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A Survery of Western United States Instream Flow Programs and The Policies that Protect a River's Ecosystem

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A SURVEY OF WESTERN UNITED STATES INSTREAM FLOW PROGRAMS AND THE POLICIES THAT PROTECT A RIVER'S ECOYSTEM

by

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The Western United States can best be described as a vast, varying land, with the high plains to the east and the jagged horizons of Rockies to the west. However, there is one common trait shared by these states: the lack of water resources. With the continued development of this land, the fact that water is scarce is becoming more real. This issue became more difficult to handle as the public became more aware that many competing uses existed for the finite resource, and those different uses were degrading the natural environments of the surface waters. With this realization, instream flow policies began to be established throughout many western states. This thesis provides a comprehensive account of the policy framework a selected number of western states have established in order to protect instream flows and the overall health of a river's ecosystem. Also included is the identification of key policies that should be promoted or removed from a state's instream flow program. Ultimately, this thesis continues to add to the ever-evolving process of modernizing water law frameworks.

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Introduction

The Western United States has a vast and varied landscape, but the included states share one trait: a very finite amount of water resources. Since the pioneers first broke ground in the 1800s, there has been an emphasis on the development of the land and its resources. For the water resources, the dominating doctrine has always been that of the "Prior Appropriation" doctrine, which states that those who are first in time to make a claim are the first in time to gain a right. This doctrine set the policy framework for the diversion of surface waters for the purposes of developing agricultural land, municipalities, and industries. All the while, the natural stream flows of the rivers were being neglected.

Today this practice is still taking place. Agriculture in Western states, on average, withdraws up to 80% of all diverted water resources (Neuman 1998). However, in just the past few decades, there has been an attitude change concerning the management of surface water supplies. The continued negligence was becoming evident when the lakes and streams were beginning to run dry. In order to curb this decline of resources and to protect the myriad benefits that consequently spring, instream flow rights were developed. The purpose of an instream flow right is to simply maintain a certain amount of water in a stream for a specific purpose. The original purpose, in many cases, was the protection of fisheries, but now that scope has grown even wider, to include the many parts of the stream ecosystem and the sum of those vital parts.

The particular states were selected for a number of reasons. The comparisons and contrasts that can be made between the demographics, geography, size of government, and resource availability of the selected states are impressive. All of these states are part of the Great Plains and they are: Montana, Wyoming, Colorado, South Dakota, Nebraska, Kansas,

Oklahoma, Texas, and New Mexico. Their geographical placement, west of the 100th Meridian, has assured the scarcity of water resources, and nearly all have recognized instream flow rights (Charney 2005). Each state has taken a unique approach in maintaining a certain streamflow within their rivers, but commonalities exist as well, as every one of these states operates under the "Prior Appropriation" Doctrine, with the water being owned by the public. Overall, this collection of states is prime for such a survey.

Streamflow protection is important for many obvious reasons. Our rivers, lakes, and streams provide an abundant amount of ecological services. Such services include providing habitat for fish and wildlife, create recreational opportunities, increase land value, and aids in the maintenance of water quality. To harbor the concept that our rivers are dispensable is shortsighted. Each of the states covered in this survey has taken the appropriate measures with the intention of protecting streamflows. This paper will concentrate on the specific policies designed by each state and will evaluate the undertakings of each, henceforth determining which of those policies are most effective in protecting the streams' ecosystems. Ultimately, the conclusions drawn will provide a framework for future policy development. The discussion provided will focus on the question, "Which policies most effectively protect the health of a stream's ecosystem?"

Methods

In order to complete this survey, an extensive literature review has been completed. Many of the state government websites served as excellent resources. Also, scholarly articles and department reports provided much of the necessary information. With the particular focus of protection and effectiveness in mind, an analysis of each state's policy was

completed. This analysis enabled a table to be created, illustrating the ins and outs of each in an easily accessible and comprehensible location.

Colorado

Water Rights System

Colorado is unique when it comes to managing its water resources. While management is still based on the doctrine of prior appropriation or "first in time – first in right," its approach to resource protection and rights allocation is different from any other state. One of the biggest players in the water management scene is the Water Court. All water rights are recognized and directed from the decrees of this court. Also, there is not one single state agency that is responsible for the management of water rights. However, there is a state engineer that is responsible for issuing the permits needed to divert the water. There is also the Colorado Ground Water Commission, which is a regulatory group responsible for the management and control of groundwater resources. Finally, for the management of instream flow rights, there exists the Colorado Water Conservation Board (CWCB), which oversees the development and implementation of the state's program.

Instream Flow System

Being one of the first states to implement such a law, in 1973 Colorado recognized the importance of protecting streamflows through the passage of Senate Bill 97. In passing this legislation, the Colorado Legislature recognized the need to "correlate the activities of mankind with some reasonable preservation of the natural environment." Prior to Senate Bill 97, all water appropriations had to be a diversion of water, but now this requirement was removed and the CWCB had the right to recognize appropriations to be left in the stream. The beneficial uses for instream flow rights have been identified for fisheries, other aquatic organisms, riparian areas, and environmental protection (Charney 2005).

In the following decades , there has been amending legislation to the original act. One of the more significant changes granted by the CWCB has been to acquire existing, decreed senior water rights on a voluntary basis from willing landowners for instream flow uses. Along with this, the CWCB can also accept short-term lease agreements for instream flow purposes.

The instream flow program can be broken down into three areas: new appropriations, water acquisitions, and water rights protection. New appropriations are considered by the CWCB each year and are filed annually with the Water Court. Water acquisitions are made through the donation, purchase, bequest, devise, lease, exchange, or any other contractual agreement. Through such agreements, more senior water rights can be attained. It should also be noted that only interested parties are considered for water acquisitions. The CWCB is also required to request instream flow recommendations from the State Division of Wildlife, the Division of Parks and Outdoor Recreation and from the US Departments of Agriculture and Interior (C.R.S. § 37-92-102(3)).

The CWCB takes a two-pronged approach to protecting the instream flows, by utilizing both physical and legal measures. Installing stream gages and the monitoring of stream flows physically protects the rights. This can result in seeking administration by placing "calls" for rights entitled to receive water. The legal protection happens through the CWCB's review of other water right applications that might potentially hurt its rights. If a potential injury is identified, the Water Court is notified before the right is decreed and special terms or conditions will be sought.

