



US Army Corps  
of Engineers®  
Tulsa District

# SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT

## LAKE TEXOMA STORAGE REALLOCATION STUDY, LAKE TEXOMA, OKLAHOMA AND TEXAS

March 2010





## FINDING OF NO SIGNIFICANT IMPACT

In accordance with the National Environmental Policy Act of 1969, including guidelines in 33 Code of Federal Regulations, Part 230, the Tulsa District has assessed the environmental impacts of reallocating 300,000 acre-feet of hydropower storage to water supply storage at Lake Texoma, Oklahoma and Texas. The Water Resources Development Act of 1986 (Public Law 99-662), authorized the Secretary of the Army to reallocate this storage for municipal, industrial, and agricultural water users in both Oklahoma and Texas (a reallocation of 150,000 acre-feet for use by each state). To account for cumulative effects of this action consistent with provisions of the Red River Compact and Public Law 99-662, impacts of the identification of a total of 300,000 acre-feet for potential future reallocation from hydropower storage to water supply have been assessed. However, reallocation of only 150,000 acre-feet of storage via execution of pending water supply contracts from Texas water supply users is the only immediate storage reallocation anticipated. Future reallocation of storage for Oklahoma entities would be dependent upon requested water supply contracts from these users. No such requests have been received to date.

This supplemental environmental assessment (SEA) was prepared to provide additional supporting information and details for analyses previously presented in the Final Environmental Assessment, Lake Texoma Storage Reallocation Study, Lake Texoma, Oklahoma and Texas (May 2006) prepared by the Tulsa District (Tulsa District 2006). The original environmental assessment (Tulsa District 2006) and the attached SEA are both incorporated by reference and were prepared in accordance with U.S. Army Corps of Engineers Regulations, Part 230, Policy and Procedures for Implementing the National Environmental Policy Act.

Impacts assessed for the proposed action included, but were not limited to, those related to socioeconomics, natural resources, cultural resources, and threatened and endangered species. Of particular importance to this assessment was determination of appropriate compensation to hydropower entities for impacts related to hydropower production. Accordingly, considerable coordination and communication with the Southwestern Power Administration and its power customers was conducted and varying methods and procedures for compensation assessed and considered. These considerations are described in the attached and incorporated SEA.

It has been determined from the enclosed Supplemental Environmental Assessment that the storage reallocation will have no significant adverse effects on the natural or human environment. Therefore, an environmental impact statement will not be prepared.

MAR 5 2010  
Date

  
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Anthony C. Funkhouser  
Colonel, U.S. Army  
District Commander

Enclosure: Supplemental Environmental Assessment

**SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT  
LAKE TEXOMA STORAGE REALLOCATION STUDY,  
LAKE TEXOMA, OKLAHOMA AND TEXAS**

**Prepared by:**

**U.S. Army Corps of Engineers  
Southwestern Division  
Tulsa District**

**March 2010**



**SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT  
LAKE TEXOMA STORAGE REALLOCATION STUDY,  
LAKE TEXOMA, OKLAHOMA AND TEXAS**

**1. Purpose, Need, and Scope**

The U.S. Army Corps of Engineers, Tulsa District, is evaluating the authorized reallocation of storage in Lake Texoma, Oklahoma and Texas, for the purpose of increasing storage available for water supply. The Water Resources Development Act of 1986 (Public Law 99-662), Sec 838, authorized the Secretary of the Army to reallocate a total of 300,000 acre-feet (150,000 acre-feet each for Oklahoma and Texas) from hydropower to water supply storage. If reallocations authorized by Sec 838 were implemented, the water supply storage in Lake Texoma would increase from a total allocation of 150,000 to 450,000 acre-feet. The requested reallocation for immediate need is 150,000 acre-feet, which would increase water supply storage to 300,000 acre-feet.

The National Environmental Policy Act (NEPA) of 1969 (Public Law 91-190) requires all Federal agencies to address the environmental impacts of any major Federal action on the natural and human environment. Guidance for complying with NEPA is contained in Title 40 of the Code of Federal Regulations (CFR), Parts 1500 through 1508, and in Engineering Regulation 200-2-2, *Procedures for Implementing NEPA*. The primary intent of NEPA is to ensure that as a part of the decision-making process, Federal agencies consider the potential environmental consequences of their proposals, document the analysis, and make the information available to the public prior to implementation. The objective of this supplemental environmental assessment (SEA) is to assure that both the intent and procedural requirements under NEPA are fulfilled for proposed storage reallocation at Lake Texoma. This includes the requirement to analyze the cumulative effects of the reallocation of the total amount authorized for water supply storage should future water supply contract requests require this amount. The total storage would consist of reallocations prior to Sec 838 that total about 150,000 acre-feet and reallocations authorized by Sec 838 that total 300,000 acre-feet.

An analysis of environmental impacts associated with storage reallocation at Lake Texoma was initially presented in the *Final Environmental Assessment, Lake Texoma Storage Reallocation Study, Lake Texoma, Oklahoma and Texas*, dated May 2006 (Tulsa District 2006). A Finding of No Significant Impact (FONSI) for the action was signed by the Tulsa District Engineer on 24 May 2006. These documents, along with the two draft environmental assessments (EAs) prepared during the NEPA process are readily available via the e-library link on the Tulsa District's webpage at [www.swt.usace.army.mil](http://www.swt.usace.army.mil).

The main purpose of this supplemental environmental assessment is to provide additional supplementary information and further technical detail for analyses conducted as part of the original project EA (Tulsa District 2006). Accordingly, the SEA proposes neither additional alternatives not evaluated in the original project EA nor an alternate proposed action. Rather, information included in the SEA consists primarily of further explanation and detail supporting original analyses such as water supply demand estimates and justification for initial screening of alternatives (e.g., reallocation from flood control storage). A consistent numbering system for like alternatives cross-referenced in the NEPA document and reallocation report for this action is likewise provided. Finally, this SEA incorporates additional analysis and calculation of hydropower-related variables and compensation based on further coordination and negotiation with hydropower interests with a stake in reallocation of Lake Texoma storage.

In an effort to minimize redundancy, this SEA makes substantial use of incorporation of existing documents by reference as specified in 40 CFR 1502.21. Accordingly, the original EA for this action (Tulsa District 2006) is incorporated by reference as is the updated and revised storage reallocation report (*Storage Reallocation Report, Lake Texoma, Oklahoma and Texas*, March 2010) (Tulsa District 2010). The latter is attached to and combined with this SEA (see 40 CFR 1506.4) and contains much of the detailed information referenced herein. It should be noted that the attached reallocation report has been expanded and updated with additional detailed information, including an addendum dated 1 October 2009, and therefore supersedes the earlier version contained as Appendix F of the original project EA (Tulsa District 2006).

An important distinction for this study is the difference between water supply storage authorized and identified for future reallocation and that actually reallocated to water supply. The latter is defined as that storage that has been reallocated from other purposes to water supply via execution of a valid water supply storage contract and initiation of payment for storage by the user. In an effort to meet the intent of NEPA by addressing cumulative effects of the eventual allocation of the total authorized storage for water supply at Lake Texoma (450,000 acre-feet), this assessment includes an impact analysis for this total authorized amount. Accordingly, the SEA addresses impacts associated with all total storage (including that currently allocated to water supply as well as that identified for future reallocation) while recognizing that actual water supply storage reallocation will likely occur in increments over time as water supply contracts are requested from users in Oklahoma and Texas. Each such incremental reallocation will be accompanied by a review of existing NEPA documentation relative to any changes to environmental conditions or other circumstances that have occurred over time and might require updated review under NEPA. If deemed necessary, appropriate additional NEPA documentation will be prepared prior to issuance of new water supply storage contracts.

## **2. Measures/Alternatives**

During plan formulation the goal is to identify and perform an initial evaluation of preliminary measures and alternatives for water supply. Consideration of all reasonable

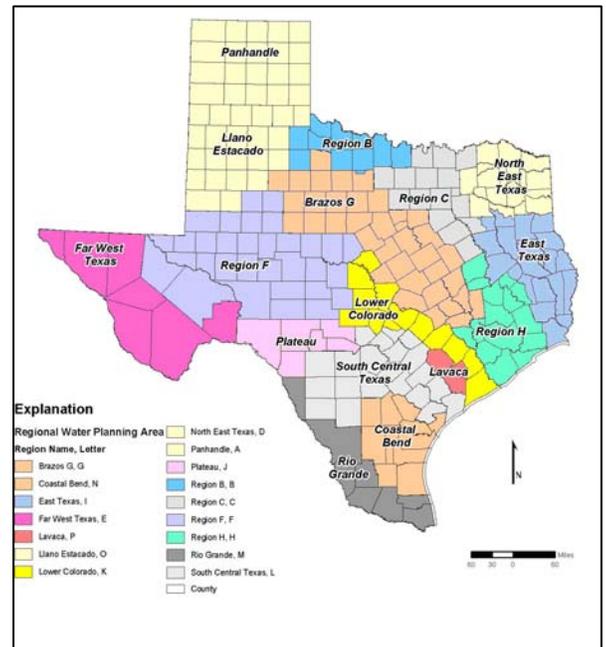
alternatives is required under NEPA to create a better decision-making process for implementing projects and programs that could adversely impact the environment. NEPA requires Federal agencies to incorporate environmental considerations in their planning and decision-making process and requires the use of a systematic and interdisciplinary approach. The Planning Guidance Notebook, Engineering Regulation (ER 1105-2-100), dated April 2000, requires the formulation and evaluation of a full range of reasonable alternative plans. Alternative plans are formulated to take into account the overall problems, needs, and opportunities afforded by the proposed action. Those plans are assessed in a manner consistent with the national objective of contributing to National Economic Development (NED) and protecting the Nation's Environment, and consistent with Federal laws and regulations. The NED objective is to provide the most cost-effective water supply source to meet the region's future municipal and industrial requirements.

**2.1 Water Supply and Demand.** The demand for water in the region and the current and potential water supply to meet future needs is based on the Oklahoma Comprehensive Water Plan and the Texas State Water Plan.

No immediate water demand has been identified for the Oklahoma portion of the study area, either in adjacent counties or major metropolitan areas; however, desires to preserve Oklahoma water resources at Lake Texoma are specified in the Red River Compact. The Oklahoma Southern Region sub-state regional water planning districts represent the region around Lake Texoma. This region consists of Atoka, Bryan, Carter, Coal, Garvin, Johnston, Love, Marshall, Murray, and Pontotoc counties in Oklahoma.

