

Whitworth Well Research Partnership Report  
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HN 300H: Seminar II - Community Project  
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## Whitworth Water Well Project Proposal

Whitworth University currently sources its water supply via two water wells located on campus, one built in 1941 and the other more recently in 1986. The 1941 well's design makes it vulnerable to contamination and, subsequently, puts the water quality at risk, and because of this, the 1986 well supplies water to all of the main campus. The University has an agreement with Whitworth Water District that allows the District to provide emergency water through interties if the 1986 well was inoperable. The university would subsequently be billed for any water usage by Whitworth Water District while the 1986 well underwent necessary repairs. It is unclear whether or not this is the most practical and cost-efficient contingency arrangement (i.e. using the interties and possibly the 1941 well as an emergency backup). Additionally, research must commence to investigate whether the university should continue utilizing its own water source or become a customer of Whitworth Water District.

Our project will analyze the benefits, costs, and consequences of becoming a customer of Whitworth Water District. One concern will be fully investigating the implications of Whitworth forfeiting or possibly selling water rights to the utility. We will research the financial and legal consequences of transferring these water rights through conversations with Whitworth Water District and Whitworth University. We will hope to uncover the explicit benefits of forfeiting water rights as well. We believe that this research is the first step in understanding if becoming a customer of Whitworth Water District is beneficial for the university. Secondly, we will consider the costs of Whitworth becoming a customer of Whitworth Water District. By the end of the Fall 2018 Semester, we hope to present our community partner, Chris Eichorst, Assistant Vice President of Facilities Services, with the following accomplishments:

- A written analysis of Whitworth Water District's requirements for Whitworth University to become a customer, that answers the following questions:
  - What happens to the university's water rights?
  - Is it possible for Whitworth Water District assume the maintenance and operation of Whitworth University's existing wells without forfeiture of water rights?
  - What are the financial and legal ramifications of becoming a customer of Whitworth Water District?
- A written explanation of the process that Whitworth University would have to complete in order to become a customer of Whitworth Water District.
- A calculation of the university's annual operational costs of being a Whitworth Water District customer.

## The Project-Based Research Cycle

Whitworth University has two wells located on campus. One, built in 1941, has been made vulnerable to contamination due to its degrading structure, so the university has designated this well for emergency-use only. The second well, built in 1986, is currently the university's only source of water. However, the university has an agreement with Whitworth Water District to provide limited amounts of emergency water through interties if the Well #2 becomes inoperable. As Whitworth continues to grow, the demand for more water increases. Chris Eichorst, Assistant Vice President of Facilities Services, brought this problem to our research team. Our project's ultimate goal is to explore the different options available to the university to address these issues. These include whether or not Whitworth should undertake the financial costs of replacing or repairing the 1941 well, continuing to be self-sufficient, and if the university should become a customer of Whitworth Water District. Therefore, the problem has already been diagnosed. As a research team, we have taken it upon ourselves to prescribe this diagnosis. However, this is an extensive research process, and we are fully aware that we will not be able to present a full cost-benefit report. That being said, we decided to approach a specific part of the overall question. We will be researching what it looks like to become a customer of Whitworth Water District—what are the legal and financial ramifications? What does the actual process of becoming a customer entail? What happens to the university's water rights? With this research, future research teams and community partners will be able to build off this foundational information, continuing with questions on the cost of replacing the well and continuing to be a self-sufficient water source. Even though our research project is only set in the prescribing phased of the Project-Based Research Cycle, extensive research will take place in that we will be asking questions, designing our own research methods, collecting data, and then analyzing the data we gather from our questions to Whitworth Water District. We are prescribing only one aspect of the future plan of action, which will enable future teams to design a final method that will lead to the ultimate conclusion on what Whitworth should do about their water situation.

## Statement of Community Partner's Context

As Assistant Vice President and Director of Facilities Services, Chris Eichorst is the highest position in the Facilities department—a leadership position that carries with it a fair amount of prestige, responsibility and authority. Eichorst is an employee of Whitworth University which is directed by the University President, the Board of Directors, and the student body. With the Facilities Department offices located on campus, Facilities plays an essential role in the university's maintenance and daily activities. From water sourcing to plumbing to basic work orders, they accomplish it all and are here to ensure the safety and well-being of those living and working on campus. The majority of the student body has limited relations with Facilities and nearly no democratic control over its operations, classifying the department on the outer rims of the Whitworth community. Regardless, Eichorst holds a vested interest in ensuring a high standard of living for the community. Likewise, Whitworth students and faculty most certainly trust Facilities to apply their resources and expertise to fixing any problems and continuing the upkeep of the university. It can also be said that Whitworth students, especially because they pay tuition, hold a certain expectation of Facilities, mainly that they will provide necessary amenities to make Whitworth campus an inhabitable space.

Eichorst is clearly an educated individual, and his intelligence and management skills have been noticed, so much so that he has been made Director of Facilities. His engineering and analytical perspective allows him to understand the work that he directs on a regular basis. His wealth of resources not only aid him in his day-to-day duties but also in the research of the Whitworth water situation. Because of his expertise and resources, Eichorst most certainly holds the power in the relationship between community partner and research team. This is the research team's introduction to the workings of water wells and all their various contributing factors, which leads the research team to be relatively unknowledgeable on the subject. Along with that, Facilities has access to engineers and companies that would be able to give Eichorst an estimate and analysis of the well situation in a more efficient timeline. For that reason, Eichorst holds the advantage.

Yet, Facilities Services does have a limited budget that is controlled by the Board of Directors and the Business Office. A few years ago, Eichorst hired a company to give a rough estimate on what the project to repair, or replace, the 1941 well would cost, and even with those numbers, he still faces a major problem in funding. As of right now, this water, and well, problem is not at the top of the university's list to address. Thus far, the system in place has been proving itself efficient, so the university has decided to direct funding elsewhere. However, one thing the research team may be able to contribute is our voice as students. Currently, Facilities' lack of meaningful connections to the student body hinders their ability to be responsive to student needs and desires. As tuition-paying individuals, we do hold power in the sense that we can demand for a better system in place. If the research concludes one way is better than the other, we, as students, have the power to make those in charge of funding aware of the situation. There is a real possibility that our findings may convince the university to address this problem.

