

Allocation of Conserved Water Program:

An Analysis of its History and Data

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Abstract

This paper analyzes the history of the Allocation of Conserved Water Program and was done because the Allocation of Conserved Water Program is the only tool that the state of Oregon has to reduce water consumption on over-allocated watersheds. This is a major problem in much of the state as watersheds are over allocated and do not have enough water to supply demand or retain acceptable water levels for wildlife. To address this problem, I gathered data on all of the applications submitted to the Allocation of Conserved Water Program. From those applications I determined the location, quantity, and individual who received water rights. Using the data from the applications I was able to determine trends, and show how the program has been used. This is significant, because understanding a program is key to improving it. The results that I found were that the program was being used as a conservation tool for interest groups, rather than an economic incentive for individuals. I cannot say why that is the case, but I can confirm that is the case. My hypothesis is that the program is not well funded, or marketed, thus resulting in very little use for individuals who cannot afford high capital costs for conservation improvements.

I was interested in this project, because I find water law interesting. The program is structured around water law and attempts to find solutions to a partially broken system. I also think that there is great benefit in determining the most economically efficient solutions to natural resource problems. Unfortunately, I was not able to focus on the economics side of the problem much because data was not available, but I was happy to get to do a study on a program that very few people know about. The most important thing that I have learned from

this project is to be flexible. I struggled from the beginning with this project, as there was really no information available. I started the project thinking I would determine one thing, and ended up doing something entirely different. This was both annoying and challenging as I felt like my research was simple and not at all as exciting as I had originally thought it would be. I had to continue on though, and I am happy with my findings even though the project is not what I originally intended it would be.

Introduction

The Allocation of Conserved Water Program (ACWP) is a unique program to the state of Oregon. It is a program that has grown out of prior appropriation water law, and has the potential to drastically influence the way water rights are treated in the United States. Prior Appropriation is a doctrine that came out of Colorado in 1872. The widespread adoption of the doctrine arose from a court case over a dispute of who had the rightful claim to a water right. The case has since become famous and is known as Coffin vs. Left Hand Ditch. This case occurred in 1882, 10 years after Colorado had officially adopted prior appropriation. Coffin, the plaintiff had land adjacent to the Left Hand Creek. To ensure irrigation flows to his land, he dammed surrounding diversions and creeks. The defendants, Left Hand Ditch Company, had established a series of ditches to run water from the St. Vrain creek for use farther away from the two creeks. The St. Vrain creek was one of the creeks that Coffin had dammed, and when the plaintiff dammed the creeks flows to the defendants ceased. The defendants then went onto the plaintiffs' land and destroyed the dams returning flows to their lands. This sparked a debate over whether Coffin who had rights under riparian water law should have a claim to the water, or Left Hand Ditch Co., who had the claim under prior appropriation. The court ruled in favor of the Left Hand Ditch Co., sighting beneficial use without waste as their main bullet point. The court said that because water is so scarce in the Western United States there was no use in having water sit in streams. During this time frame there was a big push for manifest-destiny, and the U.S. government wanted to encourage movement and development out west.

Since then almost all western states have adopted prior appropriation, with the exceptions being California and Texas, who have a hybrid system.

Under prior appropriation those who have the earliest claim to beneficial use without waste have the most senior water right. This right cannot be taken away from you, except by someone with a more senior right. Water is allocated until there is none left, and once a right is established it is locked in to the property it is attached to. However, this has caused streams to be extremely stressed as they are being squeezed to their last drop. For the state of Oregon this has become a problem, as demand for water has surpassed supply, and with water being locked in forever under prior appropriation, the state had to come up with a solution. This is where the ACWP comes in.

The ACWP allows waters users to perform upgrades to their current diversion systems and expand upon their rights. Under prior appropriation this would normally be impossible, because rights are locked in for specific amounts and specific uses. However, if upgrades are made, and the amount of water diverted is reduced, then the user may use a portion of the water saved from diversion for another use. The other water saved stays in the stream for future use. An example would be a farmer using 30 acre feet per second of water, who installs an irrigation system to reduce the amount used to 20 acre feet per second. If the state subsidized 25% of the project, then the state gets to keep 25% of the 10 acre feet per second saved. That is equivalent to 2.5 acre feet per second that the state gets to keep for in stream use, or allocate to other farmers for use. The rest of the 7.5 acre feet per second saved goes to the farmer. The farmer is allowed to use that 7.5 acre feet per second for additional growing operations. This is beneficial for both the state and the farmer, as the state is able to increase

the amount of water available for new operations and the farmer gets to use water for something different than what is stated on his water rights certificate.

