MEMO

DATE: October 29, 2009

FROM: Joseph B. Gibbs, PE, Member MRRIC, Flood Control

TO: MRRIC meeting Cheyenne, Wyoming November 3, 4 & 5, 2009

SUBJECT: Social, Economic, Cultural and Tribal (SECT) Benefits and Values

This is presented in the interests of landowners in the Missouri River basin. It is prepared to illustrate the importance of the flood control and channel stabilization programs on the Missouri River and how a reduction in these programs would affect our nation and those living and working along and depending upon the resources of the Missouri River and its floodplain.

Presented too (page 11) are some of the present recovery activities underway, including the Missouri River Recovery Program (MRRP), and needed changes in MRRP activities and project land management policies and rules to be included in a restoration plan (Missouri River Ecosystem Restoration Plan (MRERP)) to make the recovery and restoration process more compatible and favorably supported by taxpayers nationwide and by the affected landowners and stakeholders in the floodplain areas.

This is presented only as a partial listing of SECT Benefits and Values. As the MRERP develops, it can be expected that as the components and provisions to be incorporated and addressed in the MRERP are made apparent, other social, economic, cultural and tribal benefits and values will be identified that need to be included in the MRERP and they too will be used to measure the acceptance of the MRERP.

Flood Control and Bank Stabilization

General

The Missouri River with its adjoining floodplain meanders across the midsection of the State of Missouri for approximately 367 miles with a width varying from 1.5 to 10+ miles. An additional portion of the river of approximately 186 miles forms the boundary between Missouri and Kansas and Nebraska. In this area, a vast variety of activities has taken place and evolved with the development and the increasing population of the country. Use of the resources in the river and floodplain to date has focused on agriculture, transportation, potable water, minerals, hydroelectric power and wildlife conservation areas. More recently, wastewater treatment, constructed wildlife areas, wildlife habitat restoration areas and recreational uses are being expanded. Coupled with these public and private uses is the need for infrastructure items that serve the public's economic well being, health and safety. They include highways, railroads, and bridges; electric power, fuel, water, sewage and telecommunications lines and facilities which must cross the floodplain.

The entire area is subject to flooding and is most prone to flooding in the spring and early summer months during seasonal and locally heavy spring rains and during runoff from the spring snow melt in the Rocky Mountains. Flooding conditions have, however, been recorded during almost all of

the months of the year and with the increase in population and use of the floodplain's resources, flood prevention measures have been financially justified and implemented to deter disruptions caused by flooding. These measures include runoff detention dams with hydroelectric generators in the headwaters of the river during the 1940's and extensive levee/dike systems on the banks of the river. The headwater detention dams have been augmented with additional dams on the tributaries, and the construction of the levee systems has been ongoing since the earliest periods of settlement of the area.

These measures alone, though, could not and will not prevent the river from meandering and destroying the adjoining lands and infrastructure in the floodplain. The gradient, or fall, of the river averages approximately 0.865 feet per mile. It varies from 0.75 to as much as 1.55 feet per mile. With these gradients, there is sufficient velocity to cause continuous stream bank erosion with resultant meandering of the river channel. With the flooding history of the river and its ability to cut new channels, public and private interests along the river have engaged in efforts to stabilize the banks of the river.

One of the single most important public events to help prevent this meandering came from a Federal program of bank stabilization and channelization initiated in the early period of the twentieth century to develop a reliable navigable channel for barge traffic on the Missouri River. Upon completion of the Pick-Sloan Plan/Program later in the century, a worthwhile goal was attained in that the Missouri River become an integral part of the North American inland waterway system that serves an area from the Allegheny Mountains westward to the plains states and from the Gulf of Mexico northward to Canada. At the mouth of the Missouri River in St. Louis, the river discharges into the Mississippi River. This is the Missouri River's connection with the inland water system in the United States. The Upper Mississippi River forms the eastern border of Missouri for approximately 310 miles with numerous river ports. Discharges from the Missouri River at times reportedly provides 60 percent of the Mississippi River's flow from St. Louis to the mouth of the Ohio River near Cairo, Illinois (approximately 162 miles). Without Missouri River discharges, navigation along the entire eastern border of Missouri would be greatly hampered. These river channels provide the public with an alternative to truck and rail transportation with all of the benefits of national security, cheaper freight rates, better energy efficiency and reduced air pollution for moving bulk and containerized freight.