Although our knowledge on water issues and well engineering may be lacking in some regards, Eichorst recognizes that we bring this unique advantage to the project. Eichorst could have gone forth figuring out this problem by himself with a team of hired professionals; however, he recognizes this as an opportunity to engage the student body in an aspect of campus life that sometimes goes unaddressed. Also, this is also an excellent opportunity to grow in

appreciation for a new type of knowledge and challenging our mindsets. In a similar fashion, because the research team and Eichorst bring different knowledge and resources to the project, all participants must have humility to enter the project as an equal partner and recognize that we are forging long-term relationships, seeing as this project will most likely continue throughout the semesters to come. Eichorst has engaged in synergistic tendencies by consistently offering honest feedback and offering his own wisdom and knowledge to the research team. In the future, students could be organized into a group that could effectively advocate for themselves and somehow advise the Facilities department's operations, utilizing the relationship between the department and student body to ensure decisions involve all aspects of Whitworth University.

Even though this project could be easily dismissed and set aside, Eichorst recognizes this as a potential problem for Whitworth. The problem of the 1941 well has been present since the early 2000's and solving the problem has likely been an issue that Facilities has sought to address for some time. He understands that the campus is growing and will consume more water in the near future, and he does not want the water wells to become an issue that hinders campus life. With the expansion of campus and the increase of incoming students, Whitworth is entering a new chapter of its story, and Eichorst wants to provide this next chapter with a reliable source of water. Ultimately, he desires to be a good steward of the university's finances and water, and does not want this issue to be a burden. It is evident from his discussion of the project that he is passionate about individuals being engaged with and proud of the university they attend.

## Project Proposal Research Findings

A written analysis of Whitworth Water District's requirements for Whitworth University to become a customer, that answers the following questions:

### **What happens to the university's water rights?**

The University's water rights could be sold to the Whitworth Water District assuming the University would want the District to assume maintenance costs. The value of the water right is determined by the acre ft/ yr and the age of the right.

### **Is it possible for Whitworth Water District assume the maintenance and operation of Whitworth University's existing wells without forfeiture of water rights?**

No, Whitworth could become a master metered customer or a direct customer. If Whitworth University were to become a master meter customer Whitworth Water District would not purchase Whitworth University's water right and would assume no control over the maintenance or operation of Whitworth's wells and hydro-infrastructure. If Whitworth University were to become a direct customer Whitworth Water District would assume full control over all hydro-infrastructure maintenance and operations. However, Whitworth Water District would need to update existing infrastructure according to their standards at a cost burden to the University.

### **What are the financial and legal ramifications of becoming a customer of Whitworth Water District?**

At this stage, the exact financial ramifications of becoming a Whitworth Water District customer is unknown. This is because the monetary value of our water right and existing well technology is unknown, though WWD gave us a ballpark estimation of \$750,000 to \$1,000,000 as the value of our water rights. The cost of updating Whitworth's infrastructure under the direct customer model is also unknown.

The legal ramifications of becoming a WWD customer would be lasting. Any sale of WU's water right should be understood to be legally indefinite. WU would become dependent on the District's water rights if it elected to sell our existing right. However, it should be understood that WWD usually keeps customers indefinitely so this agreement would not be abnormal.

### **A written explanation of the process that Whitworth University would have to complete in order to become a customer of Whitworth Water District.**

To become a customer of WWD, Whitworth would want to have a complete understanding of the value of our assets and the necessary costs of upgrading infrastructure. Procedure can be followed regardless of whether WU wants to become a direct customer or a master metered customer. The first step in this is to have an engineer from WWD come to WU to evaluate our wells. Following this, Whitworth would need to make an agreement with WWD to inspect the

quality of WU's existing infrastructure. At this stage, the University should have specific knowledge regarding the value of water rights to the Rathdrum Aquifer that are comparable to Whitworths in order to establish how much our rights are worth. Similarly, the university should have an idea of the value of Well #2. Following the assessment of assets and costs, WU would need to enter into contract negotiations with WWD that would regarding the sale of water Rights, well technology, updating infrastructure, and acre ft/yr rate.

### **A calculation of the university's annual operational costs of being a Whitworth Water District customer.**

Assuming the University were to become a direct customer of the District, Whitworth University has two assets that make it a tremendously attractive customer to the Whitworth Water District. Whitworth University's first asset is its a mature water right of (unit rate), qualified by the Water District as potentially "highly lucrative." Whitworth University also has the asset of its modern well infrastructure. The capacity of the well to pump water above Whitworth University's usage but below the allowable (unit rate) dictated by Whitworth University's water right is an asset that could be marketed to the District as a resource to their other clients. These assets are yet to be formally appraised but should be used as powerful means of bargaining in any contractual negotiations with the District. These assets must be weighed against the cost of updating Whitworth's hydro-infrastructure to the Water District's standards and, the net cost rate increase of the District's (master meter unit) charge versus the University's existing water related energy and maintenance costs.

Assuming the University were to become a master meter customer of the District, annual maintenance costs would likely decrease as no money would need to be spent to related to powering or maintaining the University's well. Operational costs would increase because Whitworth would be charged the (unit rate) of the Water District.

### **Our Recommendations:**

We recommend that Whitworth University move forward on negotiations to have both wells evaluated by a third party to determine their ability to output water above current necessitated levels but below the acre foot per year rate allowed by the Water Right. This evaluation will help the University determine the full value of its wells and water right. Additionally, as subsequent step, we recommend Whitworth negotiate to have its existing hydro-infrastructure against the District's standards. This evaluation will help the University determine the greatest cost to becoming a direct customer. As a democratically accountable organization, Whitworth Water District should be understood as a reliable and accessible water service provider, as additionally attested to by our contacts with Mead School District.

We also recommend against Whitworth becoming a Master Metered customer because it would make our well asset largely dormant and place an unnecessary cost burden on the university.



We recommend that future students pursuing this project research confer with Chris regarding alternative options for Whitworth University's water usage, as well as consulting Further Inquiries under Sustainability Statement for possible research questions. If the University decides to become a direct customer of WWD, then an engineering assessment must take place. Upon evaluation, the University's infrastructure may need to be updated, which would involve reconstruction of the current water network. Therefore, it would be a few years until this new system would be in place, at the very least. With that, if water usage is a concern for Chris, it may be beneficial for future students to research campus' water usage. These questions would surround water policy, conservation efforts (including looking at other universities' water conservation efforts to gain insight), and getting the student body involved in surveys and activism. Encouraging the student body to be involved in this way would be largely beneficial to Chris in that it adds strength to his voice. It also allows future research groups to experience more community-based research in terms of social issues and questions, learning how to conduct research and collect data from the community rather than a cost-benefit analysis. Chris recognizes that the continual growth of the University may prove a problem in the future in terms of water reserves, so instead of dealing with the problem later, it may be extremely beneficial to be proactive and address the problem before it occurs. Being pragmatic in this regard would involve water conservation efforts and the establishment of a water policy. This way, future research groups could experience the role of activism in the realm of community engagement and change, and they would be tasked with encouraging the student body to invest and be conscious about their water usage. By doing so, this will provide the student voice and engagement that Chris seems to desire, partnering students with Facilities as they make Whitworth a viable place to not only learn but also live.

