricultural production and suburban/urban development. In Kansas, monitoring the extent of these losses is difficult and current, updated inventories are needed. Suburban and urban pressures are resulting in increased conversions in the eastern part of the state

where most of the population growth is occurring and where reservoirs are most important for drinking water supplies. The growth of the biofuels industry may also result in increased pressure to convert some of these areas for crop production.

There is growing evidence that a significant source of sediment in streams in many areas of the country is generated from stream channels and the edge of field gullies.⁽²⁾ A recent U.S. Geological Survey (USGS) study in the Perry Reservoir watershed showed that stream channels and banks were a significant contributor to reservoir sedimentation in addition to land surface erosion.⁽⁸⁾ Streambank erosion can also contribute nutrients, such as phosphorus, which can cause water quality impairments.

A naturally stable stream has the ability, over time, to transport the water and sediment of its watershed in such a manner that the stream maintains its dimension, pattern, and profile without either aggrading or degrading.⁽¹⁵⁾ Streams that have been significantly impacted by land use changes in their watersheds or by modifications to stream beds and banks go through an evolutionary process in an attempt to regain a more stable condition. This process generally involves a sequence of incision (downcutting), widening and re-stabilizing of the stream. Many streams in Kansas are incised.⁽¹⁰⁾

Streambank erosion is often a symptom of a larger more complex problem requiring solutions that often involve more than just streambank stabilization.⁽¹⁴⁾ It is important to analyze watershed conditions and understand the evolutionary tendencies of a stream when considering stream stabilization measures. Efforts to restore and restabilize streams should allow the stream to speed up the process of regaining natural stability along the evolutionary sequence. This should involve a watershed-based approach to developing stream stabilization plans.

Stream stabilization projects can be costly compared to more traditional land surface BMPs, involving multiple landowners and a combination of stream stabilization techniques. Most of the stream stabilization work in Kansas has focused on controlling streambank erosion. Streambank stabilization project costs in Kansas have generally ranged from \$15 to over \$50 per linear foot. Costs are highly influenced by how far material must be transported to the site.

While programs do exist for the development, establishment, and management of wetlands and riparian forest, there is currently no state authority in Kansas for their protection and losses continue to occur from agricultural and urban development. Because of the benefits provided by wetlands and riparian forests, their relative scarcity, and the lack of protection authority, there may be a need for additional state efforts to protect them. This may include new and modified programs that overcome barriers to protection and establishment, considering the benefits these resources provide to reduce sedimentation in federal reservoirs. Landowners often comment that while financial assistance is available to establish forested riparian areas, payments are not adequate to compensate for the required long term management of the areas. The availability of annual or extended tax incentives or continued tax incentive payments would help to overcome this objection and make protection of existing high quality wetlands and riparian forests more feasible than removing them for crop production.

Wetlands and forested riparian areas have long been recognized as providing important habitat for a wide variety of wildlife and this has helped in gaining public support for their protection. We now understand and appreciate to a greater extent their value in maintaining healthy watersheds and water quality. Both moderate flows and hydrology which can reduce streambank erosion and reservoir sedimentation. The high cost of dredging federal reservoirs, the research that substantiates the effectiveness of wetland and riparian forests in reducing sediment transport during flood events, the role of riparian trees in streambank stabilization, and the evidence that major sediment deposition in reservoirs occurs during flood events, supports the need for protection and enhancement of wetlands and riparian forests.

Regulatory and Voluntary Programs

Federal Policies and Programs

The primary federal authority protecting streams and wetlands is the Clean Water Act (CWA) of 1972. Activities that alter wetlands are required to obtain a CWA Section 404 permit from the Corps. Many projects that result

in the loss of wetland area, type or function are required to provide mitigation for those losses. However, recent U.S. Supreme Court decisions involving the authority of the Corps to regulate wetlands have limited the scope of the CWA, making headwater streams and isolated wetlands vulnerable to continued loss of acreage and function.

Section 401 of the CWA requires the state to certify that the action will not violate state water quality standards before the Corps can issue a Section 404 permit. Currently this certification only evaluates site specific impacts and does not account for cumulative effects of losses. In Kansas, there is no authority under this program to require mitigation for wetland losses.