This is important because it allows the state of Oregon flexibility with its water. Because water is so scarce in the western United States this is extremely valuable. The ACWP creates the opportunity for Oregon to take control of its water by giving it the option to decide what it wants to do with the conserved water. Water can be divvied out to people waiting for it, or it can be left in streams indefinitely to satisfy conservation interests. Either option is an improvement for the state, as it puts itself in control of its options, instead of being subject to a certificate that may have been created in the 1930's.

Project Statement and Approach

“Does the Allocation of Conserved Water Program fulfil its intended goals?” This is the question that I am trying to answer. To answer such a question, I must first answer the question of what the Allocation of Conserved Water's intended goals actually are. All programs created by the state must be written in to state legislature. The ACWP is no different. Oregon Revised Statute (ORS) 537.455 is the definitions section of the statute that allows the ACWP. This section provides a lot of really helpful information when determining what the purpose of the statute and program is.

Often times wording in statutes may be different than the more common definition. For example, in the Endangered Species Act “take” is defined as harass, harm, pursue, hunt, shoot,

wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. This is much different than the dictionary definition of take which is to reach for and hold. Oregon statutes are no different in the fact that definitions hold great value, and may have more than just a surface meaning. ORS 537.455 defines conservation as “the reduction of the amount of water diverted to satisfy an existing beneficial use achieved either by improving the technology or method for diverting, transporting, applying or recovering the water.” Clearly there is an agenda as the state is looking to conserve water through specific action. This begins to paint a picture of how the program works in real world application.

The state of Oregon wants to save water by altering the ways that water users access, transport, and apply their water. Conserved water is defined as the “amount of water that results from conservation measures.” Another way to think of this is the difference in the amount of water used before a project is implemented and after a project is implemented. This provides great insight, as it is clear how the state wishes to achieve its intended objective, but the intended objective is still unclear. Fortunately, there is another section labeled legislative findings.

In the legislative findings section (ORS 537.460) the clear intention of the policy makers is laid out. With the help of this section distinct objectives can be defined. According to the statute, the declared policy is to “aggressively promote conservation” and use “efficient utilization.” “Efficient utilization” meaning “use without waste, and ... to meet both current and future water needs at the least cost.” The combination of the statute’s definition of conservation, along with lawmakers declared policy to “aggressively promote conservation” can

be used to create intended goals. From this wording I believe it is clear that the intention of the program is to conserve water now for future use, whether it be instream, or out of stream, at the least cost. So, to answer the question of “Does the Allocation of Conserved Water Program fulfil its intended goals?” I must first determine if the State is reducing the amount of water being taken from streams, and whether the state is doing it at the least cost to themselves. Essentially, is the State using “Efficient Utilization?”

I intend to determine whether these goals are being met by collecting data from the Oregon Water Resources Department. The department has a comprehensive list of all applications that have been submitted in the 22-year history of the program. Information available from these applications that I will be using is the location of the project, and the amount of water (CFS) that is being saved for the state, as well as the individuals amount of water saved. Information regarding costs of projects is not available, so I will make an assumption that the water resources department (WRD) is not operating at a loss. By making this assumption I am satisfying one of the intended goals. The goal being satisfied is “Does the state do it at the least cost to themselves?” From this, the next step is to determine whether the state is conserving water for future use, as that is the next goal I have detailed as criteria to answer my overarching question of whether the program is fulfilling its intended goals.

Literature Review

The Allocation of Conserved Water Program has been a very challenging topic because of the lack of information available. With only 100 applications in its 22-year history it is

understandable that not much research has been conducted on the program, but I have compiled a list of the most valuable literature I could find. I will start by reviewing the most comprehensive document I found, “Restoring Water Conservation Savings to Oregon Rivers: A Review of Oregon’s Conserved Water Statute” by Bruce Aylward. This document takes on the same format as any research paper, and includes details about the history of the program, as well as its use. This document was created in 2008, and since then the program has received nearly 40 more applications meaning that the program has almost doubled in size since 2008. However, results from the 2008 Aylward study do not differ much from the results of this study.