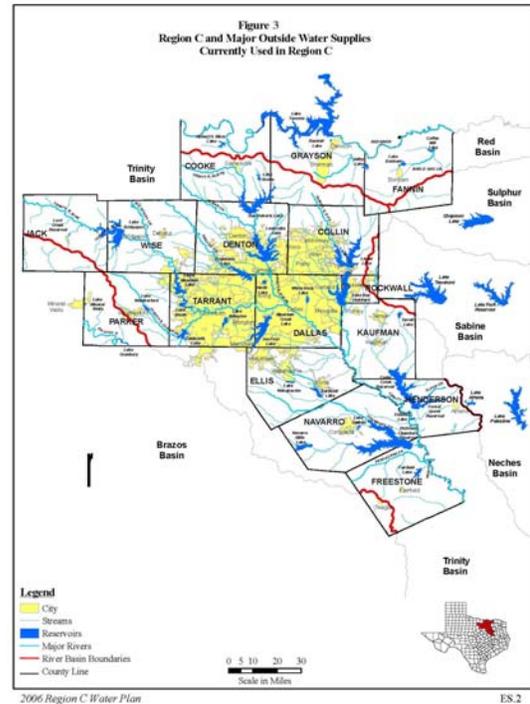
The Texas portion of the study area includes the counties and water systems or districts in the north Texas region that are currently using Lake Texoma water or may use Lake Texoma water in the future. The North Texas region is defined as Regional Water Planning Group, Region C (see Figure SEA-1), which includes Grayson County adjacent to Lake Texoma mainly in the Red River Basin, and the Dallas-Fort Worth metropolitan area, lying mostly in the Trinity River Basin.

Figure SEA-1  
Texas Water Development Board Regional Water Planning Areas



The evaluation of water supply and demands for water in the Texas region utilized the “Initially Prepared Texas State Water Plan for Region C 2006,” June 2005 draft. The data and information in that report are consistent with both the 2006 Region C Water Plan, and the draft 2007 State Water Plan, which was adopted by the Texas Water Development Board (TWDB) on 14 November 2006. The 15 regional plans for Texas that were adopted by the Regional Water Planning Groups (RWPG) were delivered to the TWDB in January 2006. This plan was posted in May 2006 to the website, <http://www.twdb.state.tx.us/RWPG>. A map of Region C, taken from the 2006 Region C Water Plan, is provided in Figure SEA-2 below.

Figure SEA-2. Texas Region C.



There are over 34 reservoirs in Texas Region C with conservation storage pools exceeding 5,000 acre-feet. Additional reservoirs outside the region also provide water supply to the region. Sources include groundwater, surface sources, and water reuse. Although use of groundwater has been decreasing, the Trinity Aquifer supplies most of the groundwater used in this region, mainly in rural areas. Ninety percent of the total water supplied in the region is from surface sources. Municipal supply accounts for about 85% of current water use. Little wastewater is treated and returned for use although municipalities are considering reuse as a source of future supply. In addition to the Greater Texoma Utilities Authority (GTUA) serving the Sherman-Denison communities in Grayson County, there are five major water providers in the region. They are: a) North Texas Municipal Water District (NTMWD), b) Dallas Water Utilities (DWU), c) Tarrant Regional Water District (TRWD), d) the city of Fort Worth, and e) the Trinity River Authority (TRA). Since the NTMWD and the GTUA have requested additional water supply storage at Lake Texoma, existing and potential sources of water supply for the NTMWD and the GTUA are discussed in detail in Section 3 of the incorporated reallocation report (Tulsa District 2010).

Future Oklahoma demand for quality water is dependent on geographical locations within Oklahoma, with ample sources of water being abundant in the eastern portions of the region and relatively scarce in the western portions. The Oklahoma Water Resources Board (OWRB) and the U.S. Army Corps of Engineers, Tulsa District, are in the process of determining future demands for water and sources of water supply for inclusion in the Oklahoma State Water Plan, which is expected to be completed by 2011.

Although all 16 counties in Region C are evaluated in the Texas State Water Plan, five counties (Collin, Dallas, Denton, Grayson, and Tarrant) stand out for comparative purposes relative to probable future use of Lake Texoma water. There are 35 wholesale water providers and 351 water user groups in Region C. Major water providers serve all or portions of other counties as well. These counties have as their major providers of water the NTMWD (Collin County), the DWU (Dallas County), and the GTUA (Grayson County). Two other counties, Denton (DWU) and Tarrant (TRWD), also account for expected large future municipal water demands. Water conservation is also built into the demand projections. Currently implemented water conservation strategies and water conservation assumption are implicit in the water demand projections for the region.

Table SEA-1 shows historical and forecasts future water demand for selected counties in Region C. These counties represent the majority of the demand for water in the region. By 2010, it is expected that about 1,768,464 acre-feet of water will be demanded in Region C, of which 1,534,703 acre-feet is municipal, according to the 2006 Water Plan.

<b>TABLE SEA-1</b>					
<b>HISTORICAL AND PROJECTED WATER DEMAND BY SELECTED COUNTIES</b>					
<b>(acre-feet)</b>					
<b>County</b>	<b>Year</b>				
	<b>2000</b>	<b>2010</b>	<b>2020</b>	<b>2040</b>	<b>2060</b>
Collin	138,316	211,501	287,247	402,383	526,315
Dallas	623,535	714,952	785,788	879,106	1,055,030
Denton	93,982	162,003	212,211	307,951	406,700
Grayson	32,478	38,656	45,954	55,613	66,715
Tarrant	311,066	399,714	451,536	559,650	718,098
Total	1,199,377	1,526,826	1,782,736	2,204,703	2,772,858
Region C Total	1,380,556	1,768,464	2,100,519	2,622,513	3,311,217
Municipal	1,196,452	1,534,703	1,828,831	2,294,491	2,915,773

Source: Region C Water Plan 2006.

An analysis of the 2006 Regional Water Plan Region C, which was incorporated into the 2007 Texas Water Plan, includes a detailed analysis of the future water supply needs of the region served by Lake Texoma. That plan identifies Lake Texoma as a primary water supply source for Texas State Planning Region C. Between 2010 and 2060 the population of the region is projected to grow 98%, from 6,625,000 to 13,087,849. The

water plan projected an 87% increase in Region C long term water demand, a 1,540,700 acre-feet increase, between years 2010 and 2060. In addition, recent analysis by the Texas State Demographer indicates that population projections used in the State Water Plan for the Region C area are already outdated and underestimate population trends for the Region. The total population of Region C on January 1, 2008 was 6,539,000. Water demand in Region C is expected to increase proportional to population increases.

Information from the Texas Water Plan clearly demonstrates both short and long term need for Lake Texoma water supply storage. The Water Plan projects an increase in needs of 611,000 acre-feet of water, based on existing water supply and future demands from 2010 to 2030 for Region C.

The State of Texas Water Plan projected the water demand for region C to be 1,768,464 acre-feet in 2010. Short term water supply needs through year 2010 indicates that there is a deficit of 254,451 acre-feet in region C based on connected supply. This deficit will rise to 1,931,933 acre-feet by year 2060. Municipal water demand accounts for about 89 percent of the deficit. Current deficits are being met through conservation and temporary interim water management strategies.

Long range projections identify that the needs will continue to increase through the year 2060. The plan identifies Lake Texoma as an existing and primary source to provide an additional 100,000 acre-feet of water supply storage by 2010. Based on immediate short term demand, the NTMWD has requested 100,000 acre-feet of storage in Lake Texoma. Fifty thousand acre-feet of storage has been requested by the GTUA. Appendix B of the Reallocation Report (Tulsa District 2010) contains letters from GTUA and NTMWD indicating their need for additional water supply storage and their intent to sign approved agreements for storage at Lake Texoma. In anticipation of increased demand and approval by the Assistant Secretary of the Army (Civil Works), ASA (CW), of the reallocation report and water storage agreements, the North Texas Municipal Water District is analyzing plans for a future desalinization plant and has received permits from the state of Texas for disposal of the plant's products. Normal business practices require that future storage agreements are in place in order to obtain funding necessary to build the plant.

While the population and water demand in Region C are expected to continue to increase, as discussed above, the total water supply of Region C is projected to decline by approximately 10%, between 2010 and 2060, from 1,979,727 acre-feet to 1,906,007 acre-feet. Existing reservoirs provide nearly 60% of total water supply in the region. About 28 percent of the water used in Region C is imported from other regions. The State Water Plan identifies four new major reservoirs at a capital cost of \$13.2 billion in 2002 dollars, and also acknowledges that this water management strategy could prove difficult to implement due to cost and regulatory requirements. Being an existing current source of water for both NTMWD and GTUA, Lake Texoma water supply storage is the most realistic and economically viable water supply alternative for these entities that serve the region.

**2.2 Measures/Alternatives.** Measures for this SEA were the same as those evaluated in the original Lake Texoma storage reallocation final EA (Tulsa District 2006). In addition to the “No Action” alternative, measures included potential non-structural solutions (basically those involving water conservation measures), a range of structural measures involving additional water supply sources as well as water diversion downstream of Denison Dam, and measures involving storage reallocation from the existing conservation pool and reallocation from flood control storage. These measures were developed into alternatives which are summarized here and thoroughly discussed in the incorporated reallocation report (Tulsa District 2010). For the sake of numbering consistency, these measures are identified in Table SEA-2 below. This table therefore replaces the similar table on page 9 of the original final EA (Tulsa District 2006) with a numbering system and information consistent with that presented in the Reallocation Report (Tulsa District 2010).

This section documents a preliminary screening of measures for: (a) an identification of the most likely source for water supply, and (b) an identification of which storage reallocation, with options of flood control or conservation pool storage, would be most appropriate when considering economic, social, and environmental impacts of the potential reallocation.