The 404 program has a tiered set of project evaluation criteria for wetlands: avoid negative impacts, minimize impacts, and mitigate impacts. While the requirement for the mitigation of wetlands when unavoidable losses occur is a positive aspect of the program, mitigation is not totally effective for the following reasons:

- Smaller and isolated wetlands may not be fully protected under the CWA. It is estimated that between 45% and 83% of remaining wetlands in Kansas may be considered “isolated”, higher than the national average of 20 to 30%.⁽⁴⁾
- Mitigation often occurs outside of the watershed in which the loss occurs, reducing the inherent ability of the impacted watershed to self-regulate.
- Mitigation does not always replace the same wetland functional type (e.g., out-of-kind).
- Mitigation is not performed or is unsuccessful.

The Wetlands Reserve Program (WRP), administered by the Natural Resource Conservation Service (NRCS), allows a landowner to provide either a 30 year or perpetual easement to protect and buffer wetlands, and implement a wetland restoration and protection plan. Forested riparian areas are eligible when linked to an eligible wetland. Priority is given to sites that provide permanent protection and enhance habitat for wildlife. Since 1995, a total of 14,129 acres of wetlands in Kansas have been enrolled in this program. NRCS reports that the program is under-utilized and that available funding goes unspent annually. Despite current and historic efforts to promote wetland conservation, many landowners still do not recognize the presence or value of wetlands on their property, and remain skeptical of wetland programs due to the potential regulatory connection. Additional incentives for landowner participation in the WRP may be needed.

Several U. S. Department of Agriculture (USDA) programs offer incentives to Kansas landowners to establish or enhance riparian forest buffers. The most widely used has been the Continuous Conservation Reserve Program (CCRP). Because of barriers to adoption of riparian forests buffers, grass filter strips (CP 21) have been much more popular than riparian forest buffers (CP22) even though research documents that riparian forests are more effective at stabilizing stream banks and causing sediment deposition, especially during flood events.

Barriers to adoption of forested buffers include longer time to establish, preference for grass planting over trees, management needs, and lack of understanding of benefits. In addition, participation in this program is largely dependent on the interest of the local NRCS district conservationist in promoting it. Enhanced marketing and targeting of program availability and resources is needed to better utilize the program. Additional financial incentives may also be helpful.

Another USDA program to address the need for protection and enhancement of riparian forests is the Healthy Forest Reserve Program (HFRP). Created from Title V of the 2003 Healthy Forests Restoration Act the program was piloted in Maine, Mississippi and Arkansas in 2006. A HFRP grant was approved in 2008 for a Kansas project in the Delaware River Watershed. With a focus on threatened and endangered species, biodiversity and carbon sequestration, the program offers options of a 30 or 99 year easement, or a 10-year cost-share agreement. Cost-share assistance for forestry practices such as tree planting and timber stand improvement at a 50% rate for the 10-year agreement, 75% for the 30-year easement and 100% for the 99-year easement are provided. Easement payments are based on a fair-market value land appraisal prior to the easement and after the easement is established. The difference in value forms the basis of compensation. Developing a state program that complements HFRP similar to what the Kansas Water Quality Buffer Initiative (WQBI) did with CCRP has the potential to promote protection of riparian forestland.

Swampbuster provisions of the federal Farm Bill disqualify landowners from receiving federal government payment for conservation practices if wetlands on the property are drained or modified. However, this does not apply to landowners not receiving government payments.

Environmental Quality Incentives Program (EQIP) funding for protection of riparian areas is matched by State Conservation Commission (SCC) funds to bring the federal/state share of projects to 90% of total costs. Even with this financial incentive, funds are not fully utilized. Program managers indicate that funding for establishing the protection or enhancement of forested riparian areas is not the main problem in getting program participation. A long term tax incentive program would encourage long term protection of established areas. Allowing selected harvesting of trees in protected riparian forests may encourage long term protection and further incentivize participation.