This bank stabilization and channelization project required the stabilization of the concave banks with stone revetment, the installation of stone jetties and wing dikes to narrow the channel and promote scouring of the channel bottom to produce a consistently deep channel and the straightening of the channel at select places to facilitate the maneuvering of barge tows. This work stabilized and established the location of the channel thereby preventing it from meandering and undermining levees and other infrastructure in the floodplain. An added bonus of channelization was that with a deeper channel, the river could handle greater flow rates between the levees during periods of flooding. With the channel stabilized, levees would be more reliable and public utilities and structures could be built with confidence in and across the floodplain that they would not be continuously torn up or disrupted by the flooding and meandering river. The Pick-Sloan Plan has not been fully implemented and is not complete as originally designed. Also, many changes over the last 20 years have diminished the effectiveness of the Pick-Sloan Plan. Dike notching, altered flow regimes, reduced funding for channel maintenance, a 10 foot reduction in the stone revetment height on the river's banks for example, and general operations, including levee inspections, have reduced flood control benefits

Upon the projected completion of the enlargement of the Panama Canal in 2014, the inland waterway system, of which the Missouri River is an integral part, is well positioned geographically to be a logical container distribution system to handle the super-sized container ships that will be able to

traverse the canal. This capability will become more important with the estimated doubling of the world's population in the next 80 to 100 years, and the proportionate increased need for transportation facilities.

With the channel stabilized, the following essential types of development have taken place in the floodplain:

Private Development

1. Since the first settlers arrived, agriculture has flourished in the valley floodplains because of the fertility of the soils. Cultural and social values are characterized in the floodplains by the number of state recognized "Century Farms" in continuous production and family ownership for 100 years or more. This has taken place primarily because of the natural fertility of the soils and the availability of water for irrigation (1,200 gallons per minute ±) at depths from 20 to 60 feet. This has permitted intensive farming practices and wise use of crop production input resources. The soils are silts and clays eroded from the uplands and have a natural balance of essential minerals and a neutral Ph balance so that they do not need extensive fertilization or any liming. Since they have only slight slopes, little to no erosion is experienced, thus allowing intensive farming practices that will not pollute our streams with sediment like that produced from farming upland soils. The USDA designates these soils as "Not Highly Erodeable Land (NHEL)." With farming in the floodplains comes the need for drainage systems. Drainage is an integral part of irrigation development and is necessary for top yields on non-irrigated land. Flooding disrupts and destroys the sizeable investments in drainage systems, state parks, wildlife areas, land grading, irrigation equipment, and lays waste to annual expenditures on machinery, fuel, fertilizer and chemicals, thus demonstrating additional justification for flood protection. These extremely fertile soils are well known throughout the Missouri River valley for their reliability in producing high crop yields when thoroughly and properly protected from flood waters. Yields for grain and forage in the last 10 years have regularly reached 200+ bushels per acre for corn and 4 to 5 cuttings of alfalfa hay per season. There can be no better use of these soils. This form of land use has greatly added to the overall financial stability of the state and its counties by having this development and personal property included in the property and use tax base. These taxes support operating and bonded indebtedness of local entities such as schools, fire protection districts, county governments, ambulance districts, library districts, levee and drainage districts, public water supply districts etc.

2. As with all other industrialized nations worldwide with ever-increasing populations, transportation of goods and services ranks in importance with food, shelter, clothing and health care. Without transportation carriers in the form of power and water lines, automobiles, trucks, railroads, airlines, ships and barges, a country cannot grow and prosper and compete with other countries. With the stabilization of the channel has come the development of harbors and ports for supporting barge traffic on the rivers. This form of transportation is cost effective and more energy efficient than truck or rail transportation. As the population of the country increases, demands for adequate transportation will be more intense. Developing and maintaining the use of the nation's lakes and rivers will become more important and this process must not be discarded.

Public Development

1. With the stabilization of the river channel and the resultant reduced threat of flooding, cities have been able to develop resources in the river and floodplain for the benefit of area populations with respect

to welfare, health and safety. Municipal and public utilities development includes potable water wells, sewage treatment plants and wetland wastewater treatment facilities. With the river maintaining the water table at shallow depths, an abundance of water is available from alluvial wells or directly from the river itself for the hundreds of thousands of urban residents and the ten of thousands of residents up to two or more counties away from the river in rural public water supply districts that purchase their water from the large capacity municipal facilities. Because of the lower elevations inherent in the floodplains, areas near and in the floodplains are natural locations for sewage treatment plants and wetland sewage treatment facilities. Along with all of these facilities in the floodplains are extensive power and water and sewage distribution appurtenances and service roads so that these facilities can function normally.

2. In order to distribute their services in Missouri and adjoining states, public utilities out of necessity must cross the Missouri River and its floodplain. Among some of the services and products provided by these utilities are power, fuel, water and telecommunications. With the stabilization of the river channel along with the programs to control and reduce the threat of flooding, these public utilities have been able to economically route their lines across the river and through the floodplain and maintain reliable consistent service with little disruption from flooding. Buried utilities across the river valley are located under the river channel. In the floodplain, though, the buried utilities have only 3 to 5 feet of earthen cover. This in many places is in the range of 20 feet above the actual utility lines under river. Without stabilization of the channel and a levee system, meandering of the channel and over-bank flows will expose, damage and disrupt buried utility services. Overhead utility poles, as well, are not immune to damage and disruption of services due to flooding. These sorts of damage occurred dramatically in the 1993 flood and during several other flood events.