**2.2.1 Preliminary Alternatives.** During plan formulation the goal is to identify and perform an initial evaluation of preliminary measures and alternatives for water supply. Consideration of all reasonable alternatives is required under the Economic and Environmental Principles for Water and Related Land Resources Implementation Studies. The National Environmental Policy Act (NEPA) requires Federal agencies to incorporate environmental considerations in their planning and decision-making process and requires the use of a systematic and interdisciplinary approach. The Planning Guidance Notebook, Engineering Regulation (ER 1105-2-100), dated April 2000, requires the formulation and evaluation of a full range of reasonable alternative plans. Alternatives are formulated to take into account the overall problems, needs, and opportunities afforded by the proposed action. Those alternatives are assessed in a manner consistent with the national objective of contributing to National Economic Development (NED) and protecting the Nation's Environment, and consistent with Federal laws and regulations. The NED objective for water supply is to provide the most cost-effective water supply source to meet the region's future municipal and industrial requirements.

**Table SEA-2**

**Evaluation Matrix of Preliminary Measures  
Screening Criteria and Results**

	<b>Measure</b>	<b>Meet Future Water Demands</b>	<b>Hydropower Impacts</b>	<b>Environmental Impacts</b>	<b>Flood Control Impacts</b>	<b>Recreation Impacts</b>	<b>Economic Costs</b>	<b>Evaluated in Previous Studies</b>	<b>Comment</b>	<b>Further Evaluation</b>
	No Action	No	No	No	No	No	NA	Yes	This is the basis for evaluation of action alternatives.	Yes
1	New Groundwater Wells	No	No	Low	No	No	High	Yes	Production not sufficient to meet high municipal and industrial demands.	No
2	Existing Surface Water Sources (Other than Lake Texoma)	No	No	Low	No	No	NA	Yes	All existing sources are already scheduled and prioritized in Texas State Water Plan, Region C	No
3	New Surface Water Sources	Yes	No	Yes	Yes	Yes	High	Yes	Accounted for in Region C in Texas State Water Plan	No
4	Downstream Red River Diversion	Yes	No	Yes - Medium	No	Yes	High	Yes	Economically unfeasible, excessive water loss, extensive pipeline construction.	No
5	Conservation	No	No	No	No	No	Low	No	Conservation incorporated into Region C water management strategy prior to use of Lake Texoma	No
6	Change in Pools – Reallocation from Flood Control Pool	Yes	Yes	Yes	Yes	Yes	High	Yes	Potentially high economic and environmental impacts; may impact dam safety certification rating.	Yes
7	Reallocation from Conservation Pool	Yes	Yes	Yes - Low	No	Yes Low	Low	Yes	Legislative authorization to reallocate storage to water supply storage.	Yes

Problems and needs in the Lake Texoma region include insufficient sources of municipal and industrial water supply at affordable costs to meet future municipal and industrial needs. Water marketers in Texas have identified a need for additional storage in Lake Texoma as a high priority and economical source of water in their water management strategy. Due to the increasing time required for the Corps to evaluate the issues of storage reallocation and near term need, water marketers in Texas have requested storage for immediate need. The reallocation opportunity would provide an incremental source of water supply of sufficient quantity and reasonable cost to meet demands. The storage available at Lake Texoma for water supply will not meet all of the expected future demand for water in the region.

For Oklahoma, water supply and demand information is taken from studies completed by the Tulsa District for the Oklahoma Water Resources Board (OWRB) in support of the Oklahoma State Water Plan. This study indicates that at this time, existing and potential sources of water supply are available to meet future municipal and industrial needs in the Oklahoma region surrounding Lake Texoma.

The identified need examined in this reallocation report is at the request of the North Texas Municipal Water District (NTMWD) for additional water supply storage of 100,000 acre-feet and GTUA's request for 50,000 acre-feet from Lake Texoma. The Region C Water Plan recommends, as a water management strategy, the reallocation of 100,000 acre-feet of storage in Lake Texoma to the NTMWD and 50,000 acre-feet of storage to the GTUA, as directed in the 1986 WRDA.

The "Denison Dam-Lake Texoma Restudy, Oklahoma and Texas, Feasibility Report," completed by the Corps of Engineers in September 1990, evaluated whether Lake Texoma should be modified to deal with present and projected water supply resource problems particularly the needs in the North Texas region in conjunction with increased hydropower production at Lake Texoma. Although the restudy focused on increasing hydropower production at Denison Dam, subject to growing North Texas water supply demand constraints, the restudy is useful to the preliminary plan formulation of this reallocation. Evaluation of the 1990 alternative plans regarding changes in the size of the conservation pool and the flood pool at Lake Texoma are useful in selection of alternatives for this reallocation.

**2.2.2 No Action.** The Council on Environmental Quality (CEQ) regulations implementing the provisions of NEPA requires Federal agencies to consider a No Action alternative. These regulations define the No Action alternative as the continuation of existing conditions and their effects on the environment, without implementation of, or in lieu of, a proposed action. The No Action alternative represents the existing condition, would not result in any new project-related environmental impacts, and serves as the baseline against which to compare the effects of the other alternatives. The Corps considers the option of "No Action" the condition reasonably expected to prevail over the period of analysis, given current conditions and trends, and assuming that no project would be implemented by the Federal government to achieve the planning objectives. No Action is synonymous with the without-project condition and is the basis from which other alternatives are measured.

**2.2.3 Action Measures.** The measures are proposed to provide an equivalent quality and quantity of water that the non-Federal interest would undertake in the absence of using storage from Lake Texoma.

**Measure 1: Groundwater Wells.** Current use of groundwater exceeds or is near the estimate of long-term reliable groundwater supply in some counties in Region C. The Region C Water Plan indicates that water suppliers will need to develop alternate sources of water supply since groundwater resources are overused by temporary over drafting. Some entities in the region rely on groundwater to meet existing and future water needs. These users tend to need smaller quantities of water. However, with large users, the quantity of water available from groundwater wells would not be sufficient to meet long-term future needs for reliable water supply in the region. Temporary over drafting of groundwater can be used only as an interim measure until other supplies are developed. Groundwater wells would not be a reasonable alternative to Lake Texoma storage reallocation.

**Measure 2: Existing Surface Water Sources.** The Region C Water Plan is a guide to utilization of existing sources of water supply. The plan discusses existing sources of surface water supply currently used and expected to be used in the region to year 2060. The water management strategy in Region C is to use those sources of supply that are the most cost effective and viable to meet demands. Existing surface water sources are already considered Region C water strategies and would not meet water needs.

**Measure 3: New Surface Water Sources.** The Region C Water Plan discusses all new sources of surface water supply currently used and expected to be used in the region to year 2060 to meet future water demands. In addition, the water management strategy and institutional problems are presented by decade and source of supply for the major water users along with their estimated costs of development. In some cases, several water using entities combine their resources to develop a new source of water supply for a shared use. The reallocation report discusses the water management strategy for the NTMWD and the GTUA regarding existing and new surface sources of water supply. New sources are recognized to be less cost effective than existing sources of storage. (Note: It should be noted that the “New Reservoirs Above Lake Texoma” alternative identified in the original EA (Tulsa District 2006) was added into this measure and screened accordingly).

**Measure 4: Downstream Red River Diversion.** The 1990 Restudy addressed pumped storage hydropower facilities at Lake Texoma with an afterbay dam constructed about 7 miles downstream of the existing dam. That study concluded that the afterbay pool would increase the tailwater elevation at the existing units and reduce their efficiency. This option was not economically feasible. Downstream re-regulation dams and offsite storage would be required with the Red River Diversion. Construction of a downstream dam was considered at the Kiamichi River but was removed from further study because evaporation and seepage would result in losses of up to approximately 25% between there and the Denison Dam. Water quality releases from Hugo Dam into the Kiamichi River could not be withdrawn for water supply without increased releases

from Hugo to replace water quality flows. This would result in a faster drawdown of Hugo Lake. Releases of water from Lake Texoma would have to be increased by the amount lost to evaporation and seepage which would result in a faster drawdown of Lake Texoma. Withdrawal of water from the Red River below Denison would require communities located in the upper reaches of Lake Texoma to construct extensive pipeline facilities to transport water greater distances rather than withdrawing water from intake structures located much closer within the lake. The need for a dependable supply using downstream water withdrawals would tend to require storage reallocation versus a run-of-river operation. Downstream Red River diversions would not be a reasonable alternative to Lake Texoma reallocation.

**Measure 5: Non-Structural Solutions - Conservation.** Potential non-structural solutions include those that would alter the demand for increased water supply in the future. These alternatives would at least partially address some of the problems and needs in the region. The non-structural alternative is to conserve water to reduce the need for additional sources of water supply. Water conservation can include altering the demand for water by water rationing and pricing methods. Communities and major water user groups, such as the NTMWD and the GTUA, already have plans to reduce water consumption as discussed in the “*Initially Prepared Region C Texas Water Plan 2006.*” Water reuse is also a viable non-structural alternative that has been implemented in many areas where permitted. Reuse water in Region C is expected to be about 771,000 acre-feet per year by 2060. Those communities and major water utilities, such as the NTMWD, that have undertaken steps to reuse water where feasible are shown in the Region C water plan. Where available, reuse water is utilized prior to development of other sources of water supply. Further conservation efforts would not be a reasonable alternative to Lake Texoma storage reallocation.

**Measures 6 and 7: Structural and/or Reallocations.** Reservoirs whose originally authorized project purposes may no longer be required to meet present needs or may be available for some new equal or higher purpose may offer an opportunity for reallocation. The opportunity to modify or update the authorized project purposes through reallocation of conservation storage or flood control storage may exist to respond to changing needs. For example, changes in a reservoir’s upstream conditions, such as reduction in sediment entering a stream, may provide an opportunity to consider whether to extend the period that sediment could be collected without encroachment on other storage or to allow part of the storage initially reserved for sediment to be reallocated to water supply. Similarly, reallocation may be appropriate where water quality storage originally provided to dilute pollutants may no longer be needed if pollutants are now being removed before being discharged into a stream or river. The reallocation of storage is the most common example of reallocation of conservation storage. This has been accomplished nationwide several times when the benefits of the reallocation are positive.

Reallocation of flood control space, however, may require an evaluation that identifies the costs and benefits of such an action. The Corps of Engineers Water Supply Manual has identified three conditions that may create an opportunity to reallocate flood control storage to water supply storage. These conditions are:

- Where reallocated flood control storage volumes are small and do not affect flood protection. The increase in flood damages downstream, within the reservoir pool, and other costs and/or damages to project purposes must be quantified. If the effect is large, Congressional action is required.
- Where the downstream floodplain has changed or supplemental protection has been provided. Mitigation of flood losses and/or damages and costs may require modification of existing structures, construction of new flood protection structures, or other measures, such as non-structural alternatives; and
- Where reservoirs have been designed to a maximum site capacity that is larger than required by hydrologic analysis. Upstream or downstream hydrologic changes may have occurred that would mitigate any loss in current flood protection.