To date, 30,811 acres of grass filter strips have been established in Kansas through CCRP but only 4,484 acres of riparian forest buffers have been established.

The U.S. Fish and Wildlife Service (USFWS) Partners for Wildlife program also provides funding for restoring wetland or riparian resources.

State Policies and Programs

In 1986 the Kansas Water Authority (KWA) approved a policy sub-section of the *Kansas Water Plan* (KWP) in the Fish, Wildlife and Recreation Section titled *Riparian Protection*. The sub-section recommended the following policies:

1. Channel modifications requiring a state permit would include appropriate conditions to maintain riparian vegetation and stabilized banks as designated by the Kansas Department of Agriculture-Division of Water Resources (DWR).
2. County Conservation Districts (CD) would be required to develop county riparian protection programs to assist landowners in managing and maintaining riparian areas.
3. State provision for the use of conservation easements on riparian lands identified as crucial wildlife habitat to encourage protection and proper management.

While all of these provisions have been implemented to some extent, riparian losses are still occurring. County riparian protection plans do not contain inventories of existing riparian areas.

The Kansas WRAPS Program provides funding to support watershed stakeholder groups to develop and implement watershed restoration and protection strategies. WRAPS projects have been initiated in all but one of the watersheds above federal water supply reservoirs. The WRAPS Work Group has identified the following desired functional conditions for wetland and riparian systems:

- Stream channels are connected to their floodplains;
- Streambank soil loss does not exceed a level commensurate with normal geomorphic processes for the watershed;
- Undisturbed hydrologic systems contain transitional zones between streams and uplands which play important roles in function and maintenance of the systems. These areas should be managed to mimic undisturbed hydrology so that the channels and floodplains continue to sustain flows that are not disruptive to the system.
- Riparian land is covered with permanent vegetation appropriate to the landscape setting; and
- Wetlands are mapped and delineated and their beneficial functions are maintained.

Development and implementation of local watershed restoration and protection strategies is expected to enhance more pro-active protection activities. However current state and federal assistance programs focus on restoration of these resources and not on protecting healthy, properly functioning wetland and riparian areas. In the past 10 years, four Land Trusts (Trusts) have been established in the state: The Kansas Land Trust, the Sunflower Land Trust, the Watershed Institute Land Trust and the Kansas Livestock Association Ranchland Trust. All of these Trusts can permanently protect wetlands, among other valuable resources, under the authority of the Uniform Conservation Easement Act.⁽¹⁶⁾ Both the Sunflower and Watershed Institute Trusts

have also established in-lieu fee programs that can be used in conjunction with the Section 404 permitting and mitigation program to establish wetlands or riparian forests to replace those lost to development. In limited cases, protection of an existing wetland may be eligible for mitigation credits under these programs.

The Kansas Livestock Association has supported the creation of a conservation easement funding source, although the organization does not specifically target conservation easements for wetland protection. Because Trusts usually have specific goals and requirements for what parcels of land are eligible under their programs, small parcels of land containing valuable wetlands may not be eligible for inclusion in these programs.

Stream mitigation guidelines to be used in the Corps Section 404 permitting program are available for use in Kansas. These guidelines can be used to establish mitigation requirements for activities that impact stream channels and riparian areas. Opportunities to establish, enhance, and protect riparian areas are an important aspect of these guidelines. In some cases, permanent protection of existing healthy forested riparian areas may be eligible for mitigation credits. The establishment of a forest riparian registry would assist in matching land owners who would like to permanently protect riparian forests with entities that are required to comply with mitigation requirements.

Several state agencies administer assistance programs addressing wetland and riparian area management. The SCC administers the Kansas WQBI program, which provides state incentives to complement the federal CCRP Program for establishing riparian forest or grass buffers in high priority watersheds. The Kansas Forest Service (KFS) provides technical assistance for managing and restoring riparian forests through the Forest Stewardship Program and in partnership with the NRCS provides financial incentives through the Environmental Quality Incentives Program for Forestland Health.

Various other conservation organizations, such as the Kansas Alliance for Wetlands and Streams (KAWS), have also implemented many wetland, riparian and streambank stabilization projects throughout the state with funding from multiple sources (e.g. Environment Protection Agency (EPA) Wetland Program Development Grants and CWA Section 319 grants).

