

efficient implementation and operation of Meaningful Measures. A steering committee meets regularly to manage the progress of the working groups.

**TABLE II-4**

**EXAMPLE OF MEANINGFUL MEASURES FROM THE USDA FOREST SERVICE**

---

**Health and Cleanliness**

- Healthy environment for users and employees
- No threat of disease or infection
- Odor free
- Litter free
- Pest free

**Setting**

- Managed to the appropriate recreation opportunity spectrum category
- Visual quality standards are maintained
- Resource damage is not occurring
  - Vegetation
  - Soil
  - Water
  - Wildlife
- Resources are maintained or enhanced
- No inappropriate or offensive administrative equipment or facilities are evident
- No intrusion by other inappropriate resource management activities is evident
- Density of users is appropriate

**Safety and Security**

- Safe environment for users and employees
- Uniformed Forest Service personnel are present
- Abusive and nonconforming activities are controlled
- Risk of crime is eliminated
- Risk by wild animals is controlled

**Responsiveness**

- Experience meets customer expectations, needs, and preferences
- Information and interpretive sources are available
- Appropriate unique amenities are available
- Needed Recreation Special Use services are available
- Good hosting

**Condition of Facilities and Equipment**

- They look good
  - They are in good repair
  - They are appropriate
  - They function
  - They are maintained
- 

Source: Stephan (1993).

### III. SUMMARY AND CONCLUSIONS

When introducing any new initiative or management system in an agency, the membership instinctively speculates on what the new initiative means to them. How will this help or hinder the way things take place now? By way of summarizing this report, this question is answered from field management and upper-management perspectives. One issue that affects both parties (and nearly all federal agencies) is that moving toward efficiency is going to be more than suggested, it is going to be expected. Vice President Gore's *National Performance Review* is very clear about this point. The business approach was developed in response to the ASA(CW), D/CW, and HQUSACE guidance in the spirit of the *National Performance Review*. The HQUSACE management and the FWG expect that recreation managers will continue to provide quality recreation experiences to the public and find the business approach to be a useful tool in continuous improvement in public service.

#### **BUSINESS APPROACH: EXPECTED IMPACT ON THE FIELD**

The business approach is not intended to cause a fundamental change in recreation management practices; the business approach simply introduces a dimension of consistency. The goals and measurable objectives of the business approach make it very clear to the recreation area manager what is important from an operations perspective.

The field will be expected to use the measurable objectives, indices of quality, and quality standards in the development and updating of OMPs. If a recreation area is not meeting a particular standard (shown in Table II-3), then it is expected that adjustments would be made, either up or down, in terms of budgeting consideration through the OMP. This will cause some projects to shift resources to improve areas that need attention. Likewise, a project that is significantly above a standard may have to lessen its budgetary attention to the operational facet above standard. None of these adjustments should be made based on the business approach quality standards alone. Rather, the standards are simply an indicator that may suggest closer examination of certain management practices.

The field will have to "get smart" about the business approach. Training will be provided on the philosophy of the business approach as well as on the mechanics of using the measurable objectives. The design is purposefully flexible to accommodate the particularities of project management situations, but certain rules must be adhered to for the program to meet its corporate objectives. The HQUSACE management and FWG anticipate the need for a field "reality check" to fine-tune and in some cases overhaul certain components of the business approach based on experience during implementation.

Those projects that presently utilize an OMP will find that the business approach adds very little extra work to management and planning activities at the project. Furthermore, it is fully expected that after the business approach analytical requirements are met the first time, that

subsequent analysis will be much more streamlined. The first business approach application is estimated to take three days at the most. It is anticipated that the business approach analysis will be implemented through CEFMS, thus optimizing the reporting requirement.

## **BUSINESS APPROACH: EXPECTED IMPACT ON THE CORPS UPPER MANAGEMENT**

The business approach will significantly enhance the Corps ability to meet its recreation mission. In the long term, the business approach will provide a means of ensuring consistent and efficient implementation of Corps recreation policy on what recreation opportunities are provided at Corps projects and the quality standards of operating and maintaining the recreation facilities that support these opportunities.

In the short term, Corps management, specifically Headquarters, is faced with providing guidance on how the business approach should be carried out. The training responsibility will likely trickle down to Divisions and Districts, respectively, over time. Based on some of the solicited comments the FWG received during the business approach design, there is some confusion in the field regarding the philosophy and details of the business approach. Much of this will be alleviated when the guidance and training is made available to the field.

Flexibility and reaction will be required by upper management during the initial implementation of the business approach. Changes to the measurable objectives, indices of quality, and quality standards are expected as actual applications take place. In addition, a governing body (assume for now it will be Headquarters, but it could easily be a review board) will decide which of the suggested changes to the business approach should be enacted. A means for accommodating exchange of information will have to be put in place.

Monitoring of consistent and fair application of the business approach is essential. Some aspects of the business approach are straightforward to track, such as the existence of a safety management plan — it either exists or does not and there is not much room for misinterpretation. Some elements are more complicated and will require close attention, especially for the first few years of the business approach. The response to situations where a quality standard is not met will have to be monitored as well.

## **FINAL THOUGHTS**

A business approach was inevitable for the Corps recreation program, given recent political tides. As Vice President Gore pursues his recommendations from the *National Performance Review*, business approaches or other performance accountability programs will be created in most federal agencies.

The most effective way for government agencies to design and introduce these programs into operation is unknown because the concept is simply too young for generalities and

programming truths to surface. Change is typically difficult, especially in bureaucracies like the Corps. Use of top managers throughout the hierarchy, such as the business approach task force, is probably an effective tack to the design challenge. Another approach would be to develop the program at a workshop, with a larger number of field participants. Still another design alternative would be to have an external source create the business approach and introduce it to the Corps. The task force approach used for this project allowed a select group to spend time corporately developing the program, and maximized their input through professionally-facilitated meetings. This method proved successful in this case and deserves consideration elsewhere.

The general challenge posed is that of measuring management actions. A relatively higher degree of measurability (i.e., enumeration) accommodates the analysis of marginal shifts in operational focus. Most elements of this business approach are characterized by a low degree of measurability (i.e. yes/no quality standards). In some cases this was necessitated due to a lack of data. There are documented cases in the recreation industry of very successful performance management schemes that are characterized by continuous parameters and rating systems. During the initial years of the business approach, opportunities for enumeration will likely come about and will be incorporated as the business approach evolves.

As mentioned above, careful monitoring of the implementation process is crucial. Changes to the specific contents of the business approach is probable, but the general philosophy will likely remain intact. Education and training of Corps managers in the business approach will be a necessary component of successful implementation. Corps managers who understand the fundamental intent of the business approach and the eminent changes in federal government are more likely to provide professional and insightful suggestions for improving the business approach. This may be best carried out through careful or hands-on monitoring of selected projects. In effect, these projects would be pilots for the business approach system. Another approach may be to have focus groups, consisting of key players in the business approach process, testifying to their experiences in it's application. The health of the business approach system depends on these inevitable suggestions and the Corps ability to incorporate these lessons-learned improvements into the program.





## REFERENCES

- Gore, A. 1993. Creating a Government that Works Better and Costs Less. Report of the National Performance Review. U.S. Government Printing Office, Washington, DC.
- Langowski, J. L., and T. D. Feather. 1991. The Management Decision Environment of the Corps O&M Program. U.S. Army Corps of Engineers Institute for Water Resources, Fort Belvoir, VA.
- Stephan, J. 1993. A Process for Developing Meaningful Measures for the Recreation Program of Work (draft). U.S. Department of Agriculture Forest Service, Washington, DC.
- U.S. Army Corps of Engineers. 1993. Report on the Recreation Policy Review. Assistant Secretary of the Army (Civil Works). U.S. Army Corps of Engineers, Washington, DC.
- U.S. Army Corps of Engineers. 1993. National Operation and Maintenance Program Plan of Improvement. U.S. Army Corps of Engineers, Institute for Water Resources, Fort Belvoir, VA.
- U.S. Army Corps of Engineers Recreation Task Force. 1990. U.S. Army Corps of Engineers Recreation Study. Headquarters, U.S. Army Corps of Engineers, Washington, DC.
- U.S. Congress, Senate. July 30, 1993. Congressional Record. U.S. Government Printing Office, Washington, DC.
- U.S. Public Law 103-62. 1993. "Government Performance and Results Act of 1993". U.S. Government Printing Office, Washington, DC.



**APPENDIX A**  
**SUMMARY OF INTERVIEWS**



**BUSINESS APPROACH FOR THE  
U. S. ARMY CORPS OF ENGINEERS  
RECREATION PROGRAM**

**REPORT ON GOVERNMENT AND INDUSTRY  
INTERVIEWS**

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**March 1994**





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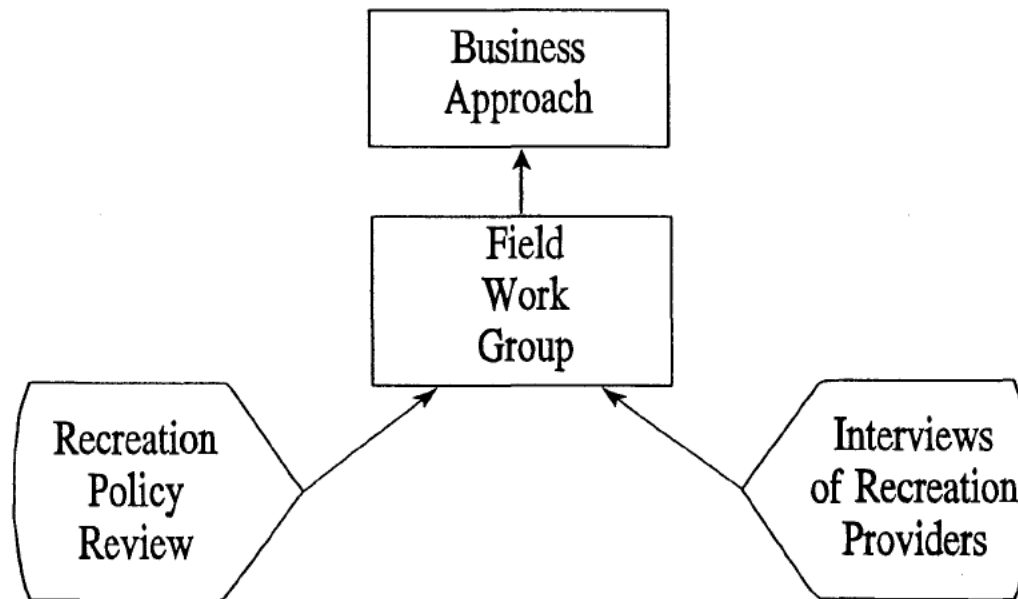
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## I. INTRODUCTION

The approach used by the U.S. Army Corps of Engineers to develop the business approach to recreation management is presented in Figure I-1. The two main sources of technical guidance that the FWG received were input from the Corps *Recreation Policy Review* and from the interviews of recreation providers. The FWG drew upon comments and recommendations from outside the FWG from interviews of selected government and business officials in the recreation industry. Those interviewed were a sample of major recreation providers, with the objective of obtaining insight from non-Corps personnel to supplement the FWG's expertise for the development of the business approach for the Corps recreation program.

This report focuses on the results of the interviews of recreation providers and is organized in the following manner. Chapter II is a review of the interview guide design and contents and describes the interview respondents. Chapter III examines the major themes which emerged from the interviews and specific technical highlights from the interviews are presented in Chapter IV. The report closes with conclusions and recommendations resulting from the interview responses in Chapter V.



**FIGURE I-1  
BUSINESS APPROACH DEVELOPMENT**





## II. INTERVIEW GUIDE AND PARTICIPANTS

### INTERVIEW GUIDE

The goal of the survey was to obtain information from recreation providers that will help the Corps in designing its business approach to recreation. The survey aims to identify and define key elements of the business approach to recreation management. The Corps is focussing on five management areas (see Figure II-1):

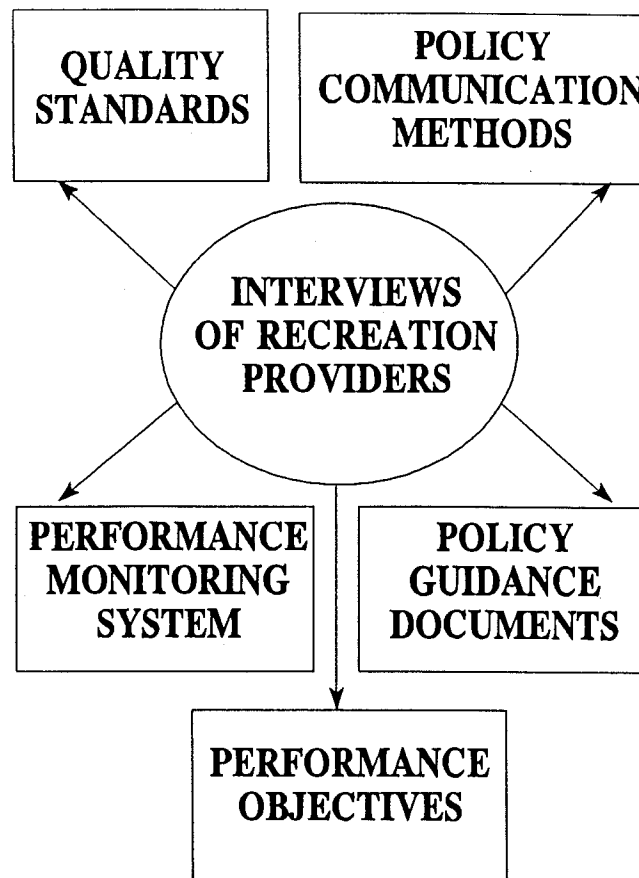
- *Best management practices:* Determine management practices that will ensure consistent quality standards for the Corps recreation program.
- *Performance monitoring system:* Determine the elements of a performance monitoring system necessary to effectively monitor the Corps recreation program.
- *Measurable performance objectives:* Determine measurable performance objectives to establish the quality and monitor the performance of the Corps recreation program.
- *Policy guidance documents:* Determine a means of translating management objectives into a clear policy guidance for Corps recreation management.
- *Policy communication methods:* Determine a means of communicating recreation policy through the Corps recreation program.

These areas are vital to the development and implementation of a successful recreation program therefore, it was important that the Corps explore these areas aggressively. Conducting interviews with experienced recreation managers provided the FWG with important insights on how selected recreation agencies and businesses approach these subject areas.

The survey questions were written to elicit information about the five areas of interest. The survey instrument contained a total of 17 questions and is provided in Exhibit A. Some questions/issues required straightforward factual information, while others solicited opinion and conjecture. The latter line of questioning accommodated collection of information on specific management areas, plus, it allowed the respondent to comment on the advantages/disadvantages of their particular management approach. Respondents could also provide their opinions of what the Corps can learn from their experience.

Interviewees were asked to describe the general scope of their operation through question such as these:

- What is the mission of your agency (geographic extent, main service, number of employees, etc.)?



**FIGURE II-1**  
**INTERVIEW SUBJECT AREAS**

- Please describe how your organization executes its recreation program (i.e., responsibilities across organizational levels, budget plans).
- Who are the top three customers/groups that your agency provides service to (e.g., tax-payers, congress, administration, environmental groups, users)? What are their priorities?

Response to these questions provided important background information on the interviewee's agency or company. In selecting the sample for the survey, the intent was to interview recreation providers that operated multiple units, realizing though, that some would have a more local or regional focus versus the national scope of the Corps program. Discussion of the general mission, scope of operation, and areas of responsibility provided important insights for interpreting the responses for the remaining questions and for making inference to the Corps recreation operation. Recognition of a mission provided critical insight on the organization. The content of the mission was of secondary importance--evidence of the existence of an accepted mission was the main motive for the question.

Questions directed at policy guidance and communication were asked, such as:

- Does your organization employ an oversight committee to govern its recreation program?
- Do you operate under a guiding policy? How is the policy developed? How does your organization communicate/enforce its recreation policy internally (i.e., memoranda, presentations, training workshops, newsletters)?
- What type of operational data are collected and how is the process managed (budget, responsibility, quality control)? How are operation costs tracked?

These questions focused on policy and communication but could be directed by the mission and scope questions discussed previously.

The final set of questions were directed at measures of performance and quality.

- What procedures does your agency employ to try to ensure consistency, cost effectiveness, and an acceptable level of quality for your facilities?
- Does your organization's approach to recreation management include measurable objectives?
- How is the quality of service you provide monitored? Does trouble-shooting occur?
- Does your organization employ best management practices (quality standards)? How are these defined? How are they communicated? What has been tried that failed?
- Are these measurable objectives and BMPs (quality standards) periodically evaluated in terms of their ability to meet agency goals? How often?

The question on "consistency, cost-effectiveness, and acceptable level of quality" probably best exemplified the type of information the survey was designed to obtain. The other questions provided important procedural and maintenance insights.

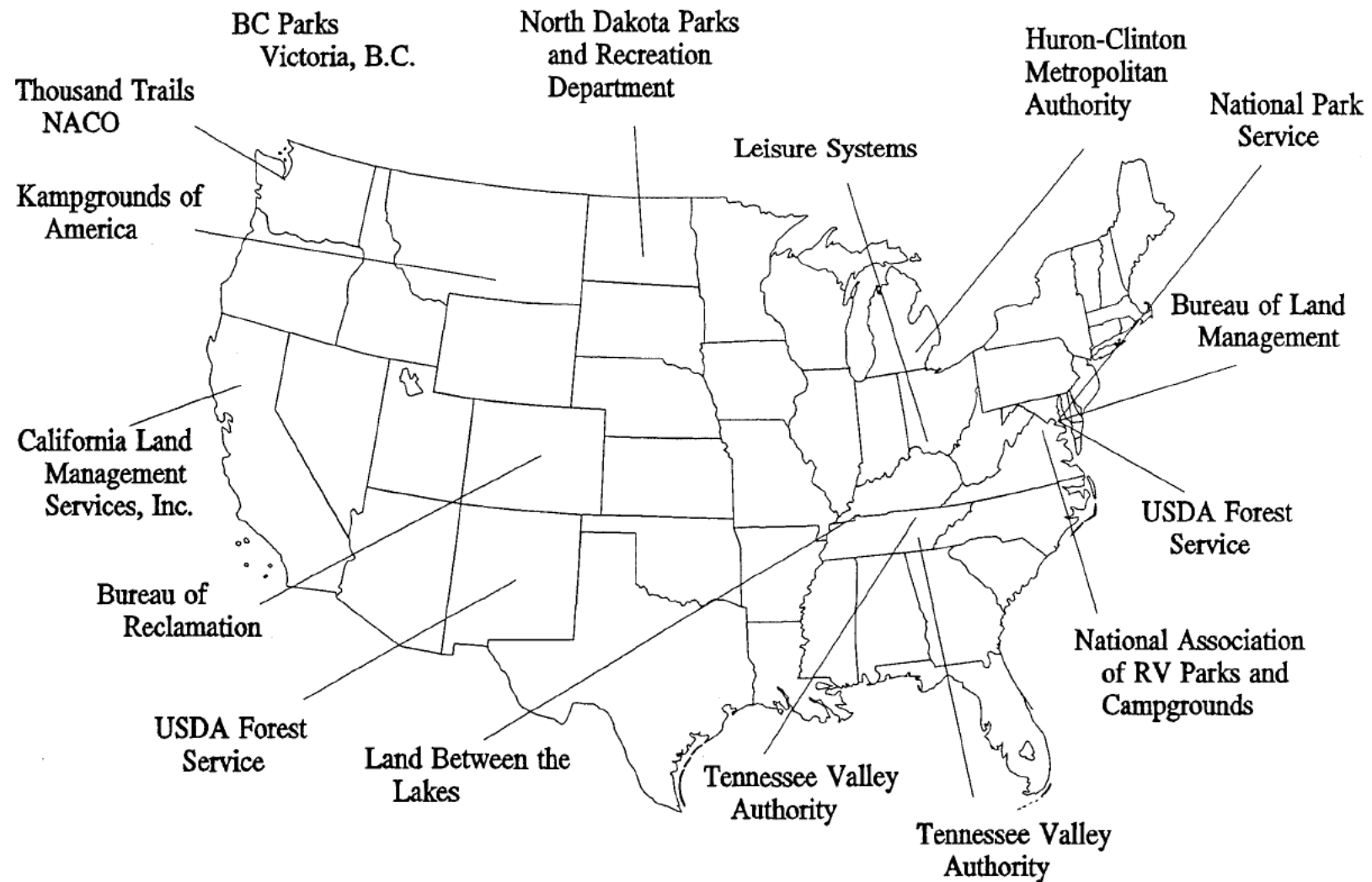
## **INTERVIEW PARTICIPANTS**

The recreation providers interviewed represented a broad cross-section of the industry. This improved the coverage of management strategies that could be used or considered in the Corps business approach to recreation. Initial points of contact were established based upon the recommendation of the Corps' Natural Resource Management office. Further points of contact were received from the initial interviews, when asked who they thought had the experience and knowledge to be of assistance to the Corps in this effort. This approach met the intended

objective of collecting management ideas for the business approach. The FWG felt comfortable that a proper cross-section of opinions and ideas were solicited from the sample interviewed.

Interviewees included officials from federal agencies, state agencies, trade associations, and private recreation providers. In addition to the organizational diversity of those interviewed, the group also represented a diverse geographical distribution. The location of participants is shown in Figure II-2. The diversity of respondents ensured that the individual characteristics of an organization or geographic location was unable to bias the survey results to an operational perspective shared in a particular geographic region. The respondents were also very experienced in recreation operations. All respondents had more than 10 years experience in recreation, with many having more than 20 years of experience. In addition, the respondents were in mid- to upper-level management (i.e., operations officers, branch chiefs, presidents, vice presidents, directors, etc.).

A-7



**FIGURE II-2  
RESPONDENT LOCATIONS**





### III. SUMMARY BY CRITICAL ISSUES

The organizations represented by the survey respondents varied in terms of operational mission, services provided, service area, and organizational size. Despite their differences, a number of common themes emerged from the interview process that are especially pertinent to the Corps development of a business approach for managing its recreation program. The four prevalent themes which are presented in this chapter were: (1) mission statements, (2) guiding policies, (3) organizational structures/oversight committees, and (4) consistency, cost effectiveness, and quality.

#### MISSION STATEMENTS

Clear mission statements were reported by all but one respondent. The respondents reported that their mission statements were a foundation for the operations of their organizations. Mission statements are used to define what resources are to be protected, what services are to be provided, and the main customers of the organization. The mission statement is the main guiding policy for some groups, while others use it as the primary force behind their guiding policy.

The format of the mission statements varied, ranging from a brief statement to a more detailed statement. For example, the published mission statement for the U.S. Forest Service is brief:

*Caring for the Land and Serving People.*

On the other end of the spectrum is the published mission statement of the Huron-Clinton Metropolitan Authority:

*The Huron-Clinton Metropolitan Authority is a regional park agency created of, by and for the people. It consists of excellent environmental and human resources which provides the finest park and recreation services available. This Metropark system is dedicated to providing natural resources and park facilities for enjoyment today and preservation for tomorrow. It will strive to fill user needs by offering clean, uncrowded and safe facilities at a reasonable cost. The Metroparks are places where free time can become wholesome activity, fun and relaxation. Metroparks are entrusted by the people of Wayne, Oakland, Macomb, Livingston and Washtenaw Counties to provide and enhance the quality of life and general well-being of its users and their families.*

The only organization without a clear mission statement has had very little emphasis placed on recreation, as recreation has used only a very small portion of their budget. They work extensively with managing partners and only manage an area if they are unable to find a managing partner.

A common theme running through the mission statements was that of who is the customer of the services provided at the recreation areas. The users of the facilities are referred to throughout the mission statements as the customers. When the respondents were asked who their top three customers were, the top response in nearly all cases was the recreation user. If the recreation users are not classified as the top customer, then they were classified as the second most important customer. Other customers specified by the respondents included: taxpayers, association members, Congress, client agencies, the environment, and employees of their organization.

## **GUIDING POLICY**

Guiding policies are used by all respondents and there are a number of strategies for communicating these policies throughout the organization. Three general approaches to communicate guiding policies were given: (1) manuals, (2) mission statements, and (3) management plans. Most organizations interviewed focus on one of these methods, with a few using more than one. An example of multiple methods is using the mission statement as an overall guiding policy, while using an annual management plan to operate an individual park.

Manuals are the most common presentation of guiding policies to employees. The mission of the organization determines what types of materials are covered in the manual. Most organizations have a master manual which is used by all employees. A limited number of respondents indicated that operational handbooks are customized for an individual project. Respondents also stated that the manuals are dynamic, they are living documents. Revisions occur on either a regular basis, or when a new policy or procedure is identified. One respondent reported that their manuals are updated every two years, but if something needs to be added then it would be updated on an annual basis. The source of the revisions can come from within the organizations or from the outside. The factors leading to revisions in manuals include visitor comments, employee suggestions, or new policies from headquarters. However, input from the field was cited as a very important consideration in the development and updating of manuals and procedural guides.

Mission statements and management plans are used by only a small number of respondents as ways of communicating guiding policies. In only a few instances were either one listed as the sole tool for communicating guiding policy. If they were stated as a method, it was usually stated in conjunction with another method.

## **ORGANIZATIONAL STRUCTURE/OVERSIGHT COMMITTEE**

The organizations surveyed are structured in a similar manner to that of the Corps. Their structure consists of a central office, which is then subdivided into regions and/or districts. In most cases, the regions and/or districts are comprised of individual projects or facilities. The central office might be a headquarters in Washington, D.C. for a federal agency, or it may be a corporate office for private industry. Reporting begins at the project level and progresses up

to the headquarters level with review at intermediate junctures. The responses to the survey indicates that the degree of autonomy given the different levels of an organization varies from organization to organization.

Budget formulation for many of the organizations surveyed start at the project (or unit) level. Projects send their budgets to the next higher level. This next level combines the budget requests it receives into a budget for that level, which is sent to the next level. The process continues until a budget is developed for the entire organization is developed. Due to the limited financial resources of the organizations interviewed, many times not all funding requests can be granted. In these cases, priorities must be set at each level as to what should be funded given their budget constraints.

A major exception to this general model for budget formulation is for franchise organizations. Each franchise is responsible for the budget at their individual facility. They develop their budget and operate with the goal of making a profit. There is limited imposition on the franchise by the corporate office, as long as there is operational consistency and quality, and a healthy financial situation remains.

Respondents were asked if their organization possesses an oversight committee. Oversight committees are not prevalent among those surveyed. Almost all of the respondents indicated that they did not have an oversight committee. Of those few that have an oversight committee, the committee was either the board of directors or the headquarters office itself. In place of an oversight committee, a few respondents stated that the oversight function was the responsibility of the regional manager, team leaders, or handled in an informal structure.

## **CONSISTENCY, QUALITY, AND COST EFFECTIVENESS**

### **Consistency and Quality**

Consistency and quality were stated as critical aspects of running a recreation facility. If the facility does not meet the standards that the visiting public expects, then the public will not return to the facility. To assure consistency and quality, respondents indicated that they receive feedback from their customers to assess how well they are doing. Customer feedback occurs in the form of visitor surveys and/or comment cards. These surveys provide the facility with information of what they are doing right, and more importantly, what they are not doing right. Survey results can be used by the facility to identify problems which must be corrected in the short run, or the results could be used to identify persistent problems which might require a change in policy or operating procedure.

In addition to customer surveys, inspections of facilities are also done to monitor consistency and quality. Formal inspections of a facility by headquarters, regional or district office are typically conducted at specific intervals. In most cases, individual facilities supplement these formal inspections with informal internal inspections on a more frequent basis.

Some organizations also make surprise inspections to monitor consistency and quality at any given point in time.

An organization must address consistency and quality within and across facilities. For example, established standards for cleanliness of toilets must be met for all toilets at that facility. If the organization has more than one facility, the standards for toilet cleanliness are targeted for all toilets at all facilities.

Measures described by respondents for achieving consistency and quality were varied and include:

- Standardizing the formats, procedures, and manuals that are used by all employees. An example is specifying the frequency that a facility is to be cleaned.
- Adopt standards for employee performance, train the employees according to those standards, and monitor their performance.
- Provide proper supervision to employees.
- Standardize evaluation forms used for operations evaluation.
- Private campground directories that rate campgrounds are the most influential determinate of quality at private campgrounds.
- Profit incentives are the driving force behind the quality of services provided by the private sector recreation providers.

### **Cost Effectiveness**

Cost effectiveness is an area that is most important to the private sector organizations surveyed. It is also important to federal agencies, but to a lesser extent. The private sector is motivated by profits, so they are taking steps to reduce their costs. Survey respondents offered a number of approaches and management positions that they considered in light of cost effectiveness. These include:

- Cost effectiveness is inevitable if a business approach is being sought. Any level of quality can be bought, thus, a policy is needed that sets the level of quality expected, then efficiency stems from that.
- Savings has to be stressed. Savings can be achieved by working toward purchasing standards, manpower efficiency (trying to find ways to do more with less), reducing deficiency payments, using input from the field.

- Track revenues and expenditures and compare them across facilities to judge their relative performance.
- Use computer models to calculate the amount of money and employees needed to conduct their operations.
- Adjusting fee schedule to reflect the changing cost of providing recreational services.
- Develop a strategic planning, such as a 5-year plan, to guide financial decision making.

#### **ADDITIONAL MESSAGES FROM THE INTERVIEWS**

There was unanimous appreciation for the Corps effort in developing a business approach. Each recreation manager interviewed was able to sympathize with the management challenges the Corps is facing, both because they generally keep up with the Corps place in the recreation industry and because they face very similar challenges in their operation. Those representing strict business interests generally felt that until the Corps operates its recreation areas under pure market conditions that a true business approach will never be reached. On the other hand, government-operated recreation providers leaned toward characterizing the business approach effort as progressive. In general though, all of those interviewed thought the Corps was taking a step in the right direction and they were very interested in the results of this effort.





## IV. INTERVIEW HIGHLIGHTS

The diverse group of respondents provided a robust view of how recreation programs are developed and run. Chapter III explored the four major themes that emerged from the survey. In addition to these themes, the respondents provided examples of techniques and tools that they use to manage their recreation programs. This chapter examines the management techniques and tools that surfaced during the interview process that appeared to be most innovative and reminiscent of a business approach for the Corps. Many of the respondents supplemented their descriptions by providing materials which detail their procedures.

### TOP MANAGEMENT TOOLS

Numerous management tools were described by the respondents. Many of the organization used similar tools to one another, but with variations that tailored the tool to their specific organizational needs. From all the tools that surfaced, the authors chose their six top management tools. These tools are (in no particular order):

- 20 - Group (focus groups of managers)
- Visitor Satisfaction Surveys
- Operations Evaluation Program
- Operation Guidelines
- National Recreation Strategy & Meaningful Measures
- Inspection and Scoring System

#### 20 - Group

An organization interviewed has established what it calls a "20 - Group." This group is comprised of 20 non-competing campground operators, which meets twice a year to analyze financial data and help one another become more profitable. In addition to the exchange of financial data, the group always discusses quality and the development of standards for all aspects of campground operations. The data collected by the group is very detailed and can be purchased by members of the organization.

An informal feature of every 20-Group meeting is that each person presents to the group their best money-saving idea. The idea voted best by the group wins that meeting's "best idea"

award. Though, this is a casual activity, it has produced some very innovative and useful management concepts.

The 20-group exemplifies the benefits of exchanging management ideas and how utilizing hard data can aid a business operation. The Corps, because of the large number of projects that it manages along with the experts that manage these projects, has a viable opportunity to transfer technology within for the betterment of the organization.

### **Visitor Satisfaction Surveys**

Nearly all of those interviewed indicated that they focus on some form of customer feedback. A very simple examination of visitor feedback is to track customer counts. Increases in the number of customers can typically be interpreted that operations are being carried out appropriately. On the other hand, if customer counts drop off, there may very well be a reason to examine and modify operations. Participants in the interviews made strong arguments for much more in the area of soliciting customer feedback. Understanding, in detail, the wants of their customers is critical to managing effectively. Most recreation providers take aggressive measures toward customer orientation such as customer surveys, comment cards, and customer focus groups.

British Columbia (BC) Parks has made visitor satisfaction surveys a central operational facet of their recreation service. Visitors are surveyed and the results are used to formulate a visitor satisfaction score for each park in 14 different areas which are shown in Table IV-1. Note that the management items are listed in order of importance. Thus the most important management item is the cleanliness of the bathrooms. A management standard is set for the parks to meet. If a park's score meets or exceeds the management standard, it should not be allowed to fall below its present level. If a park's score falls below the management standard, something has to be done to bring up the score. The margin of error that is taken into account is  $\pm 3 - 5$  percent. Those satisfaction scores that are significantly different than the management standard are shown in bold text.

### **Operations Evaluation Program**

The National Park Service has developed a process for evaluating its operations, which involves a dedication to details, and is based in its Operations Evaluation Manual. This Manual is designed to cover all critical aspects of their recreation facility operations. A great deal of effort went into the manual so that those management areas evaluated are critical segments of operation that might need attention or that a sustained performance level is required. The Manual is organized by program category and broken down into sub-program categories. For each sub-program category, an overview of the category is presented, followed by the standards that are to be met. An example is presented in Figure IV-1. The program category is "Management of the Park Area," and the sub-program category is "Park Supervision (Management System

**TABLE IV-1**  
**VISITOR SATISFACTION BY PARK MANAGEMENT REGION, BC PARKS**  
**1992**

Management Items (in order of importance)	Management Standard	South Coast	South Interior	North B.C.
Cleanliness of restrooms	69	67	74	77
Sense of security	69	74	73	72
Cleanliness of grounds	82	89	91	89
Condition of facilities	75	86	87	80
Control of noise	66	67	69	64
Recreational things to do	62	50	44	51
Value of the fee	NA	68	69	65
Availability of firewood	76	77	84	80
Responsiveness of staff	81	81	83	77
Ease of camp registration	new	74	77	82
Control of pets	59	62	63	60
Enough park information	62	58	59	55
Upkeep of roads	70	76	78	75
Sufficient directional signs	59	58	56	56

Work Scheduling)." For this particular sub-program category, there are five standards that have been established.

The philosophy behind implementation of this program requires participation at every level with emphasis on input from park managers. They use the Manual as an actual guide and plan to their operation. When an evaluation by a region or headquarters manager is conducted, areas that do not meet standards are remedied through necessary shifts in resources or through adjustments in operations. These solutions are produced in a cooperative way involving representatives from all levels. Thus, the field manager does not feel "blamed" for problems, rather he/she shares the problem with higher headquarters.

### Operation Guidelines

One organization interviewed has established comprehensive operation guidelines. These guidelines are the foundation of their operations and very detailed and comprehensive in their coverage. Areas covered under the guidelines are: preserve management, facilities, grounds, and equipment, stores, rental units, ranger stations, food service, recreation, sales, special services, and changes/additions. The guidelines are a "living document," which are updated annually.

National Park Service  
 Operations Evaluation Manual  
 Program Category: MANAGEMENT OF THE PARK AREAS

Chapter II  
 Page 22  
 July, 1993

## FIELD AREA EVALUATION

\_\_\_\_\_  
 Park

Sub-Program Category: Park Supervision  
(Management System Work Scheduling)

Work scheduling is one of the key elements of the NPS Management System. The scheduling process involves organizing information on work to be accomplished, assigning work and tracking work accomplishments. It is vital that individuals understand their daily work assignments.

### STANDARDS:

1. Routine tasks are identified to be accomplished.
2. Non-routine tasks and programs, as identified in the park's annual goals and objectives are prioritized.
3. Annual work calendar is developed by listing tasks to be performed each month.
4. Short-range work schedules are developed.
5. Workload and time utilization is analyzed to provide for the following:
  - a. develop subsequent annual operating programs;
  - b. scheduling purchases of supplies and materials;
  - c. scheduling temporary and less than full-time employees;
  - d. filling vacancies;
  - e. increasing, decreasing or terminating activities;
  - f. programming overtime, leave, training; and
  - g. determine type of vacancies (full-time/less than full-time)

## FIGURE IV-1 OPERATIONS EVALUATION FORM

## National Recreation Strategy and Meaningful Measures Program

The Forest Service developed its National Recreation Strategy<sup>1</sup> as a framework for long term planning and program development. This strategy was created with input throughout the organization and it possessed an operational theme that emphasized quality and customer satisfaction. This has resulted in the development of the Forest Service Meaningful Measures Program. Extensive field testing and careful monitoring at selected sites went into the development of the Meaningful Measures to insure that what is being measured and focussed upon is both appropriate and effective in meeting operational goals. The resultant areas of management interest include:

- (1) health and cleanliness
- (2) setting
- (3) safety and security
- (4) responsiveness
- (5) condition of facilities and equipment

For each of these areas, specific standards have been established. An example of standards for each of these areas is shown in Table IV-2.

## Inspection and Scoring System

An organization interviewed uses an inspection program to ensure consistency and quality. Inspections are made at least once a year through a detailed multiple page inspection by inspectors, and the procedure is very quantitative. Every aspect of the operations is given a point value, which are used in the computation of an overall facility score. The inspection forms are very specific about what is expected for each aspect of the operation. For example, the items examined in the rating of landscape/grounds include: the presence of "STOP" signs, the appearance of the campgrounds (neat and weed-free), the height of the grass, the condition of the trees, the amount of litter and animal/fowl refuse, the condition of fences, and that landscaping is apparent throughout the campground.

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<sup>1</sup> See National Recreation Strategy, U.S. Department of Agriculture, Forest Service, 1987.

TABLE IV-2

**EXAMPLE OF MEANINGFUL MEASURES FROM THE USDA FOREST SERVICE**

---

**Health and Cleanliness**

- Healthy environment for users and employees
- No threat of disease or infection
- Odor free
- Litter free
- Pest free

**Setting**

- Managed to the appropriate recreation opportunity spectrum category
- Visual quality standards are maintained
- Resource damage is not occurring
  - Vegetation
  - Soil
  - Water
  - Wildlife
- Resources are maintained or enhanced
- No inappropriate or offensive administrative equipment or facilities are evident
- No intrusion by other inappropriate resource management activities is evident
- Density of users is appropriate

**Safety and Security**

- Safe environment for users and employees
- Uniformed Forest Service personnel are present
- Abusive and nonconforming activities are controlled
- Risk of crime is eliminated
- Risk by wild animals is controlled

**Responsiveness**

- Experience meets customer expectations, needs, and preferences
- Information and interpretive sources are available
- Appropriate unique amenities are available
- Needed Recreation Special Use services are available
- Good hosting

**Condition of Facilities and Equipment**

- They look good
  - They are in good repair
  - They are appropriate
  - They function
  - They are maintained
- 

Source: Stephan, J. A Process for Developing Meaningful Measures for the Recreation Program of Work (Draft). U.S. Department of Agriculture Forest Service, Washington, DC.

## V. CONCLUSIONS AND RECOMMENDATIONS

Indeed, the Corps has a tremendous challenge managing its large recreation resource. This is especially difficult as society places more emphasis on recreation while the Corps operational budgets are tightening. Development of a business approach that emphasizes consistency, acceptable quality, and cost-effectiveness is definitely a step in the proper direction. Furthermore, by tapping the recreation industry through interviews such as those described in the present report, the Corps can use the advise and lessons-learned from other prominent recreation providers and can comfortably proceed with the design of a viable program for meeting its operational goals.

The interviews provided a tremendous amount of information on how different organizations operate, and yielded a number of management tools which should be considered by the Corps. Arising from the sea of information are six main conclusions/recommendations.

- (1) *Firm mission statement/policy is required.* Mission statements are the foundation from which quality standards and measurable objectives are built.
- (2) *Keep customer focus a high priority.* The recreation business is a service oriented industry. The user is number one.
- (3) *Bottom-up emphasis is needed.* Encourage autonomy and innovation at the field level. Consideration should be given as to what the field has to say regarding policy. The field must also remember that the customer is number one.
- (4) *Manage based on what is important, not just measured.* Determine what is important in the operation and collect data accordingly. Just because certain data is collected, don't base decisions on this basis.
- (5) *Continue interaction with other recreation providers.* Interaction with other recreation providers is a good source of new ideas. A great deal of recreation expertise exists outside the Corps, thus the Corps should take advantage of this resource whenever possible.
- (6) *Corps business approach is a step in the right direction.* Everyone interviewed also recognized the importance of the Corps setting measurable objectives and operating under quality standards, and indicated that the Corps was moving in an appropriate and effective direction..





**EXHIBIT A**  
**SURVEY INSTRUMENT**



U.S. ARMY CORPS OF ENGINEERS' BUSINESS APPROACH TO RECREATION  
SURVEY INSTRUMENT

I am assisting the U.S. Army Corps of Engineers in a study of outdoor recreation at Corps projects. Currently, as you may know, the Corps operates about 2500 recreation areas containing facilities such as boat ramps, picnic areas, information centers, and camping sites. State, county, and local governments and quasi public groups operate about 1800 recreation areas. And some facilities, usually marinas, are run by private sector concessionaires who lease the land and facilities from the Corps. All told, there are 4300 recreation areas at 466 projects.

During the next few months, the Corps will be undertaking an effort to identify and eventually put into practice methods to assure the provision of consistent, cost-effective, and acceptable levels of quality at Corps recreation facilities. We are currently calling this an effort to develop a business approach to managing recreation facilities.

We are asking a very select sample of agencies for information and views on a variety of management practices. These agencies include state and local governments, quasi public organizations, and private firms involved in the provision of recreation opportunities. The questions I am asking aim to identify and define the key elements of a business approach to recreation management. The Corps is focussing on the following general themes:

- best management practices to ensure consistent quality standards
- the necessary elements of a performance monitoring system
- measurable performance objectives to establish quality and monitor performance
- a means of translating management objectives into a clear policy guidance for recreation management
- a means of communicating recreation policy throughout the managing organization

It is especially important that the Corps fully investigate current recreation management practices at agencies like yours, which makes this interview process critical. The Corps greatly appreciates your participation.

1. Name
2. Organization
3. Title
4. Familiarity with Corps recreation operation  
(1 to 5; very to not)
5. What is the mission of your agency (geographic extent, main service, number of employees, etc.)?

6. Please describe how your organization executes its recreation program (i.e., responsibilities across organizational levels, budget plans).
7. Does your organization employ an oversight committee to govern its recreation program?
8. Do you operate under a guiding policy? How is the policy developed? How does your organization communicate/enforce its recreation policy internally (i.e. memoranda, presentations, training workshops, newsletters)?
9. Who are the top three customers/groups that your agency provides service to (e.g. taxpayer, congress, administration, environmental groups, users)? What are their priorities?
10. What procedures does your agency employ to try to ensure consistency, cost effectiveness, and an acceptable level of quality for you facilities?
11. Does your organization's approach to recreation management include measurable objectives? If, yes please describe.
12. What types of operation data are collected and how is the process managed (budget, responsibility, quality control)? How are operation costs tracked?
13. How is the quality of service you provide monitored? How does trouble-shooting occur?
14. Does your organization employ best management practices (quality standards)? How are these defined? How are they communicated? What has been tried that failed?
15. Are these measurable objectives and BMPs (quality standards) periodically evaluated in terms of their ability to met agency goals? How often?
16. Is there anyone else who we should talk to about this?
17. Do you have any additional thoughts about how the Corps might develop its "business approach"?

**APPENDIX B**  
**ACTIVITIES OF FWG**



The development of the business approach occurred through a series of Field Working Group (FWG) meetings. Selected Corps recreation managers from Project, District, Division, and Headquarters levels comprised the FWG. The members of the FWG were hand-picked to ensure that a business approach would be developed that met the goals of headquarters while being useful throughout the Corps hierarchy. The activities and schedule of the FWG are shown in Table B-1.

**TABLE B-1****FIELD WORK GROUP MEETING SCHEDULE AND ACTIVITIES**

Meeting	Dates	Purpose	Review
A	8/30 - 9/03	Develop 1st Draft Measurable Objectives and Definition and Criteria for Quality Standards.	Field Review via Corps Mail (1-2 weeks)
B	10/4 - 10/08	Integrate field comments on Measurable Objectives and build on field suggestions for Quality Standards.	Field Review (4 weeks)
C	10/25 - 10/29	Develop 1st Draft Budget Guidance and 3-Year Plan	To be determined
D	12/06 - 12/10	Complete Final Draft Business Approach, Budget Guidance, and 3-Year Plan. Prepare and present IPRs as needed.	To be determined

**GOALS, OBJECTIVES, AND ACTIVITIES OF FWG MEETINGS**

The ultimate intent of these meetings was to develop a set of guidelines that can be used to appropriately posture the Corps to accomplish its recreation mission. Simply put, this requires three things: a mission, technical objectives and standards, and an implementation plan. The mission statement is something that will come from outside this FWG, but will likely be solidified based, in part, by the recommendations of the FWG. The technical objectives and standards, and the implementation plan (a critical element to the success of this, or any, program) were formulated by the FWG during the course of their meetings.



## Field Working Group Meeting A

The first FWG meeting was held on August 30 - September 3, 1993, at Fort Belvoir, VA. The agenda for the meeting is shown in Table B-2. The overall goal for the series of FWG meetings was to develop a business approach for the Corps recreation program. Toward this end, the first meeting concentrated on the objective of developing a list of measurable objectives for a business approach to recreation. These measurable objectives would be a logical building block of the business approach.

The process of developing measurable objectives was proceeded by the FWG discussing what they saw as the expected purpose/outcome of the project, their concerns, and examples of good business approaches. A building process was then used to converge on a set of measurable objectives. The first step was to define the key users of Corps recreation programs. It was agreed upon by the FWG that, for the purposes of developing a business approach, focus should be placed on measurable objectives and quality standards for various types of recreation users. Provision of recreation services to these users through efficient use of tax dollars would in turn serve internal customers appropriately. The list of the key users is shown in Table B-3. The FWG converged on six elements of service for which measurable objectives were developed. These critical service elements were: safety, security, cleanliness and health, facility condition, cost recovery, and customer satisfaction.

Before measurable objectives and quality standards were developed to describe the Corps service elements, a comprehensive discussion of the criteria by which the measurable objectives and quality standards should be judged was held. These were considered to be desirable (if not required) attributes of any measurable objectives and quality standards accepted for the business approach. Initially, all possible criteria that the FWG could generate were posted, then each FWG member was asked to select his top three. Each criteria receiving at least one vote was retained as a guiding criteria. The resultant criteria for measurable objectives and quality standards are shown in Table B-4.

The next step in the process was to learn how non-Corps recreation providers operate. To supplement the experience of the FWG members and the outline for a business approach found in the *Report on the Recreation Policy Review*, other recreation providers were accessed for management ideas. Major recreation providers were targeted—that is, those managing multiple recreation sites on a national or regional scale. This makes their hierarchical management situation somewhat related to that of the Corps (parks report to higher management levels, etc). The chief application of the input from other recreation providers is to give the FWG ideas regarding scope, management scheme, and implementation strategies for the business approach.

Interviews were conducted surrounding the general themes of quality standards, performance monitoring, performance objectives, policy guidance, and policy communication. The general themes that emerged from the interviews were:

## TABLE A-2

**AGENDA**  
**FIRST FIELD WORK GROUP MEETING**

Date	Topic
8/30	<ul style="list-style-type: none"> <li>• Welcome and Admin Announcements</li> <li>• Introductions and Expectations</li> <li>• How We Got Here</li> <li>• Business Approach Project Overview <ul style="list-style-type: none"> <li>• Written Products</li> <li>• Define and Clarify Terms</li> <li>• Schedule for Written Product</li> </ul> </li> <li>• Identify Critical Tasks To Be Performed To Develop the Business Approach</li> <li>• Lunch</li> <li>• Customers of the Recreation Program: <ul style="list-style-type: none"> <li>• Who Are They?</li> <li>• What Are Their Needs?</li> </ul> </li> <li>• How Do We Satisfy Those Needs?</li> </ul>
8/31	<ul style="list-style-type: none"> <li>• Overview of Previous Day</li> <li>• Industry &amp; Government Interviews Update</li> <li>• National Park Service - Operations Evaluation</li> <li>• Lunch</li> <li>• Forest Service - Meaningful Measures</li> <li>• Business Approach Timelines</li> <li>• Begin 1st Draft Measurable Objectives (Corps Recreation)</li> </ul>
9/01	<ul style="list-style-type: none"> <li>• Continue 1st Draft Measurable Objectives <ul style="list-style-type: none"> <li>• What Are The Key Recreation Work Processes?</li> <li>• What Are The Most Important Ones?</li> <li>• What's Measurable About Them?</li> </ul> </li> </ul>
9/02	<ul style="list-style-type: none"> <li>• Corps Of Engineers Financial Management System (CEFMS)</li> <li>• Continue 1st Draft Measurable Objectives <ul style="list-style-type: none"> <li>• What Are The Key Recreation Work Processes?</li> <li>• What Are The Most Important Ones</li> <li>• What's Measurable About Them?</li> </ul> </li> <li>• Complete 1st Draft Measurable Objectives</li> </ul>
9/03	<ul style="list-style-type: none"> <li>• Fine Tune 1st Draft Measurable Objectives</li> <li>• Draft One Page Summary On Quality Standards for Corps Mail Distribution</li> <li>• Brief 1st Draft Measurable Objectives to Darrell Lewis</li> <li>• Develop Draft Agenda for Next Meeting</li> <li>• Adjourn at 12 PM</li> </ul>

**TABLE B-3****KEY USERS OF CORPS RECREATION PROGRAM**


---

Campers  
 Day-users  
     Boaters  
     Picnickers (large and small groups)  
     Beach-goers  
     Fishermen  
     Sightseers

---

**TABLE B-4****CRITERIA FOR MEASURABLE OBJECTIVES  
AND QUALITY STANDARDS**

- 
- ✓ Consistent
  - ✓ Realistic
  - ✓ Helpful, meaningful, and useful to the field
  - ✓ Acceptable and attainable
  - ✓ Existing data / don't create a new reporting system
  - ✓ Must be measurable
  - ✓ Keep it simple
  - ✓ Must be related to a stated agency policy
  - ✓ Customer oriented
  - ✓ Shouldn't drive the field to an unacceptable response
  - ✓ Visible
  - ✓ Measure what's important, not necessarily easy
- 

- Clear mission statement as a foundation for operation
- Recognize and depend on input from field
- Recreation user is top customer
- Strategic plan is basis for annual programming
- Quality and creativity stem from profit incentive (private sector)
- Varying degree of dependency on guidelines/standards

As an additional resource to the FWG, representatives from the National Park Service and U.S. Forest Service were asked to speak to the FWG and answer questions regarding recreation in their respective agencies.

Round-robin discussions generated a list of potential measurable objectives for each service element. An explicit evaluation of each measurable objective in terms of its ability to meet the evaluation criteria was conducted by each member of the FWG. Discussions based upon the individual evaluation significantly reduced the number of measurable objectives. Opportunities for combining closely related measurable objectives were used to reduce the number even further. The final list of measurable objectives are found in Figure B-1.

The measurable objectives developed by the FWG were sent to all divisions, districts, and projects for their review and comment. The field's comments and/or additional measurable objectives were to be used at the next FWG meeting.

<p style="text-align: center;"><b>Safety</b></p> <ul style="list-style-type: none"> <li>• Have evidence of an active district / project water safety committee functioning with command support</li> <li>• Perform Safety Management Evaluation (SME)</li> <li>• Develop and implement a project safety plan</li> <li>• Assure accident reporting process is functioning</li> <li>• Provide for emergency communications</li> </ul>	<p style="text-align: center;"><b>Security</b></p> <ul style="list-style-type: none"> <li>• Internal control procedures in place and being followed</li> <li>• Security plan up to date and being followed</li> <li>• Provide quality assurance plan for law enforcement contracts</li> <li>• Ensure ranger visibility</li> <li>• Provide system of visitor management</li> <li>• Provide ranger training</li> </ul>	<p style="text-align: center;"><b>Cleanliness and Health</b></p> <ul style="list-style-type: none"> <li>• Provide for odor, litter, and pest control</li> <li>• Assure facility cleanup plan being followed</li> <li>• Performance complies with appropriate laws and standards</li> </ul>
<p style="text-align: center;"><b>Facility Condition</b></p> <ul style="list-style-type: none"> <li>• Preventive maintenance programs in place</li> <li>• Facilities function as intended</li> <li>• Facilities meet codes / requirements</li> <li>• Facilities are accessible to persons with disabilities</li> <li>• Facilities are being utilized</li> </ul>	<p style="text-align: center;"><b>Customer Satisfaction</b></p> <ul style="list-style-type: none"> <li>• Conduct visitor surveys</li> <li>• Monitor growth of fee program</li> <li>• Provide prompt response to user complaints</li> <li>• Conduct information exchange meetings</li> <li>• Monitor visitation trends</li> </ul>	<p style="text-align: center;"><b>Cost Recovery</b></p> <ul style="list-style-type: none"> <li>• Percent of cost recovered</li> </ul>

**FIGURE B-1  
DRAFT MEASURABLE OBJECTIVES**

**Field Working Group Meeting B**

The second FWG meeting was held October 4-8, 1993, at Fort Belvoir, VA. The agenda for the meeting is shown in Table B-5. The objectives of meeting B were to revise the measurable objectives using field comments, develop indices of quality using field comments, develop quality standards, develop elements of implementation of the business approach, and finalize "Second Draft Business Approach" document for filed review.

The product from the first FWG meeting was critiqued by the field. A major activity of the week was to respond to the review remarks which required a divide and conquer approach

**TABLE B-5**  
**AGENDA**  
**SECOND FIELD WORK GROUP MEETING**

Date	Topic
10/4	<ul style="list-style-type: none"> <li>● Welcome and Admin Announcements</li> <li>● Overview of Agenda for the Week</li> <li>● Thoughts on Field's Reaction to the First Draft of the Business Approach</li> <li>● Review of Previous Session (Aug. 30 - Sept. 3) - Roll-up report</li> <li>● Summary of Other Interviews</li> <li>● Discussion of field comments on Business Approach (Section D)</li> <li>● Next Steps ("divide and conquer" field comments)</li> </ul>
10/5	<ul style="list-style-type: none"> <li>● Revise Measurable Objectives Using Field Comments (Sections A &amp; B)</li> </ul>
10/6	<ul style="list-style-type: none"> <li>● Develop Indices of Quality Using Field Comments (Section C)</li> </ul>
10/7	<ul style="list-style-type: none"> <li>● Develop Quality Standards</li> </ul>
10/8	<ul style="list-style-type: none"> <li>● Discuss and Develop Elements of Implementation of the Business Approach</li> <li>● Finalize "Second Draft Business Approach" Document for Field Review</li> </ul>

homework, and facilitated discussion. The review comments were sent to IWR where they were catalogued and compiled. A bound copy of the remarks, organized into four sections (Comments to Existing Measurable Objectives, Other Suggested Measurable Objective Categories, Suggestions for Indices of Quality, and General Comments), was distributed to each member of the FWG. The summarized comments totalled 149 pages. To effectively cover all the comments, each category of measurable objective was assigned to a member of the FWG.

After a review of their assigned measurable objectives categories on the first night, each FWG member was given approximately one hour to report the field comments back to the group. Each entry in the "Other Measurable Objectives" section was discussed as it came up during the course of developing measurable objectives, indices of quality, and quality standards and was considered by the group in finalizing the measurable objectives.

Given the completed set of measurable objectives, the FWG focussed next on indices of quality and quality standards. Following the same vein as with analysis of measurable objectives, each FWG member took responsibility for his assigned measurable objective category (ies) for which he made recommendations to the group on indices of quality and quality standards.

On day four, the group finished the round of discussion of indices of quality and quality standards in preparation for a briefing to Darrell Lewis. Following the general guidance of "focussing on the headlines," the FWG presented the working set of indices of quality and quality standards. The presentation and compilation of these items took place via a grand table. At this stage, the FWG had a working business approach with a full understanding of its intent, scope, and technical constituency.

This permitted the group to focus on business approach implementation issues and next steps. The objective of the next meeting will be to develop a 3-year plan which considers the implementation issues. Contents of the request for review of the business approach were discussed. Deadline for the comments was set for close of business, November 19, 1993.

Other tangential activities carried out during the week deserve mention. First, the interviews of government and industry were completed since the last FWG, and a final presentation was made. Copies of the presentation slides were provided to the FWG members. Secondly, some of the pertinent issues of Vice President Gore's report on reinventing government were discussed. It turns out that the motives behind the business approach being developed by the FWG are very much aligned with Gore's recommendations—entrepreneurship, customer satisfaction, and measurable objectives are all emphasized.

Lastly, a report on a public park accreditation program developed by the National Committee on Accreditation for Local Public Park and Recreation Agencies, was made available to the FWG as a resource. This accreditation program, which is in its developmental stage, is a way of recognizing areas that have met standards important for a quality operation.

The interview findings were available for consideration by the FWG in developing the business approach. More formal consideration was given to the solicited review comments that came from the field. Specifically, the field was asked to comment on the construction of the

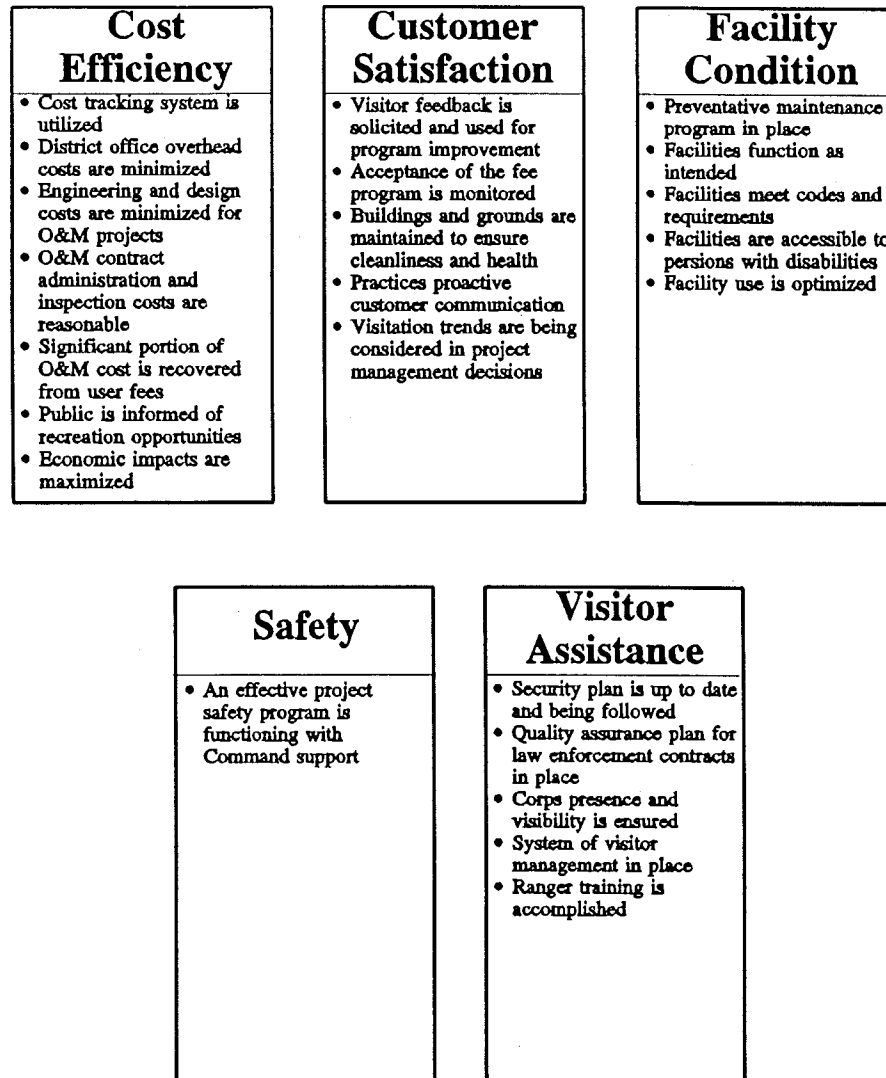
measurable objectives (the product of the previous FWG meeting), and to provide indices of quality for each of the measurable objectives for consideration by the FWG. The "divide and conquer" approach designed to handle the field comments effectively utilized the field comments in developing the final set of measurable objectives and indices of quality.

A considerable amount of effort was put forth by the FWG in developing the draft guidelines for the business approach. Though it was somewhat agonizing, it was a necessary procedure to capture the comments from the field, and utilize the general principles laid out by the non-Corps recreation providers, to create a set of measurable objectives and indices of quality that are meaningful and appropriate to the intended objectives. The criteria used by the FWG in considering the appropriateness of the business approach inputs are the ones developed at meeting A (Table B-4). Design of the indices of quality was more focused on the following criteria: existing data, must be measurable, shouldn't drive the field to unacceptable response, measure what's important, and helpful, meaningful, and useful to the field.

The set of measurable objectives created at the previous meeting is shown in Figure A-1 for comparative purposes. These six measurable objectives categories evolved into the five shown in Figure B-2. The objectives previously listed under the category "Cleanliness and Health" were moved to "Customer Satisfaction." The other major change was to the category name "Cost Recovery" which was changed to "Cost Efficiency." Close inspection of Figure A-2 reveals several other specific changes to the measurable objectives ranging from adding and deleting to wording changes.

The quality standards, in most cases are categorical (yes/no) inputs which will not likely be questioned. Thirteen of the 59 indices of quality had quality standards with a numeric or trend attribute. These will most likely receive the most attention from the field as they review the product of this week. The summary table along with a letter of explanation was sent to all Corps Districts and Division for critical review. Note that, unlike the last review step, Districts and Divisions were responsible for soliciting and summarizing project-level input.





**FIGURE B-2**  
**SECOND DRAFT OF MEASURABLE OBJECTIVES**



## Field Working Group Meeting C

The third FWG meeting was held October 25-29, 1993, at Fort Belvoir, VA. The agenda for the meeting is shown in Table B-6. The central focus of this meeting was on the development of a timeline for implementing the business approach. A blank timeline constructed of paper was affixed to the walls in the meeting room. Required implementation activities for the business approach were listed individually on smaller sheets of paper and placed appropriately on the timeline. Thus, the timeline was literally constructed by the FWG. This allowed for realistic assessment of budget development impacts and Operational Management Plan (OMP) as they relate to the business approach.

**TABLE B-6**

### **AGENDA THIRD FIELD WORK GROUP MEETING**

<b>Date</b>	<b>Topic</b>
10/25	<ul style="list-style-type: none"> <li>• Welcome and Admin Announcements</li> <li>• Late breaking news in Recreation or O&amp;M</li> <li>• Concerns or comments since last meeting</li> <li>• Overview of Business Approach Meeting Schedule</li> <li>• Overview of FWG #3 Agenda</li> <li>• Discuss the Business Approach Management Philosophy (Different things to different people)               <ul style="list-style-type: none"> <li>• Language to justify budget requests (OMB &amp; Congress)</li> <li>• Upward reporting system (ASA &amp; CECW-O)</li> <li>• Tool for consistent quality (CECW-ON)</li> <li>• Guidelines for effective project management</li> <li>• Ethic that ensures a quality recreation experience (users)</li> </ul> </li> </ul>
10/26	<p><b>BUILDING THE 3-YEAR ACTION PLAN</b></p> <ul style="list-style-type: none"> <li>• Budget Tasks and Milestones               <ul style="list-style-type: none"> <li>• Current use of OMPs</li> <li>• Future use of OMPs</li> <li>• Updating EC (How to prepare budgets-FY96 &amp; FY97)</li> <li>• Budget cycle (biannual)</li> </ul> </li> <li>• Communication (Marketing) Tasks &amp; Milestones               <ul style="list-style-type: none"> <li>• CW-O, D/CW, &amp; ASA(CW)</li> <li>• Field</li> <li>• Congress and OMB</li> <li>• Users</li> </ul> </li> </ul>

TABLE B-6 (Continued)

**AGENDA  
THIRD FIELD WORK GROUP MEETING**

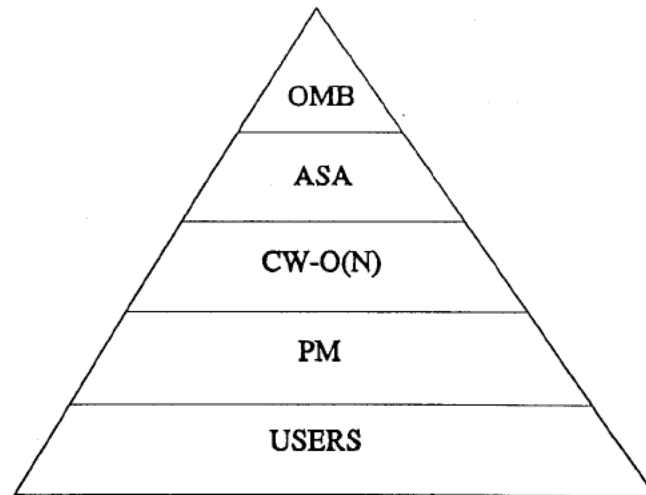
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10/27	<ul style="list-style-type: none"> <li>• External Activities Tracking (Milestones)               <ul style="list-style-type: none"> <li>• O&amp;M SOP Committee</li> <li>• O&amp;M Performance Measures &amp; Database Committee</li> <li>• O&amp;M Structures Committee</li> <li>• Other O&amp;M committee activities</li> <li>• NPR &amp; DPR Recommendations</li> </ul> </li> </ul> <p>WORKING DRAFT 3-YEAR ACTION PLAN</p> <ul style="list-style-type: none"> <li>• Developing and integrating Tasks and milestones for the 3-Year Action Plan</li> </ul>
10/28	<ul style="list-style-type: none"> <li>• Work planning for FWG #4</li> <li>• CEFMS Presentation plus Q&amp;A</li> </ul>

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Before the FWG developed the timeline some prerequisite activities were undertaken. First, late-breaking issues and general thoughts since the last meeting were heard. Then the group went into a detailed discussion of how the business approach will be used by selected operational levels (see Figure B-3) of the recreation program. This exercise raised important issues in terms of implementation design and related elements of the timeline.

The final timeline is shown in Figure B-4. The lower half of the figure represents the budget cycles for FY96, FY97, and part of FY98. The business approach will be implemented through the budget process and OMPs. The items in the top half of the figure are the specific implementation activities of the business approach. A majority of these activities are scheduled to take place before April 1994. Many of the briefings and communications will be headed up by the Corps Natural Resources Headquarters. As the FWG considered the implementation schedule, concern of OMPs not being complete Corps-wide in time to put the business approach fully on line by FY97 was voiced. This issue received a considerable amount of attention from the FWG. They concluded that the priority list development slated for December 1994 could comfortably be requested of all projects. This would be a reasonable place-holder for projects not utilizing OMPs. Thus, the implementation of the business approach could remain on schedule.



**FIGURE B-3**  
**PARITIES AFFECTED BY BUSINESS APPROACH**

An important communication element in the implementation plan is the business approach guidance that is scheduled for completion in July 1994. The FWG set aside some time to discuss the rudiments of the guidance. Suggestions were as follows:

- Correlate FWG tasks and business approach objectives
- Policy statement/level of expected service
- Measurable objectives, indices of quality, and quality standards
- Purpose of the business approach
- Schedule the guidance to fit conveniently into budget process
- Explanation of the business approach evaluation process
- Identify sources of data
- Illustrate the relationship between business approach, CEFMS, budget cycle, and OMP
- Identify operations for practicability and efficiency
- Provide procedures for projects that do not meet standards
- Correlate with reinventing government
- Provide guidance on monitoring to ensure consistency
- Provide mission statement

This guidance will most likely be published and distributed in the form of an EC.

Other tangential presentations were made to the FWG that deserve mention. A recently completed, highly visible study entitled *National Operation and Maintenance Program Plan of Improvement* (O&M Study) call for task forces to examine:

## IMPLEMENTATION

## ACTIVITIES FOR

## BUSINESS

## APPROACH

## BUDGET ACTIVITIES:

Budget EC  
 Budget from Project  
 District Roll-up  
 Division Ranking  
 HQ Review  
 Budget Package  
 ASA Review  
 OMB Review  
 OMB Passback  
 HQ Reclama  
 President's Budget  
 Budget Hearings  
 Appropriations Bill  
 OMB Apportionment  
 HQ Work Allowances  
 Program Execution

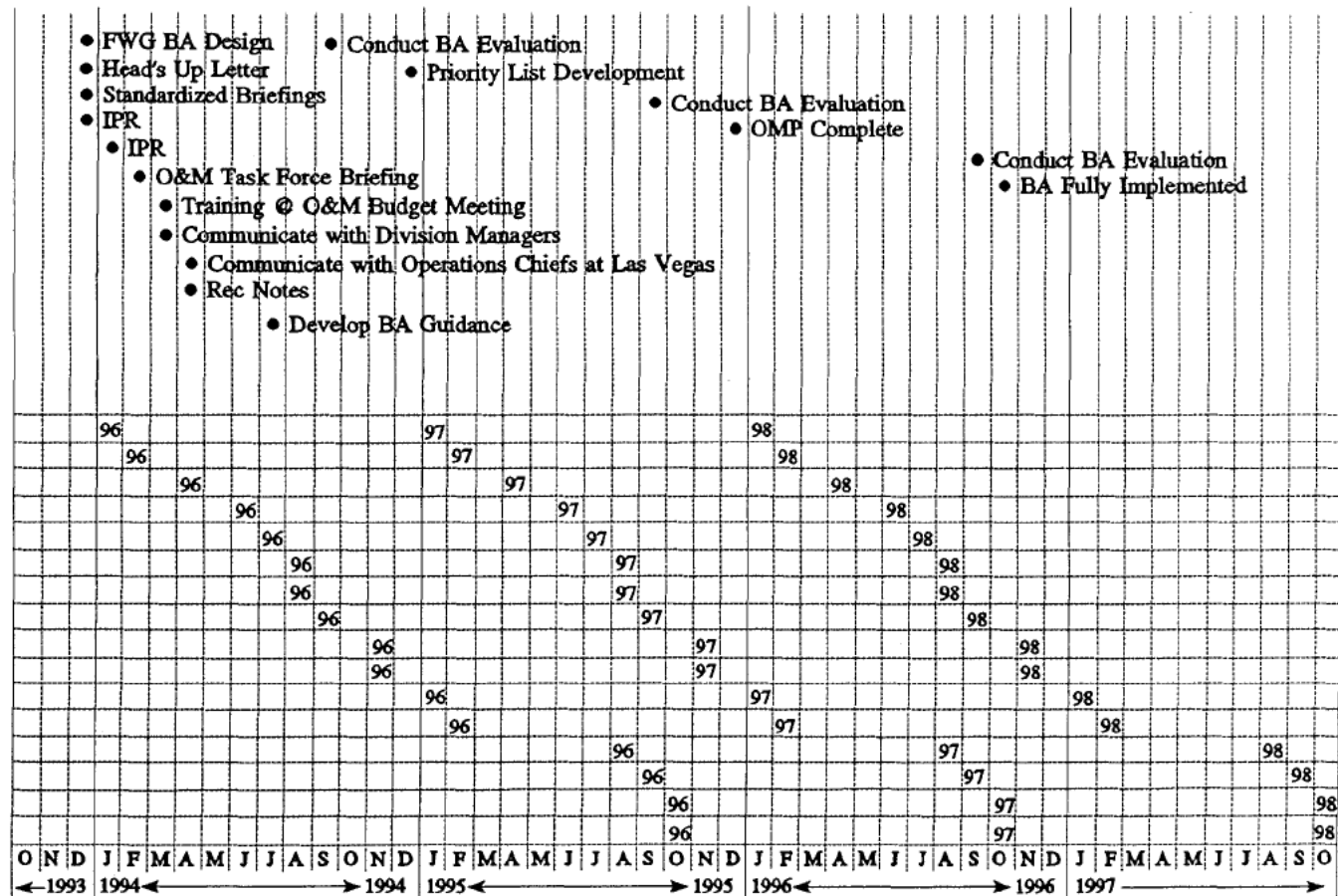


FIGURE B-4  
 IMPLEMENTATION TIMELINE FOR BUSINESS APPROACH

- Improved program development and budget execution
- Standardized organizational structure
- Standardized operation procedures
- Performance measurement and data management

It was of interest to the FWG how the business approach fits into the findings of the O&M study. An overview of the O&M study was provided to the FWG which centered upon a published executive summary which was distributed to members of the FWG. Hard copies of presentation slides were also provided to the FWG.

A task force member for standardized operation procedures made a presentation of the task force process. Of the 104 recommendation made in the O&M study in the area of SOP, 64 had been addressed at this stage. A comprehensive assessment and recommendation is made of each issue. A draft summary report of the SOP task force was provided to the members of the FWG. Recognizing the relationship between the business approach philosophy and the National Performance Review and the Defense Performance Review, the FWG was briefed of the highlights of these efforts. Each FWG member was given a hard copy of the briefing slides.

Lastly, the FWG was given an overview of CEFMS, the database and decision support program which will house the business approach. Though the Corps recreation community has not had any input into the CEFMS design process, any ad hoc reports can be made part of CEFMS by request.

**Field Working Group Meeting D**

The final FWG meeting was held on December 6-10, 1993, at Fort Belvoir, VA. The agenda for the meeting is shown in Table B-7. The completion of the business approach was the intent of the meeting. Two main activities took place: (1) completion of the measurable objectives, indices of quality, and quality standards, and (2) discussion of implementation and marketing.

**TABLE B-7**  
**AGENDA**  
**FOURTH FIELD WORK GROUP MEETING**

Date	Topic
12/6	Discussion 1: Bringing together all elements of the Business Approach into a comprehensive package
	Discussion 2: Drafting the standard briefing, based on Discussion 1.
12/7	Welcome and administrative announcements Late breaking news in Recreation or O&M Concerns or comments since last meeting Overview of Week's Agenda
	Review field comments on Measurable Objectives & Standards of Quality Revise Measurable Objectives & Standards of Quality, based on comments
12/ 8	Review & Finalize Business Approach (from work done on Monday, December 6)
	Review, Revise, Finalize Standard Briefing
12/ 9	Draft Heads-up Letter
	Develop internal marketing plan
	Meeting will Adjourn by 4:00 p.m.

