

A Comparison of the 1977 Water Policy Review and the 1978 Federal Water Policy Proposals

by Warren Viessman, Jr.*

Introduction

This report is an analysis of the President's Federal Water Policy Initiatives of June 6, 1978 [1]. Recommendations were made on: conservation, planning procedures, cost sharing, and environmental protection. In his statement the President said:

Last year [1977], I directed the Water Resources Council, the Office of Management and Budget and the Council on Environmental Quality, under the chairmanship of Secretary Cecil Andrus, to make a comprehensive review of Federal water policy and to recommend proposed reforms.

This new water policy [WPI] results from their review, the study of water policy ordered by the Congress in Section 80 of the Water Resources Planning Act of 1974, and our extensive consultations with Members of Congress, State, county, city and other local officials and the public.

Included herein is a discussion of the WPI proposals, relating these to the seven principal issues considered in the 1977 water policy review. It is worth noting at the outset that the water quality-water quantity interface was not considered in the WPI nor was there any proposal relative to the federal water pollution control program with its enormous outlays for capital construction. Although the WPI contained several positive recommendations, many controversial subjects were avoided and some important issues were given only cursory treatment.

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Background

The President's May 23, 1977, environmental message to Congress inaugurated a wide-ranging review of national water policy. The objective of that review, conducted by the Water Resources Council (WRC), the Office of Management and Budget (OMB) and the Council on Environmental Quality (CEQ), was to produce viable options for reform. Major topics under consideration were identified in a series of "issue and option" papers published on July 15 and July 25, 1977, in the *Federal Register*. They were:

- Revision of water resources planning and evaluation criteria and procedures.
- Cost sharing.
- Policy considerations and alternatives relative to institutions and institutional arrangements.
- Water conservation.
- Water quality.
- Research.
- Federal reserved water rights.

In July and August 1977, regional hearings were held in Minneapolis, Denver, Boston, Dallas, Atlanta, Los Angeles, Seattle and Cincinnati. Considerable adverse reaction was voiced, especially from water interests in the western states. Consequently, the Senate passed a resolution, S. Res. 284 (October 1977), expressing its concern about possible interference with the traditional state role in water allocation actions and the need for consultation with the Congress.

On February 3, 1978, Secretary of the Interior, Cecil D. Andrus, met with the Subcommittee on Water Management of the National Governors' Association (NGA). It was the consensus of the governors that:

. . . any national water policy should be the result of a cooperative, national, not primarily Federal, effort; that the new policy should strengthen the States' capabilities to manage; that the Federal Government must be more flexible in its response to States; and that management should recognize regional differences in water problems and ensure flexibility and equity in future Federal water investments.... State representatives who participated in the National Water Policy Review efforts were and are agreed that coherent goals and guidelines to provide a common purpose to the process have not been forthcoming from the Federal Government.

The governors were seeking a stronger role in the water resources decision making process: of particular importance to them was the economic viability of their regions. Governors in the East were seeking more help for urban water problems while those in the West were concerned about their state-rooted water rights. As a result of intense State pressures, President Carter agreed to discuss his water policy proposals with a delegation of governors before announcing his decision.

Following consultations with members of Congress, State, county, city and other local officials and the public, the results of the water policy review were transmitted to the President by the Secretary of Interior in May 1978. On June 6, 1978, President Carter presented his Federal Water Policy Initiatives to the Congress. He said:

I am today sending to Congress water policy initiatives designed to:

- Improve planning and efficient management of Federal water resource programs to prevent waste and to permit necessary water projects which are cost-effective, safe and environmentally sound to move forward expeditiously.
- Provide anew, national emphasis on water conservation.
- Enhance Federal-State cooperation and improved State water resources planning.
- Increase attention to environmental quality.

He further stipulated that the initiatives would not impose any new federal regulatory program for

water management. Key recommendations were categorized under the following headings: Improving Federal Water Resources Programs, Water Conservation, Federal -State Cooperation, and Environmental Protection.

In this report, the President's proposals are analyzed in the context of the seven original categories of the water policy review. Thus, the scope of the WP I can be more directly related to that of the review which led to its development.

Revision of Water Resources Planning and Evaluation Criteria and Procedures

Planning and evaluation of Federal water projects and programs are hampered by the considerable number of agencies and departments involved and the inconsistencies and complexities resulting from their procedures. The water policy review of 1977 addressed three major issues relative to this topic. They were: goals and objectives, planning and evaluation procedures, and administration of the planning process. The original problem areas defined for each issue are reviewed herein, followed by a discussion of the relevant recommendations contained in the President's WPI.

Issue A: Goals and Objectives

Problem areas identified in the water policy review were:

1. Whether the objectives of Federal water resources policy should be limited to national economic development (NED) and environmental quality (EQ).
2. Lack of coordination between water resources plans and overall Federal policy, such as transportation.
3. Nature of the Federal role in water resource development in a modern context.
4. Inconsistency in project evaluation: "Principles and Standards" (P & S) are applied to direct Federal programs but not to grant and loan programs.

Problem 1: The WPI addressed the problem of revising objectives. On this subject the President stated that the basic planning objectives of the Principles and Standards-national economic development and environmental quality-would be retained and given equal emphasis. In addition, water conservation would be made a specific component of both the economic and environmental objectives.

The proposal to include conservation as a component of the NED and EQ objectives rather than to assign it separate objective status appears sound. In fact, conservation is only one of several approaches which might be used singularly or in concert to meet the principal objectives set forth in the P & S. A requirement that conservation be explicitly considered in the planning phase could result in more efficient and possibly less structure-oriented alternatives for water resources development.

Problem 2: Although problems related to uncoordinated planning in the water resources field are widespread and deserve prompt attention, this subject was not addressed in the President's Water Policy Initiatives.