There are no state regulations that directly prevent losses of wetland or riparian areas. The state regulatory program is limited to Section 401 Certifications discussed above and does not protect wetlands and riparian areas not subject to federal regulation. In some urban communities, local stream ordinances have been adopted to protect riparian buffer areas. Riparian buffers are the first line of defense in stabilizing streambanks and channels. High quality riparian buffers can mitigate some effects of land use changes in the watershed and allow stream channels to regain equilibrium, perhaps negating the need for extensive restoration over time. Most local ordinances exempt current uses and only require riparian buffer protection in new development or when land changes ownership or use. The Kansas Association of Conservation Districts (KACD) endorsed this model with a Resolution at their 2005 Annual Convention supporting statewide legislation requiring riparian buffers when land changes from agricultural use to a more intensive development use.

In recent years, reservoir sedimentation has become an assistance for streambank stabilization projects. Some WRAPS projects above federal reservoirs have recognized streambank erosion as a priority watershed concern and have conducted assessment activities and demonstration projects.

The principal sources of state and federal funding for streambank stabilization projects are currently cost-share programs of the SCC and the NRCS EQIP Program. Most projects are currently implemented on a site by site basis based on applications received from willing landowners. State and federal cost-share rates have generally ranged from 50-90% of the total project costs.

A Stream Rehabilitation Sub-Section of the *Kansas Water Plan* was approved in 1987 to support stream rehabilitation projects for streams affected by past channel modification activities. Projects required a local cost-share sponsor and were restricted to areas where a significant state interest was identified. Plans were required for an entire stream reach to ensure a comprehensive approach and required approval by the Chief Engineer, DWR. The program was administered by the SCC under the authorities of K.S.A. 2-1915 *et seq.* One stream rehabilitation plan was prepared, however no stream rehabilitation projects have been implemented to date under this program. Plan implementation required a local match and due to the relatively

high cost of stream rehabilitation, the sponsor chose not to implement the plan.

The DWR administers the Stream Obstruction Act⁽¹⁷⁾ which requires prior approval and a permit for projects that modify the course, current or cross section of a river or stream, but specifically exempts from regulation properly placed revetments and jetties installed to protect caving banks. Streambank stabilization projects may require a stream obstruction permit from the DWR and a CWA Section 404 permit from the Corps.

K.S.A. 82a-1101 *et seq.* designated the Kansas Water Resources Board (now KWO) with oversight responsibilities for bank stabilization projects involving more than one political subdivision. This statute was enacted in 1969 to address stream bank erosion concerns on several major rivers in Kansas and to secure federal funding and local participation for projects.

Policy Issues, Options and Recommendations

At issue is how to best manage wetland, riparian, and stream systems to maximize their proper functioning capacity thereby reducing sedimentation in federal drinking water supply reservoirs. Two issues have been identified to better address sediment management within reservoir watersheds. These include:

1. State Wetland and Forested Riparian Area Protection
 - Utilize existing programs.
 - Voluntary easements and incentives.
 - Utilize some regulatory and voluntary elements of both options 1 and 2.
2. Stream Stabilization Planning and Implementation
 - Utilize existing programs.
 - Revitalize the Stream Rehabilitation Program.
 - Redesign the Stream Rehabilitation Program and form a management team.

Issue #1: State Wetland and Forested Riparian Area Protection

Healthy, properly functioning wetlands and riparian areas are important landscape components in managing sediment and related pollutants within a watershed. About half of the wetlands and forested riparian areas that were present in watersheds in Kansas before European settlement have been lost due to human activities. Loss of these resources contributes to increased landscape and streambank erosion, which contributes to increased reservoir sedimentation and loss of storage capacity.

Programs are available through state and federal agencies to restore or create wetlands and forested riparian areas. However, there are no state programs that are targeted to protect existing high quality, properly functioning wetlands and riparian forest resources. Regulatory authority to protect wetlands is limited to the 401 Certification Program and no additional state oversight has been authorized. Losses of these resources are still occurring in Kansas, although current data are lacking on the extent of these losses. A systematic assessment and evaluation of existing conditions is needed for both resources along with a program to protect high quality resources in reservoir watersheds.

