

TECHNICAL MEMORANDUM

SUBJECT: **Green River Basin Plan II**
Institutional Constraints

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Purpose

Federal and state laws, rules, regulations and policies vitally affect the business of water development and management. The purpose of this technical memorandum is to identify the institutional factors that impede or potentially limit future water development and use in the State of Wyoming. The memorandum discusses the effects of these institutional constraints, agency support for water development in the face of these constraints and actions that project proponents may take to address the constraints created by federal and state laws, rules, regulations and policies. This memorandum, prepared by staff of the Interstate Streams Division of the Wyoming State Engineer's Office, has updated the "Green River Basin Institutional Constraints" technical memorandum prepared by Mike Purcell of Purcell Consulting, P.C. in April 2001.

Introduction

The United States' federal government carries out an important role in water resources regulation and development. At the national level, thirty-four federal agencies in ten cabinet departments, eleven independent federal agencies plus four agencies in the Executive Office of the President, and the federal courts currently have varying degrees of responsibility for water projects. In the Federal Government's Legislative Branch, the United States Congress has 14 House committees with 102 subcommittees, plus 13 Senate committees with 82 subcommittees, exercising some level of responsibility over some aspect of water resources. Not surprisingly, there are many questions and debates about the appropriate role and organization of federal water-related programs.

Federal agencies control, operate and manage billions of dollars of public investments in water projects throughout the Nation (e.g. inland water navigation channels and locks and dams, flood control walls and levees, irrigation reservoirs, hydro-electric power plants, recreation lakes).

The Federal Government has played a pivotal role in the development and subsequent regulation of water resources in the West over the past century. The Federal Government's role and involvement has grown exponentially over the past several decades through legislative enactments such as the Endangered Species Act, the National Environmental Policy Act and the Clean Water Act. Implementation of these and other laws has challenged traditional notions about continued control of water resources by the States. The increased

control exerted by federal agencies through a variety of means has increasingly led to conflict and, in some instances, gridlock, in the development and management of water supplies in the West. One need do no more than mention the “Klamath River Basin” to associate those words with a place where regional conflict and competition over a limited water supply has led to great difficulties. In some instances, proactive cooperative conservation partnerships, such as the Upper Colorado River Basin Endangered Fish Recovery Program, have been implemented during the past twenty years to address statutory and agency missions that are at cross purposes and to minimize the opportunities for conflicts to devolve into gridlock situations.

Within Wyoming, there are countervailing and interacting statutes, agency missions and policies also acting to create institutional constraints affecting additional water use in Wyoming. The policy implications of Wyoming state agency actions, as well as county and local decisions, affect or potentially alter the water resources landscape and also merit consideration herein.

Federal Environmental Laws

Most current major environmental statutes, relating to the protection of the natural environment and other environments, which include the control of pollution and the protection of natural resources, and which result in the protection of both human and other life forms' health and well-being, were enacted in the time spanning the late 1960s through the early 1980s. Prior to the passage of these laws, most water projects were designed and operated for specific consumptive uses for municipal, agricultural or industrial purposes or to provide flood control benefits. In many instances, environmental benefits derived from the projects were indirect and incidental to the purposes for which they were designed. While such benefits could be considerable, they were not protected or required by law. With the enactment of stronger and more comprehensive environmental laws and policies, minimum flow releases became requirements of some federal project permits. The resultant greater focus on environmental issues led to greater awareness and emphasis on the economic benefits of recreation and reservoir fisheries, resulting in minimum pools becoming a planned component of reservoir operations.

Actions relating to water supplies and development that initiate or "trigger" the federal environmental laws include, but are not necessarily limited to, the following:

1. Issuance of special use and right-of-way permits for new water projects on federal lands, including those lands administered by the Bureau of Land Management (BLM), the U.S. Forest Service (USFS), and other federal agencies.
2. Renewal of special use and right-of-way permits for existing water projects on federal lands, including those lands administered by the BLM, the USFS, and other federal agencies.
3. Contracting for storage water from federal reservoirs.
4. Renewal of existing contracts for storage water from federal reservoirs.

5. Actions that involve the discharge of dredged and/or fill material into waters of the United States, including rivers, streams, and wetlands, require the issuance of a Section 404 permit under the Clean Water Act. (e.g. the construction of dams, diversion dams, pipeline crossings, etc.)
6. Procurement and renewal of licenses from the Federal Energy Regulatory Commission (FERC) to produce hydropower.
7. Use of federal funds, loans or grants, to construct a new water project or rehabilitate an existing water project.

The only water development activity that is not subject to federal environmental laws is drilling a well or building an off-channel reservoir with non-federal funds on non-federal lands outside the banks of rivers, streams, and wetlands. However, piping the water from such wells across federal lands or rivers, streams, and wetlands, or diverting surface water into the off-channel reservoir, could initiate a federal environmental review.

Endangered Species Act

The Endangered Species Act of 1973 (ESA) requires the Secretary of Interior, through the U.S. Fish and Wildlife Service (USFWS), to determine whether wildlife and plant species are endangered or threatened based on the best available scientific information. The ESA constrains all federal agencies from taking any action that may jeopardize the continued existence of an endangered or threatened species. If a federal agency is considering an action that may jeopardize an endangered species, Section 7 of the ESA requires that the agency must consult with the USFWS. There is a process of biological assessments and opinions that may result in conclusions that the proposed action will not jeopardize the species; that a reasonable or prudent alternative is needed to mitigate the impacts of the proposed action on the species or its habitat; or that the action should not be taken. The USFWS strongly encourages the coordination of the Section 7 consultation procedures with those procedures required by other statutes such as the National Environmental Policy Act and the Clean Water Act.

National Environmental Policy Act

The National Environmental Policy Act (NEPA) establishes national environmental policy and goals for the protection, maintenance, and enhancement of the environment and provides a process for implementing these goals within the federal agencies. The Act also establishes the Council on Environmental Quality (CEQ). It requires that federal agencies consider all reasonably foreseeable environmental consequences of their proposed actions. The NEPA process consists of an evaluation of the environmental effects of a federal undertaking including its alternatives.

There are three levels of analysis depending on whether or not an undertaking could significantly affect the environment: determination of qualification for a categorical

exclusion; preparation of an environmental assessment/finding of no significant impact (EA/FONSI); and preparation of an environmental impact statement (EIS). A number of agencies have developed lists of actions which are normally categorically excluded from environmental evaluation under their NEPA regulations on the basis of having no significant environmental impact. A FONSI is routinely issued for agency actions having no significant impact. The second level of analysis entails a federal agency preparing a written environmental assessment (EA) to determine whether or not a federal undertaking would significantly affect the environment. If the answer is no, the agency issues a finding of no significant impact (FONSI). The FONSI may address measures which an agency will take to reduce (mitigate) potentially significant impacts.