The cost allocated to the non-Federal sponsor for the capital investment for reallocated storage space will normally be established as the highest of the benefits or revenues foregone, the replacement cost, or the updated cost of storage in the Federal project. The non-Federal sponsor is also responsible for any specific construction and/or operational costs associated with the reallocation action including costs associated with the revision of the water control plan and environmental mitigation costs.

Benefits foregone are usually estimated using standard Corps National Economic Development (NED) evaluation criteria for the remaining economic life of the project or 50 years, whichever is greater. Revenues foregone to hydropower are the reduction in revenues accruing to the U.S. Treasury as a result of the reduction in hydropower outputs based on the existing rates that are charged by the power marketing agency.

If the reallocated storage is being taken from the flood control pool and adverse impacts warrant replacement measures, it is appropriate to use the replacement cost of equivalent flood damage reduction measures. Examples of when replacement of flood control storage would be appropriate are when there is a real estate taking or when the value of the lost flood control storage is greater than the value of the added municipal and industrial storage. This would not be appropriate for reallocations within the discretionary authority of Commander, USACE, which by definition do not have severe impacts. In any event, the 1958 Water Supply Act as amended requires that any modification of a reservoir project that has been authorized, surveyed, planned, or constructed to include storage as provided in the Act, which would seriously affect the proposes for which the project was authorized, surveyed, planned, or constructed, or which would involve major structural or operation changes, shall be made only upon the approval of Congress.

**2.2.4 Evaluation of Preliminary Measures.** As noted in Table SEA-2 and for reasons described above, only two preliminary action measures were evaluated further following initial screening: Measure 6 (reallocation from flood control pool) and Measure 7 (reallocation from conservation storage). Further evaluation of these measures is summarized below.

**Measure 6: Reallocation from Flood Control Pool.** Two alternatives involving reallocation from the flood control pool (150,000 and 300,000 acre-feet) were subjected to further, more detailed screening evaluation. Specific details regarding this further screening process are provided in Section 4 of the incorporated Reallocation Report (Tulsa District 2010). In summary, alternatives involving reallocation from the flood control pool were deemed to not merit further consideration based on screening analyses of downstream flood damages, cultural resource and recreational facility relocation costs, and economic considerations. As reallocation from the conservation pool at Lake Texoma was clearly deemed to be the only cost effective option, measures involving reallocation from the Texoma flood control pool were not evaluated further in the Reallocation Report or this SEA.

**Measure 7: Reallocation from Conservation Pool.** Two alternatives involving reallocation from the Lake Texoma conservation pool (150,000 and 300,000 acre-feet) were likewise subjected to more detailed screening evaluation. Specific details are provided in Section 4 of the incorporated Reallocation Report (Tulsa District 2010). Storage reallocation from the Lake Texoma conservation pool was deemed to be the only economically feasible option for meeting short- and long-term needs of water supply users. Analysis of water supply needs indicates that water supply users in Texas have an immediate need for 150,000 acre-feet of storage in Lake Texoma. No Oklahoma water supply needs were identified but the Red River Compact apportions water storage equally between the states of Oklahoma and Texas. Therefore, the selected plan for near-term reallocation involves reallocation of 150,000 acre-feet but a plan involving 300,000 acre-feet was evaluated for implementation.

**2.2.5 Summary of Final Alternatives.** Measure 7 was developed into Alternatives 1 and 2 described below. Measure 6 was developed as Alternatives 3 and 4. The no action plan presents the existing conditions.

No Action. The existing condition represents the current 150,000 acre-feet of water supply storage within the conservation pool. The top of conservation pool elevation is 617.0 feet. The seasonal pool plan is also part of this condition that raises the top of conservation pool to elevation 619 feet for the June to August period.

Alternative 1. This alternative would reallocate an additional 150,000 acre-feet of storage from the conservation pool. The total water supply storage would be 300,000 acre-feet. The top of pool elevation would be 617.0 feet. The seasonal pool plan is also part of this condition that raises the top of conservation pool to elevation 619 feet for the June to August period.

Alternative 2. This alternative would reallocate an additional 300,000 acre-feet from the conservation pool. The total water supply storage would be 450,000 acre-feet. The top of pool elevation would be 617.0 feet. The seasonal pool plan is also part of this condition that raises the top of conservation pool to elevation 619 feet for the June to August period.

Alternative 3. This alternative would reallocate 150,000 acre-feet from flood control storage. The top of conservation pool would be raised to elevation 618.51, with no seasonal pool raises. The total water supply storage would be 300,000 acre-feet (150,000 acre-feet previously reallocated the conservation pool and an additional 150,000 acre-feet reallocated from the flood control pool).

Alternative 4. Alternative 4 would reallocate 300,000 acre-feet from the flood control pool. The top of conservation pool would be raised to 619.99 feet with no seasonal pool raises. The total water supply storage would be 450,000 acre-feet (150,000 acre-feet previously reallocated the conservation pool and an additional 300,000 acre-feet reallocated from the flood control pool).

### **3. Proposed Action.**

The proposed action is to reallocate hydropower storage to water supply storage to provide water to meet the projected water needs in the region, as described in the *Texas 2006 Region C Water Plan*. Under the proposed action, pool elevations at Lake Texoma would not be changed. As authorized by the Water Resources Development Act of 1986, 300,000 acre-feet currently in hydropower storage could be reallocated to water supply, creating a total of 450,000 acre-feet of water supply storage for Lake Texoma. The authorized reallocation would provide up to 150,000 additional acre-feet for municipal, industrial, and agricultural water users in the State of Oklahoma and up to 150,000 additional acre-feet for municipal, industrial, and agricultural water users in the State of Texas. This apportionment of the reallocation is consistent with the Red River Compact, which states that water storage in Lake Texoma, as well as flow from the main stem of the Red River into Lake Texoma, will be divided equally between the states of Oklahoma and Texas. While the proposed action considers potential reallocation of the entire 300,000 acre-feet authorized by Sec 838, it is likely that reallocation (occurring with execution of a water supply contract and initiation of payment by the user) would be accomplished incrementally over time until the total is attained. Based on current requests, it is anticipated that initial reallocations would occur for users in Texas as water supply contract requests from Oklahoma users have not been submitted to date. The proposed action includes immediate reallocation of 150,000 acre-feet for Texas users based on current water supply contract requests from the North Texas Municipal Water District (100,000 acre-feet) and the Greater Texoma Utility Authority (50,000 acre-feet).

Section 838 would require the Southwestern Power Administration (SWPA) to reimburse preferred hydroelectric customers. The methods and assumptions used to evaluate hydropower impacts, hydropower project account credits, and preferred customer reimbursement have been topics of considerable discussion and coordination between the Tulsa District, the SWPA, and the electric cooperatives. Analysis of these issues is incorporated by reference as presented in the reallocation report (Tulsa District 2010) and is summarized in this SEA. As this compensation methodology is based on further and extensive coordination with SWPA, methods and amounts presented in this updated

analysis supersede and therefore replace initial estimates presented in the original EA as summarized in Tables 1 through 3 of Tulsa District (2006).

Upon review of issues related to hydropower credit specific to this action, the Secretary of the Army provided final direction in a February 16, 2010 letter from the Assistant Secretary of the Army (Civil Works) to the Administrator of the Southwestern Power Administration. This letter and an attachment providing details of hydropower credit are included in Appendix A of this SEA. The proposed action includes hydropower credit for this reallocation in accordance with the letter and attachment.

#### **4. Affected Environment**

No substantial changes have occurred to the affected environment for this analysis relative to descriptions provided in the original EA (Tulsa District 2006). It is noted that the bald eagle (*Haliaeetus leucocephalus*) has been de-listed as a Federally-listed threatened and endangered species since preparation of the original EA. Though no longer Federally-listed, protection for bald eagles is still provided under several other Federal laws specific to eagles and migratory birds. It is likewise noted that zebra mussels (*Dreissena polymorpha*) were discovered in Lake Texoma during the summer of 2009. This invasive species has quickly become established and individuals are currently widespread throughout the lake.

#### **5. Environmental Impacts of the Proposed Action**

Environmental impacts of the proposed action are described in Section 5 of the original final EA (Tulsa District 2006) and are therefore incorporated in this SEA by reference. An impact assessment matrix summarizing results of impact analyses is provided in Table 13 (pp. 30-31) of Tulsa District (2006).

**5.1 Impacts to Hydropower.** Subsequent to preparation of the original final EA, considerable discussion and coordination has occurred with SWPA regarding analysis of and compensation for hydropower losses in accordance with requirements of P.L. 99-662, Section 838(d)(3). Detailed results of these analyses and associated compensation values are provided in the attached and incorporated reallocation report (Tulsa District 2010) and are likewise summarized below. This updated information relative to hydropower impacts and compensation replaces that provided in Section 5.2.2.3 (pp. 28-29) and elsewhere in the original final EA (Tulsa District 2006).

**Project Cost Accounts – Hydropower and Water Supply.** The potential for reallocation of federal hydropower project benefits to water supply storage benefits was envisioned by the Federal government with the Water Supply Act of 1958. This act authorized the Secretary of the Army to modify an existing Corps of Engineers project like Lake Texoma to include storage for water supply for State and local interests. Such a reallocation would reduce some portion of hydropower production in favor of water

supply storage if that reallocation is considered to be a more beneficial use of storage. In return for the water supply storage reallocation, a non-Federal sponsor will agree pay the Treasury as much or more for the storage as would be realized through the sale of hydropower over a specified period of valuation.

The 1958 Water Supply Act gave sufficient authority to adjust and credit the Federal project accounts as the Secretary determined to be reasonably necessary to reflect the economic consequences of the reallocation. Account transfers from water supply accounts to power accounts historically have been made to preserve the repayment capability of the power marketing agency for assets and operating expenses. Use of the term “operating expenses” herein is a broad characterization that would include major replacements and continuing operation costs that are single purpose or joint use costs assigned to (in this case) the hydropower purpose. The credit transfers are based on the equity concept that reallocation of storage and diversion of water from power production would adversely effect the power marketing agency’s ability to recoup costs it had agreed to cover. The vast majority of those costs were the initial construction costs (assets). The typical repayment period is 50 years. For Lake Texoma the 50-year period ended in 1994. Subsequent assets have been added to the hydropower account, and include major replacement costs such as rewinding turbines. These costs are relatively small in comparison to the \$1.4 billion total project cost.