Problem 3: The nature of the Federal role in water resources development was not directly confronted in the June 6 WPI. Increased emphasis on State and local efforts was implicit, however, as illustrated by the following proposed actions:

- Substantially increasing from \$3 million to \$25 million the annual funding of state water planning under the existing 50%-50% matching program administered by the Water Resources Council (P. L. 89-80).
- Preparation of legislation to provide \$25 million annually in 50%-50% matching grant assistance to states to implement water conservation technical assistance programs.
- Working with State governors to create a Task Force of Federal, State, county, city and other local officials to continue to address water-related problems.

While increased funding for State water planning is, desirable according to most authorities, there is a need to question the advisability of the large increase that has been proposed. The concept of water conservation technical assistance programs is also attractive but a pilot program might be considered by the Congress before setting a funding level.

Determination of appropriate roles to be played by Federal, State and local governments is fundamental to the resolution of most critical water problems. The WPI gave this subject little attention and Congress might list this high in priority for additional consideration.

Problem 4: The WPI included heavy emphasis on

improving the P & S but this was related mostly to cost-benefit calculations. The lack of P & S coverage of federally assisted projects was not discussed. This appears to be a significant omission, particularly when one considers that Federal grants and loans for water projects now exceed direct federal funding for these by the major construction agencies. For example, the P.L. 92-500 program of EPA is not included under the P & S.

Issue B: Planning and Evaluation Procedures

The planning and evaluation procedures considered in the water policy review related to:

1. Adequacy and integrity of benefit - cost analyses.
2. Identification of project beneficiaries and consideration of social equity.
3. Appropriate weighting of environmental factors in project analyses.
4. Determination of the appropriate discount rate.
5. Focus of water development planning on construction projects rather than comprehensive management.

Problems 1 and 2: Problems 1 and 2 relate to economic analyses of water projects and were heavily emphasized in the President's WPI. It was stated that the implementation of the P & S should be improved by instituting consistent, specific procedures for calculating benefits and costs. Benefit-cost analyses have yet to be uniformly applied by Federal agencies, and in some cases benefits have been improperly recognized, "double-counted" or included when inconsistent with Federal policy or sound economic rationale. To provide a mechanism to assure the needed consistency, the WRC and its member agencies were directed to:

. . . (1) evaluate current agency practices for making benefit and cost calculations, and (2) publish within 12 months a new planning manual to ensure that benefits and costs are estimated using best current techniques and calculated accurately, consistently, and in compliance with the P & S and other economic evaluation requirements. . . .

Particular attention is to be given to the following items: benefits attributed to protecting future development in the floodplain; surplus crop benefits; navigation benefits; flat water recreation benefits; extended project life; area redevelopment benefits; the appropriateness

of calculations for ability to pay (Reclamation projects); whether benefits to charter boats should be defined as commercial navigation; uncertainty and risk of cost and benefits; least cost alternative analysis; consideration and display of engineering uncertainty; market value of vendible project outputs; determination of project design flood; the appropriateness of maximizing net benefits versus maximizing benefit/cost ratios under budget constraints; the assessment and consideration of costs of elimination of farmland, wetland, wildlife habitat, and timberland.

There can be little argument that there is the need to achieve greater consistency and reliability in economic and other aspects of project analysis. In this respect, the Water Policy Initiatives are a forward step.

Problem 3: Weighting of environmental factors was not explicitly considered in the June 6, 1978, message. However, the emphasis placed on enforcing environmental statutes and the criteria for project selection by the Executive are likely to result in a more systematic determination of the relative values of environmental factors.

Problem 4: To make investment decisions, monetary values must be identified by amount and time. Amounts in different time periods may be brought to equivalency by use of the discount rate, a time rate of decrease expressed in percent per time period. The discount rate used (currently 6-7/8 percent) greatly influences project selections. For example, high discount rates favor projects with low initial investments, while low discount rates favor capital intensive projects. Remarking on the appropriate discount rate for use in evaluating water resources projects, the President stated:

. . . After careful consideration of a range of options, I have decided that the currently legislated discount rate formula is reasonable, and I am therefore recommending that no change be made in the current formula. Nor will I recommend retroactive changes in the discount rate for currently authorized projects.

The President's WPI, by maintaining the status quo, sidesteps this politically volatile issue. The level of the discount rate has been debated intensely for years. Some prominent university economists and many environmentalists favor considerably higher rates based upon an opportunity-cost approach, while many pro-development interests consider that the present discount rate includes provisions for currency

depreciation and is therefore somewhat too high. There are also many who believe that the grandfather clause allowing some projects to use interest rates of a time long past is illogical, uneconomic, inequitable, and should be abandoned.

Problem 5: The WPI confronted the issue of excessive focus on structural approaches to water resources development. It set forth a requirement that there be an explicit formulation and consideration of a primarily nonstructural plan as one alternative whenever structural water projects or programs are planned. Such plans are to incorporate a combination of nonstructural or demand-reducing measures which could feasibly be employed or adopted to achieve the overall project purpose. Floodplain management techniques (such as zoning), pricing policies and groundwater recharge are representative of the types of measures to be employed.

The requirement that a nonstructural alternative be included in P & S procedures impacts only on those projects falling under the jurisdiction of these standards [21]. A major problem not resolved by this mandate relates to facilities constructed under provisions of P.L. 92-500. EPA cost-sharing approaches not only favor large structural measures, but also heavy initial capital investments over less capital-intensive alternatives having higher operation, maintenance and replacement (OMR) costs. This deficiency deserves congressional attention.

