

Grand Prairie Area Demonstration Project Responses to Specific Paragraphs

[Paragraph 1.](#)

We read with great interest your July 27, 2001 response to the Service's June 22, 2001 letter which supports the rationale and concepts of "A Sustainable Alternative to Replace the Grand Prairie Area Demonstration Project." The Sustainable Alternative was presented by ten nonfederal organizations including the Augusta Chamber of Commerce, Augusta City Council, Augusta Improvement Club, Clarendon Chamber of Commerce, and several conservation organizations. We recognize that Corps has done extensive studies of the Grand Prairie Area Demonstration Project (GPADP), however, the Service continues to have concerns over the long term and cumulative impacts of the project both to the natural resources of the White River basin and to two of our most important national wildlife refuges. The Service has spent a considerable amount of time and effort working with the Corps and other agencies participating in and reviewing the numerous studies undertaken for the GPADP. Many of the issues that we have raised have been addressed, but others remain unresolved, including concerns over long term and cumulative impacts from this as well as the numerous other water development projects planned for the White River basin. Furthermore, as construction of the on-farm features progresses other environmental impacts that were not considered, or were unknown when the reevaluation study was being conducted, are now coming to light.

Paragraph 1, Response – Though the so called “Sustainable Alternative” has been endorsed by some social, civic, and environmental organizations, experts on irrigation and scientific data have confirmed that it is not technically achievable. A more complete evaluation is given in the response to paragraph 3. The so called “Sustainable Alternative” will not protect the aquifers or allow for continued irrigated agriculture even if it was technically achievable and implementable. The Grand Prairie Area Demonstration Project was developed in an open and inclusive process and scientific analyses show it will sustain the aquifers and irrigated agriculture for the life of the project. Cumulative impacts were fully and adequately addressed in the Final Environmental Impact Statement (EIS). If studies are authorized and funded for other projects as you suggest, these studies would again assess the cumulative impacts of all projects (proposed and operational) at that time. You participated in an engineering review of the project and voted to construct the Grand Prairie project at the conclusion of this review. All changes in the project have been fully disclosed to the interagency environmental team. These changes are all very minor and do not effect the ability of the project to meet its purposes. As discussed, no features that involve changes made after the EIS was prepared will be constructed until full National Environmental Policy Act (NEPA) compliance has been performed. No project features with minor changes are even scheduled to begin construction until at least November 2002.

[Paragraph 2.](#)

The Service has advised the Corps of its resource concerns in our October 27, 1993 planning aid report; May 8, 1998 Fish and Wildlife Coordination Act Report; October 5, 1998 correspondence regarding the draft General Reevaluation Report (GRR) and Environmental Impact Statement; and the Department of Interiors' February 2, 2000 correspondence regarding the Final Environmental Impact Statement and Main Report. Issues identified in these documents include the voluntary nature of conservation and on-farm features, location of irrigation reservoirs and other on-farm features in wetlands, winter flooding for waterfowl, water quality, mitigating for project impacts, project monitoring, and cumulative effects of this and other proposed irrigation projects in the White River basin. After further evaluation of pumping schedules we are concerned that lowered water levels in flood plain lakes and tributaries of the White River outside the project area but within the zone of influence of water withdrawals could adversely impact Cache River and White River National Wildlife Refuges.

Paragraph 2, Response – Studies were conducted to evaluate project impacts to the White River fishery, oxbow lakes, and floodplain wetlands. Project effects were found to be insignificant. The U.S. Fish and Wildlife Service (USFWS) participated in the wetland study and was invited to participate in the oxbow lake and fishery assessments. The USFWS, as well as other resource agencies, reviewed the scopes of work and subsequent reports for all environmental studies. Neither the scopes of work nor the study conclusions have ever been challenged by the USFWS. Scientific analysis confirms that project induced water level changes are very minor. Data also shows that the project would have no effects on the maximum flood stages or durations that recharge the wetlands and oxbows. Your agency has presented no scientific data from your further evaluation that confirms different effects.

Paragraph 3.

Sustainability should be the primary driving force of any water management scheme for the Arkansas delta. Everyone acknowledges that change is needed. The current system of "mining" the aquifer cannot continue. Rice production, a high water use crop, has increased significantly in recent years. This high level of rice production is not a long-standing tradition in eastern Arkansas, but a relatively recent development. We may not be able to sustain our current level of rice production into the future. The Sustainable Alternative and the recent planning efforts of your staff in habitat restoration within the Grand Prairie project area recognize the need to provide farmers with an alternative land use. Regarding the widespread implementation of water conservation techniques, there are several examples of these various water saving irrigation techniques being employed in other parts of Arkansas and neighboring states. We feel that these examples support the assertion that greater water savings can be achieved than is stated in project documents or are currently being implemented.

Paragraph 3, Response – Based on scientific analyses, the Grand Prairie Area Demonstration Project will sustain the aquifers and allow for continued irrigated agriculture on the Grand Prairie without any significant negative impacts to the environment. Rice farming on the Grand Prairie began in the early 1900s and expanded rapidly. The economy of the Grand Prairie and the rest of eastern Arkansas is based on agriculture. Much of the cropland is in a rice-soybean rotation, crops that require irrigation. Under the "Sustainable Alternative," the local economy would be severely impacted because irrigated cropland would be reduced by more than 60%. More importantly, this alternative would fail to protect the aquifers. Most of the assumptions of this "Sustainable Alternative" plan are not scientifically supported or developed in detail. It should be noted that the basic premise of the "Sustainable Alternative" was analyzed in the EIS as the increased efficiency and storage alternative without an import system. This alternative would not protect the aquifers or allow for continued irrigated agriculture in the Grand prairie. As far as further increasing irrigation efficiencies above increase to 70% efficiency estimated for the project, all experts, including experts you cited, have agreed that efficiencies greater than 70% are not attainable for the project area of this size. We have analyzed each and every alternative proposed regardless of its implementability or practically to ensure that no reasonable alternatives are overlooked. We have included a more detailed evaluation for the so called "Sustainable Alternative" on the project web site. The Grand Prairie Area Demonstration Project is the only alternative identified that would protect and restore the aquifers, sustain irrigated agriculture, have insignificant environmental impacts, and have environmental benefits for the 50 year period of analyses of the project.