If the EA determines that the environmental consequences of a proposed federal undertaking may be significant, an EIS is prepared. An EIS is a more detailed evaluation of the proposed action and alternatives. The public, other federal agencies and outside parties may provide input into the preparation of an EIS and then comment on the draft EIS when it is completed. If a federal agency anticipates that an undertaking may significantly impact the environment, or if a project is environmentally controversial, a federal agency may choose to prepare an EIS without first preparing an EA. After a final EIS is prepared and at the time of its decision, a federal agency will prepare a public record of its decision addressing how the findings of the EIS, including consideration of alternatives, were incorporated into the agency's decision-making process.

Further, NEPA requires federal decision makers to "study, develop, and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources." (42 USC 4321 et seq., Sec. 102(2)E). NEPA created the Council of Environmental Quality (CEQ). Regulations of the CEQ require that the "no action" alternative be considered; all reasonable alternatives should be considered; the reasons for eliminating potential alternatives must be provided; the action preferred by the federal action agency should be identified, if possible; and appropriate mitigation measures should be included (40 CFR Part 1502). NEPA provides federal agencies the opportunity to determine which alternative, including no action, they feel best serves the applicant's purpose and need. The alternative selected by the federal agency may differ from the one preferred by the applicant.

If a proposed water project's location would be on federal lands, the "purpose and need" of the project proponent may be secondary to goals of the federal agency's management plans. The NEPA provides federal agencies with the opportunity to determine which alternative, including no action, they feel best serves the applicant's purpose and need. If the proposed project is located on federal lands and does not comply with the federal agency's management plan, project proponents may be faced with the daunting task of convincing that federal agency that the proposed project at that specific location is the only alternative available to meet the proponent's purpose and need.

Clean Water Act

Section 404 of the Clean Water Act of 1972 prohibits discharging dredge or fill materials

into waters of the United States without a permit from the U.S. Army Corps of Engineers (USACE). The waters of the United States include rivers and streams and, as of 1993, wetlands. USACE policy requires applicants for 404 permits to **avoid** impacts to waters of the U.S. to the extent practicable, then **minimize** the remaining impacts, and finally, take measures to **mitigate** unavoidable impacts. In addition to the alternative review required by NEPA, Section 404 (b)(1) guidelines (40CFR Part 230) require an alternative review to define the least environmentally damaging practicable alternative. Further, the guidelines are used to ensure that a project, after considering mitigation, will not cause significant impacts to the aquatic ecosystem.

Obtaining approval for a Section 404 permit for a project requires that applicants must be able to prove that they have selected the "least environmentally damaging practicable alternative" in order for the project to be approved. This means that the applicant must document that a sequence of avoidance, minimization, and compensation has been followed, in that order. This sequence is required under the Section 404(b)(1) Guidelines (40 CFR Part 230). The Section 404(b)(1) Guidelines are the rules by which federal agencies review each permit application. The Guidelines allow the applicant to take engineering, cost, environmental, and logistic factors into consideration when selecting the least environmentally damaging "practicable" alternative. The permit application usually contains an analysis that documents project alternatives, and the reasons that each alternative may or may not be considered practicable. An alternative is considered practicable, pursuant to the Federal regulations and case-law concerning the Guidelines if "it is available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes." This process starts with the initial conceptual designs being prepared in the planning stage of a project.

The avoidance test requires proving to the USACE that the proposed project alternative is the least environmentally damaging alternative that would accomplish the project purpose. The USACE will evaluate the proposed alternative, and will make an independent determination regarding whether the proposed alternative is the least environmentally damaging option; a negative determination by the Corps will usually result in denial of the permit application. To successfully meet the requirements of this test, the applicant must therefore prepare a defensible "alternatives" analysis showing that the least environmentally damaging alternative has been selected. It should be borne in mind that cost may be the applicant's primary driver in selection of an alternative but that is not the case with respect to the federal government's approach to evaluating alternatives. Further, the federal regulations governing the USACE's analyses specify that ownership of a water, mineral or property right does not confine alternatives analysis to that right or location. Rather, options not currently owned which may be reasonably obtained, utilized, expanded or managed must be evaluated. Alternatives not desirable by the applicant are to be evaluated as well.

Colorado River Basin Salinity Control Program

In order to comply with Section 303 (a) and (b) of the Clean Water Act, the Basin states established the Colorado River Basin Salinity Control Forum in 1973. Recently, the Forum published its "2008 Review, Water Quality Standards for Salinity, Colorado River System",

which outlines policies that will affect some existing and future water development activities in Wyoming's Green River Basin. These policies are:

- * Policy of Implementation of Colorado River Salinity Standards through the NPDES Permit Program. This policy applies to industrial and municipal discharges.
- * Policy for Use of Brackish and/or Saline Water for Industrial Purposes. This policy applies to industrial water use.
- * Policy for Implementation of Colorado River Salinity Standards through the NPDES Permit Program for Intercepted Ground Water. This policy applies to mines and wells which discharge intercepted ground water.
- * Policy for Implementation of Colorado River Salinity Standards through the NPDES Permit Program for Fish Hatcheries. This policy applies to discharges from fish hatcheries.

For additional information regarding the Colorado River Basin Salinity Control Program, please visit <http://www.usbr.gov/uc/progact/salinity/>.

Section 303(d) of the Clean Water Act requires the State of Wyoming to identify water bodies that do not meet uses, as designated by stream classifications, and are not expected to meet water quality standards after application of technology-based controls. It is also intended to identify a priority ranking for each water quality limited segment and develop total maximum daily loads (TMDL) to restore each water body segment. TMDL is the ability of a water body to assimilate pollution and continue to meet the use designated by the stream classifications. Future water development projects will need to address water quality benefits and impacts. Section 319 of the Clean Water Act provides funding assistance to address non-point source water quality issues. Water quality issues and local efforts to address them are more specifically addressed in the Technical Memorandum entitled "Green River Basin Plan, Water Quality" prepared by AECOM.

Council on Environmental Quality

On July 1, 2009, notice was published in the *Federal Register* (74 Fed. Reg. 31415) advising the public, pursuant to Section 2031 of the Water Resources Development Act of 2007 (Pub. L. 110-114) that directs the Secretary of the Army to revise the "Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies" dated March 10, 1983 consistent with a number of considerations enumerated in the statute. The *Federal Register* notice advised that the Administration is considering developing uniform planning standards for the development of water resources that would apply government-wide, including agencies other than the traditional water resources development agencies covered under the current Principles and Guidelines (e.g., the traditional agencies are the Army Corps of Engineers, Bureau of Reclamation (Interior), Natural Resources Conservation Service (U. S. Department of Agriculture), and Tennessee Valley Authority). The Council on Environmental Quality (CEQ) intends to facilitate an

interagency drafting of revised Principles and Guidelines for planning water resources projects that could be applied government-wide.