Issue C: Administration of the Planning Process
Problems associated with administration of the planning process were categorized as follows in the water policy review:

1. Mechanisms already provided for coordination have not been implemented.
2. Coordination between water quality planning and water quantity planning is lacking.
3. There is considerable variation in implementation of project planning procedures and review processes.
4. Separation of P & S from Environmental Impact Statement (EIS) procedures has caused unnecessary duplication.
5. Project termination procedures are lacking.
6. The P & S are difficult to interpret and use.

Problems 1 and 2: Planning coordination is not addressed in the WPI. This is a long-standing problem and is deserving of prompt attention. Of particular concern is the issue of water quantity-

water quality planning and program coordination. The Congress has given this topic some consideration but much more could be done.

Problem 3: The June 6 Initiatives gave considerable emphasis to non-uniformity in project planning and evaluation procedures. It was stated:

No entity other than the construction agency itself now effectively monitors water project planning to ensure consistency and accuracy of benefit-cost calculations or compliance with relevant statutes, regulations or procedures.

An entity is needed to provide an impartial review of all water projects during the planning phase to assure technical compliance with the Principles and Standards and related laws and other requirements. OMB currently conducts project reviews as part of its budget and legislative review function. Because of its fiscal responsibilities to the President, however, OMB is perceived to have a bias against budgetary increases and is not policy neutral. Also, its limited staff precludes a thorough review of the underlying assumptions of benefit-cost calculations on each individual project report.

To resolve this problem, the President announced the following decision:

An independent review function is to be established by Executive Order, and located within the Water Resources Council.

This review function will be performed by a professional staff of about 30, with responsibility to review pre-authorization and pre-construction plans of the Corps of Engineers, Bureau of Reclamation, Soil Conservation Service, the Tennessee Valley Authority and the other relevant Federal agencies to determine the consistency of those plans with (i) established planning procedures and manuals, including the WRC Principles and Standards, and established benefit-cost calculations and estimation procedures; and (ii) other Federal laws and regulations relevant to the planning process.

This review unit will report through the WRC Chairman to the agency heads who will in turn report to the Executive Office of the President on compliance of project plans with established

requirements and procedures. Cabinet officers will maintain responsibility for budget requests To OMB. The review unit would also examine the record of project development to ensure that there has been adequate opportunity for public comment and consideration of public views. The review of each project will ordinarily be completed within 60 - days and will always be performed within the budget cycle during which the Cabinet officer would intend to request project funding, thereby producing no delay.

It was stipulated that the Principles and Standards requirements and the independent review process would apply to all authorized projects (and separable project features) not yet under construction.

The concept of an independent review board to review agency proposals has often been recommended. This mechanism could provide unbiased evaluations of project analyses and could be used to address questions of safety and environmental impact in a detached manner. On the negative side, it would add another layer to already lengthy review processes and could aggravate problems of delay. Staffing and time requirements should be carefully assessed and a determination made of the nature and scope of projects to be reviewed.

There is some question of the advisability of assigning this type of review function to the WRC, an agency intended to play a formative role in guiding U.S. water policy and in developing a national water planning strategy. Assignment of specific project responsibilities could easily divert the talents of WRC away from its principal mission. In addition, the review function could place WRC in an adversary position with the states, a counter-productive move relative to its coordinating role.

Problem 4: Incorporation of the EIS process into the P & S makes sense and would streamline procedures and minimize duplication. Originally, the EIS procedures were devised to remedy deficiencies in environmental planning. Now, however, planning has moved strongly toward corrective action; and the incorporation of environmental protection into the planning process appears to be timely. This issue was not addressed but deserves prompt attention.

Problems 5 and 6: Project termination procedures and the complexities of interpreting the P & S were not considered, although the latter may be addressed in the manual WRC has been directed to prepare.

Cost Sharing

Cost sharing is a critical element of national water policy. Current cost-sharing arrangements are inconsistent among programs, purposes and agencies. The present disjointed approach favors: structural over nonstructural solutions; capital-heavy construction alternatives over more economical solutions (having a higher proportional cost of operation and maintenance); and high levels of wastewater treatment over other alternatives such as control of urban runoff and dispersed sources of pollution.

The cost-sharing options considered in the "issue and option" papers were:

1. The current situation: The existing non-federal cost-sharing rates would continue without change. This option presumes that the inconsistencies in repayment terms and variations among agency programs and purposes are supported by valid reasons (Section 80 C, P. L. 93251).
2. Cost-sharing floor: Existing cost-sharing arrangements would be modified to achieve greater consistency among agencies and measures providing similar benefits.
3. Joint venture: Fifty percent of the initial capital implementation of financing costs of projects would be provided by the Federal government, and the other 50 percent would be provided by State, interstate or local governments, or by public non-governmental entities.
4. Block grant: This option would provide block grants to States as replacements for the present direct Federal investments in water resources programs and projects. Initially, each State would receive grant funds equivalent each year to the average annual Federal water resources investment in that State for the past several years. Eventually, grants would be distributed on a formula basis reflecting population,
5. Full recovery: The Federal government would continue to plan, finance, implement and operate projects and programs as it does today. However, in the case of projects authorized in the future, the cost-sharing terms for each project purpose or service provided by a project would require 100 percent repayment of all costs involved, including operation, maintenance, and replacement costs, interest during construction and interest at the project evaluation rate for all repayments obligations scheduled over a period of years.

Cost sharing was given considerable emphasis in the President's Water Policy Initiatives. He stated that the approach proposed would accomplish two important goals:

. . . (1) involving the States more heavily in water project decisions; and (2) eliminating many of the conflicting rules governing cost sharing for flood control projects-especially with regard to structural and nonstructural flood damage reduction measures. economic, and other factors related to investments and expenditures.