3. As with utilities, highways and railroads out of necessity must cross the Missouri River and its floodplain. Given the location of this river in the central part of the country, railroads and highways must be built across the river in several places to maintain the economic health of the country and state and the safety of the general population. Nothing could better illustrate this point than what occurred during the flood of 1993, when the I-70 highway bridge at Rocheport was the only bridge open across the river in the 300+ miles between St. Louis and Kansas City. The stabilization of the river channels, along with the programs to control and reduce the threat of flooding, allow bridges to be built with relatively short spans across the stabilized channels of the rivers. From these bridges, road beds of several miles in length, at a level subject to flooding, complete the crossing of the river valley.

4. Over the past 30 years, Missourians have made great strides via the use of a sales tax on all goods and services that goes directly to the Missouri Department of Conservation (MDC) for the development of plant, forest and wildlife habitat in Missouri. This tax has no "sundown" provision. In 2008, $102 million from this tax source alone was conveyed to the Department for these purposes. Multi-million dollar projects have been made along and in the floodplain of the Missouri River to establish waterfowl habitat in the normal flyways for ducks and geese and provide vehicular, pedestrian and disabled access for recreational and educational purposes to the Conservation Areas (CA). Examples include Weldon Spring, Eagle Bluff, Franklin Island and Grand Pass Conservation Areas. For these areas to succeed in their goals, establishing and maintaining bodies of water, providing food plots during periods of migration and providing durable public access is necessary. To accomplish this, numerous levees, low level berms, water level control weirs and gates and electric and diesel powered pump stations valued in the tens of millions of dollars have been constructed. The stabilization of the river channel, along with the programs to control and reduce the threat of flooding, protects these public investments, and precludes unnecessary abandonment and continuous replacement and repair.

5. For the past 24 years, the citizens of the State of Missouri have channeled an additional one-tenth-of-one-percent sales tax through their Department of Natural Resources (MO-DNR) to be divided evenly for the development and upkeep of the state's parks and for cost-share of funds for erosion control practices on private property. Although this tax has a "sundown" provision, nonetheless it has been reaffirmed every time by Missouri citizens since its initial enactment. In 2006, 70 percent of the voters extended the tax for 10 more years. In 2009, approximately $60 million was conveyed to the Department for these purposes. Erosion reduction from these public lands and farms results in enhanced water quality in rivers and streams

Partial Listing of Public and Private Activities

1. Following is a partial list of the known activities and land uses both public and private in the Missouri River floodplain between St. Louis and Kansas City. Listed below are the activities and uses with which I have personally worked or with which I have first-hand knowledge. They include utilities, harbors, roads, railroads, parks, wildlife areas, and various hazardous dump sites across the central part of Missouri. Not included here are 268 other uses listed on the US Army Corps of Engineers navigation map for the Missouri River, as well as numerous other municipal and Missouri Department of Conservation facilities. Those marked with an asterisk (*) are those that experienced substantial damage from flooding in 1993 and 1995.

St. Louis and St. Charles Counties
- State Highway 370 Bridge and Pavement, 2 lanes, St. Charles and Earth City Areas.
- St. Charles County Public Water Supply District--Weldon Spring Well Facility, Weldon Spring Armory Area
- Missouri Department of Conservation--Weldon Springs Conservation Area.
- Missouri Department of Conservation--Howell Island Conservation Area.
- I 70 Highway Bridge and Pavement, 10 Lanes, St. Charles and Earth City Areas.
- * US Highway 40 Bridge and Pavement, 4 Lanes, Chesterfield Area.
- U S Dept of Energy--Weldon Spring Arsenal Nuclear Dump Site, rock quarry.
- * Airport, Chesterfield, MO.
- * Union Pacific Railroad Tracks

Franklin and Warren Counties
- * State Highway 47 Bridge and Pavement, 2 Lanes, Washington Area.
- New Haven Public Works Dept--Sewage Treatment Facility
- Washington, Missouri Public Park--River Access
- Union Pacific Railroad Tracks
- * KATY Trail State Park Bicycle and Hiking Path

Gasconade and Montgomery Counties
- * State Highway 19 Bridge and Pavement, 2 lanes, Hermann Area.
- * Union Pacific Railroad Tracks
- * KATY Trail State Park Bicycle and Hiking Path

Osage and Callaway Counties
- * State Highway 100 Pavement, 2 lanes, Chamois Area
- * Central Electric Cooperative Power Plant, Chamois Area