By far, the most time-consuming activity of the FWG involved the development of measurable objectives, indices of quality, and quality standards. This is not unexpected since they were designed to exemplify the important components of the business approach and define the level of service for which the Corps recreation program should operate.

At the conclusion of meeting B, the FWG requested comments from all Districts and Divisions on the set of measurable objectives, indices of quality, and quality standards that had been created. The measurable objectives had been reviewed by the entire Corps recreation community after meeting A. Given the thoroughness of the review process, the FWG proceeded comfortably in finalizing the measurable objectives, indices of quality, and quality standards. It should be noted that comments regarding another upward reporting system, burdensome data requirements, etc. were common and the FWG felt that as the field became more familiar with the use of the business approach they would realize that the added resource needs are minimal if any, especially in light of operational management plans (OMP) and CEFMS.

Comments from the Districts and Divisions, totaling 50 pages, were collected and organized according to measurable objective categories by IWR. These comments were distributed to all members of the FWG who used a divide and conquer approach to absorb the thoughts from the field. FWG members were given time to work on their own to consider the field comments of their assigned measurable objective category: cost efficiency, customer satisfaction, facility condition, safety, and visitor assistance. Note that the cost efficiency category was divided among two FWG members because of the large number of comments in that category.

The general impression after reviewing the field comments was that the measurable objectives, indices of quality, and quality standards appropriately depicted the important aspects of the recreation program. In many cases, further clarification was sought which indicated that the guidance will have to be clearly written. Four indices of quality that were numeric (versus yes/no) were either removed or restructured to a yes/no format. This caused some concern, especially on the part of HQ, because the initial concept of the business approach was to have ranges of quality defined so that standards could be created. Though this can be done in some cases, in most a categorical yes/no dictates the quality standard. Word changes and shifting of measurable objectives among categories consumed most of the other changes.

During the meeting on Monday, a draft set of goals were developed to encompass and formalize the measurable objective categories. The thought was that development of goals would better fit the standard goal-objective nomenclature used to develop programs in the Corps (or Army, for example, see U.S. Army Environmental Strategy). The goals that emerged after input from the entire FWG on Wednesday were:

Cost Efficiency - to make most effective use of available resources

Customer Satisfaction - to provide services that meet customer needs

Facility Condition - to provide clean, functional recreation facilities on a long-term basis.

Safety - to provide safe recreation opportunities



Visitor Assistance and Security - to provide visitors with a secure environment for a quality outdoor experience.

Given the technical structure of the business approach was finalized, the FWG considered important implementation issues to operationalize the business approach in the Corps. Three main areas of concern emerged: marketing, training, and execution/monitoring. These areas are not mutually exclusive. For example, when training is provided, it is expected that more planners will "buy into" the business approach, thus resulting in a marketing benefit.

As set out in meeting C, guidance on the business approach is scheduled for July 1994, with initial business approach evaluations (priority lists) planned for December 1994. This placed the marketing and training of the business approach on a relatively fast track.

Many groups inside and outside the Corps will be contacted in the next few months. The FWG summary of who should be contacted, communication mode and message is found in Table B-8.

The earliest communication will be the "heads-up" letter to the field which was reviewed by the FWG. Closely associated with the "heads-up" letter is approval from CW-O, CW, and ASA(CW). The timing of these briefings is somewhat up in the air in anticipation of a new ASA(CW).

Many of the activities listed in Table A-8 are briefings or presentations. The FWG spent time developing a standard briefing outline. Certain aspects of the standard briefing will be emphasized on the audience. Another chief source of communication will be the reports produced as part of the present business approach design and development effort. The opportunities for IWR to publish these reports will be explored. Other communication modes such as formal training, videos, and pamphlets will be acted upon in the intermediate time.

Once the business approach is trained and the program is in full implementation, monitoring of results and process updating will be needed. Much of these activities will fall under the venue of Peer Review. Results of the business approach application will require close evaluation, especially at the beginning of the program. Needed adjustments can be made to guidance based upon impact from the field during this initial period. Also, the peer review will ensure appropriate data sources are being utilized and proper reporting of the business approach is taking place.



TABLE B-8

## SUMMARY OF COMMUNICATION NEEDS FOR BUSINESS APPROACH

Audience	Message	Means
ASA(CW)	What, How, When, Approval	A, C
CW-O	What, How, When, Approval	A, C
CW	What, How, When, Approval	A, C
FIELD	Heads-Up, How (Detail), What, When, OPS Benefit, OMP	A, C-M
O&M BUDGET	What, When (Tailored)	B, J
RMO	How	B
CEFMS STAFF	Data Needs, Query Needs	B, C
O&M STUDY GROUP	How, What, Models	A, C
FED REC AGENCIES	Courtesy Info, What, How, Status	C, E, L
STATE PARK DIR	Courtesy Info, What, How, Status	C, E, L
PUBLIC/USERS	Benefits, Customer Satisfaction	D, H

Means: (A) Briefing, (B) Working Sessions, (C) Copy of Report, (D) Pamphlets, (E) Presentations, (F) Teleconferences, (G) Workshops and Training Sessions, (H) Journal Articles, (I) Rec Notes, (J) Formal Guidance, (K) Videos, (L) Conferences, (M) Corps Mail

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**US Army Corps  
of Engineers**

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# **Water Resources People and Issues**

*interview with  
Gilbert F. White*

EP-870-1-43

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*Water Resources People and Issues*

**GILBERT F. WHITE**

by  
Martin Reuss

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Office of History  
United States Army Corps of Engineers  
Fort Belvoir, Virginia

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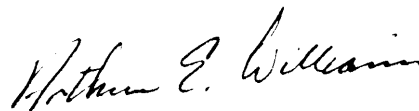
## Preface

Few people have influenced water resources planning more than Gilbert White. Within the Corps, his impact is reflected in the Floodplain Information Services Program, which has been in existence for over 30 years. Also, the Corps' Office of History has accepted the responsibility to preserve and catalog White's papers, which are an invaluable research source for social scientists, historians, planners, and policy makers. A register of these papers will be made available as soon as possible.

This present interview is the third published in the *Water Resources People and Issues* series. Through in-depth interviews, this series presents the thoughts and careers of key individuals who have influenced United States water resources development. We commend this interview to all those interested in the past and future of water resources planning.



Nancy P. Dorn  
Assistant Secretary of the Army  
(Civil Works)



Arthur E. Williams  
Lieutenant General, USA  
Commanding

## **Interviewer**

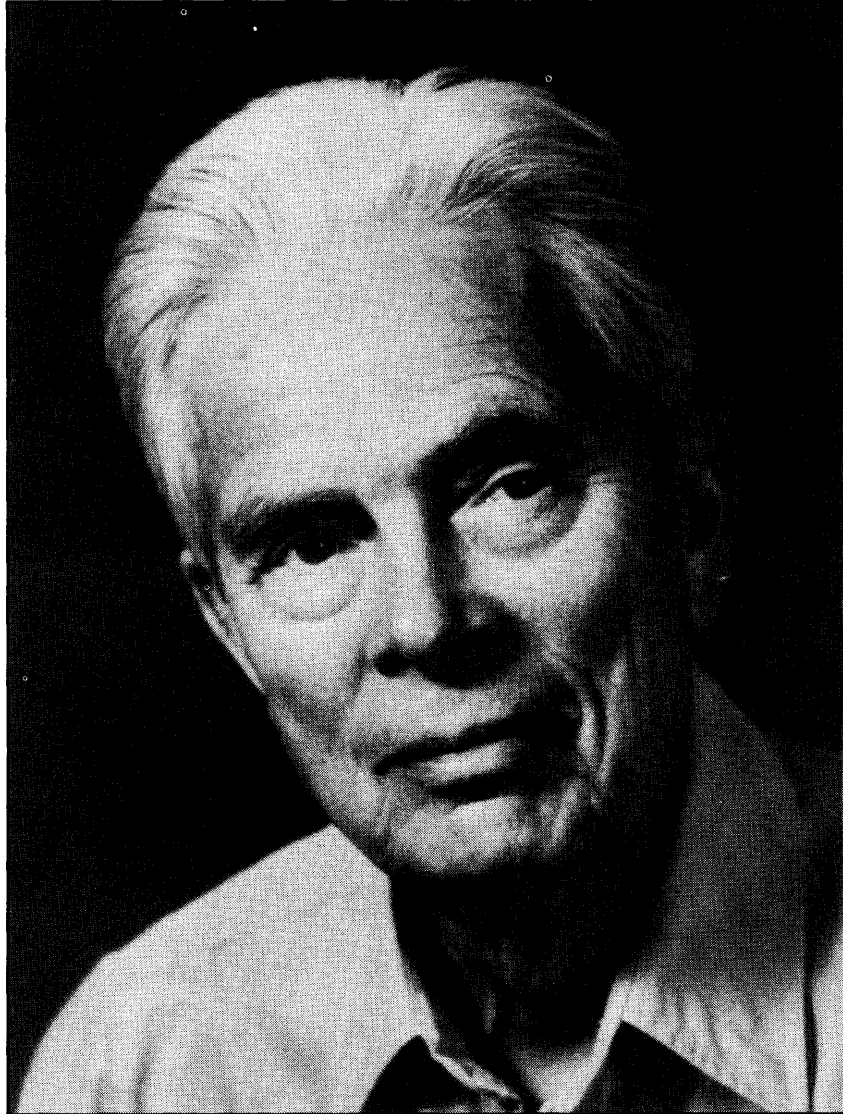
Dr. Martin Reuss is a senior historian in the Office of History, Headquarters, U.S. Army Corps of Engineers, specializing in water resources development. He holds a Ph.D. from Duke University and is the author of several books and articles dealing with the civil works program of the Corps of Engineers.

This edited manuscript is the product of a tape-recorded interview conducted by Dr. Reuss in Dr. White's office at the University of Colorado on June 25, 1985.



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**Gilbert F. White**

## Introduction

Gilbert White's influence on floodplain management practice in the United States can hardly be overestimated. Even before his path-breaking 1942 dissertation, *Human Adjustment to Floods*, was accepted and subsequently published by the University of Chicago Department of Geography, he had begun raising questions about the effectiveness of structural devices such as levees and dams in flood prevention. Although humans have resorted to various protective edifices for centuries to control floods, White's work demonstrated that flood control structures not only occasionally fail the standards of reliability set by planners but can actually increase the damage done when unsuspecting people risk lives and money to develop the land supposedly protected. One flood, one break in the levee, could spell disaster. White advocated the use of nonstructural solutions, such as zoning restrictions and floodproofing, to complement or replace more traditional structural approaches.

While White's academic career is distinguished, it is his commitment to public policy that dramatically expands the significance of contributions. His essays and books shun abstract theory and speculation in favor of clear policy analysis. His goal is to influence the management of natural resources and to do it in a way that takes into account psychological and sociological phenomena as well as physical constraints. He is fascinated by the gap between our scientific and technological capability to manage water as good stewards and our actual willingness to do so. Central to the issue is the question of how hazards are perceived, whether they be droughts, floods, or pollution. In analyzing the problem, White employed interdisciplinary methods and insights long before such an approach became fashionable. Moreover, with one eye on lessons from the past, he has never lost sight of long-term objectives: sustaining life in all its forms and avoiding violent confrontation both with one another and with nature itself. These are responsibilities that require not only professional expertise but strong spiritual values.

White's work reflects a sensitivity to the human condition rooted both in his training as a geographer and his Quaker faith. His global studies of the interaction between humankind and water resources implicitly suggest that the choices humans make in one corner of the world may contain lessons for others elsewhere. For over fifty years he has studied the human environment, ever enlarging our understanding of the intricate relationship between social development and the natural world. In this, his legacy among twentieth century geographers is unrivaled.

## **Vita**

### **Gilbert F. White**

Gustavson Distinguished Professor Emeritus of Geography  
University of Colorado

Born: November 26, 1911

Education: S.B., S.M., Ph. D., University of Chicago

### **Positions Held**

Geographer with the Mississippi Valley Committee, National Resources Committee, and National Resources Planning Board, 1934-1940

Member, Bureau of the Budget, Executive Office of the President, 1940-1942

Member, American Friends Service Committee, 1942-1946

President, Haverford College, 1946-1955

Professor of Geography, University of Chicago, 1956-1969

Visiting Professor, University of Oxford, 1962-1963

Professor of Geography and Director, Institute of Behavioral Science,  
University of Colorado, 1970-1978

Director, Natural Hazards Research Applications and Information Center,  
1976-1984

**Other Professional Activities**

Member, Hoover Commission Task Force on Natural Resources, 1948

Vice-Chair, President's Water Resources Policy Commission, 1950

Member, UNESCO Advisory Committee on Arid Zone Research, 1953-1956

Chair, United Nations Panel on Integrated River Development, 1957-1958

President, Association of American Geographers, 1961-1962

Consultant, Lower Mekong Coordinating Committee, Cambodia, Laos, Thailand, and Vietnam, 1961-1962, 1970

Chair, American Friends Service Committee, 1963-1969

Member, Special NSF Commission on Weather Modification, 1964-1965

Chair, Bureau of Budget Task Force on Federal Flood Policy, 1965-1966

Chair, Committee on Water, National Research Council, 1964-1968

Chair, Steering Committee for High School Geography Project, 1964-1970

Member, UNESCO Advisory Committee on Natural Resource Research, 1967-1971

Member, Advisory Committee on Environmental Science, National Science Foundation, 1968-1971

Scientific Advisor on Man-made Lakes to Administrator of United Nations Development Programme, 1966-1971

Chair, Commission on Man and Environment, International Geographical Union, 1969-1976

Member, Scientific Committee on Problems of the Environment, International Council of Scientific Unions, 1970- (President, 1976-1982)

Chair, Advisory Board, Energy Policy Project, 1972-1974

Chair, International Environmental Programs Committee, National Research Council, 1972-1976

Chair, Environmental Studies Board, National Research Council, 1975-1977

Member, Joint Consultative Committee, Egyptian Academy of Scientific Research and Technology-U.S. National Academy of Sciences, 1978-

Chair, Commission on Natural Resources, National Research Council, 1977-1980

Member, Technology Assessment Advisory Council, U.S. Congress, 1973-1975

Member, Earthquake Studies Advisory Panel, U.S. Department of the Interior, 1973-1976

Trustee, Resources for the Future, 1967-1979 (Chair, 1974-1979)

Consultant, Water Quality Studies on Nile–Lake Nasser, 1975-1979

Executive Editor, *Environment*, 1983-

## Honors

Distinguished Service Award, Association of American Geographers, 1955-1974

Quantrell Award for Excellence in Undergraduate Teaching, 1967

Daly Medal, American Geographical Society, 1971

Eben Award, American Water Resources Association, 1972

Thomas Jefferson Award, University of Colorado, 1973

Royal Geographical Society of London, Honorary Corresponding Member

Soviet Geographical Society, Honorary Member

National Academy of Sciences

American Academy of Arts and Sciences

Environmental Award, National Academy of Sciences, 1980

Gustavson Distinguished Professor Emeritus, University of Colorado,  
1980

Soviet Academy of Sciences, Foreign Member

University of Colorado Medal

University of Chicago Alumni Medal

Co-winner, Sasakawa International Environmental Prize, 1985

Co-winner, John Tyler Prize, 1987

## **Publications (1985-1991)**

**by Gilbert F. White**

A complete list of White's published works from 1935 to 1984 is in Robert W. Kates and Ian Burton, editors, *Geography, Resources, and Environment. Volume I: Selected Writings of Gilbert White*, Chicago: The University of Chicago Press, 1986, 443-459. The bibliography below updates that list.

'Problems, Findings, and Issues, " Water Scarcity: Impacts on Western Agriculture, E. Englebert and A. F. Scheuring, editors, Berkeley: University of California Press, 1985, 472-484.

"Geographers in a Perilously Changing World, " *Annals of the Association of American Geographers*, Vol. 75, No. 1, 1985, 10-16.

With Herbert D. Grover, "Toward Understanding the Effects of Nuclear War, " *Bioscience*, Vol. 35, No. 9, 1985, 552-556.

With Stephen A. Thompson, "A National Floodplain Map, " *Journal of Soil and Water Conservation*, Vol. 40, No. 5, 1985, 417-419.

With Steering Committee, "Foreword," *Environmental Consequences of Nuclear War*, B. Pittcock, *et al.*, editors, 2 vols., Chichester: John Wiley & Sons, 1985, xxi-xxvii.

"What Is Happening to the Chinese Environment?" *Environment*, December 1985, 13.

"Editorial," *Environment*, Vol. 27, No. 3, 1985, 1.

"Editorial," *Environment*, Vol. 27, No. 8, 1985, 1.

"Challenges for the Future, " *Arid Lands Newsletter*, Vol. 23, 1986, 13-16.

'*The Future of the Great Plains* Re-visited, " *Great Plains Quarterly*, Vol. 6, 1986, 84-93.



“A New Confluence in the Life of the River, ” *New Courses for the Colorado River: Major Issues for the Next Century*, G. D. Weatherford and F. L. Brown, editors, Albuquerque: University of New Mexico Press, 1986, 215-224.

“The Meaning of the Environmental Crisis, ” *Geography, Resources, and Environment: Vol. I: Selected Writings of Gilbert F. White*, R. W. Kates and Ian Burton, editors, Chicago: University of Chicago Press, 1986, 279-289.

“The Role of Scientific Information in Anticipation and Prevention of Environmental Disputes, ” *Geography, Resources, and Environment: Vol. I: Selected Writings of Gilbert F. White*, R. W. Kates and Ian Burton, editors, Chicago: University of Chicago Press, 1986, 378-392.

“Dimensions of Drought Management for Public Water Supplies, ” *Drought Management and Its Impact on Public Water Supplies*, Washington, DC: Academy Press, 1986, 11-23.

With Anne U. White, “Potable Water for All: The Egyptian Experience with Rural Water Supply, ” *Water International*, Vol. 11, 1986, 54-63.

“Speculating on the Global Resource Future, ” *Earth and the Human Future: Essays in Honor of Harrison Brown*, K. R. Smith, *et al.*, editors, Boulder: Westview Press, 1986, 173-186.

“Assessment of Flood Risk, ” *Violent Forces of Nature*, R. H. Maybury, editor, Mt. Airy, MD: Lomand Publications, 1986, Chapter 10.

“Defusing Natural Disasters—Introduction, ” *Journal of the American Planning Association*, Vol. 52, No. 4, 1986, 429-430.

“Environmental Ethics, ” *Environment*, Vol. 28, No. 6, 1986, 1.

“The New Cities at Threat, ” *Environment*, Vol. 28, No. 9, 1986, 1.

“Foreword, ” *Nature on the Rampage: Our Violent Earth*, Washington, DC: National Geographic Society, 1986, 8.

“Sixth General Assembly of the ICSU/SCOPE, ” *Environmental Conservation*, Vol. 13, No. 1, 1986, 82.

- Review of *Regulated Rivers*, Geoffrey Petts, editor-in-chief,  
*Environmental Conservation*, Vol. 13, No. 2, 1986, 175.
- “Foreword,” *Lands at Risk in the Third World*, P. D. Little and M. M. Horowitz, editors, Boulder: Westview Press, 1987, v-vii.
- “Opinion, Action, and Efficacy,” *Environment*, Vol. 29, No. 6, 1987, 1.
- “Políticas de Prevención de Danos Causados por Crecientes,” *Ambiente y Recursos Naturales: Revista de Derecho, Política y Administración*, Vol. 3, No. 4, 1987, 34-42.
- “SCOPE: The First 16 Years,” *Environmental Conservation*, Vol. 14, No. 1, 1987, 7-13.
- “The Ozone Hole and Knowledge Gaps,” *Environment*, Vol. 29, No. 1, 1987, 1.
- “When May a Post-audit Teach Lessons?” *The Flood Control Challenge: Past, Present, and Future*, Howard Rosen and Martin Reuss, editors, Chicago Public Works Historical Society, 1988, 53-63.
- “On ‘Geographers and Nuclear War: Why We Lack Influence on Public Policy,’” *Annals of the Association of American Geographers*, Vol. 78, 1988, 719.
- With V. M. Kotlyakov, J. R. Mather, and G. V. Sdasyuk, “Global Change: Geographical Approaches (A Review),” *Proceedings of the National Academy* Vol. 85, 1988, 5986-5991.
- “The Environmental Effects of the High Dam at Aswan,” *Environment*, Vol. 30, No. 7, 1988, 4-11, 34-40.
- “Paths to Risk Analysis,” *Risk Analysis: An International Journal*, Vol. 8, No. 2, 1988, 171-176.
- “Challenges for the Future,” *Arid Lands: Today and Tomorrow—Proceedings of an International Research and Development Conference*, E. N. Whitehead, et al., editors, Boulder: Westview and Belhaven, 1988, 1423-1425.
- “Quaker Education: Vision and Practice,” *Quaker Education: From Vision to Practice—Eighth Annual Conference*, Whittier, CA: Friends Association for Higher Education, 1988, 1-5, 58-61.

“A Global Perspective on Western Water,” *Water and the American West: Essays in Honor of Raphael J. Moses*, D. Getches, editor, Boulder: University of Colorado School of Law, 1988, 19-29.

“A Century of Change in World Water Management,” *Earth '88: Changing Geographic Perspectives*, Washington, DC: National Geographic Society, 1988, 248-261.

“Glasnost and Ecology: Three Reports from the Soviet Union,” *Environment*, Vol. 30, No. 10, 1988, 4-5.

With four others, *Environment and Development: Review of Issues and Implications for WHO*, Geneva: World Health Organization, 1988.

“The Landscape Connection,” *Environment*, Vol. 31, No. 3, 1989, 1.

“NEPA at Twenty and Beyond,” *Environment*, Vol. 31, No. 10, 1989, 1.

With nine others, *Interim Statement of the Technical Review Committee on the Yucca Mountain Socioeconomic Project*, Carson City: Agency for Nuclear Projects, 1990.

“Linking Faith and Action,” *Friends Journal*, Vol. 36, No. 7, 1990, 33-34.

“Crisis and Common Sense,” *Environment*, Vol. 32, No. 4, 1990, 1.

“Expanding Roles for the NGOS,” *Environment*, Vol. 32, No. 8, 1990.

“When Will Western Water Resource Use Be Sustainable?” *Environment*, Vol. 32, No. 10, 1990, 1.

With Mark I. L’vovich, “Use and Transformation of Terrestrial Water Systems,” *The Earth as Transformed by Human Action*, B. L. Turner, II, *et al.*, editors, New York: Cambridge University Press, 1990, 235-252.

“Keynote Address: Tasks for the Science Community,” *Sustainable Development, Science and Policy*, Oslo: Norwegian Research Council for Science and Humanities, 1990, 25-30.

“Foreword,” *Woodfuel, Women and Woodlots*, Vol. 1, Philip N. Bradley, London: Macmillan, 1991, xxxi.

“UNCED and Uncertainty,” *Environment*, Vol. 33, No. 5, 1991, *i*.

With Sir Frederick Warner, “Environment: The Catalytic Role of SCOPE,” *Science International*, Special Issue (September) 1991, 52-54.

“Management Responses to Climatic Variability,” *Managing Water Resources in the West under Conditions of Climatic Uncertainty*, Washington, DC: National Academy Press, 1991, 281-283.

“Greenhouse Gases, Nile Snails, and Human Choice,” *Perspectives on Behavioral Science: The Colorado Lectures*, Richard Jessor, editor, Boulder, CO: Westview Press, Inc., 1991.

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Water Resources People and Issues

GILBERT F. WHITE

by  
Martin Reuss

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**Interview with**  
**Gilbert F. White**

Q: Professor White, could we begin by talking about your early family history, where you were born, your father's and mother's background?

A: I was born in Chicago right near the University of Chicago. We lived there because my father was working for the Burlington Railroad and stationed in Chicago. My mother had decided, when they moved to Chicago in the 1890s, that we ought to be located near the university. She was from Atchison, Kansas, and she'd gone with her mother to the Chicago World's Fair in 1893. When they arrived in Chicago they stayed in a boarding house out near the Midway next door to the house in which the new young president of the University of Chicago, just being started that year, was living. My mother became enthusiastic about William Rainey Harper and his wife and thought that this was a very promising institution. When she married and they moved to Chicago, my father, who'd had to drop out of school and go to work at the age of 12, was concerned about his children, as yet unborn, having a better education than he'd received. They decided they would live near the university. Our family has lived there ever since. Their planning turned out to be remarkably accurate. Out of their four children, three of us attended the University of Chicago and took degrees there.

Q: Now you went through the elementary school system and the high school system in Chicago, I take it?

A: I went to the Ray Elementary School, the University of Chicago High School, which had been founded by John Dewey, and then took three degrees at the University of Chicago.

Q: Was there ever any question about your going to the University of Chicago? Did you ever think about going anywhere else?

**Water Resources People and Issues**

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A: No. We were all enthusiastic about the University of Chicago, and it was also the cheapest thing for us to do because we could live at home and walk three blocks to the university.

Q: Did you major in geography from the very beginning? How did your interest in geography develop?

A: I decided to go into geography when I was a sophomore at the university and took a course in geography. But my interest, I think, had already been formed because my father was a partner in a ranch in the Tongue River Valley in Wyoming, in addition to his railroad job. I used to spend the summers at the ranch irrigating, helping with the hay, helping drive the sheep to the mountains, tending sheep camp. I was interested very early in natural resources matters. But our ranch experience came to a close in the 1930s with the combination of the Depression, the drought, and grasshoppers. An early spring storm made my father go broke and he dropped out of the ranch [operation]. By the time I got to the university I was quite alert to anything that was being said about natural resources and water and land. When I encountered a group in the geography department that was interested in this, that was to be a logical intellectual home.

Q: Now, was the University of Chicago unusual or even unique in having an interest in this particular area of geography at that time?

A: It was unique in two respects, I think. It was the first full-fledged geography department in the United States. The founding chairman as a physical geographer-geologist, [Rollin D.] Salisbury, with his right-hand person being Harlan Barrows, who had become the chairman. They were much under the influence of [Charles R.] Van Hise of the University of Wisconsin, who you may recall published the first book on conservation of natural resources in the United States. In addition to establishing an early and strong department, they had from the outset a clear interest in conservation problems.

Q: Was there a European influence in that department, would you say? The reason why I ask that is that it's my impression that, in general, geography departments are more influential in Europe than in the United States. There seems to be a longer tradition of people majoring in geography-paying

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serious attention to geography—than in the United States. Maybe my suppositions are wrong.

A: That was the case and that still is the case. I've lectured in the Moscow State University where the geography faculty numbers 350. There's nothing like it in the United States in terms of the amount of detail and sophistication of specialization.

The European influence on Chicago was modest. There was a much stronger influence from American scholars. Edith Semple, who did historical geography, had been a visiting professor there. In the days when I was an undergraduate there was more interest in the work of Isaiah Bowman and Semple and the application of Frederick Jackson Turner's theories of occupation of semi-arid areas than there was drawing from European geography, although we all studied Humboldt and Ratzel and the other major writers.

Q: So you took a BA in geography, or was it a BS?

A: It was a BS. And then an MS.

Q: Did you write a master's thesis for your MS?

A: Yes, I wrote a master's thesis on an English estuary, Humberside. The reason for this was that there was an opportunity to do field work in England in 1931 during the summer. I took that opportunity and used material from it for a master's thesis which I completed in 1934, two years after my bachelor's degree. At that time I also completed all of the formal requirements for a Ph.D. so that I had only a doctor's dissertation to write. I then knew I wanted to write it in the field of natural resources. This was the spring of '34. Barrows had been appointed to the Mississippi Valley Committee of the Public Works Administration, which was headed by Secretary of the Interior Ickes, a Chicagoan who had known Barrows and Merriam. Charles E. Merriam, a leading professor of political science, had just been appointed to the new National Planning Board. Barrows said to me, in effect, "We have a six-months' job at most, working on preparation of a report of the Mississippi Valley Committee. Why don't you come to Washington for a few weeks or a few months and lend a hand?" I gladly



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grasped that opportunity and instead of staying a few months I stayed eight years.

Q: Let me go back for just a half a second here. Was your master's thesis done under Harlan Barrows, too?

A: No, it was done under Henry Leppard, who had worked on his thesis under Barrows and had made a comprehensive study of the Peace River Valley in Canada as a new settlement area.

Q: Was your thesis basically one of historical geography or a study of the impact of the estuary on human population?

A: It was a pedestrian piece of geographic morphology, describing the land use.

Q: Then what made you turn to your thesis topic?

A: I saw a way of taking advantage of the summer work that I had been able to complete in '31, using material already in hand, rather than because I wanted to pursue that topic any further.

Q: I presume that Professor Barrows had no particular problem with your choice of topic?

A: Not for the thesis.

Q: Well, for a Ph.D. dissertation?

A: That developed very slowly, after '34. When I went to Washington in '34 I didn't have a Ph.D. topic. All I had to do was find one. It took me several years to find one and altogether eight years to complete a dissertation.

Q: So the thesis came easily but the dissertation didn't come so easily. You were working as a Ph.D. student under Professor Barrows at this time?

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A: Yes.

Q: And then he asked you to work on the Mississippi Valley Committee. What kind of work did you do for Professor Barrows on the committee.

A: The committee was established by Harold Ickes and Colonel Henry Waite, who was the deputy director of PWA [Public Works Administration], because following the establishment of PWA they had been deluged with projects for water management, chiefly for the Mississippi Valley. And Waite and Ickes began to have questions as to how one Mississippi Valley project related to another.

There was, as you know, a series of reports that the Corps of Engineers had begun to prepare under Section 308 of the earlier Flood Control Act [1927 River and Harbor Act]. But in addition to those reports, the first of which was on the Tennessee River, there were numbers of projects that were beginning to emerge from the Corps' studies, from Bureau of Reclamation studies, and from some state agencies.

As I heard the explanation, Waite said he'd like to have someone tell him how these various proposals fitted together, the extent to which they raised common problems of policy, and the extent to which what was being proposed in the near future with PWA financing would assist or work against what might be considered a long-term plan. He appointed a group to prepare a report to be presented some time in 1934. The members of the committee divided up the task of writing the report. Barrows had the responsibility for writing a section on the Missouri Basin. Sherman M. Woodward, who had headed the Hydraulics Lab at the University of Iowa, was given responsibility for the lower Mississippi. I found myself digging up information, preparing syntheses of available reports, and doing some field collection of data through state agencies and in offices of the Bureau of Reclamation and the Corps of Engineers. The other members were Herbert S. Crocker, Glen E. Edgerton (Edgerton frequently represented Markham), Henry S. Graves, Edward M. Markham, Charles H. Paul, and Harlow S. Person.

So in the months from March on in 1934 I very quickly gained a firsthand acquaintance with the District offices of the Corps of Engineers in the Missouri and lower Mississippi areas and visited Vicksburg and New Orleans. I generally collected data which Barrows and Woodward used in preparing their sections of the Mississippi Valley Committee report.

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Q: When you came to these Corps offices you came as a representative of the Mississippi Valley Committee presumably?

A: Yes.

Q: What kind of reception did the Corps give you? Do you recall?

A: Yes. There was a cordial reception for two reasons. One was that the Chief of Engineers, General Markham, was a member of the Mississippi Valley Committee. Markham attended some of the meetings, but Colonel Glen Edgerton represented him at most of them. Edgerton was a very intelligent, thoughtful representative of the Corps who had the respect of everybody on the committee and who must have had the respect of the people in the Corps because when the word went out that we wanted something, it was always provided. The response was friendly.

The other reason was that here was a group trying to put together much of the work on which people in the Corps had been laboring for a long time. In a number of cases, people for the Corps served short times as assigned staff to the Mississippi Valley work. I remember one person was Cone from the Southwest area, who had been mainly responsible for the 308 reports on the Arkansas, Red, and White rivers. He came in and was useful. At that stage, the Corps personnel regarded this as an opportunity to get their experience and judgment presented in a larger context. All was not promising. I recall one interview with a team working on the New Madrid floodway. After the members had presented their report, one asked Woodward what he thought they needed. He replied dryly, "An historian. "

Q: Did you get to meet Harley Ferguson, who was the president of the Mississippi River Commission at that time and the Division Engineer down there?

A: Yes. I met him. He was a fine person. I didn't have very direct dealings with him. I spent much more time with Gerard Mathes, for example.

Q: The Senior Engineer?

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A: Yes.

Q: Okay. You got your data on the lower Mississippi partly from the Corps and then you came back to Washington and drafted a report?

A: It was an iterative process of preparing a report which the committee finally produced under the chairmanship of Morris L. Cooke, who had been designated by the President for this committee under Ickes.

Q: And what did the report finally say?

A: The report recommended a whole series of policies and projects for the Mississippi Valley. At the time, I did not realize fully that a part of the hidden agenda for the report was Morris Cooke's deep personal concern for rural electrification. Some of us on the staff were surprised that so much attention was given to information of a statistical and graphical sort about the lack of electrification on farms in the United States and the Mississippi Valley.

One of the outcomes of submitting the report was the establishment of the Rural Electrification Administration, and one of the men whom Cooke had brought in with him to serve on the committee—Harlow Person—and his assistants, E.J. Coil, S. P. Langhoff, and Perry Taylor, immediately went into setting up the new Rural Electrification Administration.

From this I learned that there are skillful people who take a public assignment of this sort, pick out one or two practicable outcomes, and then focus on those. In this case, Cooke focused on establishing REA. The other members of the Mississippi Valley Committee weren't interested in REA but they cooperated in getting out a report which enabled Cooke to persuade Roosevelt to establish the administration. Some of the members of the committee, I know, felt a little disappointed because Cooke didn't spend much time trying to push their other recommendations.

Q: Well, this report comes at a time when there was still a great deal of controversy over the single-purpose versus multi-purpose approach to river development. And, as you know, there were many people in the Corps who still considered that navigation ought to be the primary goal of federal

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involvement. Was the report advocating a multi-purpose approach to river development?

A: Very clearly so.

Q: And since Markham was a member of the committee, did he sign off on this report as had the other committee members?

A: Yes. They all signed off. This took a great deal of skillful drafting, but it was not so much a problem of the Corps versus other agencies or individuals, I think, as it was a matter of stress within the Corps. The Corps had been going through this process in preparing the 308 reports, and while we were doing this, the TVA was picking up the Corps' report on the Tennessee, revising it, dismissing the Corps as the engineering agency for the Tennessee Valley Authority, and establishing its own engineering staff. TVA was using Sherman Woodward as a principal engineering consultant in doing so.

So, people were very sensitive to the challenge of multi-purpose development. It was evident that Markham and Edgerton were not fighting this. They were trying to draw the best they could out of what the Corps had invested in works and experience and material from their 308 reports in meeting the new view. But when one visited in Arkansas or Louisiana or Tennessee or Mississippi, one realized that there were many, many people in the Corps who had not accepted this view.

Q: It seems almost unbelievable to me that the TVA, then headed by Arthur Morgan, would have ever seriously considered using the Corps of Engineers as an engineering agent for their projects, considering Morgan's long animosity toward the Corps.

A: Yes, but under the TVA legislation they had the authority to do so if they wished.

Q: But do you recollect any serious consideration of that proposal?

A: I never heard of there having been any serious consideration but one would need to consult the TVA records. Arthur Morgan had to sell H. A. Morgan and Lilienthal on the notion that TVA would set up its own engineering

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agency. I do recall Woodward telling with some embarrassment how he had been ordered by the TVA board to go to the St. Louis office and tell them that he was there to collect all the engineering material that the TVA now wanted.

Q: You didn't go back to Chicago immediately after you completed that report, did you?

A: The National Planning Board became the National Resources Board on July 1, 1934, and the MVC became its Water Planning Committee, with Graves dropping off. The NRB was abolished on June 7, 1935, and the National Resources Committee was established in its place. There was established, under the National Resources Committee, a series of specialty committees: one on land, one on water, one on energy, and so on. The Water Resources Committee then was appointed with Abel Wolman of Maryland as chairman and with several of the members of the Mississippi Valley Committee on the new Water Resources Committee. (A fine oral history by Wolman has been prepared by Walter Hollander, Jr.)

A number of the Mississippi Valley Committee people didn't transfer over. Barrows did, as did the representative of the Corps, with William Snow replacing Edgerton. One representative each from the Bureau of Reclamation, the Soil Conservation Service, Fish and Wildlife, U.S. Geological Survey, U.S. Public Health, and Federal Power Commission came in. I was asked to serve on the staff of the new committee, which I did. In time I became secretary of the Water Resources Committee and stayed with it and its successors until 1940, when I went over to the Bureau of the Budget.

Q: What was your initial assignment for the Water Planning Committee under the National Resources Board?

A: The first task of the Water Planning Committee was to prepare a section of the report of the National Resources Board. The National Resources Board had been requested by the President to prepare a report on national planning and public works in relation to natural resources, including land use and water resources. This it did in December of '34. It enlarged its activities and scope of interest to the whole country, but proceeded then to examine all of the problems of water policy, water data, and modes of making decisions about public works which had been described by the Mississippi Valley Committee.

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Q: Approximately when did you work on this report?

A: From about July of 1934 to December '34. Cooke was still chairman of the Water Planning Committee, but his interests were shifting in the other direction. He was not replaced as chairman until he had the REA fully under way.

So by the end of '34 you had a report from the National Resources Board. Then it promptly was replaced by other agencies with very similar membership. It was at that stage that Wolman took over from Cooke as chairman. Markham continued as a member; John Page was the representative of the Bureau of Reclamation. Other members were the head of the Soil Conservation Service, the head of the Fish and Wildlife group, the chief hydrologist from the U.S. Geological Survey, the principal engineer from the Public Health Service, and the principal engineer from the Federal Power Commission. Barrows and Woodward; Thorndike Saville from New York University; Ed Hyatt, state engineer of California; and four nongovernment folks along with Wolman made up the total committee.

Q: Was Marshall Layton from the Geological Survey the chief hydrologist?

A: No. It was N.C. Grover. They then undertook to prepare, basin by basin, an examination of problems and promising projects—construction projects and investigation projects—for the whole country.

Q: This report was then submitted to the President?

A: It was submitted to the President on November 9, 1936. The device for doing so was that under the old Public Works Planning Act the President was empowered to prepare a program of public works. They used this as the legislative authority on which they then proceeded. This continued for a period of years. The National Resources Board, National Resources Planning Board, National Resources Committee—it went through various names but retained substantially the same top membership—never had solid legislative authority from the Congress. Congress was unwilling to establish them as a permanent, well-grounded organization; they lived by executive orders and broad interpretations of other legislation. Marion Clawson describes the process in *New Deal Planning* [Baltimore: Johns Hopkins Press, 1981].

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Q: As a matter of fact, as I recall, that original National Planning Board went by the wayside because it was originally funded through the Emergency Appropriations Act of '33. Then when that funding was gone, they had to disband and then come up with some other. . .

A: They did. And they continually did this. The new National Resources Board was set up by executive order, not by Congress.

Q: Now, Congress must have gotten a copy of this report, though, somewhere along the way. I mean, this report went to the President. Clearly it would have been sent to Congress, too.

A: Oh, yes. It was sent to Congress.

Q: Do you know if this report had any kind of impact on subsequent congressional deliberations prior to the 1936 Flood Control Act? Was there any connection between the two?

A: There was frequent discussion in the old Interior Building and the old Executive Office as to what the role of the findings of the Mississippi Valley Committee and the National Resources Board had been in shaping either agency policy or congressional legislation. It was tantalizing for the people who had been connected with the committee at the top because if an agency such as the Soil Conservation Service or the Corps of Engineers or Bureau of Reclamation found something in the Mississippi Valley Committee report or National Resources Board report that looked sound and promising to them, they picked it up and used it as part of their ordinary presentations to the Congress. Thus, the planning agency got very little credit for it on the Hill if it seemed a good idea. If it was an unpopular or troublesome idea, the agencies could say, well that's what the National Resources Board was proposing. And the Resources Board members had no significant influence on the Hill beyond what the President could claim for them.

Q: How about Abel Wolman himself? Did he have influence on the Hill?

A: No direct influence. The board followed a policy. When I speak of the board I mean the National Resources Board, National Resources Planning Board, National Resources Committee. They had a practice of making



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recommendations to the President. They did virtually no lobbying on the Hill. They did not encourage their staff or their principal members to participate in activities on the Hill and therefore they were always at the mercy of the members from the principal agencies. Ickes, Secretary of Agriculture [Henry A.] Wallace, Secretary of Commerce [Daniel C.] Roper, Secretary of Labor [Frances] Perkins, FERA [Federal Emergency Relief Administration] Administrator [Harry L.] Hopkins, Frederic Delano, Charles E. Merriam, Wesley C. Mitchell, and the Secretary of War were members of the board after the original planning board was abolished. They took a rather detached view. They drew from the board what they could that was useful. They didn't identify themselves closely with the board. The history of the board, I think, has been thoughtfully recorded by Marion Clawson.

**Q:** In your deliberations for both the Mississippi Valley Committee and the National Planning Board did, you pay much attention to methods of land acquisition for flood control? Was that a concern?

**A:** In that earliest year it was not a major concern that I can recall.

**Q:** After you got through with the report for the National Planning Board, what was your next assignment?

**A:** Then I began the activities of the National Resources Committee. The National Resources Committee put out a series of reports called Drainage Basin Problems and Programs—one in '36, one in '37—which were comprehensive and which helped set out for the benefit of everybody in the field the programs of all the interested agencies, including state agencies. They identified questions that had been raised about projects by specifying priorities and recommending studies.

**Q:** Did these questions include financial questions? Cost sharing and things of this sort?

**A:** Yes, very much so.

**Q:** Did you get at all involved at this time in the deliberations on the '36 Flood Control Act?

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A: Yes.

**Q:** In what way?

A: At this point I wish that I had access to the archive files and some of the numerous memos that passed back and forth. I've never gone back to look at those. If you were to decide to use some of this material, I'd want to check it out in the archives.

The way in which the board, or committee, became involved was that efforts to establish a national flood control policy were sparked by supporters of the Corps of Engineers. The Department of Agriculture—the head of the Forest Service and head of the Soil Conservation Service—were unhappy about this. It became plain that Congress would have to pass legislation to provide support both for the Corps and for the two agencies in Agriculture. Other groups in the government were also disturbed about a prospective heavy commitment to financing Corps projects for flood control. They used the National Resources Board people as one means among many of trying to reach the President on the importance of having some kind of integrated planning provided under the proposed act instead of having it solely under the corps.

As the legislation took shape following the disastrous floods of 1936, the board was an instrument for proposing that the President push for a more comprehensive kind of river basin study and management than was provided for by having it all going to the Corps. As passed, it included provisions for the Agriculture people doing their own thing. Collaborating with the Corps was present in theory but not in practice. A series of efforts was made using the chairman of the National Resources Board and Vice Chairman Frederic Delano, uncle of the President, to persuade the President to veto the bill. He did not.

The same process followed the Ohio River floods two years later. That led to the Flood Control Act of '38. The board again tried to persuade the President to veto it, which he didn't feel was wise. Then the issue was very much the issue of cost sharing for reservoirs. And it was felt strongly by members of the Water Resources Committee, which included Barrows and Wolman, that to remove cost sharing from the major reservoir projects, even though such action would simplify the process of getting the projects started,

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would open the door further to a flow of economical y unjustified undertakings.

Q: Was New England the major problem, the Connecticut Valley?

A: It was not the major problem, but [Massachusetts Representative John] McCormack from New England was the leader in an effort to push through both the 1936 and the 1938 acts, arguing that only by simplifying the funding process would it be possible to take the measures which they felt were so urgently needed.

Q: Of course, Will Whittington was chairman of the House Flood Control Committee and he had about six or seven reservoirs being contemplated down in his home district.

A: Yes, in the Yazoo. I would say that, as I recall, the major articulated pressure came from New England. Others around the country joined in cheerfully.

Q: How about the Ohio River Basin at this point?

A: Yes, also.

Q: Was there also a discussion at this time of land acquisition for both reservoirs and floodways and spillways and things of this sort?

A: Yes. By that time it had come to the front.

Q: And do you recall what the discussion was about? As I recollect, there was a question about land easements versus condemnation and things of that sort.

A: There were several questions. One was the use of condemnation rights. A second one was whether or not easements would be more suitable than fee simple purchase or condemnation. And the third was the question of subsequent control of the reservoir frontage for purposes of recreation and wildlife, and in what agency this control would rest.

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Q: Was there any kind of change of thinking within the water subcommittee about real estate problems? I recollect that there was some discussion of this, particularly as it pertained to the lower Mississippi about fee simple versus land easements on some of these floodways down there. And originally they were for the fee simple solution; then they went to land easements, I think. There seemed to be a great deal of internal turmoil. I get this from reading some secondary literature and things of that sort.

A: There was, for example, the Birds Point New Madrid floodway. There was a good deal of argument that I heard over whether, if simple flowage rights were acquired, it would ever be politically feasible for the Corps to use the floodway. Some tough characters said unless you buy this outright and manage it, you're not going to be able to use it for flood control purposes. I think that was certainly one of the more critical issues that was argued on the lower Mississippi.

Q: You continued to work on the National Resources Planning Board until what time?

A: I worked until 1940. At that stage, I had been helping the Bureau of the Budget, with which we worked very closely because the National Resources Planning Board offices were right next door to the Bureau of the Budget in the old Executive Office Building, in preparing an executive order which required all federal construction agencies to submit proposed plans to the Bureau of Budget for review prior to submission to Congress.

Q: That would have been 1939-40?

A: Yes. I had helped draft that. The President then issued the order and the director of the Bureau of the Budget asked me if I would come and work in their Legislative Division on putting this into practice so far as land and water projects were concerned. I sat at a small desk in the Legislative Division under Fred Bailey in the Bureau of the Budget for a couple of years, seeing everything that went over the President's desk dealing with land and water.

Q: Did you feel that you were successful in that position? Did you feel that the intent of the executive order was being carried out?

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A: We had had some prior experience with this kind of an exercise. It's interesting that back in 1937 the National Resources Committee had been the instrument through which the first effort at environmental impact assessment was made, as far as I know. That was at a time when many of the technical people in federal agencies and many state people were gravely concerned about the way in which small reservoir projects were being built around the country and the way in which land drainage of wetlands was being carried out with public funds. This concern became so acute that the director of the Fish and Wildlife group [Ding Darling] asked the Water Resources Committee to look into the problem and see what could be suggested by way of reducing the number of ill-conceived and poorly managed drainage projects and water-storage projects around the country.

I served as a staffing man for the group. It soon was apparent that the files were full of horror stories of reservoirs that leaked, dams that failed, dams that didn't serve their purpose, drainage projects that destroyed large areas of wildlife habitat without proportionate gains in economic production. In the opinion of the group that reviewed this situation—it was an interagency group—agencies that were involved in undertaking new projects should at least notify the other agencies about what they were planning to do before they started. The notion was that this would give other agencies an opportunity to study possible conflicts and deleterious effects, and raise questions with the sponsoring agency.

The group recommended to the President that he issue an executive memorandum telling all agencies that before they started a new water-storage project or a new land-drainage project they should let the other ones know. This was done. A system of regular reporting was established. Subsequent experience showed that the agencies could wait until they were about ready to launch a project and then inform the others. It then became very difficult for the others to have much influence on the proposed development.

Q: Of course, by this time you've got a relatively new agency on the block, too—Soil Conservation Service.

A: Oh, yes. The whole history of the little waters movement and the small dams activity which Morris Cooke had promoted with Hugh Bennett is a fascinating record of conflict of thinking about effects of water management. After they left the Resources Board, Cooke and Person promoted the publication *Little Waters*, which became very popular. People who remained on the Water

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Resources Committee were most unhappy about this kind of promotion. They countered with preparation of the first edition of a manual called *Low Dams*. That's where *Low Dams* got started, through our Water Resources Committee.

Q: Which basically, as I recall, is a how-to-build kind of thing almost.

A: And what to look out for in designing it. Its initial stance was one of prudence: what not to do, what to do, raising all sorts of cautions, pointing out gains that can be realized but also severe damages that can be incurred as a result of ill-advised and ignorant activity.

So you had Morns Cooke's *Little Waters* getting a lot of publicity and the Water Resources Committee, representing the major federal agencies, putting out *Low Dams* and then getting the agencies to continue the publication on their own.

Q: Of course, now Morns Cooke evidently did influence Roosevelt . . .

A: He did.

Q: . . . on what later was to be called the upstream-downstream controversy. And am I to gather from your remarks that Abel Wolman and the people who worked for him didn't have a similar kind of influence on Roosevelt with this *Low Dam* book?

A: That's correct. Morris Cooke was a much more skillful political operator. He was primarily a politician in the best sense; that is, he was interested in shaping public policy. He started out with an aim and he found evidence to support it, whereas the people on the Water Resources Committee started out with the basic data and technical analysis, and finally arrived at suggestions about policy. Cooke could run circles around them when it came to getting over to the White House and to some members of Congress. He had no hesitation about going to Senator [George W.] Norris or other people on the Hill on whom he knew he could rely. Wolman and others on the board were asked not to lobby; the board was to advise the President and his cabinet.

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Q: I would assume that some of the Midwestern congressmen would have been in Morns Cooke's camp.

A: Yes. It was and is a very attractive idea. He was not unduly encumbered by scientific evidence as to what the effects would be. Cooke didn't really care very much about the upstream-downstream controversy. It was all right to have people like Leopold and Maddock write a book on the flood control controversy, but I don't think that Morris ever worried about their findings. I'm not sure he ever read the findings. I worked with him in later years.

Q: Are you suggesting that Cooke thought that building reservoirs far upstream was simply more attractive politically?

A: No. He wasn't seeking votes. He was basically convinced it was a good thing just as he was basically convinced that low-cost electricity was a good thing for the welfare of the nation. And he would brook very little argument about the possibility that it might be desirable to cost power at what would be the economically marginal rate rather than at a promotion rate. Cooke was not trying to get political influence for himself. He didn't want elective office. He was a missionary who primarily was interested in low-cost power and who became intrigued with the notion of small dams.

Q: You worked for BOB . . . ?

A: For two years.

Q: For two years, about '39 to '40?

A: No, '40 to '42.

Q: And you were mainly reviewing these reports that came in subsequent to the executive order of '39?

A: Or any legislation that was proposed. The Bureau of the Budget had several divisions. It had an Estimates Division that handled the big budget preparation. It had an Administrative Management Division. It had a Legislative Division under Fred Bailey, who was an astute and wise assistant

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director of the Budget. The Legislative Division looked at anything that went over to the President's desk that involved proposed legislation, any proposed executive order, or any report to Congress. It typically reviewed these items with the notion that it would request the author of the item to state at the conclusion of the report that it is or is not "in accord with the program of the President." Harold Smith, who then was director of the Budget, used to go over and see the President every day when the President was in town. He would typically take over a batch of papers from all parts of the Budget; always some from the Legislative Division. The latter typically provided the President with a summary of the proposal in one or two pages and stated the options. In effect, they said we want your approval to say it is either in accord with your program or not in accord with it, or to suggest alternative action. The same procedure applied to signing or vetoing congressional legislation. The President ordinarily would read these and the next day when Smith came back he would say or write OK or no or respond with a question.

Much of the material that went out then simply said this is in accord with the program of the President. If it were not, some of it could be disapproved in a straightforward way. Other parts would present problems that the Bureau of the Budget could try to grasp and reconcile.

- Q: Later on, talking about after 1965, evidently people in the Bureau of the Budget had no particular love for the Water Resources Council that was set up in the '65 act, partly, I suppose, because they felt that they could handle these kinds of matters themselves. They didn't need a WRC to help them. Was there any similar animosity on the part of the Bureau of the Budget toward some of these New Deal agencies that you'd been associated with in the 1930s? Maybe the Bureau of the Budget didn't think those agencies were necessary either?
- A: Not that I recall at that time. You recollect that the Executive Office of the President was a new institution that Louis Brownlow had engineered. It had, under Harold Smith, very much a sense of mission of being a coordinated, integrated group. It was fiercely proud of the small number of personnel that were involved. I doubt if there were more than 50 professional people in the bureau at that time. The standard operating procedure under Harold Smith and Fred Lawton and Fred Bailey was to get other people to do as much as you can.



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Your role is not to make decisions but to bring the critical decisions up to the top and to present the information in a concise, incisive way so that the folks at the White House could make an informed political judgment. There would be one person that was responsible for budget estimates for a major agency. There were two or three that were handling Defense, Interior, and so on, and just a small handful in the legislative group. We were not to get out and tell people how to manage their business. We were there to see to it that they knew what others were doing and if there were conflicts, the conflicts were resolved so far as possible at the executive level.

Q: Beginning in 1940 the President began to issue some executive orders dealing with national defense, and I forget when the War Production Board was established, '42 perhaps. In any case, how did the coming of World War II affect the water resources business while you were there in Washington?

A: The water resources activity became less important, of course, particularly in '41. After Pearl Harbor (I am a Quaker and a conscientious objector to military service) I told Harold Smith that I didn't feel I should stay with the Executive Office after the declaration of war and that I would like to go do volunteer service with the American Friends Service Committee. His position was that he would not like to see me leave; I could remain on nonmilitary matters. Under the Selective Service regulations I was doing work classified as of "national importance." If the draft board asked him, he would say no. But if the draft board didn't ask him, I could go ahead. My draft board in Washington told me they would give me permission to work with the Friends Service Committee on relief work in Europe, and to consider it as work of national importance. There was then a legislative stricture against COs serving overseas, and I therefore was not classified as a CO.

So I left the Bureau of the Budget and in the closing months I worked with Milton Eisenhower, with whom I had been associated through his being land-use coordinator in the Department of Agriculture, in setting up the new War Relocation Authority. I simply was sort of a general utility person to check out the suitability of prospective personnel for his agency.

Q: What did you do overseas?

A: I did relief work for French children, for refugees, and for people in concentration camps in Vichy, France.

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Q: Did you know French?

A: Yes, and I learned it better.

Q: How long were you over there?

A: After the Germans took over Vichy, I stayed on. I was one of, I think, two Americans who were free to move around in a German-occupied area carrying on relief and arranging for transfer of activities to non-American activities, until about February '43. Then, through a misunderstanding, I turned myself in and was taken to Germany with the Americans who'd been interned all that time. I spent 13 months in Germany and finally in '44 was with the American diplomatic group that was exchanged for Germans.

Q: Where were you located in Germany?

A: We were located in a gilded cage at Baden-Baden.

Q: It doesn't sound too bad if you're going to be a POW.

A: Oh, it wasn't. This was the diplomatic group in detention. We were in a fine hotel and we had good food, considering the circumstances. I lost weight, but it was much better food than I'd had in France, and it was a comfortable kind of internment by comparison to what I'd been seeing in French camps.

Q: After you were released you came back to the United States and then what did you do?

A: I continued as a volunteer with the American Friends Service Committee. I was in charge of raising money and supplies for the sufferers from the Bengal famine where about two million people had died-one of the least-known tragedies of the Second World War. And for sending supplies and people to a Friends unit that worked behind the Japanese lines in China, providing medical services and supplies for both Mao and Chiang Kai-shek. Then I was assistant executive secretary for the Service Committee. When the war ended,

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I accepted an invitation to go back to the University of Chicago and join the faculty, by which time I had received my Ph.D.

Q: We missed something here along the line. Let's get back to your dissertation.

A: I had decided the problem of floodplain occupancy was one that deserved attention. It certainly captured my curiosity and I had worked on it on weekends and nights.

Q: In Philadelphia?

A: No, in Washington, in the late thirties, early forties. It was a problem which I had very much in mind and that I could frequently discuss with colleagues in the Geological Survey or the Corps or Soil Conservation Service. And so when Pearl Harbor occurred—I remember walking into the Executive Office that Sunday morning when word came from Pearl Harbor—one of my early reactions was, I'll have to finish up that dissertation mighty quick.

Q: Well, your dissertation must have been influenced by what you discovered in Washington working with these various committees.

A: Oh, yes, it was. Very much so.

Q: Can you sort of outline in brief the most significant ways it was affected by your work in Washington?

A: One of the first jobs I had with the Mississippi Valley Committee was looking at the proposals for flood control in the Missouri Basin and the lower Mississippi, and one of the haunting questions that came up was what will be the effect of doing this work, if it is now financed by PWA, when the bulldozers start moving in the next few years? That question continued to pester me.

Along with it was the question of how to compare the social desirability, in terms of the local community or in terms of the nation, of making funds available for a new irrigation project on the Loup River in Nebraska or for

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a flood control project in South Dakota or an improvement in a levee in the Yazoo Basin.

I was constantly searching my mind and the minds of others for frameworks in which one could arrive at a judgment of feasibility. This was a very exciting time because [Columbia University economist John Maurice] Clark had just come out with his work on the economics of public works. The first rudimentary efforts were being made on benefit-cost analysis, most of which were in Corps 308 reports and some Bureau of Reclamation reports, and I constantly saw those. So it was an easy and natural shift for me to try to work out a framework for examining what was happening on floodplains.

Q: Your concern for trying to take into account the national desirability of a local project strikes me as if it's still very much with us. And in fact the term that popped up in the 1970s was "national scoping." Is that what we're talking about, in a sense? An early accounting of what later becomes what people like Oliver Houck . . . do you know Ollie Houck in the National Wildlife Federation?

A: I know him.

Q: He used to talk an awful lot about this concern about national scoping, not only in terms of projects but in terms of regulations, too. Regulatory 404. So it seems like you may have been the father of this kind of concern.

A: Oh, no. It was a concern of many people at the time. We sat around discussing it in late hours, at night, at lunches. One of the frequent troublesome questions was how does the body politic arrive at judgments as to what is in the national interest, and to what extent it can rely on the evaluations of the local people who are concerned. This lands you right into the whole question of cost sharing and of the wisdom of market decisions affecting externalities.

Q: I was going to say, given your concerns then, what did you think of early cost-benefit analysis? Did you think these were valid analyses? And what about their concern or lack of concern for what we now call intangible benefits?

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A: I wrote an article on this. It appeared in the *Journal of Land and Public Utility Economics* along about, I think, 1936. I have subsequently said it was probably the first and certainly the worst article that's ever been written on the subject. It was a rudimentary kind of a searching for what's involved in benefit-cost analysis, and how to deal with tangibles and intangibles, taking flood control as an example. It is not an article that appears in the University of Chicago collection. But it was illustrative of a concern that not only I but many others had at that time. We now take for granted many of the concepts that were then just beginning.

There was lively and incisive discussion of what constituted an effective benefit-cost analysis. We spent a lot of time arguing about what constituted a damage, what constituted a tangible benefit or an intangible benefit, how one dealt with secondary benefits (as the term came to be used), how to avoid double counting, and appropriate discount rates and time horizons. I was somewhat amused by the fact that when Robert Dorfman put together a symposium on benefit-cost analysis a good many years ago he didn't include water resources analysis because he argued this didn't require the same kind of sophisticated investigation that the other fields did. I think it still requires much more careful investigation than given it so far.

Q: Well, okay, so you were working on your dissertation on weekends and evenings and you submitted your dissertation to the University of Chicago in 1944?

A: No, I finished it in '42—with the help of the young woman who is now my wife in order to get through with it. And I took it to the University of Chicago. Barrows went over it with great care and revised it and I passed my exam. Then I left for France.

Q: When did you marry the young woman then?

A: We agreed that we wouldn't get married until I came back, whenever that was going to be. It was a very uncertain time.

Q: The dissertation was published by the University of Chicago. Wasn't it published in '44, an early publication?

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A: It was published in two forms. The University of Chicago at that time had a policy of simply publishing a few copies of a doctor's dissertation, putting it in a few libraries around. And that was what was done with mine. Then people began hearing about it and asking for copies, and so they published it in what came to be a monograph series. So you'll find different dates ranging from '42 to '45 depending on when people got access to it.

Q: In a nutshell, what do you think is the most significant finding in your dissertation?

A: My judgment, which may not be that of others, is that the dissertation suggested a simple but fundamental concept that, for any mode of resources management, finding the optimal use of a resource theoretically involves canvassing the whole range of alternatives that are open to society, and then trying to estimate what the consequences would be, both favorable and unfavorable, of undertaking any one of those alternatives or a combination of them. This was applied to floods. The same notion would apply to any other kind of resource management.

Q: This idea, which includes social well-being as well as the effect on the environment and so forth, strikes me as something that later on became law via NEPA [the National Environmental Policy Act]. Do you see that connection?

A: Yes, indirectly.

Q: What you're suggesting in your dissertation later on does become in fact a law of the country, a major environmental policy. You must have been very proud at that time to see . . .

A: That would be going too far. I didn't have any part in drafting NEPA. I knew some of the people who did. The notion of alternatives came out, for example, in a very interesting session at an Airlie House meeting which the Conservation Foundation held in 1968, just before NEPA was drafted [*The Careless Technology*]. There was a lot of argument about how to prevent some of the unwise projects that were being discussed at that time. I remember recounting the history of several African water projects as well as the Presidential Memorandum of 1937, and noting what we had learned from

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it. These involved prior consultation on possible effects and alternatives. I think some of those lessons were in the minds of the people who drafted the NEPA legislation.

Q: So in 1945 you joined the University of Chicago faculty?

A: No. I was through in '46. But rather than going back to the University of Chicago, I made my peace with Robert Hutchins, who was then president, and asked to be excused. Instead I went to Haverford, where they had invited me to be president. I spent the next nine and one-half years at Haverford.

Q: Was Haverford's Quaker background an inducement?

A: Yes. It was a small, high-quality college with a genuine Quaker commitment, and that seemed to me where I'd like to try to put my energy as much as I could.

Q: But of course, Haverford is an undergraduate college with no graduate school. Did you see that as an advantage or a disadvantage, or did you think about it at all? Because generally, of course, the colleges with the graduate schools are going to have the larger research commitment.

A: Oh, yes. I knew that I wasn't going to be able to do any significant research while I was at Haverford. And I didn't know whether I would ever get back to a full research program. But I felt, and my wife felt too, this was the kind of service we wanted to undertake at that stage. We were fresh from the war experience, and we felt it was important to promote education that was international in outlook and that seriously looked at ways of preventing another war. Haverford was one little spot in which one might have an opportunity to help further those concerns.

Q: So I assume you maintained your contacts with the American Friends Service Committee too at this point?

A: I did, yes.

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Q: Continued to work with them a bit?

A: I served on their committees. It wasn't until after I left Haverford that I became chairman of its board.

Q: And did you get involved then with some of the refugee problems in Europe which the Service Committee was still involved in after World War II?

A: Yes. I was on the first mission of the American Council of Voluntary Agencies that went into Germany after the end of the war. There I met Lucius Clay again, whom I first met when he was a captain in the Corps of Engineers. We went in as the representatives of civilian groups, looked into what was the condition of the German civilians at that time, wrote a report that infuriated Lucius.

Q: I gather you found that civilians were not living in a style to which they'd been accustomed.

A: Well, they were not living in a style in which he said they were living. And as a result of this report he did reluctantly give permission for civilian agencies to carry on relief work in Germany. So I found myself having been detained by the Germans and dealing with refugees from the Germans during the war, and trying to help the Germans themselves at the end of the war.

Q: While you were at Haverford College did you also maintain ties with people back in Washington?

A: Yes, I did. I tried to keep a hand in on some of the activities in Washington or in the United Nations that were relevant to what I'd been doing before. I served on one of the task forces for the Hoover Commission on Executive Organization.

Q: This would have been the first or second one?

A: The first, in 1948. And I was vice chairman of the President's Water Resources Policy Commission under Truman in 1950.



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Q: How did you get involved in the Hoover Commission? Were you invited, or were you interested in joining that effort?

A: I never knew who nominated me. Hoover asked me if I'd serve on that task force. The chairman of it was Leslie Miller, who was then governor of Wyoming. It was a fascinating enterprise.

Q: Had your feelings about the Corps of Engineers changed at all by this time? By the late forties, of course, there was a significant amount of bad press as a result of some reservoir projects in particular. How did you feel about the Corps at this time?

A: I don't think my feeling about the Corps has changed significantly over the years. I think it's about the same now as it was then, although the Corps itself had changed during that period. My attitude towards it has always been that the Corps was headed by very intelligent, bright people; that the form of organization in which commissioned officers had the responsibility for making all the major decisions was unfortunate and a handicap to the Corps; that it was assiduous in carrying out whatever jobs were handed to it; and that by virtue of its organization it was very, very slow to change but capable of changing. And I see the Corps as having been in that posture in the 1930s and I see it so today.

Q: Well, I'll get back to that later on, of course, particularly in line with the book you may have read by [Daniel A.] Mazmanian and [Jeanne] Nienaber, *Can Organization Change* ? Have you seen that book?

A: No, I haven't. In fact, I haven't heard about it.

Q: Well, I'll get you a copy. Your dissertation was published by the University of Chicago?

A: Not by the press, but by the Geography Department.

Q: And it then gained some reputation around the country. You must have gotten some inquiries about it from people interested in the same sort of things you're interested in. Do you see any impact of it politically? Do you

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hear about congressmen or politicians reading this kind of book, or is it mainly limited to an academic audience?

A: I never had any indication of politicians looking at it. Most of the response I had was from people within the agencies or from a few academicians who came across it. In fact, it was some of them that publicized the book rather than my having undertaken to do so.

Q: Was the book used at all during the drafting of various reports by the first Hoover Commission?

A: Oh, yes, certainly the ideas were incorporated.

Q: The first Hoover Commission, as I recall, came up with a recommendation to get the Corps of Engineers out of civil works. What did you think about that?

A: At the time I felt that if Hoover had been strong enough to bring about a genuine national water resources agency in which he incorporated the Corps and Bureau of Reclamation, it would have been a desirable move. Several of us had dinner one night with President Hoover and he recalled his early experiences with the Corps of Engineers. He was rather hostile to it. And he said he was prepared to get the Corps out of the water business. My feeling was if he could get the Corps out of the water business and the Bureau of Reclamation out of its similar more narrowed channel, and lead to development of a genuine national water management agency, this would be highly desirable. He never was able to do that. Lacking that, my view was make the best you can out of two agencies that are both deeply rooted in communities and political power structures of the United States and try to help them do the best they can without an administrative change.

Q: And so we then get into the preparation of what was to be called the Green Book, and then there's BOB Circular A-47. Were you involved with those efforts, too?

A: Yes, but in a rather peripheral way. I was involved in trying to get them started, and I suggested some of the people who worked on them at the time, such as Ed Ackerman, who left his post as assistant general manager of the

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TVA (having previously filled the post I had left vacant at Chicago) and had worked on drafting a lot of the material. I served as a reviewer for some of the materials. I was not an author, a primary author. But I thought they were desirable.

Q: Clearly, you thought they were desirable because they offered some necessary guidance to the agencies. But there were some restrictions put on agency activities and agency planning, particularly by BOB Circular A-47. I wonder what were your opinions of them? For instance, as I recall, the planning guidance limited agencies to developing 50-year flood projects rather than 100-year flood projects.

A: No, I didn't approve of that. There were lots of the details of it I didn't approve of. I thought the nature of the effort was commendable. This always happens when an agency undertakes to formulate rules and procedures. They tend to adopt a more conservative kind of criteria. When in doubt, they compromise in an unimaginative fashion. So I wouldn't say that I approved of all aspects. What I did approve was the effort to formulate criteria.

Q: What do you think would have happened if Truman had been allowed to serve another term, or hadn't been kept to two terms, and he had been elected President in '52 rather than Eisenhower? Do you think that A-47 would have been repealed? Do you notice that A-47, as I recall, was promulgated in the late months of the Truman presidency?

A: That's right. And it came in the wake of the President's Water Resources Policy Commission. We recommended this kind of action, which the Bureau of the Budget picked up.

Q: But I wonder whether Truman would have gone along with it if he'd been President.

A: I don't know. I had observed one aspect of agency response to this kind of an effort that came out again from the drainage basin problems and programs report to which I referred earlier. And that is that once such an effort is made by a central executive agency to coordinate the activities, the agencies go through a certain period of tension and mutual irritation. Then they gradually work out accommodations to reduce stress and delays or circumvent

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improvements. It happened after the 1937 memorandum; it happened after the Coordination Act of '43; it has happened with respect to the NEPA preparation of environmental impact statements.

Q: Of course, sometimes it happens under a great deal of political pressure. Again, I'm thinking of the upstream-downstream controversy and the kinds of concerns expressed by the Corps of Engineers and the Soil Conservation Service, particularly dealing with the Arkansas, White, and Red river basins.

A: Yes.

Q: There seemed to be no meeting of minds within the committees, as I recollect. The meeting of minds, such as it was, was hammered out in Congress.

A: That's right. Irving Fox was very much involved in trying to get that reconciliation.

Q: I suppose there are limits to how far an agency can bend, or be willing to bend.

Well, Eisenhower comes into the presidency. His Bureau of the Budget established what I think is seen by the Corps as a fair number of constraints on Corps civil works and planning. The Bureau of the Budget seems to be in favor of small projects rather than large projects, cost sharing; seems to be in favor of limiting the planning cycle, shortening it sometimes. As a matter of fact, there are some parallels between the Eisenhower administration and the Reagan administration, I would think.

A: Yes.

Q: Well, did you get involved in any of these deliberations or do you recall the response to these kinds of initiatives on the part of the Bureau of the Budget in particular?

A: I was just on the peripheries of those discussions and I was unsympathetic with any effort to make the Bureau of the Budget more of a managerial agency because I was and am more traditional in the view of what the

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function of the Budget office should be. I felt the Budget office should be a very powerful group within the government, but that it should not be a genuinely managerial group. I think the temptation has been for it to take on these various managerial responsibilities.

Q: Well, how did you get involved in the mid-fifties with people like Francis Murphy, and I gather some others, too, who continued your interest in human adjustment to floods? You were still at Haverford College at the time.

A: No.

Q: I thought you said you were at Haverford for ten years?

A: I left Haverford at the end of 1955 and the University of Chicago was courageous enough to reappoint me to its faculty, taking the risk of having a somewhat worn-out college administrator in an institution which laid heavy stress on research. I had been president of Haverford for ten years.

Q: Hadn't you been teaching, too?

A: Yes. While I was president I taught one course a year on natural resources. I felt I ought to teach along with everybody else. Also, I took a salary which was the equivalent of the highest salary paid to a professor, including summer work, because I didn't want to get into a position of being dependent on an income beyond what I might as a professor later expect. So there wasn't a great financial jolt in going from Haverford back to the University of Chicago.

Q: Was Hutchins still there?

A: No. Larry Kimpton was there. Hutchins had left. He'd gone with the Ford Foundation. His shadow was still strong.

As soon as I got back to Chicago I turned to the research interest I had had before. I thought it would be a good idea to try to find out what had been happening to the nation's floodplains since the Flood Control Act of 1936 had been passed. I went to Resources for the Future and they kindly gave me a

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small grant to do a study on this for which we were able to enlist the interest of some of the people at Chicago. That was the beginning of a series of research activities on floodplain occupancy and its implications.

**Q:** Why did you leave Haverford?

**A:** I felt I had done about all I could at that time. I'd helped them reduce their student enrollment and increase their endowment several-fold. I had enlisted a largely new faculty and started a number of new programs. We had a cooperative agreement with Bryn Mawr and Swarthmore. Things seemed to be going just fine. I thought that was the right time to leave. I knew that if I didn't leave then I probably never would leave administrative work. Margaret Mead had been at our house for dinner the preceding year and at some stage we were talking about my going back to do more research. She gave me a cool look and said, "You know you're on a one-way street. You'll never get out of educational administration. They never do." That was the challenge.

So I began thinking about whether I could really get back to research. And Chicago was, as I indicated, sufficiently risk-taking in outlook to appoint me.

**Q:** And you immediately got involved in this question of floodplain occupancy.

**A:** Yes.

**Q:** Now Francis Murphy's book comes out. I think about '56, wasn't it? Something like '57?

**A:** No, it comes a little later. The main project was to find out what had happened in the floodplains since 1936, and there were a number of issues that came out of this. One issue was the role of floodplain regulations in changing what happens on floodplains. Another issue was the role of perception in looking at alternative methods of dealing with flood losses. I had been convinced that if the kind of research we were carrying on was going to have any influence we had to involve in it, in some fashion or other, people who were on the firing line in the interested agencies. So from the outset we made a point of consulting with people in the Corps, in the Soil

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Conservation Service; TVA. Jim Goddard, of course, was a great help in this direction.

It seemed obvious to try to involve somebody from the Corps in the follow-up studies at this stage. Dick Hertzler was one of those who I recall was interested at the time. I can't recall all of the people who were involved. But permission was obtained for Murphy to use a research fellowship grant from the Office of the Secretary of the Army to come and work at Chicago. He completed his study and it was published in '58. The effect of doing this was, on the one hand, to check at an early stage all of our findings and methods against somebody who knew the Corps from the inside, and, on the other hand, to make our findings more credible to people in the Corps because here was one of their own who was participating and having an opportunity to say exactly what he wanted to say.

Q: Do you know whether Murphy had any problems in the Corps as a result of this publication?

A: Unfortunately, he died early. I don't know what the course of events would have been if he'd lived longer. I remember his telling me at the time that there were some people in his office . . .

Q: At Seattle?

A: Yes . . . who felt that he was wasting his time on this kind of enterprise. But by and large, he'd had interested and supportive comments from other people.

Q: Were you aware, and were people in the field aware at this time, that in fact the cost of flood damages had increased since the 1936 Flood Control Act despite all the flood control measures that had been developed by the Corps and other agencies? Was that something that was pretty well known or something that only comes out as a result of some of these kinds of studies?

