

PRELIMINARY ENGINEERING REPORT

WATER SYSTEM IMPROVEMENTS

DECEPTION PARK VIEW (PWS ID #18305H)
Oak Harbor, WA 98277

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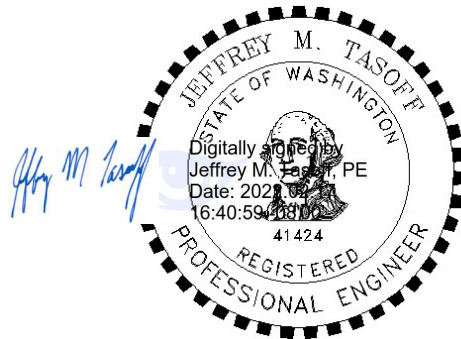
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**CERTIFICATE OF ENGINEER
Deception Park View
Water System Improvements
Preliminary Engineering Report**

The technical material and data contained within this report has been prepared by or under the direction of the following registered professional engineer(s), licensed in accordance with the laws of the State of Washington to practice in the State of Washington.



QUICK REFERENCE PROJECT INFORMATION

General Project Information

Water System	Deception Park View
Water System ID	18305H
Project Description	Replacement of existing water mains, booster pump system enhancements, and facilities improvements
Reservoir, Pumphouse, and Well Site Parcel	S6455-00-0000A-0
Location	Oak Harbor, WA 98277
Consulting Engineer	Jeff Tasoff, P.E. – Davido Consulting Group, Inc.

Project Summary

Proposed Project Elements	<ul style="list-style-type: none">• 4,800 LF 6" PVC distribution piping• 100 LF 8" suction line from reservoir to booster pumps• Two additional booster pumps (4 total)• New booster pump pipe manifold and controls• New chlorination room building addition• Replace well cover structure• Grading and re-surfacing gravel driveway to pumphouse
Proposed Booster Pumps	Two (2) proposed pumps: 5 horsepower (hp) Gould 3656

System Information

System Approved Capacity	Total Approved Connections: 100
Existing Connections	Total Existing Connections: 73
Design Values	Average Day Demand – 200 gpd/ERU Maximum Day Demand – 450 gpd/ERU Peak Hour Demand – 104 gpm
Sources	S02 – Well #2 (AGA589) – 33 gpm S01 (Inactive) – Well #1 (AGA575) – 12 gpm
Existing Reservoir	36,700-gallon Octagonal Concrete Reservoir (20.4' across x 15' tall) 33,500-gallon Cylindrical Concrete Reservoir (19.5' diameter x 15' tall)
Existing Pumps and Pressure Settings	(2) 5 hp Goulds 3656 (140 gpm @ 45 psi) Booster Pump #1 (lead pump): 46 - 58 psi Booster Pump #2 (lag pump): 42 - 56 psi
Existing Pressure Tanks	(2) 119- gallon <i>WellMate WM-35WB</i> Pressure Tanks
Cycle Stop Valves	(2) 2" Model B, 5 gpm bypass flow, Pressure Setting: 49 psi

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1. PROJECT PLANNING

Deception Park View (Washington State Department of Health (DOH) Water System Identification Number 18305H) is a Group A community water system approved by the DOH to serve up to 100 residential connections and currently providing potable water to 73 connections within their approved retail service area in Island County, WA. The water system is located on the northern portion of Whidbey Island approximately 7 miles north of Oak Harbor on the west side of State Route 20. See APPENDIX A for a retail service area map. Figure 1 below shows the approximate site location for this project. The community is pursuing upgrades to the system to ensure system reliability and address distribution system water loss. The system also desires to increase the pumping capacity to meet the Island County fire flow standards for residential areas. The proposed improvements include the replacement of water mains, installation of additional booster pumps and additional improvements to the grounds around the reservoir and pumphouse to facilitate system functions and maintenance operations.

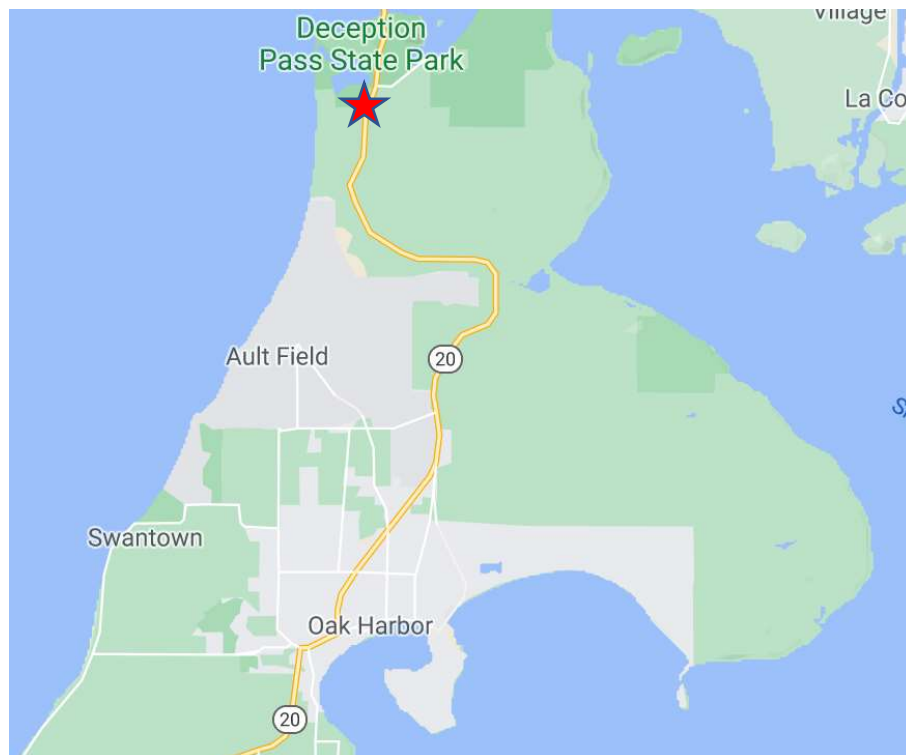


Figure 1: Location Map

The water system is located off Highway 20, south of Cranberry Lake and Deception Pass State Park. Figure 2 shows an aerial view of the water system with the retail service area shown.



Figure 2: Deception Park View Retail Service Area

1.1 Environmental Resources Present

Several small areas of moderate and steep slopes are present. A map of the steep slope area can be seen in APPENDIX A. The proposed water mains will be placed in the right-of-way along the edge of the existing roads to minimize impacts and avoid the steep slope areas. See the water system as-built map in Appendix A showing the watermains to be replaced, highlighted with blue lines.

An environmental assessment has been developed to support this project and is available under a separate cover. That report complies with the National Environmental Protection Act (NEPA) in support of the loan application. No streams were identified within the project area. A wetland on the west side of the retail service area is noted on the critical area map. The accuracy of this map is in doubt since there are at least 10 existing homes within this boundary. The proposed work will occur along the county right of way in the existing road prism to minimize impacts. Replacement of utility pipes within the road prism is normally not considered an impact to a wetland. Additional information regarding this

wetland can be found in the environmental assessment. See map in APPENDIX A for approximate wetland delineation.

An archeological review has also been conducted for the proposed project area. No areas of concern were identified in the project area. An Inadvertent Discovery Plan will be included in the final design documents. The inadvertent discovery plan will be discussed with the contractor during the pre-construction meeting.

1.2 Population Trends

The existing customers of the system are residential. The residential population that is served consists of about 180 full-time residents with no part-time residents. There are about 20 lots in the neighborhood that are undeveloped but could be developed as single-family residences. The existing system capacity is adequate to serve those additional lots.

1.3 Community Engagement

The community was informed in 2017 of the need to replace the water lines in the annual meeting and that a USDA loan would be needed to fund the renovations. Updates have been provided via a monthly newsletter. The community is also encouraged to attend the board meetings that occur every other month. The association has an annual community meeting to discuss the water system. The system also maintains a community's Facebook group and website to provide notification to the residents about the water system, including when water shutoffs are required for repairs, or other maintenance work that may impact their water service. Additionally, the community has been responsive and engaged in a successful effort over recent years to reduce their average daily demand to protect the long-term health of the aquifer as a resource. The community determines to re-set and lower their household water usage goals approximately every 5 to 7 years.

2. EXISTING FACILITIES

2.1 History

The Deception Park View water system has been in operation since 1970 and currently serves 180 people via 73 active connections. The system currently has an approved system capacity of 100 residential connections as shown on the Water Facilities Inventory Form, a copy of which is provided in APPENDIX B. A description of the distribution system and its deficiencies are provided in Sections 2.2 and 2.3 respectively.

2.2 Existing Conditions

The Deception Park View Water System's facilities range in age and condition. A brief asset inventory was performed as part of this effort to document the water system elements and age of all assets, and can be found in Appendix J.

Source:

The system is currently served by a single groundwater well (S02, Well AGA589) with a submersible pump. There is an inactive, emergency source (S01, Well AGA575) which has been disconnected from the system and is only used during emergencies. Source 2 was installed in 1975, has a 6-inch diameter

casing and is 401 feet deep. The source is approved with an instantaneous withdrawal of 33 gpm. See APPENDIX B for the WFI.

Deception Park View has a Water Right Certificate (G1-00552C) from the Washington State Department of Ecology (DOE) which allows for a maximum withdrawal rate of 45 gpm and a maximum yearly withdrawal of 40 acre-ft per year. See APPENDIX G for copy of the system's Water Rights. The system has adequate water rights to support the system to full build-out.

A prior water system capacity analysis evaluation (Davido Consulting Group, Inc., 2019) determined that based on an MDD of 450 gpd/ERU and 100 ERUs for full build-out, the existing well flow rate (Source 02 – Well #2 (AGA589) – 33 gpm), is the current limiting factor for the water system. The Well # 2 flowrate is sufficient to provide for the maximum 100 connections at full build-out of the retail service area. Existing source capacity is adequate.

Water quality samples taken at the source show the water quality to be within allowable limits for arsenic, iron, and manganese for majority of the well's existence. There was one Arsenic exceedance in 1975. The concentration of chloride, nitrate and sulfates detected in water samples also fall below actionable concentration levels.

Storage:

The water system is supported by two storage reservoirs which are located on Island County Parcel S6455-00-0000A-0, adjacent to the pumphouse and wells. The older reservoir, an octagonal concrete reservoir, was constructed in 1976 and stores approximately 36,000 gallons (20.4' diameter x 15' tall). An additional reservoir was installed in 2001 and is a cylindrical concrete reservoir providing approximately 33,000 gallons of storage (19.5' diameter x 15' tall). The reservoirs have a base elevation of approximately 101 feet above sea level and are hydraulically equivalent. Float level switches within the reservoir control the operation of the well pump.

Booster Pumps, Pressure tanks, and Controls:

The booster pump station is located within the pumphouse on parcel S6455-00-0000A-0 and consists of two (2) 5-horsepower (hp) Gould 3656 pumps each capable of supplying 140 gpm at 45 psi or 177 gpm at 25 psi. Booster pump capacity is about 300 gpm with existing both pumps in service. The pumps are fed from the two storage reservoirs via a 4-inch PVC pipe. In turn, the system provides pressurized water to the distribution system. The pumps function on an alternating lead/lag orientation cycle stop valves are installed on the discharge of each of the booster pumps, which along with the two (2) 119-gallon pressure tanks provide protection to the booster pumps to limit the number of pump starts in an hour. The lead pump on and off pressure settings are currently set to 55 psi and 43 psi.

Water Mains and Services:

The watermain distribution system primarily consists of 4-inch class 150 Asbestos Cement (AC) pipes installed during the in 1969/1970 when the system was originally constructed. The total installed pipe length in the distribution system is estimated at 4,800 linear feet. The watermains are installed within the county right-of-way. The system is looped and contains adequate isolation valves at the intersection to support system maintenance and repairs. Fire hydrants are installed in the system. An as-built drawing of the distribution system is provided in APPENDIX A. Each existing service connection is metered.

Pumphouse and grounds:

The pumphouse is also located on Island County parcel S6455-00-0000A-0. The pumphouse is a wood frame structure that houses the controls, booster pumps, chlorination equipment, and pressure tanks. There is also an additional shed on this lot.

2.3 Existing System Deficiencies

Source:

This system is dependent on a single water source (well) that is nearing the end of its anticipated lifespan. To ensure successful long-term operation of the water system, the need for a new well should be evaluated as part of a future project. A new well is not included as part of this current project proposal.

Storage:

The original storage tank, constructed in 1976, is reaching the end of its anticipated lifespan. If this tank fails, the system will rely on a single storage reservoir. The newer existing reservoir alone does not have adequate storage capacity to support the community on its own. An additional replacement reservoir for the newer of the two existing reservoirs should be evaluated as part of a future project. A replacement storage reservoir is not included as part of this current project proposal.

Booster Pumps, Pressure tanks, and Controls:

One of the booster pumps was installed in 2013 and the older pump was rebuilt in 2013. Pumps have expected lifespans of 15 years. The existing pumps are not adequate to supply the recommended fire flow rates. Two additional pumps would be required to meet these standards. High pressures up to 90 psi are present in the lowest service elevation areas. The desired maximum distribution system pressure is typically 80 psi. A constant pressure (variable speed drive) or pressure reducing valve could be utilized to decrease these excess pressures.

Water Mains and Services:

The distribution system leakage is currently 11.1 % according to the Water Use Efficiency report filed with DOH, which is over the allowed 10% threshold. This information along with age of the pipes would indicate that these pipes have exceeded their useful life. Water meters and water services have also reached the end of their anticipated lifespan. Approximately 10 water meters have been replaced in the last 7 years due to failures.

Pumphouse and grounds:

The access to the reservoir and pumphouse is in need of re-grading and resurfacing to provide reliable year-round access to the site. The small well cover structure is in poor condition and needs to be replaced.

Currently the chlorination system is located within the pumphouse which can expedite corrosion of the pumps, control, pipes and other items located in the pumphouse. The chlorination system should be housed in separate and/or isolated structure to prevent corrosion of piping and the electrical system.

2.4 Financial Status of System

The expenditures and incomes for Deception Park View have been compiled and outlined in Table 2 below. Detailed financial data for Deception Park View for the years 2017 through 2020 are available in Appendix D.

Table 1: Deception Park View Expenditures and Income for 2017-2021

Year	Total Expenses	Total Income	Net Income
2017	\$ 35,485.24	\$ 39,358.43	\$3,873.19
2018	\$ 47,318.28	\$ 35,774.51	(\$11,543.77)
2019	\$ 50,183.62	\$ 39,099.28	(\$11,084.34)
2020	\$ 90,189.96	\$ 91,307.64	\$ 1,117.68
*2021 (anticipated expenses & income)	\$ 126,965.00	\$ 126,604.00	(\$361.00)

*Starting August 2020, the user rates were increased from \$75 to \$120 per bi-monthly billing cycle per connection.

Fiscal year runs from June-May each year. Total expenses include money being transferred to Capital Improvement Projects (CIP) and the community account. In 2018, the association purchased a vacant double lot to build a community recreation area with CIP savings. This site could also be used for additional water system needs in the future. In 2019, a water system capacity analysis was completed and other one-time expenses were incurred, which accounts for the negative net income. In 2020, five water connections were added for a \$10,000 connection fee each. In 2021, five water connections were awarded to properties, requiring a \$15,000 connection fee each, but currently have only received two payments, two are still pending, and one has declined the water connection due to septic failure/denial. The user base rates were increased from \$75 to \$120 for two months of water service, effective August 1, 2020, to prepare for the USDA loan. As a result, the funds being directed into the CIP account are increasing to meet future system needs. The billing cycle covers two months of service and bills are sent out every even numbered month. Each connection is allowed 8,500 gallons per billing cycle at no additional cost, any usage beyond 8,500 gallons is subject to the tiered water usage rates (Appendix F), which was adjusted in 2020 to encourage responsible use and water conservation.

Detailed financial information is included in Appendix D of this report. An engineer's estimate of probable construction costs was completed and shows that the proposed system upgrades would cost approximately \$1,500,000 (see Appendix H). The system is considering applying for an interim loan to pay for the upfront costs associated with design and contract development prior to approval of the USDA Rural Development loan. This report has been prepared for application to the USDA Rural Development Program to acquire the needed funding to complete this project.

2.5 Water/Energy/Waste Audits

The most recent Water Use Efficiency (WUE) Report submitted to the Washington State Department of Health (DOH) are included in APPENDIX E of this report. The system is 100% metered according to the 2020 Water Use Efficiency Report. The reported average Distribution System Leakage (DSL) from 2018-2020 was 11.1%. Other than the peak usage which occurred in August of 2016, there were no other unusual spikes detected that suggest a major system leak. Using recent water use data, the ADD was determined to be 200 gpd.

3. SYSTEM PROJECT NEEDS

Source:

A new well and a replacement submersible pump for Well #2 are recommended as future improvements but are not currently vital for the continued use of the water system. The system should put money into a reserve account to replace the well pump when it fails.

Storage:

Replacement of the original reservoir, constructed in 1976, is recommended as a future improvement, but is not currently vital for the continued use of the water system. It is recommended that a replacement reservoir be sized to replace both existing reservoirs.

Booster Pumps, Pressure tanks, and Controls:

The existing booster pumps do not provide an adequate flow rate to meet Island County's recommended fire flow requirements of 500 gpm. Additional booster pumps and booster pump controls will be needed to provide fire flow. Finally, a constant pressure pump control system should be provided to reduce high pressures in the distribution system, or alternatively pressure reducing valves could be provided to reduce high pressures in the distribution system.

Water Mains and Services:

The existing aging water mains will need to be replaced as they have reached the end of their useful life. New piping will be a minimum of 6" in diameter to comply with Island County and Washington State Department of Health requirements. Water meters and water services have also reached the end of their anticipated lifespan.

Pumphouse and grounds:

The driveway to the reservoir and pumphouse is in need of re-grading and new gravel surfacing to provide reliable access to the site. The small well cover structure is in poor condition and needs to be replaced. Currently the chlorination system is located within the pumphouse which can expedite corrosion of pumps, control, and pipes. The chlorination system should be housed in separate and/or isolated structure to prevent corrosion of piping and electrical system.

The parcel currently housing the reservoirs, well, and pumphouse is too small to accommodate a new well and reservoir. The community should evaluate alternate locations that water system infrastructure could be placed.

4. ALTERNATIVES CONSIDERED

4.1 Source

The following options were considered for source alternatives.

4.1.1 Do Nothing (Preferred Option)

The primary well (Well #2) was drilled in 1975. The well condition appears to be adequate but the well and well pumps are nearing the end of their anticipated useful life, and the single source configuration does not provide any redundancy in the system. Although it is recommended that a new well is drilled in the future, it is not included in this project proposal.

4.1.2 *Replace Well Pumps*

The pump for well #2 was replaced in 2010 and is functioning as required. A new well pump is not immediately needed for the system to reliably provide water to the community.

4.1.3 *Intertie*

There are two nearby water systems: North Whidbey Water District (NWWD) and Deception Pass State Park. The closest neighboring system does not have sufficient capacity to accommodate an intertie to Deception Park View. This intertie would also require a main extension with a cost that could likely exceed the cost of the other options.

The City of Oak Harbor has a water main within the Highway 20 right-of-way, however there is a moratorium on new water service connections. Additionally, past information from the City of Oak Harbor was that the City would require Deception Park View to replace their water infrastructure prior to connecting to that water system. Therefore, an intertie is not considered feasible. Oak Harbor design standards may require 8" diameter piping. The system may install the larger piping to simplify a future intertie.

4.1.4 *Drill New Well (Future Option)*

The primary well (Well #2) was drilled in 1975. Given the age of the primary well and since the system is reliant upon it as their single source, it is recommended that a new well is drilled in the future, in a location to be determined through further evaluation. This work and the new well are not included in this project proposal. The expected timeline for the need to replace Well #2 is approximately 10 to 20 years, based on the age and the typical life expectancy of the wells.