Specifically as stated in my letter to you dated July 17, 2001, irrigation experts in Arkansas do not believe it is a realistic assumption that you can obtain greater than 70% irrigation efficiency over the project area. Supporters of the so called "Sustainable Alternative" have recently indicated that NRCS irrigation experts in Missouri believe that the Grand Prairie project could obtain an irrigation efficiency higher than 70%. However, when the Arkansas NRCS state engineer called his counterpart in Missouri, the Missouri NRCS state engineer informed him that the opposition had "taken information out of context "and that our 70% efficiency estimate was still considered valid.

Increased efficiencies alone will not solve the problem even if these higher efficiencies were attainable. As analyzed in the GRR, only approximately 1,400 acres of additional reservoirs over the amount in the project area at the time of the analyses could be effectively constructed without an import system. The first year of construction has resulted in approximately 1,500 acres of reservoirs under contract. The storage is limited by existing runoff for capture to fill these reservoirs. While greater runoff may be available during wet years, during dry years the runoff would be spread across a greater surface area with greater evaporation and seepage. The net result would be less water available during dry years if additional storage was constructed. Even if additional efficiencies were possible over the 70% goal for the project, water would not be available for significant areas. In order to more clearly present the effects of only increasing the irrigation efficiency and on-farm storage without an import system, a table was developed to show the number of fully irrigated acres possible with various levels of irrigation efficiency. The first two conditions in the table were presented in the GRR as the no action alternative and the increased efficiency and storage alternative. Irrigation experts have stated that efficiencies greater than 70% are not attainable over the project area. Therefore, conditions of higher efficiency were not presented in the GRR. They are presented here to clearly show the need for an import system to sustain irrigated agriculture. If no action was taken, water would be available for 54,600 acres of cropland. Even if irrigation efficiencies of 80% could be attained, though experts say this is not possible, only 18,200 additional acres could be irrigated over the no action alternative.

Table of acres irrigated without delivery system including unattainable irrigation efficiencies

Conditions and efficiency, even if unattainable	Acres fully irrigated	% of currently irrigated cropland
1. Future without project with existing 60% efficiency	54,648 acres	23%
2. Conservation and storage with 70% efficiency	63,756 acres	26%
3. Conservation and storage with unattainable 80% efficiency	72,864 acres	30%
4. Conservation and storage with unattainable 90% efficiency	81,972 acres	34%
5. Conservation and storage with unattainable 100% efficiency	91,080 acres	38%

Even if no water was wasted for every irrigation event over the entire project area, a completely impractical and unattainable goal, 38% of the currently irrigated cropland could be fully irrigated. This would not protect the Sparta and Alluvial Aquifers and allow them to recover. The Grand Prairie project would maintain the agricultural-based economy and protect the aquifers with minimal impact to the environment. The project will sustain the aquifers and irrigated agriculture while withdrawing water from the river only after the highest of the needs for fish and wildlife, water quality, and navigation are met. Based on years of scientific analyses, the Grand Prairie Area Demonstration Project is sustainable. In addition, the Grand Prairie project would substantially increase the amount of cropland managed for waterfowl and establish native prairie grasses on approximately 3,000 acres of canal rights-of-way.

As you are aware, the Corps is working with the USFWS, Natural Resources Conservation Service (NRCS), Arkansas Game and Fish Commission (AGFC), Arkansas Natural Heritage Commission (ANHC), the Arkansas Soil and Water Conservation Commission (ASWCC), the White River Regional Irrigation Water Distribution District (Irrigation District), and others to develop a prairie ecosystem restoration plan for the project area. If agencies work cooperatively, the environmental benefits of the Grand Prairie project can be increased tremendously. It is the hope of the Memphis District that the USFWS will continue to assist us in the development of an ecosystem restoration plan and other environmental features.

[Paragraph 4 & Paragraph 5.](#)

Specific Concerns Related to Cache River and White River National Wildlife Refuges

White River National Wildlife Refuge contains 157,000 acres and Cache River National Wildlife Refuge contains 56,000 acres for a combined ownership of 213,000 acres of wetlands in the lower White River basin. The Service owns 112 miles of one or both sides of the lower White River. These wetlands are renowned internationally as an important and strategic migratory corridor for many species of migratory birds and also provide nesting habitat for many species. Neotropical birds, marsh and wading birds, shorebirds, raptors, and waterfowl all use these two refuges to fulfill their life history requirements. These two refuges, along with the Arkansas Game and Fish Commission wildlife management areas in the basin, are designated by the Ramsar Convention as a Wetland of International Importance. The area is also identified as a "Flagship" area and the most important wintering area for mallards in the Mississippi Flyway in the North American Waterfowl Management Plan. The White River basin historically has wintered 10 percent of the continental mallard population, over 30 percent of the Arkansas mallard population, and over 42 percent of all ducks in Arkansas. The refuges contain the only native population of black bear within the state, and bears from White River National Wildlife Refuge are currently being used to repatriate other parts of the state.

Refuge habitat is almost exclusively bottomland hardwood within the flood plains of the White and Cache Rivers. These two refuges contain approximately one-fourth of the remaining bottomland hardwood forest within the state. Of major importance and significance biologically is the fact that this habitat is in a large, unbroken and contiguous block. With the exception of the Atchafalaya basin in southern Louisiana, which is a different type of bottomland hardwood wetland, no other bottomland hardwood wetland within the entire Mississippi River delta approaches the size of these two refuges' bottomland hardwood wetlands. Habitat fragmentation has been recognized as a limiting factor for many species, and in particular for numerous neotropical bird species. These two refuges provide habitat for numerous species which have been impacted by fragmentation throughout Arkansas and the Mississippi delta. This large, contiguous habitat base was also responsible for allowing native black bear and wild turkey to survive during the period when they were extirpated from the rest of the state.