Upon completion, the revision would apply to Federal water resources implementation studies including project reevaluations and modifications except those commenced prior to the issuance of the revised guidance. CEQ intends that the revision will be conducted in two phases, with the first phase addressing revisions to the 1983 Principles and Standards (Chapter I of the existing Guidelines) and the second phase addressing revisions to the Procedures (Chapters II through IV of the 1983 Guidelines).

Federal Land Management Laws

A significant amount of the land within Wyoming is under Federal ownership and control. The following table provides a breakdown of landowner status within this State.

Table 1 - Landowner Tabulation within the State of Wyoming

Landowners	Land Ownership	
	Acres	Square Miles
United States Government		
National Park Service	2,342,947	3,660.9
Forest Service	9,233,433	14,427.2
Fish and Wildlife	47,327	73.9
Bureau of Land Management	17,470,354	27,297.4
Bureau of Reclamation	954,680	1,491.7
Wyoming		
State Lands Commission	3,541,284	5,533.3
Recreation Commission	7,546	11.8
Game and Fish	165,446	258.5
Local Government		
County	21,530	33.6
City	48,467	75.7
School Districts & Colleges	23,878	37.3
Other Lands	1,986,742	3,104.3
Surface Water	456,422	713.2
Total Public	35,843,633	56,005.7
Total Private	27,010,781	42,204.3
TOTAL LAND	62,854,415	98,210.0

Source: "Equality State Almanac 2008," 12th Edition, Economic Analysis Division, Department of Administration and Information, State of Wyoming, Cheyenne, Wyoming

Over 47.8 percent of Wyoming's total land area is in Federal ownership and management (30,048,741 of 62,854,415 acres). Wyoming ranks in the top five states in the Nation in regard to lands within its boundaries being owned by the Federal Government. This fact has significant implications in regards to water use and especially development.

Federal lands within the Green River Basin include national forests, wilderness areas, wildlife refuges, and candidate areas for wild and scenic designation. Based on the acreage

figures from the table above, some 27.8 percent of Wyoming's total land area is managed by the Bureau of Land Management (BLM). The BLM, the U.S. Forest Service, and other agencies managing the federal lands are responsible for carrying out the requirements of the federal laws described above before they can issue a special use permit authorizing a proposed action on federal lands, such as construction of a water project.

The U.S. federal government has played a central role – and sometimes controversial one - in the development of Wyoming and our neighboring states in the Great Plains and Intermountain West. The land of the Great Plains began its relationship with the federal government as a set of territories; accordingly, the governmental structures in place were relatively undeveloped. The federal government, by default, was the crucial player in the few tasks accorded to the available governance in those days (law enforcement, mail delivery, development of transportation, etc.). As each territory acquired more population and identity, pressure would grow for the territory to be upgraded to statehood. Once statehood occurred, a different relationship with the Federal Government necessarily began. Theoretically, such designation would have been expected to give the states greater autonomy, but in reality it has not worked out that way; largely due to our continual expanding of federal authority throughout our Nation's history.

Federal Land Policy and Management Act

As nearly 28 percent of Wyoming's land area is BLM-administered, a brief overview of the Federal Land Policy and Management Act (FLPMA) is provided here. Beginning in the early 1970s, Congress and the American people began a debate on whether or not to change national policy for vast areas of the West known as "public lands." Congress wanted to change the policy from "disposal" to "retention." This policy shift meant the Federal government would stop holding lands until they were sold (or otherwise transferred to the states), and would retain and manage the lands for the benefit of the general public. Understandably, a great many constituencies in the Western states recognized they could be drastically affected; entire communities relied upon access to and use of resources existing on adjacent public lands. Embedded within the FLPMA of 1976 is a basic understanding or "bargain" struck by Congress with the Western states: The Western states would not oppose the retention of these lands if the Federal Government would manage them under multiple use/sustained yield principles, protect valid existing rights, limit wilderness review and consider the needs and concerns of adjacent communities when formulating land use plans. In short, FLPMA proclaimed multiple use, sustained yield, and environmental protection as the guiding principles for public land management.

FLPMA mandates the management of the public lands under the principles of multiple use. Section 202 specifically requires development and revision of land use plans on the basis of "... principles of multiple use and sustained yield." FLPMA also specifically requires that goals and objectives be established by law as guidelines for public land use planning, and that management be on the basis of multiple use and sustained yield unless otherwise specified by law. A second keystone principle of the FLPMA is the preservation of valid existing rights, including grazing rights, mining claims, oil and gas leases, water rights and granted rights of access. The third "pillar" was specific instructions to the Secretary of the

Interior to formulate land use plans that are consistent with State and local plans "...to the maximum extent he finds consistent with Federal law and the purposes of this Act." This directive includes provisions to coordinate land use inventory, planning and management activities not only with other federal agencies, but specifically with agencies of the State and local government. Further, FLPMA provides very specific instructions regarding wilderness; Congress instructed the BLM to inventory all of their lands, identify which were definitely not of wilderness quality, and then begin an intensive inventory and analysis to determine which of the remaining lands would be recommended for inclusion into the National Wilderness Preservation System.

Project Siting on Federal Lands

The scrutiny under which all of the federal laws including the FLPMA are applied is based, understandably, on the sensitivity of the environment which will be impacted or affected by a proposed action or project. Lands within national forests, wilderness areas, wildlife refuges, and wild and scenic designations are environmentally sensitive. The federal government selected the lands because of their beauty and the available habitat. Therefore, even if a project proponent obtains approval from the Federal Government to construct within these areas the project proponent must be prepared to bear what may be considerable costs to mitigate project impacts to the streams, fisheries, terrestrial habitat and wildlife. These costs must be considered in determining whether the proposed project is economically feasible.

Pursuant to Section 404 of the Clean Water Act (CWA), project proponents must demonstrate a "purpose and need" for a project in order to obtain a requisite CWA Section 404 Dredge and Fill Permits federal permit, whether or not the proposed project is located on federal lands. If the proposed project's location is on federal lands, the "purpose and need" of the project may be secondary to the goals of the federal agency and its agency resource management plans (RMPs). NEPA provides federal agencies the opportunity to determine which alternative, including the "no action" alternative, they feel best serves the applicant's purpose and need. Accordingly, if the proposed project would be located on federal lands and doesn't comply with the federal agency's management plan, project proponents may be faced with the daunting task of convincing the federal agency that the proposed project at that specific location is the only alternative that truly meets the proponent's purpose and need.

