FINAL REPORT FOR THE

WATER SUPPLY STORAGE REALLOCATION

JOHN REDMOND DAM and RESERVOIR, KANSAS

VOLUME III

United States Army Corps of Engineers; Tulsa District
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US Army Corps
of Engineers ®
Tulsa District

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EXECUTIVE SUMMARY

REPORT FOR THE WATER SUPPLY STORAGE REALLOCATION AT JOHN REDMOND DAM AND RESERVOIR, KANSAS

John Redmond Dam and Reservoir is located on the Neosho River in Coffee County, Kansas. The reservoir is the lower unit in a system of three projects in the upper Neosho River Basin in Kansas.

The reallocation study and subsequent report is in response to Congressional Senate Report 106-58 to study raising the conservation pool at John Redmond Dam and Reservoir to meet the terms of two existing water supply agreements with the state of Kansas. Storage available for water supply purposes in John Redmond has been steadily depleted by sediment redeposition such that there is infringement on State of Kansas water supply agreements.

The Kansas Water Office (KWO) had entered into water agreements with the Wolf Creek Nuclear Power Plant (WCNPP) based on the 1975 water supply Contract DACW56-75-C-0029 with the United States. The KWO had to assure the Wolf Creek Nuclear Power Plant that it would have a guaranteed amount of water supply before the nuclear plant would be built.

Supplemental Agreement No. 1 to Contract No. DACW56-75-C-0029 signed July 21, 1978, modified and added "ITEM 1" to ARTICLE 1 – WATER SUPPLY STORAGE. Item 1 stated:

> *"When, in the opinion of the Contracting Officer, the findings of such survey indicate a project purpose will be affected by unanticipated sedimentation distribution, there shall be an equitable redistribution of the sediment reserve storage space among the purposes served by the Project including municipal and industrial water supply. Adjusted pool elevations will be rounded to the nearest one-half foot."*

The total sediment deposited in the reservoir through year 2014 is now estimated to be approximately 95,000 acre-feet. This is almost twice the level of 51,000 acre-feet of sediment storage projected in year 1976. The projected sediment storage is now about 16.1 percent of the total storage of John Redmond Reservoir.

Based on the evaluation of several alternatives, the preferred alternative is to increase the top of the conservation pool elevation from 1039.0 feet National Geodetic Vertical Datum (NGVD) to 1041.0 feet NGVD to meet current water supply agreements and water quality demands.

Raising the conservation pool two feet into the flood control pool will result in an estimated 3.2 percent reduction in flood storage. An analysis of downstream flow-duration and frequency curve-duration data showed little measurable increases in flood stages at downstream locations of John Redmond Reservoir.

The Corps of Engineers with consultation with the US Fish & Wildlife Service (USFWS) evaluated and recommended six environmental mitigation/replacement measures. Replacement measures for this reallocation report refer to actions that the State of Kansas has paid for and completed, that have been implemented in conjunction with the proposed reallocation. The recommendations are:

1. Strawn boat ramp and Parking Area Replacement
2. Replacement of Strawn Flats and Goose Bend #4 Dikes, Outlet Works, and Pumping Facilities
3. Neosho Basin Management Plan
4. Annual Water Level Management Plan.
5. Post-Development Impact Evaluation Studies for Wetland Development above elevation 1041.0 feet NGVD.
6. Replacement of 243 acres of Wetlands and 166 acres of Riparian Woodlands in the Flint Hills National Wildlife Refuge

Total projected cost of replacement measures is $194,792, for which the State of Kansas has completed payment for replacement features as of 2012, satisfying all of their obligations as described in the Supplement to the Final Environmental Statement (SFES).

Authority for the reallocation of storage is provided by Public Law 85-500, Water Supply Act of 1958. Engineering regulation guidance stipulates that Congressional approval would normally be needed for storage reallocation that would involve major structural or operational changes. However, 15% of total storage capacity allocated to all authorized project purposes or 50,000 acre-feet, whichever is less, may be reallocated for water supply at the discretion of the Commander, United States Army Corps of Engineers. Due to the atypical nature of this reallocation, HQ has determined that the Reallocation Report and Agreement Amendments will be forwarded to the ASA (CW) for approval.

Since its initiation, this reallocation study has been delayed for a number of years directly related to levee safety issues associated with the Hartford levee at John Redmond Reservoir. These issues, which prohibited a conservation pool raise, have now been resolved by repairs to the levee.

This reallocation would allow the Federal government to meet the intent of its initial 1975 agreement with the KWO for water supply contracts.

REPORT FOR THE
WATER SUPPLY STORAGE REALLOCATION
AT JOHN REDMOND DAM AND RESERVOIR, KANSAS

February 2013

1.0 PURPOSE

The reallocation study and subsequent report is in response to Congressional Senate Report 106-58 to study raising the conservation pool at John Redmond Dam and Reservoir, Kansas. Regarding John Redmond Dam and Reservoir, Senate Report 106-58 stated:

> *The Committee has included an additional $525,000 for the Corps to study raising the conservation pool at John Redmond Dam and Reservoir, KS.*

The State of Kansas requested the study because the existing water supply storage will be inadequate to meet current and future water supply demands. In 1975, the State of Kansas and the Federal government entered into a water storage agreement for an estimated 34,900 acre-feet of water supply storage remaining after 50 years of sedimentation. The total conservation pool was estimated to contain 62,500 acre-feet of storage after 50 years of sedimentation. Storage available for water supply purposes in John Redmond has been steadily depleted by sediment deposition. The deposition of sediment has impacted the amount of water that the storage can yield.

Current estimates indicate that sediment has been collecting in the conservation pool, thereby reducing the conservation pool and water supply storage. Due to a significantly larger amount of sediment accumulating in the upper end of the lake, the current estimated amount of conservation storage that would be available in year 2014 is 40,100 acre-feet. A redistribution of the storage remaining between the flood control and conservation pools is needed to make an equitable redistribution between project purposes. Based on the evaluation of several alternatives, the preferred alternative is to increase the top of the conservation pool elevation from 1039.0 to 1041.0 feet National Geodetic Vertical Datum (NGVD).

This study considers reallocation of storage under Engineer Regulation (ER) 1105-2-100. Authority for the reallocation of storage is provided by Public Law 85-500, Water Supply Act of 1958. Engineering Regulation guidance stipulates that Congressional approval would normally be needed for reallocation that would involve major structural or operation changes. Fifteen percent of total storage capacity allocated to all authorized project purposes or 50,000 acre-feet, whichever is less, may be reallocated for water supply at the discretion of the Commander. Since 17,200 acre-feet of flood control storage is being reallocated (3.28% of existing flood storage), the proposed reallocation can be approved by the Commander. Due to the atypical nature of this reallocation, the Reallocation Report, and the Final Supplement to the Final Environmental Statement will be forwarded to the ASA (CW) for approval and signature on the Record of Decision.

Since its initiation, this reallocation study has been delayed for a number of years directly related to levee safety issues associated with the Hartford levee at John Redmond Reservoir. These issues, which prohibited a conservation pool raise, have now been resolved by repairs to the levee.

2.0 BACKGROUND OF JOHN REDMOND DAM AND RESERVOIR PROJECT

2.1 Project Authorization, Location, and Pertinent Data

The Flood Control Act of 17 May 1950 (Public Law 81-516, House Document 442, 80th Congress, 2nd Session) authorized the construction of Strawn Dam and Reservoir. Public Law 85-327, dated 15 February 1958, renamed the project "John Redmond Dam and Reservoir." The project was authorized for flood control, water supply, water quality, recreation purposes, and is also operated for wildlife objectives. Construction was initiated in June 1959, and the project was placed in full flood control operation in September 1964. All major construction was completed in December 1965.

The conservation pool of John Redmond Reservoir was initially at elevation 1036.0 feet NGVD. Supplement No. 3 to Design Memorandum No 4, John Redmond Dam and Reservoir, Kansas, outlined future conservation pool increases from elevation 1036.0 to 1039.0 when ultimate development of the reservoir was achieved. Ultimate development was implemented at John Redmond Reservoir in January 1976. Table 1 outlines actions related to conservation pool elevations of John Redmond Reservoir.

Table 1: Actions and Conservation Pool Elevations by Year

Year	Action	Conservation Pool Elevation, Feet (NGVD)
1950-1958	Flood Control Act passed (Public Law 81-516); approved construction of Strawn Dam (John Redmond Dam and Reservoir).	1033.0 to 1039.0
1959-1965	Construction period	1036.0
1975	Agreement with Kansas Water Office (KWO) for 55.84% of available water between elevations 1020.0 and 1039.0 feet for water supply storage. Total 27,450 acre-feet under contract.	1036.0
1976	Ultimate operational plan implemented to raise conservation pool to elevation 1039.0 feet	1039.0
1996	Water supply contract with the KWO for additional undivided 20.34% interest of usable water between elevations 1020.0 and 1039.0 feet. Estimated to be 10,000 acre-feet. (Total 37,450 acre-feet)	1039.0
2005	Proposed operating plan to raise the conservation pool to elevation 1041.0 feet.	1041.0

John Redmond Dam and Reservoir, is located on the Neosho River in Kansas. The reservoir is located at river mile 343.7 on the Neosho River, about 3 miles northwest of Burlington in Coffee County, Kansas. John Redmond is the lower unit in a system of three projects that also includes Marion Dam on the Cottonwood River and Council Grove Lake on the Neosho River (Figure 1). John Redmond Dam and Reservoir is designed primarily for flood control, water supply and water quality in the upper Neosho River Basin in Kansas (Figure 2). Figure 2 compares the existing and proposed conservation pool elevation based on the reallocation of flood control storage to water supply storage. Pertinent data for John Redmond Dam and Reservoir is outlined in Table 2.