Traditional policy for Lake Texoma credits was modified by provisions of Section 838 of the 1986 Water Resources Development Act. Traditional policy and the specific project provision of Sec 838 are discussed below. The modified policy established by Section 838 is discussed under “**Non-Traditional Policy – Project Specific Provisions of Section 838**” below.

**Traditional Policy.** The traditional Corps policy has been to transfer credits to hydropower accounts that are only sufficient to make up for amounts the power marketing agency could not collect because it would sell less hydropower. It has not been the Corps policy to reimburse the power marketing agency or their customers directly for their purchase of alternative power. To do so would have implied that power marketing agency customers have an absolute right to a power subsidy. While there is a reduction in the ability of the power marketing agency to repay costs allocated to hydropower, the transfer of storage to the water supply purpose also transfers the responsibility to repay an equal or greater value to the Treasury. Water supply repayment of costs is accomplished through the water supply user’s purchase of storage and associated operational costs.

The credit adjustments to project accounts are not transfers of funds among Federal agencies, they are Treasury account adjustments wherein the project account balances for assets and/or operating expenses allocated to a project purpose (in this case hydropower) are credited from the account of another purpose (in this case water supply). Historically the Corps has never considered it a legal obligation to authorize or provide any funds to any other government agency affected by the reallocation. The responsible power marketing agency could potentially receive an annual hydropower account credit

equal to the revenue lost (revenue foregone) as a result of a storage reallocation to water supply. The credit would potentially be limited to the account balance.

When there is a loss of revenue from existing purposes, or additional operation and/or maintenance expenses are incurred from existing purposes because of a water supply storage reallocation, these charges will be shown as a direct charge against the water supply function. All revenues lost to the project and the downstream areas must be considered. Traditionally, if hydropower revenues were to be reduced because of a water supply storage reallocation, the power marketing agency could be credited for the amount of revenues foregone to the Treasury because of the reallocation. This credit is typically estimated as a uniform annual credit. This is the first traditional credit condition.

In instances where existing repayment agreements between the power marketing agency and their customers (conditions within a power contract) would result in a cost to the Federal Government to acquire replacement power to fulfill the obligations of the agreements, an additional credit to the power marketing agency can be made for such costs incurred during the remaining period of the agreements. This is the second traditional credit condition. Corps regulations indicate that such credits would not be made until replacement costs are incurred and documented by the power marketing agency. This condition is problematic because the power marketing agency indicates that they are unable to document replacement power purchases, yet they indicate they should receive credit annually based on an estimated value of replacement costs – estimated at the time of a reallocation study and without consideration of actual hydrologic conditions, water supply withdrawals, hydropower generation, or power commodity prices that may exist throughout the credit period.

To summarize, the traditional policy for determining hydropower credits is contained in two conditions: [1] If hydropower revenues are reduced because of the reallocation, the power marketing agency could be credited for the amount of revenues foregone to the Treasury because of the reallocation assuming uniform annual credit. [2] In instances where existing repayment agreements between the power marketing agency and their customer would result in a cost to the Federal Government to acquire replacement power to fulfill the obligations of the agreements, an additional credit to the power marketing agency could be made for such costs incurred during the remaining period of the agreements. Traditional Corps policy indicates that the credit will be based on actual annual documented costs incurred by the power marketing agency to purchase replacement power.

While the second condition above is described here and in Corps regulation as an “additional credit,” only one credit condition may apply at any point in time. If there is an existing power contract in place (Contract A) at the time of a water storage reallocation and Contract A includes terms for the Federal government to purchase replacement power (a normal condition) and such replacement power purchases would result from a proposed water supply storage reallocation, then the Federal government will potentially have an expense for the purchase of replacement power from the time the

storage reallocation is implemented through the end of the power contract. The Federal obligation under guidance is for the increment of replacement power that results from the implementation of a storage reallocation – not for otherwise routine replacement power purchases by the PMA. That expense relates to the second (or additional) credit condition. The expense is termed potential because of the Corps policy that indicates credit will be based on actual annual documented costs incurred by the power marketing agency to purchase replacement power. Following the expiration of Contract A, a subsequent contract would likely be negotiated and executed between the power marketing agency and a power customer (one or more customers). If that contract (Contract B) also includes terms for the Federal government to purchase replacement power, the credit condition for replacement costs would not apply. This is because Contract B would have been executed after the reallocation of storage and would be based on the hydropower storage that remains.

Traditional policy is disseminated through the Planning Guidance Notebook, ER 1105-2-100, 22 April 2000 and is further explained in the Water Supply Handbook, Revised IWR Report 96-PS-4.

The Contract No. DE-PM75-00SW00435 between the United States of America and the Tex-La Electric Cooperative of Texas, Inc., and Rayburn Country Electric Cooperative, Inc is shown in Appendix G of the reallocation report (Tulsa District 2010). The contract covers all power marketed from the Lake Texoma (Denison Dam) project for all customers. The current contract will expire at midnight on 31 December 2018.

**Traditional Evaluation of Credit Term.** The purpose of managing accounts and Federal agency repayment to those accounts is to assign and assure repayment of the initial Federal investment in the project and in repayment of subsequent operating expenses for those specific or joint use purposes by the appropriate Federal agency. The term of repayment to the Treasury for the initial investment is typically envisioned to be 50 years. For Lake Texoma the initial hydropower investment has been repaid through power sales. Subsequent hydropower purpose assets have been added to the account and include major replacements, such as rewinding turbines. The large assets assigned to the hydropower account were repaid within the first 50 years of power sales and the subsequent assets (the result of major replacement costs) and operating expenses are relatively minor by comparison at about \$14 million. It is anticipated that these assets would be repaid within a few years just based on hydropower revenues.

**Applicable Credit Conditions Under Traditional Policy.** The two traditional credit conditions outlined above would be considered in the determination of traditional hydropower project account credits. The traditional credit conditions are briefly reviewed to provide a basis for comparison with the project specific credit provisions of Sec 838 discussed later.

The first traditional condition regarding a general revenue reduction would apply because the selected plan of reallocation would reduce the storage available to produce hydropower and would therefore have a negative impact on revenue generation. Even

though the initial construction and operating costs have been repaid from hydropower revenues, there are continuing operational costs and periodic major replacement costs that are applied to the hydropower account. While these costs are relatively small in comparison to the initial project costs, the concept of account repayment remains valid. Therefore a reduction in hydropower revenue resulting from water supply reallocation would qualify for a credit transfer from the water supply account to the hydropower account. The period of time during which such substantive transfers may occur is the duration of the water storage agreement wherein the water supply customer is making annual payments. Following the 30-year repayment period, the only funds provided by the water supply users would be annual joint-use operational payments. If credits were to be applied beyond the 30-year repayment term, then the maximum credit would be limited by the water storage share of operational expenses; or the value of credits beyond the 30-year water supply repayment period could be added to the credits during the 30-year water supply repayment period.

The second traditional condition regarding an existing hydropower contract and the purchase of replacement power by the power marketing agency to fulfill obligations of the agreement would not have been applied because a provision of the existing hydropower contract transfers the responsibility to purchase replacement power to the power customers in exchange for a reduced contract price. Provisions of Sec 838 may have been included to address the purchase of replacement power by the power customers. Because the SWPA is not responsible for the purchase of replacement power under the terms of the existing contract, the power marketing agency's ability to recoup Federal hydropower costs it had agreed to cover would not be impacted under the terms of the power contract. Therefore, the second credit condition would not be met under the terms of traditional policy and would not be applicable for determining credit to the hydropower account. The power customers would bear a greater risk of purchasing additional replacement, but that risk was considered when the reduced rate of the contract was negotiated and could also be mitigated through contract negotiations with the SWPA. An apparent lack of data regarding historic replacement power purchases would tend to complicate the issue, but estimates of those values could be developed by the power customers and by the SWPA using computer models versus financial accounting records.

Following are excerpts from the paper presented by H. Al Pless, Economist, U.S. Army Corps of Engineers, Savannah, Georgia, titled "*Reallocation of Water Storage in Federal Water Projects, Proceedings of the 1991 Georgia Water Resources Conference*," held March 19 and 20, 1991, at the University of Georgia.

While the document was developed to discuss the Corps policy of reallocation of water storage at a Georgia Water Resources Conference and it references water supply contracts for the Savannah River Basin, the discussion is germane to all Corps projects where water supply and hydropower are authorized purposes.

“Power marketing agencies (PMA's) feel that reallocation of storage from hydropower to water supply results in a pecuniary externality to the preference customers and that

the Corps should mitigate that externality. The PMA's feel that the externality could be mitigated by paying their preference customers for the replacement cost of power. It is the Corps' position that our credit to the PMA for revenues foregone covers the repayment obligation to the PMA. In addition, the Water Supply Act of 1958 gives the Corps authority to reallocate storage. Preference customers were never guaranteed generating capacity in perpetuity. Water storage reallocation contracts are considered a higher and better use of the water. [...]

In some instances reallocation of storage is a controversial issue, particularly when power interests become involved. Even though the reallocation of storage is seen by some as decreasing power benefits, marginal benefits to Federal projects are increased when storage reallocations are financially feasible.”

(Note: As discussed in the conclusions of the reallocation report (Tulsa District 2010), the revenue provided to the U.S. Treasury by the NTMWD and GTUA through the purchase of water supply storage would be slightly more than twice the value of the hydropower impact, as defined by Sec 838.)

**Non-Traditional Policy – Project Specific Provisions of Section 838.** Section 838 of the 1986 WRDA defines the methodology for determining hydropower project credits and creates a related method for reimbursement of power customer purchases of replacement power. The provisions reaffirm the Secretary’s authority to determine the impact of the reallocation on hydropower production. The legislation defines one condition for establishing credit , although the Corps has determined that the credit provision of Sec 838 does not eliminate the first traditional credit condition (hydropower revenue reduction) described above but would modify the second (Federal acquisition of replacement power). A more detailed assessment of legislation follows.