Options to Address Issue #1: State Wetland and Forested Riparian Area Protection

Option #1: Regulatory Oversight

One option is for the state to use regulatory oversight of wetlands and forested riparian areas. This could include establishing permit requirements to supplement the federal program for wetlands and expanding on local stream ordinances with stream setback requirements by establishing statewide riparian protection legislation. Potential regulatory programs and their use in other states are described below:

- Incorporate Kansas Stream Mitigation Guidelines into 401 Water Quality Certifications. An example is Ohio, which incorporates mitigation standards with credits and debits into the 401 program. Other states, including Colorado, Illinois, and Nebraska also have some ability to require and monitor mitigation through

the 401 program.

- Utilize the existing Critical Water Quality Management Areas⁽¹⁸⁾ statute and regulations to comprehensively manage wetland and riparian areas, along with other practices, in critical areas (e.g. above federal drinking water supply reservoirs)
- Increase state oversight of the federal Section 404 program to ensure that all wetlands are protected, losses are minimized, and when they occur, that mitigation activities are appropriate at the watershed scale, and they are successful. The state can assume permitting responsibility through State Programmatic General Permits (SPGP). SPGPs are administered by a state agency and designed to eliminate duplication of efforts between Corps districts and states, as well as to make the permitting process more efficient with flexibility as to the geographic region covered. Six states have a SPGP program: Florida, New Hampshire, New York, North Carolina, Pennsylvania, and Wisconsin.
- Special Area Management Plans (SAMPs) can be developed in conjunction with the Corps through a General Permit. There are two main goals of the SAMP process: to establish a watershed-wide aquatic resource identification and reserve program, and to minimize individual and cumulative impacts of future projects in these watersheds. Six states have instituted SAMPs: Colorado, Florida, Nebraska, Virginia, Washington, and Wisconsin.
- Provide for the permanent protection of wetlands in floodplains through requirements to local governments. For example, Wisconsin's cities and villages are required to zone their flood prone areas. The state sets minimum standards and regulates how development can occur within floodplains.
- Develop a state Isolated Wetlands Permit for wetlands currently or potentially not covered by federal regulation. Six states, Washington, Michigan, Illinois, Ohio Tennessee and North Carolina, have the authority to permit activities in isolated wetlands.
- Consideration of statewide or critical area riparian corridor protection legislation. North Carolina has established the Catawba River Basin Permanent Riparian Buffer Protection Rules that have been in effect since August 2004. Developed with broad representation from the public, the rule requires maintenance and protection of existing 50 foot wide vegetated riparian areas along the river and along mainstem lake shorelines.

See Appendix A for a summary of select states' enhanced program implementation.

Option #2: Voluntary, Easements and Incentives

A second option is to better protect riparian and wetland resources through enhanced use of conservation easement programs and tax incentives. Conservation easements have become an increasingly accepted means of protecting valuable natural resources in Kansas. The WRP administered by the NRCS provides for conservation easements to protect and restore wetlands. Forested riparian areas are eligible when linked with an eligible wetland. Available funding for this program has been underutilized and there may be a need to enhance the level of funding to purchase easements to increase program participation. State funds could be made available and leveraged with federal programs when available to protect high quality wetland and riparian forest resources, similar to the approach used for the Kansas WQBI. A state source of funding for conservation easements to protect these areas could be administered by the KFS and the Department of Wildlife and Parks (KDWP) to leverage WRP and other funds when possible. In the past 10 years, four land trusts have been established in the state and present another opportunity to protect wetlands and forested riparian areas through the use of conservation easements. The state could also partner with Trusts when appropriate to enhance funding availability. Following are some incentive programs that could be considered to enhance participation in voluntary protection programs.