A: It was something that was suspected but there hadn't been any solid evidence. And people didn't quite know how to interpret some of the aggregated national statistics. One reason for doubt was that the damage data on the national level were poor data. There has been and still is no genuine uniformity in the mode of collecting flood damage data and so one was

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suspicious of the aggregated statistics. The approach that it seemed wise to take was not to rely so much on the statistics but, rather, to go and look on the ground at what had happened to land use. That provides more precise, accurate information.

Q: Let me pursue that for a moment, because it's something near and dear to my heart as an historian. When planners of any sort, water planners, come up with data to justify a project it seems like they usually go to National Weather Service data, or perhaps to the Corps. And they look at things like gauge readings, maybe climatic conditions, things of this sort. But they look at it from a relatively broad point of view. In other words, there may be a gauge reading that shows a river flooded but it doesn't show how long the river flooded in a particular place, how much damage was done, or even whether the people were seriously affected by flood damage. That kind of data can only be obtained, it seems to me, from newspapers, from interviewing people, and so on. It's not the kind of data that's collected on a formal basis by interviewers, so far as I know.

So how do people come up with data that really is convincing data? As an historian, I know several cases where an agency comes up with data that suggests there's a horrible flood problem, but when you look at it by reading contemporary accounts and so forth, people weren't really seriously adversely affected. What's the answer to that?

A: One of the projects of the old Water Resources Committee was to try to get the federal agencies to adopt a uniform system for collecting flood damage data. I have a report that we published at that time. It had only modest effect on the activities of the agencies. We never persuaded the National Weather Service, Soil Conservation Service, and the Corps to adopt completely reconciled and searching modes of obtaining damage data. I say searching modes because it was, I think, early apparent that rather than depending on quick surveys after a flood and newspaper data from previous floods, it would be desirable to have very careful sample investigations of selected areas which would then enable the investigator to make estimates of what the full set of gains and losses would be from different modes of using the floodplain. This is what one wanted to come out with in the long run. We never were able to get agencies to do that. The nearest approach to it came when the old Water Resources Council began collecting data. It, however, was dependent upon modes of data collection and record keeping and publication practiced by the respective agencies involved.



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One of the arguments that a number of us had made from the very earliest time of critical examination of Corps of Engineers flood control projects and of the policies embodied in the Flood Control Act of '36 was that we needed to recognize that the proper concern with floodplains was not in preventing flood damages. The concern was making optimal use of floodplains. With that different objective one then needs different data, different forms of analysis.

**Q:** But optimal use of floodplains would necessarily depend on knowledge of past floods, would it not?

**A:** Yes. But then the knowledge of past floods that is required is of a different character than the knowledge that's required when the aim is to reduce flood damages, because one then is interested in what the floodplain has been used for, what its social value has been, and what its social liabilities have been.

**Q:** Would one also be interested in finding out how long after a flood you could not use the floodplain for the purpose intended?

**A:** Yes.

**Q:** I'm just probing.

**A:** Well, take an example of one cultivated field in a floodplain. The traditional method of examining that in terms of a flood control project is to ask what losses have occurred with past floods in that field. Now, this is significant but one would like, I think, to know what the production has been on that field year after year, how this production may have been affected by flooding, not only in terms of crops lost but yields gained. And one would then want to know what sort of measures the farmer takes to optimize his returns from that field, including cultivation practices, the kind of seed he uses, any technical measures that he may take within the field to, for example, minimize scouring by stubble in the post-harvest season, and so on. This requires a different mode of examination than just collecting the flood damage data. Some of it can be done without a long historical record, but one also is interested in an historical record as a means of indicating what the range of experience has been and what some of the possible constraints in the future

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might be, rather than just racking up a list of so many dollars damage per year over whatever is the convenient period of record.

Q: Well, we were talking about some of these early essays dealing with human occupancy of floodplains that you were involved in after you came back to the University of Chicago. Was Murphy's the first one that came out in 1958, or had there been an earlier one?

A: It was the first one that followed the basic one on changes in urban occupancy.

Q: The one that you had done?

A: The first was a joint effort. Then, we had a series of special studies, one by Jack Sheaffer on flood-proofing, which was a recognition of another gap that we saw as we tried to put together a broader theory of how societies make decisions about floodplains. That was supported by Jim Goddard in the TVA.

Q: By about 1960 then do you feel you had a fairly articulated idea about an alternative approach to floodplain management? In other words, a nonstructural approach versus structural?

A: I'd say by the early sixties. By the mid-sixties.

Q: In 1959, as I recollect, the Senate, perhaps partly in response to some of the Eisenhower administration policies, developed a select committee to examine water resources.

A: Yes.

Q: And out of this came, well, some issues from the Kennedy administration.

A: Yes.

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Q: Were you involved in some of this early work of the Senate Select Committee?

A: Yes, I was.

Q: Can you explain how?

A: I was drawn in as a consultant. Ted Schad was in charge of the staff, and I remember talking with Senator Kerr and others who had their own private agendas of what they wanted to come out of the Senate Select Committee. I was interested in seeing that the TVA had a chance to state what its experience had been in efforts of floodplain management and also in getting the Corps to express its view of what it saw happening in the field. I did have a hand in one draft of the final report of the Senate Select Committee.

Q: Do you recollect what some of the major points of that report were?

A: It was transmitted on January 30, 1961, with a large number of appendices. It recommended, among other things, completing basin-wide studies, a grants program to the states for water planning, a scientific research program on water, a biennial national water assessment, and four steps to enhance water efficiency, including regulation of floodplain use and delineation of flood hazard areas.

Q: Okay. Soon after Kennedy took office he asked his various cabinet secretaries who were involved with water resources to come up with a new plan for coordinated development, and out of that comes Senate Document 97. Were you involved with that effort at all?

A: Yes, I was. Again on the periphery. I was involved in making comments about it at different stages, but I didn't have a major drafting responsibility.

Q: There was, as I recall, in that report some mention of a nonstructural approach.

A: Yes.

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Q: Was that partly due to your influence?

A: Partly. By that time a good many other people had the idea, too. Certainly TVA would have espoused it.

Q: The report in a sense supersedes BOB Circular A-47?

A: Yes.

Q: To your mind was it an improvement on A-47?

A: I think so. Again, I was strongly in favor of the effort they were making but was distressed at the way some of the issues were resolved in what I thought was a rather pedestrian fashion. I'd have to go back and look at that.

Q: By pedestrian, do I interpret that as gutless?

A: Partly; also unimaginative.

Q: So it was a political compromise? Is that what you're saying?

A: There were few indications of efforts to change the approach in any radical fashion. It was a series of moderate adjustments of what had been the prevailing policy. And I remember there were a number of discussion papers that were out at the time being prepared. Many of them had, as I recall, some interesting and more challenging ideas, but they got watered down through the process.

Q: Now, who would be offering these discussion papers? People within the various departments?

A: Some within the departments, but some from the outside. I can't recall, did Art Maass make any contributions to that?

Q: I don't recollect that at all.

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Beginning about 1961 and then introduced annually thereafter for the next two or three years, there was a bill that would have authorized the establishment of a water resources council. Again, was your advice requested or solicited in the preparation of these bills?

A: I don't think I had any significant involvement after the basic Senate Select Committee report.

Q: Do you recollect what your reaction was toward this bill; toward the idea that the bill addressed?

A: Yes. I was for it. I had been very strongly involved in the recommendations drafted by the Senate Select Committee, which then carried over in some fashion or other and finally into the creation of the Water Resources Council. It's hard to trace the ancestry of some of those ideas. You're better at that than I am.

Q: Do you recollect some of the reasons why this bill wasn't passed until 1965? It was first of all the Water Resources Council Act of 1961, '62. Do you recollect any of the political problems that perhaps kept the bill from being passed?

A: I don't have a solid basis for judgment on that. I was deeply involved in research at Chicago. I heard a lot of secondhand opinions from friends in Washington, including the argument that the major federal agencies were opposed to it, just as they had been opposed to a permanent National Resources Planning Board. But I wasn't on the battlefield enough for a valid opinion. Ted Schad would know.

Q: I want to go back and pick up a few loose threads for a moment. People whom you had gotten to know in the forties or even earlier-I presume you probably kept up acquaintances with them later on?

First of all, Hoyt and Langbein. An obvious, of course, grouping together. When did you get to know these people? I'm sure you must have gotten to know Walter Langbein pretty well.

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A: Yes, and W.G. Hoyt. I think I first encountered both in the Geological Survey. I've forgotten when Walter joined the survey. I became interested in the flood problem in the early thirties—that is, '34, '35. The Mississippi Valley Committee financed C.S. Jarvis to put together the first real compilation of flood records. I don't know whether you know that volume that he produced. It came out as a Geological Survey Water Supply paper. He was the first to be responsive to the issue you were raising earlier as to what is solid evidence from the hydrological area about the occurrence and frequency of floods. And I negotiated the funding for the Jarvis volume as just a youngster, playing a secretarial role. Jarvis was a person who had worked with the Corps, and tremendously knowledgeable about flood problems.

W.G. Hoyt was in the Water Resources Division. John Hoyt was in charge of part of it.

Q: How were they related?

A: I seem to recall they were brothers. But I'm not sure about that. And then Hoyt and Langbein joined forces to do their book on *Floods*, which I think is an absolutely first-rate book. So I was in touch with them from the late thirties, I would say. And I used to talk with them about material I was poring over in connection with my dissertation.

Q: I see. Do you feel that Hoyt and Langbein's book on floods had a significant impact on, well, say the planning processes within the various water resources agencies?

A: Oh, I do. I think that they were the first to pull together the scientific information about floods in a coherent sort of a structure. If you compare what they were saying with what had gone before, all of the books on flood control engineering and so on, it was a definite step forward. The Jarvis study was published as a Water Supply paper in 1936. It was suggested by the Mississippi Valley Committee, and the new Water Planning Committee gave him additional support to carry out the work. Gerard Mathes was very supportive of it. One of the efforts that was made at that time was to tie in that effort with the scientific groups—the American Society of Civil Engineers, the American Geophysical Union—so that when the book came out

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it would have respectability in the circles from which the operating engineers and hydrologists in the federal [sector] would come.

I think Langbein is the smartest person who has worked on floods in this whole time, and certainly the most original.

Q: I was trying to get an interview before he died.

A: That's a shame.

Q: Another person who you must have met somewhere along the line was Arthur Maass.

A: Oh, yes.

Q: When did you first meet Professor Maass? Would it have been on the Hoover Commission?

A: I can't recall accurately. My impression is that Art came to Washington after I had left. When did he first come to Washington?

Q: Well, actually, according to my interview with him, he was working in the Bureau of the Budget in the late thirties and then, of course, his dissertation was completed about 1949, then *Muddy Waters* comes around '52.

A: When was his dissertation published?

Q: Well, *Muddy Waters* is his dissertation. In '52.

The Hoover Commission probably published part, I guess, in '50 or something like that. I think his dissertation wasn't completed until about '48 or '49.

A: I'm very much aware of him in that time. But I don't have any recollection of working with him before I left Washington. It was afterwards. It was after the Hoover Commission started at the end of the war. There was a

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convergence of interests when I was vice chairman of the President's Water Resources Policy Commission in 1950. But then there were frequent contacts.

**Q:** Did you have the opportunity to read *Muddy Waters* when it came out? Do you recollect your reaction to it?

**A:** You mean as a complete document? Yes, I thought it was a very thoughtful, useful review of the situation. It marked a new stage in political and economic examination of water management.

**Q:** How about Harold Ickes' introduction to it? Do you recollect that? This is the one where he talks about the Corps of Engineers as being above the law or something like that.

**A:** Yes. I remember thinking at the time that it was unfortunate that Ickes had come out as strongly as he had because it seemed to me that he prejudiced the document in the eyes of lots of other people. That was typical of him. He came out very strong for anything that he believed. It made it extremely difficult for anybody in the Corps to take the document seriously.

**Q:** How about Richard Hertzler? You mentioned his name before.

**A:** R.A. Hertzler. I worked with him when he was in the Office of the Secretary of the Army. I was interested in keeping in touch with those people and letting them know what we were finding out in the studies going on in Chicago. I found him one who was interested in the possibility of new ideas developing in the Corps and giving support to people who were more innovative. Gene Weber came along with a very similar posture, I would say. I found him always ready to listen to the sort of findings we were getting and giving critical reactions. We did involve them in a little workshop we had out at the University of Chicago, which then led to the idea of there being a floodplain information program.

**Q:** Howard Cook? Do you recollect when you first got to know him? Did you get to know him very well?



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A: Howard's a very thoughtful person. I never felt I really knew him well because he had personal convictions and interests that were slow in surfacing. We did a paper together for one of the international conferences, and he worked on the Water Policy Commission. I guess that was his last major assignment. Howard was an independent thinker who had great difficulty expressing his views in a fashion that showed their relationship to the views of other people.

Q: I see. Did you get to know any of the Chiefs of Engineers at this time, in the fifties or sixties? Did you know Emerson Itschner, Samuel Sturgis, or [Walter K.] "Weary" Wilson?

A: Itschner and Sturgis I recall meeting. I never had any very close dealings with them. The one I knew best was Markham.

Q: Professor White, in the mid-sixties we see the development of a cause we call the environmental movement. One aspect of that movement is a growing concern about the way in which the nation is husbanding its water resources. There's a Rampart Dam controversy in Alaska which involves the Corps. There's the earlier Grand Canyon controversy involving the Bureau of Reclamation. And in the mid-sixties Senator Moss introduces a water act that would again diminish the Corps' responsibility in water resources. Strictly in regard to water resources, do you recall what your impressions were as this environmental movement begins? Did you feel that the concerns being raised by Senator Moss or other critics of the Corps of Engineers were warranted? Did you feel there was basically self-interest? Do you recall anything about that?

A: The most significant controversy during that period, in my recollection, was the Echo Park controversy, which, of course, involved Utah and would have influenced Moss and others there. To me the essence of that controversy was the concern to look at all of the consequences of a given environmental intervention and a discontent with whatever agency was involved in trying to push for single-purpose efforts without considering those consequences and the alternatives. That's my own bias as I look at it in retrospect. That same concern then shows up in the NEPA act. It is quite different from what appeared to me to be the underlying causes for the environmental movement as we talk about it having taken shape in the late sixties and moving in the early seventies, both in the United States and worldwide. I would look for

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the causes of that environmental movement not so much in concern for alternatives and full investigation of consequences. I think they're of a broader sort. It was partly a product of increased affluence.

Society could afford to consider the effect that Echo Park had at Dinosaur Monument. In part, it reflected a discontent which was growing quite rapidly with big business, big government, big universities. In part, it came from discomfort with the increasingly complex technology, a distrust of confident human control of nature. And certainly in the late sixties it was a displacement phenomena growing out of the Vietnam War in the United States and in some other countries.

So I would think of the environmental concerns of the sort represented by Rampart and Echo Park as of somewhat different origin than those that led to the great push for NEPA at the end of the decade.

**Q:** In 1966 you got involved with a Bureau of the Budget study dealing with floodplain management. I wonder if you could explain to me the origins of that study and your involvement in it, and conclusions?

**A:** As I recall, the director of the Bureau of the Budget called me up and asked me if I would come in and talk about the status of federal flood control activities, indicating that there had been extensive expressions of dissatisfaction among bureau staff about the policies that were being followed and the appropriation programs. I went in and talked with a number of the staff, and they proposed that I should do a consultant's report on the status of flood control. I thought it over and said I thought that would be largely a sterile activity. I might be able to write a moderately intelligent report but I didn't think it would have any significant influence. I felt that something that might possibly have influence would be a joint effort in which there were representatives of the federal agencies serving as individuals but nevertheless drawn from the agencies, together with people from the outside who could jointly present their reactions and their recommendations to the director of the Bureau of the Budget, with the knowledge that the findings were going to be carefully reviewed later by the agencies. The bureau accepted that recommendation, so I became chair of a group or task force, rather than doing an independent study.

**Q:** Who were some of the primary people on the task force?

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A: Well, let's see. The task force included Jim Goddard, who was the obvious person from the TVA and the person with whom I'd had closest working relations up until that time. But from the other federal agencies there was Dick Hertzler, Walter Langbein, Harry Steele from Agriculture, Irving Hand from Pennsylvania, and Martin Schussheim from the housing agency. Then we had three others from the outside: John Krutilla, an economist from Resources for the Future, and me. Perhaps the most influential member of the group was John R. Hadd, who was the representative from the Bureau of the Budget staff and who took a lively and very thoughtful interest in the whole enterprise.

Q: What biases did he bring into the task force? I mean constructive bias. Did he have any philosophy that he was trying to . . . ?

A: No, he didn't. He was a young, inquiring, dedicated member of the bureau who had been asking a lot of questions about what was happening in this field and was much interested in learning what the people who were drawn in for this purpose and who were in a position of justifying budget presentations had to say about it.

Q: How long did the task force work on the study?

A: I'd say about a year.

Q: And this study was called finally *A Unified National Program for Managing Flood Losses* ?

A: Although the group had been put together and I had first been asked to work on federal flood control policy, the title of the report was different from that which it had been intended to be.

Q: It's a significant difference, is it not?

A: Yes. And the budget group went along with that.

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Q: The difference then being one of emphasizing flood control instead of lessening flood damages?

A: Yes. In fact, I would like to have had it speak on making best use of the floodplains. But people thought that was pushing it too far, that it would be a more attractive and supportable set of recommendations if the title were reducing or managing flood losses. You realize this came along after Senate Document 97, and it came after the Water Resources Planning Act. We had the, as it now proves in retrospect, sanguine view that with the Water Resources Council in operation and with the new federal flood insurance program which had been renovated and put into operation, we could expect some substantial changes in federal management of floodplains. That set of hopes was not fully realized. One reason was that the Bureau of the Budget wouldn't let go of some of its responsibilities.

Q: To the WRC?

A: Yes. I never fully understood why that was. It was not from lack of effort on my part to go and talk with people in the Budget and the director over there to try to understand why they were so reluctant to give the WRC responsibility to insist that the recommendations were carried out. But they were reluctant.

Q: Who was the director at that time?

A: The last person I recall discussing it with was Elmer Staats. Of course, Elmer went over and became Comptroller General. I think Elmer was the last person I talked with.

My hunch is there was a particular person in the bureau who steadfastly held the line against relinquishing duties to the WRC. At the same time, he was unwilling to exercise the duties himself. The result was a halfhearted and inconsistently sustained activity on the part of the bureau.

Some interesting ideas came out of the task force's lively discussion. John Krutilla, in the best econometric mode, suggested that what the U.S. ought to do was simply grind down all of the federal activities with respect to floods. Just make a lump-sum payment to the owners of property in floodplains for what we considered to be, at that time, the vulnerability of the property to

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flood losses. To the owners we would say, “ We’ll give you the money. Now you do with it what you want. If you experience losses you can pay for it. If you want to invest your money in an insurance fund, you can do that. If you want to build a levee, you can do that. But the federal government isn’t going to help you. ” Of course it never did float, but it was the kind of idea with which we were playing at the time.

On flood insurance, we had some excellent suggestions. We suggested that a new flood insurance activity should only get under way in a fashion [whereby] the rates fully reflect the risk for the new occupants of floodplains. We thought that a program should be on an experimental, small regional basis. If the new Federal Insurance Administration had adopted that policy, they would have avoided most of the problems that have occurred since. Particularly, they might have discovered by taking a couple of sample basins the difficulties that then ensued on a national scale and could have corrected those before they made the long-term commitments.

Q: This report, *A Unified National Program for Managing Flood Losses*, came out in 1966, I believe. It’s an interesting time for water resources development because you do have some interest in nonstructural flood control solutions, and you have some interest in new ways of planning water resources projects.

Let me take the first point, the nonstructural. Did you see any interest or did you see interest evinced on the part of the Corps of Engineers or any other water resources agency in the mid- 1960s in developing nonstructural solutions?

A: Certainly there was interest from the standpoint of the Office of the Secretary of the Army. And among individual members, including some top officials in the Corps, I encountered considerable interest. John Hadd joined the Corps’ planning office and was an articulate interpreter. At the same time, the field organization was very slow to adopt this view in practice. It was a case of approving in principle but not in practice.

Q: Do you have any explanation of that in terms of personalities or do you just think it was organizational inertia?

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A: Certainly organizational inertia would play a role as it would with any large well-established group that was being confronted with new ideas. But there was more to it than that. I think a major obstacle was the feeling among many members of the Corps staff that they were not trained to do and were not competent for the sorts of analysis that were called for in examination of nonstructural alternatives. They were reluctant to expose themselves to judgments and data analysis relating to recreational land use, wildlife values, or comparative function in an urban economy of units located in alternative sites. This was well beyond their training. They didn't want to produce analyses that would then be criticized by people outside the field.

It was interesting to me that some of the people who found it easier to engage in analysis of nonstructural measures were those that had been trained outside of the engineering professions. Some of the geographers, for example, were ones that picked it up—people like George Phippen.

Q: Why do you find that interesting? Wouldn't that be logical that a person in the social science fields would be able to more easily analyze human impact than an engineer would?

A: I should have recognized this at the time. But many of us did not. The engineers did not deny the desirability of making that kind of analysis. They simply were reluctant to do it themselves or to have any of their staff do it. It wasn't easy to have an argument about the approach in principle. People would say, yes, that's a good idea; we ought to do it. Then when it came to trying, they held back. It came out in some little Corps workshops that were held around the country later, much later. I think if we had suggested that the Corps launch workshops for engineers, by engineers, not social scientists coming to enlighten the engineers, but some engineers who knew how to do it themselves telling others, it might have moved much more rapidly than it did. This gets at the whole question of how to generate change in perspective; change in a sense of confidence among members of a big complex organization.

Q: The engineers didn't seem to be too reluctant to count in recreation in a cost-benefit ratio once that was made legal as a result of the 1965 Recreation Act.

A: Sure, but that was a much simpler kind of analysis. All they had to do was get some figures about user days, and get some economist to tally up for them

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the estimated cost of a user day, and they could put it right into the same kind of analysis they'd been applying to tallying up flood losses or returns from irrigated crops. The alternative approach would have required their looking at the whole pattern of land use and structure of the community, what influence the proposed change in recreational land use might have on the community, and what other alterations might be made in recreation.

Q: This is perhaps an unfair question since you're trained as a geographer, not as an engineer, but do you have any kind of evaluation of the skills of the engineers in the Corps in the 1960s? Do you think they were well trained to do the work they were doing?

A: I think they were moderately well trained to do what they were supposed to be doing. They were not trained to do much innovative work. I would say in the late sixties the Corps was beginning to change in the sense that it was making more conscious efforts to introduce new views and to encourage its professional members to reach out and understand what other groups were doing.

Q: In the early 1960s the Harvard water group developed some interesting new procedures for evaluating water projects, procedures that involved the use of computers, for one thing, computer simulation. Did you have any opportunity to observe how willing the Corps was or other federal water resources agencies were to accept these new kinds of procedures?

A: At the time I thought that the Harvard water program was highly imaginative and thoughtful, and I thought Maass and Hufschmidt clearly had a major impact on the thinking of people who came there. The participating individuals were, on the whole, enthusiastic. They had a sense of being part of a new mode of thought. Then they returned to their offices and, according to the testimony of a few of them whom I knew-and I knew only a small proportion-they were faced with trying to support new viewpoints and their new skills with members of the staff who were not convinced. They were very cautious about it. I'm sure that Maass and Maynard Hufschmidt have ideas now about ways in which their training was translated into action. And I certainly, in terms of individuals, felt that the Harvard program had a major effect.



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Q: What, during this time, was your relation with the Resources for the Future organization? Were you doing much work for them?

A: My connection with Resources for the Future goes back to the first mid-century conference—it had been funded by the Ford Foundation—in which I was a participant and out of which came the recommendation that a couple dozen of us made that the Ford Foundation should establish something like Resources for the Future. It was so funded and it continued to have Ford funding for about 25 years.

When I moved from Haverford to Chicago I got my first research grant from Resources for the Future. As I recall, it was \$17,000 for that first study. Then later on I became a member of the RFF board, and the final six years I was chairman of the board. I was chairman at the time the Ford Foundation decided to withdraw its support from any such organizations. We then had to decide to either take terminal support money on condition of becoming a sub-unit of Brookings Institution or go out on our own and raise a large amount of money to become independent. We decided to try the latter, and were fortunate in receiving support to become a freestanding institution. We persuaded the Ford Foundation to give the same \$7 million that would have gone to Brookings to RFF in the event it could assure a total endowment of over \$20 million. We did.

During much of that period I was associated with RFF only in the sense that work I was doing happened to converge on or cross the kinds of work the people on the RFF staff were doing. I saw people such as John Krutilla and Allen Kneese and exchanged ideas with them on frequent occasions.

The most significant thing, I think, that was going on at that time was broader than the flood loss management effort. That was the attempt to encourage people to look at water development in terms of alternatives and full examination of the full consequences. The National Research Council had a group that was working on exactly this problem at the time, and I think its reports on alternatives in water management, both in general and then using the Colorado Basin as an example, were influential in helping people consider the full implications of multiple-purpose development. It went a step further than the Harvard seminar, or training program. I can illustrate that by taking the flood field.

I remember once meeting with the Harvard group for an examination of the way in which they were treating the economic analysis of flood loss reduction



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projects. They were using standard optimization techniques for computing, in a very sophisticated fashion, what the probable flood events might be, what the damages would be from events of different magnitude, and judging what would be an optimal solution. When I asked if they had ever considered looking into a floodplain to see what happened in the floodplain, as distinct from computing the losses that would be experienced or averted, they said they weren't interested in that; that wasn't a part of the kind of analysis that they were pursuing and that they were training people to pursue. That was typical, I would say, of the economic analysis that was going on. You didn't, for an irrigation project, go in and look at the quality of life of the farmers. You looked at what you could tally up on returns from crop production or sales. In the case "alternatives" approach, there was strong emphasis on trying to find out what actually happened to the lives of the people involved, which we still find difficult to do. But this notion was just beginning to gain popularity.

**Q:** In the late 1960s you also became fairly involved with the evolution of the flood insurance program. Can you explain how you got involved in that and your perceptions of that program as it evolved?

**A:** I first became interested in it from the whole array of questions that emerged from asking why occupance in the floodplains continued as it had between 1936 and 1956. Flood insurance was one of those facets, along with flood proofing, flood forecasting, land-use regulations, and so on. Flood insurance had seemed to a number of us to be one of the more promising instruments that could be used involving some federal support but hopefully turning out to be a self-supporting effort in which market forces could play the most effective role in managing location decisions in or off a floodplain. In the late 1930s I had arranged for Alfred Manes, the German scholar, to report on European experience with flood insurance.

When the first Flood Insurance Act was passed I found myself working very hard to prevent it from ever going into effect because as the first administrator had planned to carry it out it would have had just the opposite effect.

**Q:** When was that passed?

**A:** It was passed but wasn't put into effect. There was a hiatus. Then the new legislation was passed and there was a question of how it would be put into

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effect. Again, a number of us tried very hard to influence the way in which the insurance administration would proceed. We tried to get them to adopt a series of studies, to try their program on an experimental pilot basis. We failed on that. Instead, the new administrator was committed to blanketing the country with his activity.

**Q:** Do you remember the name of the administrator?

**A:** George Bernstein. He stayed on with some interest in that program after he had moved out as administrator. He promptly began making large commitments for surveys, for mapping programs, and for doing this not using the regular federal agencies but bringing in consulting engineers. It became a trough in which a number of engineering outfits fed. In my opinion, they might have done much better to carry on a more modest program using, as was first envisioned, the Corps and Geological Survey for that purpose.

When Gloria Jiminez became administrator a number of us again expressed our concern about the way the program was going and she did hold a meeting out here in which the views that had predominated in this Unified National Program were once again stated. She adopted a number of those ideas which she carried out until the end of her service. She was at the end of the Carter administration.

**Q:** What kinds of changes would you like to see made in the flood insurance program?

**A:** About two years ago we here in the Natural Hazards Information Center were instrumental in helping the Tennessee Valley Authority take the lead in making an evaluation of what had happened in the towns in which they'd been carrying on floodplain management for several decades. They finally worked out a study in cooperation with FEMA [Federal Emergency Management Agency] that is just now coming to a close. This, as far as I know, is the most comprehensive appraisal of actual floodplain management practices that has ever been undertaken. I think it's a shame the Corps of Engineers didn't participate in this or do the same much earlier. They were aware of it but they didn't find it practical to take part.

On the basis of some of those preliminary findings I would say, first, that the insurance program has been carried out too widely, too fast, and, as a result,

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has made unwise commitments to mapping procedures, to rate structures, and to modes of technical advice to the states and communities. It's only slowly been able to recognize the faults and correct them in part. I think that a good case can be made for a very minimal amount of mapping. It was believed by the first administrators of the Federal Insurance Administration that they were going to be confronted by a host of court cases challenging the way in which they set rates and boundaries in flood zones. In fact, this didn't materialize. There has been only a handful of cases, none of which has had a major impact on the operation of the agency. The courts have held that if there were some reasonable basis for establishing a rate or a zone, this was sufficient.

Second, they are recognizing that by working through state organizations they could proceed more efficiently and with better recognition of problems on the ground than by trying to work through their regional offices. Much of the sort of work they've done could have been at the very outset decentralized to state organizations, who in turn would have reached the localities.

Third, they could have provided, and now are providing through the state organizations, better technical advisory service, and are placing less emphasis on rather sluggish pronouncement and enforcement of regulations as to what local communities are to do.

Finally, they could have moved much more rapidly to establish truly actuarial rates for all the new construction in all of the communities. If they had started that promptly, they could have put into the local community and local insurance companies the process of deciding when it was economically and socially desirable for a community to permit some kind of encroachment on the floodplain.

Q: You're leading me into my next question, which is when do you think flood insurance ought not to be granted at all? How can that kind of issue be decided if people consistently build in areas that are fairly frequently flooded? What kind of federal flood insurance ought to be given them? It 's, of course, an old question. What's your answer?

A: The more we learn from some of these evaluations the less easy it is to give a simple answer. But I think the original aims are still appropriate, namely, not to give insurance for any development in the floodway however the floodway is defined. Second, to make the rates for any new development in

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the floodplain thoroughly actuarial, taking into account prospective changes in frequency of floods, which is, we now know, likely in most urban areas. And third, encouraging the municipalities that have responsibility for the land-use regulations to develop these regulations in connection with plans for the use of the floodplain rather than just being obliged to meet a relatively simple requirement from the Federal Insurance Administration. They should have regulations that satisfy a few criteria about frequency and about rise in flood stages as a result of encroachment.

Q: How do you take into account the so-called catastrophic flood-the once-in-100-years flood?

A: There was a very interesting development of the notion that there could be a flood of sufficiently low frequency that no effort should be made to cope with it. The Federal Insurance Administration picked one percent of a recurrence interval of a hundred years. And some of us were involved in that because we recognized they initially had to have some figure to use. The one-percent flood was chosen. I think Jim Goddard and TVA colleagues would be considered parties to the crime. With the lack of any other figure, the concept taken from TVA's "intermediate regional flood" seemed a moderately reasonable figure. We generally use the term "catastrophic flood" for events of much lesser frequency.

This goes back to my earlier criticism of the FIA and its determination to cover the country promptly. In covering the country promptly they established one criterion—the 100-year flood. I think it would have been much more satisfactory if they had not tried to impose a single criterion but had recognized that there could be different criteria for different situations. This could have been practicable administratively even though a federal administrator would say it's far easier, cleaner, to have a single criterion that blankets the country as a whole.

What's the effect of having a single criterion of 100 years if in doing so a local community is encouraged to regulate any development up to that line and then to say we don't care what happens above that line? We know that in a community like Rapid City [South Dakota] the floods were of a lesser frequency than 100 years, and a community ought to be aware of this possibility.

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A simplified national policy tended to discourage communities from looking at the flood problem in a community-wide context, considering the whole range of possible floods that would occur.

So I would say that any community ought to be sensitive to the possibility of there being a 500-year flood or 1,000-year flood. It should try to consider what it would do in that circumstance, and wherein it could organize its development so that if and when that great event does occur it will have the minimum kind of dislocation.

Q: In recent years, in the Reagan administration, there evidently has been some discussion about the advantages of not building up to the 100-year flood, that you build to something less than a super flood.

A: I wouldn't call a 100-year a super flood.

Q: Okay. I shouldn't have used that term anyway—but the catastrophic flood.

A: All right.

Q: Okay? With the idea in mind that, one, of course, it's cheaper . . .

A: Cheaper for whom?

Q: Cheaper for the government, just in terms of construction, not in terms of flood damage. And, two, that it perhaps would discourage people from building there and therefore there might be some advantage to that. And, three, that it might actually prevent catastrophe because if you buildup to the limit that you need to protect against a 100-year flood and then that, say the floodwall breaks, you have a worse tragedy than if you hadn't built up to that line, and you built something perhaps more substantial, lower to the ground or whatever, which gets us into engineering questions about what happens when water goes over a wall, and so forth. Do you have any reactions to this line of thinking?

A: I think there's some foundation for it. Certainly there is foundation for the view that when a sense of security is cultivated for protection up to a given

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level, then when a failure occurs, as is likely in time, the resulting damages will be greater than if there hadn't been that confidence. But the alternative to talking about a particular level is trying to make the levels appropriate for given communities. What would be catastrophic for one community wouldn't be for another community because of the social development that has taken place in it. The kind of approach that I would hope will be adopted in time is one in which communities develop combinations of solutions that are suited to their particular conditions and history and that a federal policy could be one that encouraged rather than discouraged it.

**Q:** But could community definition of what a catastrophe is be overruled by the federal government that perhaps would be involved in emergency efforts after a flood or in building the flood-prevention facilities in the first place? How would that work?

**A:** The federal government has a variety of ways in which it can influence what a community does. It can build works or not build works. And the conditions under which it builds works, as the Corps knows, vary with the community. It can provide flood forecasts, although I would say that to the extent local communities can be encouraged to do their own flood forecasting this is highly desirable. I believe the National Weather Service has moved even more in that direction than before, toward providing the technical facilities for a community to do its own flood forecasting.

It can provide insurance or withhold insurance in a number of ways. As was indicated earlier, the ways in which the Federal Insurance Administration has been providing insurance have had a net effect of increasing catastrophe protection.

Then it can provide relief. We all know that no matter how tough the federal government may be in saying it's not going to provide relief unless such-and-such actions have been taken previously, it's going to find it very difficult to carry out such a policy when a disaster strikes.

**Q:** Okay. Let me turn to another subject for a moment. In 1969 Congress passed NEPA. I think we alluded to this before, but did you have any involvement in the drafting of NEPA or any input at all into that whole process by which NEPA was developed?

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A: No. I had no direct involvement. I knew some of the people who were doing the drafting and I took part in meetings when it was being discussed. The points I raised are ones which I'm sure other people raised too. They had to do with the importance of requiring the agencies to indicate the whole range of alternatives that were available and making an effort to suggest what would be the consequences of each alternative. I did not do any of the drafting of the language.

Q: Now, even before this time the Corps had established a floodplain information program. In what way, if any, were you involved in helping to establish that program?

A: As we completed the studies of the changes in urban occupancy and were exploring implications, one of the ideas that surfaced and received a good deal of support was that communities could be more intelligent in dealing with flood problems if they were provided with information about flood hazards and about the kinds of measures they could take to deal with a flood hazard. This was most dramatically exemplified by the Tennessee Valley Authority staff and with the assorted consulting services they had given to their communities. We held a workshop at the University of Chicago in which we tried to explore this idea. Gene Weber came from the Corps. Jim Goddard and a number of other people attended. Out of that and other measures (I can't pretend to know all of the other activities that were going on) the Corps decided to establish a floodplain information service. Legislative authority was obtained, although it probably was not necessary, in 1960, as I recall.

Q: Is that when Jim Goddard came over?

A: No, it was after House Document 465 that Jim Goddard came to the Office of the Chief. But the first systematic exploration of the idea of what ought to be done was at a meeting out at the University of Chicago that went on over a couple of days. During the same period we had stimulated the USGS to prepare its flood-hazard map of Topeka and had begun discussions of comprehensive flood-hazard mapping for the entire Chicago metropolitan area by the USGS.

Q: What is your evaluation of the Corps' information program since that time? Has it been successful, in your mind?



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A: I don't know enough about it to know whether it's been successful or not because the Corps hasn't carried out full evaluations of what's been happening in the communities. If we ask them they give us information about how many inquiries they've had. But that doesn't tell me what happened thereafter in the community. It's like being able to say that so many acres have been protected by levees or reservoirs but not what's happened in those acres of land.

Q: So there's been no follow-up by the Corps on what's happened with this advice?

A: So far as I am aware, nothing beyond keeping a kind of a log, a systematic log, of who asked them for advice about what. I have the impression that the service has been downgraded, that as a part of the floodplain management effort it has a less important role in the Planning Branch of the Corps than it was expected to have at the outset. Again, this is an impression. Goddard came in with the idea that floodplain management was going to be a more important part of the Corps operations than it turned out to be. After he left the post it became less important in terms of the sort of recognition that was given to the people in that unit. They have been well informed and very conscientious individuals.

Q: Do you know whether the FPMS [Floodplain Management Services] program made any suggestions that the program would not be part of planning but maybe would be in kind of a branch or something? Were there any ideas about that?

A: I heard a lot of discussion about it but I was never party to the arguments that went on within the Corps on that subject.

Q: I see. Do you think this service is known very well to localities? How do localities find out about this service that the Corps offers? I should be asking the people in the Corps, I realize.

A: I do have a few impressions that are not statistically valid. Other sections of the Corps, in my observation, are entirely capable of never telling a local community there is a floodplain management service. If a community hears about it, fine. But it's not one of the services all sections of the Corps were



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pushing. This, I think, varies from District to District as to how strongly it is enforced.

Q: Do you think perhaps that one problem that might develop here is that a community might say-the engineers or whoever in the community might say-gee, you gave us a good idea, now how about giving us the money to do it? Do you feel there's a reluctance on the part of communities to get involved in some of these efforts without a substantial investment on the part of the federal government?

A: With respect to a few communities that I know, the representatives of the Corps, in effect, said to the community, try to get us to obtain money for a real survey that we'll carry out. They didn't say, you know you could get most of what you want by having a floodplain information report, and then use some local consultants to work out a plan for yourself here.

I think the Planning Division was less than vigorous in trying to sell the services of the Floodplain Management Group.

Q: I see. Do you think perhaps that the District offices too were not particularly vigorous in advertising this service?

A: Yes. That would appear to be the case. What I think is clear is that in a number of instances the representatives of the District office did not mention, let alone push, the floodplain management services as being a possible aid to the solution of a local community's problems.

Q: Well, in the early 1970s, at least according to some people, the Corps had a change of heart. General Fred Clarke as Chief of Engineers established an Environmental Advisory Board and promulgated several regulations with the intent of carrying out the spirit and the specific guidance of NEPA. To what extent, if any, do you think the Corps did change at this time? Is that too big a question?

A: I don't think I have anything more than horseback opinions on that. A fairer judgment would be based on very careful analysis of what the Corps had been producing in the way of reports at that time.

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I was in the position of arguing with Arthur Morgan at the time he wrote his last book on this point. Arthur was dismissing the Corps out of hand. I was saying I think that the Corps is changing and that there is some hope here and you are unfair in asserting that it's not different than it's ever been, and it's incapable of making changes. I think it has, as I've seen representatives of the Corps operate. Just how far this has gone for all of the Districts in the country, I don't know. I would say that this fact is a partial indictment of the Corps. The Corps should have undertaken some evaluations to find out for itself the consequences of its own internal operating processes. How much influence have its various efforts like the advisory board and its directives that were sent out had? Perhaps it has made an evaluation and some of us on the outside don't know about it. But I'm not aware of it. So I would applaud the TVA's candid effort to find out the results of its activities in several score communities. I want to see the Corps do the same.

**Q:** You tried to educate people, as I understand it, on the importance of addressing flood damages as well as flood prevention. To what degree do you think you've been educating the Corps of Engineers?

**A:** I think it is clear that at the present time, by contrast with the 1930s or 1950s, the top management in the Corps of Engineers in its public declarations is adopting a view that would be consistent with much that I and others have been advocating. What direct influence I may have had in that I'm not at all clear. I'm not sure that I've had any influence. But through a conjunction of events the top management's position has changed. That's evident.

How far this gets down to the area or District office it's hard to say without the kind of evaluation to which I was referring. It's unfortunate that the Corps has not made such evaluations itself. I once used the figure of speech that getting the Corps of Engineers or the Bureau of Reclamation to change its operating procedures was like burning a pile of damp newspapers. It's a slow process in which you have to continually ventilate the field, but I think it has happened to some degree. The question is the degree.

**Q:** Have you ever suggested to anybody in the Corps or anybody in the Office of the Assistant Secretary of the Army for Civil Works that an evaluation be made?

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A: Way back I did, at the time of Clarke. But I think the response at that time may very well have been, well, we're getting a new program started-give us time and then we'll look at it. Most recently I made it to some representatives of the Corps when we were getting under way with the evaluation of TVA with FEMA, but it didn't seem practical for the Corps people to join.

Q: Let's turn to some things in which I think you're still very much involved. I'm interested in the origins of the Institute of Behavioral Science and how this institute got off the ground, what your involvement was with it, and how you got to the University of Colorado.

A: I had nothing to do with the Institute of Behavioral Science being organized. It dates back now over 20 years, and it was started within the university by an administration that wanted to upgrade the quality of its social science and behavioral science faculty. At that time there was a small group of able research people that did collaborate from several departments. The university took advantage of their being familiar with each other and interested in interdisciplinary effort to put together a new unit for which they could get funds. At that time the National Science Foundation had a Center for Excellence program. They were able to bring new money into the university, and with this new money they were able to recruit faculty that otherwise wouldn't have come. For example, Kenneth Boulding moved in economics from Michigan to Colorado, not because of the attraction of the economics department at the University of Colorado, but because of the opportunity to work in an interdisciplinary unit.

The institute was a straightforward effort by the university to build a quality social science faculty. It did so. There were a number of faculty who wouldn't have come if it hadn't been for the institute or who wouldn't have stayed if it hadn't been for the institute.

I came from the University of Chicago in 1970 because I was interested in an institution where there was more opportunity for interdisciplinary research than there was in Chicago, and because this was an area in which I thought we would like to live on retirement. While we greatly enjoyed the University of Chicago, we did look forward to retiring in the University of Colorado neighborhood since we already had a summer place here in Colorado.

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We responded to a university invitation to come out and join the institute. I was first invited to be just a professor in the institute. Then, at the last minute, they lost a director and asked me to take that post. I did. After I'd been here a little while I became much interested in an interdisciplinary effort to look at research on natural hazards in a broad context. This built on what Ian Burton, Bob Kates, and other geographers and I had learned from studying floods and droughts and applying it to other kinds of natural hazards. Those perturbations from extreme events included earthquakes, hurricanes, landslides, tornadoes, lightning. With Eugene Haas from the Department of Sociology, we obtained an NSF grant to do an assessment of research on natural hazards, which later led to the NSF establishing a research program in that field.

**Q:** Is the methodology transferable?

**A:** I think it is. There are obvious limitations and one needs to be sensitive to those. It's entirely clear that in the earthquake field the Office of Management and Budget set up a group to look at earthquakes in the same way we had looked at floods earlier. The kind of research that then began to be carried on about earthquakes followed the lines of the research that had been started on floods in terms of land use, problems of warning systems, applicability of insurance programs, areas of seismic vulnerability, and the like. I think the best test of there being something that can be learned from comparing the experience in one natural hazard field with another field is that the Natural Hazards Workshop which NSF helped start and fund to get people to attend in the first year now operates without any financial support beyond putting together the program. The federal agencies themselves pay for the center. The people who attend the workshop come at their own and their agencies' expense. People apparently think they're getting something worthwhile out of it. It is a rare example of carefully organized, periodic communication between producers and users of research in a field having large policy implications.

**Q:** I guess what I don't understand is the methodology that you're applying to various natural disasters and natural hazards. Why can't the methodology y, whatever it is, also be applicable to human hazards, like fires in a city or something of that sort? What is there unique about natural hazards versus human hazards in terms of assessing probabilities, the amount of damage, etc. ?

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A: There's nothing unique. It's a matter of convenience and manageability. First of all, there is no natural hazard that is completely natural. Any kind of hazard to society always involves some interaction among natural processes and social processes or structure. You don't have a catastrophe from an earthquake if people don't live in a place where they're vulnerable to earthquakes. [The situation is] similar for floods and hurricane coast or landslide areas. Even with lightning people have a choice of where they locate and what kind of technology they adopt to make themselves more or less vulnerable to lightning.

So all of the natural hazards have their social components, and, similarly, most hazards which are primarily the result of human technology have some natural components. One could think of some that don't have any. For example, the hazard of an airplane blowing up without any relation to the atmospheric conditions at the time. The effects of an explosion in a chemical plant, however, may be greatly influenced by the prevailing weather.

The appropriate mode of analysis is, I would say, just the same. The reason we started here to think only of natural hazards—we made this conscious decision—was that the whole field of natural and technological hazards was too big and complex to try to tackle all at once. We felt that we could do a more effective job, both in analyzing research needs and in providing a clearinghouse program, by limiting ourselves to an array of extreme events that were primarily natural. We now have a cooperative discussion going on with Clark University, which has been working on technological hazards, and with the University of Pennsylvania, which has been working particularly on the risks of industry, to promote exchange of ideas. FEMA has funded an effort to try to put together a data base that includes all of these. Our position here is that while this is a good idea, if we had tried to include all of them eight years ago, we'd probably still be floundering around. Instead, we may have made a fairly significant impact on the smaller sector.

**Q:** This may sound like a presumptuous question, but to what extent are you using your skills as a geographer in your present work?

A: The approach that a number of us, including Robert Kates and Ian Burton, have taken to natural hazards has been a distinctively geographic approach, and it's one that others can share. In terms of the kinds of methods that are applied, geography has probably had more to contribute than any other discipline. Geographers are in space a little like historians are in time; they

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have the capacity to deal with a variety of components of a complex situation. So, geographers found it easier to deal with the notion of alternatives in water management. They found it easier than economists or engineers to deal with problems of floodplain occupance.

I would say that most of what I've done in the field of natural hazards, including floods, has involved a primarily geographic approach. It has always asked what are the ways in which society can adjust to the distinctive characteristics of any natural setting in terms of place and location. This requires looking at what the experience has been in any other places similar to the natural site. It also requires looking at what would be the constraints that would be set by that natural or social environment to activities that could be carried on.

I've followed the same kind of approach in dealing with domestic water supply in developing countries. I think it is distinctively, but not exclusively, geographic. It was consistent for me to work on the NSF-supported High School Geography Project during the 1970s while doing research on hazards.

**Q:** Have you ever used historians in the institute? There is a dimension of time.

**A:** We've been delinquent in that. We've had a few historians who have been interested, but by and large either they haven't wanted to take part or we haven't been skillful in enlisting them. I'll give you as an example people that have worked with me—Robert Kates and Kenneth Hare—who are doing similar work and who have been using historians. A number of people have applied this approach to the broad problem of what would be the effects on human society and environment of a change in climate that might be induced, for example, by changes in CO<sub>2</sub> or other greenhouse gases. And the Scientific Committee on Problems of the Environment, with which I'd been associated, has just published a comprehensive report on the different methods that could be followed to estimate the effects of a climate change. All too often, meteorologists or biologists jump to very quick conclusions that if there were a one degree change in the temperature there would be specific social effect.

In that effort there are several historians who are participating. They are saying let's look back to any periods witnessing extreme climate stresses in history and ask what can we learn of the way in which societies responded at that time.

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Similarly, in the natural hazards field we've had a few people who have looked at responses to earlier stresses as a result of extreme events. Historians haven't been very much interested. We've been more successful in getting anthropologists to pay some attention to it. For example, we have a group here at the University of Colorado that's gone back and looked at what has appeared to be the consequence of great volcanic eruptions in Central America in the fourth century A.D. Not the historians.

Q: I want to go back and pick up a few odds and ends that I either omitted asking you about before or else I saved purposely until the end. One of the things that I did omit asking you about is your work on the Great Plains Committee, back in the 1930s. Can you explain what that committee was all about?

A: In the mid-thirties there were two great drought years during a longer period of drought: 1934 and 1936. The drought was probably unprecedented in recorded history, and there was severe social economic distress. Along with the drought there were new government agencies that were concerned with the public welfare and there was an economic depression. These three combined to produce not only widespread human suffering but an extraordinary effort on the part of the national government to deal with that suffering and to alleviate it. In 1934 widespread drought relief measures were undertaken in the United States through the Public Works Administration, the Works Progress Administration, and the Federal Emergency Relief Administration. The Mississippi Valley Committee report commented on problems of drought, and the National Resources Board the following year had a special section I wrote about the Great Drought of 1934.

Then came a period of relaxation and an even more severe drought in '36. At that stage, under the instigation of a whole array of New Deal agencies, there was a unified effort to ask what we could do now that would prevent this from happening again. The President set up an emergency drought committee in the early summer of '36 and then it presented a brief report commenting on various positive actions that could be taken. He appointed a full-fledged committee under Morris L. Cooke in the summer of '36 to report by the end of the year on a long-term program. The report, which Cooke shepherded, brought together the work of many federal agencies, principally the Land Division in the Department of Agriculture. I was on the sidelines because I was involved in water resources at that time. And we made



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contributions through it. It was the first attractive-looking government report that had been put out. Did you ever see it?

Q: No, I don't think I have.

A: It was distinguished by its graphics, by its quality of writing, and by the way it was marketed, because Morris Cooke called wide attention to it. He took it over and presented it to the President. The President made a variety of comments about it. It probably was the first time that a group of federal agencies joined together to propose how a disaster which the country had just experienced could be prevented in the future. Parts of it, the analysis of the environment of the Plains—its climate, its soils, vegetation, water resources—are quite accurate today. (I have written this up in the *Great Plains Quarterly* for spring 1986, pages 84 to 93.) Parts of it, its analysis of the capacity for technological change in respect to both crops and ground-water exploitation and its estimate of the capacity of society to change in planning resource, were way off base. It's one of the early cases in the history of the United States where there was a unified effort by all the agencies to grapple with a major social and environmental problem and to propose a single set of solutions.

Q: What was your involvement?

A: Oh, I was secretary of the Water Resources Committee. The Water Resources Committee was asked to contribute to the water part of it. It was mostly agricultural economics and soil conservation.

Q: Another issue that I didn't discuss with you and a project which did produce a handsome publication is the National Water Commission Report, published in 1973. Do you know what I'm referring to? Howard Cook was involved with it.

A: Yes. That was the one that Ted Schad directed, and Chuck Lute was the chairman. I was a consultant for that, as I had been for the report of the Senate Select Committee on Water Resources in 1960.

Q: To what extent did you get involved?



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A: I took part in planning the studies that the National Water Commission commissioned, and reviewing some of the materials that were turned out. I didn't do anything beyond that. That is, I didn't draft any single part of the set of reports. I only helped plan the studies and made suggestions about who might participate in producing the documents. Howard Cook was the sort of number two man to Ted Schad in that.

Incidentally, that group is, I think, unique. They still have an annual meeting. The members of the commission and the senior staff under Chuck Lute and Ted Schad get together once a year and talk things over. I think that the latest one, this year, was down in Arizona. There's a great sense of camaraderie and common mission.

Q: Professor White, you've also been very much involved in various United Nations enterprises. I wonder if you could explain some of the projects you've been involved with on behalf of the United Nations, such as taking part in the United Nations Scientific Conference on the Conservation and Utilization of Resources at Lake Success in 1949.

A: Most of them have grown out of my interest in the United States. I expect the first international program in which I became involved grew out of my experience with the drought studies and led to my being drawn into the first international scientific research program that UNESCO established on arid zone research. That was back in the early fifties. I helped them organize cooperative research activities dealing with better use of arid lands. This included the first International Conference on Arid Land Research, which was held in the Southwest under AAAS [American Academy of Arts and Science] auspices in 1955, and the 30th anniversary, which is to be celebrated by another conference in Tucson in October '85.

The United Nations was very much interested in promoting integrated river development in various developing countries around the world. I was asked to serve as chair of a panel of people from a number of countries (Colombia, France, the Netherlands, the USSR, the UK) that brought out a report on river basin development that's been used often and revised in 1970 by the United Nations.

That was in the late fifties. Out of this came interest in the environmental effects of big river projects. I served for a while under the leadership of Ralph Townley as the consultant to the United Nations Development Program

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in establishing a set of studies with developing countries on how they could salvage large reservoir projects that they had undertaken in a burst of enthusiasm without being fully aware of the full set of side effects. This included the Volta River in Ghana, the Kainji in Nigeria, Kariba in what is now Zimbabwe and Zambia, and the High Aswan in Egypt. In each case I headed an interdisciplinary mission that set up a plan of action between the concerned country and the UNDP. In the late 1970s I returned to the Nile as consultant for a joint study of the downstream effects of the High Aswan, and for the first six years of the eighties was a member of a joint consultative committee on applied science in Egypt. Later, I was senior author of a paper reviewing the world water resources and needs for the United Nations water conference in 1977.

One reason I got into that was that I'd been working on the lower Mekong with the four countries there on social economic aspects of the land and proposed reservoir system. That appraisal was funded by the Ford Foundation and the coordinating committee of the four countries.

I was drawn into the new United Nations environment program after the Stockholm conference of 1972 on various kinds of studies that they were interested in promoting in developing countries. One assignment was as senior consultant in planning the World Conference on Desertification in 1977. I expect the most recent job I did for them was to help edit their major review of what had happened to the world environment between 1972 and 1982. An Englishman (Martin Holdgate), an Egyptian (Mohammed Kassas), and I put together a final document drawing on work from about 150 different scientists.

Q: Is that available?

A: Yes, it's published by Tycooley Press, an Irish publisher, and is entitled *The World Environment: 1972-82*.

So I have worked with the United Nations in a variety of ways. I've done some other things. And I worked with the World Health Organization in studies on domestic water use.

Q: In which countries?

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A: Back in the early sixties, after I had gotten well along with the flood studies at Chicago, I found myself most interested in how decisions were made about water use and management. The Rockefeller Foundation very kindly offered to support me in anything I wanted to do for a couple of years in this field of research. I decided I would like to look into the most elemental decisions made about water and see if that could not provide some new insights into water management.

My wife and I picked East Africa as an area in which there's tremendous diversity of both culture and environment. We went into about 35 different sites and inquired about how people decide to use water. At least 60 percent of the people on the earth go and draw water from someplace outside the household every day, including a lot of people in the States.

We did something which is rudimentary but nobody had done before. We found out where they got their water, how much they used, and what it cost them to use it in terms of time, energy, money, and health. To do the health part of it and for general perspective, we were fortunate to join forces with a British medical biology researcher, David Bradley. Out of it the three of us produced the first examination of what is involved in carrying domestic water to a household, and how people make their choices as to where they will go. In almost all cases people have alternative sources from which they can draw the water. Thus, they make two decisions everyday: how much water they'll draw, and where they will go to get it, which involves who will go to get it, generally "she."

We were able to work this out with the assistance of field interviews by students from Kampala, Nairobi, and Dar es Salaam. Since then, it has been done hundreds of times in other places. This led us into all sorts of collaboration with people in various countries and in other disciplines—economists, engineers, sociologists, anthropologists—all interested in the same problem of providing potable water. Then the United Nations Drinking Water Decade was established in 1981. We were involved in several of the plans and preparations for that. That's been another international activity related to decisions about water.

Q: While it's not exactly a natural hazard, I am curious about the extent, if any, you've gotten involved in these recent concerns about nuclear winter. I understand there's a central international consortium which has been organized

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to analyze the possible impact of nuclear war. Have you been involved in any of that?

A: Yes. I was president of the Scientific Committee on Problems of the Environment for six years and active in its founding in 1969. This is under the International Council of Scientific Unions and it's made up of representatives from 36 national academies of science and about 15 international scientific unions. It functions by selecting a few problems on which it organizes international collaboration among scientists in the environmental field. The problems must be, one, of large international significance, two, interdisciplinary (if they weren't interdisciplinary they'd be handled by a particular union), and, three, ones for which we can recruit first-rate scientific personnel. We've never had a problem getting money. If we could satisfy the other criteria we could get the money. SCOPE has made pioneering examinations of environmental risk assessment, global biogeochemical cycles, and ecotoxicology.

At our general assembly in Ottawa in 1982 we decided that we ought to look into the environmental effects of nuclear war and, accordingly, organized a study group. It took us a year to get it organized because we decided we shouldn't do it unless we had both U.S. and Soviet participation. The Soviets finally came in on it. Since then we have put together a report which will be made public in Washington on the environmental consequences of nuclear war. The first volume will be on atmospheric consequences, and the second on biological, ecological, and agricultural consequences.

We explicitly are not trying to deal with the full human consequences of nuclear war because the World Health Organization has a partial report on that, and because it seemed a step beyond what is already a very speculative kind of analysis. We've had more than 200 scientists working on it. People from over 30 countries participated. We've followed a plan of holding workshops in different countries so as to reach the scientists in those countries but also to assure a global view of the problem. Our first planning meeting was in London. The next was in the Swedish Royal Academy of Sciences. Then a major workshop in New Delhi, another in Leningrad, one in Paris. This year we've had workshops in Hiroshima, Tokyo, Toronto, Melbourne, and Caracas.

Q: Have you attended all of these workshops?

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A: No, I was ill and couldn't go to some of them, and some of them I didn't need to attend. The last one was a writing workshop at Essex and that's where I was this month for a couple of weeks.

We expect to turn out—I have the draft manuscript on the desk now—these two volumes. We commissioned a Canadian journalist to write a popular version, which will be published as a paperback. I think it will be the closest anyone has achieved so far to a consensus among the world's scientific community as to what would happen if there were a major nuclear exchange.

Q: Is it as scary as the predictions have it?

A: In some respects it's less so. In other respects it's more so. It's a much more careful, balanced set of judgments than those made public in Washington last October, but it opens up some possibilities that hadn't been generally recognized. It indicates, most of all, that a very uncertain set of processes would be triggered by an explosion. You cannot be certain that there would not be a nuclear winter. That's the most conservative way of putting it. But you can also be certain that there would be a whole set of radioactive consequences that could be quite severe, and that any dislocation in this system of food supply and distribution could be horrendous. Of course, it would be even if there weren't a nuclear winter. This is the ultimate natural hazard.

Q: The ultimate natural hazard. I thought it would be the ultimate human hazard.

A: But as with all of our natural hazards, it's a human intervention in natural systems that then has human impact. If people didn't move into floodplains we wouldn't be worrying about flood damages. If people didn't invent and set off nuclear bombs we wouldn't be worrying about profound perturbations of the atmosphere.

That's the most recent question I've been working on. I worked on it for two reasons. One, I was involved in starting it in SCOPE, and then had the duty of raising about **\$600,000** to finance it, which turned out to be, with Tom Malone's participation, not a difficult task. We rallied support from all around.

**Gilbert F. White**

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I was also intrigued with this whole notion of how the human race faces up to an overarching hazard, and I was interested in seeing it through. My contributions on the scientific side have been minimal beyond a chapter touching on societal effects, but I was involved in planning it and seeing that it gets properly drafted.

Q: There seems to be a strange contradiction between the way people react to the threat of earthquake in California and the way they react to a nuclear war. Both are or could be called catastrophes in the case of California. In the case of the earthquake, though, people of California don't seem to get too worried. They say if it comes, it comes. Whereas in the case of nuclear war they'd be very much concerned about it even though pushing the button is a human decision.

A: That's a perceptive query, the answer to which a number of us have been struggling. I have tried to involve in our discussions of the nuclear war situation a few of the people who worked on perceptions of natural hazards. Some who did the first work on how people in California perceive a hazard; why they are not worried about real estate in seismic safety zones, for example; looking for possible parallels, differences.

When we carried out our first study of how people in San Francisco viewed the earthquake hazard, we had a rejection rate of 75 percent, which is almost unheard of in survey literature and indicated a flawed study design. People didn't want to talk about it. And when one says that the Californians are not worried about the earthquake hazard one has to recognize that to some extent they may not want to discuss their worries because they don't know anything to do about it. They deny it. And we now have the same sort of a problem of denial with respect to nuclear war.

One of the lessons that we may have learned in part from the work on natural hazards is that many people are realistic in their perception of an extreme event to the extent that they have some sense of efficacy in dealing with it. If a person feels that he or she can cope with the event then they're more likely to discuss it in terms that a scientist would regard as accurate and precise. If they feel they have no command over it and that there's nothing that they can do to cope with it, then they have difficulty describing it or even thinking of it in accurate terms.

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In the case of nuclear war there is some sense of efficacy. Some believe that they could stop the bomb. They could freeze its production. That's probably why the nuclear freeze has been appealing. From a political standpoint, it's a simplified, unrealistic kind of action in the opinion of many policy experts. To ordinary people it seems a practicable kind of action.

I would argue that with respect to the environmental movement, one reason people became devotees of certain kinds of environmental action in the late sixties and early seventies was that they had a sense of efficacy about it. They could stop Echo Park Dam from being built. And they did, at the time. They could stop a dam in Grand Canyon. And some people feel this about the nuclear weapons today. Others don't, and they find it very difficult to even think about. According to some studies, youngsters find it easier to think about it and are more ready to articulate their anxiety than are adults. A number of school systems have special counseling programs for youngsters who are worrying about nuclear war.

Q: Let's turn to a happier subject.

A: I thought that might be an appropriate way to conclude; starting out talking about little things like floods and ending up with nuclear war.

Q: Well, I want to conclude with just a couple of questions, We haven't talked much about your wife, and we haven't talked much about your family in general. Why don't you fill me in on your children, your wife and what she does, and SO forth.

A: I met my wife in Washington in the home of Colonel Clark, deputy administrator of the Public Works Administration, where we'd both been invited for dinner. She graduated from Vassar and later went into the National Labor Relations Board as a field investigator. Earlier she was a part of the survey opinion work that was first undertaken in the United States. As you may know, it was organized under M.L. Wilson's aegis in the Department of Agriculture, with a top-notch group of social psychologists, Jerry Bruner, Rensis Likert, and others who later formed the Institute for Social Studies at the University of Michigan. They did the first surveys of people's opinions about what was going on in the country. They began asking why farmers do not take advice. Then came the war and they were asked to find out why people bought bonds. That stimulated her interest in survey



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research. We had decided to marry before I went to Vichy, France, in 1942 but wanted to await my return, whenever that would be. I was detained for a year in Germany, and we were married following my exchange in 1944.

After the war she accompanied me to Haverford. It was a very demanding, time-consuming effort to be the wife of a president in a college where many of the students were returning veterans her age. When our youngest child went off to school she began working with me on problems of domestic water.

Q: Is she a Quaker, too?

A: Yes, we're both convinced Quakers. And were both members of the Florida Avenue Meeting in Washington. We joined separately but then came to know each other later. Since then, Quaker meeting has been an integral part of our lives.

We have three children, all fine people doing useful work. Our oldest teaches economics at the University of Illinois. And the second one maintains a glass studio in Oakland, California.

Q: Are those both sons?

A: No. The oldest is a son. The second is a daughter, the glass blower. The third took a Ph.D. in anthropology and now is raising a family and teaching part-time at the University of Victoria. We have none around here, I'm sorry to say.

Q: Well, it makes for a peaceful existence, I suppose, anyway.

A: We came to Boulder because I'd had the experience of working on a ranch as a boy and wanted my children to have it. So I looked around for a ranch that we could spend the summer in that was high and dry—one of our daughters was then somewhat asthmatic—and was within driving distance of a university library. I drew radii from Laramie, Fort Collins, Boulder, Colorado Springs, Albuquerque, for an operating ranch. It turned out there was such a rancher in Sunshine Canyon who took his cattle to the high country. So I wrote to him. His wife's reply was come live on our home place next summer if you



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will take care of the stallion, any sick cattle, keep people from running off with our tractors, and pay us \$150 for the summer. So we sent our \$150 and that's how we came to Sunshine Canyon. The ranch family was a great one, and we all enjoyed and learned from them.

**Q:** And you bought the place?

A: No, he didn't want to sell the land. We found another place up the road.

**Q:** So, in other words, the invitation you got from the university came after you . . .

A: We'd been coming out here for 12 years.

**Q:** Oh, I see. Well, I always ask this question at the very end, so I'll go ahead and ask it of you. Looking back over your life, and you've obviously had a very productive life, is there anything that you regret or that would like to change if you had to do it all over again? Any missed opportunities?

A: It may seem complacent, but I don't think so. I can look back and see where I made a number of decisions which might have led me quite different ways, and possibly would have been more productive, but I don't regret them. I don't regret having been as diverse as I have been in my interests. I know that if I'd gone deeper into a particular subject I might have made more significant contributions. Then, I wouldn't have had the fun of exploring in some of the other directions. I'll have to think about that. I'm not harassed by the thought that I took the wrong directions.

**Q:** There are a number of people I've interviewed who have had exactly the same answers, so you're not alone. Do you have any other comments about your life that perhaps we didn't cover adequately enough?

A: I think I've always tried, to use a trite phrase that I see on bumper stickers these days, to think globally and act locally. I've tried to keep in mind what the predicament of the human race was, and then find something I could do that was more concrete and possibly helpful at the local level.

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Q: I have to ask you this question as a result of what you just said. To what extent was your philosophy and were your concerns motivated by your religious beliefs?

A: I think it has been all along a sense that people ought to strive for a kind of harmony with their fellow humans in nature.

Q: Well, thank you very much.

**Water Resources People and Issues**

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### **Abbreviations and Acronyms**

AAAS	American Academy of Arts and Science
CO	Conscientious Objector
FEMA	Federal Emergency Management Agency
FERA	Federal Emergency Relief Administration
FIA	Federal Insurance Administration
FPMS	Floodplain Management Services
MVC	Mississippi Valley Committee
NEPA	National Environmental Policy Act
NRB	National Resources Board
PWA	Public Works Administration
REA	Rural Electrification Administration
RFF	Resources for the Future
TVA	Tennessee Valley Authority
UK	United Kingdom
UNDP	United Nations Development Program
USGS	United States Geological Survey
USSR	Union of Soviet Socialist Republics
WRC	Water Resources Council

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ER 1130-2-420

Regulation  
No. 1130-2-420

1 November 1992

Project Operation  
VISITOR ASSISTANCE PROGRAM

1. Purpose. This regulation prescribes policy and procedures for implementation of the provisions of Section 234 of the Flood Control Act of 1970, P.L. 91-611 (84 Stat. 1818). This regulation sets forth specific policy and guidance for the implementation of visitor assistance programs.
2. Applicability. This regulation applies to major subordinate commands, districts, and field operating activities (FOA) having Civil Works responsibilities.
3. References. See Appendix A.
4. Authority. Major subordinate commands (divisions) and district commanders are delegated authority to implement the citation authority regulatory provisions at civil works installations set forth in Public Law 91-611 and in strict accordance with the policies, procedures, criteria and guidelines contained in this regulation.
5. Policy. It is the policy of the Corps of Engineers to provide safe and healthful recreation opportunities while protecting and enhancing project resources. The protection of facilities or the enforcement of rules will always be secondary to the safety of Corps personnel and visitors. Resource managers and rangers will strive to be visible to the public, primarily to help and assist them, and secondarily, to enforce 36 CFR Chapter III, Part 327 (Title 36). In no case will this enforcement portray an aggressive law enforcement image.
  - a. Each resource manager shall have frequent, open discussions with park rangers and other team members to foster improved communications that will assist both in understanding this regulation and ensuring consistent local application of its policies.
  - b. In the acquisition of land at Civil Works installations, the Corps of Engineers obtains proprietary interests only. Individual states and their political subdivisions retain the statutory authority and inherent responsibility to enforce state and local laws. State and local agencies establish, regulate and enforce all state and local laws.

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This regulation supersedes ER 1130-2-420, 24 March 1987

HQ AR001576

ER 1130-2-420

1 Nov 92

c. The authority of resource managers and park rangers is limited to the enforcement of rules and regulations as designated in Title 36 and does not extend to the enforcement of state and local laws, including game laws. This authority is applicable to

(1) all water areas of any water resources development project administered by the Chief of Engineers, without regard to ownership of underlying land;

(2) all lands owned in fee by the Federal Government;  
and,

(3) all facilities of any such water resources development project.

d. Resource managers and rangers are employed as natural resource, recreation, environmental and public relations specialists and are not law enforcement officers. They cannot arrest, search or seize individuals or their property in the course of these duties. A resource manager or ranger may request visitors to stop but cannot physically detain them. The carrying of weapons or items such as mace, stunguns, nightsticks, or other similar equipment normally associated with law enforcement is prohibited. Accordingly, the use of radar guns or speed detectors is not permitted. Chasing vehicles or using hot pursuit techniques against alleged violators, on or off Corps property, is absolutely prohibited.

e. The maximum use of oral and written warnings will be made in the conduct of day to day operations.

f. Corps personnel who violate the policies of this regulation or abuse their authority will, at a minimum, have their citation authority suspended.

6. Job Descriptions. The implementation of a visitor assistance program in accordance with this regulation will be a major element in job descriptions and shall be addressed in the performance standards for all district staff, resource managers and rangers responsible for the direction or implementation of the program. Resource managers are responsible for the review and, if necessary, the corrective action for the proper implementation of this regulation for each individual with citation authority.



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7. Public Information. An aggressive public information program, implemented by the resource manager, will be maintained to notify and assure public understanding and support of the visitor assistance program. Title 36 will be posted on appropriate bulletin boards at civil works installations, and made available to the public. News releases, interpretive programs, school outreach programs and other information systems should be utilized to inform and educate the public of significant changes in rules and regulations, including project restrictions. As part of the Operational Management Plan, each project will outline a plan of action regarding public relations as a continuation of communications with the public.

8. Liaison and Coordination. The support of the US Magistrate, US Attorney's Office, and local law enforcement agencies is imperative for an effective visitor assistance program.

a. Continuing coordination and liaison will be maintained with Federal, state and local law enforcement, fire and rescue agencies to provide maximum visitor assistance to the public. Annual or biannual coordination meetings, which include visits to projects and participation in training sessions by US Magistrates, US Attorneys and local law enforcement agencies, are encouraged to further enhance interagency cooperation. Liaison with state, county or local authorities should include regularly scheduled strategic planning meetings to develop mutual plans for monitoring visitor use at water resource development projects.

b. Formal and informal contacts will be made with these agencies to apprise them of the limited authority of the Corps and to help ensure protection of Corps personnel, visitors and property at water resources projects. It must be emphasized to law enforcement agencies that this program does not relieve them of their statutory authority or their responsibility for enforcement of laws under their jurisdiction. Those agencies can only enforce those portions of Title 36 which are incorporated as part of their local statutes.

c. Cooperative law enforcement agreements, as prescribed in ER 1130-2-418, will be used to the maximum extent practical.

d. Corps personnel may ride with, or allow local law enforcement personnel to ride with them, in unique cases to foster interagency cooperation. This will not be normal procedure and will be done only for short term situations and with specific approval of the resource manager. Each division or

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1 Nov 92

district should develop general procedures to promote consistency and establish accountability for these activities.

e. The primary responsibility for daily liaison at the local level rests with the resource manager; however, technical assistance will be available from appropriate district and division elements, i.e., Natural Resources Management, Provost Marshal or Security Manager, Counsel, and Safety.

9. Surveillance. The district commander is responsible for insuring adequate order and discipline at Corps projects.

a. The purpose of surveillance is to observe activities and conditions on project lands and waters in order to assist the visitor and insure the protection of project resources.

b. Various methods of surveillance techniques such as foot, vehicle, fixed wing or helicopter aircraft should be used as appropriate to insure a balanced and complete prevention and early detection process. Adequate surveillance of project lands may require that specialized vehicles be available to the ranger staff including, but not limited to, four wheel drive, bicycles or all-terrain-vehicles.

c. Personnel involved in surveillance will exercise discretion and attempt to avoid potentially hazardous situations. In potential or historic trouble areas, the use of two individuals per vehicle or dual patrols in close proximity with radio contact should be given maximum consideration. Employee safety will be a primary consideration in the conduct of these activities.

d. Maximum use of local law enforcement services will be made at areas which have a history of excessive violations and during those periods when rangers are not readily available. The use of local law enforcement services and cooperative agreements during hours of darkness will reduce the need for patrols by Corps personnel during this period.

e. The scheduling of ranger personnel for surveillance duties will be consistent with staff, funds, and other resource limitations. Schedules should allow for surveillance during peak visitor use, especially during weekends and/or holidays. Night surveillance by rangers is a district option which may be considered, as necessary, to meet project and Corps objectives and provide adequate visitor security.

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f. The use of computer data systems should be encouraged at projects to record citation information and facilitate the availability of information to aid in defining problem areas.

10. Uniform and Badge. Personnel performing duties associated with the visitor assistance program will wear the complete uniform and if citation authority has been granted, the badge, as prescribed in USACE Suppl 1 to AR 640-3 and ER 1130-2-442. A Citation Authority Identification card (ENG Form 4710) or a reduced copy of ENG Form 5036-R, Certificate of Authority to Issue Citations (see Appendix B) will be carried while on duty by all persons with designated citation authority.

a. Personnel designated to issue citations who determine to take action while out of uniform in accordance with this regulation, will be considered to be working within the scope of their duties, regardless of their on-duty or off-duty status at the time.

b. Any enforcement action taken out of uniform will be reported to the immediate supervisor within 24 hours.

c. Division commanders will requisition badges from HQUSACE (CECW-ON).