There is always more uncertainty involved in constructing projects on federal lands. Special use permit customarily have an expiration date; at which point project owners must seek a special use permit renewal in order to continue to operate their water projects. The issuance of the renewal will be based on the federal laws, rules and regulations in place at the date of the renewal rather than the requirements under which the special use permit was originally issued. For example, if a species in the project area is placed on the threatened or endangered lists, the project owner may be required to revise the operations of the project to accommodate the perceived needs of the species. If the project is a dam, the owner may be required to deliver a portion of the storage water supply to the habitat of the species in order to obtain the renewal of the special use permit. If possible, project proponents should avoid locating their project on national forests because of the encumbrances that may be placed on

their investments or projects. It is virtually impossible to locate new water projects within wilderness areas, wildlife refuges, and lands with wild and scenic designations.

Wyoming State Laws

In addition to the constraining and limiting effects of federal law, regulation and policy on the ability to develop and put Wyoming's water to use, State of Wyoming statutes, regulations and policies can affect how water development proceeds in this State. These are discussed in the following sections.

Wyoming Environmental Statutes

Section 401 of the Clean Water Act provides for the state certification of any federally licensed or permitted facility which may result in a discharge to the water of the state. The 401 certification provides a mechanism for the states to amend, or perhaps veto, a permit that the federal agency might otherwise permit. While the 401 certifications are required for several federal actions, most 401 Certifications relate to Section 404 Dredge and Fill Permits required from the U.S. Army Corps of Engineers. A separate permit application is not required since all 404 Permit applications are automatically forwarded to the state in which the 404 permit is being requested. Those items typically required in the provisions of the Section 401 Permit are outlined below:

- * Pollution Control Plan
- * On-site Pollution Control Officer
- * Water Quality Monitoring for turbidity
- * Safe handling of all hazardous materials located on-site.
- * Construction of adequate water supply, sanitary and trash facilities for any constructions camps located on-site.

The Section 401 permit also outlines those additional permits required prior to the initiation of construction activities. These additional permits are described below:

1. NPDES - National Pollution Discharge Elimination System Permit.

Typically, the selected contractor for the project will prepare a "Notice of Intent" 30 days prior to any surface disturbances taking place. The major requirements of the NPDES (storm water general permit) pertain to the development and implementation of a pollution plan along with regular inspection of pollution control facilities.

2. Non-Storm Water Discharges.

An individual NPDES discharge permit from the State Department of Environmental Quality may be required for point source discharges to surface waters not related to storm water runoff. These can include discharges from gravel crushing and washing operations, cofferdam dewatering, vehicle or machinery washing, or other material processing operations, if they are conducted.

3. SPCC (Spill Prevention, Control, and Countermeasures Permit)

If above ground storage of petroleum products exceeds 1,320 gallons in total or more than 660 gallons in a single tank an SPCC plan may have to be developed as provided for in the EPA's Oil Pollution Prevention regulations.

Wyoming Water Law Considerations for Water Projects

Wyoming water law is based on the prior appropriation doctrine, or "first in time-first in right". Therefore, in times when there is not enough water to fulfill all the water rights, those water users having an earlier priority date on their water right are allowed to receive their full entitlement before those water users that have a later priority date or "junior" water right may receive any water under their right. If a particular water right holder does not feel he is getting the water that his water right entitles him to receive, he can contact the State Engineer's Office and "call" for water rights regulation. If the State Engineer concludes that the water right holder has "standing" to make the "call", the State Engineer's Office will regulate the available water based on the priority dates of the water rights on the stream or river for which the "call" was made. Additional discussion of these concepts is contained in the section entitled "Colorado River Curtailment Regulation" found later in this document.

The priority date for a new project is established by the date the project proponent applies for a water right from the Wyoming State Engineer's Office. In order to determine the water supply a new project may achieve, it is important to evaluate the existing water rights that will be "senior" to the new project. Before the decision is made to pursue a project at a particular location, the potential yield of the project should be estimated. The firm yield is the water supply benefits the project proponent could expect under worst case or drought conditions. If the proposed project is located on a stream or river that has several "senior" water rights, a new project may not be able to achieve a water supply in the drier months, such as July and August, or during drought years. Under these conditions, the development of storage facilities would be required to store water when flows are surplus to existing water rights.

The old "rules of thumb" relating to yield and feasibility were as follows:

1. The demands of industrial water users must be met 10 out of 10 years or a firm annual basis.
2. The demands of municipal water users should be met 9 out of 10 years, as the municipality could implement water conservation measures during the 10th year.
3. The demands of agricultural water users must be met 8 out of 10 years before a new water supply project would be considered feasible.

Having detailed past thinking and practical "rule of thumb" considerations, it is appropriate to add that today all water users are interested in a firm supply before they are willing to

invest in a water project due to the significant costs involved. In fact, industrial water users are interested in the yield of a potential project under "doomsday" conditions, such as assuming that the worst water year of record occurs in consecutive years. These expectations of water users make the priority date of the water rights of new projects relative to existing water rights a critical factor in the feasibility of new water development projects.

Interstate River Basin Compacts

In the early 1900s, conflict among water users spilled across the borders of Western states. States and water users turned to courts to settle the interstate conflicts, but often came away dissatisfied with the outcomes, prompting water users and state water officials to search for regional solutions apart from courts. Additional pressure to settle interstate water conflicts came from the Federal Government after the passage of the Reclamation Act of 1902, in that the Reclamation Service (later renamed the Bureau of Reclamation) would not undertake construction of reservoirs to serve lands across state boundaries unless the states and their water users settled their cross-boundary water conflicts. Eventually state water officials, with the support of water users, turned to compacts.

Compacts operate as self-governing institutional arrangements, akin to treaties entered into between the States with the prior consent of the Congress to negotiate their provisions and with the subsequent approval of their terms by the Congress. Interstate compacts are constitutionally authorized agreements used by states to reduce conflict and promote cooperation over a wide range of issues, including taxation, pollution and the allocation of resources. Interstate river compacts have been frequently used in the western United States, specify water allocation rules and in many cases establish a governing structure through which state representatives administer compact requirements. Early twentieth century advocates of interstate river compacts, including the "father" of the 1922 Colorado River Compact, Delphus Carpenter of Colorado, recognized these arrangements as far superior to relying upon the Supreme Court of the United States to try to resolve water conflicts among competing states. Rather than engaging in lengthy court proceedings that often excluded relevant water users, Mr. Carpenter persuasively advocated that the individual states, on behalf of their citizens, should negotiate equitable water allocations to provide greater certainty and security for all water rights holders in a basin.