A team of experts, specifically focused on administering the Instream Flow Program, has expertise in water resource engineering and is able to support water rights applications

and evaluate potential injury to the water rights. There are also various tools used to implement and monitor the progress of establishing instream flow rights. These tools are provided by the Colorado Decision Support system, and include GIS maps, hydrologic, climatologic, water use, and water right databases, and predictive models. Also, to meet the statutory obligation that a natural environment exists within a stream, the CWCB will use the expertise from the Colorado Division of Wildlife to conclude that such a condition does exist.

Every February, the CWCB hosts a workshop during which all interested parties are invited to request protection for certain streams and lakes. This is the initial step in the process of an instream flow right actually coming to fruition. Once all recommendations have been evaluated, the staff will prioritize the streams based on resource value, data requirements, and other criteria. The streams will then be placed onto the Candidate Stream List, from which they will be processed.

Fieldwork is the next step in the process; this is when data is gathered. This data is analyzed and the streamflow is quantified through using the R2Cross model method. It is important that whichever method is used, it must be able to qualify as a legitimate method with the Water Court.

Following the identification of the required flow amount, the CWCB must then determine if there is available water to meet those requirements. In order to do this, the CWCB staff uses either existing gage records or standard methods of determining flow if the stream has not been gauged. Once the two statutory requirements are met, and it has been determined that there is a presence of a natural environment and water is available to preserve the natural environment, the recommendations will be forwarded to the CWCB for

appropriation. From that point, the CWCB will present their findings to the Water Court for a review and final approval of the instream flow right.

The process of acquiring other water rights is a much more simple and straightforward process. The water that can be acquired from the CWCB for instream flow needs include storage reservoirs, direct diversions, interests in water owned in a ditch or reservoir, water pumped from wells, or other water. Any voluntary party that is legally able to hold ownership of a water right is also capable of transferring said right to the CWCB as an instream flow right. Such arrangements can occur through "purchase, bequest, devise, lease, exchange, or other contractual agreement."

Once an acquisition proposal is made, the CWCB will prepare to take the necessary steps to ensure the water appropriation can be made into an instream flow right. This process includes quantifying the historic flow data and preparing the agreement. This agreement is then forwarded onto the voting representatives who will then either approve or deny the acquisition of the water right. If it is accepted, a change of water right application must be filed with the Water Court. Following this step, the court will consider the adjudication of the water right for instream flow purposes.

The state finally considers the last step, a step that must be taken not only at the present time, but recurring into the future as well. This step is the actual protection of the instream flows. As mentioned earlier, every water right application is reviewed by the CWCB to determine if it will injure, in any way, an instream flow right. This analysis is accomplished through using GIS mapping tools and flow data.

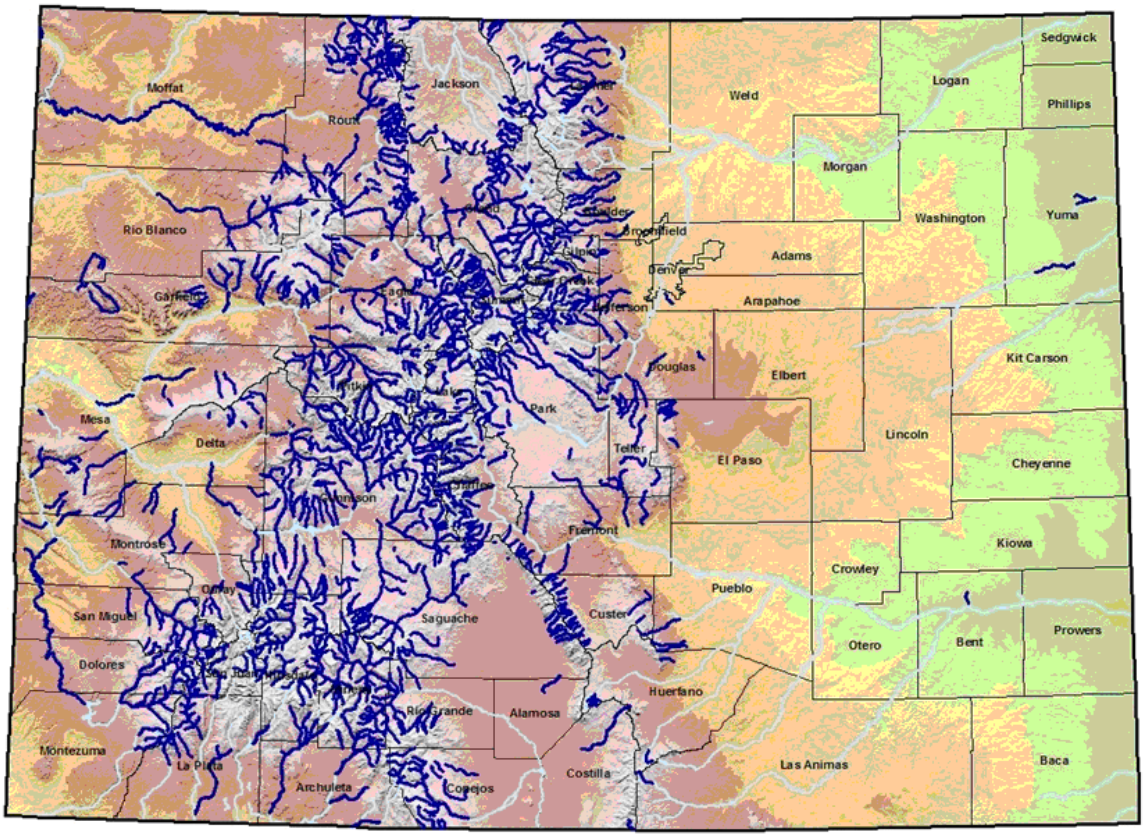

Figure 1.1: Streams included in Colorado's Instream Flow Program

Kansas

Water Rights System

The policy framework that guides the management of Kansas' water originates from the Water Appropriation Act (K.S.A 82a-701-82a-737, 82a-740, and K.S.A. 42-303-42-313). Passed by the Kansas Legislature in 1945, it has developed into the basic foundation for the state's water management policies. It is based off of the principle of prior appropriation, the "first in time, first in right" doctrine. The Division of Water Resources (DWR), which is located within the State Department of Agriculture, is the main administering agency (Kansas Water Office, 2001). The chief engineer of the division is responsible for overseeing the enforcement and implementation of the states 28 laws governing the state's water resources (Resources, Division of Water). Generally, most of

Kansas' water resources are mature in development. This has caused for actions such as the Kansas Water Office creating multiple water plans to create a sustainable development scheme for the state.