4.2 Storage

The following options were considered for storage alternatives.

4.2.1 *Do Nothing (Preferred Option)*

The older of the existing two reservoirs is approaching the end of its anticipated useful life however it is not showing any obvious signs of deterioration. The older reservoir should be replaced in the future but is not considered an immediate need. The do-nothing alternative is preferred for storage, given that there is some redundancy with the two reservoirs.

4.2.2 *Replace Oldest Reservoir*

The older reservoir, constructed in 1976, has an anticipated lifespan of 50 years. With the reservoir not showing any signs of significant deterioration, replacing the reservoir is not considered an immediate need.

4.2.3 *Replace Both Reservoirs (Future Option)*

The newest reservoir was built in 2001 and is not showing obvious signs of aging. Given the 50-year anticipated lifespan of concrete reservoirs and no obvious signs of deterioration, we are not proposing the reservoirs to be replaced at this time. Potentially a larger singular reservoir could be designed and constructed as part of a future project to replace both existing reservoirs, in a

location to be determined through further evaluation. The new reservoir is not included in this project proposal. The expected timeline for the need to replace the oldest reservoir is approximately 5 to 15 years, based on the age and the life expectancy of the reservoir.

4.3 Booster Pumps and Controls

4.3.1 *Do Nothing*

The two existing booster pumps were installed or rebuilt in 2013 and have expected lifespans of 15. Both pumps are nearing the end of their expected lifespan and the existing two booster pumps do not provide adequate fire flow, the do-nothing option is not the preferred option.

4.3.2 *Install Additional Booster Pumps and Upgrade Controls (Preferred Option)*

Two new booster pumps are proposed additional pumps required to provide fire flow capacity, including redundancy. The booster pumps should be variable frequency drives (VFDs), which would provide better controls, improve operating efficiencies and would allow for the removal of the cycle-stop valves, allowing for simplification of the system. The pump suction pipe from the reservoirs to the pump manifold, which is approx. 100 LF in length would need to be upsized to 8" pipe to support the additional pumping capacity. The pump manifold piping would need to be rebuilt to support four pumps.

4.4 Water Mains and Services:

4.4.1 *Do Nothing*

The existing distribution system is showing distribution system leakage of greater than 10%. Therefore, the do-nothing option is not preferred, as continued use of the aging infrastructure will lead to further leakage and pipe breaks, resulting in increasing water losses, as well as potential health and sanitation issues.

4.4.2 *Upgrade Water Mains to 6-inch Pipes (Preferred Option)*

Upgrading the distribution system to 6" mains throughout is necessary to meet current design standards and reduce system losses. The existing distribution system piping should be replaced and upgraded with new 6" PVC pipes, including new gate valves, fittings, fire hydrants, and appurtenances. Dead-end water main pipe segments should be evaluated further during the design phase to determine adequate sizing, as shorter pipe segments may be able to be reduced down to 2" pipes on the dead-end streets. Water meters, meter setters, meter boxes, water service lines from the main to the meter, and water service taps should be replaced.

4.4.3 *Sleeve existing pipes*

The existing distribution pipes could be sleeved with smaller (2" PVC) pipes, which would address the aging pipe issue, but would eliminate the possibility of supply fire flow and is not consistent with Island County or Washington State DOH requirements.. Additionally, this option has constructability challenges. This option is not recommended.

4.5 Pumphouse and grounds:

4.5.1 *Do Nothing*

The repairs/upgrades needed are considered necessary maintenance items that can easily be completed as part of the rest of the project. The do-nothing option is not preferred.

4.5.2 *Regrading and Building Improvements (Preferred Option)*

The grounds surrounding the pumphouse are in need of re-grading to level the driveway as well as new gravel surfacing to provide reliable access to the site. The small well cover structure is in poor condition and needs to be replaced. Currently the chlorination system is located within the pumphouse which can expedite corrosion of pumps, control, and pipes. The chlorination system should be housed in separate and/or isolated structure to prevent corrosion of piping and electrical system. This chlorination room structure can be a small building addition to the existing pumphouse. These improvements are all proposed to be completed as part of this project.

4.5.3 *Relocate Pumphouse, Wells, and Reservoir to Alternate Location (Future Option)*

As noted in above sections, the wells and reservoirs should be replaced as part of a future project. A new pumphouse could be constructed at this new location, along with the new well and new reservoir. A new pumphouse would remove the need for the building improvements for the existing pumphouse. These future improvements will need to be placed in an alternate location to be determined through further evaluation. The community should start evaluating locations for these improvements, including parcels that are within the community which are owned by community. This work is not included in this project proposal, nor are new locations for the well, reservoir, and pumphouse included in this project proposal, however, should these new facilities be constructed at future date, they could all tie into the proposed water distribution system pipes with only minor alterations required.

5. SELECTION OF AN ALTERNATIVE

The costs associated with the preferred alternative as noted above, are included in the Table below.

Table 2: Preferred Alternative Cost Estimate Summary

Category	Preferred Alternative	Installation Costs	Annual Maintenance Costs
Source	Do Nothing	\$ -	\$ -
Storage	Do Nothing	\$ -	\$ 200
Booster Pumps and Controls	(2) New Booster Pumps and controls upgrade	\$ 66,000	\$ 250
Distribution System	4,800 LF 6" watermains	\$ 780,000	\$ 1,000
Pumphouse and grounds	Building and grading and improvements	\$ 25,000	\$ 50

5.1 Life Cycle Cost Analysis

The cost for the various alternatives were analyzed for the present worth to aid in determination of an appropriate alternative. A life cycle cost analysis was performed and is included with APPENDIX D.

6. PROPOSED PROJECT

6.1 Preliminary Project Design

The proposed improvements to the system include replacing water mains with 6" diameter pipes, installation of two additional booster pumps for a total of four booster bumps, new booster pump controls and connection piping, improvements to the grounds surrounding the reservoirs and pumphouse, chlorination room building addition, and well cover structure replacement.

An engineer's estimate of probable construction costs for this alternative is provided in APPENDIX DH which estimates a total project cost of \$1,500,000.

The new water mains will be located in the right-of-way (ROW) along roads within the service area. The proposed improvements consist of approximately 4,800 lineal feet of new piping. The existing mains will be capped and abandoned in place to minimize additional environmental impacts and disposal issues with their removal. New booster pumps will be placed within the existing pump house and the improvements to the grounds and the minor structure replacement and building addition will be limited to the pumphouse lot, which is an area that is already been developed.

6.2 Project Schedule

The system is currently submitting a preliminary engineering report for USDA Loan approval and the loan review period is expected to take 3-4 months. Assuming the loan application is approved, the next step would be preparation and submittal of a project report to the Washington State Department of Health (DOH). This project report is expected to take 4-6 months. The DOH project report would include a topographical survey and construction plans. The DOH project approval typically takes 6 to 8 weeks for approval. Following DOH approval, engineering specifications would be prepared, taking another 2 to 3 months. Project bidding, contractor selection, contract development is typically a 2 to 3 month process. Construction is estimated at 4 to 6 months.

Project closeout, certification, and auditing is anticipated at 2 to 3 months. The complete schedule is approximately 20 - 27 months. From March 2022, the project could be expected to be completed between November 2023 and June 2024.

6.3 Permit Needs

The following permits will be required to support the proposed work:

- The waterline installation will require a Permit to Work in the Right of Way from Island County Public Works.
- A Franchise Agreement exists with Island County Public Works for the water service area and is valid until January 2028. This will not need to be updated unless any watermains will exist in areas not currently included in the existing Franchise Agreement. This is not expected, as the whole water service area is included in the Franchise Agreement.
- If any watermains are to be installed within the State Route 20 ROW, such as any future intertie to another water system, a Franchise Agreement would be needed with Washington State. This

is not expected, and no watermain or interties are proposed within the State Route 20 ROW as part of this project.

- A Project Report outlining the proposed water system improvements will be submitted for approval to the Washington State DOH.
- A Building Permit is likely needed for the building addition to the pumphouse for the chlorination room.
- The pump installation and controls will require an electrical permit with Labor and Industries.

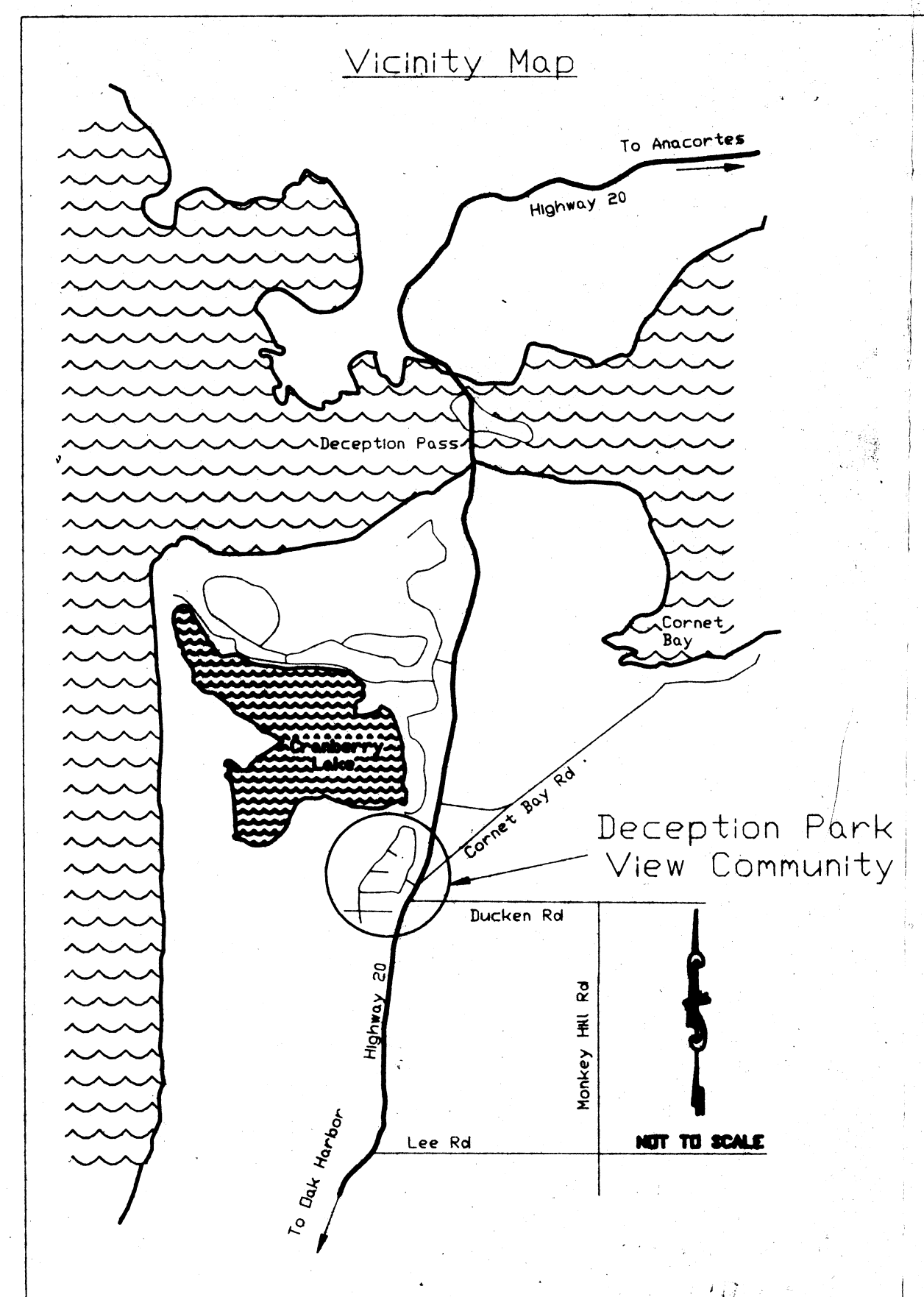
The relevant permits will be obtained by the selected contractor or engineer of record. The water system will need to obtain any franchise agreements, if needed, prior to the start of Construction.

7. CONCLUSIONS AND RECOMMENDATIONS

The proposed improvements to the system include replacing water mains with 6" diameter pipes, replacing water services and meters, replacement of two booster pumps for a total of four booster bumps, new booster pump controls, improvements to the grounds surrounding the reservoirs and pumphouse, chlorination room building addition, and well cover structure replacement.

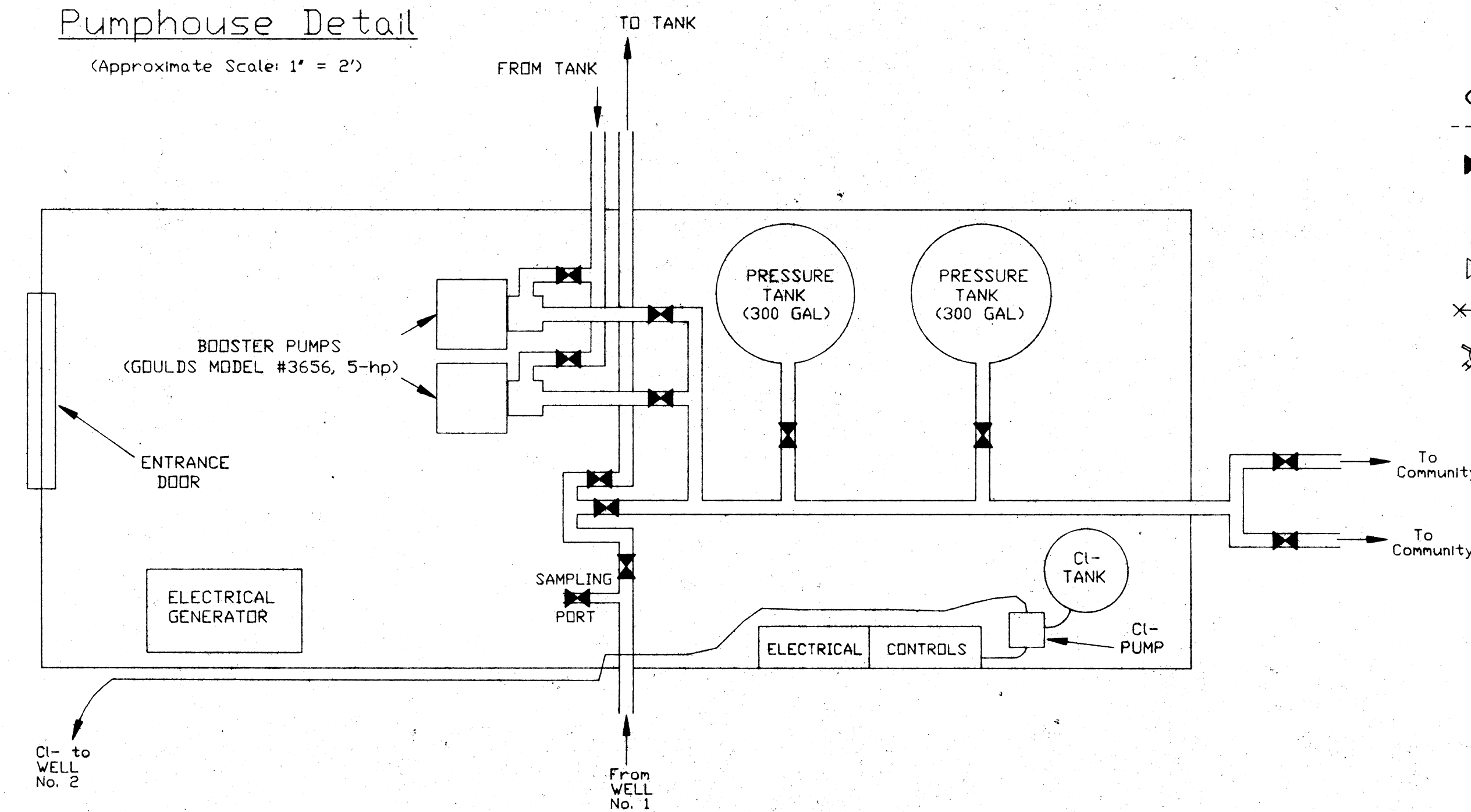
The water system provides an essential service to the existing residences within its retail service area. The system is obligated to provide reliable service to its customers and the proposed project will provide the infrastructure needed to deliver water in compliance with County, State, and Federal requirements. The proposed project will greatly improve system reliability and safety.

APPENDIX A Maps



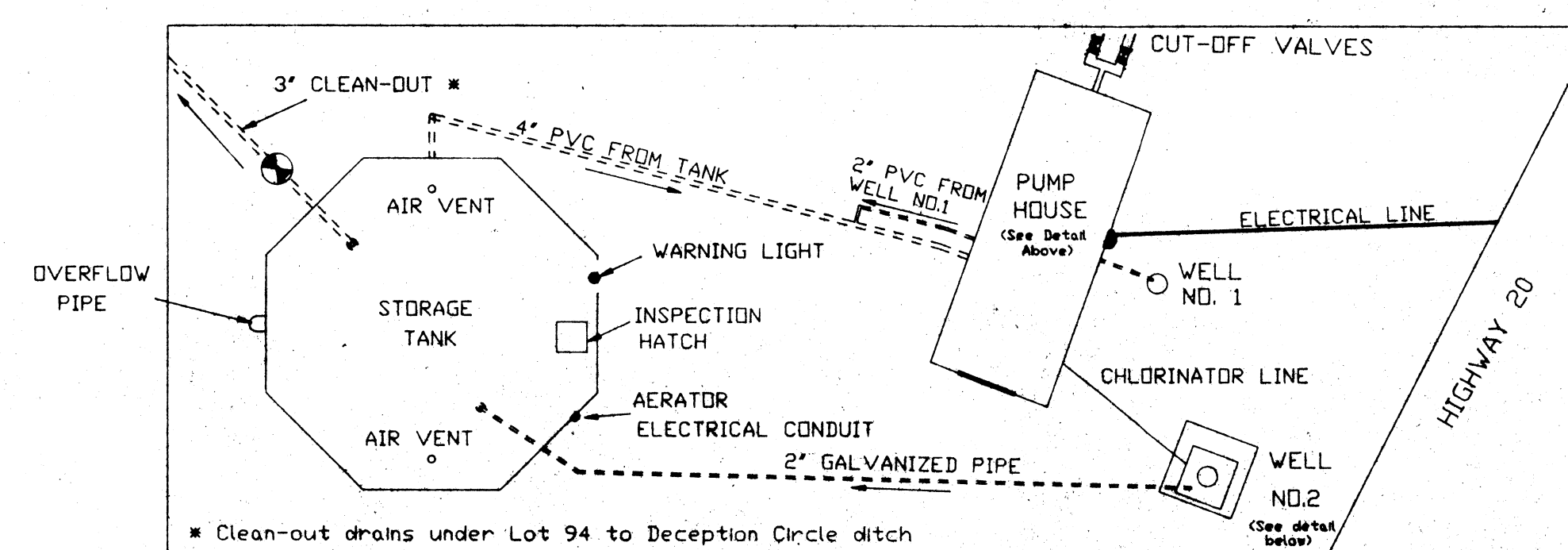
Pumphouse Detail

(Approximate Scale: 1" = 2')