## Sustainability Statement

### **Introduction:**

At the start of the semester, the research group faced the extensive issue of Whitworth University's water situation. Based on the proposal provided by Chris Eichorst, Director of Facilities, the University has two water wells, one built in 1941 and the other, more recently, in 1986. The older of the two wells is currently compromised by contamination and serves only in emergencies. Therefore, the newer well is the sole source of water on campus. Although it provides the University with all of its water needs as of right now, this is not a long-term solution, especially if the University continues to grow and more water will be required. With this at the heart of the issue, Chris tasked the research group with deciphering what the next steps for Whitworth should be regarding this problem—is it repairing the well built in 1941 and continuing to be self-sufficient in the University's water usage? Or does Whitworth become a customer of Whitworth Water District (WWD)? Or is there a possible other third solution? The team ended our semester still in the prescribing stage of the Research Cycle proposed by Randy Stoecker in *Research Methods for Community Change*, having gathered preliminary research and data, yet questions still remain.

### **Background Information:**

The university has one well performing well, Well #2, that supplies the entirety of its water needs. It has two small emergency interties with the water district, capable of operating for emergency use only, and one all but defunct well, Well #1, which is characterized by the danger of contamination in the event of environmental problems like flooding, though it is currently safe for use during emergencies. Despite this, regularly scheduled water quality testing has concluded that Whitworth's water supply is nearly pristine, and problems with quality are unlikely. Well #2 is used at approximately 330 acre feet per year to service the entire University. Whitworth is able to do this because it holds two "water rights." Water is viewed as common property but can be claimed by private persons. Whitworth's initial water right from 1941 allows for approximately 180 acre feet per year while the newer 1980s water right allows for approximately 750 acre feet per year. Both of these water rights come from the Rathdrum Aquifer. Water rights help show the maximum amount of water Whitworth could use from its existing allotments, which should be regarded as an asset. The value of water rights is determined both by their size and their age. Older water rights are more valuable because when adjudicating competitive rights, the older right always wins. However, the selling of water rights should be understood to be permanent and would have long lasting implications for the University.

### **Our Work:**

The team was tasked with researching the option of becoming a customer of the Whitworth Water District, a publicly owned water utility company. The water district has, per a preliminary call to Mead School District, a history of successfully providing water to its customers with no record of customer relation problems.

The management of the Whitworth Water District, with whom our team has met, has given us two options in regards to becoming a customer. It is very important to note the following three items. First, these options will shift the University's costs from paying for electricity to run the well and for facility maintenance to paying for water per unit volume, as well as for some degree of facility maintenance. Second, per Chris' discussion with our team, these options may involve the University selling its water rights and both wells. Third, it has also been noted by the water district that Whitworth's network is old, and to some extent remains unstandardized, with many years of different pipe being laid down around campus. While this does not represent a problem in water quality, it may lead to water waste through leaks. Chris acknowledges this probability but notes that leaks are a theoretical issue, not necessarily a real or particularly significant one, as there is not yet any credible evidence of leaks.

With this, the first option is for the water district to install several large-scale interties between their pipe network and Whitworth's, known as a Master Meter agreement. This will allow the University to commercially access water from the district. This is the easiest option to implement available to both the University and to the water district. Whitworth would continue to maintain most of its own infrastructure, minus the cost of the well, while paying for water from the district. This option will involve minimal construction, seeing as the only changes needed include the construction of the additional interties.

The second option involves the university giving full responsibility of its infrastructure to the water district, allowing the district to assume all maintenance costs of water sourcing to individual water meters placed on university structures; however, the University is still responsible for internal plumbing. This is a much riskier and costlier proposition, as the water district would most likely require the University replace their pipe network in order to standardize it with their systems. In effect, the entirety of Whitworth's water network would be removed and replaced by the district's specifications. This proposition would, however eliminate the possibility of water waste and may significantly reduce the maintenance costs of the University.

#### **Further Inquiries:**

- Is there any way to reduce water cost by limiting usage?
- What interuniversity politics are involved with limiting water usage?
- Will reduced water use in irrigation have a negative impact on student applications?

#### **Recommendations for Future Researchers:**

Being the first generation of researchers on this project, our biggest challenge was getting in contact with the water district, as we had to establish communication through Professor Jean Pond, an adjunct biology professor at the university. Since contact has been made, however, future teams will be able to communicate directly with the water district and will have a much easier time getting research questions answered in a timely manner. Many questions, though

simple on paper, are in reality very hard to answer, especially questions relating to project costs. In order to compensate for this, it is necessary to contact people as early as possible in order to leave time to exchange information and documentation needed for questions to be addressed.

Because this research group was the first on this project, there was a steep learning curve, especially in regards to which questions we needed to be asking and how to even understand the infrastructure and water system on campus. An important first step is asking Chris any questions in order to have a complete understanding of the water system and the problem, especially if students do not have an engineering or science background. With that, it is essential to communicate with Chris, who is very accessible via email (ceichorst@whitworth.edu), and he made himself available to the research team for various meetings. Our research team communicated through email and stored our numerous documents on a Google Drive folder. We also met multiple times to work on consolidating all the documents that had accumulated over the course of the semester. In regards to all the files that Chris sent us, those can be located in a Google Drive folder found at the URL below.

At this point, Tim Murrell (General Manager) and Matt Wright (District Superintendent) have served as secondary partners, especially as we broach questions regarding Whitworth becoming a customer of the water district. We have communicated with them through email, and future students may directly reach Tim at tim@whitworthwater.com. Both Tim and Matt were more than accommodating to work with our availability and schedule meetings with us. In our meetings with the water district, they were open to any questions, and while some of their answers would be vague, that was understandable due to the preliminary nature of our project. To give us the concrete answers and costs we were initially seeking, they would have to provide a full-scale investigation, and we were not at that point of this project or partnership. With that, they recognized the advantageous nature a relationship with Whitworth could entail, and therefore, were greatly interested and invested in moving forth with this project. They saw it as lucrative to their water district, especially in the possibility of Whitworth's pre-existing water to provide auxiliary water to their needs. With that, it is important to recognize that the water district sees this as an advantageous relationship, so in the future, Whitworth University may use that to their benefit when in negotiations about pricing and contracts.