Figure 1: Neosho River Basin in Kansas

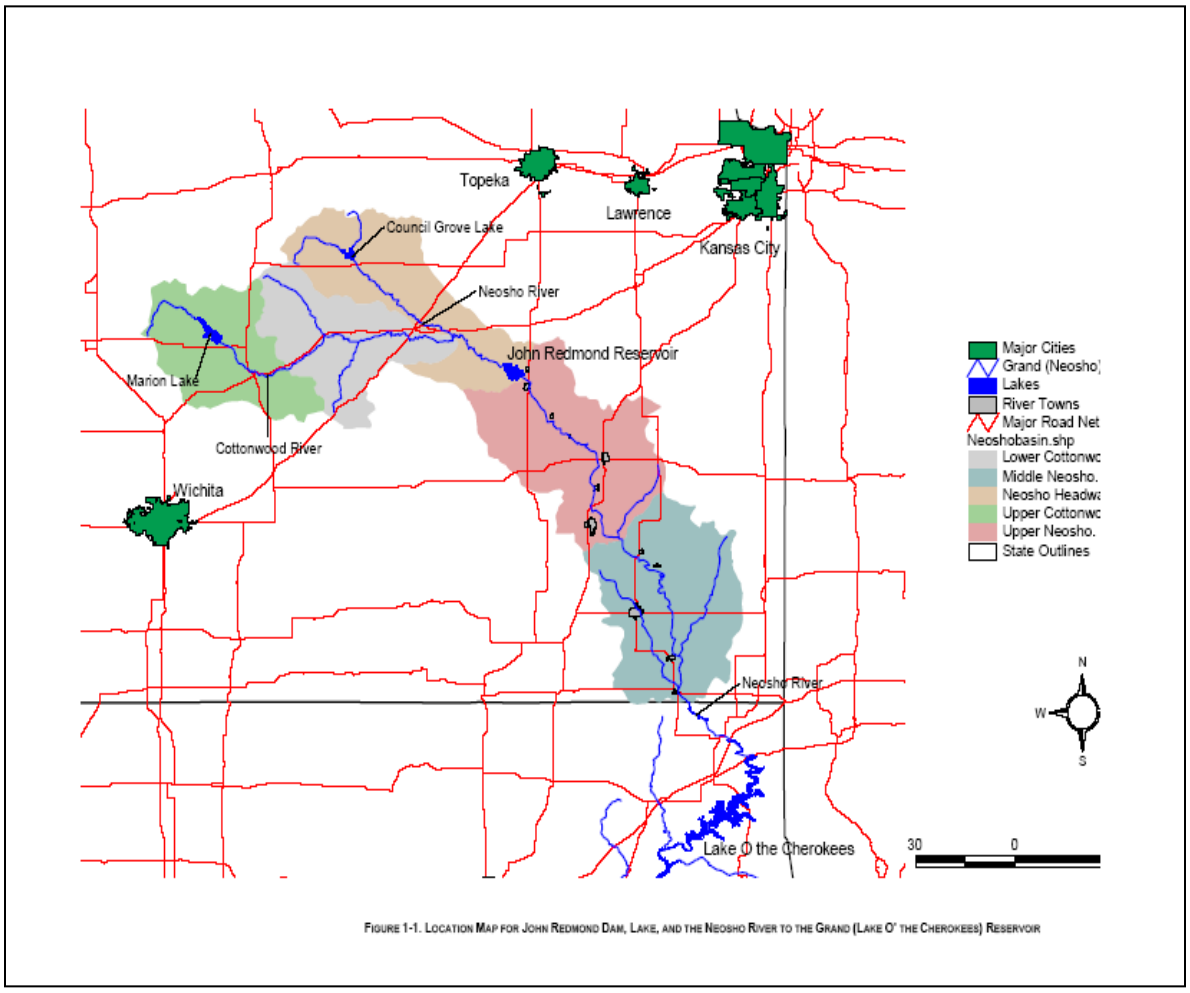


FIGURE 1-1. LOCATION MAP FOR JOHN REDMOND DAM, LAKE, AND THE NEOSHO RIVER TO THE GRAND (LAKE O' THE CHEROKEES) RESERVOIR

Figure 2: John Redmond Dam and Reservoir Project Map

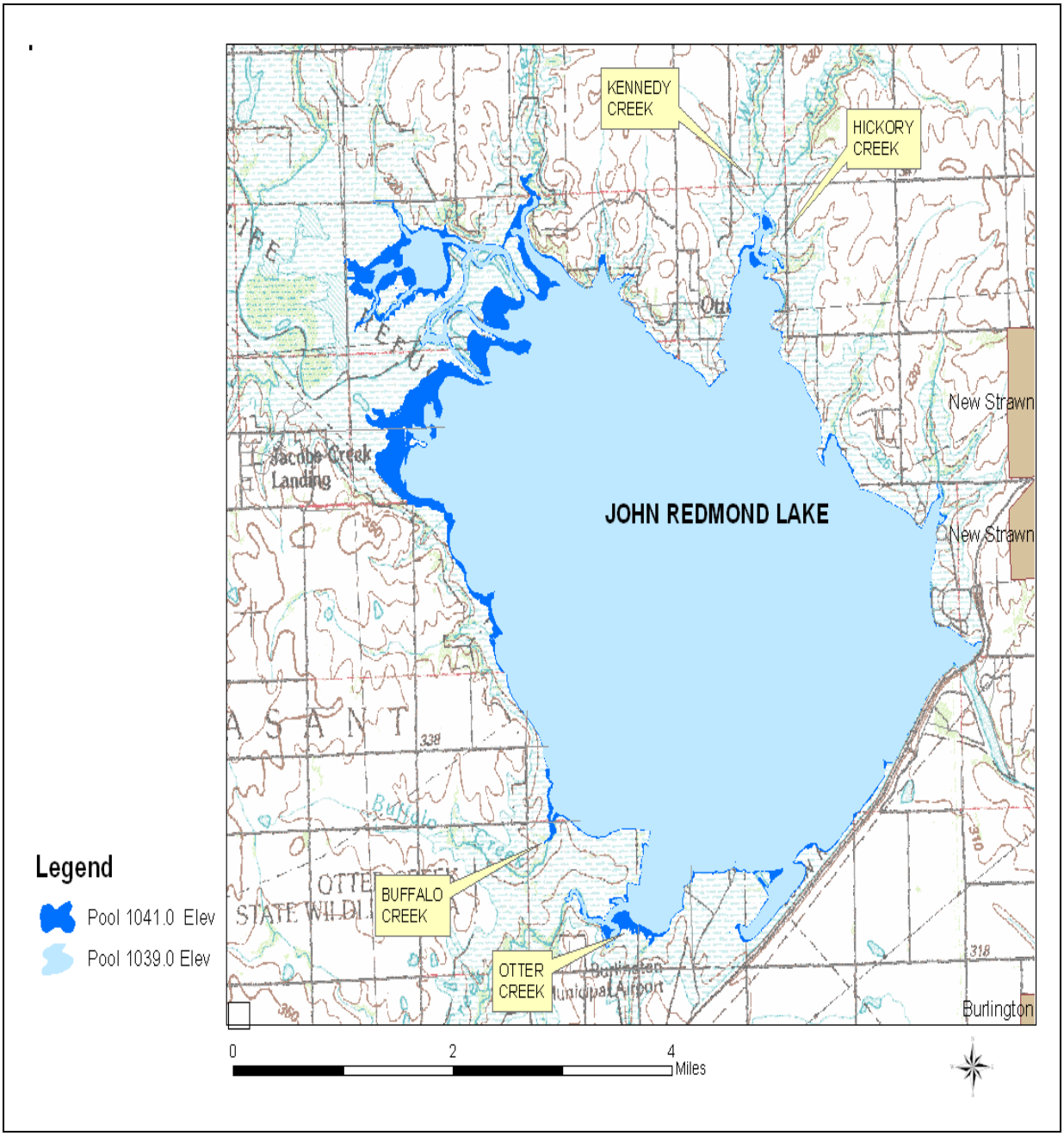


Table 2: John Redmond Reservoir and Dam Pertinent Data

Dam Location	
State:	Kansas
County:	Coffey
Nearest Community:	Burlington
River:	Grand (Neosho) River
Mile:	343.7
Latitude:	North 38.3
Longitude:	West 95.7
Upstream Federal Projects:	Marion Reservoir Council Grove Lake
Federal Projects Downstream:	Fort Gibson Lake McClellan-Kerr Arkansas River Navigation System
Other Non-Federal Projects:	Grand Lake O' the Cherokees (Pensacola Dam) Lake Hudson
Drainage Area:	3,015 square miles
Downstream Area:	7,283 square miles
Authorization, Project Purposes, and History of Construction	
Authorizing Legislation:	Flood Control Act of 1950, Public Law 81-516, Project Document HD 442 80th Congress, 2nd Session
Project Purposes:	Flood Control, Water Supply, Water Quality Control, Recreation, Wildlife
History of Construction:	
Construction Began:	June 1959
Closure of Embankment:	September 1963
Full Flood Control Operation:	September 1964
Major Construction Completed:	December 1965

Type of Structure

Rolled impervious earth fill embankment and a gated ogee weir, with concrete spillway located in the left abutment

Total Dam Length, consisting of-	21,704 feet
Embankment, earth-filled	20,740 feet
Two bulkhead sections, concrete non-overflow	300 feet
Concrete Spillway, including piers and abutments	664 feet
Spillway and Outlet Works	
Spillway	Net operating width 560 feet
Tainter Gates	Fourteen 40- by -35 foot high
Low-flow pipes	Two 24-inch-diameter with 130 cfs discharge capacity
Spillway capacity, maximum pool (elevation 1074.5)	578,000 cfs
Top of flood control pool (elevation 1068.0)	428,000 cfs
Bank-full capacity of channel below dam	15,000 cfs

Lake Data

Feature	Elevation	Area	Capacity	Equivalent Runoff
	(feet)	(acres)	(acre-feet)	(inches)
Top of Dam	1081.5	-	-	-
Top of Gates and Flood Control Pool	1068.0	34,331	574,918	3.36
Flood Control Storage	1039.0-1068.0	-	524,417	3.68
Top of Conservation Pool	1039.0	8,084	50,501	0.38
Conservation Storage	1020.0-1039.0	-	50,501	0.38
Spillway Crest	1033.0	4,801	9,980	0.01
Bottom of Conservation Pool	1020.0	0	0	-
Proposed Conservation Storage	1041.0	-	67,700	-

Source: Tulsa District Pertinent Data Book, March 2004, lake data based on year 2000 resurvey

2.2 Operational History

Construction of John Redmond Reservoir was completed for flood control operation in September 1964. All major construction was completed in December 1965. Immediately after construction was completed, the top of conservation pool elevation was changed from 1033.0 to 1036.0 feet NGVD. The initial reservoir design documented future changes to the conservation and flood storage pool elevations. Ultimate development of the reservoir was initiated on January 1, 1976. Ultimate development of the reservoir provided for a change in the conservation pool from 1036.0 to 1039.0 with 82,700 acre feet of storage.

Leases have been signed with the U.S. Fish and Wildlife Service (USFWS) and the Kansas Department of Wildlife & Parks (KDWP). The KDWP has license to 1,472 acres of project lands (Otter Creek Game Management Area) for fish and wildlife management. The USFWS is under cooperative agreement for about 18,500 acres of project land and water areas for operation of the Flint Hills National Wildlife Refuge (FHNWR). The refuge is managed as part of the national wildlife refuge system and much of it is open to public hunting in season.

John Redmond has been in operation since 1965, providing 47 years of flood damage reduction benefits through 2011. The total value of flood damages prevented at July 2012 price levels is $780,475,210; average annual damages approximately $16,600,000. Flood damage prevented is based on development downstream of the project in the 1960's. However, the development in the floodplain downstream of John Redmond is primarily rural and little development has occurred over the years. Recreational use of the lakes at Corps facilities was approximately 148,500 visitors in 2011.

Table 3: Historical Flood Damages Prevented by John Redmond

Year	Flood Damages Prevented ($1,000)'s	July 2012 ENR	ENR	ENR Update Factor	Flood Damages Prevented Current Prices ($1,000)'s
FY 1965	$ 1,592.90	9291.4	971	9.5689	$ 15,242.30
FY 1966	$ 194.00	9291.4	1019	9.1182	$ 1,768.92
FY 1967	$ 1,954.10	9291.4	1074	8.6512	$ 16,905.33
FY 1968	$ 234.00	9291.4	1155	8.0445	$ 1,882.41
FY 1969	$ 1,332.00	9291.4	1269	7.3218	$ 9,752.68
FY 1970	$ 2,505.00	9291.4	1381	6.7280	$ 16,853.70
FY 1971	$ 942.00	9291.4	1581	5.8769	$ 5,536.05
FY 1972	$ 133.00	9291.4	1753	5.3003	$ 704.94
FY 1973	$ 3,763.00	9291.4	1895	4.9031	$ 18,450.42
FY 1974	$ 10,760.00	9291.4	2020	4.5997	$ 49,492.80
FY 1975	$ 4,401.00	9291.4	2212	4.2005	$ 18,486.19
FY 1976	$ 409.00	9291.4	2401	3.8698	$ 1,582.75
FY 1977	$ 1,937.00	9291.4	2576	3.6069	$ 6,986.58