11. Vehicles and Vessels.

a. It is desirable that vehicles used by natural resources management personnel be readily identified by the visiting public. Therefore, as project vehicles are replaced, new vehicles acquired will be a solid light green color that closely matches Federal Color Paint Chip No. 14260. Marking of vehicles and vessels will be in accordance with ER 56-2-1 and EP 310-1-6.

b. Resource manager and ranger vehicles and vessels may be equipped with a single removable warning light whose color and location are acceptable within the individual states. The purpose of this light is for visitor assistance and not for use to project a law enforcement image. Lights which are inconspicuous to the public when not in use, such as lights mounted behind the grill, will be used. No fixed roof or external grill-mounted warning lights on manager and ranger vehicles are permitted. The use of these lights should be periodically reviewed by the district office.

c. The district commander may authorize that selected vehicles and vessels be equipped with a public address system and warning siren. Such equipment will be located so as not to be

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visible to the public and used with discretion. Exceptions may be made for vessels depending upon the size and design of the hull.

d. All vehicles will be equipped, as a minimum, with first aid kits and fire extinguishers. All vessels will be equipped with US Coast-Guard and state-required safety equipment, including first aid kits and marine-use fire extinguishers and/or pumps. Districts and projects should develop lists of suggested equipment for manager and ranger vehicles and vessels and purchase this equipment.

## 12. Communications.

a. Resource manager and ranger vehicles and vessels used to conduct surveillance activities will be equipped with appropriate intra-agency radio communications. Radio communications equipment linked to local, state or Federal law enforcement agencies will be provided to on-duty resource manager and ranger personnel with the concurrence of these agencies. Scanners may be used in such vehicles as deemed appropriate. Corps base stations may be located off project lands or local law enforcement agency base stations may be placed on Corps property, as necessary, to obtain adequate communications.

b. Portable radios will be provided to on-duty managers and rangers when duty assignments necessitate their use. Radio communications at base stations such as visitor centers or offices should be used to maximize the communications to rangers on duty at night, weekends, or holidays. The purchase of specialized communications equipment, such as a cellular telephone and telephone answering devices, is authorized, when necessary, to facilitate visitor assistance.

c. Park attendants should be provided with communications capability either by telephone or radio communication systems. When warranted, park attendants may be issued portable radios.

d. To ensure adequate public communications for visitor safety, the installation of public telephones is encouraged at entrance stations, beaches, and other public use areas. Where feasible, telephones should be of a type which would permit the caller to contact the operator without depositing coins. A listing of appropriate emergency telephone numbers such as fire, medical, police, rescue, and Corps officials should be placed in recreation areas near the location of public telephones.

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e. District commanders should have periodic surveys completed to assure that the required communications equipment is available for personnel and located in vehicles and vessels.

13. Training.

a. HQUSACE Visitor Assistance, NRM, Course. Division offices will ensure that all permanent and seasonal personnel with need for citation authority attend the mandatory HQUSACE sponsored training within 2 years of hiring. The HQUSACE training is the minimum requirement for the authorization of citation authority. This course will provide the basic instruction necessary to carry out visitor assistance duties and will emphasize the history, philosophy, and techniques used in visitor assistance. During the first two years of employment, personnel will also be provided additional training by divisions or districts to cover local and regional needs.

b. Division or District Visitor Assistance Course. For temporary personnel, or for permanent and seasonal personnel who are waiting to attend HQUSACE training and need citation authority immediately, a minimum of forty hours of combined on-the-job and approved classroom training will be provided by the district or division before the individual will be allowed to enforce Title 36. This training will cover philosophy, techniques, limits of Title 36 authority and specific local and regional needs to enable individuals to perform their duties. As a minimum, the core curricula found in Appendix E, along with on-the-job training which addresses special needs of the project, will be required. All permanent and seasonal employees who complete the 40-hour district or division course may be authorized to have citation authority for a maximum of 2 years with this training. This authority cannot be extended unless the individual attends the HQUSACE training course. District or division refresher courses cannot be substituted in lieu of the HQUSACE course. Districts must obtain formal HQUSACE CECW-ON approval of their curriculum as noted in Appendix C prior to conducting a Visitor Assistance Course. No temporary employee in the first summer of employment will be granted citation authority.

c. HQUSACE Visitor Assistance (Update) Course. A HQUSACE-sponsored training course for personnel with citation authority and those who manage and direct the Visitor Assistance Program is provided. Permanent personnel will attend the course as needed after attending the initial HQUSACE Visitor Assistance Course. This training provides an update on authority, policy, procedures and changes in the program. It is required for all Natural

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Resources Management personnel and, in particular, resource managers and district and division personnel.

d. Division or District Refresher Training. Each division or district will provide visitor assistance and Title 36 refresher training to all district personnel with citation authority as needed. This training may be accomplished at ranger conferences or by other appropriate means. This training will review basic visitor assistance information, sharpen skills and techniques, or address special needs of the district.

e. Other Training. To complement visitor assistance training, permanent resource manager and ranger personnel shall receive, at the district or project level, training on defensive driving, cultural resource protection, historic property protection, cardiopulmonary resuscitation (CPR), personal protection and situation evaluation, water safety, boat licensing and operation, and the equivalent of Red Cross "Advanced First Aid and Emergency Care" course. Increased first aid training up to Emergency Medical Technician Basic (EMT Basic) may be necessary for a minimum number of selected permanent staff members. Prior to providing EMT Basic training to any individual, permission must first be obtained from the district office on a case by case basis. Temporary personnel will receive Red Cross "Multimedia First Aid" Course. All training will be renewed as required. Where necessary, training in a second language other than English is highly recommended.

14. Authorized Personnel. All permanent personnel with resource manager and ranger duties will normally have citation authority. Citation authority may be granted to selected temporary personnel with ranger duties who have a minimum of one season's experience and are expected to be rehired in the subsequent year. No individual will be given authority to issue written warnings without completion of the required training.

15. Citation Authority Certification. Authorized personnel will be issued ENG Form 5036-R, Certificate of Authority to Issue Citations. (See Appendix B.)

a. To delegate civilian personnel of the Corps of Engineers to the authority to issue citations as provided by Section 234 of the Flood Control Act of 1970 (Public Law 91-611, 84 Stat. 1818), the division or district commander must certify in writing that:

(1) The individual's principal duties relate to recreation or natural resource management, which may include, but not be limited to, duties as a ranger, manager, forester,

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wildlife or fisheries biologist, or environmental or biological specialist.

(2) The individual needs citation authority to perform official duties in the most efficient manner.

(3) The individual has the aptitude, temperament, personality, experience, and ability to exercise citation authority properly.

(4) The individual has been adequately trained in citation procedures.

b. If, after training, individual readiness to meet this criteria remains questionable, citation authority should be withheld or withdrawn.

16. Cancellation of Authority. Citation authority should be revoked when an individual fails to meet the provisions of this regulation. A division or district commander may cancel a certificate of authority whenever he/she considers it appropriate, without recitation of reason. Cancellation will be carried out by using ENG Form 5036-R, Cancellation of Certificate of Authority to Issue Citations. (See Appendix D.) The person named on the cancellation certificate shall thereafter have no authority to issue citations.

17. Records. A record of citation authority will be maintained in the district office. A wallet-size citation authority card (ENG Form 4710) will be issued to, and carried by, the designee.

18. Deputizing. The deputizing or commissioning of Corps personnel by law enforcement agencies is discouraged. Corps personnel who are deputized or commissioned may not perform the duties of that office on or off Civil Works installations during duty hours or while wearing the Corps uniform. Corps personnel are also prohibited from performing the duties of a deputized or commissioned law enforcement officer on Civil Works installations during their off-duty hours. Requests for exceptions to this policy, with justification, must be submitted by the division commander to HQUSACE (CECW-ON) for approval prior to granting permission.

19. Legal Protection.

a. Federal law provides an immunity against lawsuits for employees acting within the scope of their employment. By virtue of this immunity, individuals who, in performing assigned duties,

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cause unintentional injury/harm to others are not considered personally liable. For this reason, lawsuits against individuals are rare. More frequent are claims filed against the US Government as the entity responsible for the actions of subordinates while on duty. Claims against the Government are also seen as more lucrative than claims against individuals. Persons seeking a monetary judgement usually believe that the opportunity for payment is greater if the payee is the US Government.

b. Although lawsuits against individuals are rare, there are exceptions. An individual may be sued personally without the benefit of Government mitigation when there is proof that he/she was

- (1) acting beyond the scope of assigned duties;
- (2) intentionally causing harm to another by assault, battery, slander, etc.; or
- (3) violating another person's constitutional rights by making a false arrest or illegal search and/or a seizure of personal property.

20. Issuance of Citations. The use of Title 36 citation authority is to be considered one of many tools for use in management of water resources development projects.

a. The lowest level of enforcement will be used to resolve a problem. Maximum use of oral and written warnings will be made for minor infractions. Employees with citation authority will, in order of priority, attempt to resolve the problem by oral warning, written warning, collateral forfeiture citation, and mandatory appearance citation.

b. Divisions and districts will make at least a biennial analysis, by project, of citation data from the NRMS report. As a rule, the ratio of written warnings to violation notices should be consistent with the national average of 2/1 or higher. When the ratio is lower than 2/1, an analysis should be done to identify any reasons for variances or problems which may be occurring. A ratio of 3 warnings or more per violation is preferred.

c. Project analysis will include a review of ratios of citations to visitation and citations per ranger. Unjustified deviances should be corrected.



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d. Written Warnings. Written warnings will be prepared in duplicate on ENG Form 4381, Warning Citation. Records of warning citations, either by computer entry or file copy, will be maintained for at least two years.

e. Violation Notices.

(1) Collateral forfeiture citations and mandatory appearance citations will be issued as warranted. DD Form 1805, Violation Notice, will be used for these purposes. Guidance on the use of this form is in AR 190-29.

(2) Liaison will be maintained with the Clerks of District Courts and Central Violations Bureaus (CVB) to determine forfeiture schedules and to arrange administrative details to implement the provisions of P.L. 91-611 (84 Stat. 1818). Divisions and districts will make an effort to provide consistency in collateral forfeiture schedules between magistrate districts, Corps districts and, where possible, states.

(3) Liaison will be maintained with local US Magistrates and US Attorney's offices to make arrangements for court appearances and to handle other administrative details. Any specific procedures or instructions issued by local magistrates will be kept on file at project offices and an information copy forwarded to the district office.

(4) Collateral forfeiture, or payment by alleged violators in lieu of appearance, may be made according to the forfeiture schedule approved by the district court, thus terminating the proceedings against individuals. Corps personnel will not accept or agree to handle such payments. Payments of the scheduled amounts and the related citations are to be sent by the alleged violators in the pre-addressed envelope furnished with DD Form 1805 to the appropriate location determined in advance by the CVB. In collateral forfeiture cases, the alleged violator should be advised that the payment must be mailed so as to be received by the appropriate office prior to, and therefore in lieu of, the required appearance date stated on the violation notice.

(5) In cases involving large value losses, such as timber harvesting on Government lands or major destruction of Government property, the US Attorney should be contacted according to District procedures prior to any action. These cases may be prosecuted as civil or criminal cases in order to recover losses incurred.

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(6) Miranda warning is not required in the issuance of Title 36 citations.

(7) In all but unusual circumstances, personnel designated to issue citations will carry out their duties in uniform. Before taking action out of uniform, all of the following will first be considered:

(a) Personnel should summon the aid of a uniformed ranger or other law enforcement officer if possible.

(b) If information such as license numbers, boat numbers, or other identifying facts can be gathered without personal contact, this should be done. Determination can be made later as to the appropriate action.

(c) If the action to be taken in any way creates a threat to the ranger's safety, no action should be taken.

(d) Any action, including verbal warnings, should be taken only after proper identification has been presented, by displaying the badge, citation authority identification card or other appropriate means.

f. Appearance before US Magistrate.

(1) In addition to the normal citation procedures, the written complaint on the back of DD Form 1805 will be prepared and signed by the citing officer. Such complaints will set out the pertinent details of the offense and names of witnesses, if any.

(2) Citing officials will appear before the US Magistrate along with witnesses who agree to appear. The Visitor Assistance course, discussions with the US Attorney and on-the-job training will include the proper procedures to be followed when making an appearance before a magistrate. Personnel will appear in court, dressed in complete uniform, at the preference of the US Attorney or the US Magistrate. Demeanor should be polite and conversation succinct, with fully descriptive answers given to questions.

(3) In instances where alleged violators fail to appear as directed, the magistrate may cause a summons or warrant for arrest and appearance to be issued. Service of summons or warrants for arrest and appearance are the responsibility of the US Marshal. If the magistrate requests that a Corps representative serve a summons to a violator, the individual will

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respectfully decline as being an action outside the scope of his/her authority.

g. Juveniles. Juveniles can be cited for Title 36 violations. Each Magistrate may determine if he/she will hear cases against juveniles. The US Attorney for each district should contact the Magistrate for coordination on this matter. A "juvenile" is defined by 18 USC. 5031 as a person who has not attained his/her eighteenth birthday. The US Attorney will be able to furnish the minimum age at which juveniles become accountable for their actions and may be cited for them.

h. Issuance of Citations off Project Lands. One of the following methods will be used when it is necessary to issue a citation off project lands:

- (1) By certified or registered mail.
- (2) Presented while in the company of a local law enforcement officer.
- (3) Delivered by, or in the company of, a Federal law enforcement officer.
- (4) Personally delivered by the citation official himself/herself. This should be done only when it has been determined that no personal danger exists and after specific approval of the resource manager has been received.

21. Uncooperative Violators. If an individual is uncooperative and refuses to accept a citation, the citing official should not press the issue. The citing of violators will in all cases remain secondary to the safety of the public and Corps personnel. In difficult situations, citing officials should request the assistance from local county or state law enforcement agencies. Surveillance procedures (without personal contact) can be used for the purposes of identifying the alleged violator, such as recording the vehicle license plate number and description, taking photographs of the violation, and obtaining statements of witnesses. No magistrate can issue a summon or a warrant for arrest/appearance without sufficient evidence.

22. Assault on Corps of Engineers Civilian Personnel. It is a Federal criminal offense to forcibly assault, resist, oppose, impede, intimidate, interfere with, attempt to kill or kill any civilian official or employee of the Army Corps of Engineers assigned to perform investigations, inspections, law or regulatory enforcement functions, or field level real estate

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functions while in the performance of his/her official duties (18 USC 11 and 1114.)

a. If an assault occurs, the Corps individual should immediately attempt to remove himself/herself from the situation. If this is impossible, the individual should act to ensure personnel safety and stop the assault, if possible. In no case, will Corps personnel go beyond the limits of what is absolutely necessary to establish and maintain control of the situation.

b. When an assault or other crime has occurred, several actions should be simultaneously initiated.

(1) Seek and secure medical help for the victim(s) as needed.

(2) Notify local or state law enforcement authorities immediately and request assistance as needed. Release all evidence to law enforcement officials upon their arrival to the incident scene.

(3) Ensure the incident scene and any evidence are not disturbed until arrival of law enforcement authorities. Protecting the integrity of the scene may involve halting traffic or interrupting other activities through the incident scene.

(4) Identify as thoroughly as possible all those involved in the incident as well as witnesses. Obtain name, license plate number and description of the assailant(s) and witnesses when possible.

(5) Notify the supervisor of the victim immediately and request assistance, if appropriate. Victim's supervisor should promptly report the incident to the district Natural Resources Management chief who will notify the security and law enforcement office and the district Office of Counsel.

c. From this point, the action chain and all coordination will be handled by the security and law enforcement office who will contact the United States Army Criminal Investigation Command (USACIDC) and HQUSACE. The USACIDC will call the FBI, if necessary.

d. Office of Counsel will monitor the prosecution of any case.

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23. Alternative Management Considerations. There are many alternative management techniques in addition to the issuance of citations that should be considered in the implementation of the Visitor Assistance program. A list of alternative management techniques is provided at Appendix E. Experience has proven these considerations effective in reducing visitor problems.

24. Reports. Statistical data on issued citations will be reported in Natural Resource Management System as directed in ER 1130-2-414. Serious Incident Reports, submitted on DD Form 173/1 in accordance with AR 190-40 for incidents including, but not limited to, death, major fires and natural disasters, should be forwarded through the district and division offices to HQUSACE CEPD, with copy furnished to CECW-ON.

FOR THE COMMANDER:

5 APPENDICES


APP A - References

APP B - ENG Form 5036-R

APP C - Temporary Employee Training

APP D - ENG Form 5036-1-R

APP E - Alternative Management Techniques

  
MILTON HUNTER  
Colonel, Corps of Engineers  
Chief of Staff

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## APPENDIX A

### REFERENCES

1. Public Law 90-578 (82 Stat. 1107), Federal Magistrates Act.
2. Public Law 91-611 (84 Stat. 1818), Flood Control Act of 1970.
3. Public Law 93-415, Juvenile Justice and Delinquency Prevention Act of 1974.
4. Sec. 4, Act of December 22, 1944 (58 Stat. 889), as amended, 16 USC 460d.
5. 18 USC 111, Assaulting, Resisting, or Impeding Certain Officers or Employees.
6. 18 USC 1114, Protection of Officers and Employees of the United States.
7. 28 USC 1346, Federal Torts Claims Act (FTCA).
8. 36 CFR Chapter III, Part 327, Rules and Regulations Governing Public Use of Water Resources Development Projects Administered by the Chief of Engineers.
9. AR 190-29, Misdemeanors and Uniform Violation Notices Referred to US Magistrate or District Courts and USACE Suppl. 1.
10. AR 190-40, Serious Incident Report.
11. USACE Suppl. 1 to AR 640-3, Personnel Identification Cards, Tags and Badges.
12. ER 56-2-1, Administrative Vehicles Management - Civil Works.
13. ER 1130-2-400, Management of Natural Resources and Outdoor Recreation at Civil Works Water Resources Projects.
14. ER 1130-2-404, Recreation Use Fees.
15. ER 1130-2-406, Shoreline Management at Civil Works Projects.
16. ER 1130-2-414, Natural Resources Management System.

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17. ER 1130-2-418, Cooperative Agreements for Law Enforcement Service at Civil Works Water Resource Projects.

18. ER 1130-2-442, Uniforms for Natural Resources Management Staff.

19. ER 1165-2-400, Water Resource Policies and Authorities.

20. EM 1110-1-400, Recreation Planning and Design Criteria.

21. EP 310-1-6, Graphic Standards Manual, A and B.

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APPENDIX B

CERTIFICATE OF AUTHORITY  
TO ISSUE CITATIONS

BADGE NUMBER: \_\_\_\_\_

\_\_\_\_\_  
DATE

By authority of Section 234, Flood Control Act of 1970 (Title II, P.L. 91-611), I hereby certify that \_\_\_\_\_ is authorized to issue citations for violations of Title 36, CFR, Chapter III, for the purpose of executing the provisions of said law.

This authority is derived from the "Designation of Persons Authorized to Issue Citations" made by the Chief of Engineers pursuant to said Section 234, and from my certification as to this employee in accordance with said "Designation":

(a) The employee's principal duties relate to recreation or natural resources management (which may include, but are not limited to, duties as a ranger or resources manager).

(b) The employee needs citation authority in order to perform his/her duties in the most efficient manner.

(c) The employee has the aptitude, temperament, personality, experience, and ability to exercise citation authority properly.

(d) The employee has been adequately trained in citation procedures.

\*Expiration date: \_\_\_\_\_

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\_\_\_\_\_  
(Signature of District Commander)

\*Note. The date for permanent employees may be indefinite; for temporary employees the date will not exceed the term of appointment.

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## APPENDIX C

### VISITOR ASSISTANCE TRAINING FOR TEMPORARY EMPLOYEES

1. References. See paragraphs 13b, 14 and 15. of this regulation.
2. Policy. In order to provide a consistent message through all phases of the visitor assistance training, divisions are authorized to conduct annual visitor assistance/citation training courses for temporary, seasonal and new natural resources employees who have been selected to receive citation authority. Division courses will incorporate the core curriculum outlined below and will be submitted for review to HQUSACE (CECW-ON), through the Visitor Assistance Program lead instructor.
3. Authority. Upon completion of the approved division training, permanent and seasonal employees may be granted citation authority for up to 2 years, at which time they must take the HQUSACE PROSPECT course. Temporary employees cannot be granted citation authority in their first summer of work. Upon completion of one season's work and the approved division course, returning temporary employees may be granted citation authority. Temporary employees must be certified to meet the same criteria for demeanor, aptitude, personality and ability to issue citations as do permanent and seasonal employees.
4. Core Curriculum.
  - a. Subjects required to be covered in the 24-hour core curriculum of the course include:
    - (1) USACE Visitor Assistance policy statement, to be given by a USACE V.A.P. course instructor (travel and per diem to be paid by the host district/division)
    - (2) Ranger authority, liability, image, and uniforms
    - (3) ER 1130-2-420, ER 1130-2-400, and Title 18
    - (4) Title 36
    - (5) Conflict management
    - (6) Personal protection
    - (7) Communications, verbal judo, and other non-aggressive techniques

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- (8) Fact finding
- (9) Verbal or written warnings and citations
- (10) Magistrate system, U. S. Attorney, and court appearances
- (11) Other violations to include state and local laws, ARPA, ERGO

b. Subjects to be covered with local emphasis at the instructor's predetermined length:

- (1) Water safety
- (2) Emergency situations
- (3) Patrol techniques
- (4) Report writing
- (5) Visitors under the influence

5. Manual. A manual outlining the course will be provided and should be reviewed every five years. Videos to assist with specific subject areas will accompany the course manual.

6. Videos.

a. The previously distributed 1985 videos from HQUSACE Visitor Assistance Course will be made available to District/Division instructors to highlight pertinent teaching points and enhance coverage of individual subjects.

b. The Chief of Engineer's video on guidelines for Visitor Assistance will be a part of the training.

c. Districts/Divisions may develop videos to instruct new employees on unique features of individual projects. Scripts of proposed videos will be approved by the V.A.P. lead instructor to ensure uniformity of visitor assistance courses nationwide.

7. Approval. Course outlines and/or lesson plans will be submitted to HQUSACE (CECW-ON), who will work through the V.A.P. lead instructor for approval. Courses that do not change from year to year need only be submitted once. Course dates should be submitted annually by 31 January, to allow PROSPECT instructors to schedule attendance at district or division courses.

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8. Target Audience.

a. Temporary employees.

b. Permanent and seasonal employees waiting to attend HQUSACE training who will have authority to issue written warnings or citations.

9. Refresher Course. Temporary employees must complete a refresher course every five years. Permanent and seasonal employees will complete the HQUSACE Visitor Assistance Course within two years of date of employment.

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APPENDIX D

CANCELLATION OF  
CERTIFICATE OF AUTHORITY  
TO ISSUE CITATIONS

\_\_\_\_\_  
DATE

The "Certificate of Authority to Issue Citations"

issued to \_\_\_\_\_  
(Name of Employee)

on \_\_\_\_\_, number: \_\_\_\_\_,

is hereby canceled.

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\_\_\_\_\_  
(Signature and Title of District Commander)

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## APPENDIX E

### ALTERNATIVE MANAGEMENT TECHNIQUES

#### 1. Physical Control Techniques.

a. Closing of areas. This includes the closing of areas at night, when capacities have been reached, during off season periods, campgrounds at appropriate hours, or areas where vandalism and rowdyism are frequently encountered.

b. Fencing or other barriers.

c. Managing appropriate use of area facilities, e.g., vehicles should be restricted to designated roads and parking facilities and camping to designated sites.

d. Use of entrance control stations.

e. Contract gate/park attendants. Volunteer campground hosts.

f. Security lights.

g. Use of mechanical and electrical surveillance systems.

h. Appropriate signing.

i. Prohibition of alcohol consumption, with appropriate local and district support.

j. Physical Security Surveys and Crime Prevention Surveys.

#### 2. Planning and Design Techniques.

a. Single entrances to areas.

b. Vandal resistant facilities.

c. Road design to control excessive speeds. When performing normal maintenance or during times of major renovation work, roads should be designed with an emphasis on safety.

d. Separation of user types, i.e., camping versus day use.

e. Handicapped facilities.

f. Lighting, or opening, of areas to facilitate visibility.

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- g. Providing overflow areas.
  - h. Establishing areas for special uses, such as off-road vehicle paths and trails.
  - i. Consolidate recreation areas.
  - j. Location of operation and maintenance facilities.
  - k. Informational bulletin boards at area entrances.
3. Surveillance Techniques.
- a. Computer data system.
  - b. Improved reporting systems on violations to enhance field investigations.
  - c. Use of authorized user surveys.
  - d. Inter and intra-agency data exchange and coordination on common problems and activities.
  - e. Expanded alternative surveillance techniques. The routine land surveillance activities should be supplemented with air and water inspections, as required.
  - f. Inter-governmental agency coordination on surveillance activities/s.
4. Public Involvement.
- a. Cooperative Law Enforcement Agreements.
  - b. Contingency plans.
  - c. Citizen committees.
  - d. Expanded Public Information programs.
  - e. Safety councils.
  - f. Shoreline/lake cleanup campaigns.
5. Project Plans.
- a. Ranger manuals.

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- b. Operational Management Plans.
  - c. Security plans.
  - d. Scheduling personnel to meet project needs.
  - e. Immediate vandalism repair and litter removal.
- 6. Employee Training and Professionalism.
  - 7. Standardize Vehicles.
  - 8. Service Contracts.
  - 9. Communications.

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**AUTHORIZED AND OPERATING PURPOSES  
OF CORPS OF ENGINEERS RESERVOIRS**

**July 1992**

**Department of the Army  
U. S. Army Corps of Engineers  
Washington D. C.**

**HQ AR001601**

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**AUTHORIZED AND OPERATING PURPOSES  
OF CORPS OF ENGINEERS RESERVOIRS**

**Introduction**

Section 311 of the Water Resources Development Act of 1990 (PL 101-640) directs the Secretary of the Army to "...conduct a study of the operations of reservoir projects which are under the jurisdiction of the Secretary --

- (1) to identify the purposes for which each such project is authorized; and
- (2) to identify the purposes for which each such project is being operated."

This report presents the information requested by the law. For each reservoir, information is provided about the purposes for which it is authorized, the laws granting authority, and the purposes for which water is being controlled by the Corps of Engineers. These data are arranged in table format for ease of reference and are presented in Appendix E. Appendix A lists all the public laws cited in the report together with the dates of enactment, statute numbers and popular or common name. All laws are as amended. Appendices B, C and D provide indexes to the projects alphabetically by state, alphabetically by project name, and by Corps of Engineers division and district office, respectively.

**General**

A total of 541 federally-owned reservoirs operated by the Corps of Engineers were studied and are reported herein. The criteria used in selecting a Corps water project for inclusion in this report were that it be either a dam and reservoir project or lock and dam project for which water control management is routinely required to control either water level or flow, or both. Excluded were other kinds of water control structures such as river diversion structures and pumping stations that do not routinely impound water. Also excluded are non-Corps projects for which the Corps prepares the water control plan for the purpose of either flood control or navigation under Section 7 of the Flood Control Act of 1944 and other public laws.

As used in this report the word "reservoir" includes the type of water project known as a lock and dam. A lock and dam is generally distinguished from a dam and reservoir project by its facility for passing waterway vessels and its relatively small water storage volume. It generally does not provide flood control storage space and is intended mainly to control river level, rather than river flow, for the purpose of navigation. Some Corps locks and dams serve purposes in addition to navigation. Given that locks and dams are water control facilities that require operation management to meet one or more purposes, they are similar to reservoirs and thus are included in this report.

The study reveals that most purposes served by Corps reservoirs fall into eight general categories: flood control, navigation, hydroelectric power, irrigation, municipal/industrial water supply, water quality, fish/wildlife, and recreation. Each general category represents a variety of purposes that appear in the authorizing laws, for example, the fish/wildlife category includes such purposes, among others, as sport fishing and wildlife, fisheries habitat, and wildlife preservation. Some purposes authorized by Congress that do not conveniently fit into one of the eight general categories listed above include: sediment control, low flow augmentation (without stipulation as to specific purpose), drainage and water control, saltwater intrusion, groundwater recharge, water conservation (without stipulation), and preservation of the Everglades National Park. Purposes which are not categorized are listed in Appendix E with the specific projects for which they were authorized.

### **Authorized Purposes**

The purposes that a reservoir is to serve are given in laws that may be grouped into three categories: (1) laws initially authorizing construction of the project; (2) laws specific to the project passed subsequent to construction; and (3) laws that apply generally to all Corps reservoirs. In the latter category, the following laws have the greatest relevance to Corps reservoirs:

PL 78-534, Flood Control Act of 1944 (provides authority to add recreation as a purpose and to contract for use of surplus water for domestic purposes)

PL 85-500, Title III, Water Supply Act of 1958 (provides authority to include storage for municipal and industrial water supply)

PL 85-624, Fish and Wildlife Coordination Act of 1958 (provides authority to modify projects to conserve fish and wildlife)

PL 92-500, Federal Water Pollution Control Act Amendments of 1972 (establishes goal to restore and maintain the quality of the Nation's waters)

PL 93-205, Endangered Species Act of 1973 (provides authority for operating projects to protect threatened or endangered fish/wildlife)

Specific project authorizations (categories 1 and 2, above) are found in a variety of public laws but most commonly in a series of River and Harbor and Flood Control acts passed by Congress since 1870. Recent project authorizations have been contained in a series of Water Resources Development acts. Commonly, the purposes of a reservoir are not identified directly in the authorizing law but instead are contained in reports of the Secretary of the Army, Chief of Engineers, Board of Engineers for Rivers and Harbors, or others referred to in the law. Purposes may be added or deleted by laws passed subsequent to project construction.

Operating purpose, as used in this report, refers to a reservoir purpose for which water control management decisions are made, i.e., either the volume of water retained in storage, the water surface elevation, or the rate of discharge is regulated to serve the stated purpose.

As a general rule, a reservoir is operated for its authorized purposes. There are, however, exceptions to this rule. For example, in some instances, a study during the project's post-authorization phase may show that it is not economical to operate for a particular purpose at that time and, therefore, facilities necessary to achieve that purpose, such as turbines and generators, have not been provided. In other instances, the need to operate a project to satisfy a particular purpose may no longer exist because of changed conditions in the river basin. In such cases, a project may not presently be operated for such purposes. Additionally, in certain other cases, it may not be necessary to regulate the flow of water for a particular purpose because that purpose is served incidentally by the regulation of the reservoir for its other purposes. When a reservoir is not being operated for an authorized purpose, an explanatory note has been supplied with that project's listing in Appendix E.

There are, at times, instances when physical and hydrological circumstances, such as low water conditions, may require consideration to make changes in a reservoir's water control plan. For example, the existence of municipal water supply or power plant intakes along the downstream riverbank may create the need, during times of declining river levels, to keep those intakes accessible to water for the benefit of public health and safety. An explanatory note accompanies a reservoir's listing in Appendix E when such a circumstance exists.

Under the provisions of Federal Power Act, as amended, the Federal Energy Regulatory Commission (FERC) has authority to license the development of hydroelectric generating facilities by non-Federal entities at Corps of Engineers projects. The Corps generally makes no change to the water control plan in order to accommodate the non-Federal facility; electricity is generated using the water released by the Corps for the reservoir's authorized purposes. Because non-Federal hydroelectric power is an incidental benefit and the authorizing law applies not to the Army but to another agency (FERC), it is neither listed as an operating purpose nor as an authorized purpose in Appendix E. In the few instances where the existence of a non-Federal hydroelectric power facility influences the water control operation of the reservoir the listing for that project is so annotated.

### **Incidental Benefits**

Almost all Corps of Engineers reservoirs produce benefits in addition to those for which they are authorized. Such benefits are derived incidentally to the regulation of the reservoirs for their authorized purposes. For example, augmentation of low flows for the authorized purpose of fish and wildlife conservation can, and most often does,

incidentally benefit the quality of water in the stream and vice versa. Similarly, the large reductions in the magnitude of river flow produced by regulating reservoirs to control floods reduces significantly the potential for streambank erosion. While such beneficial effects of reservoir water control management are important, incidental benefits are not the subject of this study and thus are not listed in this report.

## **Acknowledgments**

The information provided for each reservoir documented in this report was prepared by the staff of the Corps district and division office responsible for the management of the reservoir. Research into the authorization history of each project was contributed by the engineering, operations, planning, program management and legal counsel elements of each office under coordination by the water control manager. The Hydrologic Engineering Center, Corps of Engineers, developed a database to assemble and manage the information, reviewed the cited laws and references and generated the appendices of the report. William Johnson was project engineer. The report was prepared under the general direction of Richard DiBuono, Hydraulics and Hydrology Branch, Headquarters, U. S. Army Corps of Engineers.

## **Second Printing**

This is the second printing of this document and was made in November 1994. Revisions were made to some of the information on the following projects: James W. Trimble Lock and Dam - John Paul Hammerschmidt Lake; Joe Hardin Lock and Dam; Colebrook River Lake; Robert C. Byrd Locks and Dam; Virgil B. Bennington Lake; Edward MacDowell Dam; Francis E. Walter Reservoir; Central and Southern Florida (C&SF) Project; John Hollis Bankhead Lock and Dam; Holt Lock and Dam; Fort Supply Lake; Hugo Lake; Hulah Lake.

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## APPENDIX A

## PUBLIC LAWS CITED

[illegible]

<u>PUBLIC LAW</u>	<u>DATE</u>	<u>STATUTE</u>	<u>POPULAR OR COMMON NAME</u>
PL 101-640	November 28, 1990	104 Stat 4604	Water Resource Development Act of 1990
PL 101-229	December 13, 1989	103 Stat 1946	Everglades National Park Protection and Expansion Act of 1989
PL 100-876	November 17, 1988	102 Stat 4013	Water Resources Development Act of 1988
PL 100-522	October 24, 1988	102 Stat 2604	Water Storage at Abiquiú Dam, New Mexico
PL 100-202	December 22, 1987	101 Stat 1329 -104	Energy and Water Development Appropriation Act of 1988 (Title I)
PL 99-862	November 17, 1986	100 Stat 4082	Water Resources Development Act of 1986
PL 99-88	August 15, 1985	99 Stat 293	Supplemental Appropriations Act of 1985, Chapter IV - Department of Defense - Civil
PL 98-396	August 22, 1984	98 Stat 1369	Second Supplemental Appropriations Act, 1984; General Provisions (Title III)
PL 98-181	November 30, 1983	97 Stat 1153	Supplemental Appropriations Act of 1983, General Provisions, Sections 1300-1306
PL 98-63	July 30, 1983	97 Stat 301	Supplemental Appropriations Act of 1983, Chapter IV - Department of Defense - Civil
PL 97-304	October 13, 1982	96 Stat 1411	Endangered Species Act Amendments of 1982
PL 97-140	December 29, 1981	95 Stat 1717	Benbrook Lake, Texas-Water Supply Storage
PL 97-88	December 04, 1981	95 Stat 1135	Energy and Water Development Appropriations Act, 1982
PL 96-159	December 28, 1979	93 Stat 1225	Endangered Species Act of 1973, Appropriation and Authorization
PL 95-632	November 10, 1978	92 Stat 3751	Endangered Species Act Amendments of 1978
PL 95-502	October 21, 1978	92 Stat 1693	Replacement of Locks and Dam 26; Upper Mississippi River System Comprehensive Plan (Title I); Inland Waterways Revenue Act of 1978 (Title II)
PL 95-217	December 27, 1977	91 Stat 1566	Clean Water Act of 1977
PL 95-26	May 04, 1977	91 Stat 81	Supplemental Appropriations Act, 1977
PL 94-587	October 22, 1976	90 Stat 2917	Water Resources Development Act of 1976
PL 94-423	September 28, 1976	90 Stat 1324	Reclamation Authorization Act of 1976

<u>PUBLIC LAW</u>	<u>DATE</u>	<u>STATUTE</u>	<u>POPULAR OR COMMON NAME</u>
PL 93-251	March 07, 1974	88 Stat 12	Water Resources Development; River Basin Monetary Authorization
PL 93-205	December 28, 1973	87 Stat 884	Endangered Species Act of 1973
PL 92-500	October 18, 1972	88 Stat 816	Federal Water Pollution Control Act Amendments of 1972
PL 92-222	December 23, 1971	85 Stat 798	River Basin Monetary Authorization Act of 1971
PL 91-611	December 31, 1970	84 Stat 1818; 84 Stat 1824	River and Harbor Act of 1970 (Title I); Flood Control Act of 1970 (Title II)
PL 91-282	June 19, 1970	84 Stat 310	River Basin Monetary Authorization and Miscellaneous Civil Works Amendment Act of 1970
PL 90-483	August 13, 1968	82 Stat 731; 82 Stat 739	River and Harbor Act of 1968 (Title I); Flood Control Act of 1968 (Title II)
PL 89-789	November 07, 1966	80 Stat 1405; 80 Stat 1418	River and Harbor Act of 1966 (Title I); Flood Control Act of 1966 (Title II)
PL 89-689	October 15, 1966	80 Stat 1002	Public Works Appropriations Act of 1967
PL 89-298	October 27, 1965	79 Stat 1073; 79 Stat 1089	Flood Control Act of 1965 (Title II); River and Harbor Act of 1965 (Title III)
PL 89-72	July 09, 1965	79 Stat 213	Federal Water Project Recreation Act
PL 88-442	August 14, 1964	78 Stat 446	Missouri River Basin
PL 88-293	March 26, 1964	78 Stat 171	Cochiti Reservoir - Water
PL 88-253	December 30, 1963	77 Stat 840	River Basins, Flood Control
PL 87-874	October 23, 1962	76 Stat 1173; 78 Stat 1180	River and Harbor Act of 1962 (Title I); Flood Control Act of 1962 (Title II)
PL 87-483	June 13, 1962	76 Stat 96	Navajo Indian Irrigation Project; San Juan-Chama Project
PL 87-86	July 20, 1961	75 Stat 204	Federal Water Pollution Control Act of 1961
PL 86-645	July 14, 1960	74 Stat 480; 74 Stat 488	River and Harbor Act of 1960 (Title I); Flood Control Act of 1960 (Title II)
PL 86-399	March 31, 1960	74 Stat 12	Bardwell Reservoir, Texas
PL 85-824	August 12, 1958	72 Stat 583	Fish and Wildlife Coordination Act

<u>PUBLIC LAW</u>	<u>DATE</u>	<u>STATUTE</u>	<u>POPULAR OR COMMON NAME</u>
PL 85-500	July 03, 1958	72 Stat 297; 72 Stat 305; 72 Stat 319	River and Harbor Act of 1958 (Title I); Flood Control Act of 1958 (Title II); Water Supply Act of 1958 (Title III)
PL 85-230	August 30, 1957	71 Stat 513	Whitney Reservoir, Texas
PL 85-148	August 14, 1957	71 Stat 368	Sherman, Texas Water Supply
PL 84-843	July 30, 1958	70 Stat 727	Bartlesville, Oklahoma (Water Supply)
PL 84-782	July 24, 1958	70 Stat 832	Benbrook Dam, Texas (Water Supply)
PL 84-505	May 02, 1956	70 Stat 128	Missouri River Basin Projects
PL 84-218	August 03, 1955	89 Stat 449	Red River Basin
PL 84-160	July 15, 1955	69 Stat 323	Ferrells Bridge Reservoir, Texas
PL 83-780	September 03, 1954	68 Stat 1248; 68 Stat 1258	River and Harbor Act of 1954 (Title I); Flood Control Act of 1954 (Title II)
PL 83-273	August 14, 1953	87 Stat 583	Water Storage Space-Denison, Texas
PL 82-398	June 19, 1952	68 Stat 138	Cheatham Dam, Tennessee
PL 81-518	May 17, 1950	64 Stat 163; 64 Stat 170	River and Harbor Act of 1950 (Title I); Flood Control Act of 1950 (Title II)
PL 80-858	June 30, 1948	82 Stat 1171; 62 Stat 1175	River and Harbor Act of 1948 (Title I); Flood Control Act of 1948 (Title II)
PL 79-732	August 14, 1946	60 Stat 1080	Conservation of Wildlife Act
PL 79-525	July 24, 1948	80 Stat 834	River and Harbor Act of 1948
PL 79-528	July 24, 1946	60 Stat 641	Flood Control Act of 1946
PL 79-14	March 02, 1945	59 Stat 10	River and Harbor Act of 1945
PL 78-534	December 22, 1944	58 Stat 887	Flood Control Act of 1944
PL 77-675	July 23, 1942	56 Stat 703	Intercoastal Waterway-Enlargement and Extension
PL 77-228	August 18, 1941	55 Stat 838	Flood Control Act of 1941
PL 76-868	October 17, 1940	54 Stat 1198	River and Harbor Act of 1940
PL 76-398	August 11, 1939	53 Stat 1414	Flood Control Act of 1939
PL 75-761	June 28, 1938	52 Stat 1215	Flood Control Act of 1938



<u>PUBLIC LAW</u>	<u>DATE</u>	<u>STATUTE</u>	<u>POPULAR OR COMMON NAME</u>
PL 75-685	June 20, 1938	52 Stat 802	River and Harbor Act of 1938
PL 75-529	May 18, 1938	52 Stat 403	Fort Peck Project
PL 75-406	August 28, 1937	50 Stat 876	Flood Control Act of 1938, Amendments
PL 75-392	August 26, 1937	50 Stat 844	River and Harbor Act of 1937
PL 75-329	August 20, 1937	50 Stat 731	Bonneville Project
PL 74-738	June 22, 1938	49 Stat 1570	Flood Control Act of 1938
PL 74-878	June 15, 1936	49 Stat 1508	Flood Control on the Mississippi River
PL 74-409	August 30, 1935	49 Stat 1028	River and Harbor Act of 1935
PL 73-67	June 16, 1933	48 Stat 195	National Industrial Recovery Act-Public Works And Construction Projects (Title II)
PR 72-10	February 24, 1932	47 Stat 55	Public Resolution 10, 72nd Congress. Mississippi River Improvements
PL 71-520	July 03, 1930	46 Stat 918	River and Harbor Act of 1930
PL 70-391	May 15, 1928	45 Stat 534	Flood Control on the Mississippi River
PL 89-580	January 21, 1927	44 Stat 1010	River and Harbor Act of 1927
PL 87-362	September 22, 1922	42 Stat 1038	River and Harbor Act of 1922
PL 85-200	July 18, 1918	40 Stat 904	River and Harbor Act of 1918
PL 64-188	July 27, 1916	39 Stat 391	River and Harbor Act of 1916
PL 62-241	July 25, 1912	37 Stat 201	River and Harbor Act of 1912
PL 61-284	June 25, 1910	36 Stat 630	River and Harbor Act of 1910
PL 60-317	March 03, 1909	35 Stat 815	River and Harbor Act of 1909
PL 58-215	March 03, 1905	33 Stat 1117	River and Harbor Act of 1905
PL 57-154	June 13, 1902	32 Stat 331	River and Harbor Act of 1902
RHA 1894	August 18, 1894	28 Stat 338	River and Harbor Act of 1894
RHA 1890	September 19, 1890	28 Stat 428	River and Harbor Act of 1890
RHA 1888	August 11, 1888	25 Stat 400	River and Harbor Act of 1888
RHA 1884	July 05, 1884	23 Stat 133	River and Harbor Act of 1884

<u>PUBLIC LAW</u>	<u>DATE</u>	<u>STATUTE</u>	<u>POPULAR OR COMMON NAME</u>
RHA 1882	August 02, 1882	22 Stat 191	River and Harbor Act of 1882
RHA 1880	June 14, 1880	21 Stat 180	River and Harbor Act of 1880
RHA 1879	March 03, 1879	20 Stat 363	River and Harbor Act of 1879
RHA 1873	March 03, 1873	17 Stat 560	River and Harbor Act of 1873
RHA 1872	June 10, 1872	17 Stat 370	River and Harbor Act of 1872
RHA 1870	July 11, 1870	16 Stat 223	River and Harbor Act of 1870

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## PROJECTS BY STATE

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RACINE LOCKS AND DAM	Huntington	E-66
ROBERT C. BYRD LOCKS AND DAM	Huntington	E-83
STONEWALL JACKSON LAKE	Pittsburgh	E-87
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TYGART RIVER LAKE	Pittsburgh	E-87
WILLOW ISLAND LOCKS AND DAM	Huntington	E-68
WINFIELD LOCKS AND DAM	Huntington	E-68

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DEPERE LOCK AND DAM	Detroit	E-27
EAU GALLE RIVER LAKE	St. Paul	E-35
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LITTLE KAUKAUNA LOCK AND DAM	Detroit	E-28
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LOCK AND DAM NO. 5 - MISSISSIPPI RIVER	St. Paul	E-38
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LOWER APPLETON LOCKS AND DAM	Detroit	E-28
MENASHA LOCK AND DAM - LAKE WINNEBAGO	Detroit	E-28
RAPIDE CROCHE LOCK AND DAM	Detroit	E-29
UPPER APPLETON LOCKS AND DAM	Detroit	E-29

**APPENDIX C**

**PROJECTS ALPHABETICAL BY NAME**

**HQ AR001630**

## PROJECTS ALPHABETICAL BY NAME

<u>PROJECT NAME</u>	<u>STATE</u>	<u>CORPS OFFICE</u>	<u>PAGE</u>
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ABIQUIU DAM	New Mexico	Albuquerque	E-111
ADDICKS DAM	Texas	Galveston	E-120
ALAMO LAKE	Arizona	Los Angeles	E-108
ALBENI FALLS DAM	Idaho	Seattle	E-54
ALLATOONA LAKE	Georgia	Mobile	E-93
ALMOND LAKE	New York	Baltimore	E-23
ALUM CREEK LAKE	Ohio	Huntington	E-59
ALVIN R. BUSH DAM	Pennsylvania	Baltimore	E-23
APPLEGATE LAKE	Oregon	Portland	E-49
AQUILLA LAKE	Texas	Fort Worth	E-113
ARCADIA LAKE	Oklahoma	Tulsa	E-129
ARKABUTLA LAKE	Mississippi	Vicksburg	E-1
ARKPORT DAM	New York	Baltimore	E-23
ARMISTEAD I. SELDEN LOCK AND DAM - WARRIOR LAKE	Alabama	Mobile	E-93
ARTHUR V. ORMAND LOCK AND DAM AND WINTHROP ROCKERFELLER LAKE	Arkansas	Little Rock	E-120
ATWOOD LAKE	Ohio	Huntington	E-59
AYLESWORTH CREEK LAKE	Pennsylvania	Baltimore	E-23
B. EVERETT JORDAN DAM AND LAKE	North Carolina	Wilmington	E-102
BALL MOUNTAIN LAKE	Vermont	New England	E-43
BARDWELL LAKE	Texas	Fort Worth	E-113
BARKER DAM	Texas	Galveston	E-120
BARKLEY DAM AND LAKE BARKLEY	Kentucky	Nashville	E-78
BARRE FALLS DAM	Massachusetts	New England	E-43
BARREN RIVER LAKE	Kentucky	Louisville	E-68
BAY SPRINGS LOCK AND DAM	Mississippi	Mobile	E-94
BEACH CITY LAKE	Ohio	Huntington	E-59
BEAR CREEK DAM AND LAKE	Colorado	Omaha	E-13
BEAR DAM (MERCED COUNTY STREAM GROUP)	California	Sacramento	E-104
BEAVER LAKE	Arkansas	Little Rock	E-121
BEECH FORK LAKE	West Virginia	Huntington	E-59
BELLEVILLE LOCKS AND DAM	West Virginia Ohio	Huntington	E-60
BELTON LAKE	Texas	Fort Worth	E-113
BELTZVILLE LAKE	Pennsylvania	Philadelphia	E-25
BENBROOK LAKE	Texas	Fort Worth	E-114
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BIG CLIFF DAM	Oregon	Portland	E-49
BIG STONE LAKE - WHETSTONE RIVER (HIGHWAY 75 DAM)	Minnesota	St. Paul	E-35
BIRCH HILL DAM	Massachusetts	New England	E-43
BIRCH LAKE	Oklahoma	Tulsa	E-129
BLACK BUTTE LAKE	California	Sacramento	E-104
BLACK ROCK LAKE	Connecticut	New England	E-43
BLACKWATER DAM	New Hampshire	New England	E-43
BLAKELY MOUNTAIN DAM - LAKE OUACHITA	Arkansas	Vicksburg	E-1
BLUE MARSH LAKE	Pennsylvania	Philadelphia	E-26
BLUE MOUNTAIN LAKE	Arkansas	Little Rock	E-121

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BLUESTONE LAKE	West Virginia	Huntington	E-60
BODCAU LAKE	Louisiana	Vicksburg	E-1
BOLIVAR DAM	Ohio	Huntington	E-60
BONNEVILLE LOCK AND DAM	Oregon Washington	Portland	E-50
BOWMAN-HALEY DAM AND LAKE	North Dakota	Omaha	E-14
BRANDON ROAD LOCK AND DAM	Illinois	Rock Island	E-29
BREA DAM (SANTA ANA RIVER BASIN)	California	Los Angeles	E-107
BROKEN BOW LAKE	Oklahoma	Tulsa	E-129
BROOKVILLE LAKE	Indiana	Louisville	E-69
BUCHANAN DAM - H.V. EASTMAN LAKE	California	Sacramento	E-104
BUCKHORN LAKE	Kentucky	Louisville	E-69
BUFFUMVILLE LAKE	Massachusetts	New England	E-44
BUFORD DAM - LAKE SIDNEY LANIER	Georgia	Mobile	E-94
BULL HOOK - SCOTT COULEE DAMS	Montana	Omaha	E-14
BULL SHOALS LAKE	Arkansas	Little Rock	E-121
BURNS DAM (MERCED COUNTY STREAM GROUP)	California	Sacramento	E-104
BURNSVILLE LAKE	West Virginia	Huntington	E-61
CADDO LAKE	Louisiana	Vicksburg	E-1
CAESAR CREEK LAKE	Ohio	Louisville	E-69
CAGLES MILL LAKE	Indiana	Louisville	E-69
CANNELTON LOCKS AND DAM	Kentucky Indiana	Louisville	E-69
CANTON LAKE	Oklahoma	Tulsa	E-129
CANYON LAKE	Texas	Fort Worth	E-114
CARBON CANYON DAM (SANTA ANA RIVER BASIN)	California	Los Angeles	E-107
CARLYLE LAKE	Illinois	St. Louis	E-5
CARR FORK LAKE	Kentucky	Louisville	E-69
CARTERS DAM AND LAKE	Georgia	Mobile	E-94
CAVE RUN LAKE	Kentucky	Louisville	E-70
CECIL M. HARDEN LAKE	Indiana	Louisville	E-70
CEDAR CANYON DAM	South Dakota	Omaha	E-15
CEDARS LOCK AND DAM	Wisconsin	Detroit	E-27
CENTER HILL LAKE	Tennessee	Nashville	E-78
CENTRAL AND SOUTHERN FLORIDA (C&SF) PROJECT	Florida	Jacksonville	E-89
CERRILLOS DAM AND RESERVOIR	Puerto Rico	Jacksonville	E-90
CHARLES MILL LAKE	Ohio	Huntington	E-81
CHATFIELD DAM AND LAKE	Colorado	Omaha	E-15
CHEATHAM LOCK AND DAM	Tennessee	Nashville	E-78
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CHERRY CREEK DAM AND LAKE	Colorado	Omaha	E-15
CHICAGO HARBOR LOCK AND CHICAGO RIVER	Illinois	Chicago	E-27
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CHIEF JOSEPH DAM - RUFUS WOODS LAKE	Washington	Seattle	E-55
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CLAIBORNE LOCK AND DAM	Alabama	Mobile	E-95
CLARENCE CANNON DAM - MARK TWAIN LAKE	Missouri	St. Louis	E-5
CLARENCE J. BROWN DAM AND RESERVOIR	Ohio	Louisville	E-70
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COFFEEVILLE LOCK AND DAM	Alabama	Mobile	E-95
COLDBROOK DAM AND LAKE	South Dakota	Omaha	E-15
COLEBROOK RIVER LAKE	Connecticut Massachusetts	New England	E-44
COLUMBIA LOCK AND DAM	Louisiana	Vicksburg	E-2
COLUMBUS LOCK AND DAM	Mississippi	Mobile	E-95
CONANT BROOK DAM	Massachusetts	New England	E-44
CONCHAS LAKE	New Mexico	Albuquerque	E-111
CONEMAUGH RIVER LAKE	Pennsylvania	Pittsburgh	E-81
COOPER LAKE	Texas	Fort Worth	E-114
COPAN LAKE	Oklahoma	Tulsa	E-130
CORALVILLE LAKE	Iowa	Rock Island	E-29
CORDELL HULL LOCK AND DAM	Tennessee	Nashville	E-79
COTTAGE GROVE LAKE	Oregon	Portland	E-50
COTTONWOOD SPRINGS DAM AND LAKE	South Dakota	Omaha	E-15
COUGAR LAKE	Oregon	Portland	E-50
COUNCIL GROVE LAKE	Kansas	Tulsa	E-130
COWANESQUE LAKE	Pennsylvania	Baltimore	E-23
COYOTE VALLEY DAM - LAKE MENDOCINO	California	Sacramento	E-104
CPT. ANTHONY MELDAHL LOCKS AND DAM	Kentucky Ohio	Huntington	E-61
CROOKED CREEK LAKE	Pennsylvania	Pittsburgh	E-82
CURWENSVILLE LAKE	Pennsylvania	Baltimore	E-23
DALE HOLLOW LAKE	Tennessee	Nashville	E-79
DARDANELLE LOCK AND DAM	Arkansas	Little Rock	E-122
DASHIELDS LOCKS AND DAM	Pennsylvania	Pittsburgh	E-82
DAVID D. TERRY LOCK AND DAM	Arkansas	Little Rock	E-122
DEER CREEK LAKE	Ohio	Huntington	E-61
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DELAWARE LAKE	Ohio	Huntington	E-62
DEMOPOLIS LOCK AND DAM	Alabama	Mobile	E-95
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DEPERE LOCK AND DAM	Wisconsin	Detroit	E-27
DEQUEEN LAKE	Arkansas	Little Rock	E-123
DETROIT LAKE	Oregon	Portland	E-51
DEWEY LAKE	Kentucky	Huntington	E-62
DEXTER DAM	Oregon	Portland	E-51
DIERKS LAKE	Arkansas	Little Rock	E-123
DILLON LAKE	Ohio	Huntington	E-62
DORENA LAKE	Oregon	Portland	E-51
DOVER DAM	Ohio	Huntington	E-62
DRESDEN ISLAND LOCK AND DAM	Illinois	Rock Island	E-30
DRY CREEK (WARM SPRINGS) LAKE AND CHANNEL	California	Sacramento	E-106
DWORSHAK DAM AND RESERVOIR	Idaho	Walla Walla	E-56
EAST BRANCH CLARION RIVER LAKE	Pennsylvania	Pittsburgh	E-82
EAST BRIMFIELD LAKE	Massachusetts	New England	E-44
EAST LYNN LAKE	West Virginia	Huntington	E-62
EAST SIDNEY LAKE	New York	Baltimore	E-24
EAU GALLE RIVER LAKE	Wisconsin	St. Paul	E-35
EDWARD MACDOWELL DAM	New Hampshire	New England	E-44

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EMMITT SANDERS LOCK AND DAM	Arkansas	Little Rock	E-123
EMSWORTH LOCKS AND DAMS	Pennsylvania	Pittsburgh	E-82
ENID LAKE	Mississippi	Vicksburg	E-2
EUFAULA LAKE	Oklahoma	Tulsa	E-131
EVERETT LAKE	New Hampshire	New England	E-45
FALL CREEK LAKE	Oregon	Portland	E-51
FALL RIVER LAKE	Kansas	Tulsa	E-132
FALLS LAKE	North Carolina	Wilmington	E-102
FARMDALE DAM (FARM CREEK, IL)	Illinois	Rock Island	E-30
FARMINGTON DAM	California	Sacramento	E-105
FELSENTAL LOCK AND DAM	Arkansas	Vicksburg	E-3
FERN RIDGE LAKE	Oregon	Portland	E-52
FERRELL'S BRIDGE DAM - LAKE O' THE PINES	Texas	Fort Worth	E-115
FISHTRAP LAKE	Kentucky	Huntington	E-63
FONDULAC DAM (FARM CREEK, IL)	Illinois	Rock Island	E-30
FORT GIBSON LAKE	Oklahoma	Tulsa	E-132
FORT PECK DAM - FORT PECK LAKE	Montana	Omaha	E-16
FORT RANDALL DAM - LAKE FRANCIS CASE	South Dakota	Omaha	E-16
FORT SUPPLY LAKE	Oklahoma	Tulsa	E-132
FOSTER DAM	Oregon	Portland	E-52
FOSTER JOSEPH SAYERS DAM	Pennsylvania	Baltimore	E-24
FOUR RIVER BASINS (FRB) PROJECT	Florida	Jacksonville	E-90
FRANCIS E. WALTER RESERVOIR	Pennsylvania	Philadelphia	E-26
FRANKLIN FALLS DAM	New Hampshire	New England	E-45
FULLERTON DAM (SANTA ANA RIVER BASIN)	California	Los Angeles	E-107
GAINESVILLE LOCK AND DAM	Alabama	Mobile	E-96
GALISTEO DAM	New Mexico	Albuquerque	E-111
GARRISON DAM - LAKE SAKAKAWEA	North Dakota	Omaha	E-17
GATHRIGHT DAM AND LAKE MOOMAW	Virginia	Norfolk	E-25
GAVINS POINT DAM - LEWIS AND CLARK LAKE	South Dakota Nebraska	Omaha	E-17
GENERAL EDGAR JADWIN DAM AND RESERVOIR	Pennsylvania	Philadelphia	E-26
GEORGE W. ANDREWS LOCK AND DAM	Georgia Alabama	Mobile	E-96
GILLHAM LAKE	Arkansas	Little Rock	E-124
GRANGER DAM AND LAKE	Texas	Fort Worth	E-115
GRAPEVINE LAKE	Texas	Fort Worth	E-115
GRAYS LANDING LOCK AND DAM	Pennsylvania	Pittsburgh	E-82
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GREAT SALT PLAINS LAKE	Oklahoma	Tulsa	E-132
GREEN PETER LAKE	Oregon	Portland	E-52
GREEN RIVER LAKE	Kentucky	Louisville	E-70
GREENUP LOCKS AND DAM	Kentucky Ohio	Huntington	E-63
GREERS FERRY LAKE	Arkansas	Little Rock	E-124
GRENADA LAKE	Mississippi	Vicksburg	E-3
GULL LAKE DAM	Minnesota	St. Paul	E-35
H.K. THATCHER LOCK AND DAM	Arkansas	Vicksburg	E-3
HANCOCK BROOK LAKE	Connecticut	New England	E-45
HANNIBAL LOCKS AND DAM	West Virginia Ohio	Pittsburgh	E-82
HANSEN DAM (LOS ANGELES COUNTY DRAINAGE AREA)	California	Los Angeles	E-107

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HARRY S. TRUMAN DAM AND RESERVOIR	Missouri	Kansas City	E-9
HARTWELL DAM AND LAKE	South Carolina Georgia	Savannah	E-100
HEYBURN LAKE	Oklahoma	Tulsa	E-133
HIDDEN DAM - HENSLEY LAKE	California	Sacramento	E-105
HILDEBRAND LOCK AND DAM	West Virginia	Pittsburgh	E-83
HILLS CREEK LAKE	Oregon	Portland	E-53
HILLSDALE LAKE	Kansas	Kansas City	E-9
HODGES VILLAGE DAM	Massachusetts	New England	E-46
HOLT LOCK AND DAM	Alabama	Mobile	E-96
HOMME LAKE AND DAM	North Dakota	St. Paul	E-35
HOP BROOK LAKE	Connecticut	New England	E-45
HOPKINTON LAKE	New Hampshire	New England	E-45
HORDS CREEK LAKE	Texas	Fort Worth	E-115
HOWARD A. HANSON DAM	Washington	Seattle	E-55
HUGO LAKE	Oklahoma	Tulsa	E-133
HULAH LAKE	Oklahoma	Tulsa	E-133
HUNTINGTON LAKE	Indiana	Louisville	E-70
ICE HARBOR LOCK AND DAM - LAKE SACAJAWEA	Washington	Walla Walla	E-56
INGLIS LOCK AND DAM (CROSS FLORIDA BARGE CANAL PROJECT)	Florida	Jacksonville	E-91
ISABELLA LAKE	California	Sacramento	E-105
J. PERCY PRIEST DAM AND RESERVOIR	Tennessee	Nashville	E-79
J. STROM THURMOND DAM AND LAKE	Georgia South Carolina	Savannah	E-101
JAMES W. TRIMBLE LOCK AND DAM - JOHN PAUL HAMMERSCHMIDT LAKE	Arkansas	Little Rock	E-124
JEMEZ CANYON DAM	New Mexico	Albuquerque	E-112
JENNINGS RANDOLPH LAKE	Maryland West Virginia	Baltimore	E-24
JIM WOODRUFF LOCK AND DAM - LAKE SEMINOLE	Florida	Mobile	E-96
JOE HARDIN LOCK AND DAM	Arkansas	Little Rock	E-125
JOE POOL LAKE	Texas	Fort Worth	E-116
JOHN DAY LOCK AND DAM - LAKE UMATILLA	Oregon Washington	Portland	E-53
JOHN H. KERR DAM AND RESERVOIR	Virginia North Carolina	Wilmington	E-102
JOHN H. OVERTON LOCK AND DAM	Louisiana	Vicksburg	E-4
JOHN HOLLIS BANKHEAD LOCK AND DAM	Alabama	Mobile	E-97
JOHN MARTIN RESERVOIR	Colorado	Albuquerque	E-112
JOHN REDMOND DAM AND RESERVOIR	Kansas	Tulsa	E-133
JOHN W. FLANNAGAN DAM AND RESERVOIR	Virginia	Huntington	E-63
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KAUKAUNA LOCKS AND DAM	Wisconsin	Detroit	E-28
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KELLY ROAD DAM	Colorado	Omaha	E-18
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KINZUA DAM AND ALLEGHENY RESERVOIR	Pennsylvania	Pittsburgh	E-83
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LAC QUI PARLE LAKES (LAC QUI PARLE DAM)	Minnesota	St. Paul	E-96
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LAKE SHELBYVILLE	Illinois	St. Louis	E-6
LAKE TRAVERSE (RESERVATION CONTROL DAM)	Minnesota South Dakota	St. Paul	E-36
LAKE TRAVERSE (WHITE ROCK DAM)	Minnesota South Dakota	St. Paul	E-36
LAUREL RIVER LAKE	Kentucky	Nashville	E-80
LAVON LAKE	Texas	Fort Worth	E-116
LEECH LAKE DAM	Minnesota	St. Paul	E-37
LEESVILLE LAKE	Ohio	Huntington	E-64
LEWISVILLE LAKE	Texas	Fort Worth	E-116
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LITTLE CHUTE LOCKS AND DAM	Wisconsin	Detroit	E-28
LITTLE GOOSE LOCK AND DAM - LAKE BRYAN	Washington	Walla Walla	E-57
LITTLE KAUKAUNA LOCK AND DAM	Wisconsin	Detroit	E-28
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LOCK AND DAM NO. 1 - GREEN RIVER	Kentucky	Louisville	E-71
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LOCK AND DAM NO. 9 - MISSISSIPPI RIVER	Wisconsin Iowa	St. Paul	E-39
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LOCK B - TENNESSEE-TOMBIGBEE WATERWAY	Mississippi	Mobile	E-97
LOCK C - TENNESSEE-TOMBIGBEE WATERWAY	Mississippi	Mobile	E-98
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SALT CREEK DAM #9 - STAGECOACH LAKE	Nebraska	Omaha	E-20
SALT CREEK DAM #10 - YANKEE HILL LAKE	Nebraska	Omaha	E-20
SALT CREEK DAM #12 - CONESTOGA LAKE	Nebraska	Omaha	E-21
SALT CREEK DAM #13 - TWIN LAKE	Nebraska	Omaha	E-21
SALT CREEK DAM #14 - PAWNEE LAKE	Nebraska	Omaha	E-21
SALT CREEK DAM #17 - HOLMES LAKE PARK	Nebraska	Omaha	E-21
SALT CREEK DAM #18 - BRANCHED OAK LAKE	Nebraska	Omaha	E-21
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CALIFORNIA	CALIFORNIA	CALIFORNIA
COLORADO	COLORADO	COLORADO
CONNECTICUT	CONNECTICUT	CONNECTICUT
DELAWARE	DELAWARE	DELAWARE
FLORIDA	FLORIDA	FLORIDA
GEORGIA	GEORGIA	GEORGIA
HAWAII	HAWAII	HAWAII
ILLINOIS	ILLINOIS	ILLINOIS
INDIANA	INDIANA	INDIANA
IOWA	IOWA	IOWA
KANSAS	KANSAS	KANSAS
KENTUCKY	KENTUCKY	KENTUCKY
LOUISIANA	LOUISIANA	LOUISIANA
MAINE	MAINE	MAINE
MARYLAND	MARYLAND	MARYLAND
MASSACHUSETTS	MASSACHUSETTS	MASSACHUSETTS
MICHIGAN	MICHIGAN	MICHIGAN
MINNESOTA	MINNESOTA	MINNESOTA
MISSISSIPPI	MISSISSIPPI	MISSISSIPPI
MISSOURI	MISSOURI	MISSOURI
MONTANA	MONTANA	MONTANA
NEBRASKA	NEBRASKA	NEBRASKA
NEVADA	NEVADA	NEVADA
NEW HAMPSHIRE	NEW HAMPSHIRE	NEW HAMPSHIRE
NEW JERSEY	NEW JERSEY	NEW JERSEY
NEW YORK	NEW YORK	NEW YORK
NORTH CAROLINA	NORTH CAROLINA	NORTH CAROLINA
NORTH DAKOTA	NORTH DAKOTA	NORTH DAKOTA
OHIO	OHIO	OHIO
OKLAHOMA	OKLAHOMA	OKLAHOMA
OREGON	OREGON	OREGON
PENNSYLVANIA	PENNSYLVANIA	PENNSYLVANIA
RHODE ISLAND	RHODE ISLAND	RHODE ISLAND
SOUTH CAROLINA	SOUTH CAROLINA	SOUTH CAROLINA
SOUTH DAKOTA	SOUTH DAKOTA	SOUTH DAKOTA
TENNESSEE	TENNESSEE	TENNESSEE
TEXAS	TEXAS	TEXAS
UTAH	UTAH	UTAH
Vermont	Vermont	Vermont
WASHINGTON	WASHINGTON	WASHINGTON
WEST VIRGINIA	WEST VIRGINIA	WEST VIRGINIA
WISCONSIN	WISCONSIN	WISCONSIN
WYOMING	WYOMING	WYOMING

## PROJECTS BY CORPS OF ENGINEERS OFFICE

## Lower Mississippi Valley Division

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ENID LAKE	Mississippi	Vicksburg	E-2
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GRENADA LAKE	Mississippi	Vicksburg	E-3
H.K. THATCHER LOCK AND DAM	Arkansas	Vicksburg	E-3
JOHN H. OVERTON LOCK AND DAM	Louisiana	Vicksburg	E-4
JONESVILLE LOCK AND DAM	Louisiana	Vicksburg	E-4
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SARDIS DAM	Mississippi	Vicksburg	E-5
WALLACE LAKE	Louisiana	Vicksburg	E-5
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CLARENCE CANNON DAM - MARK TWAIN LAKE	Missouri	St. Louis	E-5
KASKASKIA RIVER LOCK AND DAM	Illinois	St. Louis	E-6
LAKE SHELBYVILLE	Illinois	St. Louis	E-6
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KANOPOLIS LAKE	Kansas	Kansas City	E-9
LONG BRANCH LAKE	Missouri	Kansas City	E-10
LONGVIEW LAKE	Missouri	Kansas City	E-10
MELVERN LAKE	Kansas	Kansas City	E-11
MILFORD LAKE	Kansas	Kansas City	E-11
PERRY LAKE	Kansas	Kansas City	E-11
POMME DE TERRE LAKE	Missouri	Kansas City	E-12
POMONA LAKE	Kansas	Kansas City	E-12
RATHBUN LAKE	Iowa	Kansas City	E-12
SMITHVILLE LAKE	Missouri	Kansas City	E-12

STOCKTON LAKE	Missouri	Kansas City	E-13
TUTTLE CREEK LAKE	Kansas	Kansas City	E-13
WILSON LAKE	Kansas	Kansas City	E-13
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BIG BEND DAM - LAKE SHARPE	South Dakota	Omaha	E-14
BOWMAN-HALEY DAM AND LAKE	North Dakota	Omaha	E-14
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CEDAR CANYON DAM	South Dakota	Omaha	E-15
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PAPILLION CREEK DAM #16 - STANDING BEAR LAKE	Nebraska	Omaha	E-19
PAPILLION CREEK DAM #18 - ZORINSKY LAKE	Nebraska	Omaha	E-19
PAPILLION CREEK DAM #20 - WEHRSPANN LAKE	Nebraska	Omaha	E-19
PIPESTEM DAM AND LAKE	North Dakota	Omaha	E-19
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SALT CREEK DAM #6 - WAGON TRAIN LAKE	Nebraska	Omaha	E-20
SALT CREEK DAM #9 - STAGECOACH LAKE	Nebraska	Omaha	E-20
SALT CREEK DAM #10 - YANKEE HILL LAKE	Nebraska	Omaha	E-20
SALT CREEK DAM #12 - CONESTOGA LAKE	Nebraska	Omaha	E-21
SALT CREEK DAM #13 - TWIN LAKE	Nebraska	Omaha	E-21
SALT CREEK DAM #14 - PAWNEE LAKE	Nebraska	Omaha	E-21
SALT CREEK DAM #17 - HOLMES LAKE PARK	Nebraska	Omaha	E-21
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FRANCIS E. WALTER RESERVOIR	Pennsylvania	Philadelphia	E-26
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LITTLE CHUTE LOCKS AND DAM	Wisconsin	Detroit	E-28
LITTLE KAUKAUNA LOCK AND DAM	Wisconsin	Detroit	E-28
LOWER APPLETON LOCKS AND DAM	Wisconsin	Detroit	E-28
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BENBROOK LAKE	Texas	Fort Worth	E-114
CANYON LAKE	Texas	Fort Worth	E-114
COOPER LAKE	Texas	Fort Worth	E-114
FERRELL'S BRIDGE DAM - LAKE O' THE PINES	Texas	Fort Worth	E-115
GRANGER DAM AND LAKE	Texas	Fort Worth	E-115
GRAPEVINE LAKE	Texas	Fort Worth	E-115
HORDS CREEK LAKE	Texas	Fort Worth	E-115
JOE POOL LAKE	Texas	Fort Worth	E-116
LAVON LAKE	Texas	Fort Worth	E-116
LEWISVILLE LAKE	Texas	Fort Worth	E-116

NAVARRO MILLS LAKE	Texas	Fort Worth	E-117
NORTH SAN GABRIEL DAM - GEORGETOWN LAKE	Texas	Fort Worth	E-117
O. C. FISHER DAM AND LAKE	Texas	Fort Worth	E-117
PROCTOR LAKE	Texas	Fort Worth	E-117
RAY ROBERTS LAKE	Texas	Fort Worth	E-118
SAM RAYBURN DAM AND RESERVOIR	Texas	Fort Worth	E-118
SOMERVILLE LAKE	Texas	Fort Worth	E-118
STILLHOUSE HOLLOW LAKE	Texas	Fort Worth	E-118
TOWN BLUFF DAM - B.A. STEINHAGEN LAKE	Texas	Fort Worth	E-119
WACO LAKE	Texas	Fort Worth	E-119
WHITNEY LAKE	Texas	Fort Worth	E-119
WRIGHT PATMAN DAM AND LAKE	Texas	Fort Worth	E-120
ADDICKS DAM	Texas	Galveston	E-120
BARKER DAM	Texas	Galveston	E-120
ARTHUR V. ORMAND LOCK AND DAM AND WINTHROP ROCKERFELLER LAKE	Arkansas	Little Rock	E-120
BEAVER LAKE	Arkansas	Little Rock	E-121
BLUE MOUNTAIN LAKE	Arkansas	Little Rock	E-121
BULL SHOALS LAKE	Arkansas	Little Rock	E-121
CLEARWATER LAKE	Missouri	Little Rock	E-121
DARDANELLE LOCK AND DAM	Arkansas	Little Rock	E-122
DAVID D. TERRY LOCK AND DAM	Arkansas	Little Rock	E-122
DEQUEEN LAKE	Arkansas	Little Rock	E-123
DIERKS LAKE	Arkansas	Little Rock	E-123
EMMITT SANDERS LOCK AND DAM	Arkansas	Little Rock	E-123
GILLHAM LAKE	Arkansas	Little Rock	E-124
GREERS FERRY LAKE	Arkansas	Little Rock	E-124
JAMES W. TRIMBLE LOCK AND DAM - JOHN PAUL HAMMERSCHMIDT LAKE	Arkansas	Little Rock	E-124
JOE HARDIN LOCK AND DAM	Arkansas	Little Rock	E-125
LOCK AND DAM NO. 5 - ARKANSAS RIVER	Arkansas	Little Rock	E-125
MILLWOOD LAKE	Arkansas	Little Rock	E-125
MURRAY LOCK AND DAM	Arkansas	Little Rock	E-126
NIMROD LAKE	Arkansas	Little Rock	E-126
NORFORK LAKE	Arkansas	Little Rock	E-126
NORRELL LOCK AND DAM	Arkansas	Little Rock	E-127
OZARK JETTA-TAYLOR LOCK AND DAM	Arkansas	Little Rock	E-127
TABLE ROCK LAKE	Missouri	Little Rock	E-128
TOAD SUCK FERRY LOCK AND DAM	Arkansas	Little Rock	E-128
WILBUR D. MILLS LOCK AND DAM	Arkansas	Little Rock	E-128
ARCADIA LAKE	Oklahoma	Tulsa	E-129
BIRCH LAKE	Oklahoma	Tulsa	E-129
BROKEN BOW LAKE	Oklahoma	Tulsa	E-129
CANTON LAKE	Oklahoma	Tulsa	E-129
CHOUTEAU LOCK AND DAM	Oklahoma	Tulsa	E-130
COPAN LAKE	Oklahoma	Tulsa	E-130
COUNCIL GROVE LAKE	Kansas	Tulsa	E-130
DENISON DAM - LAKE TEXOMA	Texas Oklahoma	Tulsa	E-130
EL DORADO LAKE	Kansas	Tulsa	E-131
ELK CITY LAKE	Kansas	Tulsa	E-131
EUFAULA LAKE	Oklahoma	Tulsa	E-131
FALL RIVER LAKE	Kansas	Tulsa	E-132
FORT GIBSON LAKE	Oklahoma	Tulsa	E-132
FORT SUPPLY LAKE	Oklahoma	Tulsa	E-132

GREAT SALT PLAINS LAKE	Oklahoma	Tulsa	E-132
HEYBURN LAKE	Oklahoma	Tulsa	E-133
HUGO LAKE	Oklahoma	Tulsa	E-133
HULAH LAKE	Oklahoma	Tulsa	E-133
JOHN REDMOND DAM AND RESERVOIR	Kansas	Tulsa	E-133
KAW LAKE	Oklahoma	Tulsa	E-134
KEYSTONE LAKE	Oklahoma	Tulsa	E-134
MARION LAKE	Kansas	Tulsa	E-134
NEWT GRAHAM LOCK AND DAM	Oklahoma	Tulsa	E-135
OOLOGAH LAKE	Oklahoma	Tulsa	E-135
OPTIMA LAKE	Oklahoma	Tulsa	E-135
PAT MAYSE LAKE	Texas	Tulsa	E-135
PEARSON-SKUBITZ BIG HILL LAKE	Kansas	Tulsa	E-136
PINE CREEK LAKE	Oklahoma	Tulsa	E-136
ROBERT S. KERR LOCK AND DAM AND RESERVOIR	Oklahoma	Tulsa	E-136
SARDIS LAKE	Oklahoma	Tulsa	E-136
SKIATOOK LAKE	Oklahoma	Tulsa	E-137
TENKILLER FERRY LAKE	Oklahoma	Tulsa	E-137
TORONTO LAKE	Kansas	Tulsa	E-137
W.D. MAYO LOCK AND DAM	Oklahoma	Tulsa	E-137
WAURIKA LAKE	Oklahoma	Tulsa	E-138
WEBBERS FALLS LOCK AND DAM AND RESERVOIR	Oklahoma	Tulsa	E-138
WISTER LAKE	Oklahoma	Tulsa	E-138

**APPENDIX E**

**AUTHORIZED AND OPERATING PURPOSES  
OF CORPS OF ENGINEERS RESERVOIRS**



## APPENDIX E

AUTHORIZED AND OPERATING PURPOSES  
OF CORPS OF ENGINEERS RESERVOIRSLOWER MISSISSIPPI VALLEY DIVISION

## ARKABUTLA LAKE

Coldwater River. Tate and DeSoto Counties Mississippi.