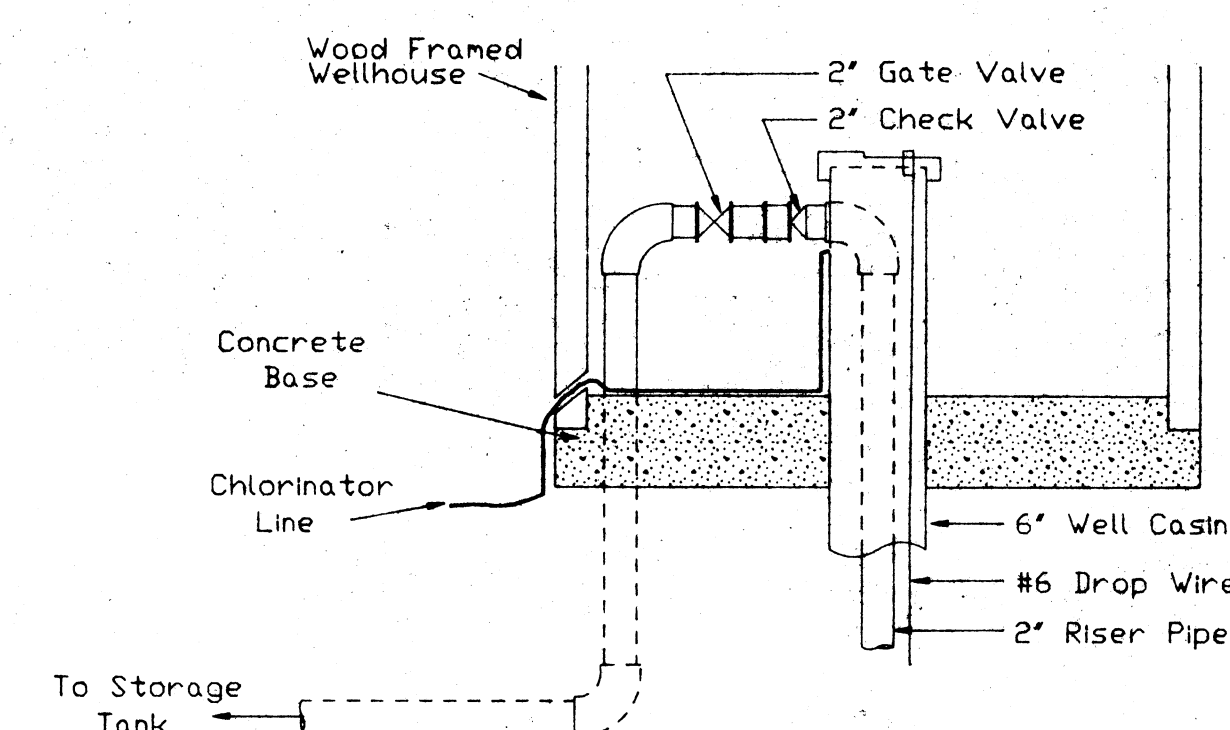
Pumphouse and Storage Tank Detail

(Approximate Scale: 1" = 10')



Well 2 Detail

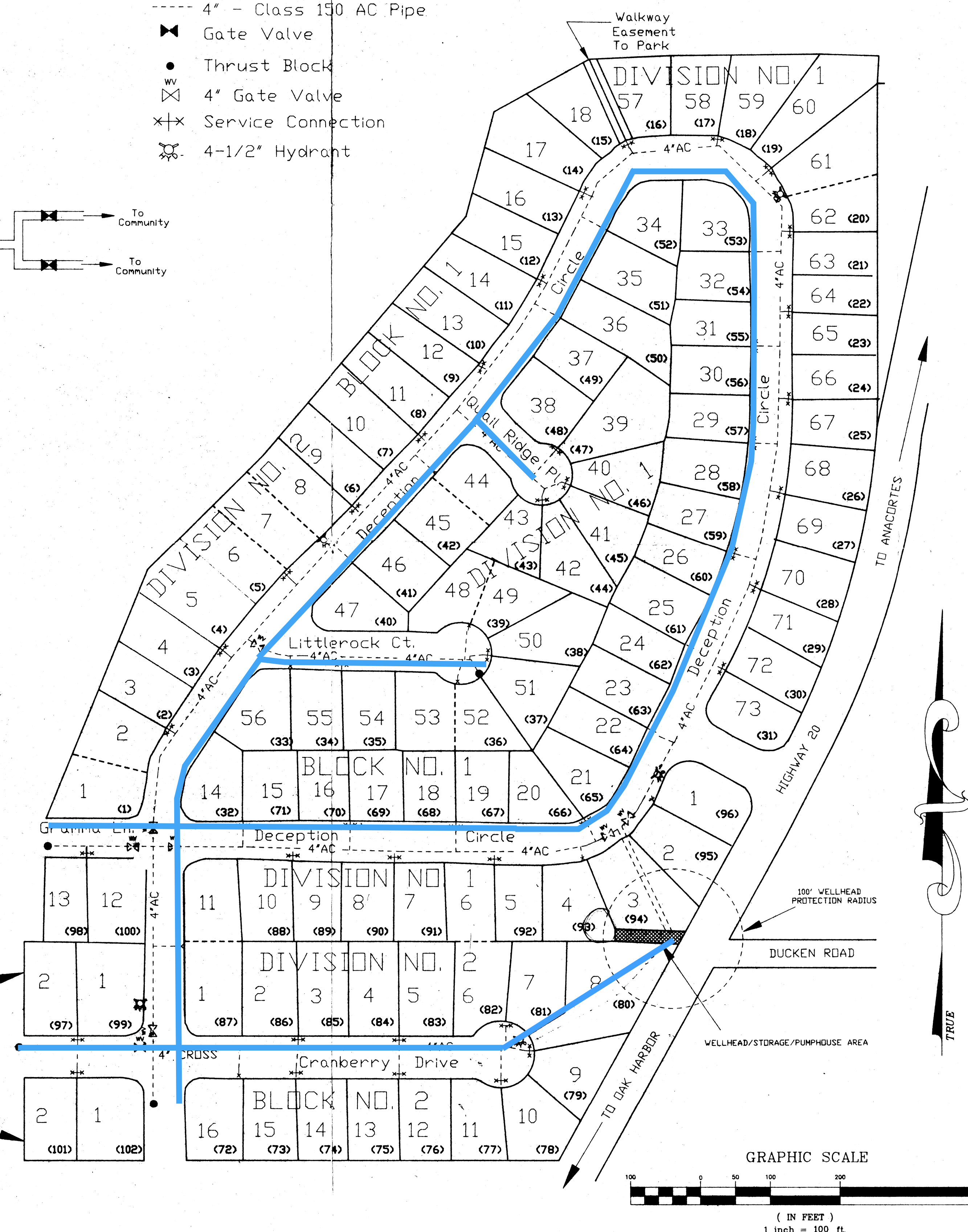
(Not to Scale)



Legend

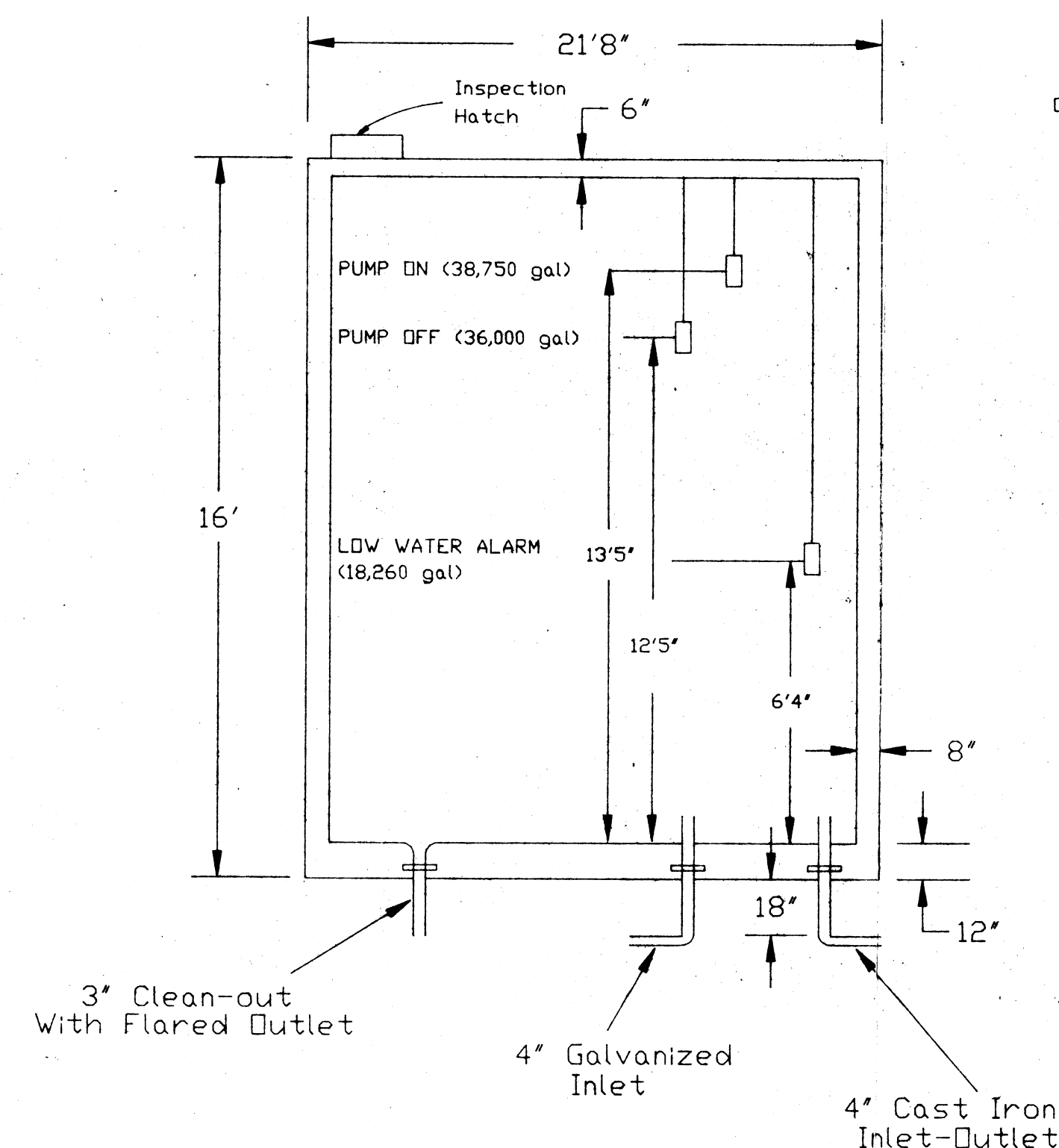
- 14 Legal Lot Number
- (8) Lot Count
- 4" - Class 150 AC Pipe
- ✕ Gate Valve
- Thrust Block
- ✕ 4" Gate Valve
- ✕ Service Connection
- ✕ 4-1/2" Hydrant

Water Distribution System



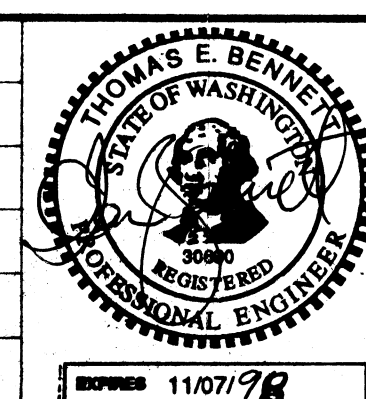
Storage Tank Detail

(Not to Scale)



BLOCK NO. 3
DIV. NO. 2
BLOCK NO. 4

1	DPVC PRELIMINARY AS-BUILT DRAWING	RPB/TEB	5/12/94
2	DPVC FINAL AS-BUILT DRAWING	RPB/TEB	10/26/94
3	AS-BUILT DRAWING UPDATE	TEB	11/22/96
NO.	REVISION	BY	DATE



CONSULTING ENGINEERS
Geology • Civil • Geotechnical • Environmental
2138 Humboldt Street
P.O. Box 5346
Bellingham, WA 98227
Ph: (206) 676-9589
Fax: (206) 676-4625

JOB NO.: 91080D.94
DWG. NAME: DPVC.DWG
DESIGNED BY: RPB
DRAWN BY: RPB
CHECKED BY: TEB

Deception Park View Comm.
P.O. Box 2446
Oak Harbor, WA 98277

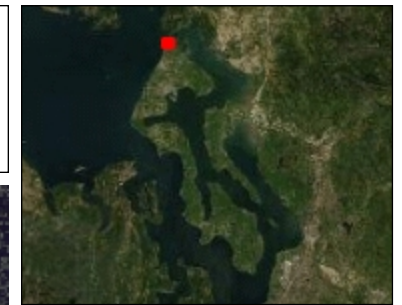
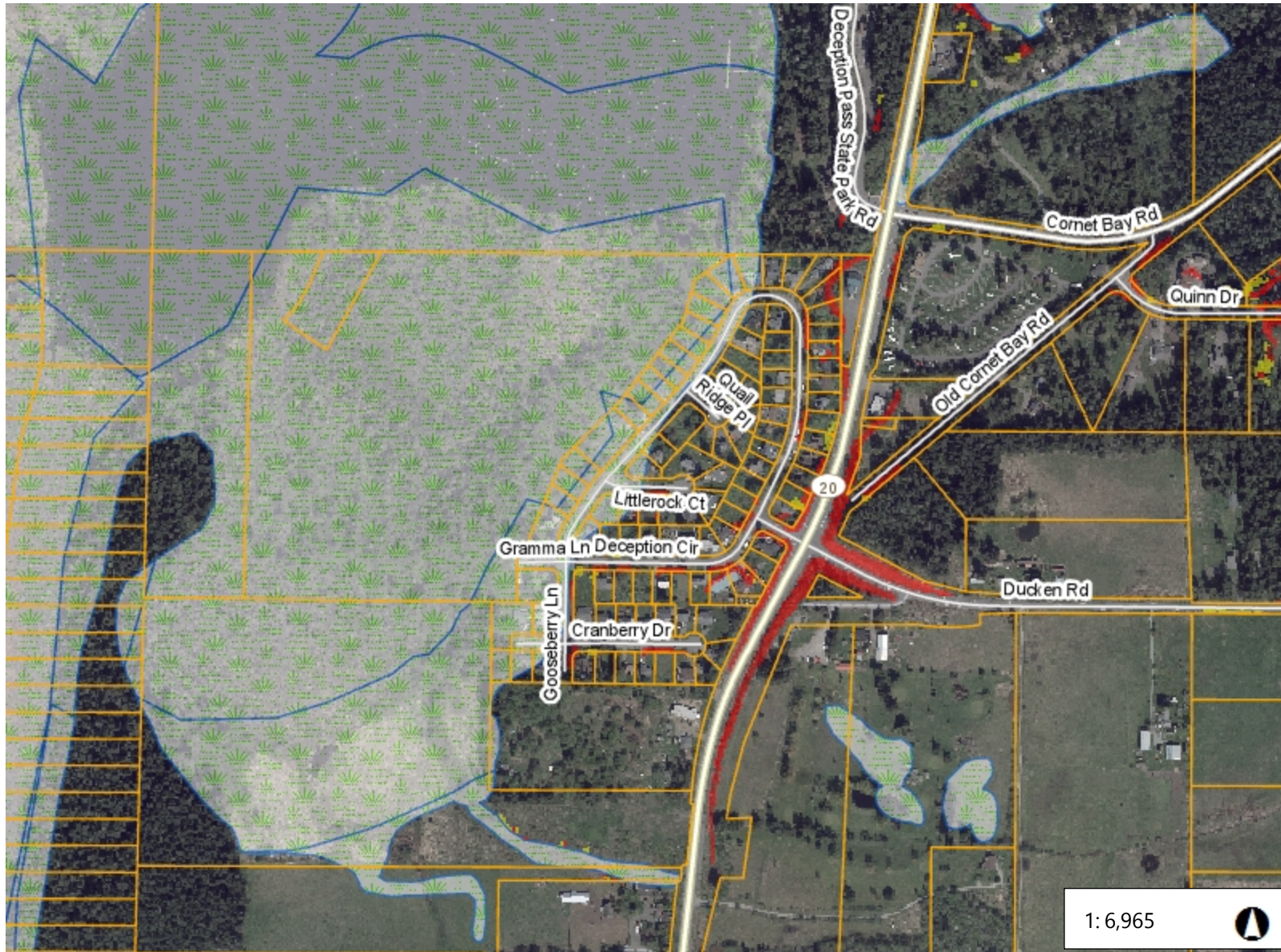
AS-BUILT WATER SYSTEM PLAN
Deception Park View Community
Island County, Washington

DATE: May 12, 1994 SCALE: H: 1" = 100' V: N/A

DRAWING: DPVC
SHEET: 1 of 1



ICGeoMap



Legend

Parcels

Roads

- Highway
- Collector and Arterial
- Local
- Private

Wetlands (IC)

- Steep Slopes (40+%)
- Moderate Slopes (30-40%)

Notes

1,160.9 0 580.45 1,160.9 Feet

WGS_1984_Web_Mercator_Auxiliary_Sphere
© Latitude Geographics Group Ltd.

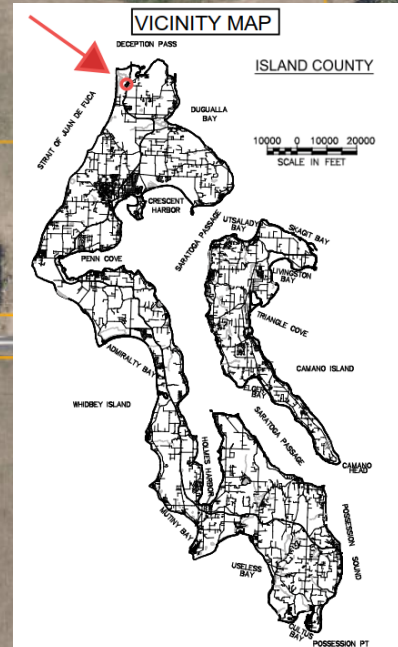
This map is a user generated static output from an Internet mapping site and is for reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable.

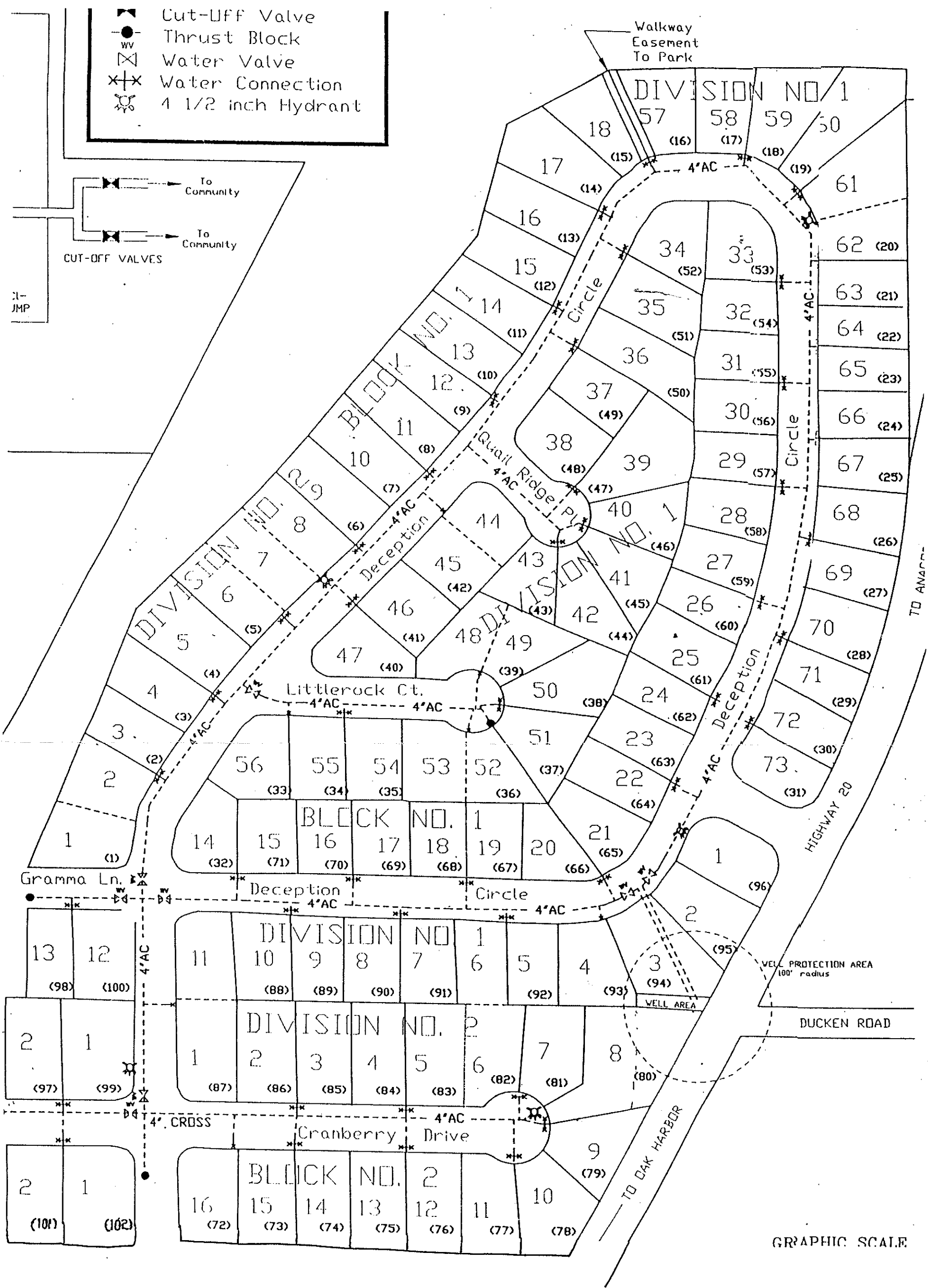
DO NOT USE AS A LEGAL DOCUMENT. ACCURACY IS NOT GUARANTEED.