Year	Flood Damages	July 2012 ENR	ENR	ENR Update Factor	Flood Damages
FY 1978	$ 1,540.00	9291.4	2776	3.3470	$ 5,154.45
FY 1979	$ 3,427.00	9291.4	3003	3.0940	$ 10,603.27
FY 1980	$ 3,150.00	9291.4	3237	2.8704	$ 9,041.68
FY 1981	$ 1,042.00	9291.4	3535	2.6284	$ 2,738.79
FY 1982	$ 12,520.00	9291.4	3825	2.4291	$ 30,412.63
FY 1983	$ 3,360.00	9291.4	4066	2.2851	$ 7,678.09
FY 1984	$ 1,968.00	9291.4	4146	2.2411	$ 4,410.39
FY 1985	$ 7,200.00	9291.4	4195	2.2149	$ 15,947.10
FY 1986	$ 8,867.00	9291.4	4295	2.1633	$ 19,182.04
FY 1987	$ 7,583.00	9291.4	4406	2.1088	$ 15,991.08
FY 1988	$ 5,921.00	9291.4	4519	2.0561	$ 12,174.02
FY 1989	$ 2,375.00	9291.4	4615	2.0133	$ 4,781.60
FY 1990	$ 6,175.00	9291.4	4732	1.9635	$ 12,124.77
FY 1991	$ -	9291.4	4835	1.9217	$ -
FY 1992	$ 3,914.00	9291.4	4985	1.8639	$ 7,295.19
FY 1993	$ 60,446.00	9291.4	5210	1.7834	$ 107,798.07
FY 1994	$ 3,278.20	9291.4	5408	1.7181	$ 5,632.22
FY 1995	$ 27,685.00	9291.4	5471	1.6983	$ 47,017.44
FY 1996	$ 6,855.40	9291.4	5620	1.6533	$ 11,333.85
FY 1997	$ 6,246.31	9291.4	5826	1.5948	$ 9,961.71
FY 1998	$ 1,964.36	9291.4	5920	1.5695	$ 3,083.04
FY 1999	$ 73,410.47	9291.4	6059	1.5335	$ 112,574.03
FY 2000	$ 97.25	9291.4	6221	1.4936	$ 145.25
FY 2001	$ 2,934.60	9291.4	6343	1.4648	$ 4,298.69
FY 2002	$ 8,313.51	9291.4	6538	1.4211	$ 11,814.65
FY 2003	$ 2,863.75	9291.4	6694	1.3880	$ 3,974.94
FY 2004	$ 14,202.76	9291.4	7115	1.3059	$ 18,547.23
FY 2005	$ 33,451.79	9291.4	7446	1.2478	$ 41,742.40
FY 2006	$ 26.69	9291.4	7751	1.1987	$ 31.99
FY 2007	$ 18,753.40	9291.4	7967	1.1662	$ 21,870.88
FY 2008	$ 15,872.70	9291.4	8310	1.1181	$ 17,747.25
FY 2009	$ 26,008.52	9291.4	8570	1.0842	$ 28,197.85
FY 2010	$ 12,548.77	9291.4	8802	1.0556	$ 13,246.50
FY 2011	$ 273.47	9291.4	9171.73	1.0130	$ 277.04
Total					**$ 780,475.21**

2.3 Water Supply Agreements

The water supply storage at John Redmond Reservoir is under agreement with the State of Kansas and the Kansas Water Resources Board (KWRB) (now Kansas Water Office (KWO)). The total storage available in the conservation pool based on the 2000 year sediment survey was 50,501 acre-feet. The KWO has two water supply agreements for a total of 37,450 acre-feet of storage. The remaining conservation pool is allocated to water quality and future sediment storage.

Agreement No: DACW56-75-C-0029, signed October 8, 1975, authorized 55.84% of the total storage space in the conservation pool (between elevations 1020.0 and 1039.0) for water supply at John Redmond Dam and Reservoir. This agreement was signed based on a total of 62,500 acre feet of storage remaining at the end of the 50 year project sediment life, providing approximately 34,900 acre feet of water supply storage. Supplemental Agreement No.1 to Contract No. DACW56-75-C-0029 signed July 21, 1978, modified and added "ITEM 1" to ARTICLE 1 – WATER SUPPLY STORAGE. Item 1 states:

> *"Sediment surveys will be made by the Contracting Officer during the term of this agreement at intervals not to exceed fifteen (15) years unless agreed to in writing by both parties. When, in the opinion of the Contracting Officer, the findings of such survey indicate a project purpose will be affected by unanticipated sedimentation distribution, there shall be an equitable redistribution of the sediment reserve storage space among the purposes served by the Project including municipal and industrial water supply. The total available remaining storage space in the Project will then be divided among the various Project features in the same ratio as was initially utilized. Adjusted pool elevations will be rounded to the nearest one-half foot."*

In 1985, a Memorandum of Understanding was signed between the U.S. Army Corps of Engineers and the State of Kansas to establish a cooperative partnership for water supply and water quality operating guidelines on Corps of Engineers reservoirs in Kansas. The terms of the memorandum of understanding called for conservation pool reallocations from water quality to water supply. Water quality release guidelines were also set up to ensure sufficient water quality during drought periods. Terms of the agreement called for the Corps of Engineers to conduct reallocation and National Environmental Policy Act (NEPA) compliance studies as required, and to pursue Congressional approval for future reallocations, if required.

In 1996, a reallocation and environmental assessment report was completed on storage at John Redmond Reservoir, Marion Reservoir, Council Grove Lake, and Elk City Lake in Kansas. In 1996 the initial agreement based on the latest sediment survey, provided 27,450 acre feet of storage for John Redmond. This was for 55.84% of the current estimate of available conservation storage (49,160 acre feet volume at the time of the agreement). The Corps recommendation from this 1996 report was to reallocate an additional 20.34% of usable storage space between elevations 1020.0 and 1039.0. After adjustment for sediment deposits for water storage, 10,000 acre-feet was estimated to be available for water supply. DACW56-96-WS-0003 signed June 26, 1996 reallocated this additional 20.34% (estimated at 10,000 acre-feet) for water supply from water quality for John Redmond Reservoir.

The KWO has a contract with the Wolf Creek Nuclear Generating Plant below John Redmond Dam. The State has also formed a water assurance district with downstream communities for use of the reallocated water quality storage. This storage was purchased to assure that downstream releases would provide water supply when needed. There are 45 active senior and junior water right holders downriver from John Redmond Dam and Reservoir. Table 4 outlines the existing water supply contracts between the USACE and the KWO.

Table 4: Existing Water Supply Storage Contracts as of February 2013

	Approval Date	% Of Water Supply to Usable Conservation Pool	Estimated Storage (acre-feet)	Total User Estimated Storage (acre-feet)
KWRB	10/08/75 (Modified (07/21/78)	55.84	27,450	27,450
KWO	06/26/96	20.34	10,000	10,000
Total		**76.18**	**37,450**	**37,450**

2.4 Sedimentation History

Sedimentation is a natural occurrence that is accounted for in all Corps of Engineers reservoir designs. Flood control, water supply, water quality, recreation, and wildlife habitat are all affected by sedimentation as the reservoir ages. A loss of 36,800 acre-feet of flood storage and 14,200 acre-feet of conservation storage to sediment were estimated when the reservoir was constructed for a total of 51,000 acre-feet of sediment deposition over a 50-year period.

On October 8, 1975, the USACE signed an agreement with the KWO for 55.84% of the conservation storage in the reservoir. At that time, 34,900 acre-feet of storage was estimated for the life of the contract. Surveys since 1975 have revealed a greater depletion of conservation storage with sediment encroaching on water supply and water quality storage. While flood control storage has been affected by increased sedimentation, the greater impact has been the loss of storage in the conservation pool.

In 1976, John Redmond reached the final ultimate development phase as planned. At that time, the conservation pool was raised from elevation 1036.0 to 1039.0. Sedimentation surveys were conducted in 1963 and 1974 to measure and predict future effects that sedimentation would have on the reservoir. In 1976, the total sediment through year 2014 was projected to be 30,800 acre-feet for the flood control pool and 20,200 acre-feet for the conservation pool. The total sediment volume did not change, but 6,000 acre-feet was redistributed from the flood pool to the conservation pool when the conservation pool was raised from 1036.0 to 1039.0

As the conservation pool storage has declined, there has been insufficient water supply storage available to satisfy the KWO's existing water supply agreements with its customers. On June 26, 1996, a water supply agreement between the Corps of Engineers and the KWO was signed

for an additional 10,000 acre-feet. This agreement reallocated 10,000 acre-feet from water quality storage to water supply storage. The KWO had entered into water agreements with Wolf Creek Nuclear Power Plant based on the 1975 water supply contract with the Corps of Engineers. The KWO needed to provide Wolf Creek Nuclear Power Plant a reliable water supply before the nuclear plant would be built. Reallocation is required to ensure water supply agreements between the Corps of Engineers and the KWO are honored so that the KWO can maintain its water agreements with its assurance districts.

Sedimentation issues continue to reduce flood control and conservation storage benefits inequitably. Table 5 shows the historical changes in flood control and conservation storage of the reservoir as a result of this sedimentation. It shows that sedimentation has not impacted flood control storage to the same degree as it has the conservation pool. Based on the 2000 sedimentation survey, the flood control storage will have been reduced from the designed 562,100 acre feet to 511,700 acre feet by year the 2014. This represents a reduction in flood control storage of about 9%. Based on the same 2000 survey, the conservation storage will have been reduced from the designed 82,700 acre feet to 40,100 acre feet by the year 2014. This represents a reduction in conservation storage of over 50%. The 9% projected reduction in flood control storage is significantly disproportionate to the 50% projected reduction in conservation pool storage. The proposed 2-foot conservation pool rise from elevation 1039.0 to 1041.0 feet will result in a loss of 16,318 acre-feet of flood storage through year 2014.

With the proposed conservation pool raise, Table 5 indicates that by year 2014, 55,456 acre-feet of sediment will be deposited in the flood pool and 39,500 acre-feet in the conservation pool below elevation 1041.0. The total sediment deposited in the reservoir in year 2014 is now estimated to be approximately 95,000 acre-feet. This is almost twice the level of 51,000 acre-feet projected in year 1976 and 16.5% of the total storage of John Redmond Reservoir. If the sediment storage was equally redistributed using a weighted average approach based on storage volumes; 91% of the sediment storage (86,410 acre-feet in year 2014) could justifiably be applied against flood control and 9% (8,546 acre-feet in year 2014) against conservation storage.

Table 5: Storage Allocation History

	POOL ELEVATION (feet)	STORAGE (acre-feet)	SEDIMENT DISTRIBUTION (acre-feet)
AUTHORIZED INITIAL ALLOCATION – 1963			Projected Sediment Accumulation 1963 - 2014
Flood Control Storage -1963			
Initial	1033.0-1068.0	608,300	
After 50 years-(2014)	1033.0-1068.0	571,500	36,800
Conservation Pool -1963			
Initial	1033.0	36,500	
After 50 years (2014)	1033.0	22,300	14,200
REALLOCATION – 1976 Ultimate Development as Designed			Projected Sediment Accumulation 1963-2014
Flood Control Storage -1976			
Initial	1039.0-1068.0	562,100	
After 50 years-(2014)	1039.0-1068.0	531,300	30,800
Conservation Pool -1976			
Initial	1039.0	82,700	
After 50 years (2014)	1039.0	62,500	20,200
Resurvey – 1993			Sediment Accumulation 1963-1996
Flood Control Storage -1993			
Surveyed	1039.0-1068.0	565,297	2,733
Conservation Pool -1993			
Surveyed	1039.0	57,705	21,046
RESURVEY - 2000			Sediment Accumulation 1963-2000
Flood Control Storage -2000			
Surveyed	1039.0-1068.0	524,417	43,613
Conservation Pool -2000			
Surveyed	1039.0	50,501	28,250
WITHOUT REALLOCATION - 2000			
Flood Control Storage -2014			
Projected	1039.0-1068.0	511,729	56,301
Conservation Pool -2014			
Projected	1039.0	40,096	38,655

	POOL ELEVATION (feet)	STORAGE (acre-feet)	SEDIMENT DISTRIBUTION (acre-feet)
PROPOSED REALLOCATION – 2005 (Top Cons Pool = 1041 ft)			Sediment Accumulation 1963-2005
Flood Control Storage -2005			
Surveyed	1041.0-1068.0	507,254	39,382*
Conservation Pool -2005			
Surveyed	1041.0	67,664	32,481*
PROPOSED REALLOCATION – 2014 (Top Cons Pool = 1041 ft)			Sediment Accumulation 1963-2014
Flood Control Storage -2014			
Projected	1041.0-1068.0	495,411	55,456
Conservation Pool -2014			
Projected	1041.0	56,414	39,500
* These numbers reflect approximately 4,231 ac-ft of sediment that will be transferred from Flood Control Storage to the Conservation Pool between elevations 1039.0-1041.0 due to a pool raise.			