The President directed the WRC to prepare, with respect to the programs of the Bureau of Reclamation, Corps of Engineers and TVA, necessary rules, procedures, guidelines or legislation to:

- Require that States provide a legally binding commitment to contribute a 10 percent cash share (in-kind contributions not allowed) of the construction costs associated with vendible outputs of water projects. within its borders plus 5 percent of the cost of other project purposes (in-kind contributions not allowed). (Vendible outputs are defined as those water supply, irrigation, power, and recreation benefits of projects for which the Federal government receives revenues from project beneficiaries under present policies). The State's cash contribution is to be paid concurrently and proportionately with the Federal contractual obligation for project construction.
- Provide for the sharing of revenues from vendible outputs between the Federal government and the States in proportion to their respective investments.
- Make this State cost-sharing requirement mandatory on projects not yet authorized by law, and voluntary on those projects authorized but not yet under construction. For purposes of determining new construction starts, expedited consideration will be given those projects for which the State has voluntarily guaranteed these cost-sharing contributions.
- Include an annual project-by-project "cap" on State contributions of 1/4 of 1 percent of the State's general revenues. Provide that for multi-state projects, the total States' share will be computed by determining contributions from benefiting states; a state refusing to participate could not "veto" a project because other states can pick up the difference.

The 10 percent/5 percent requirement for State

cost sharing would be in addition to existing cost-sharing arrangements. The Soil Conservation Service would be exempt from this requirement.

Existing cost-sharing rules would, however, be modified to require in addition to the cost-sharing requirements covered above, a 20 percent contribution for either structural or nonstructural Federal flood damage reduction measures. This would equalize structural measure cost sharing with the existing authorized arrangement for nonstructural flood control measures. This requirement would apply to the three agencies covered above, plus the Soil Conservation Service. The 20 percent contribution could include any combination of cash and in kind contribution (land, easements, rights-of way).

The President's recommendations on cost sharing fall primarily within category 2, the cost-sharing floor which was described above. By requiring that States contribute a more substantial portion of project costs, a greater care in setting priorities should result, coupled with the tendency to build only the most worthy projects. In addition, it is likely that those projects selected will have more expansive benefits and will not be as provincial in their purpose. On the other side of the coin is the possibility that if non-federal cost shares become dominant, the national interest will not be well-served.

The cost-sharing proposals, although suggesting greater consistency than the current situation, do not really achieve this. As has been pointed out in the "Section 80 C Study," there exists a wide variation in cost-sharing levels among purposes, programs and agencies. For the most part, the President's proposals do not eliminate these; rather they superimpose an additional 5 or 10 percent charge upon existing cost-sharing arrangements. It is difficult to understand why the inconsistency problem was not met head-on.

While there are provisions to guard against stiff cost sharing requirements where larger projects are involved, it is not clear whether these are sufficient. The condition that the State contribution must be cash and legally committed may be difficult for some States to accommodate. Problems could occur due to the amount of funds required, and the State's ability to time its commitment in light of budgeting cycles and possible uncertainty of revenues to cover anticipated costs.

Relative to flood damage reduction, it was recom-

mended that both structural and nonstructural measures require 20 percent non-federal cost sharing over and above other requirements. This attempt to eliminate inconsistency is commendable. It might have been better, however, if a uniform level had been set for all flood damage reduction measures. As it now stands, any existing cost-sharing provisions would be supplemented with the new proposals. In addition, the exclusion of Soil Conservation Service projects from the 5 percent share for non-vendible outputs results in a new 20 percent non-federal contribution for these projects as opposed to a 25 percent share for projects constructed by the Corps of Engineers, Bureau of Reclamation and TVA.

Although the cost-sharing requirements are not applicable to projects already authorized, it was noted that expedited consideration would be given those projects for which a State voluntarily guaranteed these cost-sharing contributions. In theory, this is a meritorious proposal, one which suggests that States sincerely interested in water development will be accommodated. There exists the very real possibility, however, that poorer States could not comply with this ideal, thus placing them at a competitive disadvantage.

The cost-sharing floor option has the attraction of providing a vehicle for eliminating inconsistencies while moving toward options more oriented to "user-pays-the-full-cost." The 1976 recommendations of the W RC, based on its "Section 80C Study," reflect this philosophy. The water policy is a move in this direction but it does little to remove most inconsistencies and adds a few of its own. A more carefully designed program seems worthy of consideration, and this might become a congressional objective before changes are enacted.

Legal and institutional aspects of cost sharing deserve as much attention as rate structure, consistency and other factors, but these issues were not considered. Practical assessment and collection procedures and mechanisms for identifying principal beneficiaries should be carefully assessed and full cognizance given to Federal laws and regulations, State statutes and financial constraints.

Solution of the cost-sharing problem might be simplified by decentralization of responsibility for intra-state regional and local public agencies. Concentrated in such agencies could be full authority to obtain financial resources through: issuance of tax-free revenue bonds, general tax assessments, sale of vendible services, tax assessment of flood control beneficiaries, and loan

and/or grant aid from State and Federal governments.

Policy Considerations and Alternatives Relative to Institutions and Institutional Arrangements

The institutional problem areas addressed in the water policy review were:

1. Water subsidies: A prime consideration relative to water project subsidies is the potential for competitive advantage of uses such as irrigation, navigation and recreation over other uses and values.
2. Impairment of environmental values by water-related laws and management: Some water related laws and management practices may lead to conflict with environmental considerations.
3. Groundwater and surface water interrelationships: In many states, the water rights system fails to recognize that ground water is related to surface water and that stream flows can be affected by groundwater pumping.
4. Inflexibility in water allocation and use: Existing systems of water rights have resulted in institutional arrangements that contribute to inflexibility in water allocation and use.
5. Lack of access for public involvement in water programs: Despite current emphasis on increased opportunities for public participation in water program planning, implementation and management, problems abound regarding the timeliness and nature of opportunities for public input.