Cole and Callaway Counties

* Jefferson City Public Works Dept--Sewage Treatment Facility, Cedar City Area
  Sewage Lift Station, Jefferson City Area.
  Callaway Co. Public Water Supply District No.2--Distribution lines, Cedar City Area.
  Jefferson City Water Supply Co.--Potable Water Source from river.
* US Highways 54 and 63 Bridges and Pavement, 6 Lanes, Jefferson Area.
* Capital Sand Company--Construction Materials, Cedar City Area.
* Jefferson City Airport, Cedar City Area.
* Union Pacific Railroad Tracks
* KATY Trail State Park Bicycle and Hiking Path

Cooper and Boone Counties

* Columbia Water and Light Dept--Wells and Water Treatment Plant in McBaine Area.
* Columbia Public Works Dept--Wetlands Wastewater Treatment Facilities,
  McBaine Area.
  I-70 Highway Bridge and Pavement, 4 Lanes, Rocheport Area.
* Missouri Department of Conservation--Eagle Bluff Conservation Area, public access
  areas, electric and diesel water pumping stations, McBaine Area.
* Missouri Sand Co.--Construction Materials, Rocheport Area.
* Williams Pipeline Co.--Diesel and Gasoline Pipelines, McBaine Area.
* Union Electric--Power lines, McBaine Area.
* Union Pacific Railroad Tracks
* Boone Co. and City of Columbia Parks Dept--MKT Nature Fitness Trail Bicycle and
  Hiking Path
* KATY Trail State Park Bicycle and Hiking Path

Cooper and Howard Counties

* Howard County Public Water Supply District No. 1--Wells, Treatment Plant and
  Distribution Lines in Franklin Area.
* New Franklin Public Works Dept--Wells, Treatment Plant and Distribution Lines in New
  Franklin Area.
* New Franklin Public Works Dept--Sewage Treatment Facility, New Franklin Area.
* US 40 and State Rte 5 and 87 and KATY Trail State Park Bridge and pavement, 2 Lanes,
  Boonville Area
* Panhandle Eastern Pipeline Co.--Natural Gas Pipelines, Boonville Area.
  City Utilities Pipeline Co.--Natural Gas Pipelines, New Franklin Area
* Sprint Cable Company--Fiber Optic Cable, Boonville Area.
* Interstate Marine Terminal--General Agricultural and Bulk Materials River Port Facility,
  Boonville Area
* Missouri Farmers Association--General Agricultural Products Handling and
  Materials Supply Facility, New Franklin Area.
* Missouri Department of Conservation--Franklin Island Conservation Area.
* Union Pacific Railroad Tracks
* KATY Trail State Park Bicycle and Hiking Path

Saline and Howard Counties

* Slater Public Works Dept--Wells and Treatment Plant, Glasgow Area.
  Marshall Public Works Dept--Wells, Marshall Area.

* State Rte 240 Highway Bridge and Pavement, 2 Lanes, Glasgow Area.
* Missouri Farmers Association--General Agricultural Products Handling and Materials Supply River Port Facility, Glasgow Area.
* Gateway Western Railroad Bridge and Tracks, Glasgow Area.

Chariton County

Brunswick Public Works Dept--Sewage Treatment Facility.
* Brunswick River Terminal--General Agricultural Products Handling and Materials Supply Facility, Brunswick Area.

Saline and Carroll Counties

* Waverly Public Works Dept--Wells, Waverly Area.
* State Rte 41 Highway Bridge and Pavement, 2 Lanes, Miami Area.
* Missouri Department of Conservation--Grand Pass Conservation Area, public access areas, electric water pumping stations.
* Gateway Western Railroad Tracks
* Union Pacific Railroad Tracks

LaFayette and Carroll Counties

Higginsville Public Works Dept--River water pump station
* US 65 and State Rte 24 Highway Bridge and Pavement, 2 Lanes, Waverly Area.
* State Rte 10 Pavement, 2 Lanes, Norborne Area.
* Atchison, Topeka and Santa Fe Railroad Tracks
* Gateway Western Railroad Tracks
* Union Pacific Railroad Tracks

LaFayette and Ray Counties

* State Rte 13 Highway Bridge and Pavement, 2 Lanes, Lexington Area.
* State Rte 10 Pavement, 2 Lanes, Hardin Area.
* Atchison, Topeka and Santa Fe Railroad Tracks
* Gateway Western Railroad Tracks
* Union Pacific Railroad Tracks

2. In addition to the uses listed above are those on public and private lands containing polluted sites. Most prevalent are underground storage tanks for fuel and hazardous materials. Several thousand of these tanks exist statewide, with a proportionate share in the floodplains. In addition to buried tanks are dump sites of hazardous materials that range from chemicals to radioactive materials.

Conclusions

The single most important step in preventing floods is stabilizing the channel and banks of the river. This step is followed with the construction of flood control levees and stormwater runoff detention lakes or structures with beneficial water level and water release policies. This having been accomplished over the past few decades, barge traffic, as a form of transportation providing access to domestic and world markets, has come to the states along and west of the Missouri River. Additionally, with channel and bank stabilization comes the ongoing essential benefit of a stabilized river channel that cannot meander and wash out roads, farms, levees and other public and private developments and infrastructure needed for the welfare, health and safety of the population.