- Partner with land trusts to offer additional incentives for protecting wetlands and forested riparian areas. Possible elements to an enhanced program could include:

- State legislation creating a conservation easement funding source in Kansas. The funding source could be used to both acquire easements and to assist in monitoring and other administrative requirements for easement maintenance. The funds could be used to enhance payments in the WRP to promote participation.
- In California, the Riparian Habitat Conservation Program allows the Wildlife Conservation Board to grant funds for acquisition and restoration to non-profits, local governments and state and federal agencies. The Board can also acquire land directly. In Washington, the Riparian Habitat Protection Grant Program, established by state legislation and paid for through capital bonds, allows the state and local governments to receive grants to acquire and manage high quality riparian areas.
- Develop a Protection of Private Wetland/Riparian Tax Credit Program. In Arkansas, the Creation and Restoration of Private Wetland and Riparian Zones Tax Credit Program allows a credit against the state income tax for any taxpayer engaged in the development or restoration of wetlands and riparian areas. A fee of three percent of the total approved tax credit is paid to the Arkansas Soil and Water Conservation Commission and total tax credits cannot exceed \$50,000/project.
- In Virginia, localities can grant tax incentives to encourage landowners to protect wetlands and riparian buffers. Localities can provide real estate tax exemption or reduction by ordinance. A state Water Quality Improvement Fund is used to reimburse local governments for tax credits. The program is administered by the Virginia Department of Conservation and Recreation. The state also administers the Riparian Buffer Tax Credit Program for individuals who own land on which timber is harvested, which abuts a waterway, and who cease timber harvesting on certain portions of the land for 15 consecutive years. The credit is 25% of the value of the timber retained as a buffer up to \$17,500.
- Develop a Property Tax Incentive Program for landowners who permanently protect wetlands and riparian forests on their property. Property taxes would be reduced for these areas.
- Utilize 319 funds and other available funding sources by Trusts to purchase conservation easements for wetlands as an implementation activity in WRAPS projects.
- Several states, including Arkansas, Virginia, California and Oregon, have established tax incentives or credits and property tax relief for wetland and riparian protection. The State of Pennsylvania recently enacted the Resource Enhancement and Protection Program (REAP) which allows farmers and businesses to earn tax credits in exchange for BMPs that enhance farm production and protect natural resources. Administered by the State Conservation Commission, tax credits by the Pennsylvania Department of Revenue between 25% and 75% of the project costs will be granted as state tax credits for up to \$150,000 of costs. In the first 10 days of the program, over \$10 million in requests were submitted. Combining incentive programs with wetland and riparian assessments accomplished by Watershed Restoration and Protection Strategy (WRAPS) groups could help to target and leverage similar programs in Kansas.
- Allow for exemption from state income tax those monies received from federal government cost share programs to protect wetlands.
- Establish a voluntary wetland and riparian forest registry to enhance effectiveness of the stream mitigation guidelines and mitigation program.

Option 3. Utilize some regulatory and voluntary elements of both Options 1 and 2.

A third option is to utilize portions of both Option 1 and Option 2 to develop a comprehensive wetland and riparian area protection program consistent with the goals of the *Reservoir Sustainability Initiative*. Pursuing increased funding and state participation in application of Conservation Easements can be accomplished in a short time frame and would have immediate and cumulative benefits. Further exploration of the most effective use of tax incentives would be done with additional public input to determine the highest probability of success

of each proposed program and acceptance by both governmental agencies and private citizens.

A regulatory outreach effort could be initiated to begin public discussion of what level of increased regulation would be acceptable and likely to succeed. This would include discussion of enhanced use of existing regulatory authority and discussion about potential additions to existing authority. If the public gains understanding of the intent and benefits of regulatory oversight to the goal of long term water supply availability, it is anticipated that programs could be developed that would benefit both the public and the resource. This approach has not been developed in a targeted manner and to either exclude the potential for increased regulation or to recommend it as the best option at this time is premature.

Option 3 is recommended.

Issue #2: State Stream Stabilization Planning and Implementation to Address Sedimentation in Public Water Supply Reservoirs

Many streams in Kansas watersheds have been impacted from land use changes and modification to stream banks and channels. As a result, many streams are in an unstable condition and are incurring increased channel and bank erosion.