In summary, the proposed sediment reallocation is needed to reduce the significant impact to the conservation pool from higher than anticipated sediment volumes. Redistribution is needed to meet existing water supply agreements. With the conservation pool raised to elevation 1041.0, existing water supply contracts will be able to be maintained as was initially intended.

3.0 ECONOMIC ANALYSIS

3.1 Water Supply Demand Analysis

3.1.1 The KWO completed an assessment of long-term water supply availability for public water supply systems in the basin in 2002. They found that additional quantities of water would be needed for 34 public water supply systems to meet their projected 2040 demands (1998 data). The KWO has estimated that there is a 2% chance of drought in any given year, based on the continuous drought of record for years 1952-1957. The entire state of Kansas has been in drought conditions since 2010. Water supply sources throughout the state are well below normal conservation storage, including John Redmond Reservoir. While specific projections of future droughts are uncertain, the importance of increasing storage and regaining what has been lost to sedimentation processes is a key component of future water planning in the state.

Congress directed the USACE to look at raising the conservation pool and providing solutions for redistribution of the conservation and flood control pool as a result of uneven sediment deposition within the reservoir. The uneven sediment distribution has reduced the available water supply of John Redmond Reservoir and is infringing upon the existing water supply agreements between the Corps of Engineers and the KWO. Economic losses would be experienced from reduction in committed water supply especially during drought periods. John Redmond Reservoir provides the primary source of cooling water for the Wolf Creek Generation Station in nearby Burlington, Kansas. Kansas Water Office also uses its storage in John

Redmond to supply drought contingency flows to Wolf Creek Power Station (WC) and Cottonwood/Neosho River Basins Assurance District No. 3 (CNRB). Wolf Creek has contracted natural flow rights for 53,916 acre-feet a year, which equates to 48.13 average million gallons per day (MGD), from the Neosho River. Wolf Creek has a marketing contract with KWO to draw water from John Redmond in the event that natural flows fall below 250 cubic feet per second. Wolf Creeks peak actual usage form John Redmond occurred in 2002 at an average of 34.09 MGD.

The CNRB includes 21 cities, wholesale water suppliers, and industrial water users. John Redmond serves as a critical source of municipal and industrial water for the CNRB. CNRB serves an estimated population of 141,000 people. Population growth by the year 2060 is estimated to be 159,000 persons. The total water demand for this population is an estimate 15,000 acre feet with an average rate of growth in the next 50 years to be 1.4 percent. The District has contracted at John Redmond with natural flow rights for 3,500 Acre Feet per year, which equates to and 3.12 MGD. CNRB has contracted with KWO for 7.12% of available yield from the conservation pool.

Wolf Creek Generating Station in Coffey County, Kan., is an essential component of the local economy. Kansas City Power & Light Co. owns the plant and employs 1,028 persons according to the Nuclear Energy Institute. The plant provides power to about 29 percent of the State of Kansas. Along with the economic value of plant's energy output, the plant generates tax revenues and secondary jobs and income. Operation of the 1.2 megawatt facility increased Coffey County's economic output by $7.9 million and Kansas' economic output by $79.9 million in 2003. Adding the direct value of the plant's electricity generation brings the county's economic output attributable to Wolf Creek to $607.9 million in Coffey County and $680 million in Kansas. Without a reliable source of water for safe operations, reduction of conservation storage at John Redmond would impact the output of the plant consequently having an adverse impact on both the local and regional economy.

The population and economic conditions of the Neosho River Basin has not experienced much substantial growth over the past three decades. Changes in agriculture and the overall world economy have resulted in flatting and, in many instances a decrease, in job opportunities, income, and economic expansion. Many communities have lost population. This trend would most likely be accentuated by reduction of available water. With diminished availability of water due to lost conservation storage in John Redmond, the overall economic conditions of the basin would worsen for those living in the basin.

3.2 Analysis of Water Supply Alternatives

3.2.1 No Action - Maintain Current Operation

Under the no action alternative, the dam and reservoir would be operated as it is currently and there would be insufficient water supply storage at the design life to meet contractual agreements

between the Corps of Engineers and the KWO. The no-action alternative is not a viable option as it does not support the equitable redistribution of sediment reserve storage to achieve project purposes, as contemplated in the water supply agreements.

3.2.2 Groundwater

Groundwater has been found to be limited in the basin. It is not a viable alternative as a source of municipal and industrial water supply.

3.2.3 Surface Sources

Water supply storage totaling 37,450 acre-feet is provided by the John Redmond Reservoir water supply contracts through year 2014 as outlined in Table 4. There are no other surface water supply sources of any consequence in the study area. Construction of a new reservoir, while not seriously considered for this reallocation, may be a future alternative worth considering as John Redmond Reservoir reaches the end of its designed life.

3.2.4 Dredging of John Redmond Reservoir

The dredging of John Redmond Reservoir would result in an increase of storage capacity of the dam thereby increasing the amount of storage for flood control and water supply. A wide range of both beneficial and adverse impacts are possible for dredging alternatives, depending upon the method of dredging selected, dredge material disposal options, and resource category under evaluation. In addition, the significance of impacts would vary widely depending upon the scenario under evaluation. Evaluation of this full range of impacts is provided in Table 2-1 of the SFES (Appendix 8.1). It is possible that sediment contains lead from waterfowl hunters, and pesticides and fertilizers from runoff of agricultural lands. Dredging activities could possibly disturb these sediments, thereby exposing buried or settled contaminants. This may also adversely affect water quality total maximum daily loads (TMDL) standards for water quality as well as eutrophication in John Redmond Reservoir.

Dredging for the purpose of restoring the original storage capacity is not a viable option for federal participation at this time because of potential economic and environmental costs. Dredging of John Redmond Reservoir is estimated to cost about $49 million for restoring 8,275 acre-feet of storage. Additional costs could vary depending on methods used to dredge the material. If John Redmond Reservoir sediment is found to contain chemical residue, the cost of disposal could increase. However, because of the lack of other water supply sources and KWO interest, dredging may need to be reconsidered in the future. At the present time, the KWO has initiated the process to pursue a dredging option at John Redmond as a state-funded and implemented action.

3.2.5 Raising Conservation Pool Elevation from 1039.0 in 0.5-foot increments for pool elevations 1039.0, 1040.0, 1040.5, and 1041.0

There is no discernible difference in discharge duration or exceedance frequency of maximum discharge between these elevation levels. Raising the conservation pool in incremental increases would not fully recover water supply lost because of sedimentation. Sediment deposit volume within the conservation pool is estimated to be 28,250 acre-feet since 1976. Using findings from

the 2000 sediment resurvey, capacities projected for target year 2014 estimates that conservation storage from reallocation would only increase by about 7,700 acre-feet for elevation 1040.0 and 12,000 acre-feet for elevation 1040.5

3.2.6 Raising Conservation Pool Elevation from 1039.0 to 1041.0

Raising the water level of the conservation pool by 2 feet would provide sufficient additional storage to satisfy the terms of existing water supply agreements without significantly impacting flood control. Impacts to water quality and recreation would be mitigated. The KWO has provided funds to the US Fish and Wildlife Service directly for replacement costs related to this mitigation. Raising the conservation pool in one single pool raise is the preferred alternative.

3.3 Economic Impact on Other Project Purposes

3.3.1 Economic Effect

The economic effect of the John Redmond Reservoir reallocation includes those effects associated with flood control, conservation storage, and recreation. No other economic effects such as employment are evident.

3.3.2 Bulkhead Replacement

Operational maintenance of the reservoir required a new bulkhead since the top of the existing bulkhead is at elevation 1040 and the proposed top of conservation pool will be raised to elevation 1041.0. The bulkhead is required to have 2.0 feet of freeboard above the top of conservation pool. In 2012, the District made modifications to the bulkhead, using funds provided under the American Recovery and Reinvestment Act. With these modifications, the bulkhead can accommodate the pool rise associated with the reallocated storage.

3.3.3 Replacement Cost Allocation

The proposed pool raise will necessitate the replacement of facilities and habitat as detailed in Section 5.3.10 and the SFES. As is the case with all M&I storage reallocations that raise the conservation pool, the M&I user, as the beneficiary, must pay for the impacts of the pool raise. Any benefits that accrue to other project purposes are considered incidental. The KWO, as beneficiary, has already provided full funding to the US Fish and Wildlife Service, who has perform the replacement work. The State of Kansas has paid 195 thousand dollars (rounded) for the replacement of all recreation facilities associated with an anticipated pool rise.

3.3.4 Hartford Levee

The Hartford Levee is located upstream of John Redmond and was installed to prevent upstream flood damage due to the operation of John Redmond Dam. Dam Safety compliance, as contained in Engineering Circular 1110-2-6064, was reviewed with this reallocation to see if the proposed reallocation could possibly impact the Hartford Levee.

A change in the conservation pool from elevation 1039.0 to 1041.0 feet does affect the pool filling frequency of the lake but only for the most frequent events. The study shows that the

flood pool fills at about a 20-year frequency and has not changed due to the recommended pool change. Likewise, lower frequency events will not be effected up through and including the 100-year.

The Hartford Levee analysis considered the full range of frequency pool elevations and river discharges. The focus of the analysis for levee certification is to determine the level of protection of the levee based on the base flood level of the 100-year event. Since the frequency curve for the lake would change only minimally, especially in the range of the 100-year event, and since the analysis shows that the pool is below elevation 1044.0 for 90 percent of the time, and the minimum tailwater assumption used in the analysis was 1041.0, then the current frequency curve for the Hartford Levee is correct. The 100-year elevation of the exterior of the Hartford Levee based on the frequency analysis of the pool elevation and river stage is 1071.9. The corresponding top of levee elevation for this river stage is 1076.0.

The reallocation modification to the conservation pool from elevation 1039.0 to elevation 1041.0 will not significantly increase life safety risk associated with John Redmond Dam or Hartford Levee. Based on the reduction in risk due to construction of the inverted filter and the associated repair to the toe drain system and the associated construction of the relief well collector system, the life safety risk associated with the Hartford Levee is minimal. The results of the Periodic Assessment for Hartford Levee and the inverted filter completion report were presented to the Dam Senior Oversight Group (DSOG) in July 2012. The DSOG recommended the Dam Safety Action Classification (DSAC) be revised from a DSAC II to a DSAC IV for Hartford Levee; Mr. James Dalton, USACE Dam Safety Officer concurred with this rating in July 2012 and officially revised the DSAC rating by memorandum dated October 22, 2012.

3.3.5 Flood Control

Raising the conservation pool 2 feet into the flood control pool will result in an estimated 3.18% reduction in flood storage volume. The USACE maintains existing flowage easements within the reservoir.

An analysis of downstream flow-duration and frequency curve data showed little measurable increases in flood stages at most downstream locations (Table 6). The flow frequency analysis was performed using SUPER, the Southwest Division reservoir system simulation program. SUPER modeled a 56-year period of record (years 1940-1995), with local hydrology based on observed gage data within the basin. The stages were calculated using available stream gage rating data.