Currently of utmost importance to Missouri and adjoining states are channel and bank stabilization programs, barge traffic, levee repair programs, beneficial water level and water release policies and other programs to prevent flooding. The elimination of any of these programs, uses and policies is simply not a viable option for the future management of the Missouri River and the resources in the floodplain. The elimination of these programs would lead to the eventual destruction, abandonment, relocation or alteration of the all of the above listed developments, uses and activities. In Missouri, tens of billions of dollars are at stake to make the welfare, social, economic, safety and infrastructure adjustments that will be required. Not included with this cost are the cleanup costs to protect the environment that could otherwise be avoided. Below are listed many of the adjustments and probable costs that would be required if the bank and channel stabilization structures and the navigation channel were done away with.

Private Development

1. The greatest impact on the private sector would be economic in nature. Jobs in the floodplain would be completely eliminated, creating unstable economic conditions locally by undermining property tax bases that support schools, fire protection districts, regional libraries, hospitals and county and city governments. Several million dollars annually are at stake in property taxes alone.

2. Farming takes place on the greatest amount of area in the floodplains. Without channelization and levees to prevent annual flooding, modern mechanized farming operations would cease in the river bottoms. This would create ruinous economic hardships in the billions of dollars for the farmers, local agri-businesses and rural communities. Continued erosion of the river bank allows for the advancement of river waters towards levee embankments in the immediate area. When the erosion is left unchecked, levees are eventually undermined by erosion to the point of levee failure. When levees are realigned land-side, landowners lose arable land. These levees on private and public properties protect not only tillable lands but also vital public infrastructure. Substantial stream bank erosion has occurred downstream several hundred feet and outside of the immediate area of dikes that have been cut by the USACE to provide shallow water habitat. This erosion has resulted in a substantial and a measurable increase in area of shallow water habitat at some locations. Such unchecked erosion by the USACE results in the taking of property, both private and public. For the private land owner there is a monetary loss with the loss of his/her land. Since property taxes are determined from land measurement to the "high bank of the river," the landowner will pay real estate taxes on land he/she no longer owns because it has been washed away. Upon readjustment of taxable acreage at the landowner's expense, local entities lose tax base for the support of schools and community colleges, roads, libraries, public water supply districts, fire protection districts, ambulance districts and clinics, etc.

3. The private transportation industry of barge lines would be adversely affected. Without a channel stabilization program to maintain adequate water depths for barge traffic, this form of transportation would cease. If this method of transportation were eliminated, the state of Missouri would not only loose existing businesses and jobs, but would forever be unable to develop and enjoy the economic benefits of viable industries utilizing river transportation. The elimination of barge traffic on a inland waterway the size and length of the Missouri River and its tributaries would be inconsistent with the future needs of a modern industrialized society and economy. The inland river waterways in Europe have been fully developed and have been in heavy use for nearly 200 years. Other developing nations are rapidly developing their river transportation systems. To illustrate this point, an article in the November 1997 issue of "SOYBEAN DIGEST" illustrates how Brazil has cut freight costs $30 per

metric ton with the startup of barge traffic on the Amazon River. The only substitution for river barge freight would be less efficient truck and rail transportation. Private industry sources have indicated that rail and truck transportation would have to be expanded 300 percent in the area of the Mississippi and Missouri Rivers. This would result in more trackage and highway construction. Lack of maintenance of the navigation channel is threatening its continued functionality for providing navigation and flood conveyance. The navigation channel needs to be maintained and operated at its original project design authorization, which includes channelization and bank stabilization structures, depth and flow.

4. The private transportation industries of railroads and fuel pipelines would be adversely affected. Without channel stabilization and levees, the river would meander across the full width of the floodplain washing out railroad bridges and roadbeds, thereby forcing the railroads into a continuous high cost maintenance program or causing them to eventually abandon or move their rail lines to other locations at a cost of billions of dollars. Fuel pipeline companies would be affected in the same way. At a cost of hundreds of millions of dollars, pipelines would have to be either buried deeper and/or relocated out of the floodplain. Added to these would be the costs associated with the cleanup of a spill resulting from a line that ruptured as a result of being exposed by river currents.

Public Development

The greatest impact on the public sector would be the enormous cost of abandonment and relocation of existing facilities and improvements at the taxpayer's expense. In terms of public facilities, hundreds of billions of dollars are at stake.