Paragraphs 4 & 5, Response – The Cache and White River National Wildlife Refuges are indeed national treasures and the Corps of Engineers thoroughly recognize their significance. All scientific studies conducted as part of the project indicate that the project effects on the refuges will be insignificant. No scientific data has been presented that would indicate otherwise. With the project in place, the Mississippi Valley Alluvial Aquifer and the Sparta Aquifer would be protected, irrigated agriculture could continue on the Grand Prairie, waterfowl habitat would be increased, and native prairie grasses acreage would increase five fold. All this would be accomplished without any significant impacts to the White River, the White River National Wildlife Refuge, or the Cache River National Wildlife Refuge. As you point out later and as borne out by studies, a greater threat to the refuges may be the long term drying of wetlands due to the loss of the Alluvial aquifer if the project is not constructed.

[Paragraph 6 & Paragraph 7.](#)

The Service has serious concerns related to the GPADP and its potential impacts to Cache River and White River National Wildlife Refuges. Hydrology is one of the most critical elements controlling the structure and function of the lower White River basin ecosystem. Seasonal high and low water conditions, as well as the multi-year cycles affect the chemical and physical properties of the basin's wetlands, and therefore its biotic components. The establishment and maintenance of the floral and faunal communities in the area are directly

linked to the timing, duration, and height of flooding. Even small changes in hydrology can equate to significant biological effects. The way water moves through the system, however, involves a complex interaction of precipitation, runoff, groundwater, evapotranspiration, and conditions on the main stem Mississippi River. The significance or extent of hydrologic effect in the lower basin is further complicated by its topography, elevation, and the numerous land use changes that have occurred over the past century. The Service's White River and Cache River National Wildlife Refuges are both located in the lower White River basin and would, therefore, be directly affected by any hydrologic changes that might occur.

Though principally low and flat, the lower White River basin also has a ridge and swale topography interlaced with numerous sloughs, bayous, and several hundred oxbow lakes. These sloughs and bayous, along with groundwater, provide the conduits for water to move in and out of the floodplain and oxbow lakes. This hydrological interconnectivity is critical to the biological productivity of this wetland complex. Even small alterations of the river's hydrology become significant in the lower portion of the White River basin where elevation changes of less than a foot can result in the occurrence of different plant communities, annual plant production, and wildlife use.

Paragraphs 6 & 7, Response – A multi-agency team, led by the ANHC and NRCS, performed a study to assess potential impacts of project water withdrawals on wetlands within the White River floodplain. This study was conducted on the White River National Wildlife Refuge near Clarendon, Arkansas. Your office participated in this study. The study showed that the project would have a significant impact on one wetland zone during July and August. However, when project flow conditions were compared to pre-reservoir or historic flow conditions, it was determined that the project would actually better approximate the pre-reservoir conditions during these months. The multi-agency team felt that lowering water levels in July and August would be more beneficial than adverse.

A connectivity study was conducted on 16 oxbow lakes from DeValls Bluff, Arkansas, to St. Charles, Arkansas. All 16 lakes are connected to the White River either seasonally or permanently. Oxbow lakes that are presently connected to the White River will not be affected by pump-induced stage reductions during median discharges. There may be short-term effects on four lakes when the discharge in the river is at or above the 75% flow line during July and August. Our studies show that these impacts are minimal. However, predicting low flows in natural streams is difficult due to the natural variability within the streams. Because of this, we are committed to monitoring these four oxbows to ensure our models are correct.

Paragraph 8.

The White River has been altered through construction and operation of six reservoirs on the main stem and tributaries, construction of levees, land use changes such as clearing and ditching, dredging for navigation, and secondary impacts from work on the Mississippi River. Thus the complex interaction between climatic conditions and anthropogenic alterations to the landscape in and around the White River has only served to complicate this already complex and poorly understood system. Our inadequate knowledge of the interaction of the above mentioned factors is complimented by our lack of knowledge of the fluvial geomorphology of the river. We have not even begun to study the ongoing geomorphic processes occurring or adjustments the river may be trying to make in response to these past alterations. The GPADP would add another layer of complexity and uncertainty to this process which has not been adequately evaluated.

Paragraph 8, Response – Evaluations conducted for the EIS have clearly demonstrated that the impacts from construction of the Grand Prairie Area Demonstration project will be insignificant. Many factors influence the conditions in the river and surrounding wetlands. Studies conducted for the EIS in which you participated

indicated that the effect of the Grand Prairie Area Demonstration Project would be to adjust conditions during the growing season in the wetlands very slightly but more closely to the natural or pre-dam conditions. Water withdrawals occur only after the needs of the river for fish and wildlife, water quality, and navigation have been met. Again, the project impacts are insignificant. You are not presenting any new data or information, and the Service did not raise concerns of this nature during the review of the EIS. It would be unwise to forego the benefits of the project including protection of both the Alluvial and Sparta Aquifers when scientific analyses including the cumulative impacts in the EIS clearly show that the project impacts are insignificant environmentally.

Paragraph 9.