Deception Pass State Park Water System

Deception Park View
Water System
Retail Service Area

North Whidbey Water District Water System





APPENDIX B Water Facility Inventory Form

WATER FACILITIES INVENTORY (WFI) FORM

Quarter: 2
Updated: 04/08/2021

ONE FORM PER SYSTEM

Printed: 8/17/2021
WFI Printed For: On-Demand
Submission Reason: Owner Update

RETURN TO: Central Services - WFI, PO Box 47822, Olympia, WA, 98504-7822

1. SYSTEM ID NO. 18305 H	2. SYSTEM NAME DECEPTION PARK VIEW	3. COUNTY ISLAND	4. GROUP A	5. TYPE Comm					
6. PRIMARY CONTACT NAME & MAILING ADDRESS SANDRA V. BODAMER [CONTACT] KING WATER CO PO BOX 2243 OAK HARBOR, WA 98277		7. OWNER NAME & MAILING ADDRESS DECEPTION PARK VIEW COMM PRESIDENT ASSN GARY M. JOHNSON 4997 DECEPTION CIRCLE OAK HARBOR, WA 98277							
STREET ADDRESS IF DIFFERENT FROM ABOVE ATTN KING WATER CO. ADDRESS 107 SOUTH MAIN ST. STE. A-203 CITY COUPEVILLE STATE WA ZIP 98239		STREET ADDRESS IF DIFFERENT FROM ABOVE ATTN ADDRESS CITY STATE ZIP							
9. 24 HOUR PRIMARY CONTACT INFORMATION		10. OWNER CONTACT INFORMATION							
Primary Contact Daytime Phone: (360) 678-5336		Owner Daytime Phone: (360) 675-6252							
Primary Contact Mobile/Cell Phone: (360) 969-1019		Owner Mobile/Cell Phone:							
Primary Contact Evening Phone: (xxx)-xxx-xxxx		Owner Evening Phone:							
Fax: (360) 678-8302 E-mail: xxxxxxxxxxxxxxxxxxxxxx		Fax: E-mail: xxxxxxxxxxxxxxxxxxxxxx							
11. SATELLITE MANAGEMENT AGENCY - SMA (check only one)									
<input type="checkbox"/> Not applicable (Skip to #12) <input type="checkbox"/> Owned and Managed SMA NAME: KING WATER COMPANY SMA Number: 128 <input checked="" type="checkbox"/> Managed Only <input type="checkbox"/> Owned Only									
12. WATER SYSTEM CHARACTERISTICS (mark all that apply)									
<input type="checkbox"/> Agricultural <input type="checkbox"/> Hospital/Clinic <input checked="" type="checkbox"/> Residential <input type="checkbox"/> Commercial / Business <input type="checkbox"/> Industrial <input type="checkbox"/> School <input type="checkbox"/> Day Care <input type="checkbox"/> Licensed Residential Facility <input type="checkbox"/> Temporary Farm Worker <input type="checkbox"/> Food Service/Food Permit <input type="checkbox"/> Lodging <input type="checkbox"/> Other (church, fire station, etc.): <input type="checkbox"/> 1,000 or more person event for 2 or more days per year <input type="checkbox"/> Recreational / RV Park									
13. WATER SYSTEM OWNERSHIP (mark only one)				14. STORAGE CAPACITY (gallons)					
<input checked="" type="checkbox"/> Association <input type="checkbox"/> County <input type="checkbox"/> Investor <input type="checkbox"/> Special District <input type="checkbox"/> City / Town <input type="checkbox"/> Federal <input type="checkbox"/> Private <input type="checkbox"/> State				70,000					
15	16 SOURCE NAME	17 INTERTIE	18 SOURCE CATEGORY	19 USE	20	21 TREATMENT	22 DEPTH	23	24 SOURCE LOCATION
Source Number	LIST UTILITY'S NAME FOR SOURCE AND WELL TAG ID NUMBER. Example: WELL #1 XYZ456 IF SOURCE IS PURCHASED OR INTERTIED, LIST SELLER'S NAME Example: SEATTLE	INTERTIE SYSTEM ID NUMBER	WELL WELL IN A WELL FIELD SPRING SPRING IN SPRINGFIELD SEA WATER SURFACE WATER RANNEY / INF. GALLERY OTHER PERMANENT SEASONAL EMERGENCY	SOURCE METERED NONE CHLORINATION FILTRATION FLUORIDATION (UV) IRRADIATION (UV) OTHER	DEPTH TO FIRST OPEN TERNAL IN FEET	CAPACITY (GALLONS PER MINUTE)	1/4, 1/4 SECTION	SECTION NUMBER	TOWNSHIP RANGE
	S01 WELL #1 (AGA575)		X				163	12	NE SW 35 34N 01E
S02	WELL #2 (AGA589)		X				285	26	NE SW 35 34N 01E

WATER FACILITIES INVENTORY (WFI) FORM - Continued

1. SYSTEM ID NO.	2. SYSTEM NAME	3. COUNTY	4. GROUP	5. TYPE
18305 H	DECEPTION PARK VIEW	ISLAND	A	Comm

	ACTIVE SERVICE CONNECTIONS	DOH USE ONLY! CALCULATED ACTIVE CONNECTIONS	DOH USE ONLY! APPROVED CONNECTIONS
25. SINGLE FAMILY RESIDENCES (How many of the following do you have?)		67	100
A. Full Time Single Family Residences (Occupied 180 days or more per year)	67		
B. Part Time Single Family Residences (Occupied less than 180 days per year)	0		
26. MULTI-FAMILY RESIDENTIAL BUILDINGS (How many of the following do you have?)			
A. Apartment Buildings, condos, duplexes, barracks, dorms	0		
B. Full Time Residential Units in the Apartments, Condos, Duplexes, Dorms that are occupied more than 180 days/year	0		
C. Part Time Residential Units in the Apartments, Condos, Duplexes, Dorms that are occupied less than 180 days/year	0		
27. NON-RESIDENTIAL CONNECTIONS (How many of the following do you have?)			
A. Recreational Services and/or Transient Accommodations (Campsites, RV sites, hotel/motel/overnight units)	0	0	0
B. Institutional, Commercial/Business, School, Day Care, Industrial Services, etc.	0	0	0
28. TOTAL SERVICE CONNECTIONS		67	100

29. FULL-TIME RESIDENTIAL POPULATION													
A. How many residents are served by this system 180 or more days per year? <u>180</u>													

30. PART-TIME RESIDENTIAL POPULATION	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
A. How many part-time residents are present each month?												
B. How many days per month are they present?												

31. TEMPORARY & TRANSIENT USERS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
A. How many total visitors, attendees, travelers, campers, patients or customers have access to the water system each month?												
B. How many days per month is water accessible to the public?												

32. REGULAR NON-RESIDENTIAL USERS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
A. If you have schools, daycares, or businesses connected to your water system, how many students, daycare children and/or employees are present each month that are NOT already included in the residential population?												
B. How many days per month are they present?												

33. ROUTINE COLIFORM SCHEDULE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
	1	1	1	1	1	1	1	1	1	1	1	1

34. NITRATE SCHEDULE	QUARTERLY	ANNUALLY	ONCE EVERY 3 YEARS
(One Sample per source by time period)			

35. Reason for Submitting WFI:

☐ Update - Change
☐ Update - No Change
☐ Inactivate
☐ Re-Activate
☐ Name Change
☐ New System
☐ Other _____

36. I certify that the information stated on this WFI form is correct to the best of my knowledge.

SIGNATURE: _____

 PRINT NAME: _____

DATE: _____

 TITLE: _____

APPENDIX C Franchise Agreement



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**FRANCHISE
ISLAND COUNTY WASHINGTON**

After Recording Return To:
Island County Engineer

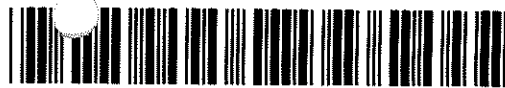
Franchise #74R
Plat of Deception Park View, Divisions 1 & 2
Sec. 35, Twp. 34N, Rge. 1E

In the Matter of the Application of

Deception Park View Community Association, a Washington non-profit corporation, for a franchise to construct, operate and maintain an existing water distribution system in, along, under and/or across all County roads located within the Plat of Deception Park View, Divisions 1 and 2, located in the South West Quarter (SW $\frac{1}{4}$) of Section 35, Township 34 North, Range 1 East, W.M., Island County, Washington.

The application of Deception Park View Community Association, its successors and assigns, for a franchise to construct, operate, and maintain an existing water distribution system in, along, under and/or across all County roads located within the Plat of Deception Park View, Divisions 1 and 2, located in the South West Quarter (SW $\frac{1}{4}$) of Section 35, Township 34 North, Range 1 East, W.M., Island County, Washington having come on regularly for hearing on the 13th day of January, 2003 before the County Commissioners of Island County, Washington under the provisions of Chapter 36.55 RCW Franchises on Roads and Bridges as now in effect or as hereafter amended, and it appearing to the County Commissioners that notice of said hearing, as required by law, has been duly given and that it is for the public interest to grant the franchise herein granted; it is

ORDERED that a franchise be and the same hereby is given and granted to Deception Park View Community Association, its successors and assigns (hereinafter referred to as "the Holder") to construct, operate and maintain an existing water distribution system, together with the necessary laterals and service connections in, along, under and/or across all County roads located within the Plat of Deception Park View, Divisions 1 and 2, located within the South West Quarter (SW $\frac{1}{4}$) of Section 35, Township 34 North, Range 1 East, W.M., Island County, Washington for a period of time to expire on the 13th day of January, 2028 subject to the terms and conditions hereinafter enumerated.



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1. Said water distribution system shall at all times be constructed and maintained so as not to interfere with the use of the county road for travel or maintenance.
2. Whenever necessary for the construction, repair, improvement, alteration or relocation of all or any portion of said county road as determined by the Island County Engineer, any or all of said water distribution system shall be immediately removed from said county road, re-laid or relocated thereon as required by the Island County Engineer.
3. The work of constructing, removing and relocating any and all of said existing and/or future water distribution lines in said water distribution system shall be done at the expense of the holder, and with the least possible interference with travel upon the said county road, and to the entire satisfaction and under the supervision of the Island County Engineer and none of such work shall be undertaken or carried on without ten days written notice having been first given to the Island County Engineer.
4. Any and all damage or injury done or caused to said county road or any portion thereof in the construction, operation, maintenance or repair of said water distribution system shall be immediately repaired and reconstructed under the supervision and to the satisfaction of the Island County Engineer; and in the event the Holder shall fail, neglect or refuse to immediately repair and reconstruct said damage, or injury to said county road, the same may be done by the County of Island (hereinafter referred to as the "County") and the expense and cost thereof shall immediately be repaid by the Holder to the County. In performing any such repairs, neither the County nor any of its employees, agents or subcontractors shall be deemed to be an employee, agent, or subcontractor of the Holder.
5. The Holder shall indemnify and save harmless and defend the County, its appointed and elected officers and employees from and against any and all claims, liability, losses, costs (including attorney's fees), and/or causes of action, which may arise from any act or omission of the Holder, its agents, subcontractors, servants or employees in the performance of services under this franchise. The Holder further agrees to indemnify, save harmless and defend the County, its agents, servants, and employees from and against any claim, demand or cause of action, in connection with or incident to the work performed under this franchise, of whatsoever kind or nature arising out of any conduct or misconduct of the Holder, its agents, subcontractors, servants or employees for which the County, its appointed officers, or elected officers, or employees are alleged to be liable. Provided further that if the claims or suits are caused by or result from the concurrent negligence of (a) the Holder, its agents, subcontractors, servants or employees and (b) the County, its appointed or elected officers or employees, this indemnity provision, with respect to claims or suits based upon such negligence, shall be valid and enforceable only to the extent of the Holder's negligence or the negligence of the contractor's agents, subcontractors, servants or employees. This requirement of the Holder to indemnify and defend the County, its appointed and elected officers and employees shall not apply when the damages are caused by or result from the sole negligence of the County, its appointed or elected officers or employees. In the event of litigation between the parties to enforce the rights

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ISLAND COUNTY WASHINGTON

under this paragraph, reasonable attorney's fees shall be allowed to the prevailing party.

Neither the application by the Holder for any permit or authorization pertaining to the use or occupancy by the Holder of any County road or other County right-of-way or pertaining to the performance on any County road or other County right-of-way of any work by the Holder or by any of its agents, subcontractors, servants or employees, nor the acceptance by the Holder of any such permit or authorization, nor the performance of any activity by the Holder or any of its agents, subcontractors, servants or employees pursuant to any such permit or authorization, nor the acceptance or enjoyment by the Holder of any benefit or privilege arising under any such permit or authorization shall be effective to enlarge or diminish the Holder's obligation or liability to indemnify or hold harmless the County or any of its appointed or elected officers and employees.

6. Upon failure, neglect or refusal of the Holder to immediately do and perform any change, removal, relaying or relocating said water distribution system, or any repairs or reconstruction of said county road herein required of the Holder, the County may undertake and perform such requirement and the cost and expense thereof shall be immediately repaid to the County by the Holder.
7. Any breach of any of the conditions and requirements herein made, or failure on the part of the Holder of this franchise to proceed with due diligence and in good faith after its acceptance, with construction work hereunder, shall subject this franchise to cancellation after a hearing before the County Commissioners, of which said hearing the Holder shall be given at least ten days written notice, if at that time the Holder is a resident and doing business in the State of Washington. Said written notice shall be by certified mail, return receipt requested, if at the time the Holder is a resident or a corporation and doing business in the State of Washington. Otherwise said notice shall be by publishing a notice of said hearing once a week for two consecutive weeks in a newspaper of general circulation in Island County, Washington, the last publication to be at least ten days before the date fixed for said hearing.
8. This franchise is non-exclusive and the County reserves the right to grant franchises to other persons or companies to use the County roads or any part thereof covered by this franchise for the same purposes authorized by law.
9. The granting of this franchise shall place no obligation upon the Island County Engineer and/or the County Commissioners to warrant or defend the rights hereby granted.
10. In constructing, operating, maintaining and repairing said water distribution system the Holder shall conform to applicable ordinances and to policies or requirements made by the Island County Engineer, or any County department or officers authorized to supervise and regulate such work and utility for the protection and safety of the public.
11. The construction that is authorized through the granting of this franchise shall be commenced within one year from the date hereof; otherwise the franchise shall be



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ISLAND COUNTY WASHINGTON

null and void and terminated upon notice as provided by law. Time is the essence of this provision.

12. This franchise is granted under the provisions and subject to the conditions and requirements of Chapter 36.55 RCW Franchises on Roads and Bridges as now in effect or as hereinafter amended.
 - a. Whenever any of the streets, avenues, alleys, roads, highways, rights-of-way or public places designated in such franchise shall be eliminated from the County jurisdiction by reason of the incorporation or annexation to a city, then all the rights, privileges and franchises so granted shall terminate in respect to the streets, avenues, alleys, roads, highways, rights-of-way, and public places so eliminated.
 - b. If at any time the County vacates any County street, avenue, alley, road, highway, right-of-way, or other County property which is subject to rights granted by the franchise and the vacation is for the purpose of acquiring the fee or other property interest in the road, right-of-way, or other property interest in the road, right-of-way, or other County property for the use of the County, in either its proprietary or governmental capacity, then the Board of County Commissioners may, at its option, by giving ninety days' written notice to the grantee and after granting an alternate route, terminate this franchise with reference to such County road, right-of-way, or other County property so vacated, and the County shall not be liable for any damages or losses to the grantee by reason of such termination and the grantee shall move its franchise at its own cost.
13. No assignment or transfer of this franchise in any manner whatsoever shall be valid nor vest any rights hereby granted until the Island County Engineer shall have been furnished with written evidence of such transfer or certified copies thereof, together with written acceptance of the terms of the franchise by the Assignee, and unless and until the County Commissioners shall have granted their consent in writing to such assignment or transfer. Failure to comply with this provision shall be cause for cancellation as herein provided.
14. The Holder shall, within twenty (20) days from receipt of a copy of this order, file with the Island County Engineer at Coupeville its written acceptance of the terms and conditions of this franchise.
15. The Holder of this franchise should remove any asbestos pipe from the County right-of-way. However, it may be abandoned in place subject to the responsibility to remove and dispose of said asbestos pipe at some future date as may be required by the County should future road maintenance constructions or improvement so dictate.
16. The Holder of this franchise, when contemplating work upon, along, over, under or across county right-of-way, shall first file with the Island County Engineer its application for permits to do such work. Such applications shall be accompanied by drawings and information as required by the Island County Engineer. Plans, drawings, and specifications for all utility lines lying within the County right-of-



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ISLAND COUNTY AUDITOR

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FRANCHISE ISLAND COUNTY WASHINGTON

way shall be prepared and approved by a licensed engineer at the expense of the Holder. One copy of plans for constructed work, including as-built construction changes and notations, shall be on file with the office of the County Engineer. No application for work shall be approved without this requirement being met.

17. The Holder is responsible for properly marking all structures in the County right-of-way owned by the holder. In compliance with the County's continuing road maintenance activity. Structures shall be cleared, by the Holder, of tall grass, brush and/or other obstacles (a minimum 5-foot radius required) at all times so County employees in maintenance equipment may easily see said structures. Damage to County equipment due to undisclosed fixtures, non-cleared pedestals, or facilities will be charged to the Holder. Failure by the Holder to comply with the clearing requirements of this paragraph on any occasion with respect to any structure owned by the Holder in the County road right-of-way will eliminate the fiscal responsibility of the County to replace such undisclosed, non-cleared structure damaged due to maintenance on that occasion.
18. The Holder will be subject to any future charge as may be authorized by the Board of County Commissioners through a public process for ordinance adoption that may be required of the franchise holders for their use of County right-of-way.
19. The Holder must comply with the Recommended Standards for Water Works (1997 Edition, Great Lakes - Upper Mississippi River Board of State Sanitary Engineers), the Criteria for Sewage Works Design (State of Washington, Department of Ecology, December 1998) and/or other requirements of the Island County Health Department.

DATED at Coupeville, Washington this 13 day of JANUARY, 2003.