In addition, a governing structure created pursuant to the negotiated compact would provide the member States regular opportunities to meet and discuss mutual water problems, develop regulations to administer the compact's terms and conditions, monitor water use, and settle conflicts. These expectations are reflected in their terms; most compacts provide for a governing body which has the authority and duty to administer the terms of the compact, investigate various water issues as they arise, and monitor water allocations and diversions. Thus states' officials expected that compacts would allow them to jointly provide for the efficient use and equitable apportionment of the water from shared rivers while promoting "interstate comity."

A more detailed description of the Colorado River Compact and Upper Colorado River Basin Compact is provided in the Technical Memorandum entitled "Green River Basin Plan,

Summary of Interstate Compacts" prepared by Pat Tyrrell of States West Water Resources Corporation in August 2000 drawing upon information provided by the Interstate Streams Division of the Wyoming State Engineer's Office.

The Upper Colorado River Basin Compact provides Wyoming 14 percent of the water allocated to the Upper Basin States by the Colorado River Compact. Wyoming's developable water under the two compacts can be estimated at between 728,000 and 1,043,000 acre-feet per year. Multiple sections of the Colorado River Compact and Upper Colorado River Basin Compact provide assurances to Wyoming that its compact entitlement is protected. Those assurances include the following:

Colorado River Compact, Article III (a):

*There is hereby apportioned from the Colorado River system **in perpetuity** to the upper basin and to the lower basin the exclusive beneficial use of seven million five hundred thousand (7,500,000) acre-feet of water per annum, which shall include all water necessary **for the supply of any rights which may not exist** (emphasis added)*

Upper Colorado River Basin Compact, Article XVI:

*The failure of any state to use the water, or any part thereof, the use of which is apportioned to it under the terms of this compact, **shall not constitute a relinquishment of the right** to such use to the lower basin or to any other state, **nor shall it constitute a forfeiture or abandonment of the right** to such use (emphasis added).*

Protections provided by the compacts may cause one to question the necessity for development under the principle of "use it or lose it" (an overly simplistic but oft-cited refrain summarizing the prior appropriation doctrine)- and which was one of the bases for formation of the Wyoming Water Development Program. The compacts provide a sound legal defense of our entitlements and Wyoming would use these defenses in the face of legal challenge. However, it is also good business for Wyoming to be a good steward of its compacts entitlements through use and planning for future use.

Colorado River Curtailment Regulation

It is important to state up front that Compact curtailment has not been invoked to date and it is hoped that the need to reduce water uses to assure compliance with the Colorado River Compact and Upper Colorado River Basin Compact does not occur in the future. However, it might. Water uses may have to be reduced (curtailed) in the Upper Division States to comply with obligations under the Colorado River Compact of 1922. Article III(c) specifies that the Upper Division is required to provide half the deficiency in the system to satisfy the United State's treaty obligation to Mexico. In addition, in what must be considered the Upper Division States "guarantee" to the Lower Basin, Article III(d) of the Colorado River Compact specifies that "the States of the Upper Division will not cause the flow of the river

at Lee Ferry to be depleted below an aggregate of 75,000,000 acre-feet for any period of 10 consecutive years reckoned in continuing progressive series beginning with the 1st day of October next succeeding the ratification of this compact.”

Recognizing this obligation, Article IV of the Upper Colorado River Basin Compact provides a specific institutional constraint on Wyoming’s water use in the event that curtailment of use would be required. Article IV of the 1948 Compact provides:

“In the event curtailment of use of water by the States of the Upper Division at any time shall become necessary in order that the flow at Lee Ferry shall not be depleted below that required by Article III of the Colorado River Compact, the extent of curtailment by each State of the consumptive use of water apportioned to it by Article III of this Compact shall be in such quantities and at such times as shall be determined by the Commission upon the application of the following principles:

(a) The extent and times of curtailment shall be such as to assure full compliance with Article III of the Colorado River Compact;

(b) If any State or States of the Upper Division, in the ten years immediately preceding the water year in which curtailment is necessary, shall have consumptively used more water than it was or they were, as the case may be, entitled to use under the apportionment made by Article III of this Compact, such State or States shall be required to supply at Lee Ferry a quantity of water equal to its, or the aggregate of their, overdraft of the proportionate part of such overdraft, as may be necessary to assure compliance with Article III of the Colorado River Compact, before demand is made on any other State of the Upper Division;

(c) Except as provided in subparagraph (b) of this Article, the extent of curtailment by each State of the Upper Division of the consumptive use of water apportioned to it by Article III of this Compact shall be such as to result in the delivery at Lee Ferry of a quantity of water which bears the same relation to the total required curtailment of use by the States of the Upper Division as the consumptive use of Upper Colorado River System water which was made by each such State during the water year immediately preceding the year in which the curtailment becomes necessary bears to the total consumptive use of such water in the States of the Upper Division during the same water year; provided, that in determining such relation the uses of water under rights perfected prior to November 24, 1922, shall be excluded.”

The Upper Division States have not yet developed their full apportionment of Colorado River water. As additional development occurs the likelihood of shortage will increase. Demand for the Colorado River resource will only increase while supply may be decreasing. To sustain the system and plan for the future, the States are currently applying a variety of

mechanisms to incorporate as much flexibility as possible into their respective water management systems.

As background to describing how Wyoming would administer curtailment of use if the State Engineer's Office would be required to regulate or administer water uses to meet a Compact-required curtailment event, consider that shortages occur regularly due to variations in annual precipitation. While the Upper Colorado River Commission would be responsible for making findings as to the need, amount and timing of Upper Division water use curtailment necessary to comply with our Compact obligations, each of the four States would be responsible for curtailing intrastate uses as appropriate, pursuant to their state water law (according to the prior appropriation system which is the legal basis for water distribution under their state water statutes), regulations and policies.

Accordingly, there are two types of shortages with which water users in Wyoming have to deal:

- Unregulated – Naturally-induced shortages based on lack of storage and tributary water to divert in periods of dry hydrology (e.g., low snowpack).
- Regulated – State-dictated based on the obligation to reduce intrastate water diversions consistent with the system of prior appropriation and interstate compact obligations.

Regulation of water rights on the tributaries of the Green River occurs, pursuant to Wyoming Water Law, on a routine basis. To prepare for the possibility of having to regulate water rights pursuant to the provisions of the Colorado River compacts, the Wyoming State Engineer's Office (SEO) initiated the Colorado River Compact Administration Program in 2006 to strengthen the State's abilities to meet requirements outlined in the Colorado River and Upper Colorado River Basin Compacts. It includes a Green River Basin Consumptive Use Determination Plan developed with recognition for the need for better information on water use in the basin. It is also built upon the belief that the individual pieces of the framework to support the plan should be assembled with care to ensure the long-term durability and quality of data generated from the program. The main components addressed within this plan include; 1) climate and hydrology, 2) diversion and consumptive use, 3) water rights attribution, 4) reservoir operation, 5) groundwater, 6) administration/decision support tools, and 7) outreach.