A number of streambank stabilization projects have been implemented in recent years with state and federal assistance to address stream bank and channel erosion concerns. To date, these projects have been implemented primarily on a site by site basis. For maximum effectiveness, multiple projects are often needed within a stream reach to achieve a significant reduction in the sediment load carried by the stream and ultimately deposited in a downstream reservoir. Stream stabilization projects that are implemented to address reservoir sedimentation should employ a holistic, watershed-based approach for assessment, planning, design and implementation to improve the effectiveness of these projects in reducing downstream sedimentation. At issue is how the state can best facilitate this approach in the planning and implementation of stream stabilization projects in reservoir watersheds.

Options to Address State Stream Stabilization Planning

Option #1: Utilize Existing Programs

One option is to promote more comprehensive, watershed-based planning and implementation of stream bank stabilization projects above federal water supply reservoirs through existing state and federal assistance programs. This would primarily involve programs of the SCC and the NRCS. Although this approach should be and has been encouraged to the extent possible, the existing programs are not well-suited to facilitate project planning and implementation for large scale stream stabilization projects involving multiple landowners and stabilization measures. Funding is also limited for project planning, design and implementation of stream stabilization projects.

Option #2: Revitalize The Stream Rehabilitation Program

Another option is to revitalize the SCC Stream Rehabilitation Program discussed previously and target program application to priority watersheds above federal water supply reservoirs. This program employed a comprehensive approach to stabilizing streams, involving development of a rehabilitation plan for a specific stream reach prior to the implementation of stabilization measures. However, this program required local sponsorship and cost-sharing for plan development and project implementation. This can be a significant limiting factor given the potential cost of implementing comprehensive stream stabilization projects and the reliance on voluntary participation in implementing stabilization measures.

Option #3: Redesign The Stream Rehabilitation Program and Form Management Team

A third option is to redesign the SCC Stream Rehabilitation Program to provide for enhanced state participation and funding in the planning and implementation of stream stabilization projects. The program would be targeted to problem stream reaches in watersheds above federal water supply reservoirs that are determined

to be a significant contributor of sediment to downstream reservoirs. Reservoirs would be prioritized and comprehensive stream corridor assessments conducted on a priority basis. Potential problem areas would be determined through the assessment process and then prioritized for stream stabilization planning. Funding for the implementation of projects included in an approved plan would be sought through state and federal sources.

Formation of a wetland and stream management team to better coordinate the siting, sizing and functional development of constructed and improved compensatory wetlands and riparian habitat in the state would enhance this systematic approach, provide additional funding sources, and build in house technical capabilities in the KWO. The team would include state, federal, local, and private entities. The KWO would serve as the primary lead in coordinating the partners of the management team as well as a technical service provider in implementing team recommendations. Coordination with WRAPS groups and involvement of local stakeholders would be an integral part of the assessment, planning and implementation process. Such a program would compliment existing programs that are designed to address more site specific streambank erosion problems.

Option three is recommended.

Plan Implementation

Issue: State Riparian and Wetland Protection

Legislative Action

A conservation easement initiative fund should be established to provide enhanced funding for the purchase and maintenance of conservation easements for wetland and riparian resources. The fund would provide funding for the KFS and the KDWP to purchase conservation easements in priority areas. It could also provide funding to Land Trusts to enhance their ability to purchase and manage sensitive areas.

Based on recommendations of the KWA legislative action would also be needed to establish tax incentive and credit programs.

Administrative Action

Figure 1 outlines the general process to be used in administering the proposed riparian and wetland protection program.

Comprehensive stream corridor and wetland assessments would need to be conducted in reservoir watersheds to assess the current condition of wetland and riparian resources. Priority areas for wetland and riparian protection and restoration would be identified through this process.

Administrative procedures would be needed for the following:

- Develop a method to identify, assess, and map forested riparian and wetland resources and for identification of priority areas for restoration and protection.
- Develop prioritization criteria for determining easement value and priority for state funding.
- Establish and implement conservation easement agreements with willing landowners including maintenance and monitoring requirements.
- Explore the most effective use of tax incentives with additional public input to determine the highest probability of success of each proposed program and acceptance by both governmental agencies and private citizens.
- Initiate a regulatory outreach effort to begin public discussion of what level of increased regulation would be acceptable and likely to succeed.