CHAIRMAN, Board of County Commissioners

ATTEST: Elaine Marlow
ELAINE MARLOW
Clerk of the Board

APPENDIX D Deception Park View Financial Information

DECEPTION PARK VIEW ASSOCIATION

FINANCIAL REPORTING PERIOD 6-01-20 TO 5-31-21

PROPOSED BUDGET VS CURRENT STATUS

STATUS AS OF FEBRUARY 28, 2021

WATER ACCOUNT - WASHINGTON FEDERAL SAVINGS

Deposits	Proposed	Current	Difference
	\$ 51,520.00	\$ 38,471.87	\$ 13,048.13
Water Connections	\$ 75,000.00	\$ 30,000.00	\$ 45,000.00
Expenses/Disbursements	Proposed	Current	Difference
King Water	\$ 13,200.00	\$ 15,574.12	\$ (2,374.12)
PSE	\$ 3,240.00	\$ 2,208.89	\$ 1,031.11
Dept of Health	\$ 320.00	\$ 322.07	\$ (2.07)
Annual Dues	\$ 4,000.00	\$ 4,360.00	\$ (360.00)
CIP Savings	\$ 27,720.00	\$ 16,170.00	\$ 11,550.00
Water Connection Surplus to CIP Savings	\$ 63,000.00	\$ -	\$ 63,000.00
Maintenance	\$ 12,000.00	\$ 2,409.20	\$ 9,590.80
Miscellaneous	\$ 1,000.00	\$ 1,040.40	\$ (40.40)
Total	\$ 124,480.00	\$ 42,084.68	\$ 82,395.32
Balance	\$ 2,040.00	\$ 26,387.19	

CIP ACCOUNT - WASHINGTON FEDERAL SAVINGS

	Proposed	Current	Difference
Deposits	\$ 27,720.00	\$ 16,170.00	\$ 11,550.00
Water Connection Surplus to CIP Savings	\$ 63,000.00	\$ -	\$ 63,000.00
Interest	\$ 84.00	\$ 64.50	\$ 19.50
Withdrawals	\$ -	\$ -	\$ -
Balance	\$ 27,804.00	\$ 16,234.50	

COMMUNITY ACCOUNT - WASHINGTON FEDERAL SAVINGS

Deposits	Proposed	Current	Difference
	\$ 4,000.00	\$ 5,350.40	\$ (1,350.40)
Existing Funds for Recreation Area	\$ 10,000.00	\$ -	\$ 10,000.00
Expenses/Disbursements			
PSE	\$ 350.00	\$ 246.29	\$ 103.71
Secretary of State	\$ 10.00	\$ 10.00	\$ -
USPS	\$ 125.00	\$ -	\$ 125.00
Liberty Insurance	\$ 1,000.00	\$ -	\$ 1,000.00
Miscellaneous	\$ 1,000.00	\$ 424.27	\$ 575.73
Community Recreation Area	\$ 11,000.00	\$ 520.32	\$ 10,479.68
Total	\$ 2,485.00	\$ 1,200.88	\$ 1,284.12
Balance	\$ 1,515.00	\$ 4,149.52	

Submitted by: Kathleen Johnson

DECEPTION PARK VIEW ASSOCIATION
FINANCIAL REPORTING PERIOD 6-01-16 TO 5-31-17
STATUS AS OF MAY 31, 2017

WATER ACCOUNT - WASHINGTON FEDERAL SAVINGS

Beginning Balance	\$	10,347.95
Deposits	\$	38,392.26
Total	\$	48,740.21

Expenses/Disbursements

King Water	\$	13,115.51
PSE	\$	3,890.19
USDA Loan	\$	2,789.38
Dept of Health	\$	315.75
Annual Dues	\$	2,660.00
CIP Savings	\$	10,890.00
Returned Check Fees	\$	30.00
Charge Back	\$	469.00
Island County Treasurer	\$	-
Miscellaneous	\$	2.64
Maintenance	\$	-
Total	\$	34,162.47

Ending Balance	\$	14,577.74
-----------------------	----	-----------

CIP ACCOUNT - WASHINGTON FEDERAL SAVINGS

Beginning Balance	\$	7,921.60
Deposits	\$	10,890.00
Interest	\$	13.17
Withdrawals	\$	-
Total	\$	18,824.77

COMMUNITY ACCOUNT - WASHINGTON FEDERAL SAVINGS

Beginning Balance	\$	4,146.63
Deposits	\$	3,613.00
Total	\$	7,759.63

Expenses/Disbursements

PSE	\$	361.74
Liberty Insurance	\$	704.00
USPS	\$	85.80
Secretary of State	\$	10.00
Miscellaneous	\$	161.23
Total	\$	1,322.77

Ending Balance	\$	6,436.86
-----------------------	----	----------

Submitted by: Kathleen Johnson

Submitted on: June 1, 2017

DECEPTION PARK VIEW ASSOCIATION
FINANCIAL REPORTING PERIOD 6-01-17 TO 5-31-18
STATUS AS OF MAY 31, 2018

WATER ACCOUNT - WASHINGTON FEDERAL SAVINGS

Beginning Balance	\$ 14,577.74
Deposits	\$ 35,549.61
Total	\$ 50,127.35

Expenses/Disbursements

King Water	\$ 12,877.90
PSE	\$ 3,034.90
Dept of Health	\$ 315.75
Annual Dues	\$ 3,340.00
CIP Savings	\$ 13,860.00
Returned Check Fees	\$ 10.00
Charge Back	\$ 100.00
Miscellaneous	\$ 100.00
Maintenance	\$ 50.00
Total	\$ 33,688.55

Ending Balance	\$ 16,438.80
-----------------------	---------------------

CIP ACCOUNT - WASHINGTON FEDERAL SAVINGS

Beginning Balance	\$ 18,824.77
Deposits	\$ 13,860.00
Interest	\$ 24.90
Withdrawals	\$ 10,704.67
Total	\$ 22,005.00

COMMUNITY ACCOUNT - WASHINGTON FEDERAL SAVINGS

Beginning Balance	\$ 6,436.86
Deposits	\$ 3,540.00
Total	\$ 9,976.86

Expenses/Disbursements

PSE	\$ 852.87
Liberty Insurance	\$ 737.00
USPS	\$ 97.00
Secretary of State	\$ 10.00
Island County Assessors	\$ 55.55
Miscellaneous	\$ 1,172.64
Total	\$ 2,925.06

Ending Balance	\$ 7,051.80
-----------------------	--------------------

Submitted by: Kathleen Johnson

Submitted on: June 1, 2018

DECEPTION PARK VIEW ASSOCIATION
FINANCIAL REPORTING PERIOD 6-01-18 TO 5-31-19
STATUS AS OF MAY 31, 2019

WATER ACCOUNT - WASHINGTON FEDERAL SAVINGS

Beginning Balance	\$	16,438.80
Deposits	\$	33,810.01
Total	\$	50,248.81

Expenses/Disbursements

King Water	\$	11,982.94
PSE	\$	3,047.17
Dept of Health	\$	348.00
Annual Dues	\$	2,920.00
CIP Savings	\$	13,860.00
Returned Check Fees	\$	10.00
Charge Back	\$	75.00
Miscellaneous	\$	577.00
Maintenance	\$	6,496.84
Total	\$	39,316.95

Ending Balance	\$	10,931.86
-----------------------	-----------	------------------

CIP ACCOUNT - WASHINGTON FEDERAL SAVINGS

Beginning Balance	\$	22,005.00
Deposits	\$	13,860.00
Interest	\$	29.27
Withdrawals	\$	5,000.00
Total	\$	30,894.27

COMMUNITY ACCOUNT - WASHINGTON FEDERAL SAVINGS

Beginning Balance	\$	7,051.80
Deposits	\$	8,180.00
Total	\$	15,231.80

Expenses/Disbursements

PSE	\$	304.83
Liberty Insurance	\$	878.00
USPS	\$	134.00
Secretary of State	\$	10.00
Island County Treasurer	\$	108.08
Miscellaneous	\$	4,431.76
Total	\$	5,866.67

Ending Balance	\$	9,365.13
-----------------------	-----------	-----------------

Submitted by: Kathleen Johnson

Submitted on: June 1, 2019

Deception Park View Association

Financial Reporting Period 6-01-19 to 5-31-20

Status as of May 31, 2020

Water Account - Washington Federal Savings

Beginning Balance	\$	10,931.86
Deposits	\$	35,495.21
Water Connections	\$	50,000.00
Total	\$	96,427.07

Expenses/Disbursements

King Water	\$	11,815.23
PSE	\$	2,833.68
Dept of Health	\$	315.75
Annual Dues	\$	3,120.00
CIP Savings	\$	13,860.00
Water Connection Surplus to CIP	\$	50,000.00
Maintenance	\$	-
Miscellaneous	\$	600.00
Total	\$	82,544.66

Ending Balance	\$	13,882.41
----------------	----	-----------

CIP Account - Washington Federal Savings

Beginning Balance	\$	30,894.27
Deposits	\$	13,860.00
Water Connection Surplus	\$	50,000.00
Interest	\$	52.43
Withdrawals	\$	5,000.00
Total	\$	89,806.70

Community Account - Washington Federal Savings

Beginning Balance	\$	9,365.13
Deposits	\$	3,880.00
CIP Funds for Community Park	\$	5,000.00
Total	\$	18,245.13

Expenses/Disbursements

PSE	\$	301.99
Liberty Insurance	\$	891.00
USPS	\$	106.00
Secretary of State	\$	10.00
Miscellaneous	\$	572.68
Community Park	\$	763.63
Total	\$	2,645.30

Ending Balance	\$	15,599.83
----------------	----	-----------

Submitted by: Kathleen Johnson

Expenses					Income				Net Income
	Water	Community	CIP	Total	Water	Community	CIP	Total	
2017	\$ 34,162.47	\$ 1,322.77	\$ -	\$ 35,485.24	\$ 38,392.26	\$ 953.00	\$ 13.17	\$ 39,358.43	\$ 3,873.19
2018	\$ 33,688.55	\$ 2,925.06	\$ 10,704.67	\$ 47,318.28	\$ 35,549.61	\$ 200.00	\$ 24.90	\$ 35,774.51	\$ (11,543.77)
2019	\$ 39,316.95	\$ 5,866.67	\$ 5,000.00	\$ 50,183.62	\$ 33,810.01	\$ 5,260.00	\$ 29.27	\$ 39,099.28	\$ (11,084.34)
2020	\$ 82,544.66	\$ 2,645.30	\$ 5,000.00	\$ 90,189.96	\$ 85,495.21	\$ 5,760.00	\$ 52.43	\$ 91,307.64	\$ 1,117.68
2021	\$ 124,480.00	\$ 2,485.00	\$ -	\$ 126,965.00	\$ 126,520.00	\$ -	\$ 84.00	\$ 126,604.00	\$ (361.00)

APPENDIX E Water Use Efficiency Reports

Water Use Efficiency Annual Performance Report - 2018

WS Name: DECEPTION PARK VIEW

Water System ID# : 18305 WS County: ISLAND

Report submitted by: Sandra Bodamer

Meter Installation Information:

Estimate the percentage of metered connections: 100%

If not 100% metered – Did you submit a meter installation plan to DOH? No

Within your meter installation plan, what date did you commit to completing meter installation?

Current status of meter installation:

Production, Authorized Consumption, and Distribution System Leakage Information:

12-Month WUE Reporting Period 01/01/2018 To 12/31/2018

Incomplete or missing data for the year? No

If yes, explain:

Total Water Produced & Purchased (TP) – Annual volume gallons	3,255,080 gallons
Authorized Consumption (AC) – Annual Volume in gallons	2,649,525 gallons
Distribution System Leakage – Annual Volume TP – AC	605,555 gallons
Distribution System Leakage – DSL = $[(TP - AC) / TP] \times 100 \%$	18.6 %
3-year annual average - %	14.0 % 2015, 2016, 2018

Goal-Setting Information:

Enter the date of most recent public forum to establish WUE goal: _____

Has goal been changed since last performance report? Yes

Note: Customer goal must be re-established every 6 years through a public process.

Customer WUE Goal (Demand Side):

Customer goal of 122 gallons per day per household.

Customer (Demand Side) Goal Progress:

Average usage per home per day was 135 gpd, which is 1 gallon over the goal set in 2012. This was due to a large leak that was repaired in the early part of 2018.

Additional Information Regarding Supply and Demand Side WUE Efforts

Describe Progress in Reaching Goals:

- Estimate how much water you saved.
- Report progress toward meeting goals within your established timeframe.
- Identify any WUE measures you are currently implementing.
- If you established a goal to maintain a historic level (such as maintaining daily consumption at 65 gallons per person per day for the next two years) you must explain why you are unable to reduce water use below that level.

The following questions will help DOH better understand water usage, water resources management and drought response. The data will be used to provide technical assistance, not for regulatory purposes.

All questions are voluntary

Month	Date of Measurement	Static Water Level (feet below measuring point)	Dynamic Water Level (feet below measuring point)
January			
February			
March			
April			
May			
June			
July			
August			
September			
October			
November			
December			

Water level data:

Please provide the following information (if known) to help us better utilize the water level data.

Well tag Id number:

Well depth:

Water level accuracy (within 0.01 ft < 1 ft ~ 1 ft)

Completion type (e.g., cased open interval, cased open-ended, cased open-ended with perforations, etc...)

Location coordinates (latitude, longitude) and accuracy of the coordinates (< 1ft, ~1ft, >1000ft)

Water level parameter name (e.g. depth below measuring point, depth below top of casing, depth below ground surface)

Elevation of top of casing OR elevation of measuring point if different than top of casing (as specified in question 7)

Monthly/Seasonal Water Usage:

What was your maximum daily water demand for the previous year (in gallons per day)? _____

Month	Volume of Water Produced in gallons
January	
February	
March	
April	
May	
June	
July	
August	
September	
October	
November	
December	

Water shortage response:

Did you activate any level of water shortage response plan the previous year?

- ☐ Yes ☐ No ☐ There was no need to

If you activated a water shortage response plan the previous year, what level did you activate? (Check all that apply)

- ☐ Advisory Conservation ☐ Voluntary Conservation
☐ Mandatory Conservation ☐ Rationing ☐ Other

What factors caused your water shortage the previous year?

- ☐ Drought ☐ Fire ☐ Landslides ☐ Earthquakes
☐ Flooding ☐ Water Supply Limitations ☐ Other

Do not mail, fax, or email this report to DOH

Water Use Efficiency Annual Performance Report - 2019

WS Name: DECEPTION PARK VIEW

Water System ID# : 18305 WS County: ISLAND

Report submitted by: Sandra Bodamer

Meter Installation Information:

Estimate the percentage of metered connections: 100%

If not 100% metered – Did you submit a meter installation plan to DOH? No

Within your meter installation plan, what date did you commit to completing meter installation?

Current status of meter installation:

Production, Authorized Consumption, and Distribution System Leakage Information:

12-Month WUE Reporting Period 01/01/2019 To 12/31/2019

Incomplete or missing data for the year? No

If yes, explain:

Total Water Produced & Purchased (TP) – Annual volume gallons 2,817,620 gallons

Authorized Consumption (AC) – Annual Volume in gallons 2,653,976 gallons

Distribution System Leakage – Annual Volume TP – AC 163,644 gallons

Distribution System Leakage – DSL = $[(TP - AC) / TP] \times 100 \%$ 5.8 %

3-year annual average - % 14.3 % 2016, 2018, 2019

Goal-Setting Information:

Enter the date of most recent public forum to establish WUE goal: 06/21/2019

Has goal been changed since last performance report? No

Note: Customer goal must be re-established every 6 years through a public process.

Customer WUE Goal (Demand Side):

Customer goal of 122 gallons per day per household.

Customer (Demand Side) Goal Progress:

Customer usage for 2019 was 115 gpd, which exceeds the goal of 122 gpd.

Additional Information Regarding Supply and Demand Side WUE Efforts

Describe Progress in Reaching Goals:

- Estimate how much water you saved.
- Report progress toward meeting goals within your established timeframe.
- Identify any WUE measures you are currently implementing.
- If you established a goal to maintain a historic level (such as maintaining daily consumption at 65 gallons per person per day for the next two years) you must explain why you are unable to reduce water use below that level.

The following questions will help DOH better understand water usage, water resources management and drought response. The data will be used to provide technical assistance, not for regulatory purposes.

All questions are voluntary

Month	Date of Measurement	Static Water Level (feet below measuring point)	Dynamic Water Level (feet below measuring point)
January			
February			
March			
April			
May			
June			
July			
August			
September			
October			
November			
December			

Water level data:

Please provide the following information (if known) to help us better utilize the water level data.

Well tag Id number:

Well depth:

Water level accuracy (within 0.01 ft < 1 ft ~ 1 ft)

Completion type (e.g., cased open interval, cased open-ended, cased open-ended with perforations, etc...)

Location coordinates (latitude, longitude) and accuracy of the coordinates (< 1ft, ~1ft, >1000ft)

Water level parameter name (e.g. depth below measuring point, depth below top of casing, depth below ground surface)

Elevation of top of casing OR elevation of measuring point if different than top of casing (as specified in question 7)

Monthly/Seasonal Water Usage:

What was your maximum daily water demand for the previous year (in gallons per day)? _____

Month	Volume of Water Produced in gallons
January	
February	
March	
April	
May	
June	
July	
August	
September	
October	
November	
December	

Water shortage response:

Did you activate any level of water shortage response plan the previous year?

- ☐ Yes ☐ No ☐ There was no need to

If you activated a water shortage response plan the previous year, what level did you activate? (Check all that apply)

- ☐ Advisory Conservation ☐ Voluntary Conservation
☐ Mandatory Conservation ☐ Rationing ☐ Other

What factors caused your water shortage the previous year?

- ☐ Drought ☐ Fire ☐ Landslides ☐ Earthquakes
☐ Flooding ☐ Water Supply Limitations ☐ Other

Do not mail, fax, or email this report to DOH

Water Use Efficiency Annual Performance Report - 2020

WS Name: DECEPTION PARK VIEW

Water System ID# : 18305 WS County: ISLAND

Report submitted by: Sandra Bodamer

Meter Installation Information:

Estimate the percentage of metered connections: 100%

If not 100% metered – Did you submit a meter installation plan to DOH? No

Within your meter installation plan, what date did you commit to completing meter installation?

Current status of meter installation:

Production, Authorized Consumption, and Distribution System Leakage Information:

12-Month WUE Reporting Period 01/01/2020 To 12/31/2020

Incomplete or missing data for the year? No

If yes, explain:

Total Water Produced & Purchased (TP) – Annual volume gallons 3,019,860 gallons

Authorized Consumption (AC) – Annual Volume in gallons 2,751,751 gallons

Distribution System Leakage – Annual Volume TP – AC 268,109 gallons

Distribution System Leakage – DSL = $[(TP - AC) / TP] \times 100 \%$ 8.9 %

3-year annual average - % 11.1 % 2018, 2019, 2020

Goal-Setting Information:

Enter the date of most recent public forum to establish WUE goal: 06/21/2019

Has goal been changed since last performance report? No

Note: Customer goal must be re-established every 6 years through a public process.

Customer WUE Goal (Demand Side):

Customer goal of 122 gallons per day per household.

Customer (Demand Side) Goal Progress:

Actual usage per household per day in 2020 was 123 gallons, which is in line with the goal.

Additional Information Regarding Supply and Demand Side WUE Efforts

Describe Progress in Reaching Goals:

- Estimate how much water you saved.
- Report progress toward meeting goals within your established timeframe.
- Identify any WUE measures you are currently implementing.
- If you established a goal to maintain a historic level (such as maintaining daily consumption at 65 gallons per person per day for the next two years) you must explain why you are unable to reduce water use below that level.

Due to Covid restrictions more people were home for longer periods of time causing higher water usage.

The following questions will help DOH better understand water usage, water resources management and drought response. The data will be used to provide technical assistance, not for regulatory purposes.

All questions are voluntary

Month	Date of Measurement	Static Water Level (feet below measuring point)	Dynamic Water Level (feet below measuring point)
January			
February			
March			
April			
May			
June			
July			
August			
September			
October			
November			
December			

Water level data:

Please provide the following information (if known) to help us better utilize the water level data.