Instream Flow System

Kansas has taken a different approach than many states in protecting the flows of its streams. In fact, the state does not actually recognize instream flows as a water right. Instead, the state has organized a system in which minimum desirable streamflows (MDS) are designated for certain streams (Charney, 2005). In 1981, this policy was first established in the State Water Resources Planning Act, in which the intent was stated as "the identification of minimum desirable streamflows to preserve, maintain or enhance baseflows for instream water uses relative to water quality, fish, wildlife, aquatic life, recreation, general aesthetics and domestic uses and for the protection of existing waters rights." Then, in 1984, the Water Appropriation Act was amended to recognize the minimum desirable streamflows. This began the process in which streams would start to become protected by this special designation. One important result of its passage was that an April 12, 1984, priority date was established for the streams that are given such a designation. Along with setting a priority date, the legislature also recognized four streams that would be given MDS. Essentially, this gave MDS the characteristics that are not too unlike a water right (Young, 2000). There was also a 1990 deadline set for establishing the MDS for certain streams. Between the years of 1984 and 1990, MDS values were established for a total of 33 sites on 23 streams in Kansas. Since then, there have not been any other streams protected by the MDS system.

It should be noted that the ultimate goal of minimum desirable streamflows is to protect

streams from being depleted due to extensive resource appropriation. Therefore, if climatic conditions result in the low streamflows, the actions will not be taken to supplement the flows during times of extended drought.

There are two methods used to by the state of Kansas to administer and implement the minimum desirable streamflow program. The first involves exercising the priority dates and seniority right that comes with such dates. In general, U.S Geological Survey stream gages monitor the streams that have been given minimum desirable flows. If the flows of a stream reach below the set amount, then the junior water rights to the April 12, 1984, date can be called on to lower their diversions. The water right holders include surface water and hydrologically-connected groundwater. Following the seniority system, any right that was registered before the 1984 date would not be affected by the call for water.

The second approach is much more straightforward and its effects can be more immediate. For the streams located below a state-owned reservoir, stored water can be released to supplement the streamflows. This typically happens during April, May, and June when fish spawning flows are needed most (Young, 2000).

The state of Kansas takes an interagency collaborative approach to establishing the minimum desirable streamflows. The Kansas Water Office serves as coordinator of an advisory committee that also includes representatives from the Division of Water Resources, Department of Health and Environment, and Kansas Department of Wildlife and Parks. This committee will evaluate the data analysis and determine the appropriate levels that should be recommended.

These recommendations are taken under consideration on the basis of needs, constraints, and hydrology. There should be a need for fish habitat, the ability to maintain

water quality, provide recreation, maintain riparian areas, and overall aesthetic values. Also considered are such factors as senior appropriations of surface water, groundwater appropriation, conservation practices, potential economic development, interstate compacts, and administrative costs. Finally, the stream should be able to provide adequate water from runoff, baseflow, and the possibility of flow supplement from reservoir storage releases to meet the minimum desirable streamflows.

Before the committee makes its recommendation, there will be public hearings held regarding the pending action. If the committee makes a recommendation, it is forwarded to the Kansas Water Authority (KWA) for its approval. If approved by the KWA, the Legislature will give it final approval and enactment.

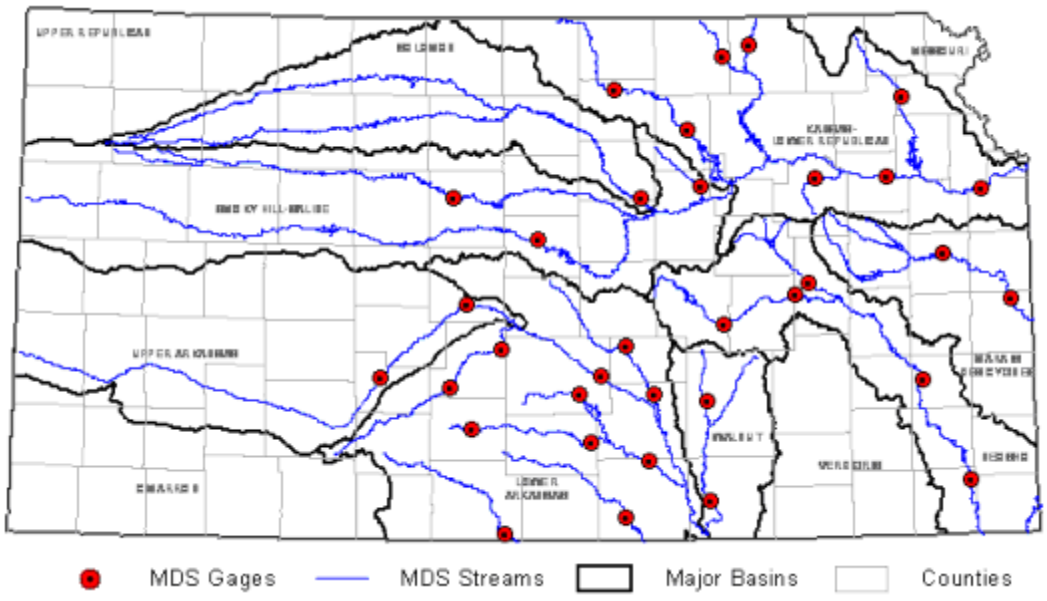

Figure 2.1: Minimum desirable streamflow gaging stations in Kansas.

Montana

Water Rights System

Montana is largely a prior appropriation state in its management of state water resources. Six state entities are involved with water law issues: the Montana Department of Natural Resources and Conservation (MDNRC), the Montana Water Court, the District Courts, the Reserved Water Rights Compact Commission, the Attorney General, and the Legislative Environmental Quality Council (EQC). The DNRC is designated as the administering agency for all water issues that are relevant past a 1973 date. The district and water courts are responsible for any legal issues that may occur. They are largely responsible for adjudicating claims for water rights that existed before July 1, 1973 (MDNRC 2006).

Much of the administrative procedure and framework for water law was changed on July 1, 1973, with the passage of the Montana Water Use Act. This piece of legislation extensively renovated the way water was managed in the state. In many aspects, it modernized the administrative system by designing a central record keeping system, allowing the authorization of permits, and a system was created that allowed for water reserves to be set aside for both consumptive uses and instream flows (BLM 2001).

Instream Flow System

The passage of the Water Use Act in 1973 was a significant step toward protecting the state's streamflows. However, Montana did take subsequent steps that approached the issue of streamflow protection prior to its passage. In 1967, the Montana government enacted the Water Resources Act. Under its passage, "the water resources of the state must be protected and conserved to assure adequate supplies for public recreational purposes and for the conservation of wildlife and aquatic life." This Act, and the language therein, served

as the initial site of realization for the state to take the appropriate steps toward stream protection (McKinney 1990).