Aylward begins by giving a brief history of Oregon water law, but quickly shifts to the reasoning behind the implementation of a program like the ACWP. The Deschutes water basin was the basin mentioned in Aylward’s study, and for good reason. The basin has been stressed, and over allocated for many years, but demand for water has continued to rise. This has created a long list of applicants waiting to receive a water right, but no water to allocate to those applicants. This created a problem, as there is a demand with no supply. The state recognized this problem, and began to construct ways for water to be introduced back into the basin. The ACWP’s birth came partially from the state’s recognition of the issue.

This new Allocation of Conserved Water Program, along with other transfer programs allowed the state to fulfil the demands of new users. The following table displays how conserved water will be used based upon demand for water in a particular basin.

Is Water Saved?	Is Water Protected?	Is Source Water Over-Allocated	
		Yes	No
Water Saved due to Incentives for Water Use Efficiency	Saved water protected legally or by contract or cooperation	Saved water will be <i>instream</i>	Saved water will be <i>instream</i>
	Saved water not protected	Saved water will be diverted	Saved water will be <i>instream</i>
Water Saved for other Reason	Saved water not protected	Saved water will be diverted	Saved water will be <i>instream</i>

Note: Over time a series of reductions in diversions will lead a system to move from being over-allocated to being under-allocated

From this table one can see that water conserved from a source over allocated will result in the conserved water being re-allocated to a new user. Water conserved from sources that aren't over allocated will result in an instream right. This is also where Aylward begins to point out the first flaw with this program. The statute is in place to promote conservation for efficient utilization. This creates a program that sounds like it is putting water back in streams, but in reality it is only putting water back in streams that need it the least. Conserved water is immediately redistributed in the places where instream rights are most valuable. From a conservationist's perspective this is somewhat of a slap in the face. This may explain why the ACWP has failed to really take off. If conservationist groups do not fully support the program, then enrollment in the program may always stay low. This transitions into the second reason why conservationist groups may refuse to endorse the program.

Aylward talks about the way that water basins work, specifically seepage. Common thought would suggest that water removed from streams, only to be placed on dirt a mile from the stream, is wasting water, however this is untrue. Basins are fed by groundwater. This is important in understanding that seepage is not such a bad thing. "From a basin water budget perspective, water conservation increases water availability only when (a) water conservation

refers to a reduction in consumptive use and (b) the saved water previously seeped through into the ground and never returned to accessible surface or ground waters.” (Aylward 2008).

This is key when talking about the ACWP, as we have established that conservation means to reduce diversion through technological improvements, rather than reduce consumption. However, part (a) states that increasing water availability can only result from a reduction in consumption. We are not concerned with reducing consumption under the ACWP, only reduction in waste through diversion techniques, so part (a) is null. That leaves part (b), and this is where the issue with seepage is addressed. Water that is lost through diversion, transportation, or application returns to the watershed in the form of seepage. A reduction in seepage is not reducing the total amount of water consumed, but rather just moving around the same water. Instead of water being recycled at a slower rate through seepage, water is just kept in stream for other users, unless the water is saved for an instream right.

This is where a big distinction is made. The ACWP can be productive depending on what the state decides to do with the water that they receive from irrigation reduction techniques. If the state decides to reallocate the water saved by reducing waste through irrigation techniques, then the state is actually hurting the watershed. However, if the state decides to protect the water as an instream right, then there is just increased water flow. This must be recognized and accounted for when looking at the effectiveness of the program. Water that is saved by improving irrigation techniques never leaves the waterway, and creates more consistent lasting flows. Often times, water is over allocated in certain sections on the waterway, which creates dry spots. The water returns downstream because, seepage has

occurred, and the water has been recycled farther downstream of the point of loss.