Well tag Id number:

Well depth:

Water level accuracy (within 0.01 ft < 1 ft ~ 1 ft)

Completion type (e.g., cased open interval, cased open-ended, cased open-ended with perforations, etc...)

Location coordinates (latitude, longitude) and accuracy of the coordinates (< 1ft, ~1ft, >1000ft)

Water level parameter name (e.g. depth below measuring point, depth below top of casing, depth below ground surface)

Elevation of top of casing OR elevation of measuring point if different than top of casing (as specified in question 7)

Monthly/Seasonal Water Usage:

What was your maximum daily water demand for the previous year (in gallons per day)?

Month	Volume of Water Produced in gallons
January	
February	
March	
April	
May	
June	
July	
August	
September	
October	
November	
December	

Water shortage response:

Did you activate any level of water shortage response plan the previous year?

- ☐ Yes ☐ No ☐ There was no need to

If you activated a water shortage response plan the previous year, what level did you activate? (Check all that apply)

- ☐ Advisory Conservation ☐ Voluntary Conservation
☐ Mandatory Conservation ☐ Rationing ☐ Other

What factors caused your water shortage the previous year?

- ☐ Drought ☐ Fire ☐ Landslides ☐ Earthquakes
☐ Flooding ☐ Water Supply Limitations ☐ Other

Do not mail, fax, or email this report to DOH

APPENDIX F Water Rates

DECEPTION PARK VIEW COMMUNITY ASSOCIATION

P.O. BOX 2446, OAK HARBOR, WA 98277
DECEPTIONPARKVIEW@GMAIL.COM

2020 Water Rate Increase

Currently we have 66 residents paying water with 67 using water. The following is the summarized current usage variance breakdown:

# of residents	Average Over	% of residents
17	10,000	25%
7 (24)	9,000	10% (35%)
5 (29)	8,500	8% (43%)
38	Under 8,500	57%

43% are at or over our flat rate benchmark.

57% are under our flat rate benchmark.

We currently have 5 households consuming over 12,000 on average.

Current rate:

Residential water use – \$37.50 per month per household connection (\$75 bi-monthly flat rate) plus bi-monthly usage tier structure as follows:

Tier range	Rate/Gal
Under 8500	Included in Flat Rate
8500-10500	\$0.0060
Over 10500	\$0.0080

Approved increase starting June 2020:

Residential water use – \$60 per month per household connection (\$120 bi-monthly flat rate) plus bi-monthly usage tier structure as follows:

Tier range	Rate/Gal
Under 8500	Included in Flat Rate
8500-10500	\$0.0080
Over 10500	\$0.0100

Approved flat rate division as follows:

\$50 for water (Currently \$40)

\$70* for CIP (Currently \$35)

CIP amount is designed to cover the USDA Loan in the future. This breakdown is not listed in the Bylaws and we can adjust it if the water costs increase.

*This is what board members pay plus the tier rates.

APPENDIX G Water Rights Documentation

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

CERTIFICATE OF WATER RIGHT

- ☐ Surface Water (Issued in accordance with the provisions of Chapter 117, Laws of Washington for 1917, and amendments thereto, and the rules and regulations of the Department of Ecology.)
- ☒ Ground Water (Issued in accordance with the provisions of Chapter 263, Laws of Washington for 1945, and amendments thereto, and the rules and regulations of the Department of Ecology.)

CERTIFICATE NUMBER	PERMIT NUMBER	APPLICATION NUMBER	PRIORITY DATE
G1-00552C	9050	9424	May 3, 1968

NAME ROBERT P. FAKKEMA			
ADDRESS (STREET)	(CITY)	(STATE)	(ZIP CODE)
4086 - 400th Avenue West	Oak Harbor	Washington	98277

This is to certify that the herein named applicant has made proof to the satisfaction of the Department of Ecology of a right to the use of the public waters of the State of Washington as herein defined, and under and specifically subject to the provisions contained in the Permit issued by the Department of Ecology, and that said right to the use of said waters has been perfected in accordance with the laws of the State of Washington, and is hereby confirmed by the Department of Ecology and entered of record as shown.

PUBLIC WATER TO BE APPROPRIATED

SOURCE A well - 6"x178'
TRIBUTARY OF (IF SURFACE WATERS)

MAXIMUM CUBIC FEET PER SECOND	MAXIMUM GALLONS PER MINUTE	MAXIMUM ACRE-FEET PER YEAR
	45.0	40.0

QUANTITY, TYPE OF USE, PERIOD OF USE Community domestic supply - continuously during entire year for a maximum potential of 200 lots
--

LOCATION OF DIVERSION/WITHDRAWAL

APPROXIMATE LOCATION OF DIVERSION/WITHDRAWAL 320 feet West and 1305 feet South of center of Sec. 3

LOCATED WITHIN (SMALLEST LEGAL SUBDIVISION)	SECTION	TOWNSHIP N.	RANGE, (E. OR W.) W.M.	W.R.I.A.	COUNTY
	35	34	1 E.	6	Island

RECORDED PLATTED PROPERTY

LOT	BLOCK	OF (GIVE NAME OF PLAT OR ADDITION)
Tract A		Plat of Deception Park View Division No. 1

LEGAL DESCRIPTION OF PROPERTY WATER TO BE USED ON

That part of the N $\frac{1}{2}$ SW $\frac{1}{4}$ and of the North 300 feet of SE $\frac{1}{4}$ SW $\frac{1}{4}$ of Sec. 35, T. 34 N., R. 1 E.W.M. lying Westerly of State Highway 525 (1-D).

PROVISIONS

Nothing in this permit shall be construed as excusing the permittee from compliance with any applicable federal, state, or local statutes, ordinances, or regulations including those administered by local agencies under the Shoreline Management Act of 1971.

The right to the use of the water aforesaid hereby confirmed is restricted to the lands or place of use herein described, except as provided in RCW 90.03.380, 90.03.390, and 90.44.020.

This certificate of water right is specifically subject to relinquishment for nonuse of water as provided in RCW 90.14.180.

Given under my hand and the seal of this office at Olympia, Washington, this 15th day of September, 1974.

JOHN A. BIGGS, Director
Department of Ecology

ENGINEERING DATA

OK DKK

by R. Jerry Bollen
R. JERRY BOLLEN, Assistant Director

FOR COUNTY USE ONLY



STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
P.O. Box 47600 • Olympia, Washington 98504-7600
(360) 407-6000 • TDD Only (Hearing Impaired) (360) 407-6006

September 13, 1999

Deception Park View Comm. Assoc.
Attn: Elaine Young
5073 N. Deception Circle
Oak Harbor, Washington 98277

RE: Addition of a second well to Water Right Certificate G1-00552C

Dear Ms. Young:

I am writing in response to our telephone conversation on August 30, 1999, and Affidavit received on September 8, 1999, that documents the existence of a second well (well #2) operating under Water Right Certificate G1-00552C. The documentation you provided allows your water system to utilize well #2 in accordance with RCW 90.44.100(3). Your water right file will be amended to reflect the existence of this second well.

The water right application #G1-27583 you submitted on January 19, 1995 is no longer necessary, and will be cancelled.

If you have any questions, I can be reached at (425) 649-7020.

Sincerely,

Sheila Baker
Environmental Specialist
Water Resources Program

Cc: Jan Cyr – U.. S. Department of Agriculture
Derek Pell – DOH
Susie King – King Management

RECEIVED

SEP 16 1999

NW DRINKING WATER





STATE OF WASHINGTON
DEPARTMENT OF HEALTH

1511 Third Ave., Suite 719 • Seattle, Washington 98101-1632

November 15, 1999

BOARD OF DIRECTORS
DECEPTION PARK VIEW WATER ASSOCIATION
C/O KING WATER MANAGEMENT
PO BOX 2446
OAK HARBOR WA 98277

Subject: Deception Park View Water System (ID#18305H) Island County
Well #2 Source Approval
Submittal #96-1203

Members of the Board:

I received a copy of the Department of Ecology's September 13, 1999 letter (from Sheila Baker) verifying that well #2 is covered under the association's existing water right certificate G1-00552C. With reference to my June 18, 1997 letter, the Department of Health now considers well #2 an approved source.

Please give me a call in Seattle at (206) 464-5401 if you have any questions or concerns.

Sincerely,

Derek M. Pell, PE
Regional Engineer
NW Drinking Water Operations

cc: Island County Health Department
Island County Assessors Office
Tom Bennett – Purnell & Associates

Water Right Self-Assessment Form for Small Water System Management Programs and Project Reports

System Name: Deception Park View Water System		System ID#: 18305 H		Type of System: Group A Comm		Proposed Type of System: (if changing)	
<u>Water Right Permit, Certificate, Claim # or Exempt</u> *If water right is interruptible, identify limitation in yellow section below		<u>Name on Water Right</u> Robert P. Fakkema		<u>FOR NON-MUNICIPAL SUPPLIERS ONLY:</u> Does water right identify a number of connections? If yes, how many?		<u>WFI Source #</u> If a source has multiple water rights, list each water right on separate line	
						<u>Existing Water Rights</u> Qi = Instantaneous Flow Rate Allowed (GPM or CFS) Qa = Annual Volume Allowed (Acre Feet/Year)	
						<u>Primary Qi</u> Maximum Rate Allowed	<u>Non-Additive Qi</u> Maximum Rate Allowed
						<u>Primary Qa</u> Annual Volume Allowed	<u>Non-Additive Qa</u> Annual Volume Allowed
1. G1-00552C		Robert P. Fakkema		Well #1 & Well #2		45	40.0
2.							
3.							
4.							
				TOTALS =		45	40.0

Column Identifiers for Calculations:

A

B

<u>Current Source Production – Most Recent Calendar Year</u> Qi=Maximum Instantaneous Withdrawal from Source. (GPM or CFS) Qa=Maximum Annual Volume Withdrawn (Acre Feet/Year) This includes wholesale water provided to other systems				<u>Forecasted Source Production at Full System Build Out</u> Projected maximum withdrawal from source at full build out. This includes wholesale water provided to other systems			
<u>Total Qi</u> Instantaneous Flow Rate	<u>Excess or (Deficiency) Qi</u>	<u>Total Qa</u> Annual Volume	<u>Excess or (Deficiency) Qa</u>	<u>Total Qi</u> Instantaneous Flow Rate	<u>Excess or (Deficiency) Qi</u>	<u>Total Qa</u> Annual Volume	<u>Excess or (Deficiency) Qa</u>
0, 35	10	0.0, 11.0	29.0	0, 33	12	0.0, 22.4	17.6
35	10	11	29	33	12	22.4	17.6

C

=A-C

D

=B-D

E

=A-E

F

=B-F

<u>Interruptible Water Rights</u> Identify limitations on any water rights listed above that are interruptible	
Permit or certificate #	Time Period of Interruption

<u>INTERTIES:</u> Systems receiving wholesale water complete this section. Wholesaling systems must include water sold through interties in the source production columns above.										
Name of Wholesaling System Providing Water	Quantities Allowed In Contract		Currently Purchased Quantity currently purchased through intertie				Forecasted Purchase at Full System Build Out Forecasted quantity purchased through intertie			
	<u>Maximum Qi</u>	<u>Maximum Qa</u>	<u>Maximum Qi</u> Instantaneous Flow Rate	<u>Excess or (Deficiency) Qi</u>	<u>Maximum Qa</u> Annual Volume	<u>Excess or (Deficiency) Qa</u>	<u>Maximum Qi</u> Instantaneous Flow Rate	<u>Excess or (Deficiency) Qi</u>	<u>Maximum Qa</u> Annual Volume	<u>Excess or (Deficiency) Qa</u>
TOTALS =										

A

B

C

=A-C

D

=B-D

E

=A-E

F

=B-F

APPENDIX H Cost Analysis

ENGINEER'S ESTIMATE OF PROBABLE CONSTRUCTION COSTS**CLIENT: Deception Park View****PROJECT: System Improvement Project****DATE: 2/15/2022**

NO.	ITEM	UNIT	UNIT COST	QUANTITY	TOTAL COST
General Project Items					
1	Mobilization	LS	\$ 60,000.00	1	\$ 60,000.00
2	Project Temporary Traffic Control	LS	\$ 10,000.00	1	\$ 10,000.00
Booster Pump Replacement					
3	Booster Pump Sled (2) 5-hp Pumps	LS	\$ 30,000.00	1	\$ 30,000.00
4	Booster Pump Manifold	LS	\$ 10,000.00	1	\$ 10,000.00
5	Booster Pump Controls	LS	\$ 15,000.00	1	\$ 15,000.00
6	8" Ductile Iron Pipe	LF	\$ 110.00	100	\$ 11,000.00
Distribution System Improvements					
7	Cut, Cap, and Abandon Existing Water Main	EA	\$ 2,500.00	3	\$ 7,500.00
8	Connect to Existing Water Main	EA	\$ 5,000.00	1	\$ 5,000.00
9	6" PVC C-900 Water Main	LF	\$ 80.00	4,800	\$ 384,000.00
10	12" Road Bore & Casing Pipe	LF	\$ 325.00	270	\$ 87,750.00
11	6" Gate Valves	EA	\$ 2,250.00	11	\$ 24,750.00
12	Bankrun Gravel for Trench Backfill	TON	\$ 30.00	1,950	\$ 58,500.00
13	Service Connection with 3/4" Water Meter	EA	\$ 1,500.00	73	\$ 109,500.00
14	Comb. Air Release/Air Vacuum Valve	LS	\$ 3,400.00	2	\$ 6,800.00
15	Blowoff Assembly	EA	\$ 3,250.00	4	\$ 13,000.00
16	Sample Station	EA	\$ 2,500.00	3	\$ 7,500.00
17	Driveway Restoration	EA	\$ 1,000.00	40	\$ 40,000.00
18	Fire Hydrants	EA	\$ 7,200.00	5	\$ 36,000.00
Building Modifications					
19	Pumphouse Driveway re-grading	LS	\$ 5,000.00	1	\$ 5,000.00
20	Well cover structure replacement and Chlorination room	LS	\$ 20,000.00	1	\$ 20,000.00

Construction Cost =	\$941,300
Sales Tax (8.7%) =	\$82,000
Total Estimated Construction Cost =	\$1,023,000
Contingency (30%) =	\$282,390
Engineering and Design (18%) =	\$169,000
Total Project Cost =	\$1,500,000

Life Cycle Cost Analysis

Deception Park Water District

Source

Inflation: 3.5%

Option: Do Nothing

Initial Cost: \$ -

O&M: \$ -

Lifespan: 60 years

Other costs?: \$ 15,000.00 If so, what year?: every 15 years

NPV: \$ 18,183.23

Option: Replace Well Pump

Initial Cost: \$ 15,000.00

O&M: \$ -

Lifespan: 60 years

Other costs?: \$ 15,000.00 If so, what year?: every 15 years

NPV: \$ 32,477.22

Option: Intertie

Initial Cost: \$ 350,000.00

O&M: \$ 250.00

Lifespan: 60 years

Other costs?: \$ -

NPV: \$ 353,128.89

Option: New well and well pump

Initial Cost: \$ 150,000.00

O&M: \$ 200.00

Lifespan: 60 years

Other costs?: \$ -

NPV: \$ 156,346.49

Life Cycle Cost Analysis

Deception Park Water District

Storage

Inflation	3.5%
-----------	------

Option: Do Nothing	
Initial Cost:	\$ -
O&M:	\$ 200.00
Lifespan:	50 years
Other costs?:	\$ 125,000.00 If so, when?: every 50 years
NPV:	\$ 113,773.36

Option: Replace oldest reservoir	
Initial Cost:	\$ 125,000.00
O&M:	\$ 200.00
Lifespan:	50 years
Other costs?:	\$ -
NPV:	\$ 128,732.42

Option: Replace Both reservoirs	
Initial Cost:	\$ 250,000.00
O&M:	\$ 200.00
Lifespan:	50 years
Other costs?:	\$ -
NPV:	\$ 253,732.42

Life Cycle Cost Analysis
Deception Park Water District
Booster pumps, controls, etc.

Inflation	3.5%
-----------	------

Option: Do Nothing	
Initial Cost:	\$ -
O&M:	\$ 250.00
Lifespan:	15
Other costs?:	
NPV:	\$ 3,128.89

Option: Additional booster pumps, upgrade controls	
Initial Cost:	\$ 66,000.00
O&M:	\$ 100.00
Lifespan:	15
Other costs?:	
NPV:	\$ 67,251.56

Life Cycle Cost Analysis Deception Park Water District Distribution

Inflation	3.5%
-----------	------

Option: Do Nothing	
Initial Cost:	\$ -
O&M:	\$ 20,000.00
Lifespan:	60
Other costs?:	
NPV:	\$ 516,120.78

Option: Upgrade to 6" pipes	
Initial Cost:	\$ 780,000.00
O&M:	\$ 1,000.00
Lifespan:	60
Other costs?:	
NPV:	\$ 805,806.04

Option: Sleeve existing pipes	
Initial Cost:	\$ 300,000.00
O&M:	\$ 10,000.00
Lifespan:	60
Other costs?:	
NPV:	\$ 558,060.39

Life Cycle Cost Analysis
Deception Park Water District
Grounds improvements

Inflation	3.5%
-----------	------

Option: Do Nothing	
Initial Cost:	\$ -
O&M:	\$ 200.00
Lifespan:	50
Other costs?:	
NPV:	\$ 4,816.33

Option: Regrading and minor improvements	
Initial Cost:	\$ 25,000.00
O&M:	\$ 50.00
Lifespan:	50
Other costs?:	
NPV:	\$ 26,204.08

Option: Relocate reservoirs/wells/pump house	
Initial Cost:	\$ 730,000.00
O&M:	\$ 50.00
Lifespan:	50
Other costs?:	
NPV:	\$ 731,204.08

APPENDIX I Capacity Analysis

SYSTEM CAPACITY ANALYSIS

DECEPTION PARK VIEW WATER SYSTEM
PWS ID # 18305 H

Oak Harbor, WA 98277

January 2019

System Contact:
Terri Boonstra
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Oak Harbor, WA 98277
Phone: (360) 675-6252

System Operator:
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For Submittal to:
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CERTIFICATE OF ENGINEER
System Capacity Analysis for Deception Park View Water System

The technical material and data contained within this report has been prepared by or under the direction of the following registered professional engineer(s), licensed in accordance with the laws of the State of Washington to practice in the State of Washington.



QUICK REFERENCE PROJECT INFORMATION

General Project Information

Water System Name	Deception Park View Water System
Project Description	Capacity Analysis to Support Existing Water System
Well #1, Well #2, Reservoir, and Pumphouse Site	S6455-00-0000A-0 Oak Harbor, WA 98277 Owner: Deception Park View Community Association
System Contact	Terri Boonstra, Deception Park View Community Association
System Operator	King Water Company
System Engineer	Jeff Tasoff, P.E. Davido Consulting Group, Inc.