The following documents can be found in a Drive folder accessible at

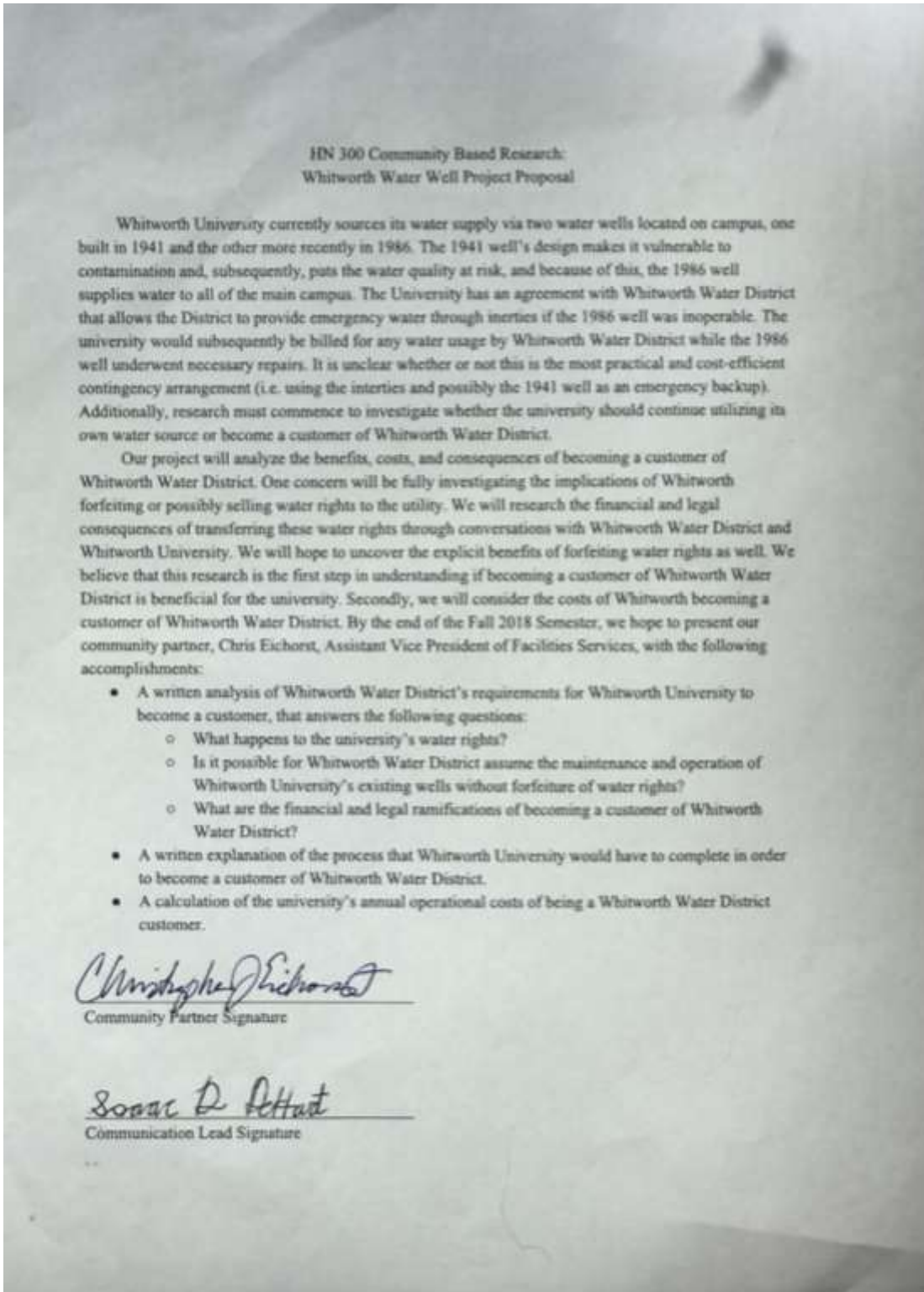
[https://drive.google.com/drive/folders/1S9GXgKXsudcewY81si-SiJ\\_5e\\_RW6bwa?usp=sharing](https://drive.google.com/drive/folders/1S9GXgKXsudcewY81si-SiJ_5e_RW6bwa?usp=sharing):

- Adams and Clark Well Feasibility Study
- Booster Pump Pack as Built and Cut
- CH2MHill Well 1 Evaluation 2003
- Copy of Current and Historic Water Rights
- H13029 Report from Budinger and Associates
- Map of WU Water Infrastructure
- Superseding Certificate of Water Right (9-20-2015)
- Superseding Certificate of Water Right (18 June 2015)

Water Quality - H13029 Report from Budinger and Associates  
Water Sub Meter Readings  
Well Water Usage 2009 - 2014, 2018  
Well Water Usage 2009 - 2014  
Well Water Usage FY 2013  
Whitworth University Amendment to Interlocal Agreement (10 July 2014)  
Whitworth University Amendment to Interlocal Agreement (Signed 7 April 2015)

## Miscellaneous Notes

Project Proposal Signed by Chris Eichorst and Isaac DeHart



#### Questions for Mead School District:

- How long has Mead school district been in relationship with the water district?
- How did Mead school district become a customer of Whitworth Water District?
- What was your first step?
- How is your fee to the district determined?
- What operational costs are covered by Whitworth Water District?
- What maintenance work are you still responsible for as a district?
- Did Mead have to sell water rights to become a customer? For how much?
- Has it been easy to work with the district? How have they made it easy/hard to work with them?
- Do you have any recommendations/ any advice for potential customers given what you know now?

#### Results from Mead Conversation:

In a brief phone discussion with the Facilities and Planning Executive Director at Mead School District, Ned Wendle, our team was informed that Mead has had a long, successful relationship with the Whitworth Water District. Mead has about 19 facilities, supplied with water from multiple sources. Of these, He mentioned that many of the older ones are supplied with water by the Whitworth Water District. When asked, he noted that there have been no instances of unsatisfactory practices on the part of the water district.