There is still criticism of the program as some argue that the redistribution of water that was previously seepage is not beneficial. In fact, there has been criticism by other authors of the program. The authors in question say “intrabasin redistribution of water between instream flow and irrigation return flow rather than the creation of additional water” is not of any value (Scheierling, Young, Cardon 2006). Aylward, however, would disagree with that statement by saying there is value in putting water in places that it previously has not been, even if there is no new creation of water. I would tend to agree, with Aylward in that sense too. Consistent stream flows are valuable, even if there is no new creation of water while achieving those streams flows.

I believe it is important to note that there have been criticisms of the program in the past, but that is not to say that a program designed to reduce the over-allocation of streams is a bad thing. There are legal and political hurdles that all programs face, and the ACWP is no different. To say that the program is a failure before looking at the results of the program is presumptuous. The criticisms mentioned above simply critiqued the nature of the program, and discredited it. The next section of literature review also draws from Aylward’s paper, but looks at the actual effects that the program has had. This includes individual applications, and the program as a whole.

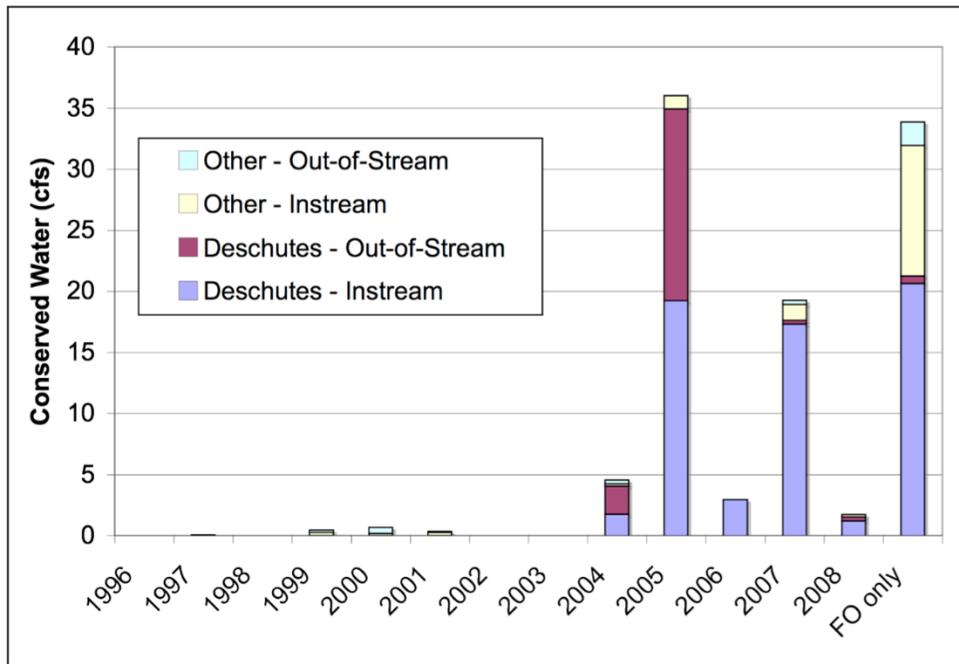
The basin that receives the most applications is the Deschutes by a large margin. It is followed by the Umatilla and Rogue. In fact, as of 2008 those three basins made up 44 of the 55 applications submitted. Twenty-three of the total number of applications submitted have been

in the Deschutes basin, fourteen in the Umatilla basin, and seven in the Rogue. The next largest application receiving basin is two total applications.

This is not a coincidence. Interest groups have made efforts to increase stream flows in over allocated regions of the state. The Deschutes, Umatilla, and Rogue basins are all regions that face water shortages in the summer months. While the program may not have 100% of the support from all interest groups, some still see the benefit of working with the state to keep water in our streams. Interestingly, around 60% of the applications from the Aylward study involve some sort of financial intermediary that is a conservation group. This is surprising, as the program does not have the public support of these groups, however the groups still choose to engage in the program a fair amount. Of those applications that do not involve a financial intermediary it is clear that the individual is trying cash in on the ability to spread a portion of the conserved water to other sections of their land for use. This is expected, as the program provides incentive to individuals to engage in the ACWP. The program is designed to allow some portion of water for the state's use, and another portion of water for personal use. What is surprising is that it is designed to operate in that manner, but, the program operates much differently. The ACWP mostly operates as a tool for conservation groups to use to reduce seepage lost. So the next question to ask is how much water is really being created?