Lower Mississippi Valley Division  
Vicksburg DistrictOperating PurposesWater Quality  
Flood Control  
Recreation  
Fish/WildlifeAuthorized PurposesWater Quality  
Flood Control  
Recreation  
Fish/WildlifeAuthorizing LawsPL 92-500  
PL 74-678  
PL 78-534  
PL 79-526

1. Arkabutla, Sardis, Enid, and Grenada Lakes are part of the Yazoo Headwater Project, a comprehensive plan for flood control on the Yazoo River and its tributaries above the head of the Mississippi River backwater area. The primary authorized purpose of these lakes is flood control and the secondary authorized purposes are fish and wildlife, recreation, and water quality. The current water control plan for the Yazoo Lakes was developed to maximize the flood control capabilities and to enhance the recreation capabilities.

## BLAKELY MOUNTAIN DAM - LAKE OUACHITA

Ouachita River. Garland and Montgomery Counties Arkansas.

Lower Mississippi Valley Division  
Vicksburg DistrictOperating PurposesHydroelectric Power  
Flood Control  
RecreationAuthorized PurposesHydroelectric Power  
Flood Control  
RecreationAuthorizing LawsPL 78-534  
PL 78-534  
PL 78-534

## BODCAU LAKE

Bayou Bodcau. Bossier Parish Louisiana.

Lower Mississippi Valley Division  
Vicksburg DistrictOperating Purposes

Flood Control

Authorized Purposes

Flood Control

Authorizing Laws

PL 89-298

## CADD0 LAKE

Cypress Bodcau. Caddo Parish Louisiana.

Lower Mississippi Valley Division  
Vicksburg DistrictOperating PurposesAuthorized PurposesWater Supply  
RecreationAuthorizing LawsPL 89-298  
PL 89-298

(continued)

**CADDO LAKE (continued)**

1. Caddo Lake was first built as a feature of the Federal Navigation Project, "Cypress Bayou and the Waterway Between Jefferson, Texas and Shreveport, Louisiana". The Caddo Lake Replacement Dam was authorized by the Flood Control Act of 1965 to preserve the socio-economic base that had developed over the years as a result of Caddo Lake. Navigation was no longer warranted as a project purpose. The replacement dam was completed in 1971 and was under the jurisdiction of the Caddo Levee District for about 5 years. In October 1978 Public Law 94-587 shifted operation and maintenance responsibilities to the Federal Government. Since the Government acquired rights to the lands under or around Caddo Lake, the replacement dam was designed to not increase lake elevations above the experienced conditions.

2. Water supply and recreation are local responsibilities. Water is not controlled for these purposes.

**COLUMBIA LOCK AND DAM**

Ouachita River. Caldwell Parish Louisiana.

Lower Mississippi Valley Division  
Vicksburg District

**Operating Purposes**

Recreation  
Navigation

**Authorized Purposes**

Recreation  
Navigation

**Authorizing Laws**

PL 91-811  
PL 81-518, PL 86-645

1. PL 81-518 and PL 86-645 provided for modification of the existing 6-1/2 ft navigation project on the Ouachita-Black Rivers below Camden, Ark., to provide a channel 9 ft deep and 100 ft wide from the mouth of the Black River to Camden, Ark., replacing the existing locks and dams Nos. 2, 3, 4, 5, 6, and 8.

2. PL 91-811 authorized acquisition of lands for establishment of national wildlife refuges at Felsenthal Lock and Dam in Arkansas and along Bayou D'Arbonne in the Columbia Lock and Dam Pool in Louisiana.

**DEGRAY LAKE**

Caddo River. Clark and Hot Springs Counties Arkansas.

Lower Mississippi Valley Division  
Vicksburg District

**Operating Purposes**

Hydroelectric Power  
Navigation  
Recreation  
Flood Control  
Water Supply

**Authorized Purposes**

Hydroelectric Power  
Navigation  
Recreation  
Flood Control  
Water Supply

**Authorizing Laws**

PL 81-516  
PL 81-515  
PL 81-518  
PL 81-516  
PL 85-500

**ENID LAKE**

Yocona River. Yalobusha, Panola, and Lafayette Counties Mississippi.

Lower Mississippi Valley Division  
Vicksburg District

**Operating Purposes**

Water Quality  
Recreation  
Flood Control  
Fish/Wildlife

**Authorized Purposes**

Water Quality  
Recreation  
Flood Control  
Fish/Wildlife

**Authorizing Laws**

PL 92-500  
PL 78-534  
PL 74-878  
PL 79-526

(continued)

1. Arkabutla, Sardis, Enid, and Grenada Lakes are part of the Yazoo Headwater Project, a comprehensive plan for flood control on the Yazoo River and its tributaries above the head of the Mississippi River backwater area. The primary authorized purpose of these lakes is flood control and the secondary authorized purposes are fish and wildlife, recreation and water quality. The current water control plan for the Yazoo Lakes was developed to maximize the flood control capabilities and to enhance the recreation capabilities.

**FELSENTHAL LOCK AND DAM**

Ouachita River. Union County Arkansas.

Lower Mississippi Valley Division  
Vicksburg District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Recreation	Recreation	PL 91-611
Navigation	Navigation	PL 81-516, PL 86-645

1. PL 81-516 and PL 86-645 provided for modification of the existing 6-1/2 ft navigation project on the Ouachita-Black Rivers below Camden, Ark., to provide a channel 9 ft deep and 100 ft wide from the mouth of the Black River to Camden, Ark., replacing the existing locks and dams Nos. 2, 3, 4, 5, 6, and 8.

2. PL 91-611 authorized acquisition of lands for establishment of national wildlife refuges at Felsenthal Lock and Dam in Arkansas and along Bayou D'Arbonne in the Columbia Lock and Dam Pool in Louisiana.

**GRENADA LAKE**

Yalobusha and Skuna Rivers. Grenada Calhoun, and Yalobusha Counties Mississippi.

Lower Mississippi Valley Division  
Vicksburg District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Water Quality	Water Quality	PL 92-500
Recreation	Recreation	PL 78-534
Flood Control	Flood Control	PL 74-878
Fish/Wildlife	Fish/Wildlife	PL 79-526

1. Arkabutla, Sardis, Enid, and Grenada Lakes are part of the Yazoo Headwater Project, a comprehensive plan for flood control on the Yazoo River and its tributaries above the head of the Mississippi River backwater area. The primary authorized purpose of these lakes is flood control and the secondary authorized purposes are fish and wildlife, recreation, and water quality. The current water control plan for the Yazoo Lakes was developed to maximize the flood control capabilities and to enhance the recreational capabilities.

**H.K. THATCHER LOCK AND DAM**

Ouachita River. Union County Arkansas.

Lower Mississippi Valley Division  
Vicksburg District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Navigation	Navigation (continued)	PL 81-516, PL 86-645

1. PL 81-516 and PL 86-645 provided for modification of the existing 6-1/2 ft navigation project on the Ouachita-Black Rivers below Camden, Ark., to provide a channel 9 ft deep and 100 ft wide from the mouth of the Black River to Camden, Ark., replacing the existing locks and dams Nos. 2, 3, 4, 5, 6, and 8.

**JOHN H. OVERTON LOCK AND DAM**

Red River. Rapides Parish Louisiana.

Lower Mississippi Valley Division  
Vicksburg District

Operating Purposes

Navigation

Authorized Purposes

Navigation

Authorizing Laws

PL 90-483

1. PL 90-483 authorized the construction of the "Red River Waterway, Louisiana, Texas, Arkansas, and Oklahoma Project," in accordance with the recommendations of the Chief of Engineers as contained in House Document No. 304, 90th Congress, 2nd Session.

**JONESVILLE LOCK AND DAM**

Black River. Catahoula and Concordia Parishes Louisiana.

Lower Mississippi Valley Division  
Vicksburg District

Operating Purposes

Navigation

Authorized Purposes

Navigation

Authorizing Laws

PL 81-516, PL 86-645

1. PL 81-516 and PL 86-645 provided for modification of the existing 6-1/2 ft navigation project on the Ouachita-Black Rivers below Camden, Ark., to provide a channel 9 ft deep and 100 ft wide from the mouth of the Black River to Camden, Ark., replacing the existing locks and dams Nos. 2, 3, 4, 5, 6, and 8.

**LOCK AND DAM NO. 1 - RED RIVER WATERWAY**

Red River. Avoyelles and Catahoula Parishes Louisiana.

Lower Mississippi Valley Division  
Vicksburg District

Operating Purposes

Navigation

Authorized Purposes

Navigation

Authorizing Laws

PL 90-463

1. PL 90-463 authorized the construction of the "Red River Waterway, Louisiana, Texas, Arkansas, and Oklahoma Project," in accordance with the recommendations of the Chief of Engineers as contained in House Document No. 304, 90th Congress, 2nd Session.

**NARROWS DAM - LAKE GREESON**

Little Missouri River. Pike County Arkansas.

Lower Mississippi Valley Division  
Vicksburg District

Operating Purposes

Flood Control

Recreation

Hydroelectric Power

Authorized Purposes

Flood Control

Recreation

Hydroelectric Power

Authorizing Laws

PL 77-226

PL 76-534

PL 76-534, PL 77-226

Little Tallahatchie River. Panola, Lafayette, and Marshall  
Counties Mississippi.

Lower Mississippi Valley Division  
Vicksburg District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Water Quality	Water Quality	PL 92-500
Flood Control	Flood Control	PL 74-878
Recreation	Recreation	PL 78-534
Fish/Wildlife	Fish/Wildlife	PL 79-528

1. Arkabutla, Sardis, Enid, and Grenada Lakes are part of the Yazoo Headwater Project, a comprehensive plan for flood control on the Yazoo River and its tributaries above the head of the Mississippi River backwater area. The primary authorized purpose of these lakes is flood control and the secondary authorized purposes are fish and wildlife, recreation, and water quality. The current water control plan for the Yazoo Lakes was developed to maximize the flood control capabilities and to enhance the recreation capabilities.

WALLACE LAKE  
Cypress Bayou. Caddo Parish Louisiana.

Lower Mississippi Valley Division  
Vicksburg District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Flood Control	Flood Control	PL 74-738

CARLYLE LAKE  
Kaskaskia River. Clinton County Illinois.

Lower Mississippi Valley Division  
St. Louis District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Water Supply	Water Supply	PL 85-500
Recreation	Recreation	PL 78-534, PL 85-500
Navigation	Navigation	PL 85-500
Fish/Wildlife	Fish/Wildlife	PL 85-500
Flood Control	Flood Control	PL 75-781, PL 85-500

CLARENCE CANNON DAM - MARK TWAIN LAKE  
Salt River. Ralls County Missouri.

Lower Mississippi Valley Division  
St. Louis District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Fish/Wildlife	Fish/Wildlife	PL 87-874
Hydroelectric Power	Hydroelectric Power	PL 87-874
Flood Control	Flood Control	PL 75-781, PL 87-874
Recreation	Recreation	PL 87-874
Navigation	Navigation	PL 87-874
Water Supply	Water Supply	PL 87-874
Water Quality	Water Quality	PL 87-874

KASKASKIA RIVER LOCK AND DAM

Kaskaskia River. Randolph County Illinois.

Lower Mississippi Valley Division  
St. Louis District

Operating Purposes  
Navigation

Authorized Purposes  
Navigation

Authorizing Laws  
PL 87-874

LAKE SHELBYVILLE

Kaskaskia River. Shelby County Illinois.

Lower Mississippi Valley Division  
St. Louis District

Operating Purposes  
Navigation  
Recreation  
Fish/Wildlife  
Water Supply  
Flood Control

Authorized Purposes  
Navigation  
Recreation  
Fish/Wildlife  
Water Supply  
Flood Control

Authorizing Laws  
PL 85-500  
PL 85-500, PL 78-534  
PL 85-500  
PL 85-500  
PL 85-500

LOCK AND DAM NO. 24 - MISSISSIPPI RIVER

Mississippi River. Pike County Missouri.

Lower Mississippi Valley Division  
St. Louis District

Operating Purposes  
Navigation

Authorized Purposes  
Navigation

Authorizing Laws  
PL 71-520, PL 74-409

LOCK AND DAM NO. 25 - MISSISSIPPI RIVER

Mississippi River. Lincoln County Missouri.

Lower Mississippi Valley Division  
St. Louis District

Operating Purposes  
Navigation

Authorized Purposes  
Navigation

Authorizing Laws  
PL 71-520, PL 74-409

LOCKS NO. 27 - MISSISSIPPI RIVER

Mississippi River. Madison County Illinois.

Lower Mississippi Valley Division  
St. Louis District

Operating Purposes  
Navigation

Authorized Purposes  
Navigation

Authorizing Laws  
PL 71-520, PL 74-409, PL 79-14

1. The gates are operated by the Corps of Engineers but not the dam.

MELVIN PRICE LOCKS AND DAM

Mississippi River. Madison County Illinois.

Lower Mississippi Valley Division  
St. Louis District

Operating Purposes  
Navigation

Authorized Purposes  
Navigation

Authorizing Laws  
PL 95-502, PL 99-88

Big Muddy River. Franklin County Illinois.

Lower Mississippi Valley Division  
St. Louis District

Operating Purposes

Water Quality  
Recreation  
Fish/Wildlife  
Water Supply  
Flood Control

Authorized Purposes

Water Quality  
Recreation  
Fish/Wildlife  
Water Supply  
Flood Control

Authorizing Laws

PL 87-874  
PL 78-534, PL 87-874  
PL 87-874  
PL 87-874  
PL 87-874

WAPPAPELLO LAKE

St. Francis River. Wayne County Missouri.

Lower Mississippi Valley Division  
St. Louis District

Operating Purposes

Flood Control  
Recreation

Authorized Purposes

Flood Control  
Recreation

Authorizing Laws

PL 70-391, PL 74-738  
PL 78-534

BLUE SPRINGS LAKE  
Little Blue River. Jackson County Missouri.

Missouri River Division  
Kansas City District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Fish/Wildlife	Fish/Wildlife	PL 90-483
Recreation	Recreation	PL 90-483
Flood Control	Flood Control	PL 90-483

1. Blue Springs Lake is part of the Little Blue River Project of Blue Springs Lake, Longview Lake, and channel improvements. The project was authorized for flood control, recreation, fish and wildlife, and water quality control. Only Longview Lake was designed for water quality purposes.

CLINTON LAKE  
Wakarusa River. Douglas County Kansas.

Missouri River Division  
Kansas City District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Fish/Wildlife	Fish/Wildlife	PL 87-874
Recreation	Recreation	PL 87-874
Water Quality	Water Quality	PL 92-500
Water Supply	Water Supply	PL 87-874, PL 85-500
Flood Control	Flood Control	PL 87-874

1. Senate Document 87-122 discusses the specific purposes of Clinton Lake as flood control, water supply, fish and wildlife recreation, and other recreation. However, the discussion of water supply does mention adequate minimum streamflow.

2. In 1985, the Bureau of Sport Fisheries and Wildlife (BSF&W) requested that low flows (21 c.f.s. from April to September and 7 c.f.s. from October to March) be provided for fisheries. In response to that request, 21,200 acre-feet of storage was allocated to supplement low flow releases. In August 1989, the State of Kansas recommended the inclusion of 110,400 acre-feet for water supply and water quality in Clinton Lake. Kansas's request was made pursuant to the Water Supply Act of 1958, P.L. 85-500. The BSF&W request for 21,200 acre-feet for water quality reduced the water supply storage to 89,200 acre-feet.

HARLAN COUNTY LAKE  
Republican River. Harlan County Nebraska.

Missouri River Division  
Kansas City District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Flood Control	Flood Control	PL 75-761, PL 77-228
Irrigation	Irrigation	PL 78-534
Recreation	Recreation	PL 78-534
Fish/Wildlife	Fish/Wildlife	PL 85-824

(continued)



## HARLAN COUNTY LAKE (continued)

1. PL 78-534 recites specific purposes which do not include recreation, but it then generally provides for "other purposes", which could include recreation. Section 4 of this Act provides generic authority for recreation and is cited here as the primary authority.

2. PL 75-761 authorized Milford Lake. PL 77-228 authorized Harlan County Lake in lieu of Milford Lake.

HARRY S. TRUMAN DAM AND RESERVOIR  
Osage River. Benton County Missouri.

Missouri River Division  
Kansas City District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Recreation	Recreation	PL 87-874
Fish/Wildlife	Fish/Wildlife	PL 87-874
Flood Control	Flood Control	PL 83-780
Hydroelectric Power	Hydroelectric Power	PL 87-874

1. House Document 87-578 recommends that the general comprehensive plan for flood control and other purposes be modified and expanded to include hydropower.

HILLSDALE LAKE  
Big Bull Creek. Miami County Kansas.

Missouri River Division  
Kansas City District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
	Navigation	PL 83-780
Water Supply	Water Supply	PL 83-780
Water Quality	Water Quality	PL 83-780
Fish/Wildlife	Fish/Wildlife	PL 85-624
Flood Control	Flood Control	PL 83-780
Recreation	Recreation	PL 83-780, PL 78-534

1. The navigation authorized is for incidental improvement of Mississippi River navigation as well as Missouri River navigation. No specific operations are made for this purpose as no storage is allocated for navigation.

KANOPOLIS LAKE  
Smoky Hill River. Ellsworth County Kansas.

Missouri River Division  
Kansas City District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Flood Control	Flood Control	PL 75-761, PL 77-228
Water Supply	Water Supply	PL 94-423, PL 78-534
	Hydroelectric Power	PL 78-534
Water Quality	Water Quality	PL 92-500
Recreation	Recreation	PL 78-534
	Irrigation	PL 78-534, PL 94-423
Fish/Wildlife	Fish/Wildlife	PL 94-423, PL 85-624
	Navigation	PL 78-534

(continued)

## KANOPOLIS LAKE (continued)

1. A surplus water contract for domestic use of water exists under the authority of Section 6, PL 78-534. Low flow augmentation for water quality is an interim use of the sediment storage. Use of storage for irrigation with current available lake storage is under investigation. Municipal and industrial water supply, irrigation, and fish and wildlife conservation authorized in PL 94-423 pertained to a pool raise that has not been implemented. Although PL 78-534 provides general authorization for navigation and power, Kanopolis is not operated for those purposes.

2. In 1949, the Bureau of Reclamation and the Corps agreed to exchange 162,500 acre-feet of flood control storage in Kanopolis Lake for 180,000 acre-feet of flood control storage in the upstream Cedar Bluff Lake. The Bureau received the right to utilize the 162,500 acre-feet of Kanopolis storage for irrigation.

3. PL 78-534 recites specific purposes which do not include recreation, but it then generally provides for "other purposes" which could include recreation. Section 4 of this Act provides generic recreation authority for recreation and is cited here as the clear authority.

4. Section 8 of PL 78-534 requires the Bureau to get a specific Congressional authorization to implement irrigation works/projects at Corps reservoirs. P.L. 88-442 reinforces this requirement. P.L. 94-423 authorizes the Bureau to provide irrigation water for 20,000 acres of land through irrigation works and project modification. However, the pool raise to provide this water has not been implemented.

## LONG BRANCH LAKE

Little Chariton River. Macon County Missouri.

Missouri River Division  
Kansas City District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Recreation	Recreation	PL 89-298
Water Supply	Water Supply	PL 89-298, PL 85-500
Water Quality	Water Quality	PL 89-298
Flood Control	Flood Control	PL 89-298
Fish/Wildlife	Fish/Wildlife	PL 89-298

1. House Document 89-238 recommends that Long Branch be authorized as a multipurpose project for flood control, recreation, fish and wildlife, water quality, and possible future water supply.

## LONGVIEW LAKE

Little Blue River, Jackson County Missouri.

Missouri River Division  
Kansas City District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Recreation	Recreation	PL 90-483
Water Quality	Water Quality	PL 90-483
Flood Control	Flood Control	PL 90-483
Fish/Wildlife	Fish/Wildlife	PL 90-483

MELVERN LAKE  
Marais des Cygnes River. Osage County Kansas.

Missouri River Division  
Kansas City District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Recreation	Recreation	PL 78-534
	Navigation	PL 83-780
	Water Supply	PL 85-500
Flood Control	Flood Control	PL 83-780
Fish/Wildlife	Fish/Wildlife	PL 85-624
Water Quality	Water Quality	PL 83-780

1. No water supply storage is currently under contract. Although PL 83-780 authorized navigation, neither is storage allocated for navigation nor is the project regulated for navigation. The navigation authorized is for incidental improvement of Mississippi and Missouri River navigation.

MILFORD LAKE  
Republican River. Geary County Kansas.

Missouri River Division  
Kansas City District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Flood Control	Flood Control	PL 83-780
Recreation	Recreation	PL 83-780, PL 78-534, PL 79-626
Navigation	Navigation	PL 83-780
Fish/Wildlife	Fish/Wildlife	PL 85-624
Water Quality	Water Quality	PL 83-780
Water Supply	Water Supply	PL 85-500

1. Navigation and water quality are used as interim purposes of water supply and sediment storage until sediment storage is depleted and water supply storage is all under contract. Interim use of storage for navigation purposes is limited in accordance with an agreement with the State of Kansas.

2. Although authorized (ref. H.D. 81-642) as primarily a flood control project, the use of a portion of the silting storage was also authorized to augment low water flows on the Kansas River when withdrawals from navigation storage in Tuttle Creek or Perry Lakes are not considered desirable.

PERRY LAKE  
Delaware River. Jefferson County Kansas.

Missouri River Division  
Kansas City District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Flood Control	Flood Control	PL 83-780
Recreation	Recreation	PL 83-780, PL 78-534
Water Supply	Water Supply	PL 85-500
Fish/Wildlife	Fish/Wildlife	PL 85-624
Navigation	Navigation	PL 83-780
Water Quality	Water Quality	PL 83-780

1. Navigation and water quality are used as interim purposes of water supply and sediment storage until sediment storage is depleted and water supply storage is all under contract. Interim use of storage for navigation purposes is limited in accordance with an agreement with the State of Kansas.

**POMME DE TERRE LAKE**

Pomme de Terre River. Hickory County Missouri.

Missouri River Division  
Kansas City District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Flood Control	Flood Control	PL 75-781, PL 78-534, PL 83-780
	Navigation	PL 83-780
Water Quality	Water Quality	PL 83-780
Recreation	Recreation	PL 78-534
Fish/Wildlife	Fish/Wildlife	PL 85-624
	Water Supply	PL 83-780

1. No storage has been allocated for water supply or navigation nor is the project regulated for those purposes.

**POMONA LAKE**

One Hundred Ten Mile Creek. Osage County Kansas.

Missouri River Division  
Kansas City District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Recreation	Recreation	PL 78-834
	Navigation	PL 83-780
Water Supply	Water Supply	PL 85-500
Flood Control	Flood Control	PL 83-780
Fish/Wildlife	Fish/Wildlife	PL 85-624
Water Quality	Water Quality	PL 83-780

1. Neither storage has been allocated for navigation nor is the project operated for navigation. Navigation is an incidental benefit.

**RATHBUN LAKE**

Chariton River. Appanoose County Iowa.

Missouri River Division  
Kansas City District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Flood Control	Flood Control	PL 83-780
	Navigation	PL 83-780
Water Quality	Water Quality	PL 83-780
Recreation	Recreation	PL 78-534
Fish/Wildlife	Fish/Wildlife	PL 85-624
Water Supply	Water Supply	PL 85-500

1. Although navigation is authorized at Rathbun Lake, it has never been operated for that purpose.

**SMITHVILLE LAKE**

Little Platte River. Clay and Clinton Counties Missouri.

Missouri River Division  
Kansas City District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Flood Control	Flood Control	PL 89-298
Recreation	Recreation	PL 89-298
Fish/Wildlife	Fish/Wildlife	PL 89-298
Water Supply	Water Supply	PL 89-298, PL 85-500
Water Quality	Water Quality	PL 89-298

**STOCKTON LAKE**

Sac River. Cedar County Missouri.

Missouri River Division

Kansas City District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Hydroelectric Power	Hydroelectric Power	PL 83-780
Water Quality	Water Quality	PL 83-780
Recreation	Recreation	PL 83-780
	Water Supply	PL 83-780
	Navigation	PL 83-780
Fish/Wildlife	Fish/Wildlife	PL 85-624
Flood Control	Flood Control	PL 83-780

1. Neither storage has been allocated for water supply or navigation nor is the project regulated for these purposes. Navigation is an incidental benefit.

**TUTTLE CREEK LAKE**

Big Blue River. Riley and Pottawatomie Counties Kansas.

Missouri River Division

Kansas City District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Flood Control	Flood Control	PL 75-761, PL 77-228, PL 78-534
Water Quality	Water Quality	PL 83-780
Recreation	Recreation	PL 83-780, PL 78-534
Fish/Wildlife	Fish/Wildlife	PL 85-624
Navigation	Navigation	PL 83-780
Water Supply	Water Supply	PL 85-500

**WILSON LAKE**

Saline River. Russell County Kansas.

Missouri River Division

Kansas City District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Flood Control	Flood Control	PL 78-534, PL 84-505
	Navigation	PL 84-505
	Irrigation	PL 78-534, PL 84-505
Recreation	Recreation	PL 78-534, PL 79-526
Fish/Wildlife	Fish/Wildlife	PL 85-824
Water Quality	Water Quality	PL 84-505

1. Wilson Lake was originally a Bureau of Reclamation project, but was transferred to the Corps of Engineers by PL 84-505.

2. Irrigation is not used because of the high salinity of impounded water. Because of the distance to the Missouri and Mississippi Rivers, navigation is only an incidental benefit and no specific operations are made for that purpose.

**BEAR CREEK DAM AND LAKE**

South Platte River. Jefferson County Colorado.

Missouri River Division

Omaha District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Fish/Wildlife	Fish/Wildlife	PL 90-483
Flood Control	Flood Control	PL 90-483
Recreation	Recreation	PL 90-483, PL 89-72

**BIG BEND DAM - LAKE SHARPE**

Missouri River. Buffalo, Lyman, Hyde, Hughes and Stanley  
Counties South Dakota.

Missouri River Division  
Omaha District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Fish/Wildlife	Fish/Wildlife	PL 78-534, PL 93-205
Recreation	Recreation	PL 78-534
Flood Control	Flood Control	PL 78-534
Navigation	Navigation	PL 78-534
Hydroelectric Power	Hydroelectric Power	PL 78-534
	Irrigation	PL 78-534
Water Supply	Water Supply	PL 78-534
Water Quality	Water Quality	PL 78-534

1. Section 8 of PL 78-534 is the only authorization for irrigation at the Corps main stem Missouri River projects. Section 8 Federal irrigation has not been developed at this project. There is, however, water being withdrawn by individual farmers for private irrigation use.

2. Water can be stored at Corps projects for municipal and industrial purposes through PL 85-500 which provides for purchase of permanent storage and PL 78-534 which provides for the purchase of storage generally for a shorter term. Although neither type of storage exists at this reservoir, water is being withdrawn by individuals and municipalities for M&I purposes. Water is also released from the reservoirs during winter river freeze-in periods to protect the access to water of downstream M&I water intakes.

3. Federally listed endangered species include the endangered least tern and pallid sturgeon and the threatened piping plover.

**BOWMAN-HALEY DAM AND LAKE**

North Fork of Grand River. Bowman County North Dakota.

Missouri River Division  
Omaha District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Fish/Wildlife	Fish/Wildlife	PL 87-874
Flood Control	Flood Control	PL 87-874
	Water Supply	PL 87-874
Recreation	Recreation	PL 87-874

1. The project was authorized for municipal and industrial water supply for the communities of Bowman, Reeder, Gascoyne and Scranton. However, pumping and treatment facilities were never constructed and these communities have developed other more favorable sources of water supply.

**BULL HOOK - SCOTT COULEE DAMS**

Bull Hook Creek and Scott Coulee. Hill County Montana.

Missouri River Division  
Omaha District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Flood Control	Flood Control	PL 78-534

CEDAR CANYON DAM  
Cheyenne River Basin. Pennington County South Dakota.

Missouri River Division  
Omaha District

Operating Purposes  
Flood Control

Authorized Purposes  
Flood Control

Authorizing Laws  
PL 80-858

CHATFIELD DAM AND LAKE  
South Platte River. Douglas County Colorado.

Missouri River Division  
Omaha District

Operating Purposes  
Recreation  
Flood Control  
Fish/Wildlife  
Water Supply

Authorized Purposes  
Recreation  
Flood Control  
Fish/Wildlife  
Water Supply

Authorizing Laws  
PL 89-72, PL 99-662, PL 93-251  
PL 81-516, PL 99-882  
PL 99-662  
PL 99-662

CHERRY CREEK DAM AND LAKE  
South Platte River. Arapahoe County Colorado.

Missouri River Division  
Omaha District

Operating Purposes  
Recreation  
Flood Control  
Fish/Wildlife

Authorized Purposes  
Recreation  
Flood Control  
Fish/Wildlife

Authorizing Laws  
PL 78-534  
PL 77-228, PL 76-534  
PL 79-732, PL 78-534

COLDBROOK DAM AND LAKE  
Cold Brook. Fall River County South Dakota.

Missouri River Division  
Omaha District

Operating Purposes  
Fish/Wildlife  
Flood Control  
Recreation

Authorized Purposes  
Fish/Wildlife  
Flood Control  
Recreation

Authorizing Laws  
PL 77-228, PL 78-534  
PL 77-228  
PL 77-228, PL 78-534

COTTONWOOD SPRINGS DAM AND LAKE  
Cottonwood Springs Creek. Fall River County South Dakota.

Missouri River Division  
Omaha District

Operating Purposes  
Recreation  
Flood Control  
Fish/Wildlife

Authorized Purposes  
Recreation  
Flood Control  
Fish/Wildlife

Authorizing Laws  
PL 77-228, PL 78-534  
PL 77-228, PL 78-534  
PL 77-228

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Fish/Wildlife	Fish/Wildlife	PL 93-205
Hydroelectric Power	Hydroelectric Power	PL 74-409, PL 75-529
Recreation	Recreation	PL 99-662
Flood Control	Flood Control	PL 74-409, PL 75-529
Water Quality	Water Quality	PL 92-500
Water Supply	Water Supply	PL 78-534
Navigation	Navigation	PL 74-409, PL 75-529
	Irrigation	PL 78-534

1. Section 8 of PL 78-534 is the only authorization for irrigation at the Corps main stem Missouri River projects. Section 8 Federal irrigation has not been developed at this project. There is, however, water being withdrawn by individual farmers for private irrigation use.
2. Water can be stored at Corps projects for municipal and industrial purposes through PL 85-500 which provides for purchase of permanent storage and PL 78-534 which provides for the purchase of storage generally for a shorter term. Although neither type of storage exists at this reservoir, water is being withdrawn by individuals and municipalities for M&I purposes. Water is released from the reservoirs during winter river freeze-in periods to protect the access to water of downstream M&I water intakes.
3. Federally listed endangered species include the endangered least tern and pallid sturgeon and the threatened piping plover.

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Recreation	Recreation	PL 78-534
	Irrigation	PL 78-534
Fish/Wildlife	Fish/Wildlife	PL 78-534, PL 93-205
Water Quality	Water Quality	PL 78-534
Hydroelectric Power	Hydroelectric Power	PL 78-534
Navigation	Navigation	PL 78-534
Flood Control	Flood Control	PL 78-534
Water Supply	Water Supply	PL 78-534

1. Section 8 of PL 78-534 is the only authorization for irrigation at the Corps main stem Missouri River projects. Section 8 irrigation has not been developed at this project. There is, however, water being withdrawn by individual farmers for private irrigation use.
  2. Water can be stored at Corps projects for municipal and industrial purposes through PL 85-500 which provides for purchase of permanent storage and PL 78-534 which provides for the purchase of storage generally for a shorter term. Although neither type of storage exists at this reservoir, water is being withdrawn by individuals and
- (continued)



FORT RANDALL DAM - LAKE FRANCIS CASE (continued)

municipalities for M&I purposes. Water is also released from the reservoirs during winter river freeze-in periods to protect the access to water of downstream M&I water intakes.

3. Federally listed endangered species include the endangered least tern and pallid sturgeon and the threatened piping plover.

## GARRISON DAM - LAKE SAKAKAWEA

Missouri River. Mercer, McLean, Dunn, Mountrail, McKenzie, and Williams Counties North Dakota.

Missouri River Division  
Omaha District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Fish/Wildlife	Fish/Wildlife	PL 78-534, PL 93-205
Hydroelectric Power	Hydroelectric Power	PL 78-534
Recreation	Recreation	PL 78-534
Flood Control	Flood Control	PL 78-534
Water Quality	Water Quality	PL 78-534
Water Supply	Water Supply	PL 78-534
Irrigation	Irrigation	PL 78-534
Navigation	Navigation	PL 78-534

1. Section 8 of PL 78-534 is the only authorization for irrigation at the Corps main stem Missouri River projects. There is a Section 8 Federal irrigation project authorized at this project but it is not yet operational. There is, however, water being withdrawn by individual farmers for private irrigation use.

2. Water can be stored at Corps projects for municipal and industrial purposes through PL 85-500 which provides for purchase of permanent storage and PL 78-534 which provides for the purchase of storage generally for a shorter term. Although there is no PL 85-500 storage, there is PL 78-534 storage at this reservoir. Water is also being withdrawn by individuals and municipalities for M&I purposes without a Section 8 (PL 78-534) contract. Water is also released from the reservoirs during winter river freeze-in periods to protect the access to water of downstream M&I water intakes.

3. Federally listed endangered species include the endangered least tern and pallid sturgeon and the threatened piping plover.

## GAVINS POINT DAM - LEWIS AND CLARK LAKE

Missouri River. Yankton and Bon Homme Counties South Dakota.  
Cedar and Knox Counties Nebraska

Missouri River Division  
Omaha District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Fish/Wildlife	Fish/Wildlife	PL 78-534, PL 93-205
Hydroelectric Power	Hydroelectric Power	PL 78-534
Recreation	Recreation	PL 78-534
Flood Control	Flood Control	PL 78-534
Water Quality	Water Quality	PL 78-534
Water Supply	Water Supply	PL 78-534
	Irrigation	PL 78-534
Navigation	Navigation	PL 78-534

(continued)

GAVINS POINT DAM - LEWIS AND CLARK LAKE (continued)

1. Section 8 of PL 78-534 is the only authorization for irrigation at the Corps main stem Missouri River projects. Section 8 Federal irrigation has not been developed at this project. There is, however, water being withdrawn by individual farmers for private irrigation use.

2. Water can be stored at Corps projects for municipal and industrial purposes through PL 85-500 which provides for purchase of permanent storage and PL 78-534 which provides for the purchase of storage generally for a shorter term. Although neither type of storage exists at this reservoir, water is being withdrawn by individuals and municipalities for M&I purposes. Water is also released from the reservoirs during winter river freeze-in periods to protect the access to water of downstream M&I water intakes.

3. Federally listed endangered species include the endangered least tern and pallid sturgeon and the threatened piping plover.

KELLY ROAD DAM  
Westerly Creek. Denver County Colorado.

Missouri River Division  
Omaha District

Operating Purposes  
Flood Control

Authorized Purposes  
Flood Control

Authorizing Laws  
PL 80-858

OAHE DAM - LAKE OAHE  
Missouri River. Stanley, Hughes, Dewey, Sully, Potter, Corson,  
Walworth, Campbell Counties South Dakota. Sioux and Emmons  
Counties North Dakota

Missouri River Division  
Omaha District

Operating Purposes  
Fish/Wildlife  
Recreation  
Flood Control  
Water Quality  
Hydroelectric Power  
  
Water Supply  
Navigation

Authorized Purposes  
Fish/Wildlife  
Recreation  
Flood Control  
Water Quality  
Hydroelectric Power  
Irrigation  
Water Supply  
Navigation

Authorizing Laws  
PL 78-534, PL 93-205  
PL 78-534  
PL 78-534  
PL 78-534  
PL 78-534  
PL 78-534  
PL 78-534  
PL 78-534

1. Section 8 of PL 78-534 is the only authorization for irrigation at the Corps main stem Missouri River projects. Section 8 Federal irrigation has not been developed at this project. There is, however, water being withdrawn by individual farmers for private irrigation use.

2. Water can be stored at Corps projects for municipal and industrial purposes through PL 85-500 which provides for purchase of permanent storage and PL 78-534 which provides for the purchase of storage generally for a shorter term. Although neither type of storage exists at this reservoir, water is being withdrawn by individuals and municipalities for M&I purposes. Water is also released from the reservoirs during winter river freeze-in periods to protect the access to water of downstream M&I water intakes.

(continued)

3. Federally listed endangered species include the endangered least tern and pallid sturgeon and the threatened piping plover.

PAPILLION CREEK DAM #11 - GLENN CUNNINGHAM LAKE  
Knight Creek. Douglas County Nebraska.

Missouri River Division  
Omaha District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Water Quality	Water Quality	PL 90-483
Flood Control	Flood Control	PL 90-483
Recreation	Recreation	PL 90-483, PL 89-72
Fish/Wildlife	Fish/Wildlife	PL 90-483

PAPILLION CREEK DAM #18 - STANDING BEAR LAKE  
Tributary Big Papillion Creek. Douglas County Nebraska.

Missouri River Division  
Omaha District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Recreation	Recreation	PL 90-483, PL 89-72
Fish/Wildlife	Fish/Wildlife	PL 90-483
Water Quality	Water Quality	PL 90-483
Flood Control	Flood Control	PL 90-483

PAPILLION CREEK DAM #18 - ZORINSKY LAKE  
Boxelder Creek. Douglas County Nebraska.

Missouri River Division  
Omaha District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Water Quality	Water Quality	PL 90-483
Flood Control	Flood Control	PL 90-483
Recreation	Recreation	PL 90-483, PL 89-72
Fish/Wildlife	Fish/Wildlife	PL 90-483

PAPILLION CREEK DAM #20 - WEHRSPANN LAKE  
Tributary South Branch Papillion Creek. Sarpy County Nebraska.

Missouri River Division  
Omaha District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Water Quality	Water Quality	PL 90-483
Flood Control	Flood Control	PL 90-483
Recreation	Recreation	PL 90-483, PL 89-72
Fish/Wildlife	Fish/Wildlife	PL 90-483

PIPESTEM DAM AND LAKE  
Pipestem Creek. Stutsman County North Dakota.

Missouri River Division  
Omaha District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Recreation	Recreation	PL 89-298, PL 89-72
Flood Control	Flood Control	PL 89-298
Fish/Wildlife	Fish/Wildlife	PL 89-298

SALT CREEK DAM #2 - OLIVE CREEK LAKE Missouri River Division  
South Tributary of Olive Creek. Lancaster County Nebraska. Omaha District

Operating Purposes

Flood Control  
Fish/Wildlife  
Recreation

Authorized Purposes

Flood Control  
Fish/Wildlife  
Recreation

Authorizing Laws

PL 85-500  
PL 85-500, PL 78-534  
PL 85-500, PL 78-534

SALT CREEK DAM #4 - BLUE STEM LAKE Missouri River Division  
North Tributary of Olive Creek. Lancaster County Nebraska. Omaha District

Operating Purposes

Recreation  
Flood Control  
Fish/Wildlife

Authorized Purposes

Recreation  
Flood Control  
Fish/Wildlife

Authorizing Laws

PL 85-500, PL 78-534  
PL 85-500  
PL 85-500, PL 78-534

SALT CREEK DAM #8 - WAGON TRAIN LAKE Missouri River Division  
North Tributary of Hickman Branch. Lancaster County Nebraska. Omaha District

Operating Purposes

Fish/Wildlife  
Flood Control  
Recreation

Authorized Purposes

Fish/Wildlife  
Flood Control  
Recreation

Authorizing Laws

PL 85-500, PL 78-534  
PL 85-500  
PL 85-500, PL 78-534

SALT CREEK DAM #9 - STAGECOACH LAKE Missouri River Division  
South Tributary of Hickman Branch. Lancaster County Nebraska. Omaha District

Operating Purposes

Recreation  
Flood Control  
Fish/Wildlife

Authorized Purposes

Recreation  
Flood Control  
Fish/Wildlife

Authorizing Laws

PL 85-500, PL 78-534  
PL 85-500  
PL 85-500, PL 78-534

SALT CREEK DAM #10 - YANKEE HILL LAKE Missouri River Division  
Cardwell Branch. Lancaster County Nebraska. Omaha District

Operating Purposes

Flood Control  
Fish/Wildlife  
Recreation

Authorized Purposes

Flood Control  
Fish/Wildlife  
Recreation

Authorizing Laws

PL 85-500  
PL 85-500, PL 78-534  
PL 85-500, PL 78-534

Operating Purposes

Recreation  
Flood Control  
Fish/Wildlife

Authorized Purposes

Recreation  
Flood Control  
Fish/Wildlife

Authorizing Laws

PL 85-500, PL 78-534  
PL 85-500  
PL 85-500, PL 78-534

SALT CREEK DAM #13 - TWIN LAKE  
Middle Creek. Lancaster County Nebraska.

Missouri River Division  
Omaha District

Operating Purposes

Fish/Wildlife  
Flood Control  
Recreation

Authorized Purposes

Fish/Wildlife  
Flood Control  
Recreation

Authorizing Laws

PL 85-500, PL 78-534  
PL 85-500  
PL 85-500, PL 78-534

SALT CREEK DAM #14 - PAWNEE LAKE  
North Middle Creek. Lancaster County Nebraska.

Missouri River Division  
Omaha District

Operating Purposes

Recreation  
Flood Control  
Fish/Wildlife

Authorized Purposes

Recreation  
Flood Control  
Fish/Wildlife

Authorizing Laws

PL 85-500, PL 78-534  
PL 85-500  
PL 85-500, PL 78-534

SALT CREEK DAM #17 - HOLMES LAKE PARK  
Antelope Creek. Lancaster County Nebraska.

Missouri River Division  
Omaha District

Operating Purposes

Flood Control  
Fish/Wildlife  
Recreation

Authorized Purposes

Flood Control  
Fish/Wildlife  
Recreation

Authorizing Laws

PL 85-500  
PL 85-500, PL 78-534  
PL 85-500, PL 78-534

SALT CREEK DAM #18 - BRANCHED OAK LAKE  
Oak Creek. Lancaster County Nebraska.

Missouri River Division  
Omaha District

Operating Purposes

Recreation  
Flood Control  
Fish/Wildlife

Authorized Purposes

Recreation  
Flood Control  
Fish/Wildlife

Authorizing Laws

PL 85-500, PL 78-534  
PL 85-500  
PL 85-500, PL 78-534

Operating Purposes

Recreation  
Fish/Wildlife

Authorized Purposes

Recreation  
Fish/Wildlife

Authorizing Laws

PL 78-534  
PL 79-732

SPRING CREEK DAM - LAKE POCASSE  
Spring Creek. Campbell County South Dakota.

Missouri River Division  
Omaha District

Operating Purposes

Fish/Wildlife

Authorized Purposes

Fish/Wildlife

Authorizing Laws

PL 85-824

**ALMOND LAKE**

Canacadea Creek. Steuben County New York.

North Atlantic Division

Baltimore District

Operating Purposes

Recreation

Flood Control

Authorized Purposes

Recreation

Flood Control

Authorizing Laws

PL 78-534

PL 74-738

**ALVIN R. BUSH DAM**

Kettle Creek. Clinton County Pennsylvania.

North Atlantic Division

Baltimore District

Operating Purposes

Flood Control

Recreation

Authorized Purposes

Flood Control

Recreation

Authorizing Laws

PL 83-780

PL 78-534

**ARKPORT DAM**

Canisteo River. Steuben County New York.

North Atlantic Division

Baltimore District

Operating Purposes

Flood Control

Authorized Purposes

Flood Control

Authorizing Laws

PL 74-738

**AYLESWORTH CREEK LAKE**

Aylesworth Creek. Lackawanna County Pennsylvania.

North Atlantic Division

Baltimore District

Operating Purposes

Recreation

Flood Control

Authorized Purposes

Recreation

Flood Control

Authorizing Laws

PL 78-534

PL 87-874

**COWANESQUE LAKE**

Cowanesque River. Tioga County Pennsylvania.

North Atlantic Division

Baltimore District

Operating Purposes

Water Supply

Water Quality

Recreation

Flood Control

Authorized Purposes

Water Supply

Water Quality

Recreation

Flood Control

Authorizing Laws

PL 85-500

PL 92-500

PL 78-534

PL 85-500

**CURWENSVILLE LAKE**

West Branch Susquehanna River. Clearfield County Pennsylvania.

North Atlantic Division

Baltimore District

Operating Purposes

Recreation

Water Quality

Fish/Wildlife

Flood Control

Authorized Purposes

Recreation

Water Quality

Fish/Wildlife

Flood Control

Authorizing Laws

PL 78-534

PL 92-500

PL 85-824

PL 83-780

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Recreation	Recreation	PL 78-534
Flood Control	Flood Control	PL 74-738

FOSTER JOSEPH SAYERS DAM North Atlantic Division  
Bald Eagle Creek. Centre County Pennsylvania. Baltimore District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Water Quality	Water Quality	PL 92-500
Recreation	Recreation	PL 78-534
Flood Control	Flood Control	PL 83-780

JENNINGS RANDOLPH LAKE North Atlantic Division  
North Branch Potomac River. Garrett County Maryland. Mineral County West Virginia Baltimore District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Recreation	Recreation	PL 87-874, PL 100-676
Water Supply	Water Supply	PL 87-874
Flood Control	Flood Control	PL 87-874
Water Quality	Water Quality	PL 87-874

1. PL 87-874 included only in-lake recreation as an authorized purpose. PL 100-878 added downstream white water recreation, fishing, and boating as authorized purposes.

RAYSTOWN LAKE North Atlantic Division  
Raystown Branch Juniata River. Huntingdon County Pennsylvania. Baltimore District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Flood Control	Flood Control	PL 87-874
Fish/Wildlife	Fish/Wildlife	PL 87-874
	Hydroelectric Power	PL 87-874
Recreation	Recreation	PL 87-874

1. Federal hydropower development was included in the initial authorization, but was not included in final design because it was not economically justifiable.

STILLWATER LAKE North Atlantic Division  
Laokawanna River. Susquehanna County Pennsylvania. Baltimore District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Water Supply	Water Supply	PL 77-228
Flood Control	Flood Control	PL 77-228



**TIOGA-HAMMOND LAKES**

Tioga River and Crooked Creek. Tioga County Pennsylvania.

North Atlantic Division  
Baltimore DistrictOperating PurposesFlood Control  
Recreation  
Water QualityAuthorized PurposesFlood Control  
Recreation  
Water QualityAuthorizing LawsPL 85-500  
PL 78-534  
PL 92-500**WHITNEY POINT LAKE**

Otselic River. Broome County New York.

North Atlantic Division  
Baltimore DistrictOperating PurposesRecreation  
Flood ControlAuthorized PurposesRecreation  
Flood ControlAuthorizing LawsPL 78-534  
PL 74-738**YORK INDIAN ROCK DAM**

Codorus Creek. York County Pennsylvania.

North Atlantic Division  
Baltimore DistrictOperating Purposes

Flood Control

Authorized Purposes

Flood Control

Authorizing Laws

PL 74-738

**GATHRIGHT DAM AND LAKE MOOMAW**

Jackson River. Alleghany and Bath Counties Virginia.

North Atlantic Division  
Norfolk DistrictOperating PurposesFlood Control  
Water Quality  
Recreation  
Fish/WildlifeAuthorized PurposesFlood Control  
Water Quality  
Recreation  
Hydroelectric Power  
Fish/WildlifeAuthorizing LawsPL 79-528  
PL 79-528  
PL 79-528  
PL 79-528  
PL 85-624

1. Studies before construction determined that hydroelectric power was not economically justified.

**BELTZVILLE LAKE**

Pohopoco Creek. Carbon and Monroe Counties Pennsylvania.

North Atlantic Division  
Philadelphia DistrictOperating PurposesWater Quality  
Low Flow Augmentation  
Water Supply  
Recreation  
Flood ControlAuthorized PurposesWater Quality  
Low Flow Augmentation  
Water Supply  
Recreation  
Flood ControlAuthorizing LawsPL 87-874, PL 87-88, PL 92-500  
PL 87-874, PL 87-88, PL 92-500  
PL 87-874  
PL 87-874  
PL 87-874

BLUE MARSH LAKE

Tulpehocken Creek. Lebanon and Berks Counties Pennsylvania.

North Atlantic Division  
Philadelphia DistrictOperating Purposes

Low Flow Augmentation  
Recreation  
Water Quality  
Flood Control  
Water Supply

Authorized Purposes

Low Flow Augmentation  
Recreation  
Water Quality  
Flood Control  
Water Supply

Authorizing Laws

PL 87-874, PL 87-88, PL 92-500  
PL 87-874  
PL 87-874, PL 87-88, PL 92-500  
PL 87-874  
PL 87-874

## FRANCIS E. WALTER RESERVOIR

Lehigh River. Carbon, Luzerne, Monroe Counties  
Pennsylvania.

North Atlantic Division  
Philadelphia District

Operating Purposes

Flood Control  
Recreation  
Water Supply

Authorized Purposes

Flood Control  
Recreation  
Water Supply

Authorizing Laws

PL 79-528  
PL 100-678  
PL 78-534

1. The Delaware River Basin Commission plan to provide temporary water supply during drought emergencies has been coordinated with the District drought contingency plan. Individual water supply contracts will be initiated as drought conditions and plans necessitate.

## GENERAL EDGAR JADWIN DAM AND RESERVOIR

Dyberry Creek. Wayne County Pennsylvania.

North Atlantic Division  
Philadelphia District

Operating Purposes

Flood Control

Authorized Purposes

Flood Control

Authorizing Laws

PL 80-858

## PROMPTON RESERVOIR

West Branch Lackawaxen River. Wayne County Pennsylvania.

North Atlantic Division  
Philadelphia District

Operating Purposes

Flood Control

Authorized Purposes

Recreation  
Flood Control

Authorizing Laws

PL 78-534  
PL 80-858

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

**MOUNT MORRIS DAM**

Genesee River. Livingston County New York.

North Central Division

Buffalo District

Operating Purposes

Flood Control

Authorized Purposes

Flood Control

Authorizing Laws

PL 78-534

**CHICAGO HARBOR LOCK AND CHICAGO RIVER CONTROLLING WORKS**

Chicago Sanitary and Ship Canal. Cook County Illinois.

North Central Division

Chicago District

Operating Purposes

Flood Control

Recreation

Water Quality

Navigation

Authorized Purposes

Flood Control

Recreation

Water Quality

Navigation

Authorizing Laws

PL 97-88, PL 98-83

PL 78-534

PL 97-88, PL 98-63

PL 97-88, PL 98-63

1. Project is owned by the Metropolitan Water Reclamation District of Greater Chicago (MWRDGC). The project is operated and maintained by the Corps of Engineers.
2. Project diverts water from Lake Michigan to the Illinois Waterway.
3. Instructions for regulation of the water control works are issued by the MWRDGC.

**CEDARS LOCK AND DAM**

Fox River. Outagamie County Wisconsin.

North Central Division

Detroit District

Operating PurposesAuthorized Purposes

Navigation

Authorizing Laws

RHA 1872

1. The Fox River is no longer utilized for commercial navigation.
2. The lock(s) is currently operated, when funds are available, at State expense for the purpose of recreational navigation.
3. The Corps of Engineers continues to operate this and the other Fox River dams in accordance with the water control plan established during the period of commercial navigation. Certain uses of the river indirectly benefit from this regulation, namely, industrial water supply, recreation and non-Federal hydroelectric power. Currently, the Corps is evaluating the legal basis for continuing its operation of the Fox River system of locks and dams.

**DEPERE LOCK AND DAM**

Fox River. Brown County Wisconsin.

North Central Division

Detroit District

Operating PurposesAuthorized Purposes

Navigation

Authorizing Laws

RHA 1872

1. See notes 1, 2 and 3 for Cedars Lock and Dam.

Operating Purposes

Authorized Purposes  
Navigation

Authorizing Laws  
RHA 1872

1. See notes 1, 2 and 3 for Cedars Lock and Dam.

LITTLE CHUTE LOCKS AND DAM  
Fox River. Outagamie County Wisconsin.

North Central Division  
Detroit District

Operating Purposes

Authorized Purposes  
Navigation

Authorizing Laws  
RHA 1872

1. See notes 1, 2 and 3 for Cedars Lock and Dam.

LITTLE KAUKAUNA LOCK AND DAM  
Fox River. Brown County Wisconsin.

North Central Division  
Detroit District

Operating Purposes

Authorized Purposes  
Navigation

Authorizing Laws  
RHA 1872

1. See notes 1, 2 and 3 for Cedars Lock and Dam.

LOWER APPLETON LOCKS AND DAM  
Fox River. Outagamie County Wisconsin.

North Central Division  
Detroit District

Operating Purposes

Authorized Purposes  
Navigation

Authorizing Laws  
RHA 1872

1. See notes 1, 2 and 3 for Cedars Lock and Dam.

MENASHA LOCK AND DAM - LAKE WINNEBAGO  
Fox River. Winnebago County Wisconsin.

North Central Division  
Detroit District

Operating Purposes

Authorized Purposes  
Water Supply  
Fish/Wildlife  
Navigation  
Flood Control  
Recreation

Authorizing Laws  
PL 85-624  
RHA 1870, RHA 1872  
RHA 1882, RHA 1884  
PL 78-534

1. Although storage space is not allocated for water supply on either a permanent (PL 85-500) or temporary (PL 78-534) basis, water is being withdrawn by municipalities for M&I purposes. Consequently, during drought, consideration is given to keeping the lake level above the supply intakes.

2. The lock is currently operated at State expense for recreational navigation.

**RAPIDE CROCHE LOCK AND DAM**  
 Fox River. Outagamie County Wisconsin.

North Central Division  
 Detroit District

Operating PurposesAuthorized PurposesAuthorizing Laws

Navigation

RHA 1872

1. See notes 1, 2 and 3 for Cedars Lock and Dam.

**UPPER APPLETON LOCKS AND DAM**  
 Fox River. Outagamie County Wisconsin.

North Central Division  
 Detroit District

Operating PurposesAuthorized PurposesAuthorizing Laws

Navigation

RHA 1872

1. See notes 1, 2 and 3 for Cedars Lock and Dam.

**BRANDON ROAD LOCK AND DAM**  
 Des Plaines River. Will County Illinois.

North Central Division  
 Rock Island District

Operating PurposesAuthorized PurposesAuthorizing Laws

Navigation

Recreation

PL 78-534

Navigation

PL 71-520, RHA 1894

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

**CORALVILLE LAKE**  
 Iowa River. Johnson County Iowa.

North Central Division  
 Rock Island District

Operating PurposesAuthorized PurposesAuthorizing Laws

Flood Control

Water Supply

PL 75-761

Flood Control

PL 75-761

Recreation

PL 75-761

Low Flow Augmentation

Water Conservation

PL 75-761

Fish/Wildlife

Fish/Wildlife

PL 85-624

1. Storage space for M&I water supply was not incorporated into the project's design; no need existed.
2. Access and facilities are provided for recreation but water is not controlled for that purpose.

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Navigation	Recreation Navigation	PL 78-534 PL 71-520, RHA 1894

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

FARMDALE DAM (FARM CREEK, IL) North Central Division  
Farm Creek, Tazewell County Illinois. Rock Island District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Flood Control	Recreation Flood Control	PL 78-534 PL 78-534

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

FONDULAC DAM (FARM CREEK, IL) North Central Division  
Fondulac Creek, Tazewell County Illinois. Rock Island District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Flood Control	Recreation Flood Control	PL 78-534 PL 78-534

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

LAGRANGE LOCK AND DAM North Central Division  
Illinois River, Brown County Illinois. Rock Island District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Navigation	Recreation Navigation	PL 78-534 PL 71-520, PL 74-409, RHA 1894

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

LOCK AND DAM NO.11 - MISSISSIPPI RIVER North Central Division  
Mississippi River, Dubuque County Iowa. Rock Island District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Navigation	Recreation Navigation	PL 78-534 PL 71-520, PR 72-10, RHA 1894

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

Mississippi River. Jackson County Iowa.

Rock Island District

Operating Purposes

Authorized Purposes

Authorizing Laws

Navigation

Recreation

PL 78-534

Navigation

PL 71-520, PR 72-10, RHA 1894

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

LOCK AND DAM NO.13 - MISSISSIPPI RIVER

Mississippi River. Clinton County Iowa.

North Central Division

Rock Island District

Operating Purposes

Authorized Purposes

Authorizing Laws

Navigation

Recreation

PL 78-534

Navigation

PL 71-520, PR 72-10, RHA 1894

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

LOCK AND DAM NO.14 - MISSISSIPPI RIVER

Mississippi River. Scott County Iowa.

North Central Division

Rock Island District

Operating Purposes

Authorized Purposes

Authorizing Laws

Navigation

Recreation

PL 78-534

Navigation

PL 71-520, PR 72-10, RHA 1894

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

LOCK AND DAM NO.15 - MISSISSIPPI RIVER

Mississippi River. Rock Island County Illinois.

North Central Division

Rock Island District

Operating Purposes

Authorized Purposes

Authorizing Laws

Navigation

Recreation

PL 78-534

Navigation

PL 71-520, PR 72-10, RHA 1894

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

LOCK AND DAM NO.16 - MISSISSIPPI RIVER

Mississippi River. Muscatine County Iowa.

North Central Division

Rock Island District

Operating Purposes

Authorized Purposes

Authorizing Laws

Navigation

Recreation

PL 78-534

Navigation

PL 71-520, PR 72-10, RHA 1894

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Navigation	Recreation Navigation	PL 78-534 PL 71-520, PR 72-10, RHA 1894

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

LOCK AND DAM NO.18 - MISSISSIPPI RIVER North Central Division  
Mississippi River. Des Moines County Iowa. Rock Island District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Navigation	Recreation Navigation	PL 78-534 PL 71-520, PR 72-10, RHA 1894

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

LOCK AND DAM NO.20 - MISSISSIPPI RIVER North Central Division  
Mississippi River. Lewis County Missouri. Rock Island District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Navigation	Recreation Navigation	PL 78-534 PL 71-520, PR 72-10, RHA 1894

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

LOCK AND DAM NO.21 - MISSISSIPPI RIVER North Central Division  
Mississippi River. Adams County Illinois. Rock Island District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Navigation	Recreation Navigation	PL 78-534 PL 71-520, PR 72-10, RHA 1894

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

LOCK AND DAM NO.22 - MISSISSIPPI RIVER North Central Division  
Mississippi River. Ralls County Missouri. Rock Island District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Navigation	Recreation Navigation	PL 78-534 PL 71-520, PR 72-10, RHA 1894

1. Access and facilities are provided for recreation but water is not controlled for that purpose.



<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
	Recreation	PL 78-534
Navigation	Navigation	PL 71-520, RHA 1894

1. Access and facilities are provided for recreation but water is not controlled for that purpose.
2. Project consists of power plant and controlling works which are owned and operated by the Metropolitan Water Reclamation District of Greater Chicago (MWRDGC), and a navigation lock, which is owned and operated by the Corps of Engineers.
3. Instructions for regulation of the water control works are issued by the MWRDGC.

MARSEILLES LOCK, CANAL, MARSEILLES DAM North Central Division  
 Illinois River. LaSalle County Illinois. Rock Island District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
	Recreation	PL 78-534
Navigation	Navigation	PL 71-520, RHA 1894

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

PEORIA LOCK AND DAM North Central Division  
 Illinois River. Peoria County Illinois. Rock Island District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
	Recreation	PL 78-534
Navigation	Navigation	PL 71-520, PL 74-409, RHA 1894

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

RED ROCK DAM AND LAKE RED ROCK North Central Division  
 Des Moines River. Marion, Jasper, Warren, Polk Counties Iowa. Rock Island District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Fish/Wildlife	Fish/Wildlife	PL 85-624
Flood Control	Flood Control	PL 75-761
Low Flow Augmentation	Water Conservation	PL 75-761
	Hydroelectric Power	PL 75-761
	Water Supply	PL 75-761
	Recreation	PL 75-761

(continued)

1. In Senate Doc. 9, 85th Cong., 1st Sess., which was the basis for the authorization of Saylorville Reservoir in PL 85-500, the plan for Red Rock Reservoir was modified so as to remove the previously authorized (PL 75-761) conservation storage. As a consequence, Red Rock was constructed with storage space provided only for flood control and sediment accumulation; hydroelectric power, water conservation and water supply were thus eliminated as purposes for operation.

2. Water is being stored in the sediment accumulation zone of the reservoir (until such time as it fills with sediment) for the purpose of low flow augmentation for water quality control of the Des Moines River in the vicinity of Ottumwa, Iowa.

3. Access and facilities are provided for recreation but water is not controlled for that purpose.

## SAYLORVILLE LAKE

Des Moines River. Polk, Dallas, Boone Counties Iowa.

North Central Division  
Rock Island District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Fish/Wildlife	Fish/Wildlife	PL 85-624
Flood Control	Flood Control	PL 85-500
	Recreation	PL 85-500
Low Flow Augmentation	Water Conservation	PL 85-500
Water Supply	Water Supply	PL 85-500

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

## STARVED ROCK LOCK AND DAM

Illinois River. LaSalle County Illinois.

North Central Division  
Rock Island District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
	Recreation	PL 78-534
Navigation	Navigation	PL 71-520, RHA 1894

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

## THOMAS J. O'BRIEN LOCK AND CONTROLLING WORKS

Calumet River. Cook County Illinois.

North Central Division  
Rock Island District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
	Recreation	PL 78-534
Navigation	Navigation	PL 71-520, PL 79-525, RHA 1894

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

2. Instructions for regulation of the water control works are issued by the Metropolitan Water Reclamation District of Greater Chicago (MWRDGC).

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Fish/Wildlife	Fish/Wildlife	PL 89-298
Flood Control	Flood Control	PL 89-298
Recreation	Recreation	PL 89-298

EAU GALLE RIVER LAKE  
 Eau Galle River, Pierce and St. Croix Counties Wisconsin. North Central Division  
 St. Paul District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Flood Control	Flood Control	PL 85-500
	Recreation	PL 78-534
Fish/Wildlife	Fish/Wildlife	PL 85-624

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

GULL LAKE DAM  
 Gull River, Cass County Minnesota. North Central Division  
 St. Paul District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Flood Control	Flood Control	PL 78-534
Recreation	Recreation	PL 78-534
Water Quality	Water Quality	PL 92-500
Water Supply	Water Supply	PL 85-500
Fish/Wildlife	Fish/Wildlife	PL 85-624
	Navigation	RHA 1880

1. The need to regulate this project for navigation was eliminated once the Mississippi River locks and dams above Lake Pepin were completed.

HOMME LAKE AND DAM  
 Park River, Walsh County North Dakota. North Central Division  
 St. Paul District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Flood Control	Flood Control	PL 78-534
Water Supply	Water Supply	PL 78-534
	Recreation	PL 78-534

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

LAC QUI PARLE LAKES (LAC QUI PARLE DAM) North Central Division  
Minnesota River. Lac qui Parle, Chippewa, Swift, Big Stone St. Paul District  
Counties Minnesota.

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Water Conservation	Water Conservation	PL 74-738
Flood Control	Flood Control	PL 74-738

LAC QUI PARLE LAKES (MARSH LAKE DAM) North Central Division  
Minnesota River. Lac qui Parle, Chippewa, Swift, Big Stone St. Paul District  
Counties Minnesota.

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Water Conservation	Water Conservation	PL 74-738
Flood Control	Flood Control	PL 74-738

1. Marsh Lake Dam is part of the Lac qui Parle project.

LAKE ASHTABULA - BALDHILL DAM North Central Division  
Sheyenne River. Barnes County North Dakota. St. Paul District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Water Conservation	Water Conservation	PL 78-534
Flood Control	Flood Control	PL 78-534

LAKE TRAVERSE (RESERVATION CONTROL DAM) North Central Division  
Bois de Sioux River. Traverse County Minnesota. Roberts County St. Paul District  
South Dakota

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Water Conservation	Water Conservation	PL 74-738
Flood Control	Flood Control	PL 74-738

LAKE TRAVERSE (WHITE ROCK DAM) North Central Division  
Bois de Sioux River. Traverse County Minnesota. Roberts County St. Paul District  
South Dakota

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Water Conservation	Water Conservation	PL 74-738
Flood Control	Flood Control	PL 74-738

1. White Rock is the primary structure for the Lake Traverse project.

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Recreation	Recreation	PL 78-534
Fish/Wildlife	Fish/Wildlife	PL 85-824
Water Supply	Water Supply	PL 85-500
Indian Tribal Rights		
	Navigation	RHA 1680
Flood Control	Flood Control	PL 78-534
Water Quality	Water Quality	PL 92-500

1. The need to regulate this project for navigation was eliminated once the Mississippi River locks and dams above Lake Pepin were completed.

2. Aboriginal and treaty rights, which pre-date the project, and the Federal Government's attendant trust responsibilities, requires modification of water control operations from time to time.

LOCK AND DAM NO.1 - MISSISSIPPI RIVER North Central Division  
Mississippi River. Hennepin County Minnesota. St. Paul District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
	Recreation	PL 78-534
Navigation	Navigation	RHA 1873

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

LOCK AND DAM NO.2 - MISSISSIPPI RIVER North Central Division  
Mississippi River. Dakota and Washington Counties Minnesota. St. Paul District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
	Recreation	PL 78-534
Navigation	Navigation	PL 69-560
Water Quality	Water Quality	PL 92-500

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

LOCK AND DAM NO.3 - MISSISSIPPI RIVER North Central Division  
Mississippi River. Goodhue County Minnesota. Pierce County St. Paul District  
Wisconsin

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Navigation	Navigation	PL 71-520
	Recreation	PL 78-534

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

LOCK AND DAM NO.4 - MISSISSIPPI RIVER

Mississippi River. Wabasha County Minnesota. Buffalo County Wisconsin

North Central Division

St. Paul District

Operating Purposes

Navigation

Authorized Purposes

Navigation

Recreation

Authorizing Laws

PL 71-520

PL 78-534

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

LOCK AND DAM NO.5 - MISSISSIPPI RIVER

Mississippi River. Winona County Minnesota. Buffalo County Wisconsin

North Central Division

St. Paul District

Operating Purposes

Navigation

Authorized Purposes

Navigation

Recreation

Authorizing Laws

PL 71-520

PL 78-534

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

LOCK AND DAM NO.5A - MISSISSIPPI RIVER

Mississippi River. Winona County Minnesota. Buffalo County Wisconsin

North Central Division

St. Paul District

Operating Purposes

Navigation

Authorized Purposes

Recreation

Navigation

Authorizing Laws

PL 78-534

PL 71-520

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

LOCK AND DAM NO.6 - MISSISSIPPI RIVER

Mississippi River. Winona County Minnesota. Trempealeau County Wisconsin

North Central Division

St. Paul District

Operating Purposes

Navigation

Authorized Purposes

Navigation

Recreation

Authorizing Laws

PL 71-520

PL 78-534

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

Operating Purposes

Navigation

Authorized Purposes

Navigation

Recreation

Authorizing Laws

PL 71-520

PL 78-534

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

LOCK AND DAM NO.8 - MISSISSIPPI RIVER

Mississippi River. Houston County Minnesota. Vernon County Wisconsin

North Central Division

St. Paul District

Operating Purposes

Navigation

Authorized Purposes

Navigation

Recreation

Authorizing Laws

PL 71-520

PL 78-534

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

LOCK AND DAM NO.9 - MISSISSIPPI RIVER

Mississippi River. Crawford County Wisconsin. Allamakee County Iowa

North Central Division

St. Paul District

Operating Purposes

Navigation

Authorized Purposes

Navigation

Recreation

Authorizing Laws

PL 71-520

PL 78-534

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

LOCK AND DAM NO.10 - MISSISSIPPI RIVER

Mississippi River. Clayton County Iowa. Grant County Wisconsin

North Central Division

St. Paul District

Operating Purposes

Navigation

Authorized Purposes

Navigation

Recreation

Authorizing Laws

PL 71-520

PL 78-534

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

Otter Tail River. Otter Tail County Minnesota.

North Central Division  
St. Paul DistrictOperating Purposes

Water Supply

Fish/Wildlife

Flood Control

Authorized Purposes

Water Supply

Recreation

Fish/Wildlife

Flood Control

Authorizing Laws

PL 81-516

PL 78-534

PL 85-624

PL 61-516

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

## PINE RIVER DAM (CROSS LAKE)

Pine River. Crow Wing County Minnesota.

North Central Division

St. Paul District

Operating Purposes

Fish/Wildlife

Flood Control

Water Quality

Water Supply

Recreation

Authorized Purposes

Fish/Wildlife

Flood Control

Navigation

Water Quality

Water Supply

Recreation

Authorizing Laws

PL 85-824

PL 78-534

RHA 1880

PL 92-500

PL 85-500

PL 78-534

1. The need to regulate this project for navigation was eliminated once the Mississippi River locks and dams above Lake Pepin were completed.

## POKEGAMA DAM

Mississippi River. Itasca County Minnesota.

North Central Division

St. Paul District

Operating Purposes

Recreation

Fish/Wildlife

Water Supply

Water Quality

Flood Control

Authorized Purposes

Recreation

Navigation

Fish/Wildlife

Water Supply

Water Quality

Flood Control

Authorizing Laws

PL 78-534

RHA 1880

PL 85-824

PL 85-500

PL 92-500

PL 78-534

1. The need to regulate this project for navigation was eliminated once the Mississippi River locks and dams above Lake Pepin were completed.

## RED LAKE RIVER

Red Lake River. Clearwater County Minnesota.

North Central Division

St. Paul District

Operating Purposes

Flood Control

Water Conservation

Authorized Purposes

Flood Control

Water Conservation

Authorizing Laws

PL 78-534

PL 78-534



**SANDY LAKE DAM**  
Sandy River. Aitkin County Minnesota.

North Central Division  
St. Paul District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Water Quality	Water Quality	PL 92-500
	Navigation	RHA 1880
Flood Control	Flood Control	PL 78-534
Water Supply	Water Supply	PL 85-500
Indian Tribal Rights		
Recreation	Recreation	PL 78-534
Fish/Wildlife	Fish/Wildlife	PL 85-624

1. The need to regulate this project for navigation was eliminated once the Mississippi River locks and dams above Lake Pepin were completed.

2. Aboriginal and treaty rights, which pre-date the project, and the Federal Government's attendant trust responsibilities, requires modification of water control operations from time to time.

**ST. ANTHONY FALLS LOWER LOCK AND DAM**  
Mississippi River. Hennepin County Minnesota.

North Central Division  
St. Paul District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Navigation	Navigation	PL 75-392
	Recreation	PL 78-534

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

**ST. ANTHONY FALLS UPPER LOCK AND DAM**  
Mississippi River. Hennepin County Minnesota.

North Central Division  
St. Paul District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Navigation	Navigation	PL 75-392
	Recreation	PL 78-534

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

**WINNIBIGOSHISH DAM**  
Mississippi River. Itasca County Minnesota.

North Central Division  
St. Paul District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Water Supply	Water Supply	PL 85-500
Flood Control	Flood Control	PL 78-534
Recreation	Recreation	PL 78-534
Indian Tribal Rights		
Water Quality	Water Quality	PL 92-500
Fish/Wildlife	Fish/Wildlife	PL 85-624
	Navigation	RHA 1880

(continued)

WINNIBICOSH DAM (continued)

1. The need to regulate this project for navigation was eliminated once the Mississippi River locks and dams above Lake Pepin were completed.
2. Aboriginal and treaty rights, which pre-date the project, and the Federal Government's attendant trust responsibilities requires modification of water control operation from time to time.