In 1969, the legislature enacted a piece of legislation that allowed for the state's Fish and Game Commission to lay claim to water rights on unappropriated waters of twelve "blue ribbon" trout streams. The purpose of this allowance was to protect and maintain streamflows necessary for fish and wildlife habitat. Named after the principal sponsor of the bill, these appropriations were known as "Murphy rights." These streams were given a priority status over other uses, unless the appropriate district court deemed another use as more beneficial for the public's use. However, in 1973, the Murphy rights legislation was repealed, with the previously existing appropriations remaining.

Another approach that Montana has taken to protect steamflows is the arrangement of a reservation system. With the passage of the Montana Water Use Act, water resources can be saved for future consumptive uses in addition to maintaining stream flows. This statute allows for any state or any political subdivision of the state and/or federal agencies to apply to the Board of Natural Resources and Conservation (BNRC) for a reservation. The purpose of such reservation may include future irrigation, municipal growth, multipurpose storage, recreation, fish and wildlife, and maintenance of water quality.

Every ten years these reservations will be reviewed to ensure the objectives are being met. Also, every five years, the BNRC may modify an instream flow reservation. If the instream flow is capable of meeting its need at a lower flow, and if there is an applicant that can demonstrate that their purpose outweighs the original reserve, the BNRC is able to reallocate the excess water to another qualified applicant.

The last, and most often used approach to protecting stream flow is the transfer or lease of water rights for the purpose an instream flow. There are three ways to convert the currently existing uses to nonconsumptive appropriations:

1) Lease all or a portion of water right to Montana Department of Fish, Wildlife, and Parks (DFWP)
2) Lease right to another party interested in holding the right for the fishery
3) Or, convert the diversion to an instream use without a lease.

The identified beneficial uses for instream flows are somewhat vague. The discretion to define a beneficial use is widely left up to the BNRC. This is because the state has defined a beneficial use as any use that benefits the appropriator, other persons, or the public (BLM 2001).

The process through which reservations are made for streamflow protection is similar to the process that new water appropriation applications must follow. The only difference is that the reservations must be reviewed by the BNRC every ten years, a difference of HOWEVER MANY YEARS.

This process begins with filing an application for a Beneficial Water Use Permit. Any federal, state, or other political subdivision can make such a filing for an instream flow reservation. The administrative agency that reviews the filing is the BNRC. Once the application is reviewed, a public notice will be made, water users who may be potentially impacted are contacted, and objections to the permit are received. If valid objections are made, a hearing examiner considers the case through an administrative hearing. An environmental impact statement must also be completed. Finally, the following criteria must be met:

- Water is physically available at the proposed point of diversion in the amount that the applicant seeks to appropriate;

- Water can reasonably be considered legally available during the period in which the applicant seeks to appropriate and in the amount requested;
- The water rights of a prior appropriator under an existing water right, a certificate, a permit, or state water reservation will not be adversely affected;
- The proposed means of operation of the appropriation works is adequate;
- The proposed use of water is, in fact, a beneficial use;
- The applicant has possessory interest, or the written consent of the person with the possessory interest, in the property where the water is to be put to beneficial use.

If the application is approved by the BNRC, the entity that applied for the permit must then take the appropriate steps to maintain the amount of water quantified in the permit. The BNRC will review those steps, and if they are acceptable, a certificate will be issued to recognize the water reservation. The priority date of a certificate becomes the date of the original permit.

As mentioned, another option for streamflow protection is to transfer a consumptive use to a nonconsumptive use. The process to do this follows the same notice and hearing procedures that are implemented by the BNRC. In addition, any conversion to an instream use must benefit fisheries.

Many organizations are active in the process of transferring the water use from consumptive to nonconsumptive. The Montana Water Trust is the state's only private non-profit organization that provides the incentives for private interests to transfer their water rights to instream water rights (BLM 2001).

Enforcement and monitoring is implemented through the utilization of either USGS or state gauges. If the streamflow is found to be threatened, the Department of Fish, Wildlife, and Parks can request that the BNRC make an administrative call. Also, in anticipation of low flows during the summer seasons, the DFWP will send out a preemptive

letter notifying junior water users that an administrative call may have to be implemented. This approach gives the water users enough time to adapt to the possible shortage of water resources (Charney 2005).

Nebraska

Water Rights System

Nebraska's water resource management framework is based on the doctrine of prior appropriation: "first come, first served." The government entities that are involved with water management include the Nebraska Department of Natural Resources (NDNR), Department of Environmental Quality (NDEQ), local Natural Resource Districts (NRDs), Nebraska Game and Parks Commission (NGPC), and the Nebraska Attorney General's Office (AGO). Much of the responsibility of surface water management is relegated to the NDNR, whereas management decisions for groundwater rules are largely left up to the NRDs. Locally elected representatives govern these districts, of which there are twenty-three, with the district boundaries matching those of local river basins. Water litigation arising from interstate compacts is dealt with by the Attorney General's office.

Instream Flow System

Following a lengthy planning study conducted by the state in 1984, Nebraska first recognized instream flows with the passage of LB 1106. This piece of legislation created the means needed to appropriate nonconsumptive streamflows. It allowed for the two state entities, the Game and Parks Commission and Natural Resource Districts, to be the holders of the appropriations. The responsibility to approve the instream flow application is vested in the Department of Natural Resources. Another approach that can be taken to protect streamflows is for users to lease their water rights to instream flow rights. This leasing

approach was enacted with the passage of LB 962, a major piece of legislation that largely impacted the state's water resource management framework (Zellmer 2007).

The leasing method is reasonably simple; however, as of yet, it has not been utilized to protect streamflows. It allows for the arrangement of a consumptive portion of a surface water appropriation for instream flows or other uses for a period of time up to thirty years. (Zuerlein 2007).

The process of gaining an instream flow permit starts with conducting studies prior to the filing, in order to identify a critical need. The permits are granted only for the amount of water necessary to fulfill that critical need. Before the application is filed, the agency requesting the permit must give public notice and hold a public hearing. Information regarding stream reach, time of year, and the amount of water necessary to provide adequate flows must be included in the application. Once filed, it is then the responsibility of the director of the NDNR to conduct studies to assess the application. Again, public notice will be given and hearings held if objections are received by the NDNR. The application for instream flows must meet these requirements:

- Unappropriated water available is to provide the instream flow rate at least twenty percent of the time during the period requested;
- The existing recreational uses or needs of existing fish and wildlife species will be maintained;
- Senior surface water appropriations will not be interfered;
- The rate and timing of the flow is the minimum necessary to maintain the existing recreational uses or needs of existing fish and wildlife species;
- It is in the interest of the general public.