From 1996 to 2008 there had been 99.8 CFS of "new" water created through the program. This "new" water is not water created for instream use. It is simply water that has been conserved from waste by improved irrigation, transportation, or application techniques. Not surprisingly, the majority of the "new" water created is in the Deschutes basin. In fact, 82.3

CFS of the 99.8 CFS created is in the Deschutes basin. This is a reflection of both the number of applications submitted in the Deschutes basin (23/55 = 41.8%) and, the cooperation of irrigation districts in the basin. Of the 82.3 CFS created in the Deschutes, 75% of it has gone to the state for use. This is essentially a result of one application that makes up over half the water for state use. The same situation occurs in the Umatilla and Rogue basins where one application makes up the majority of the water conserved for state use. The following figure shows the amount of water conserved in CFS, however it should be noted that instream use does not necessarily mean it is an instream right. That water can still be allocated to other users in need of water. This is just the state’s portion of the water. Furthermore, FO means final order, and is reflective of applications that have yet to be approved, but will eventually be approved.



From the 2008 study, I believe there is a clear trend that has emerged. The ACWP is being used mainly by conservation groups who have found parties willing to give up some or all

of their water conserved. This is an interesting trend, but regardless, water is being conserved. So, how does the ACWP compare to other state programs?

The state of Washington has a program called the Water Acquisitions Program. This is a program that allows individuals to lease their water rights to the state for a period of time. The state is also able to purchase water rights for instream use. The state of Washington has identified 16 basins that they believe are critical watersheds in danger. They have attempted to purchase and persuade users to donate water to instream uses in those critical watersheds. As of 2004, the program was able to conserve a total of 12.84 CFS (Lovrich, Siemann 2004), however, the program had only been around for four years when the study was released.

Four years in to the ACWP there had only been around 2 CFS saved, if the 32.4 CFS application is removed. This shows that there is a clear difference in the programs. One thing that may explain the differences in water conservation is that Washington's program is not permanent. Users may donate their water for instream use for a period of time, and get paid for doing so. This is different than the ACWP where individuals are giving up their water right permanently, and at a cost to themselves. However, under the ACWP water users get the ability to keep some of the water conserved and apply it for different use. It is difficult to compare the success of one program to another, as it would be like comparing apples to oranges. In both programs water is being conserved for instream use, but the way that that conservation occurs is so different it is not fair to say that one way is better than another way.

Idaho is interesting, in that it is different from both Oregon's and Washington's conservation habits. Idaho does not have a program that is designed to put water back in

streams, but it does have a water supply bank. The Idaho Water Supply Bank, is a program that allows users to put unused water into a bank for others to purchase. This only applies to water rights that are not being used, and it allows those rights to be leased to someone who does not have sufficient water rights. This does not help put water back into streams in any way, so I do feel comfortable in saying that the ACWP is more effective at conserving water than the current program in Idaho.

Lastly, I will review Montana water conservation programs. The state has three different programs that are all designed to improve conservation. Conservation is defined as “for instream purposes to benefit fishery resources”. This is different than how conservation is defined in Oregon statute, and is more similar to what an expected definition of conservation would be. The first of Montana’s programs is the Salvaged Water Program. The Salvaged Water Program is similar to the ACWP as water users can make upgrades to water systems and have access to the saved water. The difference being that the state has the right to all the water saved under the Salvaged Water Program. The state is able to purchase that water saved or allow other private individuals or groups to purchase that salvaged water. This, coupled with proving that salvaged water will not negatively affect others, has made the program somewhat of a bust.

The next water conservation program that Montana has is the “Water Conservation Program (Saved Consumptive Use).” This program is the main tool used by the state when dealing with water rights. Water that is conserved by projects may be used by the individual which is similar to the ACWP, used as a temporary or permanent instream lease, or sold to

another user. This is essentially an all-encompassing program, and deals with transfers, leases, and use change all in one.