#### Questions for Jean Pond with accompanying notes:

- What is your role with Whitworth Water district?
- How does the university become a customer of Whitworth Water District? What would be the first step to becoming a customer?
- What operations would be covered by Whitworth Water District? And what operations would remain under the university's jurisdiction?
  - Matters of negotiation-- utilities, etc.?
- Is there a certain project manager (person at the District) that Whitworth would have access to for future questions?
  - yes
- Is it possible for Whitworth Water District to assume the maintenance and operation of Whitworth University's existing wells without forfeiture of water rights?
- Could Whitworth sell water rights to the District and for how much?
- What are the financial and legal ramifications of becoming a customer of Whitworth Water District?
  - What are some of the costs? Is there first-time service fees? Operational fees?
  - Will the cost change in accordance to water usage? Or is it a flat rate?
- What happens if the university expands? How will Whitworth Water District accommodate the university's growth?
- What is the Water district's ability to adjust water usage & price rates in the future?





Notes from meeting with Jean Pond:

WWD--one of the two major suppliers for water in Spokane  
-has general manager, 5 member board of commissioners and public elections, 6 year terms, meet twice a month (first and third Thursdays and public meeting)  
Tim Murrell- general manager  
On call 24/7  
Thursday- meeting starts at 4, time for public comment  
Person doing testing needs to be certified

*9.5.2018*

Ask why the partner cares about the subject

Project proposal:

Here's the problem we're going to solve. Here's how we'll solve it.

Is well 1 water good?

Does the utility do a better job of running things?

What's the cost of maintenance?

Is our water of better quality better now than utility water?

Cost component: new monitoring system

Can we get a consultation to determine how much it costs to integrate with the

*9.11.2018*

Selling water rights: one-time payment for water rights

Quantitative analysis labor wise of project

*9.19.2018*

Does the Whitworth Water District have public meetings?

- Who's the biggest corporate partner
- We can investigate how satisfied with them the clients are
- What is the water district's range?

Begin Researching Annual costs estimates

10.10.2018

- Research water situation in southern California

Facilities and planning executive director  
Ned Wendle  
5094657657

Maintenance and operations director  
Travis Bown  
5094656138

General?  
(509) 465-6000

Notes from Mead

Good relationship

19 facilities older ones work with Whitworth water district.

### **Meeting with Tim 10.30.2018**

#### *Full service*

How much will the district take care of in terms of maintenance

- Non-customer (infrastructure established)
- Taking over infrastructure would cost a lot for the university
- Might be worth it in the long run (due to water lost)

#### *Master meter*

Probably Whitworth would keep up maintenance

What do we get

- Clean source
- Electricity charge to “per gallon” charge
- Leaks are more expensive
- o Chris doesn’t think this is much of an issue

Recent records (draft of December study)

What would a master meter agreement look like between the university and WWD?

- How much are we using now
- How does that look like as ‘usage data’?

10.31.2018

Personal learning portfolio & peer review due Finals week

Does/should the university have a water policy

- Should the university irrigate less
- Should the grass be green?
- Watering the grass makes the trees fall down

Community research questions that start with students open policy, ethical questions that are hard to answer

Final meeting

- Peak hours
- Accommodation
- How much are we spending on maintenance? – compared with buying
- Transfer in lieu of fee

Two scenarios

- Full takeover of infrastructure
- Master meter
- **Email two superseding certificates of water rights to Tim**
- Water district wants to know why this is happening now
  - Can the well supply all of the water for the university (plus the district)

## Notes from Initial Meeting with Whitworth Water District

- data of water usage per day
- Recent Records
- priority dates

### HN 300 Community Based Research: Questions for Whitworth Water District

- What is your role with Whitworth Water district?
- How does the university become a customer of Whitworth Water District? What would be the first step to becoming a customer?
- What operations would be covered by Whitworth Water District? And what operations would remain under the university's jurisdiction?
  - Matters of negotiation-- utilities, etc.?
- Is there a certain project manager (person at the District) that Whitworth would have access to for future questions?
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  - What are some of the costs? Is there first-time service fees? Operational fees?
  - Will the cost change in accordance to water usage? Or is it a flat rate?
- What happens if the university expands? How will Whitworth Water District accommodate the university's growth?
- What is the Water district's ability to adjust water usage and price rates in the future?
- Who is your largest customer?