Sec 838 (d)(3) is shown again to facilitate the following discussion of how the legislation provisions guide the determination of credits. The subsection contains the credit and reimbursement provisions:

“With respect to any water supply contract entered into by the Secretary under this section after June 1, 1985, the Secretary shall determine (A) the amount of hydropower lost, if any, as a result of the implementation of such contract, and (B) the replacement cost of the hydropower lost (where replacement cost is defined as the cost to purchase power from existing alternative sources). If hydropower is lost as a result of the implementation of such contract, the Secretary shall provide credits to the Southwestern Power Administration of amounts equal to such replacement costs. Such credits shall be against sums

required to be paid by the Southwestern Power Administration for costs of the project allocated to hydropower. In each such case the Southwestern Power Administration shall reimburse each preference customer for an amount equal to the customer's actual replacement cost for hydropower lost as a result of the implementation of such contract, less the cost such customer would have had to pay the Southwestern Power Administration for such hydropower.”

The following assumptions were established:

(a) The provisions of Sec 838 were not assumed to have been drafted to establish a Federal subsidy for the long term purchase of power from alternative sources by the Tex-La Electric Cooperative of Texas, Inc., and Rayburn Country Electric Cooperative, Inc.

(b) The provisions were not assumed to modify the existing contract between the cooperatives and the SWPA to provide any guarantees beyond the term of the existing hydropower contract.

(c) The provisions were assumed to establish a methodology to fairly compensate the electric cooperatives for the impacts of storage reallocation on their purchases of replacement power during the term of the existing hydropower contract. Traditional policy would have provided credit to the hydropower project account if the power marketing agency had the responsibility to purchase replacement power, but there are no provisions in traditional policy for compensation of power customers (reimbursement) who have that purchasing responsibility.

The provisions of Sec 838(d)(3)(B) reaffirm aspects of traditional policy, modify or limit other aspects, and redefine or create project specific guidance:

- The Secretary's authority and responsibility is reaffirmed for determination of the amount of hydropower lost and the replacement cost of the hydropower lost.
- The traditional Corps policy for estimation of credits is modified. The provisions define the hydropower credit for Lake Texoma as the replacement costs, defines replacement costs as: “the cost to purchase power from existing alternative sources”. The condition established by Sec 838 is similar to the second traditional policy condition above, where credits are valued as the “cost to the Federal Government to acquire replacement power to fulfill the obligations of the agreements” between the power marketing agency and their customers under an existing hydropower contract. The Sec 838 provision recognizes that the electric cooperatives purchase replacement power instead of the SWPA.
- A limit is established on the total amount of credit that may be applied annually. The limiting provision is: “Such credits shall be against sums

required to be paid by the Southwestern Power Administration for costs of the project allocated to hydropower.” The balance of the project hydropower account in any year is the total remaining cost allocated to hydropower, or the “sums required to be paid by the Southwestern Power Administration”. Under this provision, annual credits could not exceed the remaining hydropower account balance in any year. However, the Corps policy allows the SWPA to distribute credits to any Corps project with SWPA hydropower facilities. Therefore, for this limiting provision to be applicable the combined total of all hydropower assets at Corps projects would have to be less than the annual credit estimate.

- The traditional policy for documentation of actual annual costs for replacement power prior to the application of a credit is reaffirmed.
- The final provision of Sec 838 creates a reimbursement obligation for the SWPA. Under this obligation, the SWPA would repay the electric cooperatives for a portion of the cost of replacement power purchased due to a storage reallocation authorized by Section and subsequently implemented. The SWPA would incur a financial obligation under this provision. The obligation would be for a portion of the actual expense of purchasing replacement power, defined as the “customer’s actual replacement costs for hydropower lost as a result of the implementation of such contract, less the cost such customer would have had to pay the Southwestern Power Administration for such hydropower.” Providing credits to the SWPA for this reimbursement, although discounted by the value of an equal amount of hydropower revenue, would otherwise be contrary to the Corps’ longstanding policy to (1) not provide credits to power marketing agencies for replacement power costs in the absence of a contractual obligation, existing at the time of the reallocation, that requires the power marketing agency to purchase replacement power, and (2) not provide credits to power marketing agencies for the purpose of reimbursing power customers for the additional costs of replacement power incurred by the customers (unless directed by law). This policy reflects the principal that customers of the power marketing agencies do not have an absolute right to a Federal power subsidy.

**Evaluation of Credit Term - Provisions of Section 838.** To better present the evaluation of the credit term under the provisions of Sec 838, a brief review of “replacement power” is first discussed.

Lake Texoma hydropower production is dependent on the availability of inflow and because future inflows cannot be predicted with certainty, there is always a risk that the hydropower capacity or energy estimated to be available in the future may not be produced as needed. When conditions in the future are less conducive to power production than were expected, the hydropower facility will not be able to produce as much power as is stipulated in a hydropower contract. Because this shortage in

production is realized under normal conditions at Corps projects, there are typical contract provisions for the purchase of replacement power by the SWPA from other power sources so that the total power obligation of the government to the cooperatives is met. Lake Texoma is an exception to that typical provision because the electric cooperatives are responsible for the purchase of replacement power.

The purchase of replacement power under an existing contract occurs when one of two conditions is met. The conditions described both relate to an existing hydropower contract between a power marketing agency and power customers. The conditions do not relate to mechanical failure of hydropower facilities. The purpose of purchasing replacement power due to either condition is to satisfy the terms of an existing hydropower contract.

- The purchase of replacement power may occur when unexpected hydrologic conditions limit the amount of power that can be produced. In this case the actual capability of a power plant would, at certain times, be less than forecast conditions under which the contract terms apply.
- Replacement power purchases may be necessary if a storage reallocation is implemented during the term of a hydropower contract. A storage reallocation would reduce the capability of the power plant to produce electricity and would therefore impact the provisions of a hydropower contract in place at the time the reallocation was implemented. In this case the actual capability of a power plant would be reduced throughout the remainder of the hydropower contract.

If a new hydropower contract is negotiated, then the new contract provisions will account for the storage available for hydropower production and the SWPA will forecast hydrologic conditions over the term of the new contract with the intent of reasonably minimizing the need to purchase replacement power. Replacement power purchases may still be necessary during the term of the new contract, but those purchases will only occur if unexpected hydrologic conditions are experienced. (There would still be an opportunity for impacts due to a future storage reallocation, but that prospect would be evaluated through a future reallocation study.)

Under the traditional evaluation of credit term, if hydropower revenues were being reduced because of the water supply reallocation, the power marketing agency would be credited for the amount of revenues foregone to the Treasury because of the reallocation. Under Sec 838, the hydropower credit is defined as “the cost to purchase power from existing alternative sources” and the SWPA is directed to “reimburse each preference customer for an amount equal to the customer’s actual replacement cost for hydropower lost as a result of the implementation of such contract, less the cost such customer would have had to pay the Southwestern Power Administration for such hydropower.”

Given the assumptions at the start of this discussion that the provisions of Sec 838 were not drafted to (a) establish a Federal subsidy for the long term purchase of power in support of the two electric cooperatives, or (b) to provide any guarantees beyond the term of the existing hydropower contract, but that (c) the provisions were drafted to establish a

methodology to fairly compensate the electric cooperatives for the impacts of storage reallocation on their purchases of replacement power during the term of the existing hydropower contract (because they bore the responsibility for those purchases instead of the SWPA); then the credit term for replacement power could be no longer than the duration of the existing hydropower contracts.

The Corps has determined that Sec. 838(d)(3) does not bar the application of current policy on hydropower credit, and will therefore follow the policy in Appendix E, Section VIII, of ER 1105-2-100. Under that policy the SWPA would be credited for replacement costs through the remaining period of its current power contracts and thereafter credited for revenues forgone for the remainder of a 50-year credit period. Because the amortization period for water storage agreement (the Treasury source of credits in this instance) is 30 years, the present value of the revenues forgone for the 50-year period would be annualized over 30 years. The distribution of 50 years of credits over the 30 year water supply storage payments is policy specific to Lake Texoma at this time.

Because there are power contracts between the PMA and its customers that require credit under Sec 838 based on the cost of acquisition of replacement power through 2018 (9 years), then the credit for revenue foregone would be based on the remaining period within a 50-year total credit period. To summarize, credits for the first nine years would be replacement costs and credits for the remaining 21 years of the water supply payments would be based on 41 years of hydropower revenue foregone that would be amortized over the 21 years of remaining Treasury revenue from the water storage agreement payments.

The SWPA reimbursements to the power customers would be limited to the term of the existing hydropower contracts. As such, those reimbursements would represent a fair compensation for higher replacement power purchases than would have been expected under the terms of the current contract. Reimbursements related to the water storage reallocation would not extend to subsequent hydropower contracts because those new contracts would be predicated on the remaining storage available for hydropower production. Replacement power purchases may still be necessary under the term of future contracts, but those purchases would be due to unanticipated hydrologic conditions and not related to past storage reallocations to water supply.

The power customers will need to find alternate sources for power, but the current contract with the SWPA does not guarantee an amount of power for future contracts – or make any guarantee concerning future contracts. When the current contract expires, the power customers will likely continue to purchase hydropower produced at Lake Texoma, but those future contracts would be for a lesser amount of power. The electric cooperatives already have other sources for power and as power demands in the region increase, the cooperatives would inherently have to rely more heavily on alternate sources – even without the implementation of storage reallocation. The increment of power that will need to be replaced by alternate sources is relatively small compared to the total needs of the power customers. Hydropower has been a low cost source of peaking energy and the power customers have been able to utilize that low cost power in

their system operations for many years. But reallocation of a portion of the storage used to produce hydropower has been shown to have a higher value for water supply customers, and water supply revenues to the Treasury will equal or exceed the hydropower revenues over the period of evaluation.

**Applicable Credit Conditions - Provisions of Section 838.** Because the fundamental principle of credits is to compensate the power marketing agency for a reduction in hydropower revenue and therefore a reduction in their ability to reimburse the Treasury, the replacement power purchase credit should be limited to the actual reimbursement the power marketing agency makes to the power customers – if that reimbursement amount is less than the credit defined by Sec 838.

The historic purchase of replacement power under the current power contract would normally form a financial baseline of replacement power acquisition from which to measure the impacts of future storage reallocations. Such historic financial accounting would provide a simple and factual baseline from which to measure future purchases of replacement power that might be impacted by water supply storage reallocation. Through this baseline approach the average annual historic cost of replacement power could be established and future annual replacement costs in excess of the historic average would be identified as the impact of water supply storage reallocation on hydropower production. The process would be relatively simple. Unfortunately, the SWPA has informed the Corps those records of replacement power acquisition by the SWPA or the cooperatives do not exist, or are too complicated to produce.