1. The river provides a great abundance of water for present and future needs for the central population of Missouri. At over 1,600 locations in Missouri, water is taken either directly from the river or from shallow alluvial wells supplied with water from the river through the sandy aquifers in the river bottoms around the wells. With an unfettered river, hundreds of millions of dollars would have to be spent on improvements to protect well sites and potable water treatment plant sites from flooding and scouring damage. In some cases, alternative sources of water would have to be developed at a cost of hundreds of millions of dollars because uncontrolled meandering of the river would force abandonment of existing facilities. If alternative sources of water are insufficient for these cases, the growth, general welfare, health and safety in the affected communities would be stymied at great social cost.

2. The same problems with potable water supply facilities would also apply to existing wastewater treatment facilities. For the general health and safety of the population, these facilities must be operated without interruption from uncontrolled flooding and scouring of the river. The only alternative for these facilities is abandonment and relocation. An example of this would be the wastewater treatment for Jefferson City, Missouri, and the wetlands wastewater treatment units for Columbia, Missouri. In Missouri and adjoining states, the cleanup and relocation costs to the taxpayers would amount to tens of millions of dollars.

3. Without its meandering and flooding controlled, the river would scour out, dislodge and break up power, fuel, water and telecommunication lines. Abandonment and relocation of hundreds of miles of these utilities amounting to hundreds of millions of dollars would be required. Even minor flooding can damage lines and cause an interruption of service to industries and communities directly affecting jobs and public safety.

4. With an unfettered meandering river, hundreds of miles of county, state and federal roads in the flood plains not directly associated with bridges would be permanently closed. The affected county public works departments and the US Army Corps of Engineers place a value on these roads from $46,100 to $500,000 per mile [US Army Corps of Engineers (USACE) value 1994]. The Missouri Department of Transportation places a value on 2 lane state roads at $1,250,000 per mile [Missouri Department of Transportation (MODOT) 1997]. Loss of these roads would cut off access to private property and public access to developed wildlife and conservation areas.

5. Roads leading to bridges would eventually sustain catastrophic damage from the freely meandering river. As roads leading to the existing bridges are washed out, additional bridge works amounting to several miles in length for each bridge would eventually have to be built above the floodplains to replace the washed out roads. An example of this has already been partially started across the floodplain at a cost to taxpayers of $9,100,000 on State Rte 19 north of Hermann. Heavy duty spans, like those presently across the main channel, would eventually have to be built to span the floodplain between the high points on each side of the valley to allow the river to meander freely beneath them. This would amount to hundreds of miles of bridge structures costing tens of billions of dollars. For economy, the bridges would have to be built across the narrowest portions of the valleys. This would require collector roads carrying traffic leading to the bridges to be rerouted on higher ground to provide new bridge approaches. This would amount to hundreds of miles of new roads costing billions of dollars. Dramatic examples of this would be US 40 near Chesterfield, State Rte 47 near Washington, US 63 near Jefferson City, US 40 near Boonville and State Rte 24 near Carrollton. The estimated cost for bridge works on the Missouri River is $175.00 per square foot, and for two lanes of pavement on land the cost is $1,250,000 per mile, including land. As an example, to construct bridge works to span the un-bridged 8,000 foot flood plain on US 63 & 54 in Callaway and Cole Counties (Jefferson City, Missouri) with a 4 lane highway with a 28 foot road bed with 8 foot shoulders at today's prices, the probable estimated cost would be $123,200,000. For a 5 mile re-routing of 4 lanes of US 63 at $2,500,000 per mile, the probable estimated cost would be $12,500,000. For a 39 mile re-routing of 2 lanes of MO Rte 94 at $1,250,000 per mile, the probable estimated cost would be $48,750,000. For just these roads and no others in area, the probable estimated cost would total $184,450,000. With inflation and the continued need for more roads in the state, this figure will only get bigger.

6. Without channel and bank stabilization, the meandering and flooding of the river will destroy many of the capital improvements and efforts by federal and state agencies to establish wildlife habitat and most particularly waterfowl habitat and public access. Included with this use are some state parks. The altered landscape will force wildlife agencies to abandon present wildlife management and public access practices and adopt alternate practices that are neither desired by the agencies nor in the best interests of wildlife or the public. The citizens of the state of Missouri have invested tens of millions of dollars in acquiring and maintaining these public areas and they are not interested in loosing access to and use of them.

7. In addition to the above environmental concerns is the cost of cleanup of environmentally sensitive or polluted areas that are presently being properly managed and pose no threat. As these areas are threatened and exposed by the meandering river, millions of dollars at taxpayer expense will have to be expended to cleaned up the existing sites and develop new storage sites.

8. If the floodplain were allowed to return to its natural state, water levels would have to rise to carry the same flows that can be carried at present lower predicted levels. This would come about with uncontrolled woody and weedy growth making the over-bank areas "rougher" than the "roughness

factor" used in the flood profile model by FEMA for establishing the present regulatory flood level elevations and "regulatory floodway" in the floodplains. This change in roughness would cause the water to rise and thereby jeopardize existing floodplain development regulations and FEMA flood insurance programs in the river floodplain and the tributaries along the river.