Project Summary

Service Connections	69 Approved Connections 65 Full-Time Single-Family Residences (Current)
Proposed Connections	100 ERUs
System Design Values	Average Day Demand = 200 gpd/ERU Maximum Day Demand = 450 gpd/ERU Peak Hour Demand = 104 gpm
Source Production	Source 01 (inactive) - Well #1 (AGA575) – 12 gpm Source 02 – Well #2 (AGA589) – 33 gpm
Water Rights	G1-00552C, Priority Date: May 3, 1968 $Q_i = 45.0$ gpm & $Q_a = 40.0$ Ac-Ft/year
Treatment	Chlorination dosing and residual
Storage	36,650 gallon Octagonal Concrete Reservoir (20.4' diameter x 15' tall) 33,500 gallon Cylindrical Concrete Reservoir (19.5' diameter x 15' tall)
Booster Pump	(2) 5 HP <i>Goulds 3656</i> (140 gpm @ 45 psi)
Cycle Stop Valves	(2) 2" Model B, 5 gpm bypass flow, Pressure Setting = 49 psi
Hydropneumatic Tanks	(2) 119-gallon <i>WellMate WM-35WB</i> Pressure Tanks
Pump Controls Proposed	Booster Pump #1 (lead pump): 43 – 55 psi Booster Pump #2 (lag pump): 39 – 53 psi
Pump Controls Current	Booster Pump #1 (lead pump): 46 - 58 psi Booster Pump #2 (lag pump): 42 - 56 psi

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APPENDIX B	Equipment Information & Specifications
APPENDIX C	Water Right Information
APPENDIX D	Water Usage Data
APPENDIX E	Capacity Analysis
APPENDIX F	Water Quality Results
APPENDIX G	Hydraulic Modeling
APPENDIX H	Seawater Intrusion Analysis

1. PROJECT DESCRIPTION

This project details a capacity analysis performed on Deception Park View Water System to determine the system capacity based on current water usage. The factors involved in determining system capacity include source capacity, existing storage volume, water rights, booster pump and distribution system capacity. The Washington State Department of Health (DOH) design standards used to evaluate the system include:

- Provide peak demand flow rate while maintaining 30 psi at each service connection
- Adequate source capacity to meet maximum day demand if pumped less than 24 hours
- Adequate equalizing storage volume to meet the peak hour demand for 150 minutes
- Adequate stand-by storage volume for the temporary loss of the system's well
- Reliable operation (not subject to pressure loss or back flow)
- Compliance with system's Water Right Permit(s) / Certificate(s)

2. EXISTING SYSTEM

The system is currently served by a single groundwater well (Well #2) with a submersible pump. The inactive source (Well #1) has been physically disconnected from the system and used only during emergencies. Well #2, installed in 1975, is 6-inch in diameter and 401 feet deep. The source is approved at a capacity of 33 gpm. Please see APPENDIX A for the WFI. Water right limitations set the maximum withdrawal rate from the well at 45 gpm. See APPENDIX C for copy of the system's Water Rights.

Source water from the system's well is chlorinated and discharged to two ground level octagonal and cylindrical concrete reservoirs with storage capacity of approximately 36,000 gal (20.4' diam. x 15' tall) and 33,000 gal (19.5' diam. x 15' tall), respectively. The reservoirs are located adjacent to the pumphouse/well at an elevation of approximately 101 feet. Float level switches control the operation of the well pump.

A booster pump station located within the pumphouse building provides pressurized water to the distribution system. The booster pump system is composed of two booster pumps with automated alternate operation. The booster pumps are Gould's model 3656, both with 5 horse power (HP) motors. The Gould's pumps are each capable of supplying 140 gpm at 45 psi. A cycle stop valve is installed on the discharge of each of the booster pumps. The cycle stop valves along with the two 119-gallon pressure tanks are provided to limit the number of pump starts. Refer to APPENDIX B for information on existing equipment. The emergency well (Well #1) is located adjacent to the pumphouse on the reservoir site.

The main distribution system is composed of 4" polyvinyl chloride pipes (PVC). The total installed pipe length is estimated at 4,500 linear feet. The served parcels are located at an elevation range of 25-110' above sea level. The system is served by a single pressurized distribution system. The booster pumps are currently located at 100 feet elevation with pump on pressure of 46 psi (105') and pump off pressure of

58 psi (135'), which equates to distribution pressure range of 43 to 91 psi. The well, pumphouse and existing reservoir locations are highlighted below in Figure 1. Refer to APPENDIX H for topographic map.



Figure 1 Service Area Map

There are currently 65 connections within the service area. The original system map indicates up to 100 buildable lots within the existing service area. The system is not planning on expanding the existing service area but would like to ensure that adequate service connections are available for infilling the existing lots within the service area.

3. WATER QUANTITY & WATER RIGHTS

3.1 Water Usage

Water usage from the last six years (2013 -2018) was analyzed to determine current design values for the system. The system is composed of mostly full-time residences, so the annual average is a good reflection of typical system usage. Refer to Table 1 below for summary of water usage data.

Table 1 Water Usage Summary

Year	ADD (gpd/ERU)	Summer (gpd/ERU)	ADD MMAD (gpd/ERU)	MDD (gpd/ERU)
2013	114	126	165	280
2014	123	147	168	285
2015	142	162	201	343
2016	150	172	247	419
2017	112	126	191	325
2018	136	148	172	293
Average	130	147	191	324
Minimum	112	126	165	280
Maximum	150	172	247	419
Recommended	200			450

The annual average day demand (ADD) for this period is 130 gpd/ERU. The highest summer (June-September) ADD value from the last 6 years is approximately 172 gpd/ERU. The maximum day demand (MDD) could not be determined from actual water usage data due to a lack of daily source meter readings. Therefore, a multiplier of 1.7 is used to estimate MDD from the maximum monthly average day demand (MADD). The design MADD is 247 gpd/ERU which equates to MDD value of 419 gpd/ERU. For a conservative analysis, the system ADD will use the summer ADD rounded up to 200 gpd/ERU. Likewise, the MDD will be rounded up to 450 gpd/ERU.

The monthly data was plotted to compare year-to-year trends (see Figure 2), and although the 2016 usage was higher than usual, the peak usage occurred in August which is typically a potentially high-water usage month. No other unusual spikes were detected that could suggest a major system leak. The 2016 water usage data appears valid and was included in this analysis.

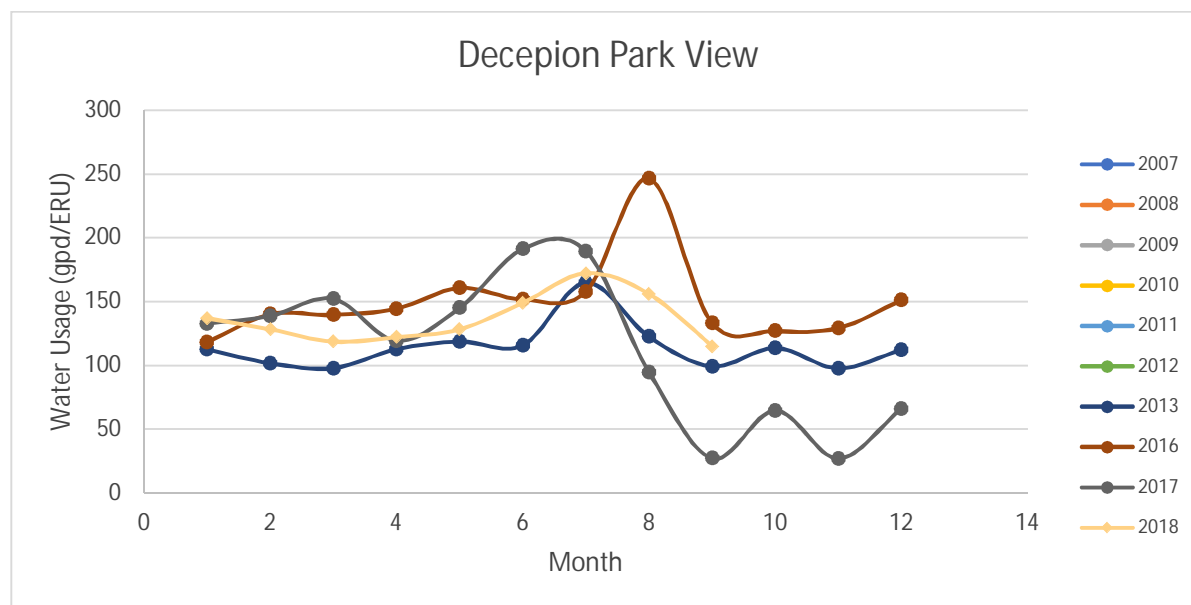


Figure 2 Monthly Water Usage by Year

3.2 Water Rights

Water Right number G1-00552C (Priority Date: May 3, 1968) has been granted for Well #1. The water right allows for total instantaneous withdrawal of 45.0 gpm and an annual withdrawal of 40.0 ac-ft/yr. This water right was amended on September 13, 1999 to include Well #2 as a source. The approved capacity of Well #2 at 33 gpm is less than that allowed by the existing water right instantaneous withdrawal limit of 45 gpm. See APPENDIX C for copy of the system's Water Rights and DOE letter for the amendment of the water right.

4. SYSTEM CAPACITY

4.1 Source Capacity Adequacy

The system source should have the capacity to supply the anticipated maximum day demand.

$$\text{Source Capacity (gpm)} = \frac{\text{MDD} \cdot \text{ERUs}}{\text{minutes pumped}}$$

$$\text{ERU} = \frac{\text{pump rate} \cdot \text{minutes pumps}}{\text{MDD}}$$

$$\text{ERU} = \frac{33 \text{ gpm} \cdot 1440 \text{ minutes/day}}{\text{gpd/ERU}}$$

$$= 105 \text{ ERUs}$$

The current source capacity is the limiting factor for the water system at 105 connections. However, the system only has 100 potential parcels within their existing service area, so a maximum of 100 connections will be adequate to allow the system to service its entire existing service area.

4.2 Treatment System Adequacy

The system currently only has a chlorination system to disinfect the source water. The existing chlorination system is designed to meet the system's well capacity of 33 gpm. The system has adequate standby storage to provide in excess of 33 minutes of contact time at the peak hour demand of 104 gpm. Therefore, the treatment system can meet the system's anticipated maximum day demand as shown in the calculations provided in APPENDIX E.

4.3 Water Rights

The water right for the well allows for total instantaneous withdrawal of 45.0 gpm and an annual withdrawal of 40.0 ac-ft/yr.

The annual water usage at full build-out is estimated by the following equation:

$$ADD \cdot \#ERUs \cdot 365 \text{ days} = \text{Annual Withdrawal}$$

Based upon the ADD value of 200 gpd/ERU and the maximum potential ERU of 100, the estimated annual withdrawal is:

$$\frac{200 \frac{\text{gpd}}{\text{ERU}} \cdot 100 \text{ ERUs} \cdot 365 \text{ days}}{43,560 \frac{\text{ft}^2}{\text{ac}} \cdot 7.48 \frac{\text{gallons}}{\text{ft}^3}} = 22.4 \text{ ac} \cdot \frac{\text{ft}}{\text{year}}$$

The estimated annual withdrawal at maximum potential is less than the current water right limit of 40.0 ac-ft/year. The system's well current capacity of 35 gpm and the approved capacity of 33 gpm are below the water right instantaneous withdrawal rate of 45 gpm. Please see a copy of the water right self-assessment provided in Appendix C.

4.4 Peak Hour Demand

The "Water System Design Manual", Equation 5-3, was used to obtain the estimated Peak Hour Demand (PHD) based upon the MDD and the source limited capacity of 100 ERUs. The equation uses the MDD and the number of potential connections to determine the PHD flowrate.

The number of connections was set to 100 to reflect the needed system capacity.

$$PHD = \frac{MDD(C \cdot N + F)}{1440} + 18$$

N = number of potential connections, 100 connections

C = coefficient based on system size

F = coefficient based on system size
MDD = 450 gpd/ERU

The coefficients utilized in the above formula are dependent upon the number of connections served. The coefficients are listed in Table 2.

Table 2 Peak Hour Demand Calculation Coefficients

Range of ERUs	C	F
15-50	3.0	0
51-100	2.5	25
101-250	2.0	75
251-500	1.8	125
501-1,000,000	1.6	225

The system peak hour demand (PHD) is calculated to be 104 gpm for 100 ERUs, as shown in APPENDIX E.

4.5 System Design Values

Based upon the analysis and calculations performed in the previous two sections, the system design values are summarized in Table 3 below:

Table 3 System Design Values

Parameter	Value
Average Day Demand	200 gpd/ERU
Maximum Day Demand	450 gpd/ERU
Peak Hour Demand	104 gpm

4.6 Booster Pumps

The booster pump system has a redundant pumping system composed of two Goulds 3656 pumps with 5 HP motors. The pumps are each capable of providing 140 gpm at 45 psi during normal operation. A pump curve was located and is provided in APPENDIX B. Each of these pumps are adequate to meet the PHD of 104 gpm for the system. The system can therefore meet the PHD requirements with one of the booster pumps out of service. An electrical analysis of the system was not performed but it was noticed that an emergency generator has been installed on this system. It is assumed that the generator was installed to provide power to at least a single booster pump to keep the system pressurized in the event of a power outage.

4.7 Pressure Tank

Pressure tanks are already installed for pump protection. The pneumatic tank sizing equation for bladder tanks is provided as Equation 11-3:

Total Volume Required:

$$V_T = \frac{R \cdot Q_P}{N_c}$$

$$V_T = \frac{15 (P_1 + 14.7)(P_2 + 14.7)}{(P_1 - P_2) (P_2 + 9.7)}$$

Where:

V_B = Total Volume Required (gallons)

P_1 = pump off pressure (55 psi)

P_2 = pump on pressure (43 psi)

Q_P = pump capacity (125 gpm) at the midpoint (49 psi)

N_c = number of pump starts per hour. Since a duplex alternating pumping system is being specified, a total of 12 starts will be allowed per hour (6 starts for each pump).

$R = 95.4$

Based upon the above parameters, a total volume of 994 gallons of storage is needed for the existing booster pump system operation range using a standard pressure tank configuration.

The system does have two cycle stop valves (CSV) installed between each booster pump and pressure tank. These valves increase pump runtimes to decrease the number of pump starts, however the increased runtimes would appear to increase the overall energy consumption. Per the DOH Group A Water System Design Manual, the minimum withdrawal volume is 10 times the minimum by-pass flow for the CSV. It is anticipated that this would provide an estimated ten minutes of pump-off time when the demand is low before restarting, effectively limiting the number of pump starts to less than 6 per hour. The bypass flowrate for the cycle stop valves is listed at 5 gpm. This would equate to a drawdown volume of 50 gallons.

The system currently provides two 119 gallon pressure tanks or a total of 238 gallons of storage. At the above pressure setting, the drawdown factor is approximately 0.15 from look up tables (refer to APPENDIX B), which would equate to approximately 36 gallons of drawdown. This is below the minimum 50 gallons indicated. However, since there are two booster pumps and if these pumps are configured in a lead/lag/alternate configuration, an additional six starts per hour is provided by the second pump and the existing pressure tank volume would appear adequate.

4.8 Storage

The system is supplemented by two 15' tall concrete reservoirs. One of the reservoirs is octagonal and other is cylindrical with an effective inside diameter of 20.4' and 19.5', respectively. The total capacity is 70,200 gallons or 4,680 gallon/foot of height. The reservoir provides the following storage components:

- Operational Storage (OS)
- Equalizing Storage (ES),
- Stand-by Storage (SBS) and
- Dead Storage (DS)

Operational storage is the height difference between where the well pumps are turned on and off. Equalizing storage is defined as the volume of storage needed to supplement the sources when the peak hourly demand exceeds the total source pumping capacity. Stand-by storage is defined as the volume of stored water available for use during a loss of well production, such as from a power interruption, well pump failure, or similar short-term emergency. Dead storage is the portion of the reservoir that is not usable for storage. Dead storage includes the volume at the top that is needed for installation of the overflow pipe and the offset at the bottom of the tank that is used for silt accumulation.

Operational Storage (OS) is the amount of volume that is needed to supply the system when the well pumps are off. This prevents the excess cycling of well pumps, in a similar manner that bladder tanks provide pump protection. It is assumed that one half of a foot (6") of elevation difference exists between the well pump on and off signals.

$$OS = 0.5 \text{ foot} \cdot 4,680 \frac{\text{gallons}}{\text{foot}} = 2,340 \text{ gallons}$$

$$\frac{2,340 \text{ gallons}}{33 \text{ gpm (well production)}} = 70 \text{ minutes of runtime}$$

The submersible well pump will run for at least one hour after each start. Therefore, the submersible well pumps will not have more than 1 start per hour. The OS is adequate to minimize the number of submersible pump starts per hour.

Equalizing Storage (ES) is the volume of water that is needed to meet the peak demand period for the water system. From Equation 9-1:

$$ES \text{ (gallons)} = (PHD - Q_s) \cdot 150 \text{ minutes}$$

Where:

PHD = peak hour demand, 100 gpm (Refer to Section 2.2 above);

Q_s = well pump capacity, 33 gpm;

$$ES = (100 - 33) \text{ gpm} \cdot 150 \text{ minutes} = 10,650 \text{ gallons (or 2.3 feet)}$$

Dead Storage (DS) is the unusable volume at the top and bottom of the tank. Approximately six inches (6") is provided at the top for the overflow pipe (freeboard) and additional six inches (6") at the bottom of the tank. Therefore, a total of twelve inches (12") or one foot (1.0') of dead storage is provided.

$$DS = 1.0 \text{ foot} \cdot 4,680 \frac{\text{gallons}}{\text{foot}} = 4,680 \text{ gallons}$$

The amount of water available as standby storage can be assumed to be the amount of storage not already utilized.

$$SB \text{ Storage} = \text{Total Reservoir capacity} - OS - ES - DS$$

$$SB \text{ Storage} = 70,200 - 2,340 \text{ gallons} - 10,650 - 4,680 = 52,500 \text{ gallons (11.2 feet)}$$

Standby storage (SB) is the volume of water that would be needed to supply the system in case of a problem with the source. The minimum recommended volume is 200 gallons per ERU. The available standby storage has a capacity to support up to 127 ERUs. The desired standby storage at the proposed 100 ERUs:

$$SB \text{ storage (desired)} = (2)(ADD)(N)$$

$$SB \text{ storage (desired)} = 2 \cdot \frac{200 \text{ gpd}}{\text{ERU}} \cdot 100 \text{ ERUs} = 40,000 \text{ gallons (or 8.5 feet)}$$

The existing reservoir provides approximately 52,500 gallons of stand-by storage (or 525 gallons per ERU). This exceeds the minimum recommended stand-by storage volume ADD and is more than 3 times (or three plus days of storage) during the typical summer demand.

This is an existing non-expanding water system and is not required to provide fire flow. However, the reservoir was also analyzed to determine if fire flow storage volume was provided to determine the feasibility of adding fire flow capability in the future. Residential fire flow requirement is 500 gpm for 30 minutes or 15,000 gallons of storage. Since fire flow storage may be nested with standby storage and the standby storage is in excess of 15,000, the reservoir does provide adequate fire suppression storage as currently installed. The provided storage volumes are summarized in Table 4 below.

Table 4 Reservoir Sizing (Current Usage)

Storage Component	Vol (gal)	Res VF
Top Dead Storage	2,340	0.5
Operational Storage (OS)	2,340	0.5
Equalizing Storage (ES)	10,650	2.3
Standby Storage (SB)	52,500	11.2
Fire Suppression Storage (FSS)	(15,000)	(3.2)
Bottom Dead Storage (DS)	2,340	0.5
Totals:	70,200	15.0

4.9 Water Age

Water age may sometimes become a problem in storage reservoirs, especially when the system is not at its maximum design capacity. The average age of the water in the reservoir is calculated based upon the lowest recorded average day demand of 27 gpd/ERU recorded in 2017. Based upon the existing 65 ERUs, this equates to 1,800 gallons.

$$\text{Water Age} = \frac{\text{Storage Volume}}{\text{ADD} \cdot \text{ERU}} = 54,8900 \frac{\text{gallons}}{1,800 \text{ gallons per day}} = 30 \text{ days}$$

It is recommended that complete turnover of water should occur at least every three to five days. The water in the reservoir does not have adequate turnover during winter months. If the system receives complaints, an aeration system or recirculation pump may be needed.

4.10 SWI Analysis

The SWI analysis provided in APPENDIX H indicates that there is low risk with sea water intrusion. Therefore, there are no existing concerns with increasing the annual withdrawal rate to support the proposed additional service connections.

4.11 Limiting Component

The summary of capacity analysis based on the system's components is provided using Table 5 below and calculations for this analysis are provided in APPENDIX E.