Problem 1: Water subsidies have resulted in advantages to various water users. many of these were established over 50 years ago and a reevaluation now seems appropriate. This politically sensitive issue was not addressed in the WPI.

Problem 2: The impairment of environmental values was emphasized in the President's Water Policy Initiatives. The following actions were proposed:

- A directive to the Secretary of the Interior and other Federal agency heads to implement vigorously the Fish and Wildlife Coordination Act, the Historic Preservation Act and other environmental statutes.

- A directive to agency heads requiring them to include designated funds for environmental mitigation in water project appropriation requests to provide for concurrent and proportionate expenditure of mitigation funds.
- Accelerated implementation of Executive Order No. 11988 on floodplain management. This Order requires agencies to protect floodplains and to reduce risks of flood losses by not conducting, supporting oral lowering actions in floodplains unless there are no practicable alternatives.
- A directive to the Secretaries of the Army, Commerce, Housing and Urban Development and Interior to help reduce flood damages through acquisition of flood-prone land and property, where consistent with primary program purposes.
- A directive to the Secretary of Agriculture to encourage more effective soil and water conservation through watershed programs of the Soil Conservation Service by:
 - working with the Fish and Wildlife Service to apply fully the recently adopted stream channel modification guidelines;
 - encouraging accelerated land treatment measures prior to funding of structural measures on watershed projects, and making appropriate land treatment measures eligible for federal cost-sharing;
 - establishing periodic post-project monitoring to ensure implementation of land treatment and operation and maintenance activities specified on the work plan and to provide information helpful in improving the design of future projects.
- A directive to Federal agency heads to provide increased cooperation with States and leadership in maintaining instream flows and protecting ground water through joint assessment of needs, increased assistance in the gathering and sharing of data, and appropriate design and operation of federal water facilities.

The WPI emphasized protection of instream flows for recreation, water quality, aesthetics and fish and wildlife habitats. Though crude, current estimates of instream flow needs suggest substantial conflicts with other water uses, notably irrigation and energy resources development. In

general, the amount of water available for storage or for new use will be reduced by about 30 to 60 percent for any one selected storage volume and location if present calculations of instream flow rates are adhered to. Such requirements might well be the most critical water development issue in a river basin.

To protect instream flows, the President directed that the following actions be taken:

- The Governors are being asked to work with Federal agencies to protect fish and wildlife and other values associated with adequate instream flows.
- Federal agencies, working in cooperation with the States, are directed to improve, where possible and consistent with state law, the operation and management of existing projects to protect instream uses. While not interfering with the responsibilities of the States, Federal water management agencies are directed to set a strong example in recognizing and protecting legitimate instream flow needs. Proposals shall be made to amend authorizing legislation that now lacks provision for stream flow maintenance in order to provide instream flows, where commitments and economic feasibility permit.
- The Federal planning and technical assistance which will be provided to the States as a part of this water policy reform shall be made available in part to address and correct instream flow problems.

Those knowledgeable in the water resources field support the need for research to produce accurate estimates of the quantities of water needed to satisfy instream flow requirements on an annual, seasonal and regional basis. The WPI does not contain such a research directive. In addition, data needs for determining instream flow requirements are ill-defined and comprehensive programs to secure basic data are lacking. Finally, a coordinated effort by all interested State and Federal agencies to reach agreement on appropriate instream flow levels is needed in light of the cross purposes of many of these actors. The Congress could consider authorizing a special research program to meet these needs.

Problem 3: Problem 3 deals with needed improvements in water management associated with the relationship between ground water and

surface water and the relationship between water quality and water quantity. The importance of both issues is well documented. Relative to ground water, State laws and court decisions have sometimes failed to recognize that surface water and ground waters are interrelated and often part of the same system. On this issue the WPI stated the following:

Management of groundwater resources is essentially a State and local function although EPA has certain statutory responsibilities to protect underground water resources in conjunction with the States. However, the absence of laws and procedures in many areas has created problems which have resulted in calls for Federal water resource development.

These problems can occur, for example, where federally funded surface water projects are proposed in areas where no effective State or local laws or procedures control acknowledged groundwater mining in the same area. In such cases, the potential availability of water from the Federal project in the future can become a contributing factor to the continuation of groundwater depletion.

To improve Federal cooperation with States with regard to groundwater, the President is directing that the following actions be taken:

- Federal water resource agencies are directed to assess groundwater problems as projects are planned.
- Federal water resource agencies are directed to work closely with States and local governments to seek resolution of groundwater problems.

The WPI recognizes the groundwater problem but does not include any substantive remedial actions. Federal-State partnerships for developing model water codes and programs which set conditions on grants and loans to require cognizance of surface water-groundwater linkages could provide guidance and incentives. The recommendations of the National Water Commission on groundwater management deserve further consideration.

Problems related to the water supply-water quality interface stem mainly from the fact that federally directed planning under P.L. 92-500 (Water Pollution Control Act Amendments of 1972) is conducted outside the procedures for comprehensive planning developed by the WRC [3]. In addition, the Environmental Protection

Agency (EPA) guidelines do not fully accommodate the water quantity-water quality interface. Particular consideration should be given to coordination of EPA's 208, 209 and 303e planning processes with those of major direct Federal programs related to water quantity. This important issue was not addressed in the WPI. It deserves consideration by the Congress.

Problem 4: It has long been recognized that the varied nature of States' water rights and the manner in which they are administered have created problems. Both intrastate and interstate problems have resulted and inefficiencies in water use have been a by-product. Greater emphasis could be placed on

total water management and implementation of conservation practices. To accommodate this, some modification of States' water rights and/or administrative procedures will be required. Most of the needed changes could be achieved at the State level, with pricing and cost-sharing mechanisms used to provide incentives.