Table 6: Downstream Stage and Discharge For Pool Elevations 1039.0 and 1041.0*

GAGE	POOL AT 1039.0		POOL AT 1041.0		STAGE DIFFERENCE (feet)
	DISCHARGE (cfs)	STAGE (feet)	DISCHARGE (cfs)	STAGE (feet)	
BURLINGTON					
Storm Return Interval (Years)					
83	143,142	42.29	144,072	42.34	**0.05**
33	19,193	25.55	20,234	26.48	**0.93**
20	17,249	23.78	17,587	24.09	**0.31**
10	16,445	23.04	16,461	23.06	**0.02**
5	15,369	22.04	16,291	22.9	**0.86**
2	14,026	20.78	15,114	21.8	**1.02**
1	12,020	18.86	12,016	18.86	**0.00**
IOLA					
Storm Return Interval (Years)					
83	289,238	40.80	290,285	40.82	**0.02**
33	68,702	32.76	69,170	32.82	**0.06**
20	62,628	31.99	63,120	32.05	**0.06**
10	46,229	29.57	46,635	29.64	**0.07**
5	43,866	29.17	44,328	29.25	**0.08**
2	39,114	28.32	39,114	28.32	**0.00**
1	38,932	28.29	38,931	28.29	**0.00**
PARSONS					
Storm Return Interval (Years)					
83	358,266	37.53	359,319	37.55	**0.02**
33	102,061	31.16	102,452	31.18	**0.02**
20	63,990	28.98	64,018	28.98	**0.00**
10	63,606	28.95	63,608	28.95	**0.00**
5	60,214	28.71	60,831	28.76	**0.05**
2	54,654	28.29	54,649	28.29	**0.00**
1	51,480	28.06	51,480	28.06	**0.00**

TABLE 6 (Continued)

GAGE	POOL AT 1039.0		POOL AT 1041.0		STAGE DIFFERENCE (feet)
	DISCHARGE (cfs)	STAGE (feet)	DISCHARGE (cfs)	STAGE (feet)	
COMMERCE					
Storm Return Interval (Years)					
83	223,682	31.17	224,700	31.2	**0.03**
33	108,058	25.79	108,057	25.79	**0.00**
20	107,220	25.74	107,693	25.77	**0.03**
10	84,650	24.3	84,650	24.3	**0.00**
5	78,819	23.87	78,823	23.87	**0.00**
2	78,432	23.85	78,432	23.85	**0.00**
1	77,485	23.77	77,511	23.78	**0.01**
* Analysis done using SUPER, the Southwest Division reservoir system simulation program.					

The only measurable stage difference between pre and post reallocation occurs near the city of Burlington and most significant increases are for flood events that are within the channel capacity or below the National Weather Service (NWS) established flood stage of 27.00 feet. There was no measurable change in stream gage values at Iola, Parsons, and Commerce. The project regulating discharge for the Burlington gage location is 23.0 ft as set by the Corps for normal flood control operations. The NWS flood stage is set at 27.0 ft, at which some minor agricultural flooding begins on the east side of the Neosho River. Out of bank urban flooding in the Burlington area occurs around a stage of 29.0 feet. The first floor elevations of improvements in the low lying areas near Burlington are at this stage. Based on the above data, the potential flood control benefits lost are minor after considering additional hydraulic modeling results which refine earlier hydrologic modeling to illustrate inundation impacts.

A structure count for each floodplain was completed for the pre (1039ft.) and post (1041ft.) reallocation floodplains. Coffey County, KS assessor's office provided GIS layers with parcel information. Replacement minus depreciation values were obtained through the assessor's office. Coffey County, KS was the only county included in the analysis, because Coffey County is the only area with a measureable difference between the pre- and post-conditions. The city of Burlington, KS is located within five miles downstream of the dam. Further downstream, the area is primarily rural land. There is a difference of less than one foot between the pre and post reallocation floodplains for the more frequent within banks flows and the pre and post reallocation floodplains converge to essentially no difference at the 100 year event. Table 7 shows the floodplain inventory in Burlington, KS at the different events and Table 8 shows the structure values in the 100 year floodplain. Figure 3 shows a map of Burlington, KS at the 100–year event.

Table 7: Floodplain Inventory in Burlington, KS

Event	Pre-Reallocation Conservation Pool (elevation 1039.0)					Post-Reallocation (elevation 1041.0)				
	Residential	**Commercial**	**Industrial**	**Public**	**Total**	**Residential**	**Commercial**	**Industrial**	**Public**	**Total**
1-year	5	4	0	0	**9**	5	4	0	0	**9**
2-year	5	4	0	0	**9**	5	5	0	0	**10**
5-year	5	5	0	0	**10**	6	5	0	0	**11**
10-year	6	5	0	0	**11**	6	5	0	0	**11**
20-year	6	5	0	0	**11**	6	5	0	0	**11**
33-year	6	6	0	0	**12**	6	6	0	0	**12**
83-year	96	51	2	2	**151**	96	51	2	2	**151**
100-year	372	105	6	3	**486**	372	105	6	3	**486**

Figure 3: Map of Burlington, KS 100 - year event

Table 8: Burlington, KS Structure Values

Burlington, KS Structure Values in the 100-yr Floodplain ($1,000's)				
Residential	Commercial	Industrial	Public	**Total**
$32,224.97	$9,816.98	$4,568.72	$3,120.02	**$49,730.69**

A windshield survey was completed in Burlington and Le Roy, KS. During the survey the structure types were verified with the assessors' data and first floor elevations were determined. A first floor elevation was determined for each structure type (residential, commercial, industrial, public, and mobile home). One economic reach was made for the study, Coffey County, and this reach extends from below the dam to the county line. A description for this reach and its associated gage stations can be found in Table 9 below.

Table 9: Economic Reach Description

Reach	Beginning Station	Ending Station	Description
Coffey County	306.033	342.7	Below Dam to County Line

Hydrologic Engineering Center- Flood Damage Analysis software (HEC-FDA) 1.2.4, which was developed by the U.S. Army Corps of Engineers Hydraulic Engineering Center, was used to calculate flood damages to structures and their contents. HEC-FDA uses a cross section within each reach, the structures first floor elevation, and depth-damage relationship to determine the amount of damage that occurs at certain water surface elevations. Expected annual damages were determined for the pre and post reallocation alternatives. A loss in flood control benefits of $23,260 was determined. The $23,260 represents the annual benefits lost, and an increase of only 2.6% in expected annual damages from without reallocation to with reallocation. The increase in damages is a result of slightly greater depths in the floodplains between the pre and post reallocation floodplains. The post five year event has one more structure then the pre reallocation floodplain. Table 10 below summarizes the results.

Table 10: Expected Annual Damages

Plan	Expected Annual Damages ($1,000's)
Pre-Reallocation (elevation 1039.0)	884.24
Post-Reallocation(elevation 1041.0)	907.5
Damage Reduced	**-23.26**

Risk based analysis is required in flood damage studies. The economic model that was used for evaluations, HEC-FDA, allows for uncertainty to be entered into the model. HEC-FDA uses Monte Carlo simulations, which is a numerical analysis procedure that computes the expected

value of the damages, while accounting for the uncertainty in the parameters that were used to determine flood damages. The future with and without-project alternatives were evaluated using HEC-FDA with risk and uncertainty for property values, contents values, and first floor elevations. These results are included in Table 11. Flood inundations were developed for all flood levels noted in Table 7 that cause "out of bank" flooding. Hydraulic information was provided for analysis in the program FDA to support incremental damages between the with and without pool raise conditions. Risk and uncertainty for the backwater analysis has been developed consistent with ER 1105-2-100; however, regardless of the uncertainty within the model, the computation of the difference in water levels computed in the hydraulic model will be very precise since the only element changing within the model is the discharge.

Table 11: Probability of Damage Reduced

Probability that Damage Reduced Exceeds Indicated Values ($1,000's)			
Probability	**0.75**	**0.5**	**0.25**
Damage Red.	-8.62	-13.45	-24.36

Recreation benefits should be slightly enhanced with the 2-foot raise in the conservation pool. This is because raising the water level of the conservation pool would result in additional water which would result in better water quantity and quality downriver. This would benefit downriver fishing. The newly flooded shoreline vegetation would enhance fishery and waterfowl habitats as well, providing a short-term economic benefit for waterfowl and fishing recreation activities.

3.3.6 Conservation Storage

Raising the conservation pool from 1039.0 to 1041.0 will result in an estimated increase of 17,200 acre-feet of additional conservation storage. It would provide sufficient storage to meet KWO's water supply requirements, satisfy the terms of existing water supply agreements, and maintain storage for water quality requirements. Without the conservation pool raise, economic losses could be experienced from reductions of committed water supply.

3.4 Approved Cost Allocation

There is no allocation of first costs for the reallocated storage since KWO has fully paid the updated costs of storage under the two water supply agreements and its undivided share of conservation storage will not increase. The purpose of the reallocation is to partially offset the disproportionate distribution of sediment in the conservation pool, in accordance with the terms of the existing water supply agreements, and maintain the usable storage space for each project purpose to be generally in line with project design.

4.0 DERIVATION OF USER COST

There is no change in user costs associated with the proposed reallocated storage. The proposed reallocation study has been initiated so that existing water agreements between the Corps of

Engineers and the KWO can be maintained through year 2014. However, KWO will fund the costs of replacement measures and facility modifications needed to implement the reallocation.

4.1 Revenues Forgone and Cost Account Adjustments

There are no hydropower capabilities at John Redmond Reservoir; therefore, there would be no revenues forgone or cost account adjustments.

4.2 Cost of Storage Analysis

There are no storage costs to calculate since KWO has fully paid the updated costs of storage under the two water supply agreements and its undivided share of conservation storage will not increase. The purpose of the reallocation is to partially offset the disproportionate distribution of sediment in the conservation pool, in accordance with the terms of the existing water supply agreements, and maintain the usable storage space for each project purpose to be generally in line with project design.

5.0 OTHER CONSIDERATIONS

5.1 Test of Financial Feasibility

The second most likely alternative considered was dredging the reservoir. The projected cost for the dredging alternative was $49 million. The no-action alternative cannot guarantee the fulfillment of existing water supply contracts. The proposed storage reallocation is the best alternative.

5.2 Cost Account Adjustments

There are no cost account adjustments because there is no hydropower at John Redmond Reservoir.

5.3 Environmental Considerations

To comply with the National Environmental Policy Act (NEPA) of 1969, a Supplement to the Final Environmental Statement (SFES) was prepared. As required under the Council on Environmental Quality (CEQ) Regulations (40 Code of Federal Regulations (CFR) 1502.14(e)), a preferred alternative is identified in Chapter 2.0, **"**Description of Proposed Action and Alternatives." For purposes of the NEPA analysis, direct environmental consequences/impacts, both positive and negative, were analyzed for the water storage reallocation.

Potential environmental impacts are measured against the existing 1039.0 conservation pool elevation. This "baseline" is used to compare the changes in the conservation pool level to assess impacts on the existing environment. Raising the conservation pool will affect nine resource areas. Resource areas considered were: (1) geology and soils; (2) hydrology and water resources; (3) biological resources; (4) air quality; (5) aesthetics; (6) prime or unique farmlands;

(7) socioeconomic resources, (8) cultural resources; and (9) hazardous, toxic, and radiological wastes. Consideration of potential benefits gained and lost is discussed below.

5.3.1 Geology and Soils

Reallocation to the raised pool elevation of 1041.0 would result in minor increased flooding of approximately 405 acres of potentially unique or prime farmland soils upstream of the John Redmond Reservoir. This acreage is already impacted by flood events at the current conservation pool elevation (1039.0) and the current seasonal pool elevation (1041.0). The impact to unique or prime farmland downstream of John Redmond Reservoir as a result of reduced flood control is considered insignificant. For the long term, there would be an insignificant adverse effect on this resource within the conservation pool and downriver of John Redmond Reservoir.

5.3.2 Hydrology and Water Resources

The 3.18% reduction in flood control storage would result in a long-term minor effect on flooding above and below the reservoir. Above the reservoir, minor flooding effects would be experienced on project lands. The SFES indicates that no impacts to private lands would occur. The USACE holds fee title to approximately 29,801 acres of land associated with John Redmond Reservoir (JRR), and has flowage easements on an additional 10,502 acres. The District's analysis of downstream flow-duration and frequency curve-duration data shows little measurable increases in flood stages at downstream locations.