The EIS's analysis of connectivity evaluated the river itself and surface water connectivity to selected oxbow lakes. Sub-surface connectivity, a very critical factor to the vigor and vitality of the wetlands, was not addressed. The pumping schedule for the proposed project portrays full capacity or near capacity pumping from June through August with a maximum related reduction in the river stage of one foot from the pumping site north of DeValls Bluff to Clarendon. Due to the underlying loamy porous soils, sub-surface moisture, which is directly controlled by the river stage, may be diminished. The effects of this on lakes, such as Horseshoe Lake on Cache River National Wildlife Refuge (located directly across the river from the proposed pump intake), have not been evaluated. Other lakes, sloughs, and bayous within the affected river reach could also experience the same impact. Impacts to wetlands from altered hydrology, and potentially reduced surface and sub-surface connectivity will be subtle, take years to occur, and affect overall habitat values, including possible long term changes in species composition throughout the area.

Paragraph 9, Response – Sub-surface connectivity was addressed adequately in the NEPA process. The Memphis District contracted with the Ground Water Institute, University of Memphis, to assess the effects of aquifer depletion on wetlands. This study revealed that wetlands along the White River could be adversely impacted by continued depletion of the Alluvial aquifer. The majority of wetlands along the river is currently a potential source of recharge for the aquifer and historically interacted with the water levels in the aquifer. Without the Grand Prairie project, distances from the water surface in the aquifer to the ground surface of the wetlands would increase, inducing a “drying” affect on the wetlands. Distances from the ground surface of wetlands to the aquifer water surface would continue to increase in the northern portion of the project area, even with implementation of the project. However, the Grand Prairie project would likely cause a rebound of the aquifer in the southern section of the project area, lessening the distance from the aquifer water surface to the wetlands. These results from the Ground Water Institute study were presented in both the draft EIS and final EIS. The project actually provides the opportunity to protect and restore the natural interaction of the river and wetlands.

Paragraph 10.

The National Wildlife Refuge System Improvement Act of 1997 defined the mission of the National Wildlife Refuge System to "administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans." This project is adjacent to both the White River and the Cache River National Wildlife Refuges, and the pump intake will be directly across the river from the Cache River National Wildlife Refuge. It is the position of the Service, therefore, that this project has the potential to significantly impair the mission of the Service as well as detract from the purposes of the White River and Cache River National Wildlife Refuges.

Paragraph 10, Response –The Cache and White River Refuges are valuable resources in or in close proximity to the project area and the pumping station. Every effort has been made to work with your agency to resolve any and all conflicts that you or others have raised concerning the refuges. Analyses indicate that the pumping station will have no appreciable affect to the refuges. The project will protect the aquifers in the area and allow for continued irrigated agriculture to prevent catastrophic losses to the economy with no significant negative impacts to the refuges or management areas. As you earlier pointed out, the refuges exist in a modified landscape. Other factors in this modified landscape have a much greater effect than the insignificant effects that scientific analyses indicate for the Grand Prairie Area Demonstration Project. The project has insignificant negative impacts while protecting the aquifers and providing additional waterfowl habitat. This has been clearly shown in studies conducted for the project. Speculation regarding potential impacts is insufficient reason to forego the benefits of the project.

[Paragraph 11 & Paragraph 12.](#)

General Concerns for the Grand Prairie Area Demonstration Project

The voluntary nature of water conservation and on-farm features continues to be a contentious issue that ties directly to the estimates of irrigation efficiency attainable in the project area. The Natural Resources Conservation Service (NRCS) estimates average irrigation efficiencies in the project area at 60 percent (General Reevaluation Report, Volume 2, Appendix A, "NRCS On-Farm Report; 24). While they project a 10 percent increase as being realistically achievable with the installation of water conservation practices and water management techniques, no specifics are given. The On-Farm Report strongly emphasizes and virtually relies solely on construction of pipelines, reservoirs, tailwater recovery pits, and retrofitting existing irrigation systems to connect to the delivery system. It makes no specific mention of any other water conservation practices other than measuring soil moisture and irrigation scheduling.

The transcript from the May 15, 2001 irrigation efficiency meeting in Little Rock, that you provided with your July 27, 2001 correspondence, only serves to reinforce our concern over the voluntary nature of the water conservation provisions in the plan. Meeting participants made it clear that the project contained no requirements for farmers to install water conservation practices such as surge irrigation, side inlet irrigation, conservation tillage, etc. The record of the meeting showed a general agreement among those in attendance that while attaining 80 percent irrigation efficiency on individual farms is possible, attaining it over the project area is not. The record omitted some key reasons why NRCS and others did not think 80 percent irrigation efficiency is attainable over the project area. It is not that attaining 80 percent or higher irrigation efficiency is technologically infeasible, but rather that supplies and equipment needed to implement proven water saving irrigation systems are not cost shared under the project. There is a general unwillingness to require project participants, recipients of federal and state tax dollars, to implement these techniques, and the general feeling is that they would rather bring in water from an alternate source than undertake the difficult task of implementing wide spread use of different, and more efficient, on-farm water management techniques.

Paragraph 11 & 12, Response - The project would put features in place that would allow for higher efficiencies, but, as discussed in the May 15, 2001, meeting the projects' main limiting factors will be the operation of the on-farm features including simply turning the water off at the proper time. This may seem simple, but when you consider many acres separated by many miles it is a difficult task. No irrigation expert has indicated that higher efficiencies would be possible over a project area of this size. The project will provide every participant with an on-farm water management plan. However, operation and maintenance cost cannot be cost shared as part of the project. Your accusation that the project team would rather bring water in from an alternate source than undertake the difficult task of implementing wide spread use of different, and more efficient, on-farm management techniques is false. Evaluations included in the EIS analyzed increased

efficiency and storage without an import system and the response to paragraph 3 clearly shows that an import system is necessary to protect and sustain the aquifers and continue irrigated agriculture, regardless of the irrigation efficiency attained. Farmers strive to reduce the irrigation needs because water is a major cost component. However, attempting to mandate irrigation techniques that are not cost-effective, within the technical ability of the farmers, or technically unattainable would make the project unimplementable and doom the aquifers and the area's economy. This would be especially foolish given that an import system is necessary anyway.