1) Tim - General Manager, Admin

Matt - Superintendent, coordination

2) Connection fees -  
→ developer ticket

↳ direct customer, entire infrastructure

↳ master meter - similar to what is in place

- would require  
upside

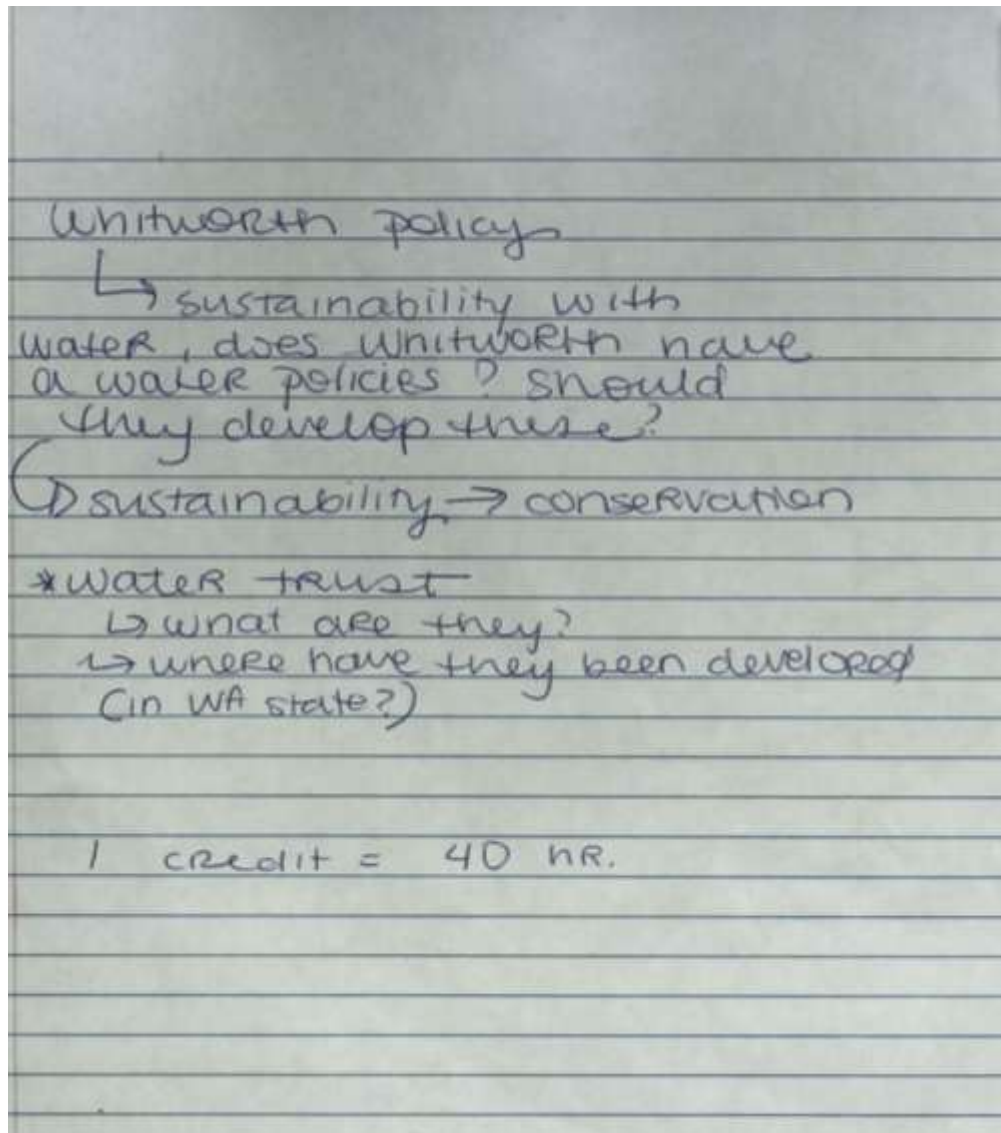
- exchange of water rights

Welsh Turner - engineer → look at system (at whitworth cost) - usually  
↳ to see what that looks like, provide specifications

WWD 11/28  
What is WU current maintenance cost instead of having  
a master meter.  
Reduction of existing rate could be negotiated  
Master meter & sell water right  
Withdrawal Water Right  
760 water right - 1987 Priority  
1,300 - 2,000 acre/ft for hl spo  
760 k ish water right  
150 acre/ft - 1941 → junior to 1987  
2 separate water rights 910 acre/ft/yr total  
Currently is 313 acre/ft/yr  
Comparable sales of water rights nearby  
Older right will have higher value  
Analysis of WU water infrastructure  
Value WU assets vs. WWD costs  
Both board approval, WU & WWD  
Agreements are perpetual, WU would be a customer forever  
WWD concerned w/ if an asset has longevity  
Engineer running hydrologic analysis  
Upgrading WU infrastructure costs money  
Leads cost more w/ volume cost v electricity costs  
by WWD would require WU infrastructure

Bottom  
fragment  
Water System Plan

Notes regarding ideas for future research teams



## Annotated Bibliography

“Amendment to Interlocal Agreement for Emergency Water Service.” Board of Commissioners of Whitworth Water District No. 2. Spokane, WA, 2014.

This document establishes the extent of Whitworth’s permissions to use Well #S01 and its permissions to use water from the Whitworth Water District. It notes that if Well #S01 is abandoned and not replaced, the university will become a customer of Whitworth Water District. It similarly notes that if the university’s intertie meter between themselves and the water district shows 180 continuous days of non-emergency use, the same thing will happen. The university similarly agrees that they must notify the water district before using the intertie during water facility maintenance. The university also assumes the responsibility of maintaining the intertie except for the meter, and that no use of the water district’s water will be used unless metered.

Boyer, John. “Recent grounds improvements should save Whitworth \$\$.” *The Whitworthian*. (Spokane, WA), Sep. 22, 1986. <https://digitalcommons.whitworth.edu/whitworthian/85>

John Boyer’s article showcases the recent improvements Whitworth University underwent during the summer of 1986. Improvements included the insulation of campus steamlines and the drilling of a new well. Previously, the university relied solely on the well dug in 1941, which supplied 700 gallons of water per minute. This was inadequate at times, seeing as if grounds were being irrigated at peak dorms times then the water pressure in the dorms would decrease. This new well supplies campus with 1500 gallons per minute. The article also claims that the additional water supply has reduced fire insurance rates because the university can now use surplus of water in case of a fire. This article provides a historical context of the wells on campus. It also prompts questions, such as has the well’s gallons per minute rates decreased since 1986? Would our fire insurance rate undergo a decrease, or increase, like it did in 1986? Although it does not provide direct information in regards to the research being conducted, it is beneficial in the questions that were raised when reading the article. It reminds researchers to be asking these same question of Whitworth Water District and the university.

Camkin, Jeff, and Susana Neto. "Roles, rights, and responsibilities in water governance: reframing the water governance debate." *World Affairs* 179, no. 3 (2016): 82+. *U.S. History in Context* (accessed October 10, 2018). <http://link.galegroup.com/apps/doc/A492222657/UHIC?u=spok87023&sid=UHIC&xid=563e6e33>.

In this piece, Jeff Camkin and Susana Neto emphasize the critical nature of improving water governance in order to address, solve, and avoid current and future water challenges. The authors argue that discussions surrounding water governance are often unbalanced, focusing solely on the rights of larger corporations and neglecting the needs and rights of individual participants. It is important to recognize all the parties involved and to encourage parties to support one another as they pursue water governance. To researchers and Chris Eichorst, it is easy to see Whitworth’s water situation as a closed scenario—a situation that only the University should be concerned about. However, this

article allows individuals to contextualize Whitworth’s circumstance and recognize that the University’s water dialogue is part of a much bigger conversation happening across the nation. Along with that, the themes of intergenerational responsibility presented by Camkin and Neto reiterate much of Chris’s own reasoning behind making this project a priority. As the authors state, “This shared responsibility can and should be the rallying point around which we gather to improve water decisions at all scales, from local streams to national policies and global agreements.

Dingfield, Jim. “Whitworth College Well #S01 Evaluation.” CH2MHill, 2003.

This document evaluates the university’s ability to upgrade Well #S01. It notes that the Department of Health (DOH) concerns that the does not meet regulations in the following ways: Well #S01 “has no impervious surface seal in the upper 20 feet of the well” to protect against potentially tainted runoff from the surface. The well is located 8 feet under the surface, further increasing the risk of ground and surface water intrusion if the pressure tank failed. Gravity sanitary sewer pipelines pass through the 100-foot radius sanitary control area surrounding the well. Other issues are mentioned but not described in depth. The document describes Well #S01 in detail and notes that it may have been developed as early as the 1920’s or earlier, evidenced by materials used in the construction of the well. The well is reported to be in decent shape, but minor root intrusions have been noted. Four potential paths Whitworth can take are noted as follows in order of increasing cost: First, the university may request a DOH waiver for the well. The waiver may potentially note that the well is of acceptable quality after up to 88 years of use, and that regional flooding is not a reasonable concern. This option requires the elimination of the nearby sewage lines and maintenance done on Well #S01. Second is partial rehabilitation of Well #S01, meeting regulatory requirements only. Third is extensive rehabilitation of Well #S01, meeting regulatory requirements and upgrading the well’s technology. Fourth is decommissioning Well #S01 and replacing it. The document concludes with an annotated letter from the Washington DOH.