The SFES also indicates that an increase in the conservation pool would improve water quality by slightly reducing the concentrations of contaminants and suspended sediment in the reservoir. This would also result in a slightly reduced sediment transport through the reservoir. However, the loss of sediment transport within the river system will be correspondingly made equalized by increased erosion of the stream bed downstream of John Redmond Reservoir. Improved water quality and sedimentation transport would be considered negligible.

The reduction in flood control capacity at John Redmond Dam is currently minimized to the extent possible by the Corps of Engineers reservoir operating procedures. Because of the reservoir operating procedures currently in place, the adverse impact downriver is considered insignificant. Additional flowage easements are not required. Flood release notification guidelines will also be used to provide information on future downstream releases to the public.

5.3.3 Biological Resources

The USACE holds fee title to approximately 29,801 acres of land associated with JRR, and has flowage easements on an additional 10,502 acres. The USACE manages JRR (9,710 acres at the current conservation pool level of 1039.0 feet above mean sea level) and 3,160 acres of adjacent land. USACE leases 18,500 acres to the USFWS and 1,472 acres to the Kansas Department of Wildlife and Parks. Effects on biological resources of the proposed action would result in the inundation of woodland, cropland, grassland, and wetland resulting in loss of existing vegetation. The impacts on biological resources appear to be minor in the long term. Replacement measures are included to offset these impacts. Biological resources impacts are as follows:

- Shoreline vegetation would be inundated, including wetland habitat totaling approximately 270 acres. Backwater effects on the moist soil units managed by Flint Hills National Wildlife Refuge (FHNWR) would increase. This loss would be considered significant.
- Disturbance, alteration, or destruction of wildlife and plant species. This loss would be considered adverse but insignificant.
- Loss of wildlife habitat over the life of the project. This loss would occur for 2-5 years until new habitat is created.
- Aquatic habitat would be slightly improved with the additional water surface area. There would be positive, but minor improvements to fisheries and aquatic wildlife.

5.3.4 Air Quality

There would be no adverse or beneficial effect to air quality.

5.3.5 Aesthetics

There would be an inundation of woodlands, scrublands, grasslands, and wetlands, resulting in drowned vegetation. Approximately 195 acres of woodland would be affected in the conservation pool. This action would be considered a short-term insignificant negative effect.

5.3.6 Prime or Unique Farmland

Approximately 405 acres of potentially farmable acreage would be inundated. Since this reallocation involves land already in the Corps of Engineers' ownership, and subject to frequent inundation, the farmland acreage is exempt from the Farmland Protection Policy Act. This farmland is already compromised as it currently floods at least three months annually. Downriver, there will be negligible increased flooding.

5.3.7 Socioeconomic Resources

Raising the pool to elevation 1041.0 would increase the frequency of flooding of some roads and facilities on the Flint Hills National Wildlife Refuge. Because the roads are routinely inundated at the 1041.0 foot level and above during rainfall impoundments, replacement of roads and facilities is anticipated to be relatively minimal. The effect of raising the pool would pose a long-term, but insignificant effect.

Raising the pool would result in a slightly greater temporary loss of Strawn boat ramp and parking area facilities. Some recreation facilities could be temporarily affected.

Raising the pool would routinely inundate an additional 556 acres of dry land within John Redmond Reservoir, or about 2% of the land which is fee owned by the Corps of Engineers. All impacted lands are fee owned by the federal government. A total of 722 acres would be inundated of which 166 acres consists of ponds and streams. The 556 acres consists of 51 acres

of cropland, 40 acres of grassland, 195 acres of woodland, and 270 acres of aquatic wetland. Raising the pool would result in insignificant short-term adverse effects to recreation resources.

Downriver from John Redmond Reservoir there would be no discernible adverse economic impact or land use effects. The District's analysis of downstream flow-duration and frequency curve-duration data shows little measurable increases in flood stages at downstream locations. Some flooding of agricultural lands and pecan orchards will likely continue during high flow conditions; however, these effects should be minimal.

Area and county roads, including the bridge on SH 130, will not be affected by the reallocation. Access roads within the affected Federal lands would be flooded more frequently. These long-term effects would be insignificant.

5.3.8 Cultural Considerations

In accordance with Section 106 of the National Historic Preservation Act of 1966 (as amended), the U.S. Army Corps of Engineers, Tulsa District, in consultation with the Kansas State Historic Preservation Office (SHPO), conducted cultural resources investigations at John Redmond Reservoir in 2000 and 2001. These efforts sought to assess and possibly locate the condition of up to 67 archaeological sites previously identified within the area of potential effects of the pool raise. In addition, four additional previously unrecorded archaeological sites were identified in this investigation. Many of the previously recorded sites were not re-located; many were determined to have been either destroyed or heavily impacted by various activities. Eight sites were recommended for further examination to determine eligibility for listing on the National Register of Historic Places (NRHP).

In 2001, the U.S. Army Corps of Engineers, Tulsa District initiated subsurface investigations at six of the eight sites. At the conclusion of these investigations, five of the eight sites were determined eligible for listing on the NRHP as a historic site. Two of the eight sites were not eligible without conducting further work.

In 2004, the U.S. Army Corps of Engineers, Tulsa District coordinated National Register eligibility determinations for the five sites with the Kansas SHPO. The Corps of Engineers additionally determined that these five sites would be adversely affected by the raise in conservation pool at John Redmond Reservoir. However, the Kansas SHPO disagreed with Tulsa District's determination of eligibility for the five sites and associated historic district and the determination of adverse effect. The Corps of Engineer subsequently re-evaluated the issue and agreed with the opinion of the Kansas SHPO of not eligible for listing on the NRHP for the five archaeological sites and associated historic district. Therefore, the proposed pool raise will have no effect on historic properties.

In summary, the U.S. Army Corps of Engineers, Tulsa District has complied with the requirements of Section 106 of the National Historic Preservation Act of 1966 (as amended) for the conservation pool raise at John Redmond Reservoir. No mitigation is required for cultural resources.

5.3.9 Hazardous, Toxic, Radioactive Wastes

There is no anticipated effect from the proposed reallocation.

5.3.10 Replacement Measures

Six measures were recommended by the U.S. Fish and Wildlife Service to replace the physical structures and man-made improvements that would be inundated by the pool raise. The U.S. Army Corps of Engineers evaluated the mitigation/replacement measures and issued its recommendation for John Redmond Reservoir replacement measures and concurred with the USFWS recommendations. All replacement facilities are now in place in anticipation of the pool raise, consequently there are no adverse impacts to recreation benefits.

Under Corps planning policy regulations, a formal Habitat Evaluation Procedures (HEP) and incremental analysis to formulate mitigation measures is typically required. As agreed upon by all parties involved, mitigation for impacts as a result of the pool raise involved replacement of manmade structures and facilities. As such, the typical HEP analysis was not completed in this study. A more general qualitative approach was taken where specific replacement measures involved replanting of previously constructed moist soil units/wetlands on the Flint Hills National Wildlife Refuge at a ratio of one acre impacted to one acre replaced (1:1). The State of Kansas is responsible for these replacement measures as a part of the project costs, and has already provided full funding for replacement costs, and replacement construction is complete.

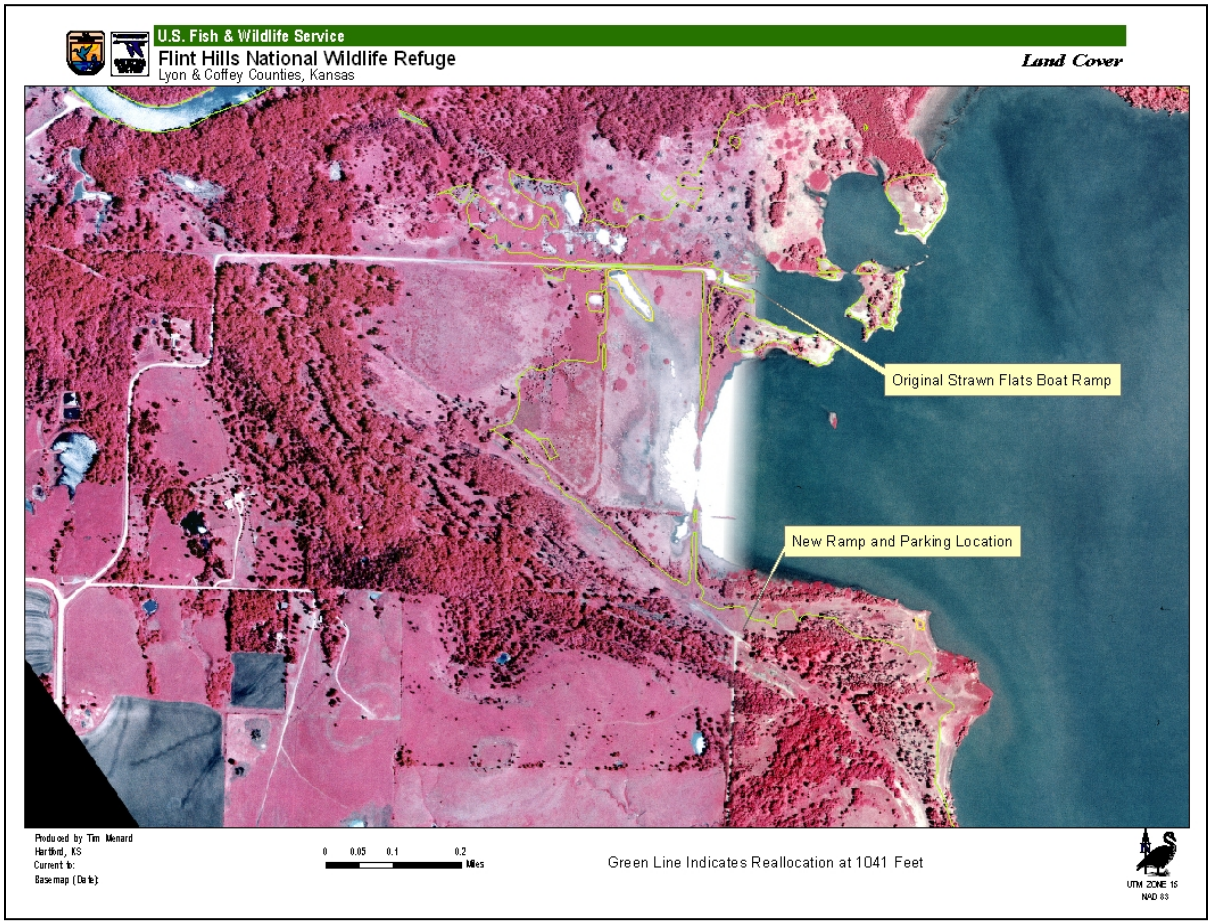
The other replacement measures that the Kansas Water Office has agreed to fully pay for and replace through state and local funding are:

1. Boat Ramp and Parking Area Replacement

   The existing Strawn Flats boat ramp and parking lot on the FHNWR would be inundated by the proposed pool raise. Replacement of the facilities to a suitable area nearby can was accomplished south of the existing location in the Fitch Hill area (Figure 4). The new location is above 1041 NGVD and was recently identified as the best location for replacement after a site visit by interested parties on 1 February 2008. Garner Road, which currently provides access to the area, is a county-owned and maintained public roadway, thereby rendering this location most feasible. The replacement cost of the boat ramp and parking lot was $10,722, and has been provided by KWO to the US Fish and Wildlife Service.

   Current primary users of the Strawn Flats Boat Ramp (which would be inundated by the pool raise) are fishermen and waterfowl hunters. The USFWS estimates that around 1,000 boating visits to the lake are made annually via this ramp facility. There is one other ramp located on the south side of the lake that may be used as an alternate launch facility. However, access to Strawn Flats from this alternate ramp involves a 3- to 4-mile trip across the lake, often under treacherous wind and wave conditions. Replacement of this ramp facility was therefore imperative to continued access and use of lake resources in this area.