In order to protect the aquifers without destroying the area's economy, the detailed studies showed clearly and without doubt that a combination of measures is necessary to protect the aquifers and continue irrigated agriculture including increased on-farm efficiency, increased on-farm storage, and import water. Attempting to mandate efficiencies that are unattainable would result in design of a system that could not accomplish the goals of aquifer protection. This would clearly be irresponsible. There are two components to achieving improved irrigation efficiencies:

Step 1. Install the infrastructure (pipelines, reservoirs, tailwater recovery systems, pumping plants, water control structures). Completion of this step greatly improves the potential for success in Step 2.

Step 2. Implement management practices (soil moisture monitoring, irrigation scheduling, side inlet application, surge irrigation, furrow irrigation, sprinkler irrigation, drip irrigation, border irrigation).

Implementing Step 1 is a fairly straightforward process and will provide significant "hard" increases in irrigation efficiency. "Hard" increases in efficiency might be thought of as being effective somewhat independent of management and/or operation. A good example would be that a pipeline would lose less water to seepage and evaporation than an open earthen canal and thus be more efficient. The pipeline would lose a certain percentage less than the canal regardless of the amount of water passed through the pipeline. This improvement in irrigation efficiency is achieved immediately upon completion of construction.

Achieving Step 2 is a much more variable, subtle, complicated and lengthy process. These management practices must be learned and practiced by the farmers over time in order to become efficient and effective. These management practices involve a large number of variables, many of which are not in the control of the farmer, weather being only one. The irrigation efficiency improvements achieved by these management practices are directly related to the water management abilities of the individual. The circumstances of each individual irrigation and field conditions are likely to vary widely from one field to another. These features in step 2 are considered to improve operation and maintenance related features.

Irrigation efficiencies are expected to increase throughout the life of the project by the utilization of many of these management practices, but to mandate the use of certain management practices with the idea that this will assure an improvement in irrigation efficiency would not be reasonable or feasibility. Flexibility is the key to innovation. American farmers can achieve great results if provided good technical information, guidance and the freedom to manage their farms. Water is a cost of production and farmers make efforts to reduce these costs in order to remain competitive.

A table presenting the analyses of irrigated cropland under different, though unattainable, efficiencies is given in response to paragraph 3. Even if 80% or higher efficiencies were attained, the delivery system would still be necessary to protect the aquifers and maintain irrigated agriculture. This fact alone should answer all concerns regarding efficiency levels completely and with finality.

Paragraph 13.

An estimated 8,849 acres of new irrigation reservoirs are to be constructed for the project. Project documents provide conflicting information about the location of irrigation reservoirs. The NRCS On-Farm Report states in no less than three places that reservoirs will be put in crop land, but it also states that no reservoirs will be placed in wetlands without the proper permits. The General Reevaluation Report (GRR) main report also has confusing statements about location of reservoirs stating on page 44 that "All reservoirs would be placed on crop land," and then on page 68 that "The new reservoirs are assumed to be located on lands identified for soybean production..." (emphasis added). Neither the Corps nor NRCS estimated any impacts to natural wetlands from construction of on-farm features. Calculations for irrigated acreage and water demand are based on locating the reservoirs on crop land. However, when it came time to start on-farm planning, NRCS and the Corps came to the agencies with a proposal to create a General Permit for impacts associated with construction of reservoirs. To date, there have been over 16 acres of wetland impacts associated with reservoir construction with plans for around 1,600 acres (150 farm plans) of the 8,849 acres of on-farm storage completed. While not a major impact at this point, it is important to recognize the over 83 percent of the presettlement bottomland hardwood forests in the project area have been cleared. The Service has objected to several of the proposed reservoir locations on the grounds that the reservoir locations were specifically planned around the wetland, the plan was not in keeping with project documents, and the impacts were avoidable.

Paragraph 13, Response – This issue is an example of how your input and input of others during public review of a draft document was incorporated into the project and presented in the final EIS. At the time of the draft EIS, no on-farm plans had been prepared; and the project team assumed that reservoirs would be constructed in upland agricultural areas. Therefore, the Memphis District assumed, for purposes of the Section 404(b)(1) evaluation that on-farm construction would not result in wetland impacts. It was indicated in the draft EIS that a farmer could build an on-farm feature in a wetland provided he/she obtained a Section 404 permit. However, this position received widespread criticism from natural resource agencies (including the USFWS) and private conservation organizations. They wanted the Memphis District to provide greater oversight of on-farm construction and to provide mitigation for on-farm impacts in large, manageable, project mitigation tracts. The USFWS stated in official comments on the draft EIS that "...wetland protection should be the responsibility of this project and not transferred to another program." In response, we acted affirmatively to the criticism by incorporating wetland mitigation for on-farm features into the project mitigation. Additionally, because the need for wetland mitigation as part of the project was identified, we realized the necessity to mitigate for the total habitat impacts (as is our policy) of the on-farm features including upland hardwoods and prairie as part of the project mitigation.

As noted, no estimates of natural wetland impacts were given in the final project reports; however, the final EIS did state that the NRCS estimated that approximately 200 acres of farmed wetlands would be lost to the construction of on-farm features. It was also noted in the final EIS that this was only an estimate of the actual on-farm impacts and that the actual impacts and appropriate mitigation would be determined as each on-farm plan was completed. At the time the final EIS was written, only a few on-farm plans were available as a basis for estimates. This estimate of on-farm impacts was presented in the final EIS, in part, to bring on-farm construction more under the "responsibility" of the project and to commit the Corps to mitigating on-farm impacts as part of the overall project mitigation. Detailed survey and designs have been continuing for the on-farm plans. These detailed surveys and designs identified that small fingers of natural wetlands may extend up into cultivated fields. The on-farm team agreed that it was not practical to run the levees around these small fingers. The impacts to natural wetlands are from the small fingers, not large areas, and are being fully mitigated under the project. It should be noted that to date the impacts from the current farm plans containing 1,600 acres of reservoirs has been a mere 16 acres of wetlands impacted. If the current rate of impacts continues, only 88 acres of wetlands will be impacted for the on-farm features, well below the estimate. While

individual permits require only mitigation of wetlands, the effect of the changes from the draft to the final version of the EIS was to ensure that all habitat impacts, including upland forest and prairie impacts, would be mitigated and mitigation purchases would be made in large manageable tracts.