In addition to the development of the Consumptive Use Plan, other major efforts undertaken have included; 1) initiation of the mapping of water rights in the basin, 2) an assessment of remote sensing technologies to estimate evapotranspiration from irrigated lands, and 3) coordinating with municipal and industrial water users in the basin on recording and reporting of consumptive water uses.

The State of Wyoming is gathering information to be able to regulate in the Green River Basin in the event, and it is again emphasized, only in the event that interstate regulation pursuant to Article IV of the Upper Colorado River Basin Compact would be required to meet the terms of Article III(d) of the Colorado River Compact. Regulation would cause a

number of junior water rights to be shut off. These junior water rights may purchase water from senior direct flow users or stored water. Stored water may be mixed with natural flows leading to uncertainties as to the true quantities of each. Proper accounting of stored and natural flows becomes an important component in the administration and enforcement of Wyoming water laws. Conveyance loss is an important quantity to measure in order to understand the distinction of natural and stored flows and is thus a vital consideration relative to any regulation that may occur in the Green River Basin.. Conveyance losses may be affected by length of reach, natural flow in the river, size of flow increase, bank storage, channel storage, precipitation, elevation and slope of the water table, stream channel characteristics, evaporation, evapotranspiration (ET), hydraulic characteristics of the aquifer, irrigation return flows, inadvertent diversion and valley cross sections.

Water Marketing or Leasing Considerations

In the past, Wyoming has been approached regarding the potential sale or lease of water to downstream out-of-state interests. The proposals addressed the procurement of unused natural flow passing the state line as well as the purchase of water from existing reservoirs. The compacts would certainly indicate that such uses by Wyoming are possible. However, these proposals have been met with considerable debate. Many Wyoming citizens fear that such sales or leases will become irreversible. Once sold or leased, such water may never be retrievable for Wyoming should future demands need it. Others question why downstream interests would be willing to pay for Wyoming's unused natural flow when they are presently getting the water for "free."

Regardless, there are institutional hurdles that would have to be overcome for marketing of water to downstream interests to become a reality. Under current state law, the export of water outside the State must be approved by the Wyoming Legislature. The reader should be aware there exists a significant and important legal distinction between uses of that water above Lee Ferry, the Compact-designated point of demarcation between the Upper Colorado River Basin and the Lower Colorado River Basin, and below Lee Ferry on account of the provisions of the Colorado River Compact and other elements of the "Law of the River" that lies beyond the scope of this memorandum.

Attempts to market a portion of Wyoming's Colorado River Compact-apportioned water supply downstream would also have to be approved by the Upper Colorado River Commission (the permanent administrative agency created by Article III of the Upper Colorado River Basin Compact and consisting of one Commissioner representing each of the States of the Upper Division, namely, the States of Colorado, New Mexico and Wyoming, designated or appointed in accordance with the laws of each such State, and, if designated by the President, one Commissioner representing the United States of America). Presently, it appears that obtaining these approvals would be very difficult, if not impossible. Therefore, Wyoming citizens should take comfort in the fact that if such transactions are proposed, the decision as to whether or not Wyoming should sell or lease a portion of its compact entitlement will be debated in public forums within Wyoming and throughout the West.

Intrastate Transbasin Use Considerations

The compacts also allow Wyoming flexibility in the use of its entitlement. In particular, the Upper Colorado River Basin Compact, Article XV (b), states the following:

The provisions of this compact shall not apply to or interfere with the right or power of any signatory state to regulate within its boundaries the appropriation, use and control of water, the consumptive use of which is apportioned and available to such state by this compact.

This provision allows for out-of-basin (but in-state) use of Wyoming's compact allocation. Within Wyoming, the largest out-of-basin transfer of Green River Basin water is by the City of Cheyenne, who conveys replacement or “make-up” water into the North Platte River Basin to replace out of priority diversions for municipal water supply to meet its existing and long-term water needs. The fact that Wyoming's compact allocation can be used to meet the demands in other basins expands the future potential uses of the water.

These provisions in the Upper Colorado River Basin Compact stand in contrast to the provisions of the Yellowstone River Compact, which states in Article X therein:

No water shall be diverted from the Yellowstone River basin without the unanimous consent of all the signatory states.

The availability of water in the Green River Basin and the flexibility provided by the Upper Colorado River Basin Compact offers the potential for transbasin diversions. The City of Cheyenne has constructed its Cheyenne Stage I and Stage II Projects, which transport water from the Little Snake River Drainage to serve its municipal water needs. The State of Colorado has a long history of constructing and implementing water projects that divert and transport Colorado River water into the South Platte River Basin for the benefit of Denver and other front-range municipalities.

Wyoming statute 41-2-121(a)(ii)(VIII) states: *"A project involving a transbasin diversion shall address the impact of the diversion and recommend measures to mitigate any adverse impact identified in the basin of origin."* This begs the question: Would it be possible for the WWDC to fund smaller agricultural reservoirs as state investments with the understanding that these projects would serve as mitigation for future potential transbasin diversion projects?

Wyoming Water Development Program

Planning, constructing, and operating a water project is costly; however, when one adds on the costs to acquire state and federal permits the price tag can be overwhelming for public entities in Wyoming. In 1975, in recognition that water development was becoming more difficult and additional water development was necessary to meet the goals and objectives of the state, the Wyoming Legislature authorized the Wyoming Water Development Program and defined the program in W.S. 41-2-112(a), which states:

“The Wyoming water development program is established to foster, promote, and encourage the optimal development of the state's human, industrial, mineral, agricultural, water and recreation resources. The program shall provide through the commission, procedures and policies for the planning, selection, financing, construction, acquisition and operation of projects and facilities for the conservation, storage, distribution and use of water, necessary in the public interest to develop and preserve Wyoming's water and related land resources. The program shall encourage development of water facilities for irrigation, for reduction of flood damage, for abatement of pollution, for preservation and development of fish and wildlife resources [and] for protection and improvement of public lands and shall help make available the water of this state for all beneficial uses, including but not limited to municipal, domestic, agricultural, industrial, instream flows, hydroelectric power and recreational purposes, conservation of land resources and protection of the health, safety and general welfare of the people of the state of Wyoming.”

The task of setting priorities under the above all-encompassing definition falls to the Wyoming Water Development Commission (WWDC), which was authorized by the Wyoming Legislature. The WWDC is made up of ten (10) Wyoming citizens, appointed by the Governor. The Wyoming Water Development Program is administered by the director and staff of the Wyoming Water Development Office.

State Water Project Ownership Considerations

The Wyoming Water Development Commission can invest in water projects as state investments or can provide loans and grants to public entities (municipalities, irrigation districts and special districts) for the construction of projects specific to their water needs. The WWDC has adopted operating criteria to serve as "a general framework for the development of program/project recommendations and generation of information." Individuals and project entities interested in the development of specific water projects should seek information regarding the Wyoming Water Development Program and the possibility of obtaining financial and technical assistance for the development of those projects.