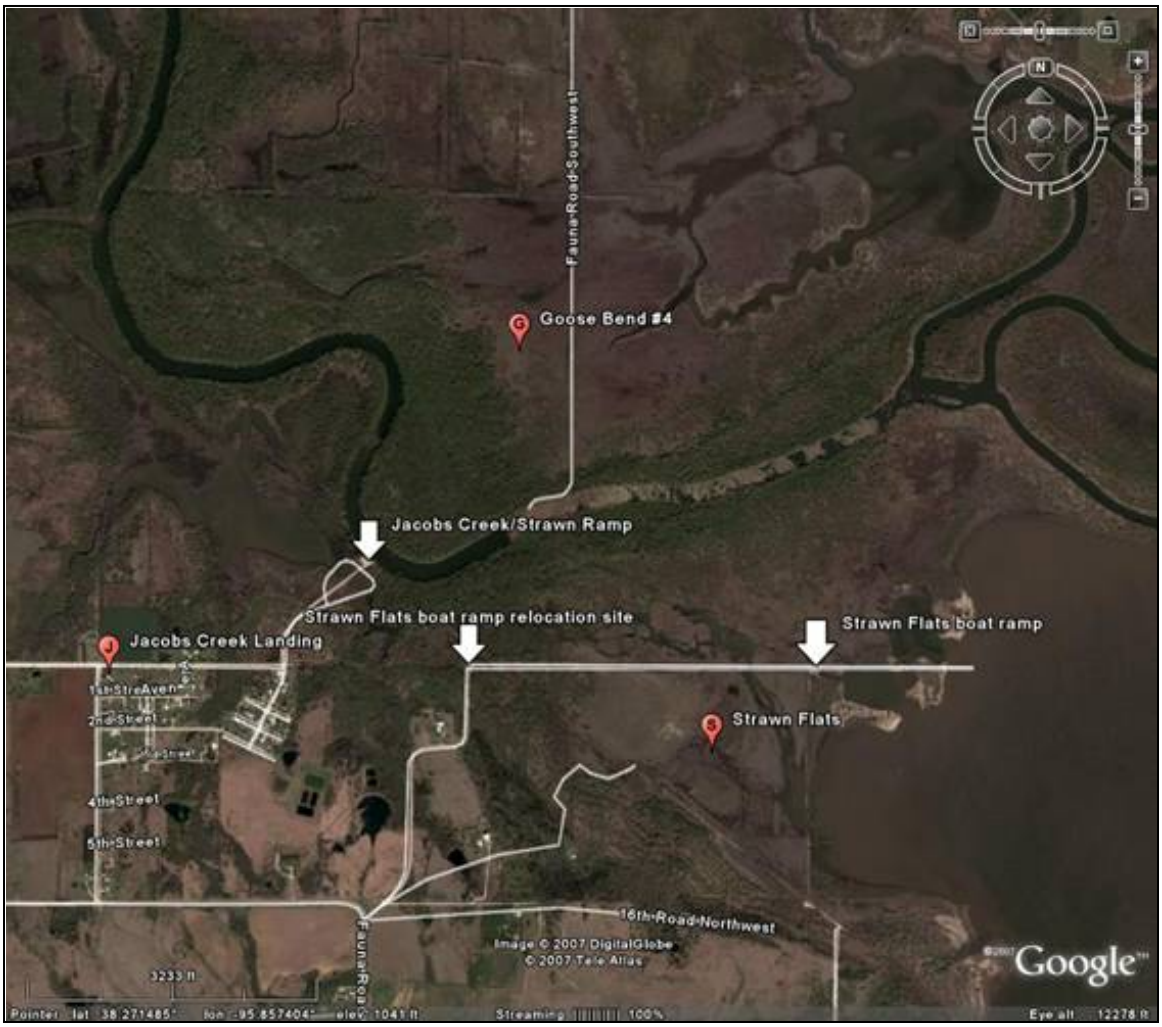
Figure 4: Original Strawn Flats Boat Ramp and proposed relocation area



2. <u>Replacement of Strawn Flats and Goose Bend #4 Dikes, Outlet Works, and Pumping Facilities</u>

The existing Strawn Flats and Goose Bend #4 dikes, outlet works and pumping facilities (Figure 5) would be inundated and subject to damaging increased wave action/erosion. The USFWS proposed to raise the existing dikes and pump site two feet to maintain operability of the facility. Therefore, this measure was accomplished with modification to existing facilities and relocation and complete reconstruction would not be required. These dikes, outlet works, and pumping facilities are critical to refuge operations for wildlife and habitat management. They therefore require modification to ensure their continued operation and protection when the proposed pool rise is complete. The cost to raise the dikes and pump site was $30,000, and the KWO provided funding to the US Fish and Wildlife Service for this work.

Figure 5: Strawn Flats and Goose Bend #4



3. Replacement of Wetlands and Riparian Woodlands

The Corps of Engineers recommended that 243 acres of wetland / moist soil units and 166 acres of riparian woodlands would need to be replaced on the Flint Hills National Wildlife Refuge. The specific location was be jointly determined by the Corps of Engineers, the U.S. Fish and Wildlife Service, and the Kansas Department of Wildlife and Parks. The 243 acres of wetlands were replaced 'one-for-one' at various locations within the refuge (areas shaded in blue in Figure 6) which can generally be described as the Hartford Units. Replacement of wetlands will maintain the current level of habitat for waterfowl, shorebirds, and other water birds, and will complement existing wetlands surrounding the Hartford area. These units are critical for the benefit of migrating waterfowl, and for the mission supporting establishment

of the turkey and deer hunting. These units within the refuge improve water quality from the Neosho River by filtering out sediments before water is released from the refuge back to John Redmond Lake. Replacement locations are abandoned agricultural fields in low lying areas on FHNWR. The low areas were excavated out at a 9:1 slope and designed to be flooded during high water periods. Replacement of wetland units are critical to continued operation of the FHNWR and its mission.

The USFWS proposed to replace the 166 acres of lost riparian woodlands along existing riparian borders at various locations on the refuge. Riparian woodlands provide important habitat for a variety of fish and wildlife species and have positive benefits to receiving water quality. Their replacement is therefore critical to refuge management. Three hundred bur oak and pecan tree seedlings were be planted and treated with herbicide. The total cost for both wetland and riparian woodland replacement is shown in Table 12, and has already been provided to the US Fish and Wildlife Service by the KWO. Table 13 presents a summary of the environmental impacts for the proposed action of a pool raise from elevation 1039.0 to 1041.0.

4. Neosho Basin Management Plan

The Neosho Basin Management Plan will be updated by the Kansas Water Office with input from the Corps of Engineers reservoir operations. Plan and development cost would be a responsibility of the Kansas Water Office.

5. Annual Water Level Management Plan

The Corps concurs that an annual water level management plan that is compatible with the new conservation pool and its operations is needed. Development of the plan would need to be drafted by the KWO and the Kansas Department of Wildlife and Park (KDWP) and would be a modification of previous water level management plans. Plan costs would be the responsibility of State and local groups. New water management plans would need to be evaluated against authorized project purposes and approved by the Corps of Engineers

6. Post-Development Impact Evaluation Studies for Wetland Development above Elevation 1041.0

The Corps of Engineers concurs that a post-development Impact Evaluation Study is needed. Plan cost and development would be a responsibility of State and local groups. Impacts will be measured over a five year period.

Figure 6: Wetland Replacement Areas (243 acres total)

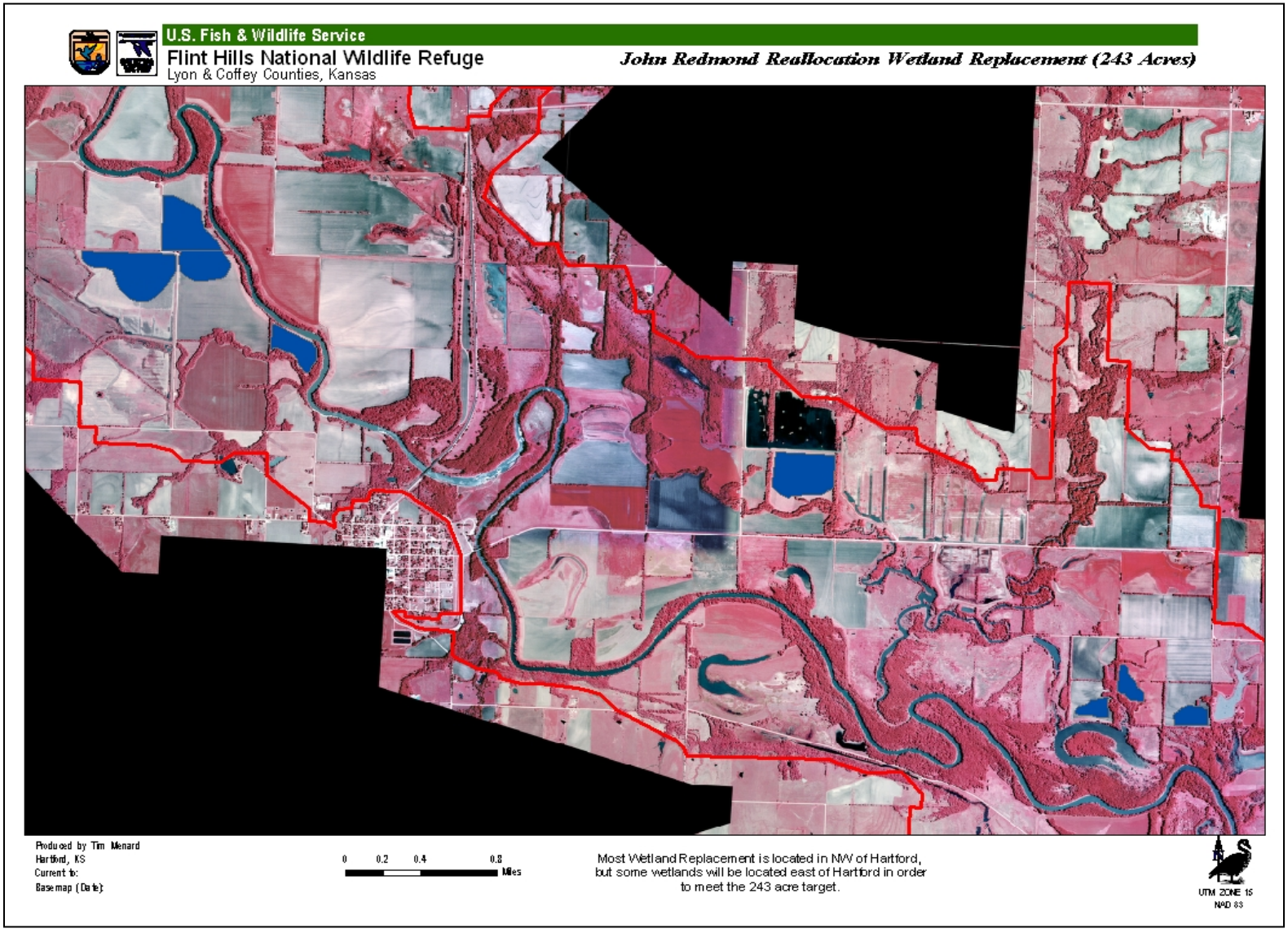


Table 12: Cost for Replacement of Features Affected by John Redmond Pool Raise

John Redmond Pool Rise Replacement Costs	USFWS Original Quoted Estimate	USFWS Actual Costs		2009 Agreement	2010 Addendum	2012 Addendum
Boat Ramp and Parking Area Replacement	$ 125,000	$ 10,722				$ 10,722
Strawn Flats and Goose Bend #4 Dikes, Outlet Works and Pumping Facilities	$ 46,500	$ 41,520				$ 30,000
Replacement of Riparian Woodlands and Wetlands						
Replacement of Wetlands						
Hartford NE Wetlands		$ 30,152		$ 30,152		
Hartford 2 Wetlands	$ 245,356	$ 48,204			$ 48,204	
Bench 3 Wetlands		$ 23,988				$ 23,988
Hartford 5 Wetlands		$ 16,744				$ 16,744
Replacement of Riparian Woodlands	$ 53,400	$ 34,982		$ 34,982		
Total	**$ 470,256**	**$ 206,312**		**$ 65,134**	**$ 48,204**	**$ 81,454**
Total KWO Costs Under 2009 Agreement and Addendums				**$**		**194,792***
* Replacement feature completion was completed by the KWO in 2012 (as referenced in Appendix II), satisfying all of their obligations as described in the SFES.						