**BALL MOUNTAIN LAKE**

New England Division

West River. Windham County Vermont.

Operating PurposesFlood Control  
RecreationAuthorized PurposesFlood Control  
RecreationAuthorizing LawsPL 78-534, PL 83-780  
PL 78-534**BARRE FALLS DAM**

New England Division

Ware River. Worcester County Massachusetts.

Operating Purposes

Flood Control

Authorized PurposesFlood Control  
RecreationAuthorizing LawsPL 77-228  
PL 78-534

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

**BIRCH HILL DAM**

New England Division

Millers River. Worcester County Massachusetts.

Operating Purposes

Flood Control

Authorized PurposesFlood Control  
RecreationAuthorizing LawsPL 74-738, PL 75-761  
PL 78-534

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

**BLACK ROCK LAKE**

New England Division

Branch Brook. Litchfield County Connecticut.

Operating PurposesRecreation  
Flood ControlAuthorized PurposesRecreation  
Flood ControlAuthorizing LawsPL 78-534  
PL 88-845**BLACKWATER DAM**

New England Division

Blackwater River. Merrimack County New Hampshire.

Operating Purposes

Flood Control

Authorized PurposesRecreation  
Flood ControlAuthorizing LawsPL 78-534  
PL 74-738, PL 75-761

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

**BUFFUMVILLE LAKE**

New England Division

Little River. Worcester County Massachusetts.

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Flood Control	Flood Control	PL 77-228
Recreation	Recreation	PL 78-534

**COLEBROOK RIVER LAKE**

New England Division

West Branch Farmington River. Litchfield County Connecticut  
Tolland, Hampden, Berkshire Counties Massachusetts

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
	Recreation	PL 78-534
Flood Control	Flood Control	PL 86-645
Water Supply	Water Supply	PL 86-645
Fish/Wildlife	Fish/Wildlife	PL 85-624

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

**CONANT BROOK DAM**

New England Division

Conant Brook. Hampden County Massachusetts.

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
	Recreation	PL 78-534
Flood Control	Flood Control	PL 86-645

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

**EAST BRIMFIELD LAKE**

New England Division

Quinebaug River. Worcester County Massachusetts.

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Water Supply	Water Supply	PL 78-534
Recreation	Recreation	PL 78-534
Flood Control	Flood Control	PL 77-228

**EDWARD MACDOWELL DAM**

New England Division

Nubanusit Brook. Cheshire County New Hampshire.

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Recreation	Recreation	PL 78-534
Flood Control	Flood Control	PL 74-738, PL 76-761

Operating Purposes

Recreation  
Flood Control

Authorized Purposes

Recreation  
Flood Control

Authorizing Laws

PL 78-534  
PL 75-761, PL 74-738

## FRANKLIN FALLS DAM

New England Division

Pemigewasset River. Grafton and Belknap Counties New Hampshire.

Operating Purposes

Flood Control

Authorized Purposes

Recreation  
Flood Control

Authorizing Laws

PL 78-534  
PL 74-738, PL 75-761

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

## HANCOCK BROOK LAKE

New England Division

Hancock Brook. Litchfield County Connecticut.

Operating Purposes

Recreation  
Flood Control

Authorized Purposes

Recreation  
Flood Control

Authorizing Laws

PL 78-534  
PL 88-845

## HODGES VILLAGE DAM

New England Division

French River. Worcester County Massachusetts.

Operating Purposes

Flood Control

Authorized Purposes

Flood Control  
Recreation

Authorizing Laws

PL 77-228  
PL 78-534

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

## HOP BROOK LAKE

New England Division

Hop Brook. New Haven County Connecticut.

Operating Purposes

Recreation  
Flood Control

Authorized Purposes

Recreation  
Flood Control

Authorizing Laws

PL 78-534  
PL 88-845

## HOPKINTON LAKE

New England Division

Contoocook River. Merrimack County New Hampshire.

Operating Purposes

Recreation  
Flood Control

Authorized Purposes

Recreation  
Flood Control

Authorizing Laws

PL 78-534  
PL 75-761, PL 74-738

Operating Purposes

Flood Control

Authorized Purposes

Flood Control  
Recreation

Authorizing Laws

PL 74-738, PL 75-761  
PL 78-534

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

LITTLEVILLE LAKE

New England Division

Middle Branch Westfield River. Hampshire County Massachusetts.

Operating Purposes

Flood Control  
Water Supply

Authorized Purposes

Recreation  
Flood Control  
Water Supply

Authorizing Laws

PL 78-534  
PL 85-500  
PL 85-500

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

MANSFIELD HOLLOW LAKE

New England Division

Natchaug River. Tolland and Windham Counties Connecticut.

Operating Purposes

Flood Control  
Recreation

Authorized Purposes

Flood Control  
Recreation

Authorizing Laws

PL 77-228  
PL 78-534

NORTH HARTLAND LAKE

New England Division

Ottaquechee River. Windsor County Vermont.

Operating Purposes

Flood Control  
Recreation  
Hydroelectric Power

Authorized Purposes

Flood Control  
Recreation

Authorizing Laws

PL 75-761, PL 77-228  
PL 78-534

1. Water is regulated for the non-Federally owned hydroelectric generating plant constructed under FERC license number 2816-001.

NORTH SPRINGFIELD LAKE

New England Division

Black River. Windsor County Vermont.

Operating Purposes

Flood Control  
Recreation

Authorized Purposes

Flood Control  
Recreation

Authorizing Laws

PL 75-761, PL 77-228  
PL 78-534

Northfield Brook. Litchfield County Connecticut.

Operating PurposesRecreation  
Flood ControlAuthorized PurposesRecreation  
Flood ControlAuthorizing LawsPL 78-534  
PL 86-645

## OTTER BROOK LAKE

New England Division

Otter Brook. Cheshire County New Hampshire.

Operating PurposesFlood Control  
RecreationAuthorized PurposesFlood Control  
RecreationAuthorizing LawsPL 83-780  
PL 78-534

## SURREY MOUNTAIN LAKE

New England Division

Ashuelot River. Cheshire County New Hampshire.

Operating PurposesFlood Control  
RecreationAuthorized PurposesFlood Control  
RecreationAuthorizing LawsPL 74-738, PL 75-761  
PL 78-534

## THOMASTON DAM

New England Division

Naugatuck River. Litchfield County Connecticut.

Operating Purposes

Flood Control

Authorized PurposesRecreation  
Flood ControlAuthorizing LawsPL 78-534  
PL 78-534

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

## TOWNSHEND LAKE

New England Division

West River. Windham County Vermont.

Operating PurposesFlood Control  
RecreationAuthorized PurposesFlood Control  
RecreationAuthorizing LawsPL 78-534, PL 83-780  
PL 78-534

## TULLY LAKE

New England Division

East Branch Tully Lake. Worcester County Massachusetts.

Operating PurposesFlood Control  
RecreationAuthorized PurposesFlood Control  
RecreationAuthorizing LawsPL 74-738, PL 75-761  
PL 78-534

Operating Purposes

Flood Control

Authorized Purposes

Flood Control

Recreation

Authorizing Laws

PL 74-738, PL 75-761

PL 78-534

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

WEST HILL DAM

New England Division

West River. Worcester County Massachusetts.

Operating Purposes

Flood Control

Authorized Purposes

Flood Control

Recreation

Authorizing Laws

PL 78-534

PL 78-534

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

WEST THOMPSON LAKE

New England Division

Quinebaug River. Windham County Connecticut.

Operating Purposes

Flood Control

Recreation

Authorized Purposes

Flood Control

Recreation

Authorizing Laws

PL 86-645

PL 78-534

WESTVILLE LAKE

New England Division

Quinebaug River. Worcester County Massachusetts.

Operating Purposes

Flood Control

Recreation

Authorized Purposes

Flood Control

Recreation

Authorizing Laws

PL 77-228

PL 78-534



**CHENA RIVER LAKES**

Chena River. North Star Borough County Alaska.

North Pacific Division  
Alaska DistrictOperating PurposesRecreation  
Fish/Wildlife  
Flood ControlAuthorized PurposesRecreation  
Fish/Wildlife  
Flood ControlAuthorizing LawsPL 90-483  
PL 90-483  
PL 90-483**APPLEGATE LAKE**

Applegate River. Jackson County Oregon.

North Pacific Division  
Portland DistrictOperating PurposesFlood Control  
Fish/Wildlife  
Water Quality  
Recreation  
IrrigationAuthorized PurposesFlood Control  
Fish/Wildlife  
Water Quality  
Recreation  
IrrigationAuthorizing LawsPL 87-874  
PL 87-874  
PL 87-874  
PL 87-874  
PL 87-874, PL 93-251**BIG CLIFF DAM**

North Santiam River. Marion and Linn Counties Oregon.

North Pacific Division  
Portland DistrictOperating PurposesHydroelectric Power  
ReregulationAuthorized PurposesHydroelectric Power  
ReregulationAuthorizing LawsPL 80-858  
PL 80-858

1. Part of the Detroit Lake project; it reregulates the discharges from Detroit Reservoir.

**BLUE RIVER LAKE**

Blue River. Lane County Oregon.

North Pacific Division  
Portland DistrictOperating PurposesFlood Control  
  
Recreation  
Water Quality  
Irrigation  
Fish/WildlifeAuthorized PurposesNavigation  
Flood Control  
Hydroelectric Power  
Recreation  
Water Quality  
Irrigation  
Fish/WildlifeAuthorizing LawsPL 81-516  
PL 81-516  
PL 99-682  
PL 78-534  
PL 81-516  
PL 81-516  
PL 81-516

1. Federal development of hydropower has been held in abeyance because the Eugene Water and Electric Board has sought to develop hydropower at the project under a license from the Federal Energy Regulatory Commission (FERC).
2. The upper river above Willamette Falls Locks is no longer utilized for commercial navigation.

**BONNEVILLE LOCK AND DAM**

North Pacific Division

Columbia River. Multnomah County Oregon. Skamania County  
Washington

Portland District

Operating PurposesAuthorized PurposesAuthorizing Laws

Hydroelectric Power

Hydroelectric Power

PL 75-329

Recreation

Recreation

PL 78-534

Navigation

Navigation

PL 75-329

Water Quality

Water Quality

PL 92-500

Fish/Wildlife

Fish/Wildlife

PL 85-824, PL 98-396

1. Project originally authorized by the Federal Emergency Administration of Public Works on 30 Sep 1933. Authorized by Congress on 30 Aug 1935 (Senate Committee Print, 73rd Congress, Second Session). PL 75-329 authorized the completion, operation and maintenance of the project by the Department of Defense on 20 Aug 1937.

**COTTAGE GROVE LAKE**

North Pacific Division

Coast Fork, Willamette River. Lane County Oregon.

Portland District

Operating PurposesAuthorized PurposesAuthorizing Laws

Flood Control

Navigation

PL 75-761

Irrigation

Flood Control

PL 75-761

Fish/Wildlife

Irrigation

PL 81-516

Water Quality

Fish/Wildlife

PL 81-516

Recreation

Water Quality

PL 81-516

Recreation

PL 78-534

1. The upper river above Willamette Falls Locks is no longer utilized by commercial navigation.

**COUGAR LAKE**

North Pacific Division

South Fork, McKenzie River. Lane County Oregon.

Portland District

Operating PurposesAuthorized PurposesAuthorizing Laws

Irrigation

Navigation

PL 81-516

Hydroelectric Power

Irrigation

PL 81-516

Flood Control

Hydroelectric Power

PL 81-516, PL 83-780

Fish/Wildlife

Flood Control

PL 81-516

Water Quality

Fish/Wildlife

PL 81-516

Recreation

Water Quality

PL 81-516

Recreation

PL 78-534

1. The upper river above Willamette Falls Locks is no longer utilized by commercial navigation.

## DETROIT LAKE

North Pacific Division

North Santiam River. Marion County Oregon.

Portland District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Flood Control	Flood Control	PL 75-761
Irrigation	Irrigation	PL 75-761
Hydroelectric Power	Hydroelectric Power	PL 60-658
Recreation	Recreation	PL 78-534
	Navigation	PL 75-761
Fish/Wildlife	Fish/Wildlife	PL 61-516
Water Quality	Water Quality	PL 61-516

1. The upper river above Willamette Falls Locks is no longer utilized by commercial navigation.

## DEXTER DAM

North Pacific Division

Middle Fork, Willamette River. Lane County Oregon.

Portland District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Hydroelectric Power	Hydroelectric Power	PL 61-516
Reregulation	Reregulation	PL 61-516
Recreation	Recreation	PL 78-534

1. Part of the Lookout Point Project and reregulates the discharges from Lookout Point Dam.

## DORENA LAKE

North Pacific Division

Row River. Lane County Oregon.

Portland District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Flood Control	Flood Control	PL 75-761
Recreation	Recreation	PL 78-534
	Navigation	PL 75-761
Water Quality	Water Quality	PL 61-516
Irrigation	Irrigation	PL 61-516
Fish/Wildlife	Fish/Wildlife	PL 61-516

1. The upper river above Willamette Falls Locks is no longer utilized by commercial navigation.

## FALL CREEK LAKE

North Pacific Division

Fall Creek. Lane County Oregon.

Portland District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Flood Control	Flood Control	PL 61-516
Irrigation	Irrigation	PL 61-516
Recreation	Recreation	PL 78-534
Fish/Wildlife	Fish/Wildlife	PL 61-516
	Navigation	PL 61-516
Water Quality	Water Quality	PL 61-516

(continued)

1. The upper river above Willamette Falls Locke is no longer utilized by commercial navigation.

**FERN RIDGE LAKE**  
Long Tom River. Lane County Oregon.

North Pacific Division  
Portland District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Flood Control	Flood Control	PL 75-761, PL 87-874
Recreation	Recreation	PL 78-534
	Navigation	PL 75-761
Fish/Wildlife	Fish/Wildlife	PL 81-518
Water Quality	Water Quality	PL 81-518
Irrigation	Irrigation	PL 81-518

1. The upper river above Willamette Falls Locke is no longer utilized by commercial navigation.

**FOSTER DAM**  
South Santiam River. Linn County Oregon.

North Pacific Division  
Portland District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Reregulation	Reregulation	PL 86-645
Hydroelectric Power	Hydroelectric Power	PL 86-645
Irrigation	Irrigation	PL 88-845
	Navigation	PL 86-645
Recreation	Recreation	PL 78-534
Fish/Wildlife	Fish/Wildlife	PL 81-518
Water Quality	Water Quality	PL 81-518
Flood Control	Flood Control	PL 86-645

1. The upper river above Willamette Falls Locks is no longer utilized by commercial navigation.

2. Reregulates the discharge from Green Peter Dam.

**GREEN PETER LAKE**  
Middle Fork, Santiam River. Linn County Oregon.

North Pacific Division  
Portland District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Flood Control	Flood Control	PL 81-518
Irrigation	Irrigation	PL 81-518
Hydroelectric Power	Hydroelectric Power	PL 81-518, PL 83-780
Recreation	Recreation	PL 78-534
Fish/Wildlife	Fish/Wildlife	PL 81-518
Water Quality	Water Quality	PL 81-518
	Navigation	PL 81-518

1. The upper river above Willamette Falls Locks is no longer utilized by commercial navigation.

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Flood Control	Navigation	PL 81-516
Hydroelectric Power	Flood Control	PL 81-516
Recreation	Hydroelectric Power	PL 81-516
Fish/Wildlife	Recreation	PL 78-534
Water Quality	Fish/Wildlife	PL 81-516
Irrigation	Water Quality	PL 81-516
	Irrigation	PL 81-516

1. The upper river above Willamette Falls Locks is no longer utilized by commercial navigation.

JOHN DAY LOCK AND DAM - LAKE UMATILLA North Pacific Division  
 Columbia River. Sherman County Oregon. Klickitat County Portland District  
 Washington

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Flood Control	Flood Control	PL 81-516
Irrigation	Irrigation	PL 81-516
Navigation	Navigation	PL 81-516
Recreation	Recreation	PL 78-534
Fish/Wildlife	Fish/Wildlife	PL 81-516
Water Quality	Water Quality	PL 81-516, PL 92-500
Hydroelectric Power	Hydroelectric Power	PL 81-516

LOOKOUT POINT LAKE North Pacific Division  
 Middle Fork, Willamette River. Lane County Oregon. Portland District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Hydroelectric Power	Navigation	PL 78-781
Recreation	Hydroelectric Power	PL 81-516
Flood Control	Recreation	PL 78-534
Fish/Wildlife	Flood Control	PL 78-781
Water Quality	Fish/Wildlife	PL 81-516
Irrigation	Water Quality	PL 81-516
	Irrigation	PL 81-516

1. The upper river above Willamette Falls Locks is no longer utilized by commercial navigation.

LOST CREEK LAKE  
Rogue River. Jackson County Oregon.

North Pacific Division  
Portland District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Flood Control	Flood Control	PL 87-874
Fish/Wildlife	Fish/Wildlife	PL 87-874
Water Quality	Water Quality	PL 87-874
Recreation	Recreation	PL 87-874
Irrigation	Irrigation	PL 87-874, PL 89-888
Water Supply	Water Supply	PL 87-874, PL 85-500
Hydroelectric Power	Hydroelectric Power	PL 87-874

THE DALLES LOCK AND DAM - LAKE CELILO  
Columbia River. Wasco County Oregon. Klickitat County  
Washington

North Pacific Division  
Portland District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Irrigation	Irrigation	PL 81-518
Navigation	Navigation	PL 81-518
Recreation	Recreation	PL 78-534
Fish/Wildlife	Fish/Wildlife	PL 85-824, PL 98-396
Water Quality	Water Quality	PL 81-518, PL 92-500
Hydroelectric Power	Hydroelectric Power	PL 81-518

WILLOW CREEK LAKE  
Willow Creek. Morrow County Oregon.

North Pacific Division  
Portland District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
	Irrigation	PL 89-298
Water Quality	Water Quality	PL 89-298
Sports Fishing/Wildlife	Sports Fishing/Wildlife	PL 89-298
	Water Supply	PL 89-298, PL 85-500
Recreation	Recreation	PL 76-534
Flood Control	Flood Control	PL 89-298

1. Demands for irrigation and municipal and industrial water supply has not developed.

ALBENI FALLS DAM  
Pend Oreille River. Bonner County Idaho.

North Pacific Division  
Seattle District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Recreation	Recreation	PL 78-534
Navigation	Navigation	PL 81-518
Hydroelectric Power	Hydroelectric Power	PL 81-518
Flood Control	Flood Control	PL 81-518

Operating Purposes

Hydroelectric Power

Authorized Purposes

Hydroelectric Power  
Recreation

Authorizing Laws

PL 79-528  
PL 78-534

1. Chief Joseph Additional Units Project was authorized by PL 94-587 and PL 95-26.
2. Access and facilities are provided for recreation but water is not controlled for that purpose.

HOWARD A. HANSON DAM

Green River. King and Pierce Counties Washington.

North Pacific Division  
Seattle District

Operating Purposes

Flood Control  
Fish/Wildlife

Authorized Purposes

Flood Control  
Fish/Wildlife  
Water Supply  
Recreation  
Water Quality  
Irrigation

Authorizing Laws

PL 81-516  
PL 81-516  
PL 81-516  
PL 78-534  
PL 81-516  
PL 81-516

1. Water quality (called pollution abatement in PL 81-516) benefits are derived from the flows released for fish and wildlife.
2. Originally planned water supply needs did not develop. A study of current water supply needs that could be served by the project is underway.
3. Irrigation water supply on the scale originally planned did not develop. Irrigators draw water from the river downstream from the dam.

LIBBY DAM - LAKE KOOCANUSA

Kootenai River. Lincoln County Montana.

North Pacific Division  
Seattle District

Operating Purposes

Recreation  
Hydroelectric Power  
Flood Control

Authorized Purposes

Recreation  
Hydroelectric Power  
Flood Control

Authorizing Laws

PL 78-534  
PL 81-518  
PL 81-516

MUD MOUNTAIN DAM

White River. King, Pierce Counties Washington.

North Pacific Division  
Seattle District

Operating Purposes

Flood Control

Authorized Purposes

Recreation  
Flood Control

Authorizing Laws

PL 78-534  
PL 74-738

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

**WYNOCHEE LAKE**

Wynoochee River. Grays Harbor County Washington.

North Pacific Division

Seattle District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Flood Control	Flood Control	PL 87-874
Water Supply	Water Supply	PL 87-874
Fish/Wildlife	Fish/Wildlife	PL 87-874
	Irrigation	PL 87-874
Recreation	Recreation	PL 78-534

1. Transfer of operation, maintenance, repair and rehabilitation to the city of Aberdeen, Washington was authorized by PL 100-876. Non-Federal hydropower development of Wynoochee Dam by the cities of Tacoma and Aberdeen under Federal Energy Regulatory Commission License No. 6842 is currently in the design phase. Transfer of fee title to the city of Aberdeen, which is authorized by PL 101-640, is in the negotiation stage.

2. Federal hydropower was authorized in the original authorization (PL 87-874) subject to additional economic studies. Post-authorization studies by the Seattle District, USACE, showed hydropower to be uneconomical.

3. The demand for irrigation water supply as originally planned has not materialized.

**DWORSHAK DAM AND RESERVOIR**

North Fork of the Clearwater River. Clearwater County Idaho.

North Pacific Division

Walla Walla District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Fish/Wildlife	Fish/Wildlife	PL 87-874, PL 85-824
Hydroelectric Power	Hydroelectric Power	PL 87-874
Navigation	Navigation	PL 87-874
Recreation	Recreation	PL 78-534
Flood Control	Flood Control	PL 65-500, PL 87-874

**ICE HARBOR LOCK AND DAM - LAKE SACAJAWEA**

Snake River. Walla Walla and Franklin Counties Washington.

North Pacific Division

Walla Walla District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Navigation	Navigation	PL 79-14
Irrigation	Irrigation	PL 79-14
Recreation	Recreation	PL 78-534
Hydroelectric Power	Hydroelectric Power	PL 79-14
Fish/Wildlife	Fish/Wildlife	PL 85-624



<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Fish/Wildlife	Fish/Wildlife	PL 85-824
Irrigation	Irrigation	PL 79-14
Navigation	Navigation	PL 79-14
Hydroelectric Power	Hydroelectric Power	PL 79-14
Recreation	Recreation	PL 78-534

LOWER GRANITE LOCK AND DAM North Pacific Division  
Snake River. Whitman and Garfield Counties Washington. Walla Walla District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Navigation	Navigation	PL 79-14
Hydroelectric Power	Hydroelectric Power	PL 79-14
Recreation	Recreation	PL 78-534
Fish/Wildlife	Fish/Wildlife	PL 85-824
Irrigation	Irrigation	PL 79-14

LOWER MONUMENTAL LOCK AND DAM - LAKE HERBERT G. WEST North Pacific Division  
Snake River. Walla Walla and Franklin Counties Washington. Walla Walla District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Fish/Wildlife	Fish/Wildlife	PL 85-824
Irrigation	Irrigation	PL 79-14
Recreation	Recreation	PL 78-534
Hydroelectric Power	Hydroelectric Power	PL 79-14
Navigation	Navigation	PL 79-14

LUCKY PEAK LAKE North Pacific Division  
Boise River. Ada County Idaho. Walla Walla District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Flood Control	Flood Control	PL 79-528
Irrigation	Irrigation	PL 79-525
Recreation	Recreation	PL 78-534
Fish/Wildlife	Fish/Wildlife	PL 85-824
Streamflow Maintenance	Streamflow Maintenance	PL 94-587

1. Streamflow maintenance involves the making of minimum winter flow releases for the benefit of downstream fish and wildlife.

2. Under a Memorandum of Understanding with the U. S. Bureau of Reclamation (USBR), Lucky Peak is regulated for flood control and irrigation as one element of a three project system, the other two being USBR's Anderson Ranch and Arrowrook reservoirs.

MCNARY LOCK AND DAM - LAKE WALLULA

Columbia River. Umatilla County Oregon. Benton County  
Washington

North Pacific Division

Walla Walla District

Operating Purposes

Hydroelectric Power  
Navigation  
Irrigation  
Recreation  
Fish/Wildlife

Authorized Purposes

Hydroelectric Power  
Navigation  
Irrigation  
Recreation  
Fish/Wildlife

Authorizing Laws

PL 78-14, PL 89-662  
PL 78-14  
PL 78-14  
PL 78-534  
PL 85-624

VIRGIL B. BENNINGTON LAKE

Mill Creek. Walla Walla County Washington.

North Pacific Division

Walla Walla District

Operating Purposes

Flood Control  
Recreation

Authorized Purposes

Flood Control  
Recreation

Authorizing Laws

PL 75-761  
PL 78-534

**ALUM CREEK LAKE**

Alum Creek. Delaware County Ohio.

Ohio River Division  
Huntington DistrictOperating PurposesWater Supply  
Fish/Wildlife  
Flood Control  
RecreationAuthorized PurposesWater Supply  
Fish/Wildlife  
Flood Control  
RecreationAuthorizing LawsPL 87-874  
PL 87-874  
PL 87-874  
PL 87-874**ATWOOD LAKE**Indian Fork of Conotton Creek of Tuscarawas River. Tuscarawas  
County Ohio.Ohio River Division  
Huntington DistrictOperating PurposesFish/Wildlife  
Recreation  
Flood ControlAuthorized PurposesWater Conservation  
Recreation  
Flood ControlAuthorizing LawsPL 76-398, PL 73-87  
PL 76-398, PL 73-87  
PL 76-398, PL 73-87

1. Water Conservation - As per the "Official Plan for the Muskingum Watershed Conservancy District," dated 8 Oct 34 and subsequently revised 15 April 35 and 5 Jun 35, conservation storage is to be withdrawn during periods of low flow for purpose of water supply, groundwater recharge, industrial uses, dilution of pollution, promotion of fish life and various other purposes (Vol I, p. 7).

**BEACH CITY LAKE**

Sugar Creek of Tuscarawas River. Tuscarawas County Ohio.

Ohio River Division  
Huntington DistrictOperating PurposesFish/Wildlife  
Recreation  
Flood ControlAuthorized PurposesWater Conservation  
Recreation  
Flood ControlAuthorizing LawsPL 76-398, PL 73-87  
PL 76-398, PL 73-87  
PL 76-398, PL 73-87

1. Water Conservation - As per the "Official Plan for the Muskingum Watershed Conservancy District," dated 8 Oct 34 and subsequently revised 15 April 35 and 5 Jun 35, conservation storage is to be withdrawn during periods of low flow for purpose of water supply, groundwater recharge, industrial uses, dilution of pollution, promotion of fish life and various other purposes (Vol I, p. 7).

**BEECH FORK LAKE**

Beech Fork. Wayne County West Virginia.

Ohio River Division  
Huntington DistrictOperating PurposesRecreation  
Flood ControlAuthorized PurposesRecreation  
Flood ControlAuthorizing LawsPL 87-874, PL 100-676  
PL 67-674

1. PL 100-676 authorized whitewater recreation and recreation enhancement. The project is not operated for these purposes because the need has not been identified.

BELLEVIEW LOCKS AND DAM  
Ohio River. Wood County West Virginia. Meigs County Ohio  
Ohio River Division  
Huntington District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Fish/Wildlife	Fish/Wildlife	PL 86-824
Recreation	Recreation	PL 76-534
Navigation	Navigation	PL 80-317

BLUESTONE LAKE  
New River. Summers County West Virginia.  
Ohio River Division  
Huntington District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Flood Control	Flood Control	PL 74-738, PL 75-761
	Hydroelectric Power	PL 74-738, PL 75-761
Recreation	Recreation	PL 76-534, PL 100-876
Low Flow Augmentation	Low Flow Augmentation	PL 74-738, PL 75-761
Fish/Wildlife	Fish/Wildlife	PL 74-738

1. The project purposes were originally set forth in Executive Order 7183, 12 September 1935.
2. Limited facilities were constructed to accomodate subsequent hydropower development which as yet has not materialized. Studies are proposed, but not yet funded, to identify potential whitewater recreation for future implementation of PL 100-876. Recreation enhancement is also a newly authorized purpose for which a need has not been identified.

BOLIVAR DAM  
Sandy Creek of Tuscarawas River. Stark and Tuscarawas Counties Ohio.  
Ohio River Division  
Huntington District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Flood Control	Flood Control	PL 76-398, PL 73-87

BURNEVILLE LAKE  
Little Kanawha River. Braxton County West Virginia.  
Ohio River Division  
Huntington District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Recreation	Recreation	PL 76-534
	Low Flow Augmentation	PL 75-761
Flood Control	Flood Control	PL 75-761
Water Quality	Water Quality	PL 87-88

1. Burneville Lake was intended to be part of a system of reservoirs that would meet low flow requirements. Since that system has not been constructed, Burneville Lake alone cannot meet the low flow augmentation needs and thus is not regulated for that purpose.

Operating Purposes

Flood Control  
Recreation  
Fish/Wildlife

Authorized Purposes

Flood Control  
Recreation  
Water Conservation

Authorizing Laws

PL 76-396, PL 73-67  
PL 76-396, PL 73-67  
PL 76-396, PL 73-67

1. Water Conservation - As per the "Official Plan for the Muskingum Watershed Conservancy District," dated 8 Oct 34 and subsequently revised 15 Apr 35 and 5 Jun 35, conservation storage is to be withdrawn during periods of low flow for purpose of water supply, groundwater recharge, industrial uses, dilution of pollution, promotion of fish life and various other purposes (Vol I, p. 7).

## GLENDENING LAKE

Brushy Fork of Stillwater Creek. Harrison County Ohio.

Ohio River Division  
Huntington District

Operating Purposes

Fish/Wildlife  
Recreation  
Flood Control

Authorized Purposes

Water Conservation  
Recreation  
Flood Control

Authorizing Laws

PL 76-396, PL 73-67  
PL 76-396, PL 73-67  
PL 76-396, PL 73-67

1. Water Conservation - As per the "Official Plan for the Muskingum Watershed Conservancy District," dated 8 Oct 34 and subsequently revised 15 Apr 35 and 5 Jun 35, conservation storage is to be withdrawn during periods of low flow for purpose of water supply, groundwater recharge, industrial uses, dilution of pollution, promotion of fish life and various other purposes (Vol I, p. 7).

## CPT. ANTHONY MELDAHL LOCKS AND DAM

Ohio River. Bracken County Kentucky. Clermont County Ohio

Ohio River Division  
Huntington District

Operating Purposes

Fish/Wildlife  
Recreation  
Navigation

Authorized Purposes

Fish/Wildlife  
Recreation  
Navigation

Authorizing Laws

PL 85-624  
PL 78-534  
PL 60-317

## DEER CREEK LAKE

Deer Creek. Pickaway County Ohio.

Ohio River Division  
Huntington District

Operating Purposes

Flood Control  
Low Flow Augmentation  
Recreation  
Fish/Wildlife

Authorized Purposes

Flood Control  
Low Flow Augmentation  
Recreation  
Fish/Wildlife

Authorizing Laws

PL 75-781  
PL 75-781  
PL 78-534  
PL 85-624

**DELAWARE LAKE**

Olen tangy River, Delaware County Ohio.

Ohio River Division

Huntington District

Operating Purposes

Flood Control  
 Low Flow Augmentation  
 Recreation

Authorized Purposes

Flood Control  
 Low Flow Augmentation  
 Recreation

Authorizing Laws

PL 75-761  
 PL 75-761  
 PL 78-534

**DEWEY LAKE**

Johns Creek. Floyd County Kentucky.

Ohio River Division

Huntington District

Operating Purposes

Fish/Wildlife  
 Flood Control  
 Recreation

Authorized Purposes

Low Flow Augmentation  
 Flood Control  
 Recreation

Authorizing Laws

PL 75-761  
 PL 75-761  
 PL 78-534

**DILLON LAKE**

Licking River. Muskingum County Ohio.

Ohio River Division

Huntington District

Operating Purposes

Flood Control  
 Recreation  
 Low Flow Augmentation

Authorized Purposes

Flood Control  
 Recreation  
 Low Flow Augmentation

Authorizing Laws

PL 75-761  
 PL 78-534  
 PL 75-761

**DOVER DAM**

Tuscarawas River. Tuscarawas County Ohio.

Ohio River Division

Huntington District

Operating Purposes

Flood Control

Authorized Purposes

Water Conservation  
 Flood Control

Authorizing Laws

PL 76-396, PL 73-67  
 PL 76-396, PL 73-67

1. Water conservation storage was never incorporated into the project. A small pool, which exists solely because of the physical configuration of the reservoir bottom and which cannot be regulated by the outlet works, serves the purpose of fishery conservation.

**EAST LYNN LAKE**

Twelvepole Creek. Wayne County West Virginia.

Ohio River Division

Huntington District

Operating Purposes

Water Quality  
 Low Flow Augmentation  
 Flood Control  
 Recreation

Authorized Purposes

Water Quality  
 Low Flow Augmentation  
 Flood Control  
 Recreation

Authorizing Laws

PL 87-88  
 PL 75-761  
 PL 75-761  
 PL 78-534, PL 100-676

1. PL 100-676 authorized whitewater recreation and recreation enhancement. The project is not operated for these purposes because the need has not been identified.

## FISHTRAP LAKE

Levisa Fork. Pike County Kentucky.

Ohio River Division

Huntington District

Operating Purposes

Recreation  
 Low Flow Augmentation  
 Flood Control  
 Fish/Wildlife  
 Water Quality

Authorized Purposes

Recreation  
 Low Flow Augmentation  
 Flood Control  
 Fish/Wildlife  
 Water Quality

Authorizing Laws

PL 78-834  
 PL 75-781  
 PL 75-781  
 PL 85-624  
 PL 87-88

## ROBERT C. BYRD LOCKS AND DAM

Ohio River. Mason County West Virginia. Gallia County Ohio

Ohio River Division

Huntington District

Operating Purposes

Navigation  
 Recreation  
 Fish/Wildlife

Authorized Purposes

Navigation  
 Recreation  
 Fish/Wildlife

Authorizing Laws

PL 74-409, PL 73-87  
 PL 78-834  
 PL 85-824

## GRAYSON LAKE

Little Sandy River. Carter County Kentucky.

Ohio River Division

Huntington District

Operating Purposes

Water Quality  
 Recreation  
 Flood Control

Authorized Purposes

Water Quality  
 Recreation  
 Flood Control

Authorizing Laws

PL 87-88  
 PL 86-645  
 PL 88-645

## GREENUP LOCKS AND DAM

Ohio River. Greenup County Kentucky. Scioto County Ohio

Ohio River Division

Huntington District

Operating Purposes

Fish/Wildlife  
 Recreation  
 Navigation

Authorized Purposes

Fish/Wildlife  
 Recreation  
 Navigation

Authorizing Laws

PL 85-624  
 PL 78-834  
 PL 80-317, PL 61-264

## JOHN W. FLANNAGAN DAM AND RESERVOIR

Pound River. Dickenson County Virginia.

Ohio River Division

Huntington District

Operating Purposes

Fish/Wildlife  
 Water Supply  
 Flood Control  
 Low Flow Augmentation  
 Recreation  
 Water Quality

Authorized Purposes

Fish/Wildlife  
 Water Supply  
 Flood Control  
 Low Flow Augmentation  
 Recreation  
 Water Quality

Authorizing Laws

PL 85-624  
 PL 85-500  
 PL 75-761  
 PL 75-761  
 PL 78-834  
 PL 87-88

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Fish/Wildlife	Water Conservation	PL 76-396, PL 73-67
Recreation	Recreation	PL 76-396, PL 73-67
Flood Control	Flood Control	PL 76-396, PL 73-67

1. Water Conservation - As per the "Official Plan for the Muskingum Watershed Conservancy District," dated 8 Oct 34 and subsequently revised 15 Apr 35 and 5 Jun 35, conservation storage is to be withdrawn during periods of low flow for purpose of water supply, groundwater recharge, industrial uses, dilution of pollution, promotion of fish life and various other purposes (Vol I, p. 7).

LONDON LOOKS AND DAM Ohio River Division  
Kanawha River. Kanawha County West Virginia. Huntington District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Fish/Wildlife	Fish/Wildlife	PL 85-624
Recreation	Recreation	PL 78-534
Navigation	Navigation	PL 71-520

MARMET LOCKS AND DAM Ohio River Division  
Kanawha River. Kanawha County West Virginia. Huntington District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Navigation	Navigation	PL 71-520
Recreation	Recreation	PL 78-534
Fish/Wildlife	Fish/Wildlife	PL 85-624

MOHAWK DAM Ohio River Division  
Wahhonding River. Coshocton County Ohio. Huntington District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Flood Control	Flood Control	PL 76-396, PL 73-67

MOHICANVILLE DAM Ohio River Division  
Lake Fork of Mohican River. Ashland County Ohio. Huntington District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Flood Control	Flood Control	PL 76-396, PL 73-67



<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Fish/Wildlife	Fish/Wildlife	PL 85-624
Recreation	Recreation	PL 78-534, PL 87-874
Flood Control	Flood Control	PL 78-534, PL 87-874

NORTH FORK OF POUND LAKE  
North Fork of Pound River. Wise County Virginia. Ohio River Division  
Huntington District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Flood Control	Flood Control	PL 88-648
Water Supply	Water Supply	PL 85-500
Fish/Wildlife	Fish/Wildlife	PL 85-624
Recreation	Recreation	PL 86-645, PL 85-624

PAINT CREEK LAKE  
Paint Creek. Ross County Ohio. Ohio River Division  
Huntington District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Water Quality	Water Quality	PL 87-88
Water Supply	Water Supply	PL 85-500
Flood Control	Flood Control	PL 75-761
Low Flow Augmentation	Low Flow Augmentation	PL 75-761
Recreation	Recreation	PL 78-534

PAINTSVILLE LAKE  
Paint Creek. Johnson County Kentucky. Ohio River Division  
Huntington District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Flood Control	Flood Control	PL 89-298
Recreation	Recreation	PL 89-298
Water Quality	Water Quality	PL 89-298

PIEDMONT LAKE  
Stillwater Creek of Tuscarawas River. Harrison County Ohio. Ohio River Division  
Huntington District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Recreation	Recreation	PL 76-396, PL 73-67
Fish/Wildlife	Water Conservation	PL 76-396, PL 73-67
Flood Control	Flood Control	PL 76-396, PL 73-67

1. Water Conservation - As per the "Official Plan for the Muskingum Watershed Conservancy District," dated 8 Oct 34 and subsequently revised 15 Apr 35 and 5 Jun 35, conservation storage is to be withdrawn during periods of low flow for purpose of water supply, groundwater recharge, industrial uses, dilution of pollution, promotion of fish life and various other purposes (Vol I, p. 7).

PLEASANT HILL LAKE

Clear Fork of Mohican River. Ashland County Ohio.

Ohio River Division

Huntington District

Operating Purposes

Flood Control  
Fish/Wildlife  
Recreation

Authorized Purposes

Flood Control  
Water Conservation  
Recreation

Authorizing Laws

PL 76-396, PL 73-67  
PL 76-396, PL 73-67  
PL 76-396, PL 73-67

1. Water Conservation - As per the "Official Plan for the Muskingum Watershed Conservancy District," dated 6 Oct 34 and subsequently revised 15 Apr 35 and 5 Jun 35, conservation storage is to be withdrawn during periods of low flow for purpose of water supply, groundwater recharge, industrial uses, dilution of pollution, promotion of fish life and various other purposes (Vol I, p. 7).

R.D. BAILEY LAKE

Guyandotte River. Mingo and Wyoming Counties West Virginia.

Ohio River Division

Huntington District

Operating Purposes

Water Quality  
Recreation  
Flood Control

Authorized Purposes

Water Quality  
Recreation  
Flood Control

Authorizing Laws

PL 67-674  
PL 67-674, PL 100-676  
PL 67-674

1. PL 100-676 authorized whitewater recreation and recreation enhancement. The project is not operated for these purposes because the need has not been identified.

RACINE LOCKS AND DAM

Ohio River. Mason County West Virginia. Meigs County Ohio

Ohio River Division

Huntington District

Operating Purposes

Fish/Wildlife  
Navigation  
Recreation

Authorized Purposes

Fish/Wildlife  
Navigation  
Recreation

Authorizing Laws

PL 65-624  
PL 60-317, PL 61-264  
PL 78-534

SENECAVILLE LAKE

Seneca Fork of Wills Creek. Guernsey County Ohio.

Ohio River Division

Huntington District

Operating Purposes

Flood Control  
Recreation  
Fish/Wildlife

Authorized Purposes

Flood Control  
Recreation  
Water Conservation

Authorizing Laws

PL 76-396, PL 73-67  
PL 76-396, PL 73-67  
PL 76-396, PL 73-67

1. Water Conservation - As per the "Official Plan for the Muskingum Watershed Conservancy District," dated 6 Oct 34 and subsequently revised 15 Apr 35 and 5 Jun 35, conservation storage is to be withdrawn during periods of low flow for purpose of water supply, groundwater recharge, industrial uses, dilution of pollution, promotion of fish life and various other purposes (Vol I, p. 7).

**SUMMERVILLE LAKE**

Gauley River. Nicholas County West Virginia.

Ohio River Division

Huntington District

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Operating Purposes

Flood Control  
 Low Flow Augmentation  
 Water Quality  
 Fish/Wildlife  
 Recreation

Authorized Purposes

Flood Control  
 Low Flow Augmentation  
 Water Quality  
 Fish/Wildlife  
 Recreation

Authorizing Laws

PL 75-761  
 PL 75-761  
 PL 87-88  
 PL 79-732  
 PL 78-534, PL 99-662, PL 100-676

1. PL 100-676 authorized whitewater recreation and recreation enhancement. The project is not operated for these purposes because the need has not been identified.

**SUTTON LAKE**

Elk River. Braxton County West Virginia.

Ohio River Division

Huntington District

Operating Purposes

Low Flow Augmentation  
 Flood Control  
 Fish/Wildlife  
 Recreation

Authorized Purposes

Low Flow Augmentation  
 Flood Control  
 Fish/Wildlife  
 Recreation

Authorizing Laws

PL 75-761  
 PL 75-761  
 PL 79-732  
 PL 78-534, PL 100-676

1. PL 100-676 authorized whitewater recreation and recreation enhancement. The project is not operated for these purposes because the need has not been identified.

**TAPPAN LAKE**

Little Stillwater Creek. Harrison County Ohio.

Ohio River Division

Huntington District

Operating Purposes

Flood Control  
 Recreation  
 Fish/Wildlife

Authorized Purposes

Flood Control  
 Recreation  
 Water Conservation

Authorizing Laws

PL 78-396, PL 73-67  
 PL 78-396, PL 73-67  
 PL 78-396, PL 73-67

1. Water Conservation - As per the "Official Plan for the Muskingum Watershed Conservancy District," dated 8 Oct 34 and subsequently revised 15 Apr 35 and 5 Jun 35, conservation storage is to be withdrawn during periods of low flow for purpose of water supply, groundwater recharge, industrial uses, dilution of pollution, promotion of fish life and various other purposes (Vol I, p. 7).

**TOM JENKINS DAM**

Hocking River. Athens County Ohio.

Ohio River Division

Huntington District

Operating Purposes

Flood Control  
 Recreation  
 Water Supply

Authorized Purposes

Flood Control  
 Low Flow Augmentation  
 Recreation  
 Water Supply

Authorizing Laws

PL 78-534  
 PL 78-534  
 PL 78-534  
 PL 85-500

1. Low flow augmentation is no longer required since the water treatment plant takes water directly from lake.

**WILLOW ISLAND LOCKS AND DAM**Ohio River. Pleasants County West Virginia. Washington County  
Ohio

Ohio River Division

Huntington District

Operating PurposesFish/Wildlife  
Recreation  
NavigationAuthorized PurposesFish/Wildlife  
Recreation  
NavigationAuthorizing LawsPL 85-824  
PL 78-534  
PL 80-317, PL 61-264**WILLS CREEK LAKE**

Wills Creek. Coshocton and Muskingum Counties Ohio.

Ohio River Division

Huntington District

Operating PurposesRecreation  
Flood Control  
Fish/WildlifeAuthorized PurposesRecreation  
Flood Control  
Water ConservationAuthorizing LawsPL 78-396, PL 73-87  
PL 78-398, PL 73-87  
PL 76-398, PL 73-87

1. Water Conservation - As per the "Official Plan for the Muskingum Watershed Conservancy District," dated 8 Oct 34 and subsequently revised 15 Apr 35 and 5 Jun 35, conservation storage is to be withdrawn during periods of low flow for purpose of water supply, groundwater recharge, industrial uses, dilution of pollution, promotion of fish life and various other purposes (Vol I, p. 7).

**WINFIELD LOCKS AND DAM**

Kanawha River. Putnam County West Virginia.

Ohio River Division

Huntington District

Operating PurposesFish/Wildlife  
Navigation  
RecreationAuthorized PurposesFish/Wildlife  
Navigation  
RecreationAuthorizing LawsPL 85-824  
PL 74-409, PL 73-67  
PL 78-534**YATESVILLE LAKE**

Blaine Creek. Lawrence County Kentucky.

Ohio River Division

Huntington District

Operating PurposesFlood Control  
Water Quality  
Recreation  
Low Flow AugmentationAuthorized PurposesFlood Control  
Water Quality  
Recreation  
Low Flow AugmentationAuthorizing LawsPL 75-781, PL 89-298  
PL 89-298  
PL 89-298  
PL 75-781, PL 89-298**BARREN RIVER LAKE**

Barren River. Allen and Barren Counties Kentucky.

Ohio River Division

Louisville District

Operating PurposesWater Quality  
Recreation  
Water Supply  
Flood ControlAuthorized PurposesWater Quality  
Recreation  
Water Supply  
Flood ControlAuthorizing LawsPL 92-800  
PL 78-534  
PL 85-500  
PL 75-761

East Fork Whitewater River. Franklin and Union Counties  
Indiana.

Ohio River Division  
Louisville District

Operating Purposes

Water Quality  
Recreation  
Water Supply  
Flood Control

Authorized Purposes

Water Quality  
Recreation  
Water Supply  
Flood Control

Authorizing Laws

PL 92-500  
PL 78-534  
PL 85-500  
PL 75-761

## BUCKHORN LAKE

Middle Fork Kentucky River. Perry and Leslie Counties Kentucky.

Ohio River Division  
Louisville District

Operating Purposes

Flood Control  
Recreation  
Water Quality

Authorized Purposes

Flood Control  
Recreation  
Water Quality

Authorizing Laws

PL 75-761  
PL 78-534  
PL 92-500

## CAESAR CREEK LAKE

Caesar Creek. Warren, Clinton and Greene Counties Ohio.

Ohio River Division  
Louisville District

Operating Purposes

Flood Control  
Water Supply  
Recreation  
Water Quality

Authorized Purposes

Flood Control  
Water Supply  
Recreation  
Water Quality

Authorizing Laws

PL 75-761  
PL 85-500  
PL 78-534  
PL 87-88

## CAGLES MILL LAKE

Eel River. Putnam and Owen Counties Indiana.

Ohio River Division  
Louisville District

Operating Purposes

Flood Control  
Recreation  
Water Quality

Authorized Purposes

Flood Control  
Recreation  
Water Quality

Authorizing Laws

PL 75-761  
PL 78-534  
PL 92-500

## CANNELTON LOCKS AND DAM

Ohio River. Hancock County Kentucky. Perry County Indiana

Ohio River Division  
Louisville District

Operating Purposes

Navigation

Authorized Purposes

Navigation

Authorizing Laws

PL 80-317

## CARR FORK LAKE

Carr Fork. Knott County Kentucky.

Ohio River Division  
Louisville District

Operating Purposes

Recreation  
Flood Control  
Water Quality

Authorized Purposes

Recreation  
Flood Control  
Water Quality

Authorizing Laws

PL 87-874  
PL 87-874  
PL 92-500

CAVE RUN LAKE

Licking River. Bath, Rowan, Menifee and Morgan Counties  
Kentucky.

Ohio River Division  
Louisville District

Operating Purposes

Water Quality  
Flood Control  
Recreation

Authorized Purposes

Water Quality  
Flood Control  
Recreation

Authorizing Laws

PL 92-500  
PL 74-738, PL 75-781  
PL 78-534

CECIL M. HARDEN LAKE

Raccoon Creek. Parke and Putnam Counties Indiana.

Ohio River Division  
Louisville District

Operating Purposes

Recreation  
Flood Control  
Water Quality

Authorized Purposes

Recreation  
Flood Control  
Water Quality

Authorizing Laws

PL 78-534  
PL 75-781  
PL 92-500

CLARENCE J. BROWN DAM AND RESERVOIR

Mad River. Clark County Ohio.

Ohio River Division  
Louisville District

Operating Purposes

Recreation  
Flood Control  
Water Quality

Authorized Purposes

Recreation  
Flood Control  
Water Quality

Authorizing Laws

PL 87-874  
PL 87-874  
PL 92-500

GREEN RIVER LAKE

Green River. Taylor and Adair Counties Kentucky.

Ohio River Division  
Louisville District

Operating Purposes

Water Quality  
Flood Control  
Water Supply  
Recreation

Authorized Purposes

Water Quality  
Flood Control  
Water Supply  
Recreation

Authorizing Laws

PL 92-500  
PL 75-781  
PL 85-500  
PL 78-534

HUNTINGTON LAKE

Wabash River. Huntington and Wells Counties Indiana.

Ohio River Division  
Louisville District

Operating Purposes

Flood Control  
Recreation  
Water Quality

Authorized Purposes

Flood Control  
Recreation  
Water Quality

Authorizing Laws

PL 85-500  
PL 78-534  
PL 92-500

Operating Purposes

Authorized Purposes  
Navigation

Authorizing Laws  
RHA 1888

1. Project closed to navigation due to loss of pool at Green River Dam No. 4
2. Old Lock and Dam built in 1841. The Federal Government assumed ownership in 1888.

LOCK AND DAM NO. 1 - GREEN RIVER  
Green River. Henderson County Kentucky.

Ohio River Division  
Louisville District

Operating Purposes  
Navigation

Authorized Purposes  
Navigation

Authorizing Laws  
RHA 1888

1. Original lock and dam was built 1835-1840. Federal Government assumed ownership in 1888.

LOCK AND DAM NO. 2 - GREEN RIVER  
Green River. McLean County Kentucky.

Ohio River Division  
Louisville District

Operating Purposes  
Navigation

Authorized Purposes  
Navigation

Authorizing Laws  
RHA 1888

1. The original lock and dam was built between 1836-1842. The Federal Government assumed ownership in 1888.

LOCK AND DAM NO. 3 - GREEN RIVER  
Green River. Muhlenberg and Ohio Counties Kentucky.

Ohio River Division  
Louisville District

Operating Purposes

Authorized Purposes  
Navigation

Authorizing Laws  
RHA 1888

1. The original lock and dam was built by the State of Kentucky between 1833-1836. This lock and dam was operated by the State and later by a chartered navigation company until purchased by the Federal Government in 1888.
2. Dam has been breached, no navigation pool maintained.

LOCK AND DAM NO. 4 - GREEN RIVER  
Green River. Butler County Kentucky.

Ohio River Division  
Louisville District

Operating Purposes

Authorized Purposes  
Navigation

Authorizing Laws  
RHA 1888

1. The original lock and dam was built by the State of Kentucky between 1834 and 1839. This lock and dam was operated by the State and later by a chartered navigation company until purchased by the Federal Government in 1888. The dam was breached in May 1965, no navigation pool is maintained.

LOCK AND DAM NO. 5 - GREEN RIVER  
Green River. Warren County Kentucky.

Ohio River Division  
Louisville District

Operating Purposes

Authorized Purposes  
Navigation

Authorizing Laws  
RHA 1890

1. The lock and dam was built between 1898 and 1900, and was placed into operation in 1900.
2. The Corps of Engineers discontinued use of lock in 1951.

LOCK AND DAM NO. 6 - GREEN RIVER  
Green River. Edmonson County Kentucky.

Ohio River Division  
Louisville District

Operating Purposes

Authorized Purposes  
Navigation

Authorizing Laws  
PL 57-154

1. Project was built 1904-1905 and put in operation Jan 1, 1906.
2. Project deactivated August 1961.

LOCK AND DAM NO. 1 - KENTUCKY RIVER  
Kentucky River. Carroll County Kentucky.

Ohio River Division  
Louisville District

Operating Purposes  
Navigation

Authorized Purposes  
Navigation

Authorizing Laws  
RHA 1679

LOCK AND DAM NO. 2 - KENTUCKY RIVER  
Kentucky River. Henry and Owen Counties Kentucky.

Ohio River Division  
Louisville District

Operating Purposes  
Navigation

Authorized Purposes  
Navigation

Authorizing Laws  
RHA 1879

LOCK AND DAM NO. 3 - KENTUCKY RIVER  
Kentucky River. Henry and Owen Counties Kentucky.

Ohio River Division  
Louisville District

Operating Purposes  
Navigation

Authorized Purposes  
Navigation

Authorizing Laws  
RHA 1879

1. Project built 1838-1842 by the State and taken over by the Federal Government in 1880.



Operating Purposes  
Navigation

Authorized Purposes  
Navigation

Authorizing Laws  
RHA 1879

1. Project built 1838-1842 by the State and taken over by the Federal Government in 1880.

LOCK AND DAM NO. 5 - KENTUCKY RIVER  
Kentucky River. Woodford and Anderson Counties Kentucky.

Ohio River Division  
Louisville District

Operating Purposes

Authorized Purposes  
Navigation

Authorizing Laws  
RHA 1879

1. Project built 1838-1842 by the State and taken over by the Federal Government in 1880.

2. The Corps of Engineers has been authorized by Congress to divest itself of the Kentucky River Locks and Dams Nos. 5-14. The properties have been turned over to the General Services Administration (GSA) and are being processed for disposal. Since 1985, the Commonwealth of Kentucky has been operating these locks and dams in accordance with a Memorandum of Understanding (MOU) and a lease executed between Kentucky and Corps of Engineers. This MOU and lease expired on 15 October 1989. This MOU and lease were signed with the understanding that Kentucky intended to obtain ownership of the locks and dams after their expiration. On August 28, 1989, Kentucky filed suit against the Corps of Engineers concerning the proposed divestiture of the locks and dams. On 8 February 1991 the defendants filed a motion for summary judgement. That motion is pending before the court. A new one-year lease was signed on July 2, 1990. It was extended on July 2, 1991 with the proviso that the lease would expire on July 1, 1992, or upon divestiture if that occurs sooner.

LOCK AND DAM NO. 8 - KENTUCKY RIVER  
Kentucky River. Woodford and Mercer Counties Kentucky.

Ohio River Division  
Louisville District

Operating Purposes

Authorized Purposes  
Navigation

Authorizing Laws  
RHA 1879

1. Project built 1888-1891 by the Federal Government.
2. See note 2, Lock and Dam No. 5 - Kentucky River.

LOCK AND DAM NO. 7 - KENTUCKY RIVER  
Kentucky River. Jessamine and Mercer Counties Kentucky.

Ohio River Division  
Louisville District

Operating Purposes

Authorized Purposes  
Navigation

Authorizing Laws  
RHA 1879

1. Project built 1898 to 1897 by the Federal Government.
2. See note 2, Lock and Dam No. 5 - Kentucky River.

LOCK AND DAM NO. 8 - KENTUCKY RIVER  
 Kentucky River. Jessamine and Garrard Counties Kentucky.

Ohio River Division  
 Louisville District

Operating Purposes

Authorized Purposes  
 Navigation

Authorizing Laws  
 RHA 1879

1. Project built 1898-1900 by the Federal Government.
2. See note 2, Lock and Dam No. 5 - Kentucky River.

LOCK AND DAM NO. 9 - KENTUCKY RIVER  
 Kentucky River. Jessamine and Madison Counties Kentucky.

Ohio River Division  
 Louisville District

Operating Purposes

Authorized Purposes  
 Navigation

Authorizing Laws  
 RHA 1879

1. Project built 1901-1903 by the Federal Government.
2. See note 2, Lock and Dam No. 5 - Kentucky River.

LOCK AND DAM NO. 10 - KENTUCKY RIVER  
 Kentucky River. Madison and Clark Counties Kentucky.

Ohio River Division  
 Louisville District

Operating Purposes

Authorized Purposes  
 Navigation

Authorizing Laws  
 RHA 1879

1. Project built 1902-1905 by the Federal Government.
2. See note 2, Lock and Dam No. 5 - Kentucky River.

LOCK AND DAM NO. 11 - KENTUCKY RIVER  
 Kentucky River. Madison and Estill Counties Kentucky.

Ohio River Division  
 Louisville District

Operating Purposes

Authorized Purposes  
 Navigation

Authorizing Laws  
 RHA 1879

1. Project built 1904-1906 by the Federal Government.
2. See note 2, Lock and Dam No. 5 - Kentucky River.

LOCK AND DAM NO. 12 - KENTUCKY RIVER  
 Kentucky River. Estill County Kentucky.

Ohio River Division  
 Louisville District

Operating Purposes

Authorized Purposes  
 Navigation

Authorizing Laws  
 RHA 1879

1. Project built 1907-1910 by the Federal Government.
2. See note 2, Lock and Dam No. 5 - Kentucky River.

Operating Purposes

Authorized Purposes  
Navigation

Authorizing Laws  
RHA 1879

1. Project built 1907-1910 by the Federal Government.
2. See note 2, Lock and Dam No. 5 - Kentucky River.

LOCK AND DAM NO. 14 - KENTUCKY RIVER  
Kentucky River. Lee County Kentucky.

Ohio River Division  
Louisville District

Operating Purposes

Authorized Purposes  
Navigation

Authorizing Laws  
RHA 1879

1. Project built 1911-1917 by the Federal Government.
2. See note 2, Lock and Dam No. 5 - Kentucky River.

LOCKS AND DAM NO. 52 - OHIO RIVER  
Ohio River. McCracken County Kentucky. Massac County Illinois

Ohio River Division  
Louisville District

Operating Purposes  
Navigation

Authorized Purposes  
Navigation

Authorizing Laws  
PL 60-317, PL 61-264, PL 65-200

LOCKS AND DAM NO. 53 - OHIO RIVER  
Ohio River. Ballard County Kentucky. Pulaski County Illinois

Ohio River Division  
Louisville District

Operating Purposes  
Navigation

Authorized Purposes  
Navigation

Authorizing Laws  
PL 60-317, PL 61-264, PL 65-200

MARKLAND LOCKS AND DAMS  
Ohio River. Gallatin County Kentucky. Switzerland County  
Indiana

Ohio River Division  
Louisville District

Operating Purposes  
Navigation

Authorized Purposes  
Navigation

Authorizing Laws  
PL 60-317

MCALPINE LOCKS AND DAM  
Ohio River. Jefferson County Kentucky. Clark County Indiana

Ohio River Division  
Louisville District

Operating Purposes  
Navigation

Authorized Purposes  
Navigation

Authorizing Laws  
PL 60-317

**MISSISSINewa LAKE**

Mississinewa River. Miami, Wabash and Grant Counties Indiana.

Ohio River Division  
Louisville District

Operating Purposes

Recreation  
Flood Control  
Water Quality

Authorized Purposes

Recreation  
Flood Control  
Water Quality

Authorizing Laws

PL 78-534  
PL 85-500  
PL 92-500

**MONROE LAKE**

Salt Creek. Monroe, Brown and Jackson Counties Indiana.

Ohio River Division  
Louisville District

Operating Purposes

Recreation  
Flood Control  
Water Supply

Authorized Purposes

Recreation  
Flood Control  
Water Supply

Authorizing Laws

PL 78-534  
PL 85-500  
PL 85-500

**NEWBURGH LOCKS AND DAM**

Ohio River. Henderson County Kentucky. Warrick County Indiana

Ohio River Division  
Louisville District

Operating Purposes

Navigation

Authorized Purposes

Navigation

Authorizing Laws

PL 60-317

**NOLIN LAKE**

Nolin River. Edmonson, Grayson and Hart Counties Kentucky.

Ohio River Division  
Louisville District

Operating Purposes

Flood Control  
Water Quality  
Recreation  
Water Supply

Authorized Purposes

Flood Control  
Water Quality  
Recreation  
Water Supply

Authorizing Laws

PL 75-781  
PL 92-500  
PL 78-534  
PL 85-500

**PATOKA LAKE**

Patoka River. Dubois, Orange and Crawford Counties Indiana.

Ohio River Division  
Louisville District

Operating Purposes

Flood Control  
Water Quality  
Recreation  
Water Supply

Authorized Purposes

Flood Control  
Water Quality  
Recreation  
Water Supply

Authorizing Laws

PL 89-296  
PL 89-298  
PL 89-298  
PL 89-296

**ROUGH RIVER LAKE**

Rough River. Breckinridge, Grayson and Hardin Counties Kentucky.

Ohio River Division  
Louisville District

Operating Purposes

Flood Control  
Water Quality  
Recreation  
Water Supply

Authorized Purposes

Flood Control  
Water Quality  
Recreation  
Water Supply

Authorizing Laws

PL 75-781  
PL 92-500  
PL 78-534  
PL 85-500

SALAMONIE LAKE  
Salamonie River. Wabash and Huntington Counties Indiana. Ohio River Division  
Louisville District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Flood Control	Flood Control	PL 85-600
Recreation	Recreation	PL 78-534
Water Quality	Water Quality	PL 92-500

SMITHLAND LOCKS AND DAM  
Ohio River. Livingston County Kentucky. Pope County Illinois Ohio River Division  
Louisville District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Navigation	Navigation	PL 60-317

TAYLORSVILLE LAKE  
Salt River. Spencer, Nelson and Anderson Counties Kentucky. Ohio River Division  
Louisville District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Flood Control	Flood Control	PL 69-789
Water Quality	Water Quality	PL 89-789
Recreation	Recreation	PL 69-789
Fish/Wildlife	Fish/Wildlife	PL 89-789

UNIONTOWN LOCKS AND DAM  
Ohio River. Union County Kentucky. Posey County Indiana Ohio River Division  
Louisville District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Navigation	Navigation	PL 80-317

WEST FORK OF MILL CREEK LAKE  
West Fork of Mill Creek. Hamilton County Ohio. Ohio River Division  
Louisville District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Flood Control	Flood Control	PL 79-528
Recreation	Recreation	PL 78-534

WILLIAM H. HARSHA LAKE  
East Fork, Little Miami River. Clermont County Ohio. Ohio River Division  
Louisville District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Flood Control	Flood Control	PL 75-761
Water Supply	Water Supply	PL 85-600
Recreation	Recreation	PL 78-534
Water Quality	Water Quality	PL 87-88

**BARKLEY DAM AND LAKE BARKLEY**  
Cumberland River. Lyon and Livingston Counties Kentucky.

Ohio River Division  
Nashville District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Water Quality	Water Quality	PL 92-500
Recreation	Recreation	PL 78-534
Water Supply		
Fish/Wildlife	Fish/Wildlife	PL 85-824
Navigation	Navigation	PL 79-525, PL 83-780
Hydroelectric Power	Hydroelectric Power	PL 79-525, PL 83-780
Flood Control	Flood Control	PL 83-780

1. PL 70-525 authorized Eureka and Dover projects. PL 83-780 authorized Barkley in lieu of Eureka and Dover.

2. Although storage space is not allocated for water supply on either a permanent (PL 85-500) or temporary (PL 78-534) basis, water is being withdrawn by municipalities and industries for M&I purposes. Consequently, during drought, consideration is given to keeping the lake level above the supply pipe intakes.

**CENTER HILL LAKE**  
Caney Fork River. Dekalb County Tennessee.

Ohio River Division  
Nashville District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Hydroelectric Power	Hydroelectric Power	PL 79-525
Fish/Wildlife	Fish/Wildlife	PL 85-824
Water Quality	Water Quality	PL 92-500
Flood Control	Flood Control	PL 75-761
Water Supply		
	Recreation	PL 78-534

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

2. Although storage space is not allocated for water supply on either a permanent (PL 85-500) or temporary (PL 78-534) basis, water is being withdrawn by municipalities and industries for M&I purposes. Consequently, during drought, consideration is given to keeping the lake level above the supply pipe intakes.

**CHEATHAM LOCK AND DAM**  
Cumberland River. Cheatham and Dickson Counties Tennessee.

Ohio River Division  
Nashville District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Recreation	Recreation	PL 78-534
Fish/Wildlife	Fish/Wildlife	PL 85-824
Water Quality	Water Quality	PL 92-500
Water Supply		
Hydroelectric Power	Hydroelectric Power	PL 82-396
Navigation	Navigation	PL 79-525

(continued)

1. Although storage space is not allocated for water supply on either a permanent (PL 85-500) or temporary (PL 78-534) basis, water is being withdrawn by municipalities and industries for M&I purposes. Consequently, during drought, consideration is given to keeping the lake level above the supply pipe intakes.

**CORDELL HULL LOCK AND DAM**  
Cumberland River. Smith County Tennessee.

Ohio River Division  
Nashville District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Recreation	Recreation	PL 78-534
Water Supply		
Navigation	Navigation	PL 79-525
Hydroelectric Power	Hydroelectric Power	PL 79-525
Water Quality	Water Quality	PL 92-500
Fish/Wildlife	Fish/Wildlife	PL 85-624

1. Although storage space is not allocated for water supply on either a permanent (PL 85-500) or temporary (PL 78-534) basis, water is being withdrawn by municipalities and industries for M&I purposes. Consequently, during drought, consideration is given to keeping the lake level above the supply pipe intakes.

**DALE HOLLOW LAKE**  
Obey River. Clay County Tennessee.

Ohio River Division  
Nashville District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Hydroelectric Power	Hydroelectric Power	PL 79-525
Flood Control	Flood Control	PL 78-761
Water Supply		
	Recreation	PL 78-534
Water Quality	Water Quality	PL 92-500
Fish/Wildlife	Fish/Wildlife	PL 85-624

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

2. Although storage space is not allocated for water supply on either a permanent (PL 85-500) or temporary (PL 78-534) basis, water is being withdrawn by municipalities and industries for M&I purposes. Consequently, during drought, consideration is given to keeping the lake level above the supply pipe intakes.

**J. PERCY PRIEST DAM AND RESERVOIR**  
Stones River. Davidson County Tennessee.

Ohio River Division  
Nashville District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Hydroelectric Power	Hydroelectric Power	PL 79-525
Flood Control	Flood Control	PL 78-761
Water Supply		
Recreation	Recreation	PL 78-534
Fish/Wildlife	Fish/Wildlife	PL 85-624
Water Quality	Water Quality	PL 92-500

(continued)

1. Although storage space is not allocated for water supply on either a permanent (PL 85-500) or temporary (PL 78-534) basis, water is being withdrawn by municipalities and industries for M&I purposes. Consequently, during drought, consideration is given to keeping the lake level above the supply pipe intakes.

**LAUREL RIVER LAKE**

Laurel River. Laurel and Whitley Counties Kentucky.

Ohio River Division  
Nashville District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Recreation	Recreation	PL 88-645
Water Quality	Water Quality	PL 92-500
	Flood Control	PL 86-645
Hydroelectric Power	Hydroelectric Power	PL 88-645
Fish/Wildlife	Fish/Wildlife	PL 85-624
Water Supply		

1. Flood control was not economically justified in later studies.

2. Although storage space is not allocated for water supply on either a permanent (PL 85-500) or temporary (PL 78-534) basis, water is being withdrawn by municipalities and industries for M&I purposes. Consequently, during drought, consideration is given to keeping the lake level above the supply pipe intakes.

**MARTINS FORK LAKE**

Martins Fork of Clover River. Harlan County Kentucky.

Ohio River Division  
Nashville District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Water Supply		
Recreation	Recreation	PL 89-298
Flood Control	Flood Control	PL 89-298
Fish/Wildlife	Fish/Wildlife	PL 85-624
Water Quality	Water Quality	PL 89-298, PL 92-500

1. Although storage space is not allocated for water supply on either a permanent (PL 85-500) or temporary (PL 78-534) basis, water is being withdrawn by municipalities and industries for M&I purposes. Consequently, during drought, consideration is given to keeping the lake level above the supply pipe intakes.

**OLD HICKORY LOCK AND DAM**

Cumberland River. Davidson and Sumner Counties Tennessee.

Ohio River Division  
Nashville District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Water Supply		
Navigation	Navigation	PL 79-525
Hydroelectric Power	Hydroelectric Power	PL 79-525
Fish/Wildlife	Fish/Wildlife	PL 85-824
Water Quality	Water Quality	PL 92-500
Recreation	Recreation	PL 78-534

(continued)



1. Although storage space is not allocated for water supply on either a permanent (PL 85-500) or temporary (PL 78-534) basis, water is being withdrawn by municipalities and industries for M&I purposes. Consequently, during drought, consideration is given to keeping the lake level above the supply pipe intakes.

**WOLF CREEK DAM - LAKE CUMBERLAND**

Cumberland River. Russell County Kentucky.

Ohio River Division  
Nashville District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
	Recreation	PL 78-534
Water Supply		
Fish/Wildlife	Fish/Wildlife	PL 85-624
Water Quality	Water Quality	PL 92-500
Flood Control	Flood Control	PL 75-781
Hydroelectric Power	Hydroelectric Power	PL 79-525

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

2. Although storage space is not allocated for water supply on either a permanent (PL 85-500) or temporary (PL 78-534) basis, water is being withdrawn by municipalities and industries for M&I purposes. Consequently, during drought, consideration is given to keeping the lake level above the supply pipe intakes.

**BERLIN LAKE**

Mahoning River. Portage and Mahoning Counties Ohio.

Ohio River Division  
Pittsburgh District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Recreation	Recreation	PL 78-534, PL 87-874
Water Quality	Water Quality	PL 75-761, PL 92-500
Flood Control	Flood Control	PL 75-761
Water Supply	Water Supply	PL 75-761
Low Flow Augmentation	Low Flow Augmentation	PL 75-761
Fish/Wildlife	Fish/Wildlife	PL 85-824

**CONEMAUGH RIVER LAKE**

Conemaugh River. Indiana and Westmoreland Counties Pennsylvania.

Ohio River Division  
Pittsburgh District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Flood Control	Flood Control	PL 74-738, PL 75-761
Recreation	Recreation	PL 78-534
Water Quality	Water Quality	PL 92-500

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Recreation	Recreation	PL 78-534
Flood Control	Flood Control	PL 74-738, PL 75-761

DASHIELDS LOCKS AND DAM  
Ohio River, Allegheny County Pennsylvania.  
Ohio River Division  
Pittsburgh District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Navigation	Navigation	PL 65-200

EAST BRANCH CLARION RIVER LAKE  
East Branch Clarion River, Elk County Pennsylvania.  
Ohio River Division  
Pittsburgh District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Recreation	Recreation	PL 78-534
Low Flow Augmentation	Low Flow Augmentation	PL 75-761
Fish/Wildlife	Fish/Wildlife	PL 75-761, PL 85-824
Flood Control	Flood Control	PL 75-761
Water Quality	Water Quality	PL 75-761, PL 92-500

EMSWORTH LOCKS AND DAMS  
Ohio River, Allegheny County Pennsylvania.  
Ohio River Division  
Pittsburgh District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Navigation	Navigation	PL 65-200

GRAYS LANDING LOCK AND DAM  
Monongahela River, Fayette County Pennsylvania.  
Ohio River Division  
Pittsburgh District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Navigation	Navigation	PL 99-662

1. Under construction.

HANNIBAL LOCKS AND DAM  
Ohio River, Wetzel County West Virginia, Monroe County Ohio  
Ohio River Division  
Pittsburgh District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Navigation	Recreation Navigation	PL 78-534 PL 80-317

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

Operating Purposes  
Navigation

Authorized Purposes  
Navigation

Authorizing Laws  
PL 81-516

KINZUA DAM AND ALLEGHENY RESERVOIR  
Allegheny River. Warren County Pennsylvania.

Ohio River Division  
Pittsburgh District

Operating Purposes  
Recreation

Authorized Purposes  
Recreation

Authorizing Laws  
PL 74-738, PL 75-761, PL 77-226,  
PL 76-534  
PL 74-738, PL 75-761, PL 77-226  
PL 85-624  
PL 74-738, PL 75-761, PL 77-226  
PL 77-226, PL 92-500

Low Flow Augmentation  
Fish/Wildlife  
Flood Control  
Water Quality

Low Flow Augmentation  
Fish/Wildlife  
Flood Control  
Water Quality

LOCK AND DAM NO. 2 - ALLEGHENY RIVER  
Allegheny River. Allegheny County Pennsylvania.

Ohio River Division  
Pittsburgh District

Operating Purposes  
Navigation

Authorized Purposes  
Navigation

Authorizing Laws  
PL 74-409

LOCK AND DAM NO. 3 - ALLEGHENY RIVER  
Allegheny River. Allegheny County Pennsylvania.

Ohio River Division  
Pittsburgh District

Operating Purposes  
Navigation

Authorized Purposes  
Navigation

Authorizing Laws  
PL 74-409

LOCK AND DAM NO. 4 - ALLEGHENY RIVER  
Allegheny River. Allegheny and Westmoreland Counties  
Pennsylvania.

Ohio River Division  
Pittsburgh District

Operating Purposes  
Navigation

Authorized Purposes  
Navigation

Authorizing Laws  
PL 82-241

LOCK AND DAM NO. 5 - ALLEGHENY RIVER  
Allegheny River. Armstrong County Pennsylvania.