Multi-agency meetings were held in Little Rock, Arkansas, in September 2000 to address various project issues. Meeting accomplishments and topics included: (1) development of charters for environmental on-farm review, mitigation, monitoring, and weir teams; (2) development of standard operating procedures for the on-farm review team; (3) establishment of an acceptable level of on-farm impacts and compensatory mitigation, and (4) an update on the status of the general permit. The USFWS participated in these meetings and agreed to the impact and mitigation limits that were set. Also, the project team expressed its decision to require mitigation for upland impacts associated with on-farm construction. An environmental assessment was completed including a 404(b)(1) evaluation, disclosing the estimated impacts. This assessment resulted in a general permit being issued for the on-farm component of the project. The general permit included impacts and mitigation limits set by the on-farm environmental team.

The USFWS and several other agencies suggested that the Memphis District should form inter-agency environmental teams to help oversee on-farm planning, select mitigation sites and prepare subsequent mitigation plans, develop project monitoring programs, and investigate proposed weir locations. These teams have been formed and charters have been prepared for each team and signed by team representatives. The on-farm review team is comprised of representatives from the Corps, NRCS, USFWS, U.S. Environmental Protection Agency, Irrigation District, AGFC, ANHC, Arkansas Department of Environmental Quality, and Arkansas Soil and Water Conservation Commission. To date, the on-farm impacts and subsequent mitigation requirements are well within the acceptable limits established at the September 2000 meetings. The on-farm review team, according to established standard operating procedures, has approved all final on-farm plans.

[Paragraph 14.](#)

The GRR estimated impacts to 128 acres of wetland habitats and 124 acres of upland habitats from construction of the import and delivery system. These impacts are to be mitigated by planting 243 to bottomland hardwoods and 193 acres to upland hardwoods. The NRCS only estimated impacts to 200 acres of farmed wetlands (EIS-71) from construction of on-farm features. The Corps and project sponsors have committed to mitigating for project impacts including both wetland and upland impacts. The EIS (EIS-72) stated that the project sponsor would acquire mitigation for on-farm wetland losses and that this would proceed at the same rate as construction of on-farm features. To date, neither the Corps nor the project sponsors have initiated action to acquire a mitigation site. The lack of a mitigation site is becoming problematic to the On-Farm Environmental Review Team in reviewing projects with environmental impact.

Paragraph 14, Response – No impacts requiring project mitigation have occurred. Potential mitigation sites have been identified and approved by the mitigation team with your staff's participation. On-farm impacts must be mitigated in large, manageable tracts as part of the overall project mitigation UNLESS the on-farm review team grants an exception for a farmer to provide on-site mitigation. The USFWS specifically requested that the on-farm review team be given the authority to grant this exception. Although no large mitigation sites have been acquired, on-site mitigation plans have been developed for all completed on-farm plans. The Memphis District has requested that the local sponsor acquire a project mitigation site. Again, it should be stressed that no farm plans requiring project mitigation have been constructed.

Paragraph 15.

The GRR and EIS committed the Corps and project sponsors to project monitoring. Larval fish entrainment and water quality were both specifically referenced for monitoring, though other project components should also be monitored. To date, no monitoring plan has been developed even though on-farm features have been under construction for nearly a year and the Corps is preparing scopes of work for construction of the inlet canal and pump station. Establishing pre-project baseline conditions is essential if the monitoring is to be at all meaningful.

Paragraph 15, Response – The project delivery system will not be in operation for at least four years. However, the Memphis District agrees that it is important to begin assessing baseline conditions. An initial water quality meeting was held on March 20, 2001. Subsequent meetings will be scheduled this fiscal year in order to finalize a water quality-monitoring plan. If the project is funded for fiscal year 2002, the Memphis District will provide funds to the Waterways Experiment Station for preparation of a draft larval fish-monitoring plan. Additional meetings will be held with the inter-agency monitoring team to finalize the plan before the end of fiscal year 2002.

Paragraph 16.

The Service has and continues to emphasize the need to evaluate the cumulative effects of this and other proposed irrigation projects in the White River basin. As the project nears construction of the import and delivery system, cumulative impacts have still not been assessed. The Cumulative Impacts section of the EIS is largely an accounting of and short narratives describing other ongoing projects in the White River basin. Interactions of the projects in the basin, especially the other proposed irrigation projects were not assessed. The cumulative impact analysis of the GPADP and the other proposed irrigation projects amounted to summing up withdrawal capacity of the proposed projects and comparing this to the withdrawal cutoff (i.e., minimum flow designation). It is hoped that the White River Basin Comprehensive Study being coordinated by the Corps will do a much more thorough evaluation of cumulative impacts of all water development and land use in the basin.

Paragraph 16, Response – Cumulative impacts from the GPADP and all reasonable and foreseeable projects were fully and adequately addressed in the final EIS. The White River Comprehensive Study can provide a detailed model by which to evaluate the impacts of various water level changes on wetlands within the lower White River Basin. The Memphis District is optimistic that local sponsors will step forward with cost-share funding for this important study. The Memphis District appreciates the efforts of the USFWS to make this study a reality.

Paragraph 17 & Paragraph 18.

As construction of the on-farm features and detailed planning progresses, other environmental impacts that were not considered, or were unknown when the reevaluation study was being conducted, are now becoming evident. We are incurring impacts to wetland and upland habitats from construction of on-farm features that were not projected in the GRR. Some of these arise from rehabilitation of existing reservoirs, which also was not discussed in the GRR.