The lack of these financial records significantly complicates the determination of hydropower account credit. Under traditional policy the Secretary would only assign hydropower credits based on documentation of actual replacement power purchases (for the prior year). Section 838 similarly states that preference customers are to be reimbursed “for an amount equal to the customer’s actual replacement cost for hydropower lost as a result of the implementation of such contract, less the cost such customer would have had to pay the Southwestern Power Administration for such hydropower.” To address the financial record data gap, the Corps has estimated the baseline purchase of replacement power by proxy using a computer model. The estimation of replacement power purchases by proxy is a normal study practice in anticipation of a storage reallocation. The estimation process provides decision makers with reliable information. However, adjusting the hydropower account based on an estimation of credits would be contrary to the traditional policy of applying credits based on documented actual costs of replacement power and contrary to the provision of Section 838.

It is the Corps understanding that in exchange for a discounted cost in the current hydropower contract, the SWPA has transferred responsibility for the purchase of replacement power to the electric cooperatives, which are now wholly responsible for purchase of replacement power to fulfill the capacity terms of the power contract. The Corps understanding is based on discussions with the SWPA, review of the hydropower

contracts, and by reference in Sec 838 that stipulate the reimbursement of preference customer costs as “an amount equal to the customer’s actual replacement cost for hydropower.” The provision of the contract between the SWPA and the electric cooperatives wherein the cooperatives assume the responsibility to purchase replacement power in exchange for a reduced contract price, is presumably for the benefit of the government and acceptable to the cooperatives. Therefore, the forecast conditions for 2019 and beyond assume future power contracts would contain the same provision.

Table SEA-3 shows an estimate of the incremental replacement power purchases assuming the full impact of a storage reallocation to water supply of 150,000 acre-feet (the proposed immediate need reallocation to Texas). The power values were developed by the HAC and are presented in Appendix E of the reallocation report (Tulsa District 2010). The SWPA has already received or will receive full credit for the prior 150,000 acre-feet of storage reallocated in 1983, 1985, 1992, 1997, and 2004.

<b>TABLE SEA-3</b>	
<b>ESTIMATED REPLACEMENT POWER PURCHASES IMMEDIATE NEED WATER SUPPLY REALLOCATION (150,000 ACRE-FEET) 2009 THROUGH 2018</b>	
<b>(October 2008 Prices, 4.625% Interest)</b>	
<b>Capacity and Energy Category</b>	<b>Average Annual Cost (\$)</b>
Denison Capacity	\$317,000
Peak Energy	\$335,000
On-Peak Energy	\$501,000
Off-Peak Energy	\$194,000
<b>Total Annual Value</b>	<b>\$1,347,000</b>

**The Hydropower Project Account Credit Process.** All the water storage agreement revenue received from the NTMWD for 100,000 acre-feet of storage and the GTUA for 50,000 acre-feet of storage would be deposited into the U.S. Treasury by the Corps of Engineers. The SWPA would be notified in writing within 30 days after the agreement between the United States of America and the NTMWD and the GTUA for the proposed agreements and future water storage agreements.

The estimated first nine (9) years of credit (between 2009 and 2018) would be replacement costs valued at about \$1,347,000 per year. Credits for the remaining 21 years (30 years minus 9 years) of the water supply payments are estimated based on 41 years (50 years minus 9 years) of estimated revenue foregone with a present value (PV) of \$11,471,226.34. The present value of revenue foregone would be amortized over 21

Solving for annual payment or cost.

$$A = \frac{PV}{\frac{(1+i)^n - 1}{i(1+i)^n}}$$

years (n). Interest equals 4.625% (i). The estimated average annual value, A, for revenue foregone is \$865,418. Therefore, the estimated hydropower credit would be \$1,347,256 annually for the first nine years (replacement costs), and \$865,418 annually for 21 years (revenue foregone), for a total of 30 years of credits.

Credit estimates may be reestablished periodically by the Corps Hydropower Analysis Center at the discretion of the Secretary or his designee throughout the term of credit period.

The estimates above may be refined for development of a memorandum of agreement that further defines the credit terms between the power marketing agency and the Corps.

Upon receipt of annual documentation from the Tex-La Electric Cooperative of Texas, Inc., and Rayburn Country Electric Cooperative, Inc., SWPA will reimburse these customers the difference between the actual replacement costs for hydropower lost as a result of the reallocation and the amounts these customers would have paid SWPA for such hydropower, as specified by Section 838. The reimbursement will be consistent with the project account transfer (credit) by the Secretary from the water supply account to the hydropower account.

### **Corps and SWPA Methodology Differences**

The SWPA and the Corps of Engineers Hydropower Analysis Center have had numerous discussions concerning the appropriate methodologies used for evaluating impacts to energy and capacity benefits when hydropower storage is reallocated to other uses. Differences center primarily on six issues:

- (1) Computation of dependable capacity
- (2) Energy value used to compute power benefits foregone
- (3) SWPA's contract rates used to compute revenue foregone
- (4) Calculation of energy loss
- (5) Value applied to the capacity
- (6) Time period used when calculating the SWPA credit

Contained in Appendix F of the reallocation report (Tulsa District 2010) are comments and position papers that outline or express concerns of the SWPA regarding the Corps' determinations of energy, power, and capacity.

- (1) Draft Water Storage Reallocation – Hydropower Impacts, July 2005.
- (2) Comparison of Actual Energy Purchases with Platts Power Outlook Research Service Values, October 2008.
- (3) Development of Hydropower Loads for SUPER Runs, October 2008.
- (4) 1980 Final Power Allocations and Term of Compensation for Reallocations, October 2008.
- (5) Portion of Customer's Load, November 2008.

(6) GDS Associates Letter, Denison Power Customers' capacity replacement intentions, January 2009.

(7) Comparison Summary of Hydropower Impacts due to 150,000 acre-foot reallocation, January 2009.

An introduction to each of the seven documents is included in the appendix. The introductions provide insight to how the information in these documents was used or considered in the development of study assumptions, identification of data sources, or the assessment and selection of evaluation methodologies.

**Final Decision Regarding Hydropower Credits.** The above discussion provides an analysis of impacts and issues related to hydropower based on information developed for the Corps' reallocation report and based on traditional policy. Upon review of this information, the Secretary of the Army provided final direction regarding hydropower credit specific to this action. This decision and details regarding credit are provided in the letter and attachment contained in Appendix A of this SEA. As the proposed action includes hydropower credit in accordance with this decision, hydropower credit-related impacts to the Southwestern Power Administration would occur accordingly.

**5.2 Cumulative Effects.** With regard to indirect and cumulative effects associated with the proposed action, it is recognized that water availability resulting from reallocated storage at Lake Texoma may potentially lead to growth and development of communities and related infrastructure for entities benefiting from resulting water supply. It is also recognized that this development may occur independent of the proposed reallocation. Owing to complexity and uncertainty of these issues, information necessary for detailed and defensible estimation of these impacts is currently incomplete and unavailable. It is recognized, however, that many of the facilities (e.g., those involving air emissions, wastewater discharges, potential transfer of zebra mussels, wetland impacts) will be subject to permitting requirements in accordance with local, State, and Federal law. This will help ensure environmental protection associated with construction and operation of developing infrastructure.

Zebra mussel presence has been noted in Lake Texoma since the summer of 2009. Accordingly, the reallocation of water supply storage and associated activities is unlikely to result in increased threat of infestation by this invasive species. Zebra mussels will continue to be of concern for water supply customers and others and control measures may be necessary with or without reallocation of storage.

## **6. Relevant Operational Plans**

Operational plans described in Section 6 of Tulsa District (2006) are still relevant and in place at Lake Texoma. In particular, it is noted that plans and procedures for coordinating downstream releases (during high or low flow periods) to accommodate nesting interior least terns are still in place and are routinely applied to site- and event-specific conditions for the Red River below Denison Dam.

## **7. Federal, State, and Local Agency Coordination**

All public notices, correspondence, and comments received during public review periods are provided in appendices of the original final EA (Tulsa District 2006). These comment letters can be reviewed for detailed comments on a variety of issues. The NEPA process for this action can be described as one characterized by concerted efforts to address comments and incorporate concerns while complying with Corps of Engineers policy and intent of authorizing legislation in P.L. 99-662, Section 838. This is particularly true with respect to comments and concerns related to hydropower impacts and compensation issues as expressed by SWPA and its power customers. In all, the NEPA process included initial public workshops, preparation of two distinct draft environmental assessments, requested and granted time extensions for review of each draft EA, attempts to incorporate concerns expressed in comments received for each draft EA, preparation of a final environmental assessment and signature of the FONSI, and post-FONSI coordination and negotiation with SWPA regarding hydropower-related compensation issues. Finally, this supplemental environmental assessment has been prepared to provide additional detail and information, largely related to alternative evaluation specifics and hydropower-related issues.. A brief synopsis of coordination under NEPA is provided below and in Section 4.12 of the attached reallocation report (Tulsa District 2010).

Following public workshops held on 16 and 17 September 2003 at Denison, Texas and Durant, Oklahoma, respectively, an initial draft EA was prepared and circulated for public comment on 21 January 2005. Hydropower interests requested and were granted a time extension for the 30-day comment period originally scheduled to end 21 February 2005. The comment period was extended to 7 April 2005.

Comments received during the January 21 through April 7, 2005 public review period were generally aligned along three areas of interest: 1) public water supply, 2) hydropower, and 3) fish and wildlife. Public water supply entities were in favor of the reallocation because of the need for additional water supply to meet growing municipal water needs in the north Texas region that includes Dallas and Fort Worth. Hydropower interests were opposed to the reallocation because of revenue losses since the water would be reallocated from hydropower storage. Hydropower interests likewise were in disagreement with methods and conclusions regarding hydropower losses and compensation. Fish and wildlife interests expressed concern that if public water supply needs increased and the total reallocation was used, the additional water requirement would cause negative impacts upon lake levels and downstream releases for fish and wildlife.

A second draft EA was prepared to include additional information and analyses based on comments received during the first public comment period. Substantial changes were made to include, among other topics, issues related to hydropower impacts and compensation. The second draft EA was circulated for public comment on 14 October

2005 with a 30-day comment period scheduled to conclude on 14 November 2005. Hydropower interests again requested an extension to the review period and the comment period was extended to 20 December 2005.