The States should review their water law doctrines and consider removing legal impediments to water saving practices. If a district or user makes reductions in water use that require a significant investment, a benefit from such savings should be provided. This could be in the form of authority to use the saved water or to sell it. States could also consider making changes in their laws to facilitate desirable transfers of water rights. The Federal government, working through the river basin commissions or other regional authorities, could play a useful role in assisting States to develop laws that recognize the interrelationship of surface water and ground water and provide for integrated management and conjunctive use of water supplies.

Although the WPI explicitly avoids imposing any new Federal regulatory programs, positive steps by the Federal government to aid the States in resolving tough water management issues should be encouraged. The Congress could explore this subject and devise cooperative measures to facilitate identification and implementation of needed changes.

Problem 5: The issue of public participation was not directly confronted in the President's Water Policy Initiatives. It does receive attention in many of the Federal water resources planning programs, and efforts by W RC and others to improve the mechanics of public participation are underway.

Water Conservation

The common-property character of water has constrained implementation of conservation practices. Changes in institutions such as water rights, organizational structures and long-standing social customs would appear to be necessary to effect systematic, large-scale conservation. Incremental changes could, however, be made for new water developments with minimal disruption of current policies and practices, and existing systems could be modified short of massive changes in water rights systems. Five major problem areas relative to water conservation were identified in the water policy review. They were:

1. Waste encouraged by low water prices: The price of water is inadequate to provide incentive for efficient water use.
2. Inadequate watershed management practices: Inadequate consideration has been given to meeting existing water needs by means of comprehensive watershed management, including management of storage and transfer of surplus water derived from existing supplies.
3. Limited reuse and recycling: The quantity and quality of water available for off-stream and in-stream uses is reduced due to the limited practices of reuse and recycling.
4. Groundwater depletion: The disposition of groundwater is poorly regulated, and groundwater supplies in some areas are being significantly depleted because of excessive withdrawals.
5. In efficient water use: In efficient use of water by all users contributes to water shortages and related problems.

Problem 1: The issue of pricing policies was confronted in the WPI. Special emphasis was placed on the improvement of irrigation repayment and water service contract procedures under existing authorities of the Bureau of Reclamation (BR).

It was noted that 40 percent of the water used for irrigation in water-short areas comes from Federal projects and that there is a wide disparity between the price of water from Federal projects and the cost to the Federal government of supplying it. Farmers who obtain BR irrigation water from the Central Valley project in California, for example, pay from \$3.50 to \$7.50 an acre foot. The rate for the Westlands Water District within this project has recently been raised to \$14.50 per acre foot. Other farmers who obtain irrigation water from the

California State Water Project pay about \$22 an acre foot. The principal differences between the Federal and California water projects are that the State charges full cost including interest for the water and applies no acreage limitations, while for Federal projects, there is an acreage limitation and full costs, including interest, are not recovered.

In his June 6 message, the President remarked that the Secretary of the Interior will:

- Continue the recently instituted requirement that new and renegotiated contracts include provisions for recalculation and renegotiation of water rates every five years. This will replace the previous practice of 40-year contracts which often do not reflect inflation and thus do not meet the beneficiaries' repayment obligations.
- Under existing authority, add provisions to recover operation and maintenance costs when existing contracts are renegotiated, or sooner where contracts have adjustment clauses.
- Assure the recovery of a more appropriate share of capital costs by more precisely and rigorously calculating and implementing the "ability to pay" provision in existing law on which repayment arrangements are currently based.

In addition, the President is initiating:

- Preparation of a legislative proposal to allow States the option of requiring conservation pricing for municipal and industrial water projects, provided that State revenues in excess of Federal costs would be returned to municipalities or other public water supply entities for use in water conservation or rehabilitation of water supply systems.

The proposed pricing policies have much to recommend them, but the impact of changes in most repayment contracts will not be realized for some time. The use of terms such as "more appropriate share" tend to cloud the significance of other measures.

Problems 2 and 3: Total water management and water reuse were not considered in the June 6 message. Both of these topics are important and should be given priority consideration. The resolution of many critical water problems awaits the ultimate

implementation of comprehensive, authoritative water management programs.

Problem 4: Relative to groundwater depletion, the water policy directed the Departments of Interior and Agriculture:

. . . through a variety of approaches to encourage conservation and discourage overextension and groundwater depletion in their agricultural assistance programs which affect water consumption in water-short areas.

The problem of groundwater management is of national importance. It is complicated by nonexistent, varied and ill-devised laws; spotty regulation; lack of data; political sensitivity; and development programs oblivious of critical ground water-surface water interrelationships. The President's water policy gives this important issue only scant attention.

Problem 5: There was considerable emphasis in the WPI on methods for combating inefficient water use. The President set forth several initiatives to encourage conservation, including pricing, technical assistance and Federal program reforms designed to help alleviate the problems. These include directing:

- Agriculture, Commerce and EPA to modify financial assistance programs for municipal water supply and sewer systems to require appropriate community water conservation programs as a condition of loans and grants.
- HUD, Agriculture and VA to modify housing assistance programs to require use of water-reducing technologies in new buildings as a condition of receiving assistance.
- GSA, in consultation with affected agencies, to implement measures to encourage water conservation at Federal facilities. A goal will be established and each agency having facilities will be required to comply.
- All Federal water agencies to require development of water conservation programs as a condition of contracts for storage or delivery of municipal and industrial water supplies from Federal projects.
- All Federal departments to review programs and policies for consistency with water conservation principles.

There are strong arguments in favor of obtaining water conservation through pricing systems rather than by regulation or statute. In many cases, however, there are limitations on what might be achieved through pricing, and it may be more feasible to obtain the necessary changes by regulatory authority. In any event, regional, State and local differences argue against a uniform national policy.