Ohio River Division  
Pittsburgh District

Operating Purposes  
Navigation

Authorized Purposes  
Navigation

Authorizing Laws  
PL 82-241

LOCK AND DAM NO. 6 - ALLEGHENY RIVER  
Allegheny River. Armstrong County Pennsylvania.

Ohio River Division  
Pittsburgh District

Operating Purposes  
Navigation

Authorized Purposes  
Navigation

Authorizing Laws  
PL 82-241

Operating Purposes  
Navigation

Authorized Purposes  
Navigation

Authorizing Laws  
PL 62-241

LOCK AND DAM NO. 8 - ALLEGHENY RIVER  
Allegheny River. Armstrong County Pennsylvania.

Ohio River Division  
Pittsburgh District

Operating Purposes  
Navigation

Authorized Purposes  
Navigation

Authorizing Laws  
PL 62-241, PL 74-409

LOCK AND DAM NO. 9 - ALLEGHENY RIVER  
Allegheny River. Armstrong County Pennsylvania.

Ohio River Division  
Pittsburgh District

Operating Purposes  
Navigation

Authorized Purposes  
Navigation

Authorizing Laws  
PL 74-409

LOCKS AND DAM NO. 2 - MONONGAHELA RIVER  
Monongahela River. Allegheny County Pennsylvania.

Ohio River Division  
Pittsburgh District

Operating Purposes  
Navigation

Authorized Purposes  
Navigation

Authorizing Laws  
PL 57-154

LOCKS AND DAM NO. 3 - MONONGAHELA RIVER  
Monongahela River. Allegheny County Pennsylvania.

Ohio River Division  
Pittsburgh District

Operating Purposes  
Navigation

Authorized Purposes  
Navigation

Authorizing Laws  
PL 58-215

LOCKS AND DAM NO. 4 - MONONGAHELA RIVER  
Monongahela River. Westmoreland and Washington Counties  
Pennsylvania.

Ohio River Division  
Pittsburgh District

Operating Purposes  
Navigation

Authorized Purposes  
Navigation

Authorizing Laws  
PL 60-317, PL 71-520

LOCK AND DAM NO. 7 - MONONGAHELA RIVER  
Monongahela River. Fayette County Pennsylvania.

Ohio River Division  
Pittsburgh District

Operating Purposes  
Navigation

Authorized Purposes  
Navigation

Authorizing Laws  
PL 67-362

1. To be removed upon completion of Grays Landing Lock and Dam.

Operating Purposes

Water Quality  
Flood Control  
Recreation

Authorized Purposes

Water Quality  
Flood Control  
Recreation

Authorizing Laws

PL 92-500  
PL 74-738, PL 75-761  
PL 78-534

## MAHONING CREEK LAKE

Mahoning Creek, Armstrong County Pennsylvania.

Ohio River Division

Pittsburgh District

Operating Purposes

Fish/Wildlife  
Flood Control  
Recreation

Authorized Purposes

Fish/Wildlife  
Flood Control  
Recreation

Authorizing Laws

PL 85-624  
PL 74-738, PL 75-761  
PL 78-534

## MAXWELL LOCKS AND DAM

Monongahela River, Fayette and Washington Counties  
Pennsylvania.

Ohio River Division

Pittsburgh District

Operating Purposes

Navigation

Authorized Purposes

Recreation  
Navigation

Authorizing Laws

PL 78-534  
PL 60-317

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

## MICHAEL J. KIRWAN DAM AND RESERVOIR

West Branch Mahoning River, Portage County Ohio.

Ohio River Division

Pittsburgh District

Operating Purposes

Water Supply  
Recreation  
Fish/Wildlife  
Low Flow Augmentation  
Water Quality  
Flood Control

Authorized Purposes

Water Supply  
Recreation  
Fish/Wildlife  
Low Flow Augmentation  
Water Quality  
Flood Control

Authorizing Laws

PL 85-500, PL 88-645  
PL 85-500  
PL 85-624  
PL 85-500  
PL 85-500, PL 88-645, PL 92-500  
PL 85-500

## MONTGOMERY LOCKS AND DAM

Ohio River, Beaver County Pennsylvania.

Ohio River Division

Pittsburgh District

Operating Purposes

Navigation

Authorized Purposes

Navigation

Authorizing Laws

PL 85-200

Operating Purposes  
Navigation

Authorized Purposes  
Navigation

Authorizing Laws  
PL 60-317

MOSQUITO CREEK LAKE

Mosquito Creek. Trumbull County Ohio.

Ohio River Division  
Pittsburgh District

Operating Purposes

Water Quality  
Low Flow Augmentation  
Fish/Wildlife  
Flood Control  
Water Supply  
Recreation

Authorized Purposes

Water Quality  
Low Flow Augmentation  
Fish/Wildlife  
Flood Control  
Water Supply  
Recreation

Authorizing Laws

PL 75-761, PL 92-500  
PL 75-761  
PL 85-624  
PL 75-761  
PL 75-761  
PL 76-534

NEW CUMBERLAND LOCKS AND DAM

Ohio River. Hancock County West Virginia. Jefferson County Ohio

Ohio River Division  
Pittsburgh District

Operating Purposes

Navigation

Authorized Purposes

Recreation  
Navigation

Authorizing Laws

PL 78-534  
PL 60-317

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

OPEKISKA LOCK AND DAM

Monongahela River. Monongalia County West Virginia.

Ohio River Division  
Pittsburgh District

Operating Purposes

Navigation

Authorized Purposes

Navigation  
Recreation

Authorizing Laws

PL 61-516  
PL 78-534

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

PIKE ISLAND LOCKS AND DAM

Ohio River. Ohio County West Virginia. Belmont County Ohio

Ohio River Division  
Pittsburgh District

Operating Purposes

Navigation

Authorized Purposes

Recreation  
Navigation

Authorizing Laws

PL 78-534  
PL 60-317

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

Operating Purposes

Navigation

Authorized Purposes

Navigation

Authorizing Laws

PL 67-362, PL 81-516, PL 99-662

## SHENANGO RIVER LAKE

Shenango River. Mercer County Pennsylvania.

Ohio River Division

Pittsburgh District

Operating Purposes

Low Flow Augmentation

Recreation

Flood Control

Fish/Wildlife

Authorized Purposes

Low Flow Augmentation

Recreation

Flood Control

Fish/Wildlife

Authorizing Laws

PL 75-761

PL 75-781, PL 78-534

PL 75-761

PL 85-824

## STONEWALL JACKSON LAKE

West Fork River. Lewis County West Virginia.

Ohio River Division

Pittsburgh District

Operating Purposes

Water Quality

Recreation

Water Supply

Flood Control

Fish/Wildlife

Low Flow Augmentation

Authorized Purposes

Water Quality

Recreation

Water Supply

Flood Control

Fish/Wildlife

Low Flow Augmentation

Authorizing Laws

PL 89-789

PL 89-789, PL 100-676

PL 89-789

PL 89-789

PL 85-824

PL 89-789

1. Though authorized by PL 100-676, the West Fork River is not suitable for white water rafting, therefore the project is not operated for this purpose.

## TIONESTA LAKE

Tionesta Creek. Forest County Pennsylvania.

Ohio River Division

Pittsburgh District

Operating Purposes

Recreation

Flood Control

Fish/Wildlife

Authorized Purposes

Recreation

Flood Control

Fish/Wildlife

Authorizing Laws

PL 78-534

PL 74-738, PL 75-761

PL 65-624

## TYGART RIVER LAKE

Tygrant River. Taylor County West Virginia.

Ohio River Division

Pittsburgh District

Operating Purposes

Fish/Wildlife

Water Supply

Low Flow Augmentation

Navigation

Flood Control

Water Quality

Recreation

Authorized Purposes

Fish/Wildlife

Water Supply

Low Flow Augmentation

Navigation

Flood Control

Water Quality

Recreation

Authorizing Laws

PL 85-824

PL 74-409

PL 74-409

PL 74-409

PL 74-409

PL 74-409, PL 92-500

PL 78-534

UNION CITY DAM  
French Creek. Erie County Pennsylvania.  
Ohio River Division  
Pittsburgh District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Flood Control	Flood Control	PL 87-874

WOODCOCK CREEK LAKE  
Woodcock Creek. Crawford County Pennsylvania.  
Ohio River Division  
Pittsburgh District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Flood Control	Flood Control	PL 87-874
Recreation	Recreation	PL 87-874
Water Quality	Water Quality	PL 87-874, PL 92-500
Low Flow Augmentation	Low Flow Augmentation	PL 87-874
Fish/Wildlife	Fish/Wildlife	PL 85-824

YOUGHIOGHENY RIVER LAKE  
Youghiogheny River. Fayette and Somerset Counties Pennsylvania.  
Ohio River Division  
Pittsburgh District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Low Flow Augmentation	Low Flow Augmentation	PL 75-761
Fish/Wildlife	Fish/Wildlife	PL 85-824
Flood Control	Flood Control	PL 75-761
Recreation	Recreation	PL 78-534, PL 100-878



## CENTRAL AND SOUTHERN FLORIDA (C&amp;SF) PROJECT

The Everglades; Caloosahatchie, Kissimmee, St. Johns Rivers  
Dade, Broward, Palm Beach, Okeechobee, Glades, Lee, Hendry, St.  
Lucie, Osceola, Martin, Indian River, Brevard and Orange  
Counties Florida.

South Atlantic Division  
Jacksonville District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Navigation	Navigation	PL 71-520, PL 80-858
Irrigation	Irrigation	PL 80-858, PL 90-483, PL 87-874
Water Supply	Water Supply	PL 80-858, PL 90-483, PL 87-874
Fish/Wildlife	Fish/Wildlife	PL 80-858, PL 86-624, PL 90-483, PL 93-205
Drainage and Water Control	Drainage and Water Control	PL 80-858, PL 87-874, PL 90-483
Preservation/Everglades National Park	Preservation/Everglades National Park	PL 90-483, PL 101-229
Water Supply/Everglades National Park	Water Supply/Everglades National Park	PL 80-858, PL 90-483, PL 91-282, PL 98-181, PL 99-190, PL 101-229, PL 100-676
Recreation	Recreation	PL 90-483, PL 78-534, PL 87-874
Water Quality	Water Quality	PL 90-483, PL 92-500, PL 95-217
Saltwater Intrusion	Saltwater Intrusion	PL 80-858, PL 90-483, PL 87-874
Groundwater Recharge	Groundwater Recharge	PL 80-858, PL 87-874
Flood Control	Flood Control	PL 71-520, PL 80-858, PL 87-874, PL 90-483

1. This project includes Agricultural and Conservation Areas, Kissimmee River Basin and Related Areas, Upper St. Johns River Basin and Related Areas, Lake Okeechobee and Outlets, Coastal Areas South of St. Lucie Canal.

2. PL 93-205 authorizing preservation of fish and wildlife has been amended by PL 95-632, PL 96-159, and PL 97-304.

3. PL 71-520 authorized the project for the Caloosahatchee River and Lake Okeechobee Drainage Areas. PL 80-858 modified and expanded the Project for the Caloosahatchee River and Lake Okeechobee Drainage Areas to include the first phase of the C&SF Project as recommended in H.D. 80-643. PL 83-780 authorized the remainder of the comprehensive plan found in H.D. 80-643. Completed work under the project for Caloosahatchee River and Lake Okeechobee Drainage Areas that did not pertain to navigation have been maintained as a part of the C&SF Project since July 1950 (1950 Annual Report, Chief of Engineers). The navigation project since then has been known as the Okeechobee Waterway.

4. The C&SF Project is operated and maintained by the South Florida Water Management District in accordance with regulations prescribed by the Corps of Engineers.

**CERRILLOS DAM AND RESERVOIR**

Cerrillos River. Puerto Rico.

South Atlantic Division  
Jacksonville District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Flood Control	Flood Control	PL 91-611
Water Supply	Water Supply	PL 91-611, PL 85-500
Fish/Wildlife	Fish/Wildlife	PL 91-611, PL 85-824, PL 93-205
Recreation	Recreation	PL 91-611, PL 78-534, PL 87-874, PL 89-72
Water Quality	Water Quality	PL 91-611, PL 92-500, PL 95-217, PL 87-88

1. This project is in the reservoir filling phase.
2. PL 93-205 authorizing enhancement of fish and wildlife has been amended by PL 95-632, PL 96-159, PL 97-304.
3. This project will be operated and maintained by the Commonwealth of Puerto Rico in accordance with regulations prescribed by the Corps of Engineers.

**FOUR RIVER BASINS (FRB) PROJECT**

Hillsborough, Oklawaha, and Withlacoochee Rivers. Marion, Lake, Citrus, Hernando, Sumter, Hillsborough, Pinellas, Orange, Pasco Counties Florida.

South Atlantic Division  
Jacksonville District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Navigation	Navigation	PL 87-874
Water Supply	Water Supply	PL 87-874
Fish/Wildlife	Fish/Wildlife	PL 87-874, PL 85-824, PL 93-205
Recreation	Recreation	PL 87-874, PL 78-534
Water Quality	Water Quality	PL 87-874, PL 92-500, PL 95-217
Saltwater Intrusion	Saltwater Intrusion	PL 87-874
Maintain Lake Levels		
Flood Control	Flood Control	PL 87-874

1. This project includes Tampa Bypass Canal, Lower Hillsborough Flood Detention Area, Tsala Apopka Lakes, Lake Tarpon, Moss Bluff Lock and Dam, Oklawaha Chain of Lakes.
2. PL 93-205 authorizing preservation of fish and wildlife has been amended by PL 95-632, PL 96-159, PL 97-304.
3. This project is operated and maintained by the Southwest Florida Water Management District (SWFWMD) and St. Johns River Water Management District (SJRWMD) in accordance with regulations prescribed by the Corps of Engineers. Oklawaha River Project upstream of State Road 40 has been essentially incorporated into the FRB Project. The Oklawaha River Project has authorized purposes of navigation, reclamation and drainage, and maintenance of lake levels (see report for Oklawaha River Navigation Project).

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Flood Control	Flood Control	PL 87-874
Recreation	Recreation	PL 78-534, PL 87-874
Navigation	Navigation	PL 77-675
Fish/Wildlife	Fish/Wildlife	PL 85-624, PL 93-205
Water Quality	Water Quality	PL 92-500, PL 95-217

1. The pool created by Inglis Dam is known as Lake Rousseau.
2. Flood control purpose was contained in the Report (H.D. 87-585) for the Four River Basins Project.
3. PL 93-205 authorizing enhancement of fish and wildlife was amended by PL 96-632, PL 96-159, PL 97-304.
4. This project has been deauthorized by Section 402 of PL 101-640 (WRDA 1990). The project lands and facilities are scheduled to be turned over to the State of Florida in November 1992.

#### OKEECHOBEE WATERWAY PROJECT

Caloosahatchee River, Taylor Creek, and St. Lucie River.  
 Okeechobee, Glades, Lee, Hendry, St. Lucie, Martin, Palm Beach  
 Counties Florida.

South Atlantic Division  
 Jacksonville District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Recreation	Recreation	PL 78-534, PL 87-874
Fish/Wildlife	Fish/Wildlife	PL 85-624, PL 93-205
Navigation	Navigation	PL 71-520, PL 74-409, PL 75-406, PL 79-14
Water Quality	Water Quality	PL 92-500, PL 95-217
Flood Control	Flood Control	PL 71-520, PL 74-409, PL 75-406

1. This project includes Ortona Lock, St. Lucie Lock, Moore Haven Lock, St. Lucie Canal, Caloosahatchee River, Lake Okeechobee, Taylor Creek.
2. PL 93-205 authorizing preservation of fish and wildlife has been amended by PL 95-632, PL 96-159, PL 97-304.
3. PL 71-520 authorized the project for the Caloosahatchee River and Lake Okeechobee Drainage Areas. PL 80-858 modified and expanded the project for the Caloosahatchee River and Lake Okeechobee Drainage Areas to include the first phase of the C&SF Project as recommended in H.D. 80-643. Completed work under the project for Caloosahatchee River and Lake Okeechobee Drainage Areas that did not pertain to navigation have been maintained as a part of the C&SF Project since July 1950 (1950 Annual Report, Chief of Engineers). The navigation project since then has been known as the Okeechobee Waterway. Refer to the report for the C&SF Project.

## OKLAWAHA RIVER PROJECT

Oklawaha River. Putnam, Marion and Lake Counties Florida.

South Atlantic Division  
Jacksonville DistrictOperating Purposes

Flood Control  
Fish/Wildlife  
Maintain Lake Levels  
Water Quality  
Recreation  
Navigation

Water Supply

Authorized Purposes

Flood Control  
Fish/Wildlife  
Maintain Lake Levels  
Water Quality  
Recreation  
Navigation

Water Supply

Authorizing Laws

PL 87-874  
PL 87-874, PL 85-824, PL 93-205  
PL 81-264, PL 62-241  
PL 87-874, PL 92-500, PL 95-217  
PL 87-874, PL 78-534, PL 89-72  
PL 81-264, PL 62-241, PL 64-168,  
PL 87-874  
PL 87-874

1. This project includes Moss Bluff Lock and Dam.

2. PL 93-205 authorizing preservation of fish and wildlife has been amended by PL 95-832, PL 96-159, and PL 97-304.

3. This project is operated and maintained by the St. Johns River Water Management District (SJRWMD) in accordance with regulations prescribed by the Corps of Engineers. The project upstream from State Road 40 has been essentially incorporated into the Four River Basins (FRB) Project. The purposes associated with the FRB Project authorization (PL 87-874) are included above.

## PORTUGUES DAM AND RESERVOIR

Portugues River. Puerto Rico.

South Atlantic Division  
Jacksonville DistrictOperating PurposesAuthorized Purposes

Water Quality  
  
Fish/Wildlife  
Flood Control  
Water Supply  
Recreation

Authorizing Laws

PL 91-811, PL 92-500, PL 95-217,  
PL 87-88  
PL 91-811, PL 85-824, PL 93-205  
PL 91-811  
PL 91-811, PL 85-500  
PL 91-811, PL 78-534, PL 87-874,  
PL 89-72

1. This project is in the construction phase.

2. PL 93-205 authorizing enhancement of fish and wildlife has been amended by PL 95-832, PL 96-159, PL 97-304.

3. This project will be operated and maintained by the Commonwealth of Puerto Rico in accordance with regulations prescribed by the Corps of Engineers.

## RODMAN LOCK AND DAM (CROSS FLORIDA BARGE CANAL PROJECT)

Oklawaha River. Marion, Putnam Counties Florida.

South Atlantic Division  
Jacksonville DistrictOperating Purposes

Fish/Wildlife  
Recreation  
Navigation  
Water Quality

Authorized Purposes

Fish/Wildlife  
Recreation  
Navigation  
Water Quality

(continued)

Authorizing Laws

PL 85-824, PL 93-205  
PL 78-534, PL 87-874  
PL 77-875  
PL 92-500, PL 95-217

1. The pool created by Rodman Dam is known as Lake Oklawaha.
2. PL 93-205 authorizing enhancement of fish and wildlife was amended by PL 95-632, PL 96-159 and PL 97-304.
3. This project has been deauthorized by Section 402 of PL 101-640 (WRDA 1990). The project lands and facilities are scheduled to be turned over to the State of Florida in November 1992.

**ABERDEEN LOCK AND DAM**

Tombigbee River. Monroe County Mississippi.

South Atlantic Division  
 Mobile District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Water Quality	Water Quality	PL 92-500
Navigation	Navigation	PL 79-525
	Recreation	PL 78-534

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

**ALLATOONA LAKE**

Etowah River. Bartow County Georgia.

South Atlantic Division  
 Mobile District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Flood Control	Flood Control	PL 77-228
Recreation	Recreation	PL 78-534
Water Quality	Water Quality	PL 92-500
Water Supply	Water Supply	PL 85-500
Fish/Wildlife	Fish/Wildlife	PL 85-624
	Navigation	PL 77-228
Hydroelectric Power	Hydroelectric Power	PL 77-228

1. The project is not regulated for navigation because it is located distant from the navigation channel and any releases for that purpose would be captured and reregulated by the Alabama Power Co. reservoirs located downstream. Navigation benefits indirectly from the operation of the project for the other authorized purposes.

**ARMISTEAD I. SELDEN LOCK AND DAM - WARRIOR LAKE**

Black Warrior River. Hale and Greene Counties Alabama.

South Atlantic Division  
 Mobile District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Water Quality	Water Quality	PL 92-500
	Recreation	PL 76-534
Navigation	Navigation	PL 80-317

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

BAY SPRINGS LOCK AND DAM  
Tennessee-Tombigbee Waterway. Tishomingo County Mississippi. Mobile District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Navigation	Recreation	PL 78-534
Fish/Wildlife	Navigation	PL 79-525
Water Quality	Fish/Wildlife	PL 85-624
Water Supply	Water Quality	PL 92-500

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

2. Bay Springs Lock and Dam and the Tenn-Tom Waterway acts as a conveyor of water supply for the city of Tupelo, Mississippi.

BUFORD DAM - LAKE SIDNEY LANIER  
Chattahoochee River. Forsyth and Gwinnett Counties Georgia. South Atlantic Division  
Mobile District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Flood Control	Flood Control	PL 79-525
Fish/Wildlife	Fish/Wildlife	PL 85-624
Navigation	Navigation	PL 79-525
Hydroelectric Power	Hydroelectric Power	PL 79-525
Water Supply	Water Supply	PL 79-525
Water Quality	Water Quality	PL 79-525
Recreation	Recreation	PL 78-534

CARTERS DAM AND LAKE  
Coosawatee River. Murray County Georgia. South Atlantic Division  
Mobile District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Water Quality	Navigation	PL 79-14
	Water Quality	PL 92-500
	Recreation	PL 78-534
Hydroelectric Power	Hydroelectric Power	PL 79-14
Flood Control	Flood Control	PL 79-14

1. The project is not regulated for navigation because it is located distant from the navigation channel and any releases for that purpose would be captured and reregulated by the Alabama Power Co. reservoirs located downstream. Navigation benefits indirectly from the operation of the project for the other authorized purposes.

2. Access and facilities are provided for recreation but water is not controlled for that purpose.

CLAIBORNE LOCK AND DAM

Alabama River. Monroe County Alabama.

South Atlantic Division

Mobile District

Operating PurposesNavigation  
Water QualityAuthorized PurposesNavigation  
Water Quality  
RecreationAuthorizing LawsPL 79-14  
PL 92-500  
PL 78-534

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

COFFEEVILLE LOCK AND DAM

Tombigbee River. Clarke and Choctaw Counties Alabama.

South Atlantic Division

Mobile District

Operating PurposesNavigation  
Water QualityAuthorized PurposesRecreation  
Navigation  
Water QualityAuthorizing LawsPL 78-534  
PL 60-317  
PL 92-500

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

COLUMBUS LOCK AND DAM

Tombigbee River. Lowndes County Mississippi.

South Atlantic Division

Mobile District

Operating PurposesNavigation  
Fish/Wildlife  
Water QualityAuthorized PurposesRecreation  
Navigation  
Fish/Wildlife  
Water QualityAuthorizing LawsPL 76-534  
PL 79-525  
PL 85-624  
PL 92-500

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

DEMOPOLIS LOCK AND DAM

Tombigbee River. Sumter and Marengo Counties Alabama.

South Atlantic Division

Mobile District

Operating Purposes

Navigation

Authorized PurposesNavigation  
RecreationAuthorizing LawsPL 60-317  
PL 78-534

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

GAINESVILLE LOCK AND DAM  
Tombigbee River. Sumter and Greene Counties Alabama.

South Atlantic Division  
Mobile District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Fish/Wildlife	Fish/Wildlife	PL 85-624
Water Quality	Water Quality	PL 92-500
	Recreation	PL 76-534
Navigation	Navigation	PL 79-525

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

GEORGE W. ANDREWS LOCK AND DAM  
Chattahoochee River. Early County Georgia. Houston County Alabama

South Atlantic Division  
Mobile District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Navigation	Navigation	PL 79-525
Water Quality	Water Quality	PL 92-500
	Recreation	PL 78-534

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

HOLT LOCK AND DAM  
Black Warrior River. Tuscaloosa County Alabama.

South Atlantic Division  
Mobile District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Navigation	Navigation	PL 60-317
Hydroelectric Power	Recreation	PL 78-534

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

2. The hydroelectric power project is owned and operated by Alabama Power Co. under a FERC license.

JIM WOODRUFF LOCK AND DAM - LAKE SEMINOLE  
Apalachicola River. Gadsden and Jackson Counties Florida.

South Atlantic Division  
Mobile District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Fish/Wildlife	Fish/Wildlife	PL 85-624
Hydroelectric Power	Hydroelectric Power	PL 79-525
Navigation	Navigation	PL 79-525
Water Quality	Water Quality	PL 92-500
	Recreation	PL 78-534
Water Supply		

(continued)



1. Access and facilities are provided for recreation but water is not controlled for that purpose.

2. During drought periods, the project is regulated to maintain minimum flows downstream to protect M&I water supply intakes.

#### JOHN HOLLIS BANKHEAD LOCK AND DAM

Black Warrior River, Tuscaloosa County Alabama.

South Atlantic Division

Mobile District

##### Operating Purposes

##### Authorized Purposes

##### Authorizing Laws

Hydroelectric Power

Recreation

PL 78-534

Navigation

Navigation

PL 80-317

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

2. The hydroelectric power project is owned and operated by Alabama Power Co. under a FERC license.

#### LOCK A - TENNESSEE-TOMBIGBEE WATERWAY

Canal Section Tennessee Tombigbee Waterway, Monroe County Mississippi.

South Atlantic Division

Mobile District

##### Operating Purposes

##### Authorized Purposes

##### Authorizing Laws

Fish/Wildlife

Fish/Wildlife

PL 85-624

Navigation

Navigation

PL 79-525

Recreation

PL 78-534

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

#### LOCK B - TENNESSEE-TOMBIGBEE WATERWAY

Canal Section Tennessee Tombigbee Waterway, Monroe County Mississippi.

South Atlantic Division

Mobile District

##### Operating Purposes

##### Authorized Purposes

##### Authorizing Laws

Navigation

Navigation

PL 78-534

Fish/Wildlife

Fish/Wildlife

PL 79-525

PL 85-624

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Water Quality	Water Quality	PL 92-500
Navigation	Navigation	PL 79-525
Fish/Wildlife	Fish/Wildlife	PL 85-624
	Recreation	PL 78-534

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

LOCK D - TENNESSEE-TOMBIGBEE WATERWAY South Atlantic Division  
Canal Section Tennessee Tombigbee Waterway. Itawamba County Mobile District  
Mississippi.

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Fish/Wildlife	Fish/Wildlife	PL 85-624
Navigation	Navigation	PL 79-525
	Recreation	PL 78-534

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

LOCK E - TENNESSEE-TOMBIGBEE WATERWAY South Atlantic Division  
Canal Section Tennessee Tombigbee Waterway. Itawamba and Mobile District  
Prentiss Counties Mississippi.

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Navigation	Navigation	PL 79-525
	Recreation	PL 78-534
Fish/Wildlife	Fish/Wildlife	PL 85-624
Water Quality	Water Quality	PL 92-500

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

MILLERS FERRY LOCK AND DAM - WILLIAM "BILL" DANNELLY LAKE South Atlantic Division  
Alabama River. Wilcox County Alabama. Mobile District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
	Flood Control	PL 79-14
Navigation	Navigation	PL 79-14
Hydroelectric Power	Hydroelectric Power	PL 79-14
	Recreation	PL 78-534

(continued)

1. There is no flood control storage in the Millers Ferry project. This purpose was deleted prior to construction.
2. Access and facilities are provided for recreation but water is not controlled for that purpose.

**OKATIBBEE LAKE**

Okatibbee Creek. Lauderdale County Mississippi.

South Atlantic Division  
Mobile District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Flood Control	Flood Control	PL 87-674
Water Quality	Water Quality	PL 87-674
Fish/Wildlife	Fish/Wildlife	PL 85-624
Recreation	Recreation	PL 87-674
	Water Supply	PL 67-674

1. Water supply storage has not been used to date.

**ROBERT F. HENRY LOCK AND DAM - R.E. "BOB" WOODRUFF RESERVOIR**  
Alabama River. Autauga and Lowndes Counties Alabama.

South Atlantic Division  
Mobile District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
	Recreation	PL 78-534
	Flood Control	PL 79-14
Hydroelectric Power	Hydroelectric Power	PL 79-14
Navigation	Navigation	PL 79-14

1. There is no flood control storage in this project; flood control was deleted from the project plan prior to construction.
2. Access and facilities are provided for recreation but water is not controlled for that purpose.

**TOM BEVILL LOCK AND DAM**

Tombigbee River. Pickens County Alabama.

South Atlantic Division  
Mobile District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
	Recreation	PL 78-534
Navigation	Navigation	PL 79-525
Water Quality	Water Quality	PL 92-500

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Hydroelectric Power	Hydroelectric Power	PL 79-525
Water Quality	Water Quality	PL 92-500
Navigation	Navigation	PL 79-525
Fish/Wildlife	Fish/Wildlife	PL 85-824
Recreation	Recreation	PL 78-534

WEST POINT DAM AND LAKE South Atlantic Division  
 Chattahoochee River. Troup County Georgia. Mobile District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Fish/Wildlife	Fish/Wildlife	PL 87-874
Flood Control	Flood Control	PL 87-874
Hydroelectric Power	Hydroelectric Power	PL 87-874
Navigation	Navigation	PL 87-874
Water Quality	Water Quality	PL 92-500
Recreation	Recreation	PL 87-874
Water Supply		

1. During drought periods, the project is regulated to maintain minimum flows downstream to protect M&I water supply intakes.

WILLIAM BACON OLIVER LOCK AND DAM South Atlantic Division  
 Black Warrior River. Tuscaloosa County Alabama. Mobile District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Navigation	Navigation	PL 80-317
Water Quality	Water Quality	PL 92-500
	Recreation	PL 78-534

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

HARTWELL DAM AND LAKE South Atlantic Division  
 Savannah, Tugaloo and Seneca Rivers. Anderson, Oconee, Savannah District  
 and Pickens Counties South Carolina. Hart, Franklin and Stephens  
 Counties Georgia

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
	Navigation	PL 81-518
Flood Control	Flood Control	PL 81-518
Water Quality	Water Quality	PL 92-500
Fish/Wildlife	Fish/Wildlife	PL 85-824
Water Supply	Water Supply	PL 85-500
Recreation	Recreation	PL 78-534
Hydroelectric Power	Hydroelectric Power	PL 81-518

1. The Savannah River above the harbor is no longer utilized for commercial navigation.

J. STROM THURMOND DAM AND LAKE  
Savannah River. Columbia and Lincoln Counties Georgia.  
McCormick County South Carolina

South Atlantic Division  
Savannah District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Recreation	Recreation	PL 99-662
Hydroelectric Power	Hydroelectric Power	PL 78-534
Water Supply	Water Supply	PL 85-500
Flood Control	Flood Control	PL 78-534
	Navigation	PL 78-534
Fish/Wildlife	Fish/Wildlife	PL 99-662
Water Quality	Water Quality	PL 92-500

1. The project is no longer operated for navigation due to the lack of commercial traffic on the Savannah River.
2. During drought periods, the project is regulated to maintain minimum flows downstream for water supply for the city of Augusta, Dept. of Energy's Savannah River site, and several other municipal and industrial users, as well as prevent saltwater intrusion upstream of the Savannah Harbor which threatens the fresh supplies of the Savannah National Wildlife Refuge.

NEW SAVANNAH BLUFF LOCK AND DAM  
Savannah River. Richmond County Georgia. Aiken County South  
Carolina

South Atlantic Division  
Savannah District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Recreation	Recreation	PL 78-534
	Navigation	PL 74-409
Water Supply		
Reregulation	Reregulation	PL 81-516

1. The dam is operated by the Corps of Engineers to smooth out, or reregulate, peaking power releases from J. Strom Thurmond Dam. The original purpose of reregulation was to provide adequate depth of flow downstream for navigation. The purpose now is to maintain adequate depth of flow for downstream water supply intakes.
2. The city of Augusta operates and maintains the lock and recreational facilities. There is no commercial navigation on this reach; the lock is operated for recreational boats. The dam also provides sufficient depth of water for boat racing events along the Augusta riverfront.

RICHARD B. RUSSELL DAM AND LAKE  
Savannah River. Abbeville and Anderson Counties South Carolina.  
Elbert County Georgia

South Atlantic Division  
Savannah District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Water Supply	Water Supply	PL 85-500
Hydroelectric Power	Hydroelectric Power	PL 89-769
Flood Control	Flood Control	PL 89-769
Fish/Wildlife	Fish/Wildlife	PL 89-769, PL 99-662
Water Quality	Water Quality	PL 92-500
Recreation	Recreation	PL 89-769

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Fish/Wildlife	Fish/Wildlife	PL 88-253
Water Quality	Water Quality	PL 88-253
Flood Control	Flood Control	PL 88-253
Water Supply	Water Supply	PL 88-253
Recreation	Recreation	PL 88-253

FALLS LAKE  
Neuse River. Wake, Durham and Granville Counties North Carolina.  
South Atlantic Division  
Wilmington District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Flood Control	Flood Control	PL 89-298
Water Supply	Water Supply	PL 89-298
Recreation	Recreation	PL 89-298
Water Quality	Water Quality	PL 89-298
Fish/Wildlife	Fish/Wildlife	PL 89-298

JOHN H. KERR DAM AND RESERVOIR  
Roanoke River. Mecklenburg, Charlotte, Halifax Counties Virginia. Warren, Vance, Granville Counties North Carolina  
South Atlantic Division  
Wilmington District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Recreation	Recreation	PL 78-534
	Low Flow Augmentation	PL 78-534
Water Supply	Water Supply	PL 85-500
Flood Control	Flood Control	PL 78-534
Hydroelectric Power	Hydroelectric Power	PL 78-534
Fish/Wildlife	Fish/Wildlife	PL 85-824

1. John H. Kerr is not regulated for low flow augmentation since the Federal Energy Regulatory Commission assigned that requirement to the two Virginia Power Company projects located downstream. These projects, Gaston and Roanoke Rapids, are operating under project license No. 2009.

PHILPOTT LAKE  
Smith River. Franklin, Henry and Patrick Counties Virginia.  
South Atlantic Division  
Wilmington District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Hydroelectric Power	Hydroelectric Power	PL 78-534
Flood Control	Flood Control	PL 78-534
Water Supply	Water Supply	PL 85-500
Recreation	Recreation	PL 78-534
Fish/Wildlife	Fish/Wildlife	PL 85-824
Low Flow Augmentation	Low Flow Augmentation	PL 78-534

Operating Purposes

Water Supply  
Recreation  
Fish/Wildlife  
Flood Control

Authorized Purposes

Water Supply  
Recreation  
Fish/Wildlife  
Flood Control

Authorizing Laws

PL 85-500  
PL 79-534  
PL 85-624  
PL 79-528

BEAR DAM (MERCED COUNTY STREAM GROUP)  
Bear Creek, Mariposa County California.

South Pacific Division  
Sacramento District

Operating Purposes  
Flood Control

Authorized Purposes  
Flood Control

Authorizing Laws  
PL 78-534

BLACK BUTTE LAKE  
Stony Creek, Tehama County California.

South Pacific Division  
Sacramento District

Operating Purposes  
Flood Control  
Irrigation  
Recreation

Authorized Purposes  
Flood Control  
Irrigation  
Recreation

Authorizing Laws  
PL 78-534  
PL 78-534  
PL 78-534

BUCHANAN DAM - H.V. EASTMAN LAKE  
Chowchilla River, Madera County California.

South Pacific Division  
Sacramento District

Operating Purposes  
Flood Control  
Irrigation  
Recreation

Authorized Purposes  
Flood Control  
Irrigation  
Recreation

Authorizing Laws  
PL 87-874  
PL 87-874  
PL 87-874

BURNS DAM (MERCED COUNTY STREAM GROUP)  
Burns Creek, Merced County California.

South Pacific Division  
Sacramento District

Operating Purposes  
Flood Control

Authorized Purposes  
Flood Control

Authorizing Laws  
PL 78-534

COYOTE VALLEY DAM - LAKE MENDOCINO  
East Fork, Russian River, Mendocino County California.

South Pacific Division  
Sacramento District

Operating Purposes  
Flood Control  
Water Supply  
Recreation  
Water Quality

Authorized Purposes  
Flood Control  
Water Supply  
Recreation  
Water Quality  
Irrigation

Authorizing Laws  
PL 81-516  
PL 81-516  
PL 78-534  
PL 92-500  
PL 81-516

1. Water is not controlled for irrigation. Downstream irrigators draw water directly from the river.



Operating Purposes

Water Quality  
Flood Control  
Water Supply  
Recreation

Authorized Purposes

Water Quality  
Flood Control  
Water Supply  
Recreation

Authorizing Laws

PL 92-500  
PL 87-874  
PL 87-874  
PL 87-874

FARMINGTON DAM

Littlejohn Creek. San Joaquin and Stanislaus Counties  
California.

South Pacific Division  
Sacramento District

Operating Purposes

Flood Control

Authorized Purposes

Flood Control

Authorizing Laws

PL 78-534

HIDDEN DAM - HENSLEY LAKE

Fresno River. Madera County California.

South Pacific Division  
Sacramento District

Operating Purposes

Flood Control  
Irrigation  
Recreation

Authorized Purposes

Flood Control  
Irrigation  
Recreation

Authorizing Laws

PL 87-874  
PL 87-874  
PL 87-874

ISABELLA LAKE

Kern River. Kern County California.

South Pacific Division  
Sacramento District

Operating Purposes

Flood Control  
Irrigation  
Recreation

Authorized Purposes

Flood Control  
Irrigation  
Recreation

Authorizing Laws

PL 78-534  
PL 78-534  
PL 78-534

MARIPOSA DAM (MERCED COUNTY STREAM GROUP)

Mariposa Creek. Mariposa County California.

South Pacific Division  
Sacramento District

Operating Purposes

Flood Control

Authorized Purposes

Flood Control

Authorizing Laws

PL 78-534

MARTIS CREEK LAKE

Martis Creek. Nevada County California.

South Pacific Division  
Sacramento District

Operating Purposes

Flood Control  
Recreation

Authorized Purposes

Flood Control  
Recreation  
Water Supply

Authorizing Laws

PL 87-874  
PL 78-534  
PL 85-500

1. Future water supply has been approved by the Chief of Engineers (4 April 1968)  
however presently there is no sponsor for the storage space.

## NEW HOGAN LAKE

Calaveras River. Calaveras County California.

South Pacific Division  
Sacramento DistrictOperating PurposesFlood Control  
Water Supply  
Recreation  
IrrigationAuthorized PurposesFlood Control  
Water Supply  
Recreation  
IrrigationAuthorizing LawsPL 78-534  
PL 78-534  
PL 78-534  
PL 78-534

## OWENS DAM (MERCED COUNTY STREAM GROUP)

Owens Creek. Mariposa County California.

South Pacific Division  
Sacramento DistrictOperating Purposes

Flood Control

Authorized Purposes

Flood Control

Authorizing Laws

PL 78-534

## PINE FLAT LAKE AND KINGS RIVER

Kings River. Fresno County California.

South Pacific Division  
Sacramento DistrictOperating PurposesFlood Control  
Irrigation  
RecreationAuthorized PurposesFlood Control  
Irrigation  
RecreationAuthorizing LawsPL 78-534  
PL 78-534  
PL 78-534

## SUCCESS LAKE

Tule River. Tulare County California.

South Pacific Division  
Sacramento DistrictOperating PurposesFlood Control  
Irrigation  
RecreationAuthorized PurposesFlood Control  
Irrigation  
RecreationAuthorizing LawsPL 78-534  
PL 78-534  
PL 78-534

## TERMINUS DAM - LAKE KAWEAH

Kaweah River. Tulare County California.

South Pacific Division  
Sacramento DistrictOperating PurposesFlood Control  
Irrigation  
RecreationAuthorized PurposesFlood Control  
Irrigation  
RecreationAuthorizing LawsPL 78-534  
PL 78-534  
PL 78-534

## ALAMO LAKE

Bill Williams River. La Paz and Mojave Counties Arizona.

South Pacific Division  
Los Angeles DistrictOperating PurposesWater Supply  
Recreation  
Fish/Wildlife  
Flood ControlAuthorized PurposesWater Supply  
Recreation  
Fish/Wildlife  
Flood Control  
Hydroelectric PowerAuthorizing LawsPL 78-534  
PL 78-534  
PL 93-205  
PL 78-534  
PL 78-534

(continued)

1. Hydroelectric power facilities have never been constructed because studies made by the U.S. Bureau of Reclamation for the Corps indicate that hydroelectric power would not be economically feasible to develop.

BREA DAM (SANTA ANA RIVER BASIN)  
Brea Creek. Orange County California.

South Pacific Division  
Los Angeles District

Operating Purposes  
Flood Control

Authorized Purposes  
Flood Control  
Recreation

Authorizing Laws  
PL 74-738  
PL 78-534

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

CARBON CANYON DAM (SANTA ANA RIVER BASIN)  
Carbon Creek. Orange County California.

South Pacific Division  
Los Angeles District

Operating Purposes  
Flood Control

Authorized Purposes  
Flood Control  
Recreation

Authorizing Laws  
PL 74-738  
PL 78-534

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

FULLERTON DAM (SANTA ANA RIVER BASIN)  
Fullerton Creek. Orange County California.

South Pacific Division  
Los Angeles District

Operating Purposes  
Flood Control

Authorized Purposes  
Flood Control  
Recreation

Authorizing Laws  
PL 74-738  
PL 78-534

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

HANSEN DAM (LOS ANGELES COUNTY DRAINAGE AREA)  
Tujunga Wash. Los Angeles County California.

South Pacific Division  
Los Angeles District

Operating Purposes  
Flood Control

Authorized Purposes  
Flood Control  
Water Conservation  
Recreation  
(continued)

Authorizing Laws  
PL 74-738  
PL 99-662  
PL 78-534, PL 99-662

HANSEN DAM (LOS ANGELES COUNTY DRAINAGE AREA) (CONTINUED)

1. The Water Resources Development Act of 1986 (PL 99-662) authorized the Secretary to contract for the removal and sale of dredged material from the reservoir for the purpose of facilitating flood control, recreation and water conservation. It authorized to be appropriated annually an amount not to exceed the amount of funds received from the aforementioned sale of dredged material to be used to a) construct, operate and maintain recreational facilities at the project, and b) to the extent consistent with the other authorized project purposes, to facilitate water conservation and ground water recharge measures. These uses are being planned.

2. Access and facilities are provided for recreation but water is not controlled for that purpose.

LOPEZ DAM (LOS ANGELES COUNTY DRAINAGE AREA)  
Pacoima Wash. Los Angeles County California.

South Pacific Division  
Los Angeles District

Operating Purposes  
Flood Control

Authorized Purposes  
Flood Control

Authorizing Laws  
PL 74-738

MATHEWS CANYON DAM  
Mathews Canyon Wash. Lincoln County Nevada.

South Pacific Division  
Los Angeles District

Operating Purposes  
Flood Control

Authorized Purposes  
Flood Control  
Recreation

Authorizing Laws  
PL 81-518  
PL 78-534

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

MOJAVE RIVER RESERVOIR  
Mojave River. San Bernardino County California.

South Pacific Division  
Los Angeles District

Operating Purposes  
Flood Control

Authorized Purposes  
Flood Control  
Recreation

Authorizing Laws  
PL 86-845  
PL 78-534

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

PAINTED ROCK DAM  
Gila River. Maricopa County Arizona.

South Pacific Division  
Los Angeles District

Operating Purposes  
Flood Control

Authorized Purposes  
Flood Control  
Recreation

Authorizing Laws  
PL 81-518  
PL 78-534

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

Pine Canyon Wash. Lincoln County Nevada.

Los Angeles District

Operating Purposes

Flood Control

Authorized Purposes

Flood Control

Recreation

Authorizing Laws

PL 81-516

PL 78-534

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

PRADO DAM (SANTA ANA RIVER BASIN)

Santa Ana River. Riverside and San Bernardino Counties California.

South Pacific Division

Los Angeles District

Operating Purposes

Flood Control

Water Conservation

Fish/Wildlife

Authorized Purposes

Flood Control

Water Conservation

Recreation

Fish/Wildlife

Authorizing Laws

PL 74-738

PL 74-738

PL 78-534

PL 85-624, PL 93-205

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

SAN ANTONIO DAM (SANTA ANA RIVER BASIN)

San Antonio Creek. Los Angeles and San Bernardino Counties California.

South Pacific Division

Los Angeles District

Operating Purposes

Flood Control

Water Conservation

Authorized Purposes

Flood Control

Authorizing Laws

PL 74-738, PL 75-761

1. San Antonio Dam is operated for water conservation by reducing flood control releases to rates of discharge that can be effectively recharged to groundwater in spreading grounds owned by local water supply agencies. This regulation is performed using the lower 15% of the reservoir storage space during periods when forecasted inflow indicates the storage space is not required for flood control.

SANTA FE DAM (LOS ANGELES COUNTY DRAINAGE AREA)

San Gabriel River. Los Angeles County California.

South Pacific Division

Los Angeles District

Operating Purposes

Flood Control

Water Conservation

Authorized Purposes

Flood Control

Recreation

Authorizing Laws

PL 74-738

PL 78-534

1. Following runoff events, water is temporarily stored in the debris pool to recharge groundwater in spreading grounds owned by local water supply agencies.

2. Access and facilities are provided for recreation but water is not controlled for that purpose.

Operating Purposes

Flood Control

Authorized Purposes

Flood Control

Recreation

Authorizing Laws

PL 74-738, PL 75-761

PL 78-534

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

WHITLOW RANCH DAM  
Queen Creek. Pinal County Arizona.

South Pacific Division  
Los Angeles District

Operating Purposes

Flood Control

Authorized Purposes

Flood Control

Authorizing Laws

PL 78-526

WHITTIER NARROWS DAM (LOS ANGELES COUNTY DRAINAGE AREA)  
Rio Hondo and San Gabriel River. Los Angeles County California.

South Pacific Division  
Los Angeles District

Operating Purposes

Flood Control

Water Conservation

Authorized Purposes

Flood Control

Recreation

Authorizing Laws

PL 74-738

PL 78-534

1. Los Angeles County Department of Public Works constructed a dike within the reservoir to protect lessees from being flooded from small impoundments of water. The dike's permit storage of 2500 ac-ft of storm runoff which can be released to recharge the groundwater in spreading grounds downstream from the dam. The operation does not affect the flood control capability of the project.

2. Access and facilities are provided for recreation but water is not controlled for that purpose.

**ABIQUIU DAM**

Rio Chama. Rio Arriba County New Mexico.

Southwestern Division

Albuquerque District

Operating Purposes

Flood Control  
Sediment Control  
Water Supply

Authorized Purposes

Flood Control  
Sediment Control  
Water Supply

Authorizing Laws

PL 80-858, PL 81-518, PL 88-845  
PL 81-518, PL 88-845  
PL 97-140, PL 100-522

1. Water supply includes municipal, irrigation, domestic and industrial uses and provides recreation and fish and wildlife benefits. PL 87-483 authorized the San Juan-Chama Project to transfer interbasin water; PL 97-140 authorized the storage of that water in Abiquiu Reservoir.

**COCHITI LAKE**

Rio Grande. Sandoval County New Mexico.

Southwestern Division

Albuquerque District

Operating Purposes

Fish/Wildlife  
Flood Control  
Sediment Control  
Recreation

Authorized Purposes

Fish/Wildlife  
Flood Control  
Sediment Control  
Recreation

Authorizing Laws

PL 88-293  
PL 88-845  
PL 88-845  
PL 88-293

**CONCHAS LAKE**

Canadian River. San Miguel County New Mexico.

Southwestern Division

Albuquerque District

Operating Purposes

Flood Control  
  
Irrigation

Authorized Purposes

Recreation  
Flood Control  
Hydroelectric Power  
Irrigation

Authorizing Laws

PL 78-534  
PL 74-738  
PL 74-738  
PL 74-738

1. Project has 150 kilowatt hydroelectric power plant originally designed to provide electrical power to the project. It is now used to provide emergency power to the project.

2. Access and facilities are provided for recreation but water is not controlled for that purpose.

**GALISTEO DAM**

Rio Grande. Santa Fe County New Mexico.

Southwestern Division

Albuquerque District

Operating Purposes

Flood Control  
Sediment Control

Authorized Purposes

Flood Control  
Sediment Control

Authorizing Laws

PL 88-845  
PL 88-845

JEMEZ CANYON DAM  
Jemez River. Sandoval County New Mexico.

Southwestern Division  
Albuquerque District

Operating Purposes

Flood Control  
Sediment Control

Authorized Purposes

Flood Control  
Sediment Control

Authorizing Laws

PL 80-858, PL 81-516, PL 86-645  
PL 81-516, PL 86-645

JOHN MARTIN RESERVOIR  
Arkansas River. Bent County Colorado.

Southwestern Division  
Albuquerque District

Operating Purposes

Flood Control  
Irrigation  
Recreation  
Fish/Wildlife

Authorized Purposes

Flood Control  
Irrigation  
Recreation  
Fish/Wildlife

Authorizing Laws

PL 74-738  
PL 74-736  
PL 89-298  
PL 89-298

SANTA ROSA DAM AND LAKE  
Pecos River. Guadalupe County New Mexico.

Southwestern Division  
Albuquerque District

Operating Purposes

Flood Control  
Sediment Control  
Irrigation

Authorized Purposes

Flood Control  
Sediment Control  
Irrigation

Authorizing Laws

PL 83-780  
PL 83-780  
PL 83-780

TRINIDAD LAKE  
Purgatoire River. Las Animas County Colorado.

Southwestern Division  
Albuquerque District

Operating Purposes

Recreation  
Flood Control  
Irrigation  
Sediment Control

Authorized Purposes

Recreation  
Flood Control  
Irrigation  
Sediment Control

Authorizing Laws

PL 78-534  
PL 85-500  
PL 85-500  
PL 85-500

TWC RIVERS DAM  
Rio Hondo. Chaves County New Mexico.

Southwestern Division  
Albuquerque District

Operating Purposes

Flood Control  
Sediment Control

Authorized Purposes

Flood Control  
Sediment Control

Authorizing Laws

PL 83-780  
PL 83-780



<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Flood Control	Flood Control	PL 90-483
Water Supply	Water Supply	PL 90-483
	Recreation	PL 90-483
Fish/Wildlife	Fish/Wildlife	PL 90-483

1. Access and facilities are provided for recreation but water is not controlled for that purpose.
2. The State of Texas permit for water appropriation issued to the Brazos River Authority requires that whenever the flow in Aquilla Creek downstream from the dam is less than 0.5 cfs, the Authority will release at least 0.5 cfs through the dam for domestic and livestock uses and for the benefit of fish and wildlife.

BARDWELL LAKE Southwestern Division  
 Waxahachie Creek. Ellis County Texas. Fort Worth District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Flood Control	Flood Control	PL 86-399
Water Supply	Water Supply	PL 86-399
	Recreation	PL 78-534

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

BELTON LAKE Southwestern Division  
 Leon River. Bell County Texas. Fort Worth District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Flood Control	Flood Control	PL 79-526, PL 83-780
Irrigation	Irrigation	PL 79-526
Water Supply	Water Supply	PL 63-760
	Hydroelectric Power	PL 83-760
	Recreation	PL 76-534

1. Post-authorization studies have determined that Federal hydroelectric power is not economically feasible.
2. Access and facilities are provided for recreation but water is not controlled for that purpose.

Clear Fork of the Trinity River, Tarrant County Texas.

Operating Purposes

Flood Control

Water Supply

Authorized Purposes

Flood Control

Navigation

Water Supply

Recreation

Authorizing Laws

PL 79-14

PL 79-14

PL 84-782, PL 91-282, PL 92-222,

PL 97-140

PL 78-534

1. Navigation has not been developed on the Trinity River. The Secretary of the Army has contracted for the interim use of navigation storage space for M&I water supply until such time as the space is needed for navigation.

2. Access and facilities are provided for recreation but water is not controlled for that purpose.

## CANYON LAKE

Southwestern Division  
Fort Worth District

Guadalupe River, Comal County Texas.

Operating Purposes

Flood Control

Streamflow Regulation

Water Supply

Fish/Wildlife

Authorized Purposes

Flood Control

Streamflow Regulation

Hydroelectric Power

Water Supply

Recreation

Authorizing Laws

PL 79-14, PL 83-780

PL 79-14, PL 83-780

PL 79-14, PL 83-780

PL 83-780

PL 78-534

1. Federal hydroelectric power was not developed because post-authorization studies indicated it to be economically infeasible.

2. Access and facilities are provided for recreation but water is not controlled for that purpose.

3. Guadalupe-Blanco River Authority has developed a hydroelectric power project at Canyon Lake under license from the FERC. The license requires that minimum releases must be maintained for fish and wildlife.

## COOPER LAKE

Southwestern Division  
Fort Worth District

South Sulphur River, Delta and Hopkins Counties Texas.

Operating Purposes

Flood Control

Water Supply

Authorized Purposes

Flood Control

Recreation

Water Supply

Authorizing Laws

PL 84-218

PL 78-534

PL 84-218

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

FERRELL'S BRIDGE DAM - LAKE O' THE PINES  
Big Cypress Creek. Marion County Texas.

Southwestern Division  
Fort Worth District

Operating Purposes

Water Quality  
Flood Control  
Water Supply

Authorized Purposes

Water Quality  
Flood Control  
Water Supply  
Recreation

Authorizing Laws

PL 92-500  
PL 79-526  
PL 84-160  
PL 78-534, PL 79-526

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

## GRANGER DAM AND LAKE

San Gabriel River. Williamson County Texas.

Southwestern Division  
Fort Worth District

Operating Purposes

Water Supply  
  
Flood Control

Authorized Purposes

Water Supply  
Recreation  
Flood Control

Authorizing Laws

PL 83-780, PL 87-874  
PL 78-534, PL 79-526  
PL 83-760, PL 87-874

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

## GRAPEVINE LAKE

Denton Creek. Tarrant and Denton Counties Texas.

Southwestern Division  
Fort Worth District

Operating Purposes

Flood Control  
  
  
Water Supply

Authorized Purposes

Flood Control  
Navigation  
Recreation  
Water Supply

Authorizing Laws

PL 79-14  
PL 79-14  
PL 78-534  
PL 79-14

1. Secretary of the Army has contracted with the city of Grapevine for the interim use of navigation storage space for municipal water supply until such time as the space is needed for navigation.

2. Access and facilities are provided for recreation but water is not controlled for that purpose.

## HORDS CREEK LAKE

Hords Creek. Coleman County Texas.

Southwestern Division  
Fort Worth District

Operating Purposes

Flood Control  
  
Water Supply

Authorized Purposes

Flood Control  
Recreation  
Water Supply

Authorizing Laws

PL 77-228  
PL 78-534  
PL 77-228

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

JOE POOL LAKE

Mountain Creek. Dallas County Texas.

Southwestern Division

Fort Worth District

Operating Purposes

Water Supply  
Flood Control

Authorized Purposes

Water Supply  
Flood Control  
Fish/Wildlife  
Recreation

Authorizing Laws

PL 89-298  
PL 89-298  
PL 89-298  
PL 89-298

1. Permit to appropriate state water issued to the Trihity River Authority (TRA) by the State of Texas requires that in order to maintain streamflows in the channel between Joe Pool Lake and Mountain Creek Reservoir, TRA will release a minimum of 5 cfs in conformance with the release schedule. Fish and wildlife benefit incidentally from these releases.

2. Decisions on water releases from the conservation pool are made by users permitted by the State of Texas.

3. Access and facilities are provided for recreation but water is not controlled for that purpose.

LAVON LAKE

East Fork of the Trinity River. Collin County Texas.

Southwestern Division

Fort Worth District

Operating Purposes

Water Supply  
Flood Control

Authorized Purposes

Water Supply  
Flood Control  
Recreation

Authorizing Laws

PL 79-525, PL 87-874  
PL 79-14, PL 79-525  
PL 78-534

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

LEWISVILLE LAKE

Elm Fork of the Trinty River. Denton County Texas.

Southwestern Division

Fort Worth District

Operating Purposes

Water Supply  
Flood Control

Authorized Purposes

Recreation  
Fish/Wildlife  
Water Supply  
Flood Control

Authorizing Laws

PL 89-298  
PL 89-298  
PL 79-14, PL 89-298  
PL 79-14, PL 89-298

1. Fish and wildlife and recreation benefit incidentally from the regulation of the project for its other authorized purposes. Water is not controlled for these purposes.

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Water Supply	Water Supply	PL 83-780
Flood Control	Flood Control	PL 83-780
	Recreation	PL 78-534

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

NORTH SAN GABRIEL DAM - GEORGETOWN LAKE  
North Fork of the San Gabriel River. Williamson County Texas.

Southwestern Division  
Fort Worth District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Flood Control	Flood Control	PL 87-874
	Recreation	PL 78-534
Water Supply	Water Supply	PL 87-874

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

O. C. FISHER DAM AND LAKE  
North Concho River. Tom Green County Texas.

Southwestern Division  
Fort Worth District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Flood Control	Flood Control	PL 77-228, PL 78-534
Water Supply	Water Supply	PL 78-534
	Recreation	PL 77-228, PL 78-534
	Fish/Wildlife	PL 77-228, PL 78-534

1. Recreation and fish and wildlife benefit incidentally from the regulation of the project for the other authorized purposes. Water is not controlled for these purposes.

PROCTOR LAKE  
Leon River. Comanche County Texas.

Southwestern Division  
Fort Worth District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Flood Control	Flood Control	PL 83-780
	Recreation	PL 78-534
Water Supply	Water Supply	PL 83-780

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Water Quality	Water Quality	PL 92-500
	Fish/Wildlife	PL 89-298
Flood Control	Flood Control	PL 79-14, PL 89-298
Water Supply	Water Supply	PL 89-298
	Recreation	PL 89-298

1. Recreation and fish and wildlife benefit incidentally from regulation of the project for the other authorized purposes. Water is not controlled for these purposes.

SAM RAYBURN DAM AND RESERVOIR Southwestern Division  
Angelina River. Jasper County Texas. Fort Worth District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Hydroelectric Power	Hydroelectric Power	PL 79-14
	Fish/Wildlife	PL 79-14
	Recreation	PL 79-14
Water Supply	Water Supply	PL 79-14
Flood Control	Flood Control	PL 79-14
	Navigation	PL 79-14

1. Currently, there is no need to release water from the conservation storage space in support of navigation activities because there is no navigation downstream.

2. Recreation and fish and wildlife benefit incidentally from regulation of the project for the other authorized purposes. Water is not controlled for these purposes.

SOMERVILLE LAKE Southwestern Division  
Yegua Creek. Burleson and Washington Counties Texas. Fort Worth District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Flood Control	Flood Control	PL 83-780
Water Supply	Water Supply	PL 83-780
	Recreation	PL 78-534

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

STILLHOUSE HOLLOW LAKE Southwestern Division  
Lampasas River. Bell County Texas. Fort Worth District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Flood Control	Flood Control	PL 83-780
Water Supply	Water Supply	PL 83-780
	Recreation	PL 78-534

(continued)

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

**TOWN BLUFF DAM - B.A. STEINHAGEN LAKE**  
 Neches River. Tyler County Texas.

Southwestern Division  
 Fort Worth District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
	Hydroelectric Power	PL 79-14
Reregulation	Reregulation	PL 79-14
Water Supply	Water Supply	PL 80-858
	Recreation	PL 78-534

1. Hydroelectric power is marketed by Sam Dam Municipal Power as a run-of-the river power plant. No water control decisions are made for hydropower production.

2. Access and facilities are provided for recreation but water is not controlled for that purpose.

**WACO LAKE**  
 Bosque River. McLennan County Texas.

Southwestern Division  
 Fort Worth District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Flood Control	Flood Control	PL 83-780
Water Supply	Water Supply	PL 83-780
	Recreation	PL 78-534

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

**WHITNEY LAKE**  
 Brazos River. Bosque and Hill Counties Texas.

Southwestern Division  
 Fort Worth District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
	Fish/Wildlife	PL 77-228
Hydroelectric Power	Hydroelectric Power	PL 77-228, PL 78-534
	Recreation	PL 77-228, PL 78-534
Water Supply	Water Supply	PL 85-230
Flood Control	Flood Control	PL 77-228, PL 78-534

1. Recreation and fish and wildlife benefit incidentally from the regulation of the project for the other authorized purposes. Water is not controlled for these purposes.

**WRIGHT PATMAN DAM AND LAKE**

Sulphur River. Bowie and Cass Counties Texas.

Southwestern Division

Fort Worth District

Operating PurposesFlood Control  
Water SupplyAuthorized PurposesFlood Control  
Water Supply  
RecreationAuthorizing LawsPL 79-526, PL 84-218  
PL 84-218  
PL 78-534

1. Under the conservation storage contract between the Federal Government and the city of Texarkana, Texas, the Government shall have the right to withdraw water at a rate of 1D cfs for the maintenance of minimum flow in the Sulphur River below Wright Patman Dam.
2. Access and facilities are provided for recreation but water is not controlled for that purpose.

**ADDICKS DAM**

South Mayde Creek, Tributary of Buffalo Bayou. Harris County Texas.

Southwestern Division

Galveston District

Operating Purposes

Flood Control

Authorized Purposes

Flood Control

Authorizing Laws

PL 75-685

**BARKER DAM**

Buffalo Bayou. Harris and Fort Bend Counties Texas.

Southwestern Division

Galveston District

Operating Purposes

Flood Control

Authorized Purposes

Flood Control

Authorizing Laws

PL 75-685

**ARTHUR V. ORMAND LOCK AND DAM AND WINTHROP ROCKEFELLER LAKE**

Arkansas River. Conway County Arkansas.

Southwestern Division

Little Rock District

Operating Purposes

Navigation

Authorized PurposesNavigation  
Recreation  
Fish/Wildlife  
Water Supply  
IrrigationAuthorizing LawsPL 79-525  
PL 79-525  
PL 79-525  
PL 100-202  
PL 100-202

1. PL 88-645 authorized incorporation of river and harbor and flood control plans for the Arkansas River Basin into a single plan of development and made all previous authorizations applicable to a combined plan of development.
2. Recreation and fish and wildlife benefit incidentally from the project's regulation for navigation. Water is not controlled for these purposes.
3. Irrigation and water supply have not been implemented.



**BEAVER LAKE**

White River, Carroll County Arkansas.

Southwestern Division  
Little Rock DistrictOperating PurposesHydroelectric Power  
Water Supply  
  
Fish/Wildlife  
Flood ControlAuthorized PurposesHydroelectric Power  
Water Supply  
Recreation  
Fish/Wildlife  
Flood ControlAuthorizing LawsPL 83-780  
PL 83-780, PL 85-500  
PL 83-780  
PL 85-624  
PL 83-780

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

**BLUE MOUNTAIN LAKE**

Petit Jean River, Yell County Arkansas.

Southwestern Division  
Little Rock DistrictOperating Purposes

Flood Control

Authorized PurposesRecreation  
Flood ControlAuthorizing LawsPL 83-780  
PL 75-761

1. PL 86-645 authorized incorporation of river and harbor and flood control plans for the Arkansas River Basin into a single plan of development and made all previous authorizations applicable to a combined plan of development.
2. Access and facilities are provided for recreation but water is not controlled for that purpose.

**BULL SHOALS LAKE**

White River, Baxter and Marion Counties Arkansas.

Southwestern Division  
Little Rock DistrictOperating PurposesHydroelectric Power  
  
Flood Control  
Water Supply  
Fish/WildlifeAuthorized PurposesHydroelectric Power  
Recreation  
Flood Control  
Water Supply  
Fish/WildlifeAuthorizing LawsPL 77-228, PL 75-761  
PL 77-228, PL 75-761  
PL 77-228, PL 75-761  
PL 85-500  
PL 77-228, PL 85-624, PL 75-761

1. PL 77-228 modified the plan of development described in Flood Control Committee, Doc 1, 75th Congr. and authorized by PL 75-761.
2. Access and facilities are provided for recreation but water is not controlled for that purpose.

**CLEARWATER LAKE**

Black River, Reynolds and Wayne Counties Missouri.

Southwestern Division  
Little Rock DistrictOperating Purposes

Flood Control

Authorized PurposesFlood Control  
RecreationAuthorizing LawsPL 75-761  
PL 83-780

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

DARDANELLE LOCK AND DAM

Arkansas River. Pope and Yell Counties Arkansas.

Southwestern Division

Little Rock District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
	Flood Control	PL 79-525
	Irrigation	PL 100-202
Navigation	Navigation	PL 79-525
	Recreation	PL 79-525
	Fish/Wildlife	PL 79-525
Hydroelectric Power	Hydroelectric Power	PL 79-525
	Water Supply	PL 100-202

1. PL 88-645 authorized incorporation of river and harbor and flood control plans for the Arkansas River Basin into a single plan of development and made all previous authorizations applicable to a combined plan of development.
2. Flood control was deleted from the plan of development during the post-authorization phase.
3. Irrigation and water supply have not been implemented.
4. Recreation and fish and wildlife benefit incidentally from the regulation of the project for the other authorized purposes. Water is not controlled for these purposes.

DAVID D. TERRY LOCK AND DAM

Arkansas River. Pulaski County Arkansas.

Southwestern Division

Little Rock District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Navigation	Navigation	PL 79-525
	Recreation	PL 79-525
	Irrigation	PL 79-525, PL 100-202
	Water Supply	PL 100-202
	Fish/Wildlife	PL 79-525

1. Recreation and fish and wildlife benefit incidentally from the regulation of the project for navigation. Water is not controlled for these purposes.
2. PL 88-645 authorized incorporation of river and harbor and flood control plans for the Arkansas River Basin into a single plan of development and made all previous authorizations applicable to a combined plan of development.
3. Irrigation and water supply have not been implemented.

DEQUEEN LAKE  
Rolling Fork River. Sevier County Arkansas.  
Southwestern Division  
Little Rock District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Fish/Wildlife	Fish/Wildlife	PL 85-500
Water Quality	Water Quality	PL 85-500
	Hydroelectric Power	PL 85-500
	Recreation	PL 83-780
Water Supply	Water Supply	PL 85-500
Flood Control	Flood Control	PL 85-500

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

2. Hydroelectric power was found to be economically infeasible in post-authorization studies.

DIERKS LAKE  
Saline River. Howard and Sevier Counties Arkansas.  
Southwestern Division  
Little Rock District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Water Supply	Water Supply	PL 85-500
	Recreation	PL 83-780
	Hydroelectric Power	PL 85-500
Flood Control	Flood Control	PL 85-500
Fish/Wildlife	Fish/Wildlife	PL 85-500
Water Quality	Water Quality	PL 85-500

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

2. Hydroelectric power was found to be economically infeasible in post-authorization studies.

EMMITT SANDERS LOCK AND DAM  
Arkansas River. Jefferson County Arkansas.  
Southwestern Division  
Little Rock District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Navigation	Navigation	PL 79-525
	Fish/Wildlife	PL 79-525
	Recreation	PL 79-525
	Irrigation	PL 79-525, PL 100-202
	Water Supply	PL 100-202

1. Recreation and fish and wildlife benefit incidentally from the regulation of the project for navigation. Water is not controlled for these purposes.

2. PL 88-646 authorized incorporation of river and harbor and flood control plans for the Arkansas River Basin into a single plan of development and made all previous authorizations applicable to a combined plan of development.

3. Irrigation and water supply have not been implemented.

**GILLHAM LAKE**

Cossatot River. Howard County Arkansas.

Southwestern Division

Little Rock District

Operating Purposes

Flood Control

Water Quality

Water Supply

Fish/Wildlife

Authorized Purposes

Flood Control

Water Quality

Recreation

Water Supply

Fish/Wildlife

Authorizing Laws

PL 85-500

PL 85-500

PL 83-780

PL 85-500

PL 85-500

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

**GREERS FERRY LAKE**

Little Red River. Cleburn County Arkansas.

Southwestern Division

Little Rock District

Operating Purposes

Fish/Wildlife

Flood Control

Water Supply

Hydroelectric Power

Authorized Purposes

Fish/Wildlife

Flood Control

Water Supply

Recreation

Hydroelectric Power

Authorizing Laws

PL 83-780, PL 85-824

PL 75-761

PL 85-500

PL 83-780

PL 83-780

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

**JAMES W. TRIMBLE LOCK AND DAM - JOHN PAUL HAMMERSCHMIDT LAKE**

Arkansas River. Crawford and Sebastian Counties Arkansas.

Southwestern Division

Little Rock District

Operating Purposes

Navigation

Authorized Purposes

Fish/Wildlife

Water Supply

Recreation

Navigation

Irrigation

Authorizing Laws

PL 79-525

PL 100-202

PL 79-525

PL 79-525

PL 100-202

1. PL 86-645 authorized incorporation of river and harbor and flood control plans for the Arkansas River Basin into a single plan of development and made all previous authorizations applicable to a combined plan of development.

2. Recreation and fish and wildlife benefit incidentally from the regulation of the project for navigation. Water is not controlled for these purposes.

3. Irrigation and water supply have not been implemented.

Arkansas River. Jefferson and Lincoln Counties Arkansas.

Southwestern Division  
Little Rock District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Navigation	Fish/Wildlife	PL 79-525
	Recreation	PL 79-525
	Irrigation	PL 79-525, PL 100-202
	Navigation	PL 79-525
	Water Supply	PL 100-202

1. Recreation and fish and wildlife benefit incidentally from the regulation of the project for navigation. Water is not controlled for these purposes.

2. PL 86-845 authorized incorporation of river and harbor and flood control plans for the Arkansas River Basin into a single plan of development and made all previous authorizations applicable to a combined plan of development.

3. Irrigation and water supply have not been implemented.

LOCK AND DAM NO. 5 - ARKANSAS RIVER

Arkansas River. Jefferson County Arkansas.

Southwestern Division  
Little Rock District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Irrigation	Irrigation	PL 79-525, PL 100-202
	Fish/Wildlife	PL 79-525
	Water Supply	PL 100-202
	Navigation	PL 79-525
Navigation	Recreation	PL 79-525

1. Recreation and fish and wildlife benefit incidentally from the regulation of the project for its other authorized purposes. Water is not controlled for these purposes.

2. PL 86-845 authorized incorporation of river and harbor and flood control plans for the Arkansas River Basin into a single plan of development and made all previous authorizations applicable to a combined plan of development.

3. Water supply has not been implemented.

MILLWOOD LAKE

Little River. Hempstead and Little River Counties Arkansas.

Southwestern Division  
Little Rock District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Flood Control	Flood Control	PL 79-525, PL 85-500
Water Quality	Water Quality	PL 85-500
Fish/Wildlife	Fish/Wildlife	PL 85-500
Water Supply	Recreation	PL 83-780
	Water Supply	PL 65-500

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

MURRAY LACK AND DAM

Southwestern Division

Arkansas River. Pulaski County Arkansas.

Little Rock District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
	Fish/Wildlife	PL 79-525
	Irrigation	PL 79-525, PL 100-202
	Recreation	PL 79-525
	Water Supply	PL 100-202
Navigation	Navigation	PL 79-525

1. Recreation and fish and wildlife benefit incidentally from the regulation of the project for navigation. Water is not controlled for these purposes.

2. PL 86-645 authorized incorporation of river and harbor and flood control plans for the Arkansas River Basin into a single plan of development and made all previous authorizations applicable to a combined plan of development.

3. Irrigation and water supply have not been implemented.

## NIMROD LAKE

Southwestern Division

Fourche LaFave River. Perry County Arkansas.

Little Rock District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
	Hydroelectric Power	PL 86-845
	Recreation	PL 83-780
Flood Control	Flood Control	PL 75-781
Water Supply	Water Supply	PL 85-500

1. PL 86-645 authorized incorporation of river, harbor and flood control plans for the Arkansas River Basin into a single plan of development and made all previous authorizations applicable to a combined plan of development. Also, this Act authorized penstocks and other similar facilities adapted to possible future use in the development of hydroelectric power to be installed in any dam when approved by the Secretary of the Army on the recommendation of the Chief of Engineers and the Federal Power Commission.

2. Hydroelectric power was found to be economically infeasible in post-authorization studies.

3. Access and facilities are provided for recreation but water is not controlled for that purpose.

## NORFORK LAKE

Southwestern Division

North Fork River. Baxter County Arkansas.

Little Rock District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
	Recreation	PL 77-228
Water Supply	Water Supply	PL 85-500
Flood Control	Flood Control	PL 75-781
Fish/Wildlife	Fish/Wildlife	PL 77-228, PL 85-624
Hydroelectric Power	Hydroelectric Power	PL 77-228

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

NORRELL LOCK AND DAM

Southwestern Division

Arkansas River. Arkansas County Arkansas.

Little Rock District

Operating PurposesAuthorized PurposesAuthorizing Laws

Navigation

Fish/Wildlife

PL 79-525

Irrigation

PL 79-525, PL 100-202

Navigation

PL 79-525

Water Supply

PL 100-202

Recreation

PL 79-525

1. Recreation and fish and wildlife benefit incidentally from the regulation of the project for navigation. Water is not controlled for these purposes.

2. PL 86-645 authorized incorporation of river and harbor and flood control plans for the Arkansas River Basin into a single plan of development and made all previous authorizations applicable to a combined plan of development.

3. Irrigation and water supply have not been implemented.

OZARK JETTA-TAYLOR LOCK AND DAM

Southwestern Division

Arkansas River. Franklin County Arkansas.

Little Rock District

Operating PurposesAuthorized PurposesAuthorizing Laws

Hydroelectric Power

Recreation

PL 79-525

Irrigation

PL 100-202

Hydroelectric Power

PL 79-525

Fish/Wildlife

PL 79-525

Water Supply

PL 100-202

Navigation

Navigation

PL 79-525

Flood Control

PL 79-525

1. PL 86-645 authorized incorporation of river and harbor and flood control plans for the Arkansas River Basin into a single plan of development and made all previous authorizations applicable to a combined plan of development. Also, this Act authorized penstocks and other similar facilities adapted to possible future use in the development of hydroelectric power to be installed in any dam when approved by the Secretary of the Army on the recommendation of the Chief of Engineers and the Federal Power Commission.