Habitat Recovery Activities

General

A commitment of nationwide tax monies for the purchase of privately owned lands to be converted into wildlife refuges can be viewed as a commendable act since it indicates a willingness to provide for better wildlife habitat. This is particularly noteworthy in terms of cost since these purchases add to the ten of thousands of acres already in public hands.

Originally, the federal government owned all of the land and settlers acquired and developed it for their use and sustenance. After the land passed into private hands, the people established various local governments, which developed public infrastructure and adopted various laws and regulations to which all landowners had to adhere. This was done for the benefit of society and has been instrumental in providing the high standard of living in the country.

With land now being sold back to the government, however, the local laws and powers are not conveyed with the lands passing into the ownership of state and federal governments. The result is that landowners in farming and other communities now find a different [government] landowner next door with special privileges amounting to exemptions from state and local statutes, regulations and taxes. These privileges include the fact in the case of non-payment of property and use taxes, agency property cannot be sold on the Court House steps for back taxes. Another privilege afforded government property ownership is that the property can neither be condemned for worthwhile public projects nor returned to private hands to revitalize local economies. With the 100 percent loss of personal property tax combined with ever-decreasing tax revenues from real property tax, local entities are realizing unacceptable tax revenue losses impacting their ability to provide essential services and debt service.

Substantial acres of land have been purchased or leased by agencies, public entities and private individuals for purposes of constructing shallow water habitat and other conservation, recovery and recreational uses and investments. There exists a myriad of programs and projects by state and federal agencies and private land uses, resulting in much duplication of conservation and recovery efforts. A partial list of Federal activities would include:

MRRP involving chutes, wetlands, etc.

Big Muddy Wildlife Refuge and Squaw Creek Wildlife Refuge of the US-FWS

Acreages purchased by the USACE and construction projects on state properties to mitigate the effects of channelization and bank stabilization

Wetlands delineations for 404 permits

US Department of Agriculture (USDA) programs of the Farm Service Agency (FSA) and Natural Resources and Conservation Service (NRCS) that include:

Wetland Reserve Program (WRP)
Emergency Wetland Reserve Program (EWRP)
Conservation Stewardship Program (CSP) and CP-23 practice of the Conservation Reserve Program (CRP)
Conservation Easements including USDA requirements on wetlands, farmed wetlands, etc., that regulate land use of private properties
Missouri Department of Conservation (MDC) owns thousands of acres of land in the flood plains where MDC constructed public access areas, wetlands, wildlife habitat and refuges
Private property purchased by hunt clubs

All of these lands with their present uses plus those authorized to be part of recovery amount to hundreds of thousands of acres. The resulting duplication of land uses by agencies combined with those of private individuals has become such a vast area of land that local businesses and county tax bases are being destabilized. There is not a data base providing the identification and compilation of all the acreages, public and private, and activities and land uses authorized and in agency possession and/or control that are taking place for every conservation or recovery program. Local private interests, particularly farming interests, and taxpayers are confused by the myriad of programs and projects involved and want an accounting of all the lands involved before more lands are purchased.

All of these land uses, when located adjacent to private agricultural lands, are incompatible with agricultural uses and their existence imposes hardships on the agricultural community. Most of the hardships are related to agency land management and policies. While working for landowners and/or levee and drainage districts, I encounter one or more times every six months tracts that are subject to requirements of agency ownership or regulation. Levee and drainage issues impose the greatest managerial hardships. Agencies do not or are not required to cooperate with adjacent landowners with construction or maintenance of drainage and flood protection facilities. This immediately affects drainage and flood protection of farm fields as well as highways and municipal and public infrastructure. The lack of local tax revenue support by the agencies imposes the greatest policy hardships.

This grates against the conscience of a farming community and heightens a widespread level of disgust, since the private landowners are watching their own tax dollars going into the government operations against their own interests. At the present, managers of government properties think they are being good neighbors and believe they are implementing a good neighbor policy when in reality as long as they enjoy exemptions to laws that adjoining landowners have to adhere to, their presence will always be a drag on a farming community by not providing any constructive benefits to the community.

With government purchase of the land, as with that in private hands, come responsibilities, including paying taxes. At present, the local taxpayers are carrying an ever-increasing burden both culturally and economically. The Federal government's record of making payments "in lieu of taxes" upon the initial acquisition of land shows a substantial decrease in payments to local entities. These decreases come not only from the complete elimination of agricultural rental income from the properties upon completion of wildlife habitat development, but also from reduced annual Congressional appropriations for offsetting tax revenue losses to local taxing entities. Combined with the reduction in tax revenues is a correlating reduction in local business. With reduced employment opportunities comes reduction in local population. Those that have to move away have essentially become "conservation refugees."

In their present form, the programs and policies of agency purchases of private lands converted into wildlife conservation areas are totally incompatible with farming communities. Below is a listing of some of the changes that need to be made in order for wildlife conservation development and recovery operations to be valued, respected and openly supported in their respective communities and states.