In order for the application to meet the public interest test, it must include:

- The economic, social, and environmental value of the instream use or uses, including, but not limited to, recreation, fish and wildlife, induced recharge for municipal water systems, and water quality maintenance;

- The economic, social and environmental value of reasonably foreseeable alternative out-of-stream uses of water that will be foregone or accorded junior status if the appropriation is granted.

The fate of the application is then largely left up to the discretion of the NDNR director. If the studies conducted by the NDNR find that there is an insufficient flow for the instream application, further study will be implemented to identify storage flows that can be utilized. However, after an extensive review, the director can approve or deny the agency's instream flow application. If the application is approved, it is administered in a similar fashion to other appropriations, with the exception that senior storage reservoirs do not have to pass water when the NDNR solely administers an instream flow.

Every fifteen years, an instream flow right will be reviewed by the NDNR. This review begins with the NDNR giving an official notice of review. The agency that holds the right must file documentation that instream flow right is still serving its intended purpose. Hearings may also be held upon the request of interested parties. For these hearings, there is a rebuttal with the presumption that the beneficial use is still in the public interest.

After the hearing, the director of the NDRN has the opportunity to modify an instream flow application for:

- Induced recharge appropriations for public water suppliers;
- Storage permits for flood and sediment control projects which will not result in a net consumption of water exceeding 200 acre feet;
- Applications for transfer permits associated with natural flow, storage use, power generation, or hydropower;
- Applications for *de minimis* uses;
- Applications for industrial or manufacturing *de minimis* consumptive uses.

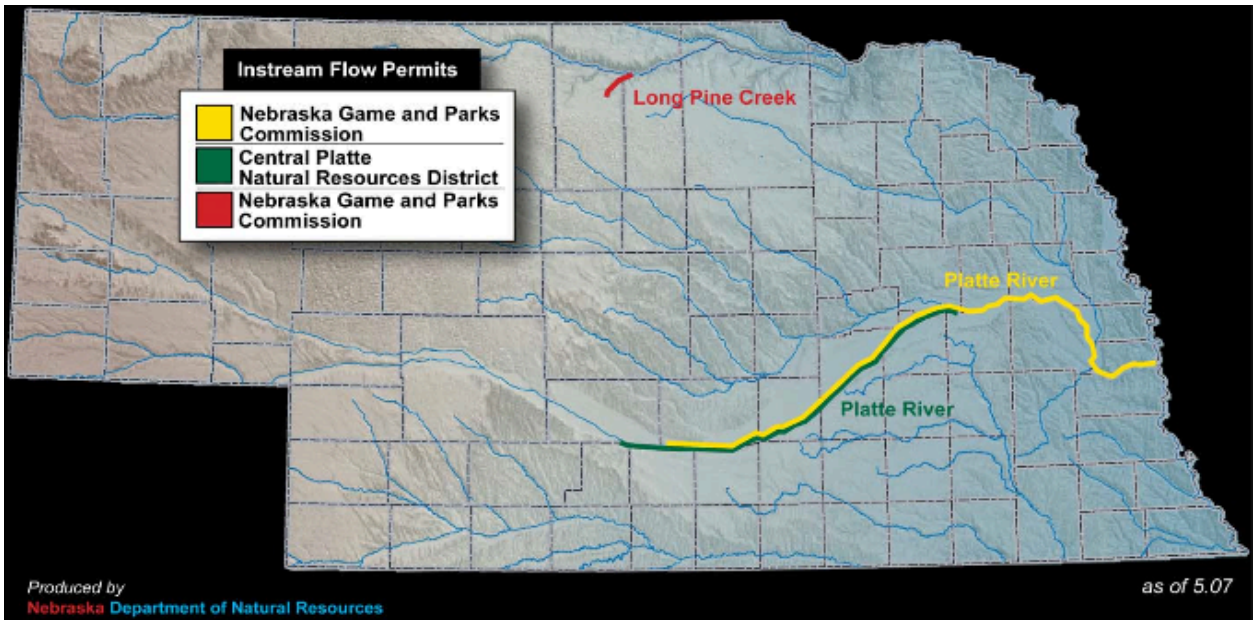

Figure 4.1: *Nebraska's Instream Flow Permits*

New Mexico

Water Rights System

The policy framework that governs the water management policies in New Mexico is purely based on the prior appropriation doctrine. Much of the management responsibility of the surface water resources is delegated to the Office of State Engineer. These responsibilities include supervision, measurement, appropriation, and distribution of the resource. Room exists for leeway regarding interpretation and flexibility in administering the laws. For instance, the five basic components of a water right are point of diversion, place of use, purpose of use, owner, and quantity. While these components are statutorily required, there are standing court decisions, legal opinions, and administrative rulings by the state engineer that have required otherwise for the issuance of a right.

The only exception for possession of a water right is the State Engineer. This means that any entity, let it be an individual, corporation, organization or agency, is eligible for holding a right. Each right is viewed as real property. Therefore, it may be transferred from one holder to another and also bought or sold.

Instream Flow System

The instream flow policy for New Mexico is really quite unique. The legal mechanism to recognize nonconsumptive rights does not originate from a statute, but instead a ruling that was made by the Attorney General in 1998. This opinion, formally known as Op.No. 98-01, stated that the transfer of a consumptive water right to an instream flow right is allowable under state law. Before this opinion was made, all water appropriations must have met the requirement of being diverted from the stream. However, the Attorney General, at the time based his opinion on previous court cases. One court, in 1945, ruled that "beneficial use" in relation to unappropriated water included recreation and fishing. In 1972, another court ruled that a diversion was only necessary for water rights that are related to agriculture.

Limitations to the scope of the 1998 opinion did exist. It was directed at the transfer of water rights for instream flow purposes. The Attorney General at the time made sure to note that new appropriations of water for instream flow were not subject to his opinion. The dealings with and the responsibility to approve these transfers are largely left to the discretion of the state engineer.

This opinion also left some ambiguity as to how it should be implemented. For example, it is unclear as to who is eligible to transfer the rights or hold on to them. Also, the methods of quantifying the flows and the methods that should be followed have yet to be established. It is assumed that much of this is to be determined by the state engineer.

Oklahoma

Water Rights System

Oklahoma's surface water resources are managed by the prior appropriation doctrine. There are also some vestiges of riparian rights integrated within the water laws of the state.

Ground water resources are largely managed by the guidance of the Oklahoma Groundwater Law (Couch 2008).