“Funding Sources.” Whitworth University. Accessed October 9, 2018.

<https://www.whitworth.edu/cms/administration/facilities-services/funding-sources/>

Located under Facilities on the Whitworth website, the “Funding Sources” webpage details where Facilities Services receives their funding. Although Christ Eichorst is fully aware of the funding his department receives, this information is helpful to the research team. It provides an overview of the funding allocated for Facilities projects that is accessible and understandable to the general public. Regardless of what Facilities decides to pursue—become a customer of Whitworth Water District or repair the unusable 1941 well—it is important to recognize that this project is a massive undertaking, and will require a large financial sum. This information reveals that funding comes through different avenues: Departmental Funding, O&M Funding, Stewardship Funding, UIF Funding, Repair & Replacement Funds, Bond Funds, and Gifts. Through the research process, researchers must consider where and how their project may be funded, and if



they can be funded. Therefore, this site provides helpful information regarding why type of funding is necessary and how the project must be officially requested.

Getzler, Joshua. *A History of Water Rights at Common Law*. Oxford: Oxford University Press, 2006. Oxford Scholarship Online, 2010. Doi: 10.1093/acprof:oso/9780199207602.001.0001.

In *A History of Water Rights at Common Law*, Joshua Getzler provides a historical narrative of water rights. It describes how courts and individuals created rights for landowners and users to appropriate water villages, factories, drainage, and transportation, chronicling the use and implementation of these rights from early times to the late nineteenth century. This narrative may not provide useful information in regards to aiding the decision between becoming a customer of Whitworth Water District or repairing the 1941 well, but it does provide a contextual understanding of water usage and water rights that may prove interesting. It also illustrates how common law of property and water changes over time, reminding individuals that the laws in place at the start of the university's water usage may not be the same as they are today. Likewise, they will change and evolve in the future, which may influence the decision made.

Guerra, Tony. "How Do Water Rights Relate to Real Estate Transactions?" SFGATE, accessed October 12, 2018. <https://homeguides.sfgate.com/water-rights-relate-real-estate-transactions-63690.html>

This source explains how many western states allow persons to sell water rights without selling their land. It also claims that riparian water rights cannot be sold separately from land; I am not sure if this means littoral water rights are the only type that can be sold. Later, the article seems to explain that is impossible to sell rights to the body of water that is adjacent to one's land but may be possible in the west to sell below surface water, which may include Whitworth's well. The article mentions that some states give automatic "absolute dominion" over all groundwater directly beneath the land, it is unclear if WA or more specifically WU have this privilege. This article was mostly helpful in our research by pointing out the chance that WU may not be able to sell its water rights and pushed me to further investigation.

Hurst, Haylee J. "Changing Course: Revisiting Instream Flow Rulemaking in Washington State Following *Swinomish V. Ecology*." *Washington Law Review* 90, no. 4 (December 2015): 1901–42. <https://librarysftp.whitworth.edu:2443/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=a9h&AN=112457194&site=ehost-live>.

This source is a detailed report of water rights legislation is the post *Swinomish v. Ecology* landscape. The supreme court ruled against Ecology claiming that they cannot allow new water rights that impair instream flows unless Ecology can prove "overriding considerations of the public interest." This article is of interest to this research due to its comments on the creation of a potential water trust. The paper makes the argument that WA's existing Trust Water Rights Program should be expanded to create a greater supply of water for public use. Beyond the immediate implications of the research, this paper

informs the reader that the State can purchase water rights from individuals for a plethora of reasons including conservation and public use. “Under the program, the State may acquire trust water rights from existing appropriators through voluntary transfers including donation, purchase, or lease.” Failing to actively use full water rights can result in loss of those water rights, which could be a problem for WU given that it does not use its full rights. However, this paper suggests that a farmer “who switches to a crop that requires less water can lease the extra water rights to the State to supplement low stream flows, rather than eventually losing the rights by abandonment or forfeiture.” Leasing extra water rights to Whitworth Water District, if possible, would give them water, give us money, but also allow us to retain the full amount of our water rights. “Trust water rights may be placed in ‘water banks,’ also known as ‘exchanges,’ where they can be used to supplement low stream flows or purchased by third parties to mitigate new uses of water.”<sup>c</sup>

Peone, Samantha. "North Side Water District to Build \$4.3M Facility." *Journal of Business* 33, no. 10 (May 10, 2018): 7.  
<https://librarysftp.whitworth.edu:2443/login?url=https://search.proquest.com/docview/2046744634?accountid=1149>.

Although the article is brief, it provides useful information in regards to Whitworth Water District No. 2's future plans. Currently located at 10828 N. Waikiki, Whitworth Water District has outgrown its 5,500-squarefoot office, which it has occupied for almost 50 years. Because of this, it will relocate to a new facility located in the Mead area. According to the article, it began construction in May 2018. The important aspect of this article is that the construction of the new administration and operations facility is costing \$4.3 million. This may influence the water district's desire to gain a new customer, especially one the size of Whitworth University. Along with that, although the article does not state the completion date of the construction, it is important for the university to consider if they want to begin a relationship with the district while it is undergoing these changes. The university and researchers may want to ask how this new location will impact the process of Whitworth University becoming a customer of Whitworth Water District.

Peters, R. Troy. "Washington Water Rights for Agricultural Produce," Washington State University Extension, published June 2009, accessed October 12, 2018.  
<http://irrigation.wsu.edu/Content/Fact-Sheets/FSWR001-WA-Water-Rights-v3.pdf>

This source goes in depth of the basics of water rights in Washington State. The section of interest is titled “Can I buy, sell, transfer, or modify water rights?” This section reiterates that water rights are inherently connected to a piece of owned land; however, the article details that it is possible to privately transfer a water right if one informs the Department of Ecology. It also gives six conditions that must be met to transfer a water right: “the water right being transferred is valid and legal water right; the water will be beneficially used; there is no impairment to existing water rights, including in-stream flows; it is not detrimental to the public interest; the instantaneous or annual amount of water used won't increase; and the water source won't change. To my knowledge, any

sale of WU water right to the Whitworth Water District would meet all of these criteria. I have the least amount of certainty that water usage wouldn't increase, and this article does not clarify whether that water usage cannot increase at all or simply cannot increase above the amount allowed in the water right. The article goes on to say that a local Water Conservancy Board, which I assume may be Whitworth Water District, is allowed to process an application for the forfeiture of water rights and submit it to the department of ecology. Because Whitworth Water District would be the customer, another procedure may need to be followed. The article also mentions the DoE purchases water rights when it may benefit fish, which seems irrelevant to this research. Further research is necessary to determine if the DoE purchases water rights for other reasons.