Table 5 System Capacity Components

Component	Maximum Value	Potential Connections
Instantaneous Water Right, Qi	45.0 gpm	144
Annual Water Right, Qa	40.0 ac-ft/year	178
Source Capacity	33 gpm	105
Booster Pumps Capacity	140 gpm @ 45 psi	158
Standby Storage Capacity	53,400	133

The source capacity was determined to be the limiting factor, with the existing capacity of 33 gpm a total of 105 ERUs can be supported. The original system map indicates up to 100 buildable lots within the existing service area. Therefore, the system is requesting a total of 100 ERUs to provide an adequate number of service connections to complete the infilling of the existing service area.

5. IMPROVEMENTS

5.1 Required Improvements

- The system's current pressure setting results in high pressure at the lowest service elevation areas of approximately 25 - 50 feet. The recommended distribution system maximum pressure is typically 80 to 90 psi to reduce the risk of leaks. The delivered pressure can be up to 91 psi at the lowest service elevations. The anticipated minimum pressure at the highest service elevation is 43 psi, which is slightly above the desired minimum recommended service pressure of 40 psi. The lead pump on and off pressure should be lowered 3 psi to 43 and 55 psi to decrease the maximum system pressure to approximately 88 psi, while keeping the minimum pressure at 40 psi. Alternatively, individual pressure reducing valves (PRV) could be installed to reduce system's pressure in the lower elevation areas. Individual PRV should be set between 40-50 psi.
- Confirm that the pressure setting of the cycle stop valves are in the midpoint of the lead pump pressure settings. The cycle stop valves are currently not operating properly and as a result, the pumps are running continually and not building pressure. It is recommended that the cycle stop valves are fixed or replaced. The system should review their past electrical charges to determine the impact that the cycle stop valves have on the overall system electrical usage.
- The booster pump should be configured in a lead/lag/alternate configuration. The electrical controls should be investigated to determine if this is the current system configuration. If not, an alternator module such be installed to provide the required configuration.

5.2 Recommended Improvements

- The system has experienced leaks and water main repairs in the past. Monies should be budgeted to replace the aging mains. A preliminary budget number for waterline replacement is \$200 per linear foot.
- The system is reliant upon a single source. Development of a second source is recommended.
- The water in the reservoir does not have adequate turnover. If this becomes problematic for the customers, the probe setting in the reservoir may be modified to decrease the amount of stored water. These could be adjusted seasonally if needed to balance operational needs. Installation of aeration or recirculation system may also help with water quality if needed.
- An Operations and Maintenance Manual (O & M manual) should be created and maintained. This manual would list the current operational configuration of the system and provide information on the installed equipment and their settings and/or capacities.
- Fireflow could be added to the system with additional booster pumps and upsized watermains. The residential fireflow requirement in Island County is 500 gpm for 30 minutes. Adequate reservoir capacity is currently provided. If desired by the community, the system should plan future upgrades to support adding fireflow. The watermain piping will need to be increased to at least 6" diameter to support the additional flow rates.
- The chlorination tank is currently located close to the pump controls. In order to avoid rusting of the controls, it is advised that the chlorination pump is relocated away from the pump controls in the available space near the northeast corner of the pumphouse. Alternatively, the storage room

located west of the pumphouse can be used as a treatment building to house the chlorination tank and injection point.

- It is recommended that the well enclosure for Well #1 (SO1) is replaced to prevent rodent infestation and to provide good weather protection.

APPENDIX A Existing System Information

WATER FACILITIES INVENTORY (WFI) FORM - Continued

1. SYSTEM ID NO.	2. SYSTEM NAME	3. COUNTY	4. GROUP	5. TYPE
18305 H	DECEPTION PARK VIEW	ISLAND	A	Comm

	ACTIVE SERVICE CONNECTIONS	DOH USE ONLY! CALCULATED ACTIVE CONNECTIONS	DOH USE ONLY! APPROVED CONNECTIONS
25. SINGLE FAMILY RESIDENCES (How many of the following do you have?)		67	69
A. Full Time Single Family Residences (Occupied 180 days or more per year)	67	<div style="border: 1px solid red; padding: 2px; display: inline-block;">65</div>	
B. Part Time Single Family Residences (Occupied less than 180 days per year)	0		
26. MULTI-FAMILY RESIDENTIAL BUILDINGS (How many of the following do you have?)			
A. Apartment Buildings, condos, duplexes, barracks, dorms	0		
B. Full Time Residential Units in the Apartments, Condos, Duplexes, Dorms that are occupied more than 180 days/year	0		
C. Part Time Residential Units in the Apartments, Condos, Duplexes, Dorms that are occupied less than 180 days/year	0		
27. NON-RESIDENTIAL CONNECTIONS (How many of the following do you have?)			
A. Recreational Services and/or Transient Accommodations (Campsites, RV sites, hotel/motel/overnight units)	0	0	0
B. Institutional, Commercial/Business, School, Day Care, Industrial Services, etc.	0	0	0
28. TOTAL SERVICE CONNECTIONS		67	69

29. FULL-TIME RESIDENTIAL POPULATION													
A. How many residents are served by this system 180 or more days per year? 180													

30. PART-TIME RESIDENTIAL POPULATION	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
A. How many part-time residents are present each month?												
B. How many days per month are they present?												

31. TEMPORARY & TRANSIENT USERS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
A. How many total visitors, attendees, travelers, campers, patients or customers have access to the water system each month?												
B. How many days per month is water accessible to the public?												

32. REGULAR NON-RESIDENTIAL USERS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
A. If you have schools, daycares, or businesses connected to your water system, how many students daycare children and/or employees are present each month?												
B. How many days per month are they present?												

33. ROUTINE COLIFORM SCHEDULE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
* Requirement is exception from WAC 246-290	1	1	1	1	1	1	1	1	1	1	1	1

34. NITRATE SCHEDULE	QUARTERLY	ANNUALLY	ONCE EVERY 3 YEARS
(One Sample per source by time period)			

35. Reason for Submitting WFI:

☒ Update - Change
 ☐ Update - No Change
 ☐ Inactivate
 ☐ Re-Activate
 ☐ Name Change
 ☐ New System
 ☐ Other _____

36. I certify that the information stated on this WFI form is correct to the best of my knowledge.

SIGNATURE: <u>Senait</u>	DATE: <u>1/31/2019</u>
PRINT NAME: <u>Senait Gebeeyesus</u>	TITLE: <u>Engineer I</u>

OWNER: Name SETH R. LEE Address 4086 400 AVE NW Oak Harbor WALOCATION OF WELL: County ISLAND NE 1/4 Sec 18 T 28 N R 20 W

bearing and distance from section or subdivision corner.

(3) PROPOSED USE: Domestic ☐ Industrial ☐ Municipal ☒
Irrigation ☐ Test Well ☐ Other ☐(4) TYPE OF WORK: Owner's number of well (if more than one).... 3
New well ☒ Method: Dug ☐ Bored ☐
Deepened ☐ Cable ☒ Driven ☐
Reconditioned ☐ Rotary ☐ Jetted ☐(5) DIMENSIONS: Diameter of well 6 inches
Drilled 401 ft. Depth of completed well 289 ft.

(6) CONSTRUCTION DETAILS:

Casing installed: 6" Diam. from 0 ft. to 285 ft.
Threaded ☐ " Diam. from ft. to ft.
Welded ☒ " Diam. from ft. to ft.Perforations: Yes ☐ No ☒

Type of perforator used

SIZE of perforations in. by in.
perforations from ft. to ft.
perforations from ft. to ft.
perforations from ft. to ft.Screens: Yes ☒ No ☐Manufacturer's Name John Cook
Type RED BRASS Model No. W125
Diam. 6 Slot size 30 from 285 ft. to 289 ft.
Diam. Slot size from ft. to ft.Gravel packed: Yes ☐ No ☒ Size of gravel:
Gravel placed from ft. to ft.Surface seal: Yes ☒ No ☐ To what depth? 18' ft.
Material used in seal
Did any strata contain unusable water? Yes ☐ No ☒
Type of water? Depth of strata
Method of sealing strata off (7) PUMP: Manufacturer's Name
Type: H.P.(8) WATER LEVELS: Land-surface elevation above mean sea level.... 90+ ft.
Static level 90 ft. below top of well Date OCT 75
Artesian pressure lbs. per square inch Date
Artesian water is controlled by (Cap, valve, etc.)(9) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes ☒ No ☐ If yes, by whom? BOB PUMPS
Yield: 30 gal./min. with 41 ft. drawdown after 4 hrs.
" " " "
" " " "

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level
5 min	84' 6"				

Date of test 10-23-75
Bailer test 20 gal./min. with 105 ft. drawdown after 4 hrs.
Artesian flow g.p.m. Date
Temperature of water Was a chemical analysis made? Yes ☒ No ☐

(10) WELL LOG:

Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of formation.

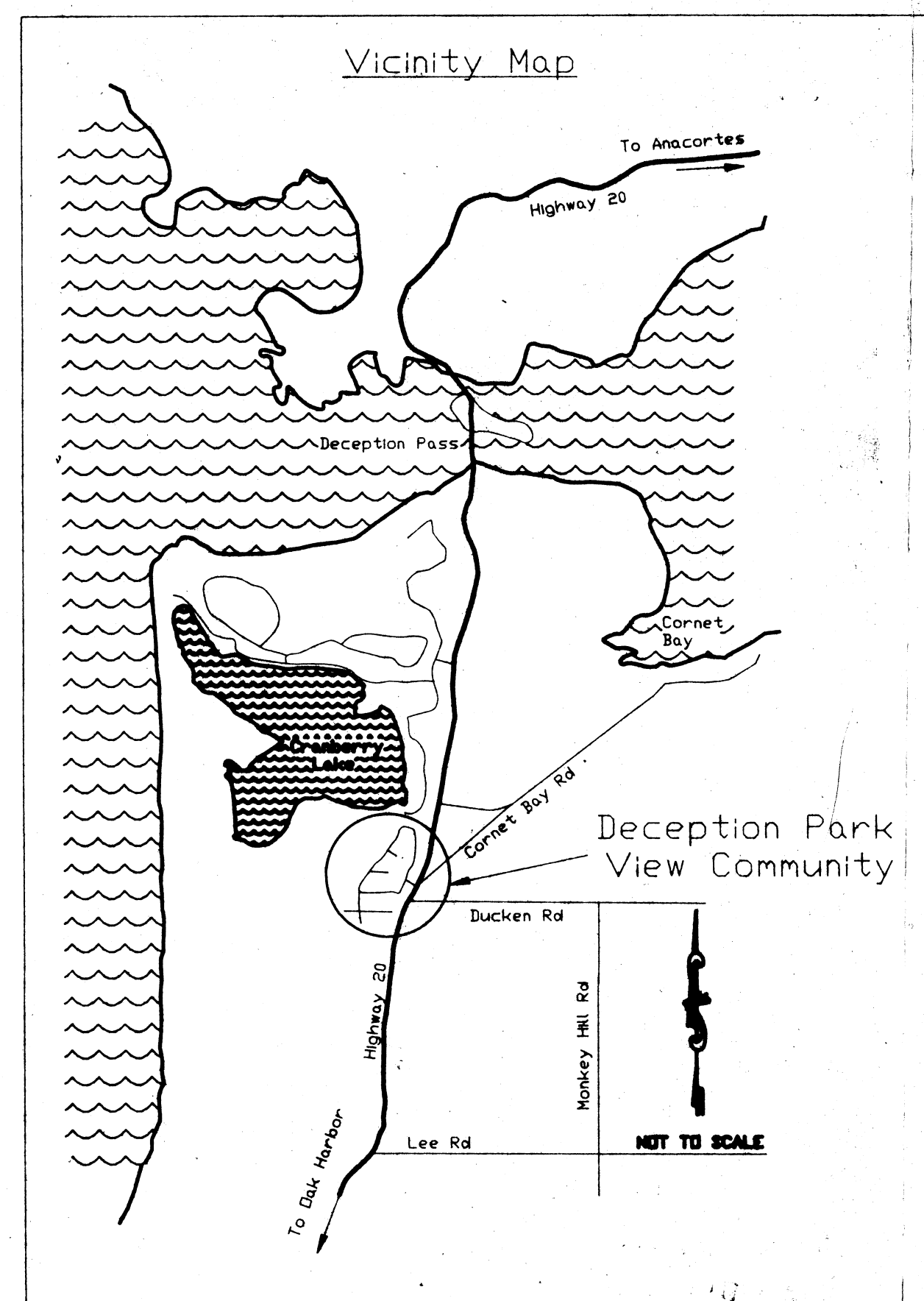
MATERIAL	FROM	TO
HARD PAN	0	18
SAND	18	31
SANDY CLAY	31	51
DRY SAND	51	124
CLAY	124	150
WATER SAND	150	156
GRAVELLY CLAY	156	161
(GOOD) WATER SAND	161	193
CLAY	193	269
WATER SAND	269	277
HARD PAN	277	284
GOOD WATER GRAVEL	284	289
CLAY	289	401
STILL IN CLAY	401	

Work started July, 19 75 Completed OCT 7, 19 75

WELL DRILLER'S STATEMENT:

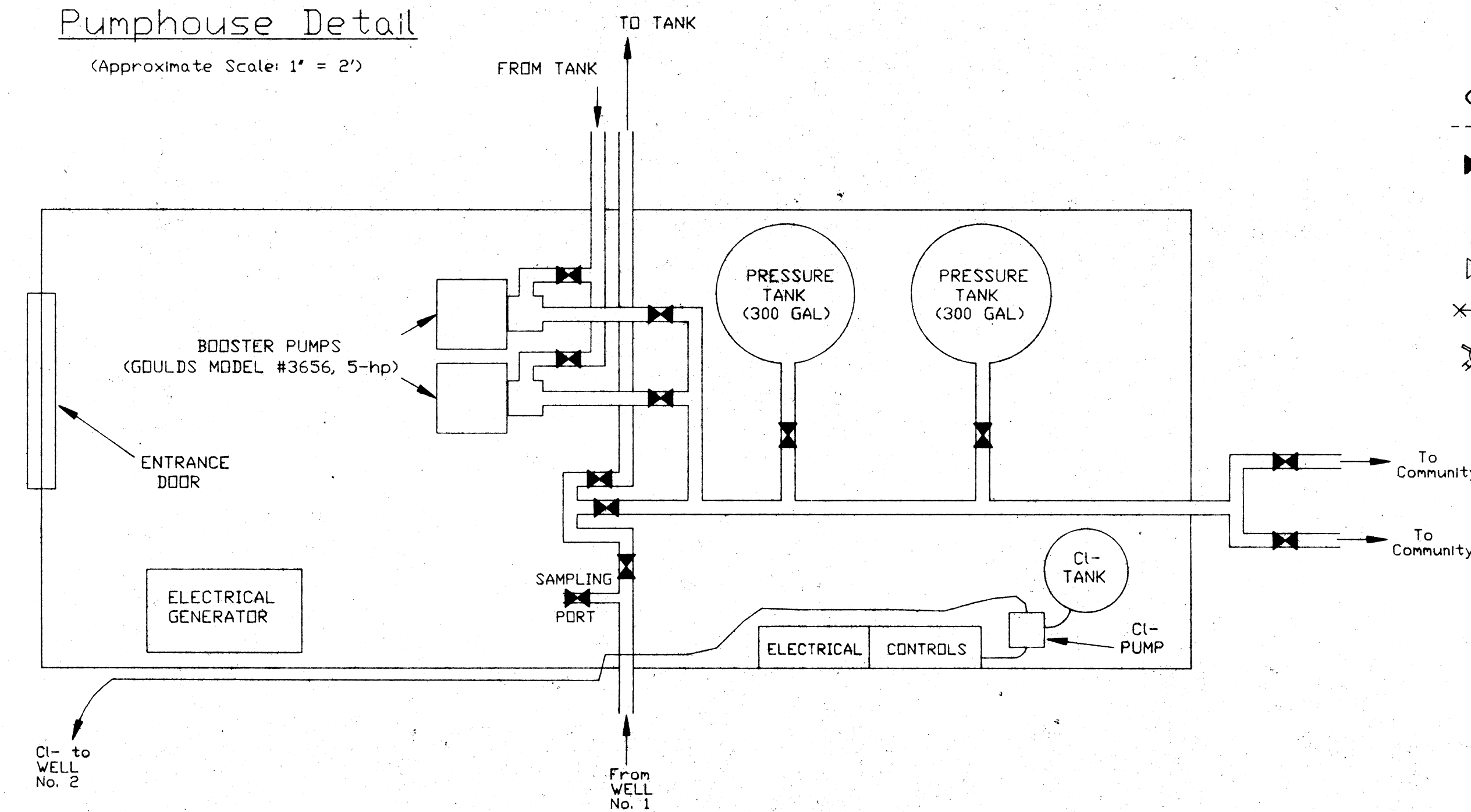
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME WHIDBEY WELL DRILLERS
(Person, firm, or corporation) (Type or print)Address OAK HARBOR WA[Signed] Quinn Fabe
(Well Driller)License No. 0129 Date OCT, 19 75



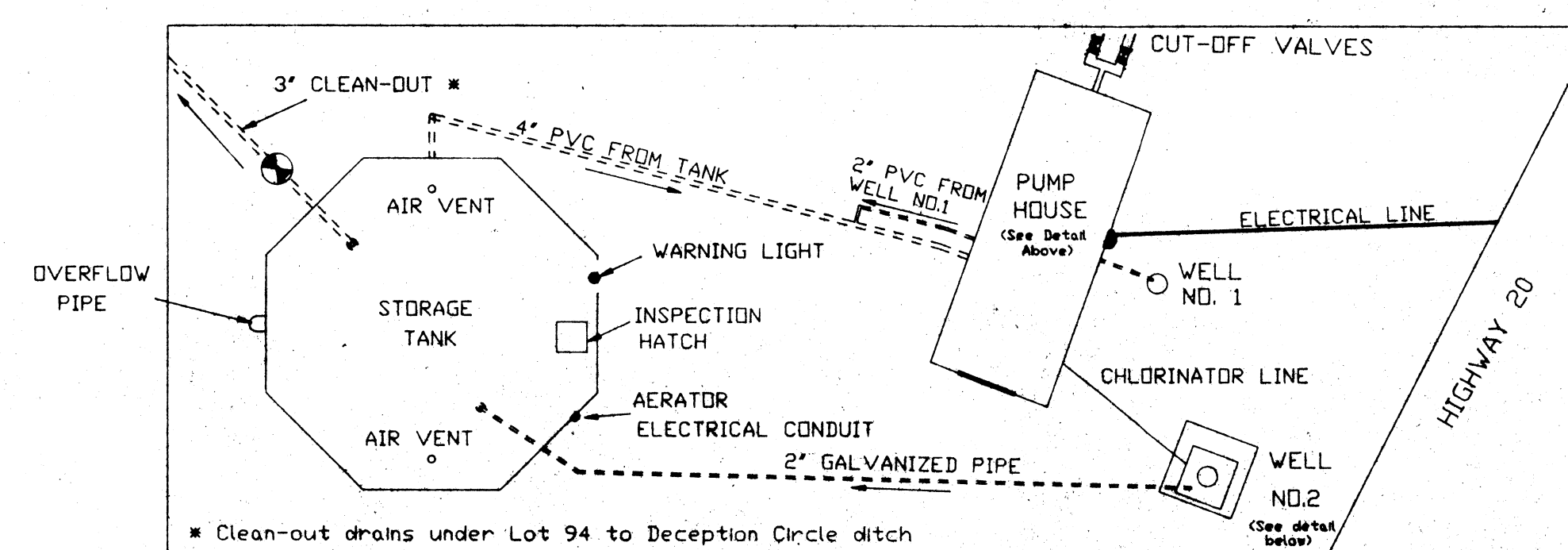
Pumphouse Detail

(Approximate Scale: 1" = 2')