The Oklahoma Water Resources Board (OWRB) is the administering agency for the state's water resources management laws. The governor appoints each of the OWRB's nine members, whose responsibility is to define the policy and conduct the business related to the states water issues. This requires that the OWRB review surface water permits and keep record of all permits that have been approved. Also, the agency is involved with planning activities to prepare for future management decisions (OWRB 2009). Oklahoma identifies three different types of water resources: definite streams, groundwater, and diffused water. Ownership and management decisions vary for each. Definite streams are a publicly-owned resource subject to appropriation. Groundwater is owned purely by the same individual(s) who owns the land over which the water **exists**. Likewise, diffused water maintains the same owner as the land that is washed over by the water in consideration.

Instream Flow System

Of the High Plains states, Oklahoma is the only state that lacks the legal recognition of instream flow rights. However, the state is making progress on establishing such a system of rights. In 1995, the state implemented the Oklahoma Comprehensive Water Plan Study, structured on a cycle of reviews every five years. These studies primarily focus on the development of the state's water policy framework, in preparation for future challenges and needs. So far, there have been two proposed changes to the state's water policy that progress toward streamflow protection. The first proposes a change to the surface water rules by the OWRB. This rule states that for the rivers given special designation under the Scenic Rivers Act or a stream recognized as one of the Outstanding Resource Waters, an appropriate amount of instream flows within these streams is to be protected (OWRB 2008).

The second step taken by the state of Oklahoma in this matter is much more substantial. The most recent workplan under the Comprehensive Water Plan Study has included the consideration of developing an instream flow policy framework. The outcome of this study is uncertain, but this is a step toward Oklahoma's recognition of instream flows (OWRB; OCWP 2008).

South Dakota

Water Rights System

South Dakota's policy framework to guide the water management decisions based on the prior appropriation doctrine. All of the water in the state is public property; however, the right to use it is specifically acquired through appropriation. The seven-member governor - appointed Water Management Board (WMB) regulates water use, approves and denies permits, validates vested rights, cancels water right permits or rights, and establishes ordinary high and low water marks for lakes and lake outlet elevations. In order to fulfill the administrative requirements of the WMB, various departments and programs specific in scope are allocated.

It is the responsibility of the WMB to approve or deny a water appropriation application in South Dakota. The requirements for the approval of a water appropriation include:

- Water must be available for the proposed use;
- The proposed diversion can be developed without unlawful impairment of existing rights;
- The use of water must be a beneficial use;
- The use of water must be in the public interest.

This criterion is fairly basic and quite common in many other states.

However, "beneficial use," as well as "public interest," is not often expressly defined.

It is the duty of the WMB to make such a determination throughout the hearings for a permit. Therefore, while definitions from previous decisions of the WMB can apply, it is largely determined on a case-by-case basis.

Instream Flow System

Statutorily, instream flow rights in South Dakota are much more implicit than states with explicit language. Meaning, that while the state does recognize instream flows as a beneficial use, it does not currently have a statute that singles out the right as such. In order to implement an instream flow right, the process used to gain any other right is followed.

This process entails the proposal for an instream flow, the recommendation made by the Chief Engineer, and the approval of the right by the water management board. Again, the statutes are somewhat unclear as to who can hold onto an instream flow right. To date, the South Dakota Game, Fish, and Parks, federal agencies, and organizations have been identified as eligible entities to do so. The particular entity will submit an application for an instream flow right to the Water Rights program of the DENR. The burden of proof for the initiating entity is quite low. Much of the responsibility, both to establish the flow and to determine if enough water is available to satisfy that flow, is left up to the DENR. Once that study is completed, the Chief Engineer of the Water Rights program will make a recommendation to the Water Management Board (WMB). Public notice will be given and if there are objections to the right, a hearing will be held. The WMB will then have the opportunity to either approve or deny the application (Rath 2009).

There are also legal mechanisms available to transfer a consumptive use to an instream flow right. However, some restrictions placed on diversions are explicitly intended for irrigation. This process begins with a request to the Water Rights division to make such a

transfer, where it is then taken to the WMB for approval or rejection (Water Rights Division, DENR 2009).

Texas

Water Rights System

Over the years, Texas has developed a water rights system that recognizes the two doctrines of prior appropriation and riparian. A complex history of court cases and disputes has led to this system. In 1967, the Texan government enacted a policy that recognized the prior appropriation doctrine. This act required all water users to earn a water rights permit and for all new users to do the same. In Texas, the public owns the water; therefore, in order to have access to the resource, the system of permits needed establishment. The agency responsible for administering this process is the Texas Commission on Environmental Quality (TCEQ). For the holder of a water right, the right exists as a transferable piece of property. The state also recognizes groundwater and drainage water as available resources, although these resources are managed by an entirely different set of guidelines and principles.

The policy framework under which all water resources is guided is found in the Texas Water Code (TWC). The TWC encompasses the comprehensive set of statutes are part of the Texas Statutes (Texas A&M 2009).

Obviously, Texas is a vast state, with many resources and varying landscapes. As a result, there are also many different bureaucratic layers and government entities involved in the management of the state's water resources. However, the main entity involved with the management of water resources is the TCEQ. This agency oversees the process of resource protection, conservation, and management. Also, the Texas Water Development Board (TWDB) deals with water planning and development issues. Along with these two major agencies, distinct watershed districts are responsible for the management of the local

resources (TECQ).

As mentioned earlier, all surface water rights are administered through an appropriation process by the TCEQ. However, these rights take many different shapes and forms in Texas to meet the different needs of the resource users. These permits can be classified by the length of time for how long the water right will be held. For example, there are perpetual rights and limited term rights. A certificate of adjudication and general permit is a perpetual right. While a term permit and temporary permit are limited-term rights. The requirements for each right vary for the purpose in which it is to serve. However, for most permits the water must be available and it must be put to a beneficial use. It is the responsibly of the TCEQ to review and either approve or deny a permit. (TECQ 2009).

Instream Flow System

The state of Texas has taken a more unique approach to protecting streamflows. Through many acts of the government, instream flows have been recognized institutionally. However, the actual instream right or a means of pursuing a permit for one does not exist. Through an active administrative review process, the state has taken steps to ensure that streamflows are preserved.

In 1985, the Texan government amended the TWC to include instream flows on the list beneficial uses of water. As recently as 2001 and 2007, the Texas Legislature enacted legislation to begin the process of recognizing such a right. Between those points of time, there has been a mixture of stream protection and policy established in order to contribute to this effort, as well.