Historically, state investments in water projects have been limited to larger, multi-purposes reservoirs such as the Buffalo Bill Enlargement and Fontenelle Reservoir. However, the Wyoming Water Development Commission (WWDC) recommended and the Wyoming Legislature authorized funding for the High Savery Reservoir that was constructed during the 2001-2004 period.

High Savery Reservoir is a relatively small reservoir, with a capacity of approximately 22,400 acre feet. Storage water from the reservoir is used to provide supplemental irrigation water, as well as to provide recreational and environmental benefits. Contrary to past practice, this reservoir is being constructed as a state investment. There are several reasons that the state decided to make this investment. One of the most significant reasons was that

the project proponents convinced the Wyoming Legislature that the project was necessary to mitigate the transbasin diversions from the Little Snake River Basin by the Cheyenne Stage I and Stage II Projects.

The current “Operating Criteria for the Water Development Program” specify that the loan/grant mix will typically limit grant funding for project construction to 67 percent of the total project cost. In order to obtain the typical grant, the project sponsors must demonstrate to the WWDC that they have taken steps or are willing to take steps to make their water supply systems financially self-supporting. Wyoming statutes authorize a maximum 75/25 grant/loan ratio for project construction. Even though the WWDC and Wyoming Legislature may agree to increase the grant percentage to the maximum 75 percent, it may be difficult or impossible for the agricultural water users to make the payments on even a 25 percent WWDC loan, plus pay for the operation and maintenance of a dam and reservoir. However, when circumstances warrant, the WWDC and Wyoming Legislature will likely be asked to fund and construct smaller dams in the Green River Basin as state investments. Wyoming statute 41-2-121(a)(ii)(II) provides the following: *“Storage projects may be financed by grants for the full cost of the storage capacity but not to exceed public benefits as computed by the commission.”*

Given the tremendous costs associated with design, siting, permitting, construction and operation and maintenance of water projects, economics is a constraint to developing Wyoming’s water; just as it is with every other societal endeavor. Given that the State has engaged in state investments in larger, multi-purposes reservoirs such as the Buffalo Bill Enlargement and Fontenelle Reservoir in the past, the question may be asked whether state ownership and operation of new, smaller and single-purpose water projects is in the best interests of the State so as to avoid institutional impediments – and so as to continue to put Wyoming’s water to beneficial use?

Upper Colorado River Recovery Implementation Program

Since 1988, an innovative and cooperative program has been underway to resolve serious conflicts in the Upper Colorado River Basin between further development of Compact-apportioned water supplies and the conservation and recovery of four endangered fish species. The Upper Colorado River Endangered Fish Recovery Program is a multi-agency partnership to recover endangered fish in the upper Colorado River basin while water development proceeds in compliance with state and federal law (e.g., state water law, the Endangered Species Act, and interstate compacts).

Wyoming's participation in the Upper Colorado River Recovery Implementation Program facilitates the process by which most Wyoming projects within Wyoming’s portion of the Green River Basin obtain federal clearances under ESA. Rather than spending thousands of dollars on evaluations of potential impacts to the fish species and their designated critical habitat and developing expensive mitigation plans, a project proponent is able to pay a one-time charge for new depletions which are paid into a fund to benefit the endangered fish. The one-time charge is presently approximately \$18 per acre foot of the estimated annual depletion. This amount is adjusted annually for inflation.

The Recovery Program was established in 1988 under a Cooperative Agreement signed by the Secretary of the Interior, the Governors of Colorado, Utah, and Wyoming, and the Administrator of the Western Area Power Administration. In December 2001, those same officials signed an extension of the Agreement that extended the program through September 30, 2013. An additional extension that will continue the Recovery Program through the end of fiscal year 2023, the date by which recovery of the four fish species (Colorado pikeminnow, the razorback sucker, the bonytail, and the humpback chub) will be completed pursuant to projections made in the four species' recovery goals (published as part of their recovery plans), is in process currently.

Observations and Insights

The Federal Government, with the authorizations provided by the Endangered Species Act, the National Environmental Policy Act, and the Clean Water Act, has the tools to ensure the protection of the endangered species, critical habitat and other federal environmental interests. The federal agencies responsible for the implementation of these acts have not been reluctant to use these tools to achieve these goals. Even the best planned large water storage project will take years to permit and large sums of dollars in preliminary engineering studies, environmental analysis and NEPA review.

The following discusses approaches and actions which water project proponents, be they the State of Wyoming, water districts or other entities, may wish to consider and employ as they address and work through the institutional constraints within federal and state environmental laws, rules, regulations and policies identified within this memoranda.

Project Purpose

Project proponents should have a clear definition of the purpose of their project. There are numerous uses of water and hence there may be multiple purposes associated with any proposed project: agricultural, municipal, or industrial water use; power generation; flood control; recreation; fisheries and others. In fact, the project proponent may have several purposes in mind. One reservoir could serve all of the above listed purposes. However, the alternatives analyses required by NEPA can become very complex, time consuming and costly for a multipurpose project. Each of the purposes for a proposed project will typically have its own individual alternative analysis. For example, a proposed reservoir designed to provide an agricultural water supply and recreation benefits would have to undergo a needs analysis and alternative review for both of the purposes. The project proponent would be required to verify that there are needs for additional agricultural water and recreation and that the operations of the proposed project to provide these benefits were the least environmentally damaging practicable alternative to meet those needs. Therefore, a project proponent is forced into defining the "primary" purpose of the project, such as agricultural water use, for purposes of the NEPA review. The purpose of providing recreation benefits would become a secondary benefit of the project and, if it is determined that this secondary purpose causes substantial environmental damage, beyond that of the primary purpose, recreation benefits may have to be deleted from the proposed operation of the project.

Project proponents should recognize at the onset of their project planning that the USACE is directed to consider causal relationships (e.g., cause and effect) between the proposed projects to be permitted and the resultant impacts anticipated from the construction and operation of the water project. The USACE is directed to take the position that the underlying need for the identified water supply project is to address demands and issues related to growth. Further, the USACE holds that typically growth will occur without permit being issued for water supply projects.