Written comments received during the second public review were aligned between two water user groups. Water supply interests, who are in need of municipal and industrial water to meet growing water supply needs in the region, supported the reallocation. Hydropower interests, who are concerned that hydropower benefits would be lost, opposed the reallocation and want the storage to remain allocated for hydropower. Comments from hydropower interests expressed continued disagreement with methods and conclusions regarding hydropower losses and compensation.

Comment letters received from Federal and State agencies during NEPA review for this action are provided in Appendix E of the original final EA (Tulsa District 2006). Major comment categories received from these agencies included, but certainly were not limited to, the following:

U.S. Fish and Wildlife Service (USFWS): The USFWS expressed concern over reduced lake levels and ability to release water for nesting interior least terns, an endangered species, during drought periods. They commented that low flow releases during these periods could be reduced relative to current conditions. The USFWS also noted that compliance with Section 7 of the Endangered Species Act for this action was being addressed in an existing formal consultation. The final biological opinion covering this (and other) actions was received by the Tulsa District in June, 2005 following receipt of these comments by USFWS. The USFWS also provided comments regarding cumulative impacts. They submitted no additional comments on the second draft EA.

Department of Energy (DOE): Southwestern Power Administration provided very extensive comments regarding a number of topics. Most comments concerned the need for additional alternatives evaluation, impacts to hydropower, and methods of compensation and crediting for hydropower losses. Similar comments were provided by SWPA power customers. These comments formed the basis for further evaluation and coordination regarding these issues.

Oklahoma Water Resources Board (OWRB): Comments received from the OWRB centered around apportionment rules of the Red River Compact, implications for water supply users in Oklahoma, and costs of storage for Oklahoma.

Oklahoma Department of Environmental Quality (ODEQ): No comments were received from the ODEQ.

Texas Water Development Board (TWDB): The TWDB submitted comments supportive of the reallocation and stating need for water supply in Texas.

Oklahoma Department of Wildlife Conservation (ODWC): The ODWC expressed concerns over lake levels, impacts to associated fish and wildlife, and

downstream effects. They also commented on potential cumulative effects on fish and wildlife and recreational resources.

Texas Parks and Wildlife Department (TPWD): The TPWD deferred to ODWC relative to impacts in Oklahoma. They commented that there should not be any major alternative impacts to the lake fishery unless timing of water removals is significantly altered. They also cited golden algae as an increasing concern at Lake Texoma and the region.

Texas Historical Commission (THC): The Texas Historical Commission responded with a “no affect” determination for historic properties.

Oklahoma Archeological Survey (OAS) and Oklahoma State Historic Preservation Office (Oklahoma SHPO): Both commented that the proposed reallocation should have no effect on historic properties in the State of Oklahoma.

A final EA was prepared with incorporation of information in response to additional comments received on the second draft EA, mainly from water supply and hydropower interests. The FONSI for this action was signed by the Tulsa District Engineer on 24 May 2006. In the interim, the Tulsa District, the Corps of Engineers’ Hydropower Analysis Center, and Southwestern Power Administration have coordinated and negotiated issues related to hydropower calculations and compensation. This information, along with additional detail on water supply demands and alternatives analysis, is included in this SEA and the attached and incorporated reallocation report (Tulsa District 2010).

Issues related to hydropower credit for this specific action were reviewed by the Secretary of the Army (Secretary). The Secretary’s decision regarding hydropower credit was communicated to the Southwestern Power Administration in a February 16, 2010 letter and attachment from the Assistant Secretary of the Army for Civil Works (see Appendix A).

## **8. References**

Tulsa District. 2006. Final Environmental Assessment, Lake Texoma Storage Reallocation Study, Lake Texoma, Oklahoma and Texas. May, 2006. Available at e-library link: [www.swt.usace.army.mil](http://www.swt.usace.army.mil).

Tulsa District. 2010. Storage Reallocation Report, Lake Texoma, Oklahoma and Texas. March 2010.

**Appendix A**

**Assistant Secretary of the Army (Civil Works) letter (w/attachment) to  
Southwestern Power Administration regarding hydropower credit  
(February 16, 2010)**



DEPARTMENT OF THE ARMY  
OFFICE OF THE ASSISTANT SECRETARY  
CIVIL WORKS  
108 ARMY PENTAGON  
WASHINGTON DC 20310-0108

FEB 16 2010

Mr. Jon Worthington  
Administrator  
Southwestern Power Administration  
One West Third Street  
Tulsa, OK 74103-3502

Dear Mr. Worthington:

Section 838 of the Water Resources Development Act of 1986, Public Law 99-662, authorizes the Secretary of the Army to reallocate up to 300,000 acre-feet of storage in the project for Denison Dam, Lake Texoma, Red River, Texas and Oklahoma, from hydropower use to water supply use. It also directs the Secretary to provide credits to the Southwestern Power Administration (SWPA) equal to the replacement costs of any hydropower which is lost due to the implementation of any water supply contracts for this storage pursuant to this authorization. The purpose of this letter is to inform you of the Secretary's decision regarding these credits and how the U.S. Army Corps of Engineers (Corps) will implement the Secretary's decision.

The Secretary has determined that the credits described in Section 838(d)(3) will extend for as long as water storage reallocated under the authority of Section 838 is used for municipal and industrial purposes. Because Public Law 88-140 grants storage rights for indefinite periods to non-Federal entities who enter into water supply storage contracts with the Department of the Army, such contracts typically do not have expiration dates. Pursuant to Section 838(d)(3), any credits afforded are to offset sums SWPA is required to pay the U.S. Treasury for costs allocated to hydropower for Denison Dam. Currently, the remaining repayable cost allocated to hydropower for this project is approximately \$14 million. Credits are only offsets to the amounts SWPA would otherwise repay the Federal government, and these credits cannot exceed the remaining cost allocated to hydropower in any given year. A literal reading of Section 838(d)(3) would require yearly calculation of the replacement cost of hydropower, the operation, maintenance, and rehabilitation, and the remaining investment cost allocated to hydropower, if any, to determine the amount of credit available for that year.

Further, section 838(d)(4) directs that in calculating payments of water supply users, these payments shall not increase as a result of implementing Section 838. In addition, Section 838 does not provide for any other funding or offset mechanism to provide credits to SWPA other than the revenue generated by the water supply contracts. Consequently, the hydropower credits must be limited to the offsetting collections derived from the water storage payments collected by the Corps from water supply users. Therefore, the maximum amount of hydropower credit allowable is equal to the total water storage payments of the water supply users.

*CEMP-SWD RIT  
Ms. Haberer*

Because the credits described in Section 838(d)(3) are based on hydropower replacement costs and extend for indefinite periods of time, it would be extremely difficult, if not impossible, for the Secretary to determine the replacement costs of hydropower on a yearly and cumulative basis. Under a literal reading of Section 838, these credits would be limited to the amounts SWPA must repay that are assigned to operation, maintenance, rehabilitation and investment cost allocated to hydropower at Denison Dam without recognition that these costs are financially integrated by SWPA for repayment purposes with other Corps projects. To simplify the implementation of Section 838 with the funding and crediting mechanisms available, the Corps will provide credits to SWPA equal to the total payments collected from water supply users for the storage obtained under Section 838. This procedure will commence once the Corps receives the first payment from the water supply user. This arrangement represents the maximum allowable credits available through Section 838 and, therefore, would fulfill the Secretary's crediting obligations under Section 838. Finally, since SWPA operates a financially integrated system, the Corps will allow any excess credit to be applied against the capital and operating costs of SWPA's financially integrated system. After receiving such credits, SWPA may implement its own internal accounting for the amounts credited by the Corps allowing for appropriate accounting of such credited amounts and reimbursement of the preference customer for hydropower lost pursuant to Section 838. The principles of this crediting arrangement are outlined in the attached document. These arrangements are specific to Section 838 and the project for Denison Dam, Lake Texoma, and do not change current policies on crediting.

If you have any questions, please contact Ms. Marianne Matheny-Katz at 202-761-0027.

Very truly yours,



Jo-Ellen Darcy  
Assistant Secretary of the Army  
(Civil Works)

Enclosure

**DENISON DAM, LAKE TEXOMA**  
**HYDROPOWER CREDITING PURSUANT TO SECTION 838 OF PUBLIC LAW 99-662**

1. These crediting principles shall apply to any contract for water supply storage in the Project entered into pursuant to Section 838.
2. The Corps shall deposit all payments of water supply users for the cost of storage in the U.S. Treasury and provide credits equal to such amounts to the Project's hydropower income account. If the credits exceed sums required to be paid by SWPA for the costs of the Project allocated to hydropower, including the Project's operation and maintenance costs allocated to hydropower, the excess credits shall be applied to other hydropower projects within SWPA's financially integrated system as directed by SWPA. The Corps shall notify SWPA at the time water supply payments are deposited in the U.S. Treasury. After receiving such credits, SWPA may implement its own internal accounting for the amounts credited by the Army allowing for appropriate accounting of such credited amounts and reimbursement of the preference customer for hydropower lost pursuant to Section 838.
3. At no time shall credit to the hydropower income account exceed the water supply payment.
4. Credit to the hydropower income account shall not be provided upon occurrence of any of the following:
  - a. After full payment of the cost-of-storage by the water supply user;
  - b. Non-payment of the cost-of-storage by the water supply user;
  - c. During suspension of a water supply contract insofar as water supply payments under such contract have been suspended;
  - d. Upon termination of a water supply contract insofar as water supply payments under such contract have terminated;
  - e. In the event of b, c, or d, the water supply user shall forfeit its right to withdraw water pursuant to the terms of the water supply contract;
  - f. Cessation of the sale of all hydropower at the Project until such time as the sale of hydropower at the Project has resumed;
  - g. Termination of all contracts for the sale of hydropower at the Project until such time as any contract for the sale of hydropower at the Project has been reinstated or re-executed;
  - h. Deauthorization of Federal hydropower as a Project purpose or deauthorization of the Project by Congress;

i. Enactment of Federal law requiring suspension of such credit.

5. Section 838(d)(3) credits which have been suspended or have stopped due to non-payment by a water supply user or termination of a water supply contract shall resume upon resumption of payments or reinstatement of the water supply contract.