1) Payments-in-lieu-of-taxes must be made directly to the affected political entities and continuously adjusted, based upon the current market value for land in the surrounding area.

2) Payments in-lieu-of taxes must be made to all political entities supported and duly authorized in the community.

3) The bonding capacity of an entity cannot be lowered due to the presence of agency-owned land. The government agency must underwrite all bonded indebtedness assigned to their lands and guarantee sufficient payments in-lieu-of taxes to support increases in indebtedness approved by the voters.

4) If payments-in-lieu of taxes are discontinued for any reason, the lands must be sold on the open market to a tax revenue-producing owner or the affected public entity with the approval of the voters.

5) Basically the lands are to be used for the purposes of wildlife habitat. However, applicable portions of such lands shall also be considered as being held in trust to be readily developed by local entities into worthwhile public works projects such as potable water supplies, wastewater treatment facilities, parks, road, railroads, drainage and flood control systems and port facilities and authorities.

6) Agency lands must be subject without privilege or exception to all local laws of condemnation and powers of eminent domain.

7) The operation of agency lands must be subject to all local laws dealing with zoning and development regulations, noxious weeds, fire protection, floodplain development regulations, etc.

8) Public or private ownership, or the operation of wetlands and other wildlife areas, shall not be deducted from the total of lands for the purposes of determining benefit/cost ratios to meet the requirements of eligibility for government grants and/or 84-99 funds for the repair of levees and other flood control and drainage structures.

9) The agencies must not operate their lands in such a manner as to change the character of the existing land use on adjoining properties. Judgments and awards should be granted liberally in favor of existing land use on adjacent privately owned lands and liberally against agency policies that are detrimental to adjoining land uses.

10) Spring pulses cause flood-related damage to local landowners and public facilities in three ways. High water levels eliminate the functionality of drainage pipes; intermittent flows cause scouring of river banks and undercut levees; and spring pulses during periodic spring time flood flows will overtop and destroy area levees and cause flood depths up to more than 20 feet. Given these three negative outcomes of damage from spring pulses, it is recommended that other methods for conservation of species be implemented.

11) Local landowners believe that the agencies already have enough land authorized in sum total to meet the requirements of the recovery program. They want public and private lands not now considered as

part of the total acreage authorized to be owned or controlled by the USACE and the US-FWS to be included as already counting toward the targeted amount of acreage authorized for the habitat recovery program. Local landowners believe that they are making a sufficient commitment toward the recovery effort and continued acquisitions of land for recovery purposes are imposing too great a hardship on them. Agencies need to cease land acquisition or control of any additional lands for the purposes of conservation programs or recovery until:

a) All existing public and private lands utilized for conservation or recovery purposes are identified and categorized in a data base with a conservation or recovery value that is consistent with like categories of lands authorized for conservation programs or recovery;

b) The respective acreages of such identified and categorized public and private lands are included in the targeted amount of lands needed for conservation programs for recovery purposes.

12) Government must provide for payment of losses, both public and private, resulting directly from recovery practices. This would include flood insurance and facility and property repairs, for example.

13) The agencies should not enjoy special privileges on the lands that they control or own. As noted above, some of these special privileges include: a) the non-payment of taxes for support of levees and drainage; b) the non-payment of other taxes or substantially reduced payments of other taxes that are not on par with those levied on adjoining private tracts both at the time of purchase and when land values change; c) the loss of tax base resulting from the destruction of improvements (buildings) and loss of personal property (livestock and machinery) upon initial purchase of property; d) the provision that agency lands cannot be sold for non-payment of taxes; e) the fact that rights-of-way cannot be condemned for public uses; and f) total exemption from local land use and zoning ordinances and noxious weed and plant control ordinances.

14) Changes in agency policies should be designed to gain more positive support for recovery and restoration projects. To help increase support for these projects and to make them more welcome to local landowners and public entities, the following is recommended: 1) operation of wetland banks on agency properties for use by private property landowners; 2) adherence to local zoning and noxious weed laws; 3) input from local stakeholders on the use and features of properties to be purchase by agencies. This would be implemented by public hearings before land purchases. Such uses and features would include items that benefit adjoining landowners and entities, and would include but not be limited to temporary construction and permanent easements for drainage and levee works and assignment of flood protection and drainage benefits, etc.; and 4) halting the deposition of project earthen spoils materials in streams by identifying alternative uses for earthen spoils materials, such as using them for augmentation of area levees.

15) The MRERP should have a policy to monitor all stream bank erosion sites on public and private lands and measure the resultant increases in shallow water habitat area and apply such additional areas as they occur toward the total authorized acreage for the development of shallow water habitat for recovery purposes.

16) The MRERP should have provisions for changing the policies and the scope of activities in the MRRP.