Sokol, Chad. "Washington Supreme Court water-rights ruling will affect building permits for rural property owners" last modified October 18, 2016.  
<http://www.spokesman.com/stories/2016/oct/18/washington-supreme-court-water-rights-ruling-will/>

This article described a divided WA Supreme Court decision that found evidence must be provided that enough water exists before creating new developments. This seems to have implications for Whitworth as it would imply that any future developments would be limited to the scope of WU's wells. If WU retained its water rights it would need to orient the timetable of the project first toward demonstrating the availability of water. The ruling may only apply to usage of off-property wells. Since WU gets its water from a shared aquifer, I would assume that any new development would need to show not to go beyond our existing water right and infringe on that of another party. The decision also shifts the burden of the research from the DOE onto the applicants themselves. Specifically, the article seems to suggest that the burden has shifted from the DOE to the county, which I believe is separate from the water district.

Warren, Frank F. "Whitworth College Faces the Future." *Whitworth Alumni Magazine*. (Spokane, WA), Nov. 1941. <https://digitalcommons.whitworth.edu/alumnimagazine/188>

The newspaper is keen to describe how the new well, built in 1941, has beautified Whitworth's campus in the heat of summer, stating "much of the campus had burned severely but as soon as the pump was installed its continued loveliness was assured." The article reveals how this was the first time Whitworth has had adequate water supply at low cost, illustrating how even then it was important to maintain low cost and be good stewards of the university's finances. The total cost was \$10,000, and the article includes that \$2,000 still need to be raised to clear the expenses. This does not add much to the research process, just giving the project and university some historical context.

"Water Rights," Investopedia, accessed October 11, 2018.  
<https://www.investopedia.com/terms/w/water-rights.asp>

Investopedia in this source gives a definition of water rights as an interest attached to owned real estate. They distinguish between two types of Water Rights: riparian and littoral. Littoral rights are given to landowners "whose land border large, navigable lakes and oceans" and are not applicable to the Whitworth Water District project. Riparian

rights are rights that pertain to rivers and one's ability to use that water commercially or domestically. Municipalities are stated to have unique regulation for water rights as usage is largely dependent on the specific source. The article also defines water rights as "appurtenant" meaning that rights are passed down with the owned real estate and not with the owner. This seems to imply that Whitworth owns its water rights not as a third party but as an owner of the physical land we hold.

"Water Rights in Washington: Frequently Asked Questions," Washington State Department of Ecology, last modified November 2013, accessed October 11, 2018.  
[https://fortress.wa.gov/ecy/publications/documents/9618\\_04swr.pdf](https://fortress.wa.gov/ecy/publications/documents/9618_04swr.pdf)

This is a comprehensive description of water rights as they exist in Washington. It details first and foremost how water is a socialized good and cannot be individually owned. The State through the DOE assigns permission to private citizens to own water via water rights. It defines the unique types of water rights and describes a water right certificate, which is what Whitworth University holds. Later in the article the DOE explains that most water already has "ownership" which makes new water rights negotiations controversial. The article goes on to explain how to apply for water rights, a process largely irrelevant to our current research.

"Water Rights." In *West's Encyclopedia of American Law*, 2nd ed., edited by Shirelle Phelps and Jeffrey Lehman, 309-312. Vol. 10. Detroit: Gale, 2005. *U.S. History in Context* (accessed October 8, 2018).  
<http://link.galegroup.com/apps/doc/CX3437704664/UHIC?u=spok87023&sid=HIC&xid=26a89586>.

This reference article defines water rights as "a group of rights designed to protect the use and enjoyment of water that travels in streams, rivers, lakes, and ponds, gathers on the surface of the earth, or collects underground." With this basic understanding of water rights, the article continues with a contextual description of the use, implementation, and purpose of water rights, specifically focusing on riparian rights, surface water rights, and underground water rights. It details specific qualifications necessary for owners or possessors of land to stake claim to water rights, and with this, the article is beneficial to the research on Whitworth University's water wells. The article's detail on the legality surrounding water rights is useful in understanding the legal rights and responsibilities Whitworth possesses. U.S. law treats water as a limited resource, and it is important to consider this reality as Whitworth chooses to change their water sourcing and usage. Because water is a limited commodity, an institution of Whitworth's size may have to enter into certain negotiations or approach certain restrictions regarding their water consumption and sourcing.

"Water Rights." State of Washington Department of Ecology,  
<https://ecology.wa.gov/Water-Shorelines/Water-supply/Water-rights>.

This is an online posting by the Washington Department of Ecology describing water rights in the State of Washington. It details the concept of "first in time, first in right," stating that senior right holders have a greater claim to water in the event of a shortage.

Similarly, it notes that water must be used for the right to continue to exist. It notes that Washington is a water rich state, especially west of the Cascade Mountains, but also notes that water for new uses is becoming more difficult to find due to growing population and recent court decisions. Establishment of water rights are required except in using less than 5,000 gallons per day or irrigating less than a half-acre of lawn or non-commercial garden. The document also defines commonly used terms on the topic, such as permit, certificate, adjudicated certificate, claim, and trust water right.

“Whitworth College Well Feasibility Study.” Adams & Clark, Inc., Spokane, Washington, 2003.

This study is the catalyst for our project and deals with the conditions of the university’s water systems. According to the study, Whitworth supplies all of its water, but also has interties with the local water provider. Its primary concerns are with Well #S01, which was constructed in 1941 and faces a significant risk of contamination, though it has not had any water quality problems. Improving Well #S01 must involve sealing the surface and perimeter of the brick lined well to prevent contamination and seepage from above ground sources of water. However, these improvements are difficult to make and were generally unwanted due to the unknown nature of how best to properly seal the well against contaminants. The document also addresses the possibility of new well (Well #S03) construction near Baldwin-Jenkins. Construction of this well would include demolition of Well #S01 and the well’s abandonment. Details are listed for the processes of refitting Well #S01 and constructing Well #S03. The estimated cost of improving Well #S01 is \$324,000. The cost of constructing Well #S03 is \$253,000, and the cost of decommissioning Well #S01 is \$46,000.