It should be pointed out that reduction in water use through conservation will be limited unless existing systems (especially those used in irrigation) are modified. New systems can be designed according to revised procedures, but the treatment of old systems will require great care since the cost of their revision may far exceed the owners' ability to pay.

There is merit in conditioning grant and loan programs on the basis of requiring establishment of conservation programs. Determining the nature of these programs and how they can be implemented is another matter. The WPI does not clarify this point. Well-intentioned as the proposals may seem, great hardships and expense could result if the conditions imposed are ill-devised. Caution should thus be exercised in determining their explicit nature.

Finally, it should be emphasized that conservation is not the sole answer to the nation's water problems. Other measures will also be required, their nature a function of the locality in question.

Water Quality

The water policy review focused mainly on pollution from point sources. This is surprising when one considers the repeated warnings by the National Commission on Water Quality, the National Water Commission and the Council on Environmental Quality of the importance of non-point sources. These dispersed flows contain toxicity from petroleum hydrocarbons, ammonia, heavy metals, nutrients, various minerals, acids from mine drainage, sediment and other pollutants. The magnitude of the problem is clear when one considers that the National Commission on Water Quality estimated that primary treatment and disinfection of urban runoff alone would cost \$199 billion.

Municipalities and local governments cannot be expected to undertake a pollution control program of the scale envisioned by P. L. 92-500 without Federal assistance. Aside from the large costs involved, complications also arise due to the relationships between water quality and land use,

water resource development and use, maintenance of in-stream flows, and environmental protection. It is very likely that current 208 programs will produce "implementable" proposals quite different from those envisioned by the National Commission on Water Quality [4]. Many of these, due in part to time and financing limitations, will probably not meet the 1983 goals of the Act. This problem deserves priority consideration.

President Carter has indicated that money spent on wastewater treatment should concentrate "on building those projects which take care of the highest priority needs, represent the most cost-effective solution to the treatment problem, and will not lead to secondary impacts resulting in even greater environmental assaults to the air, the water and the land." In addition, it was stated, ". . . continued commitment of heavy public funding to this program must be predicated on an environmental objective." In referring to the President's policies, the cited EPA position states, "If the program ... loses sight of its environmental objective, the Federal Water Pollution Control Program will be in danger..... However, according to the National Commission on Water Quality, meeting the 1983 goals would cost far more than the nation could afford (in excess of \$501 billion). On this basis, priorities will have to be set and choices made accordingly.

Considering the importance of water quality to the nation and the portion of the Federal water budget devoted to this area (over 50 percent), it is notable that the President's WPI does not confront this matter. The reality that water quantity-water quality issues must be dealt with jointly will have to take hold if any real progress in reaching conservation or water development objectives is to be expected. In addition, the severity of some groundwater quality problems suggests the need for congressional attention. The recommendations of the National Water Commission and the National Commission on Water Quality are worth considering [5 and 6]. The Congress might review the goals of water quality management in the context of a comprehensive policy for total water management.

Water Resources Research

President Carter's emphasis on better water management suggests the need for a dynamic and responsive water research program, one that considers both current and emerging problems. The water policy review considered this important

issue but the WPI is barren of any pertinent recommendations.

Unless coordination, planning and implementation of Federal water research programs are improved, little change from the current situation can be expected. It also seems that a close, balanced relationship should be sought between water research and water resources planning processes. Determination of funding levels to permit effective research on high priority issues and provision of mechanisms for translating this information into budget processes should be given top consideration in restructuring the Federal water research program.

Federal Reserved Water Rights

The President has instructed Federal agencies to work promptly and expeditiously to inventory and quantify Federal reserved and Indian water rights. In some areas, States have been unable to allocate water because these rights have not been determined. The quantification effort is to focus first on high priority areas, and is expected to involve close consultation with the States and affected water users. It is to emphasize negotiation rather than litigation. Although the "issue and option" papers did not address Indian water rights, the President's Water Policy Initiatives did and his recommendations on this subject are included herein.

Federal Reserved Rights

The issue of Federal reserved water rights is especially significant in the public land states because considerable water originates or flows through national parks. The uncertainty created in attempting to strike a water budget where there is no quantification of Federal reserved rights makes planning difficult at best. To date, adjudication of these rights has not been extensive. Because of the importance of this issue, the President has directed Federal agencies:

- To increase the level and quality of their attention to the identification of Federal reserved water rights, focusing particularly on areas where water planning and management will be improved, where the protection of Federal water uses is of highest importance, and where it is essential to reduce uncertainty over future Federal assertions of rights. States and water users should be closely consulted as this is accomplished.

- To seek an expeditious establishment and quantification of Federal reserved water rights consistent with the priorities set out, and this action should be accomplished primarily through administrative means, seeking formal adjudication only where necessary. Resolution of disputes involving Federal water rights should include a willingness to negotiate and settle such rights in an orderly and final manner, seeking a balance with conflicting and established water uses. Where adjudication is necessary, it should be actively pursued by the agency to a speedy resolution.
- To utilize a reasonable standard when asserting Federal reserved rights which reflects true Federal needs, rather than theoretical or hypothetical needs based on the full legal extension of all possible rights. The agencies will be further directed to develop procedures and standards for the purposes of this directive, consulting with the Department of Justice as appropriate.

Special consideration could be given to integrating Federal reserved rights into existing State water rights systems. Thereafter, these rights could be subject to court decrees, interstate compacts or other institutional developments affecting the source of water involved. Establishing a forum outside the judicial system to resolve Federal reserved water rights questions deserves full consideration.

There are many who believe that the Federal government should pay compensation to the holders of established water rights that are destroyed or impaired by the exercise of Federal reserved water rights. It can be argued that water-related investment has been made with full knowledge of the possible consequences of the exercise of such rights, yet Congress may wish to guarantee that any disruption caused be ameliorated by adoption of a compensation mechanism.