The last program in Montana is a controversial one, and has only recently been put in place. This program essentially says that water diverted is protected until it returns to its original source. This is controversial because, it allows water users to hold onto water that is protected. However, this is only allowed if the Department of Water Resources finds that holding onto the water will not harm others, and there is historical evidence that can quantify amounts diverted and held in the past.

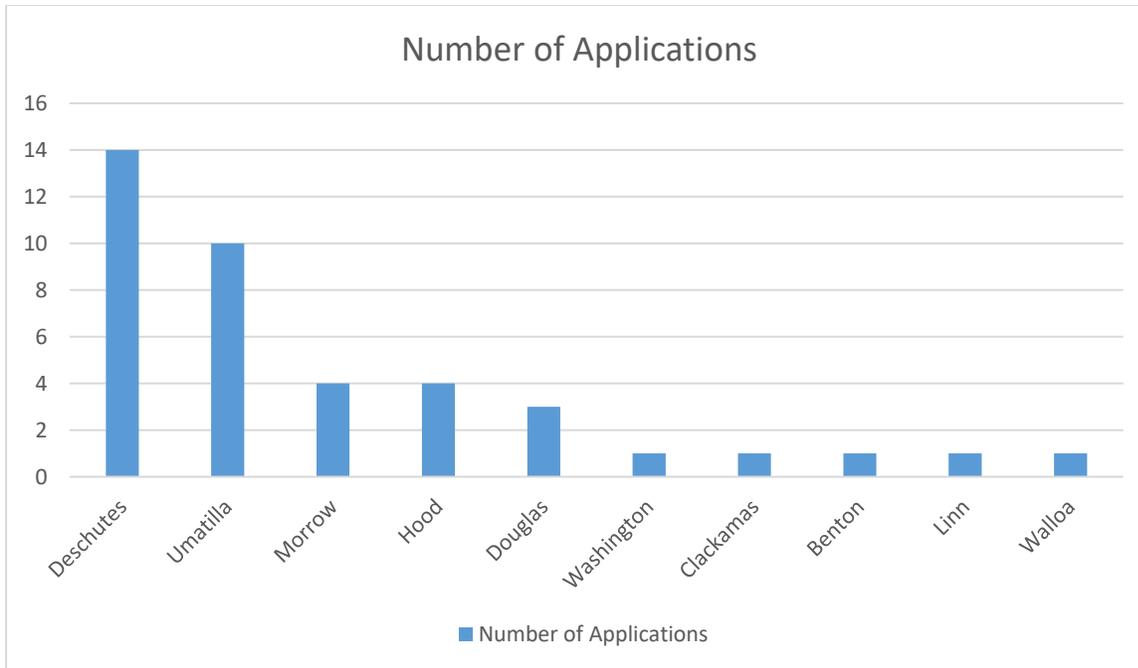
When comparing the ACWP to other state's programs it is evident that the program is somewhat of a hybrid. Montana has the most complete program, which allows the most flexibility for water users. Washington makes it easiest to lease water rights. Idaho, allows for transfers amongst users easy, but does not do much for conservation. The ACWP guarantees that a portion of the water conserved will go to the state. What the state decides to do with that water is up to the state, but that is an advantage over Montana's system. In Montana it is easy to transfer, lease, or change water rights, but that does not guarantee that the state of Montana will get any water. In Montana water users also have the ability to change a right with the help of a conservation measure. This separates Montana and Oregon from Washington, however, to counter that Washington has made it extremely easy for individuals to lease water for any amount of time that they choose. Currently, I would not say there is a program that far excels over the programs of surrounding states.

The ACWP is 22 years old now, and has grown from the last study that was done by

Aylward in 2008. Interestingly, I noticed similar trends in my research and was not surprised to see that the Aylward study mirrored my data.

Data Analysis

From the last application included in the Aylward analysis to the end of 2017 there has been 120.972 CFS of full time new water conserved and dedicated to the state. Of note, two of the applications are for seasonal use only, so I have removed their quantities from the CFS total. This has been done on 45 applications with five of them being withdrawn. Currently there are three applications under review. Fourteen of the approved applications were for the Deschutes basin, and ten of the approved applications were in the Umatilla basin. Surprisingly, there were no applications approved for the Rogue basin, but there has been more distribution to new watersheds than previously. Applications have been approved for five new watersheds, however, each watershed has only had one approved application. Below is a breakdown of the number of approved applications per county from 2008 to 2017.