Project Need

A well defined project purpose and need is a critical element of the Section 404 permit application. Depending on how the alternatives are approached and other factors, this can be a complex issue and will usually be identified by the USACE at a pre-application meeting. The USACE is bound by law to determine whether the project is in the best interest of the public; specifically the federal regulations governing the USACE's administration of Section 404 require the USACE to evaluate the proposed project's purpose and the need for the project. . If the project is not determined to be in the public interest, the USACE may deny the permit application. The project proponent must quantify the need for water to meet the defined purpose or purposes for the project. For example, if the purpose of a proposed agricultural project is to increase the yield of alfalfa or native hay, the amount of water needed for this purpose must be calculated. If the purpose of a proposed municipal project is to meet future water needs, the project proponent must complete population projections and future demand estimates in a manner that withstands the scrutiny of the federal permitting agencies. Industrial water users will need to calculate the water needs for their proposed operations. The needs analyses will have to quantify the amount of water that will be stored or diverted and consumed by the proposed action. Typically, the federal permitting agencies will require that future water conservation activities be considered in the needs analysis.

Alternative Analyses and Selection of the Preferred Alternative

Project proponents necessarily will have evaluated several alternatives prior to selecting the alternative that is going to be subjected to the federal review process. As previously noted, NEPA regulations require that the "no action" alternative be considered; all reasonable alternatives should be considered; and the reasons for eliminating potential alternatives must be provided. Therefore, project proponents should develop enough information on alternatives to evaluate how well the preferred alternative will fare under the federal review. The scope of the alternatives must typically include other approaches to providing water for the need, not just different sizes or configurations of a proposed project. For instance, the federal agencies will typically require that water conservation must be considered as an alternative to the project. This results in analysis of such things as if a municipality charged more for water would there be a reduction in the demand for water and would that reduction be sufficient to meet the future water demand without building a new water supply project.

Strategic mistakes made during the NEPA process are often difficult to fix because of the public review process and the official record ... good pre-planning, sound feasibility studies, early consultation with the Corps and stakeholders will minimize the potential for error.

Accordingly, it is critically important to assure that the project need is defensible. Good preliminary planning and solid feasibility studies are essential to avoiding permitting delays (or worse). Feasibility studies should view the project purpose and need and alternatives through a regulator's eyes.

Cost and technical feasibility are the primary factors considered by project proponents in determining project feasibility. While these factors are also considered by federal permitting agencies, the federal perspective is more interested in the environmental damage that may occur if the project is constructed and implemented. Therefore, the project proponents should consider potential environmental impacts in developing project alternatives. For example, a pipeline alignment that avoids wetlands should be evaluated. Perhaps an off-channel reservoir on a ephemeral stream with a supply canal can meet the water supply needs as well as a reservoir on a Class I fishery. While the revised pipeline alignment or off-channel reservoir may be more costly to construct, those increased costs may be more than offset by the mitigation costs to replace wetlands or mitigate the impacts to the fishery. In addition, federal clearances for a pipeline that does not impact wetlands or a reservoir with no or minimal fishery impacts will be easier to obtain.

Prior to concluding that a reservoir or storage impoundment is required to meet water supply needs, be sure to fully evaluate other alternatives (you can be sure that the USACE will fully do so), including:

- Aquifer Storage
- Groundwater
- Non-Jurisdictional Impoundments
- Less Environmentally Damaging Alternatives
- Multiple Projects that Achieve the Same Objective
- Conservation / Reuse
- Individual Alternatives or Combinations

If reservoir storage is required, smaller, off channel impoundments are generally easier to permit, but still take considerable time and financial resources. Large projects that successfully navigate the regulatory minefield have elements that are attractive to a wide spectrum of stakeholders.

Wyoming Must Maintain Its Resolve

Water development continues to become more difficult and costly. Nonetheless, if a project proponent has a need for water, patience, and financial resources, the federal permitting process can be successfully completed and permits obtained for construction of water projects. In fact, Wyoming must maintain its resolve to develop its water resources to meet the needs of its citizens.

The State of Wyoming has historically been proactive in dealing with institutional constraints that may impact its ability to develop its water resources as allocated by court decrees and interstate compacts. State agency personnel review proposed federal mandates to interject the

state's position and provide our State's perspective in their development and implementation. These efforts are important to Wyoming and must continue. There have been successes, as evidenced by the Upper Colorado River Recovery Implementation Program and the Colorado River Basin Salinity Control Program. Without such cooperative efforts, water development in Wyoming's Green River Basin would be much more difficult and costly.

Wyoming's interstate compacts and water related court decrees serve as the primary defense of Wyoming's water entitlements. However, demands downstream of Wyoming are continuing to increase at prodigious rates, as are conflicts over the use of water that are being litigated, which increases the likelihood of judicial interpretation of the intent of those compacts and decrees in ways that potentially are prejudicial to our citizens' interests. There is resistance from downstream states toward upstream development. Federal laws, rules and regulations are narrowing the window of opportunity to develop water resources.

Future Water Development

Water development plans can serve to protect Wyoming's entitlements by documenting the need to develop additional sources of water to meet demands associated with anticipated growth and development. The publication of the "Green River Basin Plan" should foster discussion among water users and state officials relative to water development in the Green River Basin in Wyoming. The plan concludes that Wyoming has water to develop in the basin. The water can be used for future municipal and industrial growth. There are existing agricultural water demands that could be met with the water. The Wyoming Water Development Program's criteria are based on the general philosophy that responsible development and the efficient consumptive beneficial use of water will protect Wyoming's compact and court decreed entitlements. The Program can invest in water projects as state investments or can provide loans and grants to public entities, such as irrigation districts, for the construction of projects.

There are opportunities to construct smaller agricultural reservoirs in the Green River Basin. The loan/grant mix criterion presently applied by the WWDC limits grant funding for project sponsors to 50 percent of the total project cost. Wyoming statutes authorize a maximum 75/25 grant/loan ratio for project sponsors. Even though the WWDC and Wyoming Legislature may agree to increase the grant percentage to the maximum 75 percent, it may be difficult or impossible for the agricultural water users to make the payments on even a 25 percent WWDC loan, plus pay for the operation and maintenance of a dam and reservoir. However, when circumstances warrant, the WWDC and Wyoming Legislature will likely be asked to fund, construct and operate smaller reservoirs in the Green River Basin as state investments. Wyoming Statute 41-2-121(a)(ii)(II) provides the following: *"Storage projects may be financed by grants for the full cost of the storage capacity but not to exceed public benefits as computed by the commission."*

Future Water Planning

The "Green River Basin Plan" is an important foundation point for identifying and achieving Wyoming goals in the Green River Basin. It is important to update and maintain the "Green

River Basin Plan" or it will simply be a glimpse of the status of the water use in the year in which the Plan was prepared. In order to improve on the plan, additional data will be necessary. Existing water use is an important element in planning for the future. Without an understanding of existing water uses and quantification of those uses, it is very difficult to define the water available for future use. It may be time in Wyoming's history that the installation of measuring devices and annual reporting of monthly water use become a requirement placed on water rights, with the exception of those water rights permitted for domestic, stock and other *de minimus* uses.

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