One legal tool, known as inflow requirements, is specifically focused on estuaries and bays. These requirements ensure that an adequate amount of water is provided for estuary freshwater inflow needs. This is achieved by requiring all reservoirs constructed after 1985,

that exist within two hundred river miles of the coast, to appropriate five percent of the annual firm yield of water to the Parks and Wildlife Department to make releases to bays and estuaries and for instream uses. However, this method is somewhat suspect, as it has been reported in previously-published literature that there are reservoirs currently not managed in such a way (Kaiser 1998).

The second method that has been utilized to a much greater extent is the consideration of instream or ecological concerns in the approval process of appropriation permits. This repsonsibilty is given to the Instream Uses Staff of the Resource Protection Team under the TCEQ. When there is a new water right permit application submitted to the TCEQ, there is a technical review process followed. During this process, the staff will implement an environmental review of the application. The available information that is related to a proposed water project is considered to determine the potential impact it will have on fish and wildlife habitat, water quality, instream uses associated with the affected body of water and downstream areas. According to TWC, the TCEQ must consider these factors to base its recommendation off of:

- The need for inflows, based on available information;
- The ecology and productivity of the estuary system;
- The expected effects on the public welfare of not including conditions;
- The amount and use of water requested and the needs of those who would be served by the applicant;
- The expected effects on the public welfare of the failure to issue all or part of the permit being considered; and
- The statutory list of water use preferences (Kaiser).

Once all pertinent information is gathered, a recommendation will be made as to what type of restriction or condition that may be required to satisfy the environmental concerns (TCEQ).

Finally, as mentioned earlier, Texas has made recent steps toward streamflow protection and the establishment of instream flows. In 2001, the Texas Legislature enacted Senate Bill 2 (S.B. 2). This piece of legislation charged the TCEQ, TWDB, and the Texas Parks and Wildlife Department to "…jointly establish and continuously maintain an instream flow data collection and evaluation program…" Also, the agencies were charged with the responsibility to "…conduct studies and analyses to determine appropriate methodologies for determining flow conditions in the state rivers and streams necessary to support a sound ecological environment" (TCEQ). What has followed since the enactment of S.B.2 can only be described as an immense undertaking of scientific reviews, stakeholder meetings, work plans, and public hearings. In fact, the National Academy of Sciences initiated its own program review of the activities that took place after the passage of S.B. 2.

In 2007, the Texas Legislature took another step toward streamflow protection by passing Senate Bill 3 (S.B. 3). This piece of legislation reinforced the environmental review step of the permit application process. Senate Bill 3 added a stakeholder process that would result in science and policy based environmental flow regime recommendations to protect instream flows and freshwater inflows on a basin-by-basin basis. The bill achieved this by creating the Science Advisory Committee to the Study Commission on Environmental Flows (SACSCEF) and the Texas Environmental Flows Science Advisory Committee (TEFSAC). It is the responsibility of the SACSCEF to oversee this process, while the TEFSAC is charged with the obligation to provide objective scientific advice to the SACSCEF. The bill also created seven bay/basin stakeholder groups and bay/basin expert science teams, one for each of Texas's river basins and bay systems. Through the addition of this step in the process, the TCEQ will adopt new rules on establishing environmental flow standards for specific bay/basin areas, including a set-aside of unappropriated flows.

Wyoming

Water Rights System

Like many other Western states, Wyoming exercises the prior appropriation doctrine as its foundation for its water management policies. The water resource is publicly-owned and the ability to utilize it is made possible through an appropriation process. The State Engineer serves as the administrating agency for much of the state's water issues. This agency is responsible for the appropriation, distribution, and management of the surface and groundwater resources. For administrative purposes, the state is also divided into four water divisions, which are each lead by a supervisor. These four superintendents, along with the state engineer, make up the Wyoming Board of Control (WBC). The WBC deals with all matters of adjudication and amendments to water rights (SEO).

Another key agency involved with the management of the state's water resources is the Wyoming Water Development Commission (WWDC). The purpose of this 10-member governor-appointed body is "to promote the optimal development of the state's human, industrial, mineral, agricultural, water and recreational resources." The WWDC largely focuses on the planning, selection, financing, construction, acquisition, and operation of development projects.

Instream Flow System

In 1986, the Wyoming legislature first recognized instream flow rights through declaring the maintenance or improvement of existing stream fisheries as a beneficial use of water. The enacted legislation included the statutory procedure to be followed in order to gain an instream flow right for a stream. The three key agencies are involved with this process include:

- Wyoming Water Development Commission (WWDC)

- Wyoming Game and Fish Department (WGFD)
- State Engineer's Office (SEO)

Each agency is responsible for a certain step of the process of gaining an instream flow right. It begins with the WGFD identifying a stretch of a stream in need of streamflow protection. Thus far, the WGFD has taken the approach of implementing 5-year study plans (Thomas, Paul 2006). These study plans help the department identify numerous streams and pursue an instream flow right for those streams. The WGFD will base its selection off of biological reports, knowledge of the fisheries, and stream flow models (WWDC). The next player in the process is the WWDC, the sole entity eligible to hold an instream flow right. After the WGFD has completed its studies, the WWDC will apply for the appropriation. The WWDC is responsible for conducting its own hydrological study to determine whether there is enough available water, either through storage or natural flow of the stream, for the proposed instream flow. The findings of the WWDC will then be submitted to the SEO. The SEO has the opportunity to conduct its own studies to evaluate the application. Before the SEO makes a final decision, public hearings must be held and consider all available reports and information. Finally, following the public input period, the State Engineer has the responsibility to approve, approve with medications, or deny the application. Also, if an application is approved, a condition for review of continuation of the permit at a future time may be included.

If the application is approved, stipulations apply for the instream flow right. First, the priority date for the right must be the date the application was submitted and received by the SEO. The instream flow right will also go immediately into effect on the date the SEO's approval. The Board of Control cannot adjudicate the water right for three years after the permit is approved. Municipalities are the only entities that can condemn an instream flow

right. Further, no existing water rights can be condemned for an instream flow. A water user, however, can gift its rights to the state for instream purposes. Finally, the regulation of water rights on a stream must be called for by the WGFD with the request proceeding through the WWDC.

Discussion

Rights Created to Benefit

The first step that must be taken in order to recognize an instream flow right is to declare it a beneficial use. Of the states covered, Oklahoma is the only state that does not recognize an instream flow right as a beneficial use. The process through which a state recognizes an instream flow as a beneficial use generally takes the form of an explicit statute. The beneficial use designation may result from other government processes, as well. In one instance, the Attorney General of New Mexico issued an opinion, in which it was stated that maintaining flows in a stream for an established purpose is beneficial to the public. In another example, South Dakota has given the responsibility to a board to determine exactly what constitutes a beneficial use.