Financial Requirements

Funding will be needed to conduct assessments in priority reservoir watersheds and for the purchase and management of wetland and riparian conservation easements by state agencies.

An estimated \$100,000-\$200,000 will be needed to initiate stream corridor and wetland assessments in a pilot reservoir watershed. Upon completion of the pilot, additional assessment costs would be determined.

\$300,000 should be provided initially for the purchase of conservation easements in priority wetland and riparian areas. Future funding needs would be determined annually based on the level of program participation and the identification of additional priority areas as stream corridor and wetland assessments are completed in reservoir watersheds. Priority would be given to leveraging existing funding sources such as the NRCS WRP or to partner with Trusts when applicable.

Additional agency resources may be needed to administer and monitor conservation easements, depending on the number of easements acquired.

Information and Education

The KWO, the KFS, the KDWP, and the KDHE would work closely with Basin Advisory Committees (BAC) and WRAPS Stakeholder Leadership Teams to provide information on restoration and protection opportunities to area landowners and other stakeholders in the watershed throughout the assessment and implementation phases of the process.

Issue: Stream Stabilization

Legislative Action

K.S.A. 82a-1102 requires that federal funding be available before the state participates in a streambank stabilization project. This provision should be removed and allowances provided for 100% state funding for project planning and implementation if needed.

Administrative Action

Figure 2 outlines the general process proposed for stream stabilization planning and implementation to address reservoir sedimentation.

Administrative procedures need to be developed to address the following:

- Identify priority reservoir watersheds
- Form the Wetland and Stream Management Team

- Prioritize areas for stream stabilization planning
- Determine local support for planning and project implementation
- Develop contents of a stream stabilization plan. Preliminary plan components would address:
 - Stream reach to be stabilized and its contributing drainage area
 - Stabilization measures to be utilized
 - Cost-benefit analysis including the sediment reduction to be achieved
 - Proposed Implementation schedule
 - Protection of riparian zones associated with the project
 - Protection of the project from future upstream activities
 - Long-term maintenance and monitoring of the project
 - (Final design and scheduling for implementing stabilization measures would be determined in the implementation phase)
- Determine available state and federal funding
- Seek approval for project funding and inclusion in the *Kansas Water Plan*.

Administrative procedures would be needed for administering project funds to implement approved projects and insuring that appropriate monitoring and maintenance of the project is accomplished.

Existing regulations of the DWR for administration of the Stream Obstruction Act should be reviewed to ensure that stream stabilization projects implemented through this process are not adversely impacted by future stream obstruction projects permitted by the agency. This should also be addressed as part of the Environmental Coordination Act review process for these future projects and through the Wetland and Stream Management Team.

Financial Requirements

The cost of completing of a stream stabilization plan will vary significantly depending on the size of the area being considered and the specific conditions that exist within the project area. An estimated cost of \$100,000 - \$150,000 per plan is anticipated.

An estimated \$300,000 to \$350,000 would be needed in the first year to initiate the Kansas Wetland and Stream Management Team. After purchase of additional equipment and supplies, somewhat reduced funding would be needed for staff support in subsequent years.

The cost of implementing a stream stabilization plan could vary widely, with projects ranging from \$500,000 to millions of dollars for project design and construction. It is estimated that one or two projects could be considered for implementation annually.

Information and Education

The KWO, the SCC, BACs and WRAPS Stakeholder Leadership Teams in the project watersheds would help provide information and seek input from area landowners and other stakeholders in the watershed throughout all phases of the process. Local landowner participation will be a primary component in determining whether to proceed with the project planning and implementation.

Resources

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16. Uniform conservation Easement Act. 58-3817 *et. seq.*
17. Stream Obstruction Act K.S.A. 82a-301 *et. seq.*
18. Critical Water Quality Management Area. K.S.A. 65-171d. K.A.R. 28-16-69 *et. seq.*