Indian Water Rights

The competition between Indian and non-Indian water rights poses some extraordinary problems. Most Indian reservations predate extensive water development projects in the western United States, although the use of water in significant quantities by the Indians has generally developed only in recent years.

The tribes are concerned that water used for energy and other non-Indian development will

adversely affect their water rights and lead to a depletion of supplies critical for sustaining future economic developments on their reservations. They seek assurances that their water requirements will be properly considered in all planning scenarios.

Rational water planning is dependent upon quantification of all existing and proposed water uses. Current studies of future water uses in the western United States have addressed the issue of Indian water requirements to greater or lesser degrees, but the fact remains that the quantities involved are generally unknown or in dispute. Until this matter is resolved, estimates of future streamflow depletions will be biased accordingly, and decisions on tradeoffs with other users will be clouded.

In the President's Water Policy Initiatives, it was stated:

The priority and quantity of these rights present a question, however, because the quantification of the rights must be determined by examining the documents establishing each reservation. These issues can, of course, be resolved through judicial proceedings. This is a time-consuming and costly process. The President strongly favors a negotiation process instead. Where negotiation is unsuccessful, the rights should be adjudicated in the Federal courts.

In order to facilitate the negotiation process:

- The Bureau of Indian Affairs, through the Department of Interior, is being directed to develop and submit a plan for the review of Indian water claims to be conducted within the next 10 years. The plan will include the development of technical criteria for the classification of Indian lands which reflect and make allowance for water use associated with the maintenance of a permanent tribal homeland.
- All Federal water development agencies are being directed to develop procedures to be used in evaluating projects for the development of Indian water resources and to increase Indian water development in conjunction with quantification of rights. These procedures will be consistent with existing laws, principles, standards and procedures governing water resource development.

The quantification of Indian water requirements for both short- and long-range planning horizons is urgently needed and should be given high priority. The negotiation approach suggested in the water policy is considered superior by most authorities on Indian water rights. If it can be accommodated, it should shorten the time span for resolution of many problems. The ten-year time frame proposed for the Bureau of Indian Affairs to submit a plan for, and conduct a review of, Indian water claims does not seem in keeping with the President's instruction to Federal agencies to ". . . work promptly and expeditiously to inventory and quantify Federal reserved and Indian water rights." Problems associated with these rights are already of critical proportions in some areas and timely action seems warranted. The statement that Federal agencies should develop procedures ". . . to increase Indian water development" is not consistent with the general tenor of the President's WPI which is to conserve water and to seek non-developmental alternatives whenever practical. To encourage water development on Indian lands is to invite more trouble in many water-short regions. This is not to say that Indian waters should not be developed, but rather that other options for solving their problems should be emphasized in the planning process.

The need to resolve issues relative to Federal reserved and Indian water rights has been identified by leading water rights authorities as paramount and deserving of immediate attention. The President's directives relative to this issue are generally a move in this direction but care must be exercised in any quantification scheme to assure that "reasonable," not "inflated," determinations of future water needs result.

Criteria for Selecting Water Projects for Authorization

The President's WPI stressed the need to apply scientific measures in selecting water projects for inclusion in the Federal budget. Criteria were prescribed to guide Presidential decisions on annual funding of water projects and on authorization and appropriation bills, including the selection of new planning and construction starts. They were:

- Projects should have net national economic benefits unless there are environmental benefits which clearly compensate for any economic deficit
- Projects should have widely distributed benefits.

- Projects should stress water conservation and appropriate nonstructural measures.
- Projects should have no significant safety problems involving design, construction or operation.
- There should be evidence of active public support including support by State and local officials.
- Projects will be given expedited consideration where State governments assume a share of costs over and above existing cost sharing.
- There should be no significant international or intergovernmental problems.
- Where vendible outputs are involved, preference should be given to projects which provide for greater recovery of Federal and State costs, consistent with project purposes.
- The project's problem assessment, environmental impact, costs and benefits should be based on up-to-date conditions.
- Projects should comply with all relevant environmental statutes.
- Funding for mitigation of fish and wildlife damages should be provided concurrently and proportionately with construction funding.

These criteria are essentially a reinforcement of the evaluation aspects of the P & S combined with more explicit considerations of safety, cost sharing, and enforcement of environmental statutes. The provision for giving preference to projects where states provide more than the required level of cost sharing has merit when considered from the Federal point of view. This could, however, place poorer states at a disadvantage when competing for project authorizations.

Summary The President's Water Policy Initiatives announced on June 6, 1978, contain needed improvements in cost-sharing policies and a strengthening of environmental quality objectives of water resources planning. Many politically sensitive issues were sidestepped, however, and several topics were presented in generalities with no substantive remedial action proposed. Important issues relative to water quality,

research and planning coordination were not mentioned.

The principal features of the WPI are summarized below:

- The Water Policy will not preempt State or local water responsibilities.
- Conservation is added as a specific component of the economic and environmental objectives of the Principles and Standards.
- Consistency is to be achieved in calculating benefits and costs.
- A water project review board within the Water Resources Council is to be established.
- Consistency in cost sharing for structural and nonstructural flood control alternatives is proposed (legislation required).
- Water conservation measures would be a condition for receipt of Federal grant and loan funds for various purposes.
- Planning grants to States would be significantly increased.
- A water conservation technical assistance matching grant program is proposed (legislation required).
- More vigorous enforcement of environmental statutes is being sought.
- More emphasis is to be placed on determining and encouraging allocation of flows for instream needs.
- The Federal agencies are to cooperate with States in solving groundwater problems.
- Federal agencies are to inventory and quantify Federal reserved and Indian water rights.

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