In order for an instream flow right to be recognized as a beneficial use, it must meet a legally recognized purpose. Such a purpose can include the protection of fish and wildlife habitat, recreation, water quality, other aquatic organisms, aesthetics, and navigation. The uses that directly impact the ecosystem include: fish and wildlife habitat, water quality, and other organisms. Wyoming has the most restrictive uses for only allowing the protection of fish habitat, while Kansas is on the opposite of the spectrum for permitting the protection of fish habitat, other aquatic organisms, wildlife habitat, and water quality. In order to protect the health of the stream's ecosystem, it is important for a state to have an inclusive set of uses for which an instream flow right can be utilized. As previously mentioned, a river provides

many ecological services, and a policy that allows for an instream flow to protect all of those services is the best policy for the health of the stream's ecosystem.

Transferability and Conversion

The fact that a stream is able to gain an instream flow right is important. However, a reality that must be considered is that for many of the states, the surface waters have already been greatly developed. While working within the prior appropriation doctrine, seniority of a right undeniably matters. If a stream's available resources are nearly depleted, and an instream flow is granted, there will be many pre-existing water rights that take priority. Essentially, when water resources are low, the instream flow right may be last in line to receive its share of the water.

To overcome this obstacle, it becomes necessary – and fortunately, possible – to either transfer or convert the water right. Transferring or converting the water right allows an instream flow the ability to "jump in line" when there is a limited amount of resources. It is essential that instream flows be able to gain a senior date, and the capacity to make transfers is a way to achieve this. For example, if a farmer had a 1958 seniority right and wanted to lease her right to the state game agency for instream flow purposes, that new instream flow right would secure a privileged place in line. The instream flow right would supersede any others in line after the 1958 date. This can be compared to the many instream flow rights that are being created today and the junior dates that are applied to them. By gaining a more senior right, there is a greater assurance that the stream flow will be protected.

The ability to gain a priority date that is more senior to the consumptive rights is crucial in the protection of streamflow ecosystems. As earlier mentioned, if the condition exists that there is a lack of water resources available, the more senior appropriators will

receive their share of the water. For many instream flow rights, the flow required to maintain or protect a habitat has already been determined by scientific studies. If there is an administrative call on the river and there is not enough water for all of the users, a junior instream right is likely to not receive its required amount of water. Once this happens, the health of the river ecosystem can be threatened due to the lack of water. Accordingly, the policy that allows for a greater freedom to transfer a consumptive water right to an instream flow right is the policy that is best for the river ecosystem. The fewer restrictions there are for the consumptive rights users, the more able they are to transfer those rights to a use that would benefit the ecosystem.

Colorado and Montana are the two states that should be noted for their efforts in promoting and establishing this policy of limiting barriers to an instream gaining senior rights. Both states allow for the purchase, lease, or any other contractual agreement for a consumptive right to be converted into a non-consumptive right. Kansas, however, has much more work to accomplish in this area, as it only allows for the conversion of a consumptive use to a nonconsumptive one that is not considered to be an instream flow right. The legal tools available in Kansas only allow for the retirement of rights in river basins that have been exploited.

Subject to Review

For the protection of the streamflows, it is important for an instream flow right to remain a permanent fixture. While most consumptive uses are not subject to loss, with the exception of diligent use and timing of use, there are two states that allow for an instream flow right to be reviewed and amended. Montana requires that any streamflow reservation be reviewed on the 10-year basis, while Nebraska requires an instream flow right be reviewed on a 15-year basis. In order for an instream flow to have positive impact on the

health of the river's ecosystem, it must be a perpetual right. The policy of allowing for a review of an instream flow right can prove to be detrimental to the health of a river. Such a review allows for a right to be lost, and possibly to a consumptive use, which would pose a threat to the ecosystem.

Participants in Instream Flow Program

The entities and individuals involved with streamflow protection are consistent among most of the states. For almost all of the states, the agency responsible for wildlife, fish, and parks management is authorized to provide input and comment. It is usually a state engineer or the agency administering surface water rights who is responsible for administering the instream right. The agency's technical and scientific know-how is considered necessary in order to quantify and appropriate the flows required to meet the instream flow needs. The final step of involvement regards the holder of an instream flow right. Some states allow any entity to hold an instream flow right – a corporation, individual, or government body – while other states may only allow one state agency.

The role of the administrating agency and other involved stakeholders is very important to the health of a river's ecosystem. However, it is a complex issue that can vary greatly from one state to another. For example, it may be assumed that if the policy is less restrictive, granting many entities to hold an instream flow right will all for enhanced streamflow protection. Yet, that assumption may be scrutinized if one compared Montana and Colorado. In 2005, Colorado had 1,926 instream flow rights that protected 8,549 stream miles, while Montana had 434 instream reservations that protected 2,477 stream miles (Charney 2005). Colorado law only allows for the Colorado Water Conservation Board to hold an instream flow right, while Montana allows for any state, federal, or political subdivision to hold a right. The amount of effort the agency gives while gaining an instream

flow law is essential in protecting the health of an ecosystem. As mentioned previously in the Colorado section, the CWCB is an active pursuer of instream flows. Their dedication can be seen in action at the annual event they host, at which interested parties submit proposals for streams to be considered for protection by an instream flow right.

In order to protect an ecosystem, the agency responsible for applying for instream flow rights needs to progressively be an active pursuer for those rights. The best policy is to have an agency with the single responsibility of pursing instream flow rights. Such an agency would have a clear mission of streamflow protection. Having a focused mission allows for an agency to solely dedicate its resources to the pursuit of gaining instream flow rights. There must also be an agency responsible for enforcing the protection of an instream flow right. While it is obviously important to have the right established, a matter of enforcing and protecting the right is just as important. The ecosystem of a stream depends on instream flows, and if an agency is not willing to make an administrative call, the necessary flows may not be available to maintain the health of the stream.

Conclusion

Instream flow policies are an honest endeavor into remedying the decades of willing negligence we have inflicted upon our rivers. Before the recognition of instream flow rights, our nation's rivers and the many natural things they provided us were being taken for granted. A shift in values occurred and our rivers began to be seen as a resource that should be protected, not just exhausted. Those values, however, varied from each state and from that we have a diverse set of policy tools used to protect the rivers. Regardless, change is welcomed in order to better protect our rivers and their ecosystems. As these policies continue to develop, they should recognize the importance of seniority, permanence, meeting diverse needs, and involving agencies that are willing to seek and protect rights.

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