2. Recreation and fish and wildlife benefit incidentally from the regulation of the project for navigation. Water is not controlled for these purposes.

3. Flood control was deleted from the plan of development during the post-authorization phase.

4. Irrigation and water supply have not been implemented.

5. The Southwestern Power Administration makes release decisions for hydroelectric power production.

Operating Purposes

Flood Control  
Water Supply  
Fish/Wildlife  
Hydroelectric Power

Authorized Purposes

Flood Control  
Water Supply  
Fish/Wildlife  
Hydroelectric Power  
Recreation

Authorizing Laws

PL 77-228, PL 75-781  
PL 85-500  
PL 77-228, PL 85-824, PL 75-781  
PL 77-228, PL 75-781  
PL 77-228, PL 75-761

1. PL 77-228 modified the plan of development in Flood Control Committee, Doc 1, 75th Congr. and authorized by PL 75-781.

2. Access and facilities are provided for recreation but water is not controlled for that purpose.

## TOAD SUCK FERRY LOCK AND DAM

Arkansas River. Faulkner and Perry Counties Arkansas.

Southwestern Division

Little Rock District

Operating Purposes

Navigation

Authorized Purposes

Irrigation  
Fish/Wildlife  
Navigation  
Recreation  
Water Supply

Authorizing Laws

PL 100-202  
PL 79-525  
PL 79-525  
PL 79-525  
PL 100-202

1. PL 86-645 authorized incorporation of river, harbor and flood control plans for the Arkansas River Basin into a single plan of development and made all previous authorizations applicable to a combined plan of development.

2. Recreation and fish and wildlife benefit incidentally from the regulation of the project for navigation. Water is not controlled for these purposes.

3. Irrigation and water supply have not been implemented.

## WILBUR D. MILLS LOCK AND DAM

Arkansas River. Arkansas and Desha Counties Arkansas.

Southwestern Division

Little Rock District

Operating Purposes

Navigation

Irrigation

Authorized Purposes

Water Supply  
Recreation  
Fish/Wildlife  
Navigation  
Irrigation

Authorizing Laws

PL 100-202  
PL 79-525  
PL 79-525  
PL 79-525  
PL 79-525, PL 100-202

1. Recreation and fish and wildlife benefit incidentally from regulation of the project for the other authorized purposes. Water is not controlled for these purposes.

2. PL 86-645 authorized incorporation of river and harbor and flood control plans for the Arkansas River Basin into a single plan of development and made all previous authorizations applicable to a combined plan of development.

3. Water supply has not been implemented.



**ARCADIA LAKE**

Deep Fork River. Oklahoma County Oklahoma.

Southwestern Division

Tulsa District

Operating Purposes

Water Supply

Flood Control

Authorized Purposes

Water Supply

Recreation

Flood Control

Authorizing Laws

PL 91-611

PL 91-611

PL 91-611

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

**BIRCH LAKE**

Birch Creek. Osage County Oklahoma.

Southwestern Division

Tulsa District

Operating Purposes

Water Supply

Flood Control

Water Quality

Authorized Purposes

Water Supply

Recreation

Flood Control

Water Quality

Fish/Wildlife

Authorizing Laws

PL 87-874

PL 87-874

PL 87-874

PL 87-874

PL 87-874

1. Fish and wildlife and recreation benefit incidentally from regulation of the project for the other authorized purposes. Water is not controlled for these purposes.

**BROKEN BOW LAKE**

Mountain Fork River. McCurtain County Oklahoma.

Southwestern Division

Tulsa District

Operating Purposes

Water Supply

Flood Control

Fish/Wildlife

Recreation

Hydroelectric Power

Authorized Purposes

Water Supply

Flood Control

Fish/Wildlife

Recreation

Hydroelectric Power

Authorizing Laws

PL 85-500

PL 85-500

PL 85-500

PL 85-500

PL 85-500

**CANTON LAKE**

North Canadian River. Blaine County Oklahoma.

Southwestern Division

Tulsa District

Operating Purposes

Water Supply

Flood Control

Authorized Purposes

Irrigation

Recreation

Water Supply

Fish/Wildlife

Flood Control

Authorizing Laws

PL 79-528, PL 101-640

PL 75-781

PL 80-658, PL 101-640

PL 75-761

PL 75-761

1. Local irrigation interests have never contracted for the irrigation storage at Canton Lake. The Water Resources Development Act of 1990 (PL 101-640) reassigned all the irrigation storage in the lake to municipal and industrial water supply storage.

2. Fish and wildlife and recreation benefit incidentally from the regulation of the project for the other authorized purposes. Water is not controlled for these purposes.

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
	Recreation	PL 79-525
	Fish/Wildlife	PL 79-525
Navigation	Navigation	PL 79-525

1. Fish and wildlife and recreation benefit incidentally from regulation of the project for navigation. Water is not controlled for these purposes.

COPAN LAKE  
 Little Caney River. Washington County Oklahoma. Southwestern Division  
 Tulsa District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Water Quality	Water Quality	PL 87-874
Flood Control	Flood Control	PL 87-874
	Recreation	PL 87-874
Navigation	Navigation	PL 87-874
	Fish/Wildlife	PL 87-874
Water Supply	Water Supply	PL 87-874

1. Fish and wildlife and recreation benefit incidentally from regulation of the project for the other authorized purposes. Water is not controlled for these purposes.

COUNCIL GROVE LAKE  
 Grand (Neosho) River. Morris County Kansas. Southwestern Division  
 Tulsa District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
	Recreation	PL 81-518
Water Supply	Water Supply	PL 81-518
Flood Control	Flood Control	PL 81-518
Water Quality	Water Quality	PL 81-518

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

DENISON DAM - LAKE TEXOMA  
 Red River. Grayson County Texas. Bryan County Oklahoma Southwestern Division  
 Tulsa District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Hydroelectric Power	Hydroelectric Power	PL 78-888
	Regulation Red River Flows	PL 76-888
Fish/Wildlife	Fish/Wildlife	PL 76-888
Water Supply	Water Supply	PL 83-273, PL 85-148, PL 91-282, PL 99-882
Flood Control	Flood Control	PL 76-888
	Recreation	PL 99-882
	Navigation	PL 76-888

(continued)

**EL DORADO LAKE**

Walnut River. Butler County Kansas.

Southwestern Division  
Tulsa District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Flood Control	Flood Control	PL 89-298
Fish/Wildlife	Fish/Wildlife	PL 89-298
Water Quality	Water Quality	PL 89-298
Water Supply	Water Supply	PL 89-298
	Recreation	PL 89-298

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

**ELK CITY LAKE**

Elk River. Montgomery County Kansas.

Southwestern Division  
Tulsa District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Recreation	Recreation	PL 77-228
Water Supply	Water Supply	PL 77-228
Fish/Wildlife	Fish/Wildlife	PL 77-228
Flood Control	Flood Control	PL 77-228
Water Quality	Water Quality	PL 77-228

**EUFULA LAKE**

Canadian River. Okmulgee, McIntosh, Haskell and Pittsburg Counties Oklahoma.

Southwestern Division  
Tulsa District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
	Recreation	PL 78-534
Navigation	Navigation	PL 79-525
	Sediment Control	PL 79-525
Water Supply	Water Supply	PL 79-525
Flood Control	Flood Control	PL 79-525
Fish/Wildlife	Fish/Wildlife	PL 85-624
Hydroelectric Power	Hydroelectric Power	PL 79-525

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

2. Sediment control is achieved defacto by the regulation of the project for its multiple purposes. It requires no water control management.

FALL RIVER LAKE

Fall River, Greenwood County Kansas.

Southwestern Division

Tulsa District

Operating PurposesWater Quality  
Flood ControlAuthorized PurposesWater Quality  
Flood Control  
Recreation  
Fish/Wildlife  
Water SupplyAuthorizing LawsPL 77-228  
PL 77-228  
PL 77-228  
PL 77-228  
PL 77-228

1. Recreation, fish and wildlife and supplemental water supply benefit incidentally from regulation of the project for the other authorized purposes.

FORT GIBSON LAKE

Grand (Neosho) River. Mayes, Wagoner and Cherokee Counties  
Oklahoma.

Southwestern Division

Tulsa District

Operating PurposesNavigation  
Fish/Wildlife  
Flood Control  
Hydroelectric PowerAuthorized PurposesNavigation  
Fish/Wildlife  
Flood Control  
Hydroelectric PowerAuthorizing LawsPL 77-228, PL 79-525  
PL 85-624  
PL 77-228, PL 79-525  
PL 77-228, PL 79-525

FORT SUPPLY LAKE

Wolf Creek. Woodward County Oklahoma.

Southwestern Division

Tulsa District

Operating PurposesFlood Control  
Water SupplyAuthorized PurposesFlood Control  
Water ConservationAuthorizing LawsPL 74-736  
PL 74-736, PL 81-516

GREAT SALT PLAINS LAKE

Salt Fork of the Arkansas River. Alfalfa County Oklahoma.

Southwestern Division

Tulsa District

Operating Purposes

Flood Control

Authorized PurposesWater Conservation  
Flood Control  
RecreationAuthorizing LawsPL 74-736  
PL 74-736  
PL 78-534

1. A conservation pool was established per PL 74-736 but water control decisions are not made for conservation.
2. Access and facilities are provided for recreation but water is not controlled for that purpose.

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Water Supply	Fish/Wildlife	PL 79-526
Flood Control	Water Supply	PL 79-526
	Flood Control	PL 79-526
	Recreation	PL 79-526

1. Fish and wildlife and recreation benefit incidentally from the regulation of the project for the other authorized purposes. Water is not controlled for these purposes.

HUGO LAKE Southwestern Division  
 Kiamiohi River. Choctaw County Oklahoma. Tulsa District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Fish/Wildlife	Fish/Wildlife	PL 85-624, PL 87-874
Flood Control	Flood Control	PL 79-526
Water Supply	Water Supply	PL 87-874
Water Quality	Water Quality	PL 87-874
	Recreation	PL 87-874

1. Recreation benefits incidentally from regulation of the project for the other authorized purposes. Water is not controlled for this purpose.

HULAH LAKE Southwestern Division  
 Caney River. Osage County Oklahoma. Tulsa District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Flood Control	Flood Control	PL 74-738
Water Supply	Water Supply	PL 84-843, PL 74-738
Water Quality	Water Quality	PL 92-500
	Recreation	PL 78-534
Navigation	Navigation	PL 74-738
	Fish/Wildlife	PL 85-624

1. Fish and wildlife and recreation benefit incidentally from regulation of the project for the other authorized purposes. Water is not controlled for these purposes.

JOHN REDMOND DAM AND RESERVOIR Southwestern Division  
 Grand (Neosho) River. Coffey County Kansas. Tulsa District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Water Supply	Water Supply	PL 81-516
Water Quality	Water Quality	PL 81-516
	Recreation	PL 81-518
Flood Control	Flood Control	PL 81-516
Fish/Wildlife	Fish/Wildlife	PL 85-624

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

KAW LAKE

Arkansas River. Blaine County Oklahoma.

Southwestern Division  
Tulsa DistrictOperating Purposes

Water Supply

Navigation

Water Quality

Flood Control

Fish/Wildlife

Authorized Purposes

Water Supply

Recreation

Navigation

Water Quality

Flood Control

Fish/Wildlife

Authorizing Laws

PL 87-874

PL 87-874

PL 87-874

PL 87-874

PL 87-874

PL 87-874

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

## KEYSTONE LAKE

Arkansas River. Tulsa County Oklahoma.

Southwestern Division

Tulsa District

Operating Purposes

Flood Control

Hydroelectric Power

Navigation

Water Supply

Recreation

Authorized Purposes

Flood Control

Hydroelectric Power

Fish/Wildlife

Navigation

Water Supply

Recreation

Authorizing Laws

PL 81-518

PL 81-518

PL 81-518

PL 81-518

PL 81-518

PL 81-518

1. Fish and wildlife benefit incidentally from the regulation of the project for its other authorized purposes. Water is not controlled for this purpose.

## MARION LAKE

Cottonwood River. Marion County Kansas.

Southwestern Division

Tulsa District

Operating Purposes

Water Supply

Water Quality

Flood Control

Authorized Purposes

Water Supply

Recreation

Water Quality

Flood Control

Authorizing Laws

PL 81-518

PL 81-518

PL 81-518

PL 81-518

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

NEW GRAHAM LOCK AND DAM

Verdigris River. Wagoner County Oklahoma.

Southwestern Division

Tulsa District

Operating Purposes

Navigation

Authorized Purposes

Navigation

Fish/Wildlife

Recreation

Authorizing Laws

PL 79-525

PL 79-525

PL 79-525

1. Fish and wildlife and recreation benefit incidentally from regulation of the project for navigation. Water is not controlled for these purposes.

## OOLOGAH LAKE

Verdigris River. Rogers County Oklahoma.

Southwestern Division

Tulsa District

Operating Purposes

Flood Control

Water Supply

Navigation

Authorized Purposes

Recreation

Fish/Wildlife

Flood Control

Water Supply

Navigation

Authorizing Laws

PL 75-781

PL 75-781

PL 75-781

PL 75-781

PL 75-781

1. Recreation and fish and wildlife benefit incidentally from regulation of the project for the other authorized purposes. Water is not controlled for these purposes.

## OPTIMA LAKE

North Canadian River (Beaver River). Texas County Oklahoma.

Southwestern Division

Tulsa District

Operating Purposes

Flood Control

Authorized Purposes

Recreation

Flood Control

Water Supply

Authorizing Laws

PL 78-534

PL 74-738, PL 81-518

PL 74-738, PL 81-518

1. The need for water supply has not developed.
2. Access and facilities are provided for recreation but water is not controlled for that purpose.

## PAT MAYSE LAKE

Sanders Creek. Lamar County Texas.

Southwestern Division

Tulsa District

Operating Purposes

Flood Control

Water Supply

Authorized Purposes

Flood Control

Recreation

Fish/Wildlife

Water Supply

Authorizing Laws

PL 87-874

PL 87-874

PL 87-874

PL 87-874

1. Fish and wildlife and recreation benefit incidentally from the regulation of the project for the other authorized purposes. Water is not controlled for these purposes.

**PEARSON-SKUBITZ BIG HILL LAKE**

Big Hill Creek. Labette County Kansas.

Southwestern Division

Tulsa District

Operating PurposesFlood Control  
Water SupplyAuthorized PurposesRecreation  
Flood Control  
Water Supply  
Fish/WildlifeAuthorizing LawsPL 87-874  
PL 87-874  
PL 87-874  
PL 87-874

1. Recreation and fish and wildlife benefit incidentally from regulation of the project for the other authorized purposes. Water is not controlled for these purposes.

**PINE CREEK LAKE**

Little River. McCurtain County Oklahoma.

Southwestern Division

Tulsa District

Operating PurposesWater Supply  
  
Flood Control  
Fish/Wildlife  
Water QualityAuthorized PurposesWater Supply  
Recreation  
Flood Control  
Fish/Wildlife  
Water QualityAuthorizing LawsPL 85-500  
PL 85-500  
PL 85-500  
PL 85-500  
PL 85-500

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

**ROBERT S. KERR LOCK AND DAM AND RESERVOIR**

Arkansas River. Sequoyah County Oklahoma.

Southwestern Division

Tulsa District

Operating PurposesRecreation  
Hydroelectric Power  
  
NavigationAuthorized PurposesRecreation  
Hydroelectric Power  
Fish/Wildlife  
NavigationAuthorizing LawsPL 79-525  
PL 79-525  
PL 79-525  
PL 79-525

1. Fish and wildlife benefit incidentally from regulation of the project for the other authorized purposes. Water is not controlled for these purposes.

**SARDIS LAKE**

Jackfork Creek. Pushmataha County Oklahoma.

Southwestern Division

Tulsa District

Operating PurposesWater Supply  
  
Flood ControlAuthorized PurposesWater Supply  
Fish/Wildlife  
Flood Control  
RecreationAuthorizing LawsPL 87-874  
PL 87-874  
PL 87-874  
PL 87-874

1. Fish and wildlife and recreation benefit incidentally from regulation of the project for the other authorized purposes. Water is not controlled for these purposes.



<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
	Fish/Wildlife	PL 87-874
Flood Control	Flood Control	PL 87-874
Water Quality	Water Quality	PL 87-874
	Recreation	PL 87-874
Water Supply	Water Supply	PL 87-874

1. Fish and wildlife and recreation benefit incidentally from regulation of the project for the other authorized purposes. Water is not controlled for these purposes.

TENKILLER FERRY LAKE Southwestern Division  
 Illinois River. Cherokee and Sequoyah Counties Oklahoma. Tulsa District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Hydroelectric Power	Hydroelectric Power	PL 79-525
Water Supply	Water Supply	PL 85-500
Fish/Wildlife	Fish/Wildlife	PL 85-824
	Recreation	PL 78-534
Navigation	Navigation	PL 79-525
Flood Control	Flood Control	PL 75-781, PL 79-525

1. Access and facilities are provided for recreation but water is not controlled for that purpose.

TORONTO LAKE Southwestern Division  
 Verdigris River. Woodson County Kansas. Tulsa District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Water Quality	Water Quality	PL 77-228
	Recreation	PL 77-228
	Fish/Wildlife	PL 77-228
Flood Control	Flood Control	PL 77-228
Water Supply	Water Supply	PL 77-228, PL 85-500

1. Fish and wildlife and recreation benefit incidentally from regulation of the project for the other authorized purposes. Water is not controlled for these purposes.

W.D. MAYO LOCK AND DAM Southwestern Division  
 Arkansas River. LeFlore and Sequoyah Counties Oklahoma. Tulsa District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
	Fish/Wildlife	PL 79-525
Navigation	Navigation	PL 79-525
	Recreation	PL 79-525

1. Fish and wildlife and recreation benefit inoidentially from the regulation of the project for navigation. Water is not controlled for these purposes.

**WAURIKA LAKE**

Beaver Creek. Jefferson County Oklahoma.

Southwestern Division

Tulsa District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Water Quality	Water Quality	PL 88-253
	Recreation	PL 88-253
Fish/Wildlife	Fish/Wildlife	PL 88-253
Flood Control	Flood Control	PL 88-253
	Irrigation	PL 88-253
Water Supply	Water Supply	PL 88-253

1. Waurika Lake is not being operated for irrigation due to the inability of the Jefferson County irrigation district to construct an irrigation facility.

2. Access and facilities are provided for recreation but water is not controlled for that purpose.

**WEBBERS FALLS LOCK AND DAM AND RESERVOIR**

Arkansas River. Muskogee County Oklahoma.

Southwestern Division

Tulsa District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
	Recreation	PL 79-525
Navigation	Navigation	PL 79-525
	Fish/Wildlife	PL 79-525
Hydroelectric Power	Hydroelectric Power	PL 79-525

1. Fish and wildlife and recreation benefit incidentally from the regulation of the project for the other authorized purposes. Water is not controlled for these purposes.

**WISTER LAKE**

Poteau River. LeFlore County Oklahoma.

Southwestern Division

Tulsa District

<u>Operating Purposes</u>	<u>Authorized Purposes</u>	<u>Authorizing Laws</u>
Fish/Wildlife	Fish/Wildlife	PL 85-624
Flood Control	Flood Control	PL 75-781
Navigation	Navigation	PL 75-781
Water Supply	Water Supply	PL 75-781, PL 98-63
Recreation	Recreation	PL 78-534

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## REPORT DOCUMENTATION PAGE

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19. ABSTRACT (Continue on reverse if necessary and identify by block number)  Section 311 of the Water Resources Development Act of 1990 (PL 101-640) directs the Secretary of the Army to "...conduct a study of the operations of reservoir projects which are under the jurisdiction of the Secretary -- (1) to identify the purposes for which each such project is authorized; and (2) to identify the purposes for which each such project is being operated." This report presents the information requested by the law. For each reservoir, information is provided about the purposes for which it is authorized, the laws granting authority, and the purposes for which water is being controlled by the Corps of Engineers.						
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CECW-ON                      DEPARTMENT OF THE ARMY                      ER 1130-2-401  
                                 U.S. Army Corps of Engineers  
                                 Washington, D.C. 20314-1000

Regulation  
No. 1130-2-401

15 February 1991

Planning, Development, Management and Operation  
VISITOR CENTER PROGRAM

Limited supplementation of this regulation is permitted, but is not required. If supplements are issued USACE Commands Commanders will furnish one copy of each to HQUSACE(CECW-ON) and (CEIM-PD), Washington, D.C. 20314-1000. DISTENGR will furnish required copies to appropriate DIVENGR.

1. Purpose. This regulation establishes policy governing planning, development, management and operation of Visitor Center facilities at U. S. Army Corps of Engineers (Corps) Civil Works water resource projects.

2. Applicability. This regulation applies to major subordinate commands, districts, and laboratories and field operating activities (FOA) having Civil Works responsibilities.

3. References.

- a. ER 360-1-1, Public Affairs
- b. ER 870-1-1, Field Operating Activities Historical Programs
- c. ER 1110-2-400, Design of Recreation Sites, Areas, and Facilities
- d. ER 1110-2-1150, Engineering After Feasibility Studies
- e. ER 1130-2-400, Management of Natural Resources and Outdoor Recreation at Civil Works Water Resource Projects
- f. ER 1130-2-414, Natural Resource Management System
- g. ER 1130-2-428, Interpretive Services

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This regulation supersedes ER 1130-2-401, 30 October 1981

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- j. ER 1130-2-431, Sign Standard Program for Civil Works Projects
  - k. ER 1130-2-432, The Corps of Engineers Resource Volunteers (CERV) Program
  - l. ER 1130-2-438, Historic Preservation Program
  - m. ER 1165-2-400, Recreation Planning, Development, and Management Policies
  - n. EM 385-1-1, Safety and Health Requirements Manual
  - o. EM 1110-1-400, Recreation Planning and Design Criteria
  - p. EM 1110-2-38, Environmental Quality in Design of Civil Projects
  - q. EP 310-1-6, Graphics Standards Manual
  - r. EP 310-1-6a & 6b, Sign Standards Manual
  - s. Waterways Experiment Station Instruction Report R-81-1, "A Guide to Cultural and Environmental Interpretation in U.S. Army Corps of Engineers", National Technical Information Service (NTIS), 5285 Port Royal Road, Springfield, VA 22161
  - t. Waterways Experiment Station Instruction Report R-841, "Supplement to A Guide to Cultural and Environmental Interpretation in the U.S. Army Corps of Engineers", NTIS, 5285 Port Royal Road, Springfield, VA 22161
4. Policy. It is the policy of the Corps to plan, develop, manage and operate Visitor Centers at water resource development projects. Visitor Centers educate and inform the public with regard to the history and mission of the Corps, its role in water resources development, the project, its purpose, benefits and costs. Visitor Centers are further operated to ensure the public is provided with the information necessary for the safe use and enjoyment of Corps projects. The Visitor Center program is conducted in accordance with the following criteria:
- a. The Corps of Engineers is responsible for providing information to the visiting public at every project it operates. This can be accomplished through a Type A Regional Visitor

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Center, a Type B Project Visitor Center, or a Type C Visitor Information Facility (para 8 a,b,c).

b. Visitor Centers and support facilities (access roads, parking, etc.) are restricted to fee lands. Acquisition of additional lands to accommodate Visitor Centers, or their support facilities is not authorized.

5. Program Goals and Objectives. Visitor Center operation is a necessary and integral part of total project management. The primary purpose of the Visitor Center program is to provide interpretive information to the visiting public about the Corps, its mission, the project and its facilities, visitor safety, and the geographic area where the project is located. Visitor Centers provide the information necessary to visitors for safe and enjoyable use of Corps facilities. Exhibits and other interpretive communications should be designed to stimulate interest and convey information. The interpretive objectives of Visitor Centers are to:

a. Enhance the public's understanding of the multi-dimensional role of the Army and the Corps and their contributions to the Nation.

b. Enhance the public's understanding of the purpose and operation of the project, its archeological, historic, man-made, natural, and cultural features.

c. Develop public appreciation for the proper and safe use of project resources.

d. Foster the spirit of personal stewardship of public lands.

e. Orient the visitor to the project and its recreational opportunities.

f. Aid project personnel in accomplishing management objectives.

g. Reduce overall project operation and maintenance costs.

6. Planning Guidelines. The Master Plan or the Supplement (if necessary) should address Visitor Center facilities and program requirements in general terms. The planning process for any Visitor Center construction, or major rehabilitation of an existing facility will include the following components:



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a. When major rehabilitation or construction is approved, the Visitor Center concept will be developed prior to the design memorandum. This will include a project visitation analysis, an analysis to determine the proper type of Visitor Center required, and the identification of the interpretive themes and objectives. The development of the concept stage of the Visitor Center will be accomplished substantially by the project staff with coordination and support of the other District elements. If contractors are used, the Corps will coordinate closely to ensure that the final product meets the objectives in Paragraph 5.

b. An interpretive prospectus for the Visitor Center will be prepared by either Corps or contract personnel. An interpretive theme(s) will be identified and developed, which describes the importance of specific resources, sites, or programs in relation to the project. These general statements then provide the basic subject matter for the development of interpretive objectives and storyline for the Visitor Center. The interpretive prospectus will include the following: a summary of the decisions reached during the concept process, the basic design criteria for the Visitor Center structure, site selection, site development, structural elements, interior treatment, and traffic flows. The prospectus will show the relationship between the concept decisions and the design.

c. In the case of major rehabilitation of either the Visitor Center building or exhibits, some of the design criteria in the interpretive prospectus may be negated by existing conditions. However, major rehabilitation may include site and/or building modifications, if they are integral to the new Visitor Center concept.

d. References 3p and 3q contain additional information for the interpretive prospectus. If the prospectus is prepared by contract, Corps personnel will remain directly involved in the process in an advisory and review capacity. Sections of the prospectus dealing with the history of the Corps should be submitted to the Office of History, HQUSACE (CEHO) for review and authentication. Sections dealing with local and/or state history should be referred to the appropriate state or local agencies.

7. Visitor Center Design and Construction/Rehabilitation. A special design memorandum (ER 1110-2-400) will be completed for any new building construction, or major facility rehabilitation. The design memorandum will address site development, design rationale, architectural, electrical and mechanical specifications, and cost analysis.



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a. The Visitor Center building design memorandum will be completed after the concept plan and concurrently with the interpretive prospectus to insure compatibility between the structural design and the exhibit design. The building should be designed to support and enhance the interpretive presentation. The design should provide flexibility to allow for future updating and modifications of content. Use of windows should be carefully controlled to permit effective use of lighting, efficient use of floor space and the use of a variety of exhibit techniques. The excessive use of windows will unnecessarily restrict interior development of the building. Energy efficient design principles and criteria will apply. Public food service facilities, including beverage and candy vending machines, will not be provided by the government.

b. All Visitor Centers will be physically accessible for individuals with mobility impairments. All interpretive exhibits will be designed to be as accessible as possible to the broadest possible audience.

c. Where feasible, consideration should be given to utilizing existing and desirable building designs from other projects, instead of initiating new designs. Plans and specifications are to be prepared for the Visitor Center/resource management office building and the interpretive displays. The designers should closely coordinate their work to assure compatibility from utility, spacial, and aesthetic stand points.

8. Types of Visitor Facilities. Visitor Centers are classified into three types based upon their authorization, size, facilities, and program scope. The basic objective of serving and informing the visiting public is common to all. The following sub-sections provide a brief description of each type.

a. Type A Visitor Center. Construction of Type A Regional Visitor Centers is no longer authorized. Specific legislation is the only way a new Type A Visitor Center can be built. However, a Type B Visitor Center can be redesignated as a Type A Visitor Center with authorization by HQUSACE (CECW-ON) provided it meets the existing criteria. A Type A Visitor Center is intended to serve as a regional facility. It provides information encompassing a large geographic area such as a river basin, state, or other designated area of concern. It tells the story of the Corps from the national to the local level and the mission of the local project. It provides information on the socio-economic development of the area, events of archeological, historical, cultural, and natural importance in the area, and other items of interest. Information will be made available to visitors concerning rules and regulations, safety, facilities,

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and other recreation projects in the area. This type of facility is called a "Regional Visitor Center."

b. Type B Visitor Center. ~~Type B Project Visitor Centers~~ are limited to those projects where the Corps is committed to construction through legislation, memorandum of understanding or cost sharing agreements. This type of Visitor Center, established by the Division Commander, presents information on the project area. This can include specifics on Corps history, the project, natural and cultural resources, and local history. In addition, information on rules and regulations, safety, facilities and project recreation opportunities should be available to visitors. This type of center is similar to the Type A Visitor Center except that its scope is local in nature. This type of facility is called a "Project Visitor Center."

c. Type C Visitor Centers. Construction of Type C Visitor Information Centers is limited to the placement of exhibits in existing buildings, or in new, or rehabilitated administration buildings for which construction has been budgeted. Justification for these buildings will be based on administrative need. Information facilities of this type are usually incorporated into existing buildings. Type C Visitor Centers will be staffed during regular office hours, as needed, incidental to other work. They dispense information, publications and maps which assist visitors in understanding, locating, and safely using and enjoying project facilities. Displays and presentations, as space permits, cover such topics as project purpose, visitor safety, history, and natural resources. This type of facility is called a "Visitor Information Center".

d. Projects Without Visitor Centers. If a project does not have any of these facilities available, an area will be designated to make Corps project, regulatory, safety, and other informative materials available to the public.

9. Operation. It is imperative that Visitor Centers be operational during periods of heaviest visitation and accommodate large groups. All Type A and B Visitor Centers will have adequate staff to ensure that they are operational during these periods. Specific operating guidelines for individual Visitor Centers are properly left to the discretion of the Project Manager and District staff. In addition to regular paid staff or contract services, Project Managers should make full use of volunteers.

a. Permanent Personnel. It is the Districts' responsibility to ensure that adequate FTE's are authorized for proper operation of Regional and Project Visitor Centers. If FTE's are not available, Districts should consider the use of contract

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personnel. Regional Visitor Centers will be staffed at a minimum with one full-time permanent position. This employee will hold the primary responsibility for operation of the facility.

b. Contract Services. If adequate staffing cannot be maintained through permanent and seasonal personnel, Districts are authorized to contract for these services with O&M funds. Control or ownership of Visitor Center facilities or contents will not be conveyed to an operating contractor. Visitor Center design and planning remain a Corps responsibility in contract operated facilities, as do management decisions such as those regarding hours and days of operation, specific operation guidelines, and Visitor Center objectives. Should the Corps contract for the operation of a Visitor Center, it is the Corps' responsibility to provide adequate training for contract personnel on the Corps history, operational procedures, and interpretive materials in the center.

10. Maintenance. Corps facilities available to the public are subject to the highest standards of maintenance, both inside structures and on the surrounding grounds. This maintenance function may be performed either in-house or by contract personnel. These services should be scheduled for non-operational hours.

a. All equipment used in Visitor Centers should be generic off-the-shelf products, selected for dependability, ease of maintenance, longevity and low operating costs.

b. A contract or other type agreement should be negotiated for any equipment repairs beyond the skills of the staff. Backup equipment should be available to maintain display operations.

12. Security. Security features should be included in the Visitor Center. Many of these features may be passive in nature such as proper lighting, adequate locking systems and key control, unobstructed views of windows and entrance ways, and alarm systems. At many Visitor Centers, adjacent facilities such as powerhouses, may require restricted access which will be controlled by others. Additional security for these areas may be provided by the Park Ranger staff or contract law enforcement personnel.

13. Audio/Visual Equipment. When old equipment is replaced, or upgraded, and new displays are developed, every effort will be made to purchase generic, highly dependable, off-the-shelf equipment with low maintenance costs, that can be readily repaired or replaced. Audio/visual presentation equipment changes rapidly, making it necessary to purchase equipment that

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has the capability of being upgraded. New purchases should be coordinated through the District or Division Information Management Office to ensure uniformity.

14. Development and Distribution of Brochures.

a. Development and funding procedures must follow those established by the District and Division.

b. All brochures must meet the guidelines provided in the Graphics Standards Manual. Information that may become quickly outdated, such as hours of operation, special events, etc., should be in the form of inserts, or special handout materials. Each center should conduct a regular review of the effectiveness, accuracy, and relevance of each brochure.

15. Visitor Center and Exhibit Evaluations.

a. All Visitor Centers and exhibits will be reviewed at least once every two years by a Division level review team. The review team will consist of one representative from each of the following Division office elements: public affairs, natural resources management, engineering, and history (if available).

b. The purpose of the review is to ensure that all facilities are safe and adequate, equipment is in operating condition, and that audio-visual presentations, photographs, taped messages, and other interpretive materials are accurate and up-to-date. The review team will forward their final inspection report to the District Commander who will determine what changes, if any, will be made. A copy of all Regional Visitor Center evaluations will be provided to HQUSACE (CECW-ON). A sample Visitor Center checklist is shown in Appendix A.

16. Cooperation with Other Agencies. It is in the best interest of the Corps to foster cooperation with federal, state and local agencies, non-profit educational, or other interest groups and individuals in order to facilitate the operation of Visitor Centers. Agencies and groups such as the U.S. Coast Guard, U.S. Fish and Wildlife Service, National Park Service, U.S. Forest Service, state environmental agencies, local conservancies, non-profit groups, universities, historical societies, etc., possesses experience, expertise, exhibits, time, and interest that may be used by the Visitor Centers to better inform and educate the public.

APPENDIX A  
Visitor Center Checklist

(SCALE is based on 1 = poor to 5 = very good)

**A-1. Visitor Reception**

- a. Is the approach to the facilities inviting? ..... 1 2 3 4 5
  - (1) Are sign directions clear and concise? ..... 1 2 3 4 5
  - (2) Are there negatively worded signs? ..... Y N
  - (3) Is parking easy and convenient? ..... 1 2 3 4 5
  - (4) Is handicapped parking provided? ..... Y N
  - (5) Are there barriers to handicapped? ..... Y N
- b. Does the visitor center establish a friendly and welcome mood? ..... 1 2 3 4 5
  - (1) Are the surroundings warm and friendly? ..... 1 2 3 4 5
  - (2) Is there a personal welcome message? ..... 1 2 3 4 5
  - (3) Is there an orientation map of the building?.. Y N
  - (4) Is there an orientation map of the project? .. Y N
  - (5) Do the exhibits invite participation or involvement? ..... 1 2 3 4 5
  - (6) Are any exhibits directed towards children? .. Y N
  - (7) Can all exhibits be viewed by children? ..... Y N
  - (8) Are there interior architectural barriers for the handicapped? ..... Y N
  - (9) Is there a good traffic flow through the exhibit and display area? ..... Y N

- c. Is there a central theme to interpretive material?. 1 2 3 4 5
- (1) Does any one subject dominate the others? .... Y N
- (2) Identify any subjects that dominate. ....
- (3) If one subject dominates, is it appropriate? . Y N
- (4) Are the exhibits arranged in a logical order?. Y N
- (5) Can you define the objectives of the major displays and exhibits? ..... Y N
- (6) Do these objectives fit into a central theme? Y N
- d. Is the text for interpretive material easy to understand? ..... 1 2 3 4 5
- (1) Is it in layman's terms? ..... 1 2 3 4 5
- (2) Does it avoid or explain technical jargon? ... 1 2 3 4 5
- (3) Is it too long or tedious? ..... 1 2 3 4 5
- e. Is the audio visual material easy to understand? .. 1 2 3 4 5
- (1) Is it in layman's terms? ..... 1 2 3 4 5
- (2) Does it avoid or explain technical jargon? ... 1 2 3 4 5
- (3) Is it too long or tedious? ..... 1 2 3 4 5
- f. Are various techniques of displays used i.e. audio-visual, artifacts, flat wall, etc.)? ..... 1 2 3 4 5
- (1) Percentage of exhibits that are primarily audiovisual..... %
- (2) Percentage of exhibits that are primarily auditory. .... %
- (3) Percentage of exhibits that are primarily text. .... %
- (4) Percentage of other exhibits. .... %
- (5) Percentage of exhibits primarily active. .... %
- (6) Percentage of exhibits primarily passive. ... %

- g. Do most of the exhibits and displays utilize standard off-the-shelf equipment i.e. video decks, monitors, dissolve units, slide projectors, etc. .... %
- (1) Percentage of equipment that is standard. ... %
- (2) Percentage of equipment that is custom built. .... %
- h. Has an interpretive prospectus been prepared? ..... Y N
- (1) Date prospectus scheduled/completed. ....
- (2) Have recommendations been implemented?  
If no, explain in Section 6, Comments ..... Y N

#### A-4. Information Brochures and Folders

- a. Do they include information we wish to convey to the public as well as information the public would like to receive? ..... 1 2 3 4 5
- b. Are brochures available at visitor facilities? ..... Y N
- c. Are they displayed attractively? ..... 1 2 3 4 5
- d. Is it obvious that these are free to the public? ... Y N

#### A-5. Operations

- a. Is the staffing (Corps or contractor) adequate? .... 1 2 3 4 5
- (1) Are self-guided tours used? ..... Y N
- (2) Do they stand on their own? ..... Y N
- (3) Can the visitor use the center without additional information from the staff? ..... Y N
- (4) Is the staff readily accessible to the public? Y N
- (5) Is there a reception area near the entrance? .. Y N
- (6) Is the reception desk manned? ..... Y N
- (7) Is the staff knowledgeable about the displays and the Corps? ..... 1 2 3 4 5
- (8) How many people work directly in the center? .....
- (9) Is reduced staffing an option?..... Y N



- b. Does the visitor center receive adequate use by the public? ..... 1 2 3 4 5
- (1) What is the annual visitation? ..... \_\_\_\_\_
- (2) What is the peak month for visitation? ..... \_\_\_\_\_
- (3) Is the facility visitation appropriate for its location and market area? If no, explain in Section 6, Comments ..... Y N
- (4) Is the facility visitation appropriate for its size? If no, explain in Section 6, Comments Y N
- (5) Is the visitation primarily local, repeat or transient?..... \_\_\_\_\_
- (6) Is the center made available to school and community groups? ..... Y N
- (7) Does the staff contact schools and groups and invite them to the center? ..... Y N
- (8) Do these groups regularly visit? ..... Y N
- (9) Is the center available to groups by special arrangements outside of regular office hours? Y N
- (10) What other actions have been taken to encourage visitation? ..... \_\_\_\_\_
- c. Are hours of operation convenient for the visitor? Y N
- (1) Are the hours of operation posted where they can be seen? ..... Y N
- (2) Summer hours of operation:  
Days of the week ..... S M T W T F S  
Hours of the day ..... \_\_\_\_\_
- (3) Winter hours of operation:  
Days of the week ..... S M T W T F S  
Hours of the day ..... \_\_\_\_\_



- d. Are the physical conditions in the building appropriate? ..... 1 2 3 4 5
- (1) heating ..... 1 2 3 4 5
- (2) air conditioning ..... 1 2 3 4 5
- (3) lighting ..... 1 2 3 4 5
- (4) drinking fountains ..... 1 2 3 4 5
- (5) restrooms ..... 1 2 3 4 5
- e. Is the building adequate in terms of visitor capacity and configuration? ..... 1 2 3 4 5
- f. Have there been any incidents of vandalism or theft in the past two years? ..... Y N
- (1) how many? ..... \_\_\_\_\_
- (2) how severe? ..... \_\_\_\_\_
- (3) any particular target? what? ..... \_\_\_\_\_
- g. Are adequate security devices installed? ..... Y N
- (1) door and window alarms? ..... Y N
- (2) sound and movement detectors? ..... Y N
- (3) closed circuit TV? ..... Y N
- (4) fire alarms? ..... Y N
- (5) smoke detectors ..... Y N
- h. What percentage of the time are the main exhibits operational? ..... %
- i. If there is a main audiovisual presentation, what percentage of the time is it operational?.... %
- j. Is there an adequate supply of all types of backup equipment, e.g. projectors, tape players, etc. ... 1 2 3 4 5
- k. Are funds adequate for operation of the center? .. Y N

1. Are there interpretive facilities outside of the visitor center? ..... Y N
  - (1) Are they integrated into the total program? Y N
  - (2) Are they effective? ..... Y N
  - (3) Do they make maximum use of the natural assets of the site? ..... Y N
    - a. nature trail ..... 1 2 3 4 5
    - b. overlook ..... 1 2 3 4 5
    - c. physical feature ..... 1 2 3 4 5
    - d. nature features ..... 1 2 3 4 5
    - e. historical archeological ..... 1 2 3 4 5
- Overall Rating for the Visitor Center ..... 1 2 3 4 5

A-6. Comments

\_\_\_\_\_  
Evaluator

\_\_\_\_\_  
Title

\_\_\_\_\_  
Phone

HQ AR001810-HQ AR001859

Public Law 101-640  
101st Congress

An Act

Nov. 28, 1990  
[S. 2740]

To provide for the conservation and development of water and related resources, to authorize the United States Army Corps of Engineers civil works program to construct various projects for improvements to the Nation's infrastructure, and for other purposes.

Water Resources  
Development  
Act of 1990.  
33 USC 2201  
note.

*Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,*

SECTION 1. SHORT TITLE; TABLE OF CONTENTS.

(a) SHORT TITLE.—This Act may be cited as the "Water Resources Development Act of 1990".

(b) TABLE OF CONTENTS.—

Sec. 1. Short title; table of contents.

Sec. 2. Secretary defined.

TITLE I—WATER RESOURCES PROJECTS

- Sec. 101. Project authorizations.
- Sec. 102. Project modifications.
- Sec. 103. Small navigation projects.
- Sec. 104. Small flood control projects.
- Sec. 105. Bay City, Michigan.
- Sec. 106. Delaware River and tributaries, Pennsylvania.
- Sec. 107. Continuation of authorization of certain projects.
- Sec. 108. Hazard, Kentucky.
- Sec. 109. Sauk Lake, Minnesota.
- Sec. 110. Rehabilitation of Federal flood control levees.
- Sec. 111. Belen, New Mexico.
- Sec. 112. Lower Truckee River, Nevada.
- Sec. 113. Arkansas Post Navigation Canal.
- Sec. 114. Struthers, Ohio.
- Sec. 115. Maysville, Kentucky.
- Sec. 116. Studies.
- Sec. 117. Cranston, Rhode Island.
- Sec. 118. Technical assistance for New York Harbor.
- Sec. 119. Project deauthorizations.
- Sec. 120. Half Moon Bay Harbor.

TITLE II—LAND TRANSFERS

- Sec. 201. Sneads, Florida.
- Sec. 202. Ira D. MacLachlan American Legion Post, Sault Sainte Marie, Michigan.
- Sec. 203. Aberdeen, Washington.
- Sec. 204. Release of reversionary interest to Clay County, Georgia.
- Sec. 205. Conveyance of Oakland Inner Harbor Tidal Canal property to cities of Oakland and Alameda, California.

TITLE III—GENERALLY APPLICABLE PROVISIONS

- Sec. 301. Planning and engineering.
- Sec. 302. Emergency response.
- Sec. 303. Construction of navigation projects by non-Federal interests.
- Sec. 304. Project modifications for improvement of environment.
- Sec. 305. Ability to pay.
- Sec. 306. Environmental protection mission.
- Sec. 307. Wetlands.
- Sec. 308. Flood plain management.
- Sec. 309. Shoreline protection.
- Sec. 310. Reservoir management.
- Sec. 311. Reservoir project operations.

- Sec. 312. Environmental dredging.
- Sec. 313. Protection of recreational and commercial uses.
- Sec. 314. Operation and maintenance of hydroelectric facilities.
- Sec. 315. Matters to be addressed in planning.
- Sec. 316. Harbor maintenance trust fund amendment.
- Sec. 317. Single entities.
- Sec. 318. Technical assistance to private entities.
- Sec. 319. Fees for development of State water plans.
- Sec. 320. Cabin site leases.
- Sec. 321. Information on floods and flood damages.
- Sec. 322. Reduced pricing for certain water supply storage.

#### TITLE IV—MISCELLANEOUS PROVISIONS

- Sec. 401. Great Lakes remedial action plans.
- Sec. 402. Cross Florida Barge Canal.
- Sec. 403. Wappingers Lake and Lake George, New York.
- Sec. 404. Demonstration of construction of Federal project by non-Federal interests.
- Sec. 405. Upper Mississippi River plan.
- Sec. 406. Construction of Virgin Islands projects by Secretary of the Army.
- Sec. 407. Virginia Beach, Virginia.
- Sec. 408. Declaration of nonnavigability for portions of Lake Erie.
- Sec. 409. Wetlands enhancement opportunities.
- Sec. 410. Raystown Lake, Pennsylvania.
- Sec. 411. Onondaga Lake, New York.
- Sec. 412. Alternatives to mud dump site for disposal of dredged material.
- Sec. 413. Albemarle Sound-Roanoke River Basin, North Carolina.
- Sec. 414. Rondout Creek and Wallkill River, New York and New Jersey.
- Sec. 415. Regulation of Dworshak Dam, Idaho.
- Sec. 416. Southeast light on Block Island, Rhode Island.
- Sec. 417. Magnetic levitation technology.
- Sec. 418. Riverside, California.
- Sec. 419. Buy American.
- Sec. 420. Sense of Congress.
- Sec. 421. Woodlawn Beach, Hamburg, New York.

#### SEC. 2. SECRETARY DEFINED.

For purposes of this Act, the term "Secretary" means the Secretary of the Army.

33 USC 2201  
note.

### TITLE I—WATER RESOURCES PROJECTS

#### SEC. 101. PROJECT AUTHORIZATIONS.

(a) **PROJECTS WITH REPORT OF THE CHIEF OF ENGINEERS.**—Except as provided in this subsection, the following projects for water resources development and conservation and other purposes are authorized to be carried out by the Secretary substantially in accordance with the plans, and subject to the conditions, recommended in the respective reports designated in this subsection:

(1) **BAYOU LA BATRE, ALABAMA.**—The project for navigation for Bayou La Batre, Alabama: Report of the Chief of Engineers, dated August 3, 1989, at a total cost of \$16,230,000, with an estimated first Federal cost of \$4,490,000 and an estimated first non-Federal cost of \$11,740,000.

(2) **HOMER SPIT, ALASKA.**—The project for storm damage prevention, Homer Spit, Alaska: Report of the Chief of Engineers, dated June 28, 1990, at a total cost of \$4,700,000, with an estimated first Federal cost of \$3,050,000 and an estimated first non-Federal cost of \$1,650,000, and an average annual cost of \$242,000 for periodic nourishment over the 50-year life of the project, with an estimated annual Federal cost of \$157,000 and an estimated annual non-Federal cost of \$85,000.



(3) CLIFTON, SAN FRANCISCO RIVER, ARIZONA.—The project for flood control on the San Francisco River at Clifton, Arizona, authorized by section 401(d) of the Water Resources Development Act of 1986 (100 Stat. 4130), is modified to authorize the Secretary to construct the project substantially in accordance with the report of the Chief of Engineers, dated September 6, 1988, at a total cost of \$12,510,000, with an estimated first Federal cost of \$9,150,000 and an estimated first non-Federal cost of \$3,360,000.

(4) NOGALES WASH AND TRIBUTARIES, ARIZONA.—The project for flood control, Nogales Wash and tributaries, Arizona: Report of the Chief of Engineers, dated February 28, 1989, at a total cost of \$11,100,000, with an estimated first Federal cost of \$8,300,000 and an estimated first non-Federal cost of \$2,800,000. The Secretary shall cooperate with the Government of Mexico as necessary to provide for flood warning gauges in Mexico. The Secretary may proceed with the portion of the project in the United States before an agreement is reached with the Government of Mexico with respect to the portion of the project in Mexico.

(5) COYOTE AND BERRYESSA CREEKS, CALIFORNIA.—The project for flood control, Coyote and Berryessa Creeks, California: Report of the Chief of Engineers, dated February 7, 1989, at a total cost of \$56,300,000, with an estimated first Federal cost of \$39,000,000 and an estimated first non-Federal cost of \$17,300,000.

(6) OCEANSIDE HARBOR, CALIFORNIA.—The project for navigation and storm damage reduction, Oceanside Harbor, California: Report of the Chief of Engineers, dated May 21, 1990, at a total cost of \$5,100,000, with an estimated first Federal cost of \$3,350,000 and an estimated first non-Federal cost of \$1,750,000.

(7) VENTURA HARBOR, CALIFORNIA.—The project for navigation, Ventura Harbor, California: Report of the Chief of Engineers, dated June 5, 1990, at a total cost of \$6,455,000, with an estimated first Federal cost of \$5,175,000 and an estimated first non-Federal cost of \$1,280,000.

(8) MARTIN COUNTY, FLORIDA.—The project for storm damage reduction, Martin County, Florida: Report of the Chief of Engineers dated November 20, 1989, at a total first cost of \$9,400,000, with an estimated first Federal cost of \$3,850,000 and an estimated first non-Federal cost of \$5,550,000, and an average annual cost of \$472,300 for periodic nourishment over the 50-year life of the project, with an estimated annual Federal cost of \$193,600 and an estimated annual non-Federal cost of \$278,700.

(9) MIAMI HARBOR CHANNEL, FLORIDA.—The project for navigation, Miami Harbor Channel, Florida: Report of the Chief of Engineers dated September 25, 1989, at a total cost of \$67,100,000, with an estimated first Federal cost of \$42,810,000 and an estimated first non-Federal cost of \$24,290,000.

(10) McALPINE LOCK AND DAM, INDIANA AND KENTUCKY.—The project for navigation, McAlpine Lock and Dam, Indiana and Kentucky: Report of the Chief of Engineers, dated June 29, 1990, at a total cost of \$219,600,000, with a first Federal cost of \$219,600,000. The Federal share of costs of construction of the project is to be paid one-half from amounts appropriated from the general fund of the Treasury and one-half from amounts appropriated from the Inland Waterways Trust Fund.

Mexico.  
Flood control.

(11) FORT WAYNE, ST. MARY'S AND MAUMEE RIVERS, INDIANA.—The project for flood control, Fort Wayne, St. Mary's and Maumee Rivers, Indiana: Report of the Chief of Engineers, dated May 1, 1989, at a total cost of \$35,618,400, with an estimated first Federal cost of \$26,493,000 and an estimated first non-Federal cost of \$9,125,400.

(12) ALOHA-RIGOLETTE, LOUISIANA.—The project for flood control, Aloha-Rigolette Area, Louisiana: Report of the Chief of Engineers dated April 11, 1990, at a total cost of \$8,283,000, with an estimated first Federal cost of \$6,212,000 and an estimated first non-Federal cost of \$2,071,000.

(13) BOSTON HARBOR, MASSACHUSETTS.—The project for navigation, Boston Harbor, Massachusetts: Report of the Chief of Engineers, dated May 11, 1989, at a total cost of \$26,200,000, with an estimated first Federal cost of \$16,230,000 and an estimated first non-Federal cost of \$9,970,000.

(14) ECORSE CREEK, WAYNE COUNTY, MICHIGAN.—The project for flood control, Ecorse Creek, Wayne County, Michigan: Report of the Chief of Engineers, dated August 8, 1989, at a total cost of \$9,296,000, with an estimated first Federal cost of \$6,754,000 and an estimated first non-Federal cost of \$2,542,000.

(15) GREAT LAKES CONNECTING CHANNELS AND HARBORS, MICHIGAN AND MINNESOTA.—The project for navigation, Great Lakes Connecting Channels and Harbors, Michigan and Minnesota: Report of the Chief of Engineers, dated January 30, 1990, at a total cost of \$13,148,400, with an estimated first Federal cost of \$8,791,700 and an estimated first non-Federal cost of \$4,356,700.

(16) COLDWATER CREEK, MISSOURI.—The project for flood control, Coldwater Creek, Missouri: Report of the Chief of Engineers, dated August 9, 1988, at a total cost of \$22,829,000, with an estimated first Federal cost of \$15,496,000 and an estimated first non-Federal cost of \$7,333,000.

(17) RIVER DES PERES, MISSOURI.—The project for flood control, River Des Peres, Missouri: Report of the Chief of Engineers, dated May 23, 1989, at a total cost of \$21,318,000, with an estimated first Federal cost of \$15,846,000 and an estimated first non-Federal cost of \$5,472,000.

(18) PASSAIC RIVER MAIN STEM, NEW JERSEY AND NEW YORK.—

(A) FLOOD CONTROL ELEMENTS.—

(i) IN GENERAL.—The project for flood control, Passaic River Main Stem, New Jersey and New York: Report of the Chief of Engineers, dated February 3, 1989, except that the main diversion tunnel shall be extended to include the outlet to Newark Bay, New Jersey, at a total cost of \$1,200,000,000, with an estimated first Federal cost of \$890,000,000 and an estimated first non-Federal cost of \$310,000,000.

(ii) DESIGN AND CONSTRUCTION.—The Secretary shall design and construct the project in accordance with the Newark Bay tunnel outlet alternative described in the Phase I General Design Memorandum of the District Engineer, dated December 1987. The main diversion tunnel shall be extended approximately 6½ miles to outlet in Newark Bay, the 9 levee systems in Bergen, East Essex, and Passaic Counties which were associated with the eliminated Third River tunnel outlet shall be excluded from the project, and no dikes or levees shall



be constructed along the Passaic River in Bergen County in connection with the project. With respect to the Newark Bay tunnel outlet project, all acquisition, use, condemnation, or requirement for parklands or properties in connection with the excluded 9 levee systems and the eliminated Third River tunnel outlet works, and any other acquisition, use or condemnation, or requirement for parkland or properties in Bergen County in connection with the project, is prohibited. The Secretary shall certify to the Committee on Public Works and Transportation of the House of Representatives and the Committee on Environment and Public Works of the Senate that no detrimental flood impact will accrue in Bergen County as a result of the project.

(iii) **APPLICABILITY OF COST SHARING.**—Except as otherwise provided in this paragraph, the total project, including the extension to Newark Bay, shall be subject to cost sharing in accordance with section 103 of the Water Resources Development Act of 1986.

Regulations.

(iv) **OPERATION AND MAINTENANCE.**—The non-Federal sponsor shall maintain and operate the project after its completion in accordance with the regulations prescribed by the Secretary; except that the Secretary shall perform all measures to ensure integrity of the tunnel, including staffing of operation centers, cleaning and periodically inspecting the tunnel structure, and testing and assuring the effectiveness of mechanical equipment at gated structures and pump stations.

(v) **CREDIT FOR NON-FEDERAL WORK.**—In recognition of the State of New Jersey's commitment to the project on June 28, 1984, all work completed after such date by the State or other non-Federal interests which is either compatible with or complementary to the project shall be considered as part of the project and shall be credited by the Secretary toward the non-Federal share of the cost of the project. Such work shall include, but not be limited to, those activities specified in the letter of the New Jersey Department of Environmental Protection, dated December 9, 1988, to the Office of the Chief of Engineers. However, only the portion of such work that meets the guidelines established under section 104 of the Water Resources Development Act of 1986 shall be considered as project costs for economic purposes. In applying such section 104 to the project, the Secretary shall likewise consider work carried out by non-Federal interests after June 28, 1984, and before the date of the enactment of this Act that otherwise meets the requirements of such section 104.

(B) **STREAMBANK RESTORATION MEASURES.**—The project shall include the construction of environmental and other streambank restoration measures (including bulkheads, recreation, greenbelt, and scenic overlook facilities) on the west bank of the Passaic River between Bridge and Jackson Streets in the city of Newark, New Jersey, at a total cost of \$6,000,000. The non-Federal share of the project element authorized by this subparagraph shall be 25 percent. The value of the lands, easements, and rights-of-way provided



by non-Federal interests shall be credited to the non-Federal share. Construction of the project element authorized by this subparagraph may be undertaken in advance of the other project features and shall not await implementation of the overall project.

(C) WETLANDS BANK.—

(i) PURPOSES.—The purposes of this subparagraph are to evaluate and demonstrate, for application on a national basis, the feasibility of and methods of obtaining an interim goal of no overall net loss of the Nation's remaining wetlands base and a long-term goal to increase the quality and quantity of the Nation's wetlands; of restoring and creating wetlands; of developing public and private initiatives to search out opportunities of restoring, preserving, and enhancing wetlands; and of improving understanding of the function of wetlands ecosystems in order to improve the effectiveness of the Nation's wetlands program, including evaluating the functions and values of wetlands, assessing cumulative impacts and the effectiveness of protection programs, and wetlands restoration and creation techniques.

(ii) ESTABLISHMENT.—The State of New Jersey shall establish a Passaic River Central Basin Wetlands Bank (hereinafter in this paragraph referred to as the "Wetlands Bank") to be comprised of lands which are acquired before, on, or after the date of the enactment of this Act by the State or any other non-Federal interest and which lie within the Passaic River Central Basin, New Jersey, natural storage area discussed in the report of the Chief Engineers and the Phase I General Design Memorandum.

(iii) USE.—The Wetlands Bank shall be available for mitigation purposes required under Federal or State law with respect to non-Federal activities carried out in the State.

(iv) COMPENSATION.—The State may receive compensation for making lands available under clause (iii).

(v) STATE OWNERSHIP AND OPERATION.—The State shall continue to own and operate, consistent with the purposes of the project authorized by this paragraph, lands made available for mitigation purposes under clause (iii).

(vi) ACQUISITION OF ADDITIONAL LANDS.—The State or other non-Federal interests may acquire for the Wetlands Bank additional lands which are in, adjacent to, or provide drainage for runoff and streamflows into the storage area described in clause (ii) and may use funds provided by sources other than the State for such purpose. Such lands shall include transition and buffer areas adjacent to the Central Basin natural storage wetlands and other Passaic River Basin areas, including the Rockaway, Pequannock, Ramapo, and Wanaque River watershed areas.

(vii) CREDIT.—The fair market value of lands acquired by the State or other non-Federal interests in the storage area described in clause (ii) before, on, or

after the date of the enactment of this Act, the fair market value of lands acquired for the Wetlands Bank under clause (vi) before, on, or after such date of enactment, and the costs incurred by the State or other non-Federal interests in converting any of such lands to wetlands shall be credited to the non-Federal share of the cost of the project authorized by this paragraph.

(viii) TREATMENT OF ACQUIRED LANDS.—Lands acquired by the State for the Wetlands Bank shall not be treated as a project cost for purposes of economic evaluation of the project.

(ix) EFFECT ON OTHER LAWS.—Nothing in this subparagraph shall be construed as affecting any requirements under section 404 of the Federal Water Pollution Control Act (33 U.S.C. 1344) or section 10 of the Act of March 3, 1899 (33 U.S.C. 403).

(19) RIO DE LA PLATA, PUERTO RICO.—The project for flood control, Rio De La Plata, Puerto Rico: Report of the Chief of Engineers, dated January 3, 1989, at a total cost of \$58,968,000, with an estimated first Federal cost of \$35,900,000 and an estimated first non-Federal cost of \$23,068,000.

(20) MYRTLE BEACH, SOUTH CAROLINA.—The project for storm damage reduction, Myrtle Beach, South Carolina: Report of the Chief of Engineers, dated March 2, 1989, at a total cost of \$59,730,000, with an estimated first Federal cost of \$38,820,000 and an estimated first non-Federal cost of \$20,910,000, and an average annual cost of \$1,215,000 for period nourishment over the 50-year life of the project, with an estimated annual Federal cost of \$790,000 and an estimated annual non-Federal cost of \$425,000.

(21) BUFFALO BAYOU AND TRIBUTARIES, TEXAS.—The project for flood control, Buffalo Bayou and tributaries, Texas: Report of the Chief of Engineers, dated February 12, 1990, at a total cost of \$727,364,000, with an estimated first Federal cost of \$403,359,500 and an estimated first non-Federal cost of \$324,004,500.

(22) RAY ROBERTS LAKE, GREENBELT, TEXAS.—The multiple purpose project, Ray Roberts Lake, Greenbelt, Texas, authorized by section 301 of the Rivers and Harbors Act of 1965, is modified to authorize the Secretary to construct recreation features substantially in accordance with the Report of the Chief of Engineers, dated December 24, 1987, at a total cost of \$8,503,000, with an estimated first Federal cost of \$3,189,000 and an estimated first non-Federal cost of \$5,314,000.

(23) UPPER JORDAN RIVER, UTAH.—The project for flood control, Upper Jordan River, Utah: Report of the Chief of Engineers, dated November 16, 1988, at a total cost of \$7,900,000, with an estimated first Federal cost of \$5,200,000 and an estimated first non-Federal cost of \$2,700,000.

(24) BUENA VISTA, VIRGINIA.—The project for flood control, Buena Vista, Virginia: Report of the Chief of Engineers, dated June 27, 1990, at a total cost of \$55,100,000, with an estimated first Federal cost of \$41,300,000 and an estimated first non-Federal cost of \$13,800,000.

(25) MOOREFIELD, WEST VIRGINIA.—The project for flood control, Moorefield, West Virginia: Report of the Chief of Engineers, dated July 23, 1990, at a total cost of \$16,260,000, with an



estimated first Federal cost of \$11,675,000 and an estimated first non-Federal cost of \$4,585,000.

(26) **PETERSBURG, WEST VIRGINIA.**—The project for flood control, Petersburg, West Virginia: Report of the Chief of Engineers, dated June 29, 1990, at a total cost of \$17,904,000, with an estimated first Federal cost of \$10,044,000 and an estimated first non-Federal cost of \$7,860,000.

(b) **PROJECT SUBJECT TO FAVORABLE REPORT OF THE CHIEF OF ENGINEERS.**—The project for flood control, Los Angeles County Drainage Area, California, at a total cost of \$327,000,000, with an estimated first Federal cost of \$163,500,000 and an estimated first non-Federal cost of \$163,500,000, is authorized to be prosecuted by the Secretary in accordance with a final report of the Chief of Engineers and with such modifications as are recommended by the Secretary. No construction on the project may be initiated until such a report of the Chief of Engineers is issued and approved by the Secretary.

#### SEC. 102. PROJECT MODIFICATIONS.

(a) **VILLAGE CREEK, ALABAMA.**—The project for flood control, Village Creek, Alabama, authorized by section 401 of the Water Resources Development Act of 1986 (100 Stat. 4111), is modified to authorize the Secretary to acquire private vacant lands within the definite project boundaries established in the Real Estate Design Memorandum, dated March 4, 1988, as a nonstructural element of the project.

(b) **KODIAK HARBOR, ALASKA.**—The project for navigation, Kodiak Harbor, Alaska, authorized by section 202(a) of the Water Resources Development Act of 1986 (100 Stat. 4091), is modified to authorize the Secretary to construct the project at a total cost of \$25,000,000, with an estimated first Federal cost of \$22,500,000 and an estimated first non-Federal cost of \$2,500,000.

(c) **LOS ANGELES AND LONG BEACH HARBORS, SAN PEDRO BAY, CALIFORNIA.**—Section 4(d) of the Water Resources Development Act of 1988 (102 Stat. 4015) is amended by inserting after “approved by the Secretary” in the first sentence the following: “or which is carried out after approval of the final report by the Secretary and which is determined by the Secretary to be compatible with the project”.

(d) **SACRAMENTO DEEP WATER SHIP CHANNEL, CALIFORNIA.**—The project for navigation, Sacramento Deep Water Ship Channel, California, authorized by section 202(a) of the Water Resources Development Act of 1986 (100 Stat. 4092), is modified to direct the Secretary, if requested by a non-Federal sponsor, to enforce, on a reimbursable basis, the terms of any permit issued by the Secretary under section 10 of the Act of March 3, 1899 (30 Stat. 1151; 33 U.S.C. 403), commonly known as the Rivers and Harbors Appropriations Act of 1899, to compel the relocation of any utility necessitated by the construction of such project.

(e) **SANTA ANA MAINSTEM, CALIFORNIA.**—The project for flood control, Santa Ana Mainstem, including Santiago Creek, California, authorized by section 401(a) of the Water Resources Development Act of 1986 (100 Stat. 4113), is modified to authorize the Secretary to develop recreational trails and facilities on lands between Seven Oaks Dam and Prado Dam, including flood plain management areas.

(f) **SAN LUIS REY RIVER, CALIFORNIA.**—The project for flood control, San Luis Rey River, California, authorized pursuant to section 201 of the Flood Control Act of 1965 (42 U.S.C. 1962d-5), is modified to authorize the Secretary to construct the project at a total cost of \$60,400,000, with an estimated first Federal cost of \$45,100,000 and an estimated first non-Federal cost of \$15,300,000.

Bridges.

(g) **DELAWARE RIVER TO CHESAPEAKE BAY, DELAWARE AND MARYLAND.**—The project for navigation, inland waterway from the Delaware River to the Chesapeake Bay, Delaware and Maryland, authorized by the first section of the Act of August 30, 1935 (49 Stat. 1030), and modified by the Act entitled "An Act authorizing construction of a highway bridge across the Chesapeake and Delaware Canal at Saint Georges, Delaware", approved August 7, 1939 (53 Stat. 1240-1241), is modified to direct the Secretary to replace the highway bridge on United States Route 13 in the vicinity of St. Georges, Delaware, to meet current and projected traffic needs, at a Federal cost of \$115,000,000. The State may carry out the bridge replacement. If the State carries out the bridge replacement, the Secretary may reimburse the State for costs incurred.

(h) **ALAFIA CHANNEL, FLORIDA.**—

(1) **PROJECT DEPTH.**—The project for navigation, Tampa Harbor, Florida, authorized by section 4 of the Rivers and Harbors Act of September 22, 1922 (42 Stat. 1042), is modified to authorize the Secretary to maintain the Alafia Channel at a depth of 34 feet if the non-Federal sponsor dredges the channel to such depth; except that the non-Federal sponsor shall reimburse the United States for the incremental costs incurred by the Secretary in maintaining the channel at a depth greater than 30 feet.

(2) **MAINTENANCE.**—Nothing in this subsection shall be construed as affecting the Federal responsibility for maintenance of the Alafia Channel to a depth of 30 feet.

21 Stat. 180.

(i) **FERNANDINA HARBOR, FLORIDA.**—The project for navigation, Fernandina Harbor, Florida, authorized by the River and Harbor Appropriation Act of June 14, 1880, is modified to redesignate the location of the turning basin between stations 0+00 of cut 8 and 5+45 of cut 10 to the area between stations 11+70 and 23+30 of cut 5. Such redesignation shall remain in effect until the ongoing study of Fernandina Harbor under section 107 of the River and Harbor Act of 1960 is completed and the resulting project is constructed.

(j) **MANATEE HARBOR, FLORIDA.**—The project for navigation, Manatee Harbor, Florida, authorized by section 202(a) of the Water Resources Development Act of 1986 (100 Stat. 4093), is modified to direct the Secretary to construct the project substantially in accordance with the post authorization change report, dated April 1990, at an estimated total cost of \$27,589,000, with an estimated first Federal cost of \$12,381,000 and an estimated first non-Federal cost of \$15,208,000.

(k) **ALENAIO STREAM, HAWAII.**—The project for flood control, Alenaio Stream, Hawaii, authorized by section 401(a) of the Water Resources Development Act of 1986 (100 Stat. 4114), is modified to authorize the Secretary to construct the project substantially in accordance with the report of the Chief of Engineers, dated August 15, 1983, as modified by the General Design Memorandum and Environmental Assessment, dated March 1990, at a total cost of \$12,060,000, with an estimated first Federal cost of \$7,730,000 and an estimated first non-Federal cost of \$4,330,000.



(l) **LOCKS AND DAM 26, MISSISSIPPI RIVER, ALTON, ILLINOIS AND MISSOURI.**—The navigation project for replacement of locks and dam 26, Mississippi River, Alton, Illinois and Missouri, authorized by section 102 of Public Law 95-502, is modified to authorize the Secretary to provide project-related recreational development in the State of Illinois, that requires no separable project lands and includes site preparations and infrastructure for a marina and docking facilities, access roads and parking, a boat launching ramp, hiking trails, and picnicking facilities, at a Federal construction cost that will not increase the overall project cost estimate for recreational development. The recreational development shall be subject to cost-sharing with the State of Illinois.

92 Stat. 1695.

Recreation and recreation areas.

(m) **FALLS OF THE OHIO NATIONAL WILDLIFE CONSERVATION AREA, INDIANA.**—The Falls of the Ohio National Wildlife Conservation Area, Indiana, authorized by title II of Public Law 97-137, is modified to authorize the Secretary to design and construct an interpretive center for such area, at a total cost of \$3,200,000, with an estimated first Federal cost of \$1,600,000 and an estimated first non-Federal cost of \$1,600,000.

(n) **DES MOINES RIVER AND GREENBELT, IOWA.**—

(1) **AREA DESCRIPTION.**—The project for Des Moines Recreational River and Greenbelt, Iowa, authorized by the Supplemental Appropriations Act, 1985 (99 Stat. 313), is modified to include the area described in the Des Moines Recreational River and Greenbelt map, which description is printed in Committee Print 101-47 of the Committee on Public Works and Transportation of the House of Representatives, dated July 1990.

(2) **FORMER AREA DESCRIPTION.**—Section 604 of the Water Resources Development Act of 1986 (100 Stat. 4153) is repealed.

Repeal.

(o) **SOUTH FRANKFORT, KENTUCKY.**—The project for flood protection for the Ohio River Basin, authorized by section 4 of the Flood Control Act of June 28, 1938 (52 Stat. 1217), is modified to direct the Secretary, subject to section 903(c) of the Water Resources Development Act of 1986, to carry out a project for flood protection for South Frankfort, Kentucky, in accordance with plan R-1 of the Louisville District Commander's Re-evaluation Report, dated June 1990. The level of protection shall be no less than that afforded North Frankfort, Kentucky. In addition, the Secretary shall execute a local cooperation agreement for the project for South Frankfort not later than October 1991.

Cooperative agreements.

(p) **RED RIVER WATERWAY, LOUISIANA.**—The project for mitigation of fish and wildlife losses, Red River Waterway, Louisiana, authorized by section 601(a) of the Water Resources Development Act of 1986 (100 Stat. 4142), is modified to authorize the Secretary to acquire an additional 12,000 acres adjacent to or close to the Bayou Bodcau Wildlife Management Area.

(q) **CROOKED AND INDIAN RIVERS, MICHIGAN.**—

(1) **NON-FEDERAL OPERATION AND MAINTENANCE.**—The navigation project for the Crooked and Indian Rivers, Michigan, authorized by the Act entitled "An Act authorizing the construction, repair, and preservation of certain public works on rivers and harbors for navigation, flood control, and for other purposes", approved September 3, 1954 (68 Stat. 1248), is modified to authorize the Secretary to enter into agreements with the State of Michigan and other non-Federal interests in such State to make operation and maintenance of such project a non-Federal responsibility.

(2) **TERMS AND CONDITIONS.**—The agreements referred to in paragraph (1) may—

(A) contain such terms and conditions as the Secretary determines to be necessary to protect the interests of the United States; and

(B) require the Secretary to make payments to the State of Michigan to cover the costs of operation, maintenance, and repair of such project for lake level regulation and other flood control purposes, including payments made in advance of such costs being incurred by the State.

(3) **NON-FEDERAL IMPOSITION OF TOLLS.**—Notwithstanding section 4 of the Act entitled “An Act making appropriations for the construction, repair, and preservation of certain public works on rivers and harbors, and for other purposes”, approved July 5, 1884 (33 U.S.C. 5; 23 Stat. 147), during any period in which a non-Federal interest is responsible for operation and maintenance of the project described in paragraph (1), the non-Federal interest may impose upon boats and other watercraft using the project such tolls, operating charges, and other fees as may be necessary to pay the costs incurred by the non-Federal interest in connection with such projects which are not covered by payments made by the Secretary under this subsection.

(r) **ROUGE RIVER, MICHIGAN.**—The multipurpose project at Rouge River, Michigan, authorized by the Act of August 30, 1935 (49 Stat. 1036–1037), is modified to authorize and direct the Secretary, in consultation with appropriate State and local agencies, to conduct a 1-year comprehensive study of the Rouge River streamflow enhancement project at the Rouge River, Huron River, and Belleville Lake for the purpose of identifying measures which will optimize achievement of the project’s purposes while preserving and enhancing the quality of the Rouge River, Huron River, and Belleville Lake for current and future users. Upon completion of the study, the Secretary is authorized to provide, on a reimbursable basis, technical assistance in the implementation of measures identified in such study.

(s) **MISSISSIPPI RIVER, ST. PAUL, MINNESOTA.**—The project for flood control, Mississippi River at St. Paul, Minnesota, authorized by section 401(a) of the Water Resources Development Act of 1986 (100 Stat. 4118), is modified to authorize the Secretary to construct the project substantially in accordance with the Design Memorandum, dated March 1990, and the Recreational Supplement, dated April 1990, at a total cost of \$18,021,000, with an estimated first cost of \$10,226,000 and an estimated first non-Federal cost of \$7,795,000.

(t) **BRUSH CREEK AND TRIBUTARIES, MISSOURI AND KANSAS.**—The project for flood control, Brush Creek and tributaries, Missouri and Kansas, authorized by section 401(a) of the Water Resources Development Act of 1986 (100 Stat. 4168), is modified to authorize the Secretary to construct the project substantially in accordance with the Post Authorization Change Report, dated April 1969, as revised in January 1990, at a total cost of \$26,200,000, with an estimated first Federal cost of \$16,090,000 and an estimated first non-Federal cost of \$10,110,000.

(u) **MISSOURI RIVER BETWEEN FORT PECK DAM, MONTANA, AND GAVINS POINT DAM, SOUTH DAKOTA AND NEBRASKA.**—Section 9 of the Act entitled “An Act authorizing the construction of certain public works on rivers and harbors for flood control, and for other purposes”, approved December 22, 1944 (58 Stat. 891), is amended by

Real property  
acquisition.