Interestingly, while Deschutes county has received the most applications it is not the county that has conserved the most CFS. Umatilla county has conserved 52.087 CFS from 2008-2017 on just 10 approved applications. Much of this comes from one application that dedicated over 25 CFS to the state. That application also donated 100% of the water conserved. Many of the other applications in Umatilla county dedicate only the minimum 25% to state use, which is also surprising. In fact, of the 40 applications that have been approved since 2008, 21 have dedicated 100% of the conserved water to the state, where 19 have kept at least some water. Of those 19, 14 dedicated just the minimum 25%. This differs somewhat from the data presented in the 2008 study. In the 2008 study 26 of the 41 approved applications dedicated 100% of the conserved water to the state, with only five of the remaining 15 applicants dedicating the minimum amount. This trend shows the development of the program over time. Where previously, the program was used almost entirely to conserve water in the Deschutes basin, you see that it is now being used much more as a tool for water users to expand on their

rights.

I was surprised when I found out that for the first half of the program the majority of users were dedicating all or part of their conserved water to the state. This may have been a result of having intermediaries arrange these projects, but that seems highly inefficient. It would seem that water users acting on their own would generate much more participation than having interest groups find likely targets. I believe this is what is being reflected in the data from the second half of the program. While it is true that more than half of the applicants still dedicated 100% of their water to the state, the ratio is down over 10%. Furthermore, of the applicants who decided not to dedicate all of their conserved water to the state the ratio of applicants dedicating the minimum 25% is up from 33% to 79%. The quantities being kept by the individual are up also. Before 2008, most of the water that was being kept by the individual was small amounts (>1 CFS), but it appears that the amount of water being kept by individuals is going up. This is a good thing, as higher quantities of water kept by the individual mean higher quantities kept by the state.

The applicants who have kept the majority of the water conserved, and the quantity has been larger than 1 CFS, have a trend in the data. Many of the applications that fit that criteria are back to back with each other and in the same county. Or, they appear in clusters within the same couple year span. This makes sense, as applicants are realizing the ability to expand on their water rights through this program. This trend probably reflects an individual who owns multiple rights, or neighbors who learn about this program through one another. I believe this is where the future of the program is headed. A program much more centered around

individuals applying with the intention of expanding their right, rather than individuals, or organizations looking to dedicate water to the state.

The future of the program looks optimistic. While the total number of applications is about the same (54 in 12 years, and 48 in 10 years), the total amount of water conserved has gone up. There has been more participation from individuals who own large water rights, as well as the continued participation from irrigation districts, and individuals with small rights intending to dedicate 100% of their conserved water.

Policy Implications

I believe the policy implications of this program are large. While the future of the ACWP is looking better, there are still major issues and concerns that I have with the program. My biggest concern is still the lack of participation. In the 10 years since the Aylward study there has been no significant rise in participation of the program. If the state of Oregon is really concerned with conserving water, and this program is the main tool the state wants to use, then they will need to increase participation. In the 22-year history of the program there has only been 103 applications. Seventeen of those 103 applications have been withdrawn or denied, so the number of approved and pending applications is only 86. These 86 divided by the 22 years since it began equals less than four applications a year approved. Without participation from irrigation districts 75-100 CFS would be gone. That is close to half of the conserved water gone, in just four applications. This is clearly a problem and shows the current weaknesses of the program.

Moving forward I believe there needs to be much more emphasis on the expansion of the program. Speaking with Teri Hranac who is the director of the ACWP and Becky Williams who is head of the Water Resources Department Budget and Grant Director I found that there is no set budget for the ACWP. If the program is to succeed long term, and really make a difference in conserving water for future consumptive use, or instream use, then the ACWP needs to be a budgeted program. I believe Oregon can draw from other states like Washington or Montana. Both Washington and Montana have defined yearly budgets, and with those budgets they are able to target specific watersheds. In Washington there is a budget for leasing instream water rights, and in Montana there is a budget for purchasing conserved water to be used as an instream right. In Oregon a budget is only made available after the application process is in its latter stages. This may discourage individuals from wanting to participate, because of the up-front capital costs.