Many existing reservoirs in the project area were constructed years ago in wetlands, often by damming a stream or drain or by constructing levees on three sides of the lower end of a sloping field. Considerable wetland habitat either persisted or developed in these reservoirs due to topographic features within the reservoir. Rehabilitation of these reservoirs generally comprises raising the height of the levees or constructing the fourth

side, thus totally enclosing the levee. Hydrologic changes and the loss of wetland vegetation, both in these reservoirs and along the fringe, are occurring due to the project, but were unanticipated in the GRR or EIS. Much of the total wetland impact mentioned above is from rehabilitation of these reservoirs.

Paragraphs 17 & 18, Response – The on-farm review team has visited reservoirs slated for rehabilitation and has concluded that existing reservoirs can be rehabilitated with only minor impacts. The team has made numerous suggestions to avoid and minimize impacts that have been adopted by the NRCS irrigation team. In addition, a number of fish and wildlife features are being incorporated into reservoir designs. All wetland and upland hardwood impacts are being mitigated, regardless of whether the impacts are associated with modifications to an existing reservoir or associated with construction of a new reservoir. All wetland impacts are being mitigated regardless of whether they are jurisdictional under the Clean Water Act. Moreover, impacts related to work on existing reservoirs count toward the impact limits set by the multi-agency environmental team. Rehabilitation of existing reservoirs is allowed under the General Permit for the on-farm features and offers a cost-effective method to gain additional storage. As you know, rehabilitation of existing reservoirs is one of the concepts of the McKenzie plan you endorsed.

Paragraph 19.

Other unanticipated or unquantified impacts are now being recognized. For example, a tailwater pit constructed for the project was located on the edge of a protected remnant prairie slash community, one of the last examples of this habitat type remaining in the Grand Prairie region. The tailwater pit will divert sheet flow from the site, thus altering the hydrology and potentially endangering the continued existence of this remnant community. Another unanticipated impact that was recently observed was from construction of another tailwater pit near a riparian forest along Bayou LaGrue. Even though the pit itself was constructed in cropland as called for in the project documents, the spoil material/levee of this pit was partially placed in the adjacent woods. Not only does this directly impact the woods, but this spoil acts as a levee altering the flood plain and flood flow of the bayou. One other example is a proposal to construct a tailwater pit along drainage in a forested tract.

Paragraph 19, Response – The Memphis District is coordinating with the Arkansas Natural Heritage Commission to develop a plan to provide project water for the slash community you referenced. The environmental on-farm review team has approved the other two on-farm plans that you mention. The capture of surface runoff will no doubt alter the hydrology of the project area. However, this trend would continue without the Grand Prairie project. The project provides the greatest practical amount of on-farm storage while providing supplemental water from the White River. You have endorsed the rationale and concepts of the so-called “Sustainable Alternative” which maximizes on-farm storage and would further alter project area hydrology. By constructing these on-farm features as part of the Grand Prairie Area Demonstration Project, habitat impacts are being mitigated including upland forest. Although specific sites may differ, the project is proceeding in accordance with reports and NEPA documentation. To date we have not received any new information to contradict our NEPA evaluation. Some small changes have been proposed as the project reaches its final design, however, these changes are minor and are within the scope of the project outlined in the EIS. As further assurance, an environmental assessment on these changes will be complete before any work on these specific items begins.

Paragraph 20.

The GRR estimated minimum aquatic resource impacts. Entrainment of larval fish was the primary impact identified. The Service voiced concern about the spread of zebra mussels to streams in the project area. Corps/WES personnel minimized this, stating "...if zebra mussels become prolific in the White River, the introduction of zebra mussels into the smaller project area streams is inevitable" (Dr. Andrew Miller, WES,

pers. comm. as cited in EIS-67). Consequently, no provisions have been made to prevent possible introduction of zebra mussels into these streams. This appears to be contrary to Executive Order 13112, which requires federal agencies whose actions may affect the status of invasive species to "... (2) use relevant programs and authorities to prevent, control, monitor, and research such species, and (3) not authorize, fund, or carry out actions that it believes are likely to cause or promote the introduction or spread of invasive species in the United States or elsewhere."

Paragraph 20, Response – During the general reevaluation, the USFWS and others voiced concern that the zebra mussels could harm native mussels in streams that would be used to deliver irrigation water. The Memphis District provided funding to the USFWS to conduct a reconnaissance mussel survey. This reconnaissance survey was performed to determine the need for more intensive population surveys. The USFWS conducted the survey on LaGrue Bayou because it was considered to be the stream most likely to contain at least a moderate mussel population. However, only low-density mussel populations were found. Based on this survey, the USFWS informed the Memphis District that there was no need for more intensive surveys. The zebra mussel concerns appeared to be resolved at that time. However, the use of existing streams to deliver water was eliminated in detailed design. Therefore, zebra mussels will not be introduced into existing streams by the project and should no longer be an issue.

[Paragraph 21.](#)

Another recent change effects impact calculations. Originally the project proposed to use existing channels to distribute water throughout the project area. In the aquatic HEP analysis credit was assigned to providing year round water to streams that otherwise would be dry for much of the summer. Project plans now call for the much more extensive use of pipes to distribute water, and the anticipated benefits to streams will not be realized.

Paragraph 21, Response – This change was fully disclosed to the interagency environmental team, the loss of the fisheries benefits claimed was disclosed, and commitments were made to work with the team to find alternatives to regain lost benefits. The use of existing streams has been eliminated. This should ease concerns related to zebra mussel introductions, but the projected gains in fish habitat within these streams will be lost. To compensate, the Memphis District will work with the inter-agency environmental team to identify alternates including maximizing fishery benefits in the project reservoir. Increasing the size of the reservoir and incorporating special features in the reservoir design can greatly maximize fishery benefits. These project design changes have been presented to the environmental team. At the time, no one on the team voiced any objections to either the elimination of receiving streams or the general plan to maximize fishery benefits in the reservoir.