Table 13: Environmental Impacts of Pool Raise and Replacement Measures

Resource	Potential Impacts of Action
Geology and Soils	Inundation of approximately 405 acres of potentially farmable land upstream within John Redmond Reservoir, which USACE owns in fee. USACE holds fee title to approximately 29,801 acres of land associated with JRR and has flowage easements on an additional 10,502 acres. Only 51 acres currently is reported as cropland on USACE owned land. Farmland is exempt from the Farmland Protection Policy Act since it is already of Corps owned land and is routinely inundated. Inundation would result in insignificant adverse effects. *Mitigation Measures: No mitigation.*
Hydrology and Water Resources	Minimal change in water flow releases. Takings Analysis not required. No additional real estate interest is needed because there will be minimal change in downstream flooding. No change to groundwater elevation. Minor loss in flood control storage (16,300 acre-feet or 3.18% of flood pool) Significant beneficial effect in available water conservation storage. *Mitigation Measures: No mitigation.*
Biological Resources	Of the 556 acre inundation; 270 acres is wetland terrestrial wildlife habitat. The acreage affected is fee owned by USACE and does not include privately owned land. Minor temporary loss of wildlife habitat over 2-5 years. Aquatic habitat slightly improved with positive effect on fisheries and aquatic wildlife. Increase in inundation frequency of the original floodplain adjacent to John Redmond Reservoir Lake. *Mitigation (replacement) measures: replace 243 acres of wetland area and 166 acres of riparian woodland area. Replace Strawn Flats ramp and parking area and Goose Bend Dikes outlet works, and pumping facilities. All replacement measures agreed to by the Kansas Water Office have been completed.*
Air Quality	No change in air quality.

TABLE 13 (Continued)

Resource	Potential Impacts of Action
Aesthetics	195 acres of woodland below conservation pool would be inundated. *Mitigation Measures: See Replacement of Biological resources.*
Prime or Unique Farmland	Insignificant adverse flooding of 405 acres of potentially farmable farmland which is exempt from Farmland Protection Policy Act. Downriver, there will be negligible increased flooding with 3.18% reduction of flood control storage. *Mitigation Measures: No mitigation.*
Socioeconomic Resources	Minimal potential flooding of some roads and facilities on the Flint Hills National Wildlife Refuge. Inundation of 556 acres of land surrounding John Redmond Reservoir. No discernible adverse economic impact or land use effects downstream of John Redmond Reservoir. With reallocation from the flood control pool, there is potential for increased downstream flood risks. However, hydrological and economic analyses of the impacts indicates those changes to be minimal. Inundation of Strawn Flats boat ramps and parking lot. *Mitigation Measures: See Mitigation (replacement) of Biological Resources*. There are no recreation impacts. Informational and public awareness programs for downriver entities will be developed as part of normal project operations by USACE and State of Kansas.
Cultural Resources	No National Register-eligible sites within the 1041.0 elevation conservation pool. Section 106 compliance complete. *Mitigation Measures: No mitigation measures.*
Hazardous, Toxic, Radioactive Wastes	No known issues. *Mitigation Measures: No mitigation.*

5.3.11 ADMINISTRATION GOALS. The identification and evaluation of alternatives for this reallocation study were guided by the Corps' 26 March 2002 Environmental Operating Principles (EOPs), and the USACE Campaign Plan.
The Environmental Operating Principles are:

- Foster sustainability as a way of life throughout the organization.
- Proactively consider environmental consequences of all Corps activities and act accordingly.
- Create mutually supporting economic and environmentally sustainable solutions.
- Continue to meet our corporate responsibility and accountability under the law for activities undertaken by the Corps, which may impact human health and natural environments.
- Consider the environment in employing a risk management and systems approach throughout the life cycles of projects and programs.
- Leverage scientific, economic, and social knowledge to understand the environmental context and effects of Corps actions in a collaborative manner.
- Employ an open, transparent process that respects views of individuals and groups interested in Corps activities.

Throughout the reallocation study, the views of agencies, groups, and individuals were sought through a public review process of study alternatives and results. Analyses sought to find both an economic solution for a critical water supply need for the State of Kansas as well as environmental sustainability through replacement of critical facilities to be inundated by the proposed conservation pool raise at John Redmond Lake. Risk management played an important role in considerations of levee safety with respect to ensuring appropriate repairs to the Hartford Levee prior to further considerations of pool level increases.
Goal 2 of the USACE Campaign Plan is aimed at engineering sustainable water resources for the Nation. Specifically, Goal 2a is to deliver integrated, sustainable, water resource solutions. Goal 2b is to implement collaborative approaches to effectively solve water resources problems. These goals guided the development of this reallocation study for John Redmond Dam and Reservoir, KS.

6.0 NEPA DOCUMENTATION (Views of Public, State, Federal and Local Interests)

Official notification of the scoping period began with publication of the Notice of Intent (NOI) on March 7, 2001, in the *Federal Register*. Two public scoping meetings were held in conjunction with the notice, the first in Burlington, Kansas (March 29, 2001), and the second in Chetopa, Kansas (April 5, 2001). An advertisement for the scoping meeting was placed in the Coffey County Republican newspaper on March 14, 2001. A total of 30 individuals were present in each meeting and represented citizens and county, State, and Federal agencies.

Publication of the Draft Supplemental to the Final Environmental Statement (DSFES) was announced in the Federal Register on 28 June 2002 and the DSFES was circulated for agency

and public review comments from 11 July 2002 to 11 September 2002. Copies of all agency letters, as well as substantive written comments received from the public are included in Appendix H of the final SFES. Comments were received from two Federal agencies (U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service), two state agencies (Kansas Historical Society, Kansas Water Office), two local agencies, and the general public. Substantive comments and responses to these comments are provided in Table 1-2 of the final SFES starting on page 1-14.

A Biological Assessment (BA) was submitted to the USFWS as part of the coordination undertaken to comply with the Endangered Species Act. The USFWS concurred with the Corps' determination that the reallocation of storage at John Redmond would not likely adversely affect Threatened and Endangered species over and above current operations. Specific coordination with the USFWS can be found in Appendices C and D in Volume II of the SFES. The BA can be found in Appendix D. The mitigation/replacement elements discussed in this report can also be found in Appendix D.

Informal contact with State and Federal resource agencies also was conducted, in a workshop format, informing them of the proposed rise in the pool level and date and time of the workshop. Of those attending the workshop, the following summarizes the comments from individuals:

- Remove the logjam at Jacob Creek
- Logjam is causing increased flooding in the upper reaches of the lake and is flooding wildlife management areas, cropland, and is affecting the Kansas Department of Wildlife and Park's (KDW&P) seasonal pool manipulation plans.
- High pools isolate non-easement lands preventing farmers from harvesting crops.

In response to the NOI and agency notification, a total of 17 comment forms, letters, and e-mails were received. The content of the comments are similar to the concerns expressed at the public meetings, and include:

- Three respondents were for the 2-foot raise in water level.
- Nine opposed the reallocation due to loss of flood control storage.
- Three wanted the lake to be dredged.
- Four noted that habitat would be affected
- Two noted that it would improve recreational opportunities and one was opposed because it was done strictly to benefit recreation.
- Three stated that the logjam needs to be removed.
- 101 individuals from the area signed a petition for removal of a logjam 0.9 miles east of the Jacob Creek boat ramp.

7.0 CONCLUSIONS AND RECOMMENDATIONS

7.1 Summarization of Findings

Based on the evaluation of several alternatives, the recommended alternative is to increase the top of the conservation pool elevation from 1039.0 to 1041.0 feet NGVD to comply with storage contract agreements. Congressional approval would normally be needed for storage reallocation that would involve major structural or operation changes. Fifteen percent of total storage capacity allocated to all authorized project purposes or 50,000 acre-feet, whichever is less, may be reallocated for water supply at the discretion of the Commander, HQUSACE. The proposed reallocation is for 17,200 acre-feet and falls within this approval authority. Due to the atypical nature of this reallocation, HQUSACE has determined that the Reallocation Report will be forwarded to the ASA (CW) for approval.

In summary, a storage reallocation can be accomplished at John Redmond Reservoir to allocate 17,200 acre-feet of flood storage for water supply. The almost doubling of sediment in the reservoir will result in the conservation pool being reduced by 52% by year 2014. This reallocation would allow the Federal government to meet the intent of its initial 1975 agreements with the KWO for water supply contracts of 37,450 acre-feet through 2014.

Replacement measures, as agreed to by the State of Kansas, will offset long term adverse effects. The Kansas Water Office has already paid for the agreed on replacement measures. The current projected costs for these modifications are estimated as outlined in Table 12. The replacement measures already completed by the US Fish and Wildlife Service with funding provided by KWO are:

- Boat Ramp and Parking Area Replacement
- Replacement of Strawn Flats and Goose Bend #4 Dikes, Outlet Works and Pumping Facilities
- Update the Neosho Basin Management Plan
- Update the Annual Water Level Management Plan
- Perform Post-Development Impact Evaluation Studies for Wetland Development above Elevation 1041.0
- Replacement of Wetland and Riparian Woodlands

In addition, informational and public awareness programs for downriver entities as described in Section 5.8 of the SFES will be developed at nominal cost by the USACE and State of Kansas as part of normal project operations.

There would be minimal increase in flood flow releases. Reservoir water quality would be slightly improved. The additional storage would facilitate water quality releases during drought periods consistent with the terms of the 1985 Memorandum of Understanding between the Corps of Engineers and the State of Kansas.

The hydrology analysis for this study shows that the loss of flood storage would not significantly affect downstream flooding. Impacts to structures or crops due to flooding are minor. An analysis of downstream flow and frequency curve-duration data shows little measurable increases in flood stages at downstream locations. The potential flood control benefits lost is considered insignificant.

7.2 Reference Applicable Web Sites

- WEB 1, http://www.swt..army.mil/recreat/
- WEB 2**,** http://www.swt..army.mil/recreat/OPSField

7.3 Recommendation of the District Engineer

Based on the findings in this study and the Supplement to the Final Environmental Statement, I recommend changing the elevation of the conservation pool at John Redmond Dam and Reservoir, Kansas, from 1039.0 to 1041.0 feet NGVD by reallocation of 17,200 acre-feet of storage from the flood pool. This reallocation will provide sufficient conservation storage to comply with existing Corps of Engineers and KWO water supply agreements at John Redmond Reservoir.

All replacement costs outlined in section 7.1 have been provided by the Kansas Water Office and State of Kansas through local appropriations, and all replacement work has been completed.

MICHAEL J. TEAGUE
Colonel, EN
Commanding

The recommendations contained herein reflect the information available at this time and current Departmental policies governing formulation of individual projects. They do not reflect program and budgeting priorities inherent in the formulation of a national Civil Works program nor the perspective of higher review levels within the Executive Branch. Consequently, the recommendations may be modified before they are transmitted to the Congress as proposals for authorization and implementation funding. However, prior to transmittal to the Congress, the sponsor, the States, interested Federal agencies, and other parties will be advised of any modifications and will be afforded an opportunity to comment further.