Another thing that I believe the program can improve upon in regards to expansion is marketing. Clearly there is some sort of disconnect between individuals and information on the ACWP. It may benefit the state by marketing this program to individuals in an attempt to increase participation. Water rights are already very niche and not well known, but those who own the rights are probably well informed. Specifically targeting those people may result in an uptick of participation.

The last thing that could be done would be to change or scrap the program entirely. If the state is happy with the conservation that they have created, then no change is needed, but I would say from a numbers standpoint alone there is a problem. Looking at the intended goals

of the program, I cannot say that I am satisfied. The state is doing this at the least cost to themselves, because there is no established budget for the program, but I am not sure if the state is effectively conserving water. It is difficult to achieve results to be proud of without an operating budget, yet if the state creates a budget it automatically assumes costs.

I believe the state statutes must be changed because these policy objectives oppose each other. Currently the most effective conservation tool the state has is based on a statute that is written to contradict itself. I believe that the data from the 2008 study, along with the data from this study illustrate the shortcomings of the current program. My advice to the state legislature moving forward is to come at the problem in a different way. From the design of the program it would appear that state legislature intended on creating an incentive based program for individuals to gain additional water rights, while simultaneously designating some of the rights to the state for future or instream use. That is not how the program has worked out, and believing that things will change after 20 plus years of the same is ignoring the facts. Data shows that the program has not taken off as intended, and without changes to the program it is likely that the future will be no different.

Conclusion

My data collection confirmed that the data in the 2008 study was accurate, and tracked how the program has changed. Unfortunately, the program has not changed much since then, and as another 10 years have passed, the results are about the same. Every year there is an average of 10 CFS of water conserved, on about four approved applications each year. The

reason why 10 CFS is conserved annually is because every few years an irrigation district will donate 30 CFS or more. This has provided the program with most of its results.

To gather my data, I looked through every application under the WRD Water Rights Information Query. In the query there is a CW option, which shows all submitted applications to the Conserved Water Program. I recorded the location of the proposed project, application by application, along with the quantity of water conserved for both the state and the individual, and also the percent dedicated to the state and individual. This created a list of quantities, and locations. From that list I was able to determine trends in the data such as which locations received the most applications and where the water being conserved was from. Comparing that information with the 2008 study was helpful because I was able to confirm the validity of the 2008 study with my own data and feel confident about the information I had gathered.

In the future I think it would be helpful to track what is happening with the state's portion of the water after it is donated. By this I mean, is the state dedicating water to instream use, or is the state reallocating that water to users whose demands are not being met. From a traditional conservationist perspective this is really what is of concern. If the state is reallocating the water to other users, then there are no instream rights that are being protected. This would result in the same over allocation of streams; however if the state has dedicated the rights that they receive to instream use then they are creating more consistent stream flows, which have value.

Another thing that I would like to determine and that I am really interested in is what the individual is doing with the water that they keep. For the individuals who are keeping a

portion of their conserved water I would like to know about the usage. I then would like to compare that use to the cost of the project, and see how the cost of the project compares to the use of the water. When I imagine this program at its best, I imagine a program that incentivizes water users to reduce waste through improved irrigation, transportation, and application techniques. Then, some of that reduced waste is used to produce more commodities. I would think that the increased production of commodities would outweigh the costs of the project, thus incentivizing individuals to participate all while the state receives a portion of the conserved water. To me, this is the ideal version of the program, and I would like to see if that is actually the case for the individuals who decided to keep a portion of their water right. I believe if that were to be proven true, then the state would have an extremely successful program.

Overall I am satisfied with my project, although I know that there is much more that can be done. Answering some of the above questions are what really interest me, because of the economics involved. Proving that participation in a program would result in increased economic gains, while simultaneously creating water for instream use would be a major breakthrough in conservationism, and could potentially change the way water conservation in the western US occurs. However, I am not sure that it would even be possible to prove that, simply because data collection would be too difficult. Regardless, I believe my data provided some good results, and pointed out flaws in the ACWP. Hopefully moving forward the state can learn from those flaws, and adjust the program as needed.

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