[Paragraph 22.](#)

The GPADP established minimum flows in the White River when water diversion will stop. The Service is heartened that this measure has been taken, especially during the high flow periods when the White River overtops its banks and floods the bottoms. Admittedly, pumping during lower flow seasons will offset higher than historical flows caused by operation of the dams in the upper reaches of the river. While reducing summer flows will allow the hydrograph to come down to more historical levels, it also sets 9,650 cubic feet per second (cfs) as the low flow standard. This flow, while within the historic range, is static; the historic hydrograph was not. We are concerned that summer flow dynamics will be reduced rather consistently to 9,650 cfs and below. The consequences of this possibility have not been evaluated.

Paragraph 22, Response – The wetland studies considered the effect of the diversion over the period of record. This study was conducted by others, however the USFWS was invited and did participate in the development of the scope of the studies and the study itself. As you can see by the with and without project flows for the period of record presented in the hydraulic appendix of the General Reevaluation Report, the river will not be static at a flow of 9,650 during the summer. The river will still flood into the wetland zones with the pumping station in operation. The river currently floods into the wetland zones more frequently than the historic conditions. With the pumping station in operation, the frequency of the floods into the wetland will be less than with current conditions but still greater than in historic conditions.

[Paragraph 23 & Paragraph 24.](#)

Conclusion

There is no doubt that the Alluvial aquifer under the Grand Prairie, as well as other portions of eastern Arkansas, is declining, and a solution must be found. Any solution will be difficult and contentious and involve its share of impacts to both the environment and the farm economy. It is our belief that the problems of water supply for agriculture must be solved by embracing the premise espoused by the Sustainable Alternative: that is, that the aquifer depletion problem on the Grand Prairie should be solved by attacking the problem at its source, and that we should work to bring agriculture into alignment with its sustainable water limits as the first and primary emphasis. This may be achieved by 1) maximizing water use efficiency (i.e., conservation), 2) maximizing storage of excess surface water, and 3) converting the unsustainable irrigated crop land to less water intensive uses. Construction of a water import and delivery system should only be considered as a "last resort" if the above techniques can not meet the stated goal of protecting the aquifer.

The recent problems that have arisen in the Klamath basin portend future problems in this area. When the government embarks on massive water supply projects and makes promises to the people of a region, certain expectations develop and eventual conflicts arise when the government is unable to live up to those expectations. We think this is the long term future of the White River and the Grand Prairie region. We still believe that the creative approach of the Sustainable Alternative is worthy of consideration. Furthermore, we stand by our belief that the concepts and rationale behind the proposed Sustainable Alternative represent a holistic approach to solving the aquifer depletion problems in eastern Arkansas that will serve the long term good of the region and our nation.

Paragraph 23 & 24, Response – The water availability from the project and minimum river levels necessary for water withdrawals have been fully disclosed. Please provide information to me on how the problems in the Klamath basin pertain to problems in this area. As I understand it, the water withdrawals in the Klamath were established well before any withdrawal limits were set for fish and wildlife. Now limits are being established pursuant to the Endangered Species Act. Limits on the White River withdrawals for this project were established and analyzed to determine the environmental impacts.

The project was planned to take full advantage of increasing irrigation efficiencies and capturing rainfall. These alternatives are presented in the GRR, and additional analyses of the so-called "Sustainable Alternative" plan have been conducted. These have been provided to you. The Grand Prairie Area Demonstration Project would increase farm efficiencies, increase storage, provide supplemental water to protect the Sparta and Alluvial Aquifers, and allow the continuation of irrigated agriculture. This is truly the sustainable alternative.

Paragraph 25.

Because of the continuing controversy over this project, the number of project modifications and unanticipated impacts, and the undefined cumulative impacts associated with this and other projects in the White River basin, we request that you reevaluate the impacts of this project to reflect these issues. Large-scale use of surface water for irrigation is new to Arkansas, and this is the first project to implement that use. It is essential that we move forward carefully to assure that we are setting good precedents.

Paragraph 25, Response – As with any project of this size, minor modifications are inevitable. The EIS was written based on large-scale design concepts of how the project should be built in a perfect world. As more information was found about the project area, ways were identified to improve project efficiency, ease of operation, and most importantly reduce environmental impacts. These were incorporated in the final design. As these changes were found they were fully disclosed to the interagency environmental team working on the project. These changes are well within the scope of the project and do not affect the project goals or purposes. Methods for the recovery of lost environmental benefits have been discussed with the interagency environmental teams and are being pursued. It is important that we continue to identify ways to improve project efficiency and reduce impacts during the design and construction; we will continue to disclose these changes as soon as they are identified.

The cumulative impacts assessment included in the EIS examined the cumulative impacts in the affected area of the White River basin. It considered proposed, designed, existing and operational projects and how the Grand Prairie project would interact with them both positively and negatively. Cumulative impacts were fully and adequately addressed. The on-farm changes have been disclosed in an environmental assessment conducted for the on-farm general permit. Any on-farm activity that is not covered by the general permit will have its own environmental assessment through the individual permit process. As disclosed to the interagency environmental team, an environmental assessment will be conducted to address the changes in the project at the appropriate time; no features involved in the changes will be constructed until an EA is complete. The EA for the changes is the only appropriate instrument to determine if a supplemental EIS is necessary for the changes you mention.

It is necessary to continue to move forward with the project to provide the much-needed protection to the aquifers and aquatic environment being affected by the critical loss of groundwater. It is not prudent to continue to languish in speculation or unnecessary studies, not required and not based on facts, while the aquifers continue to be depleted and cause irreparable harm to the region's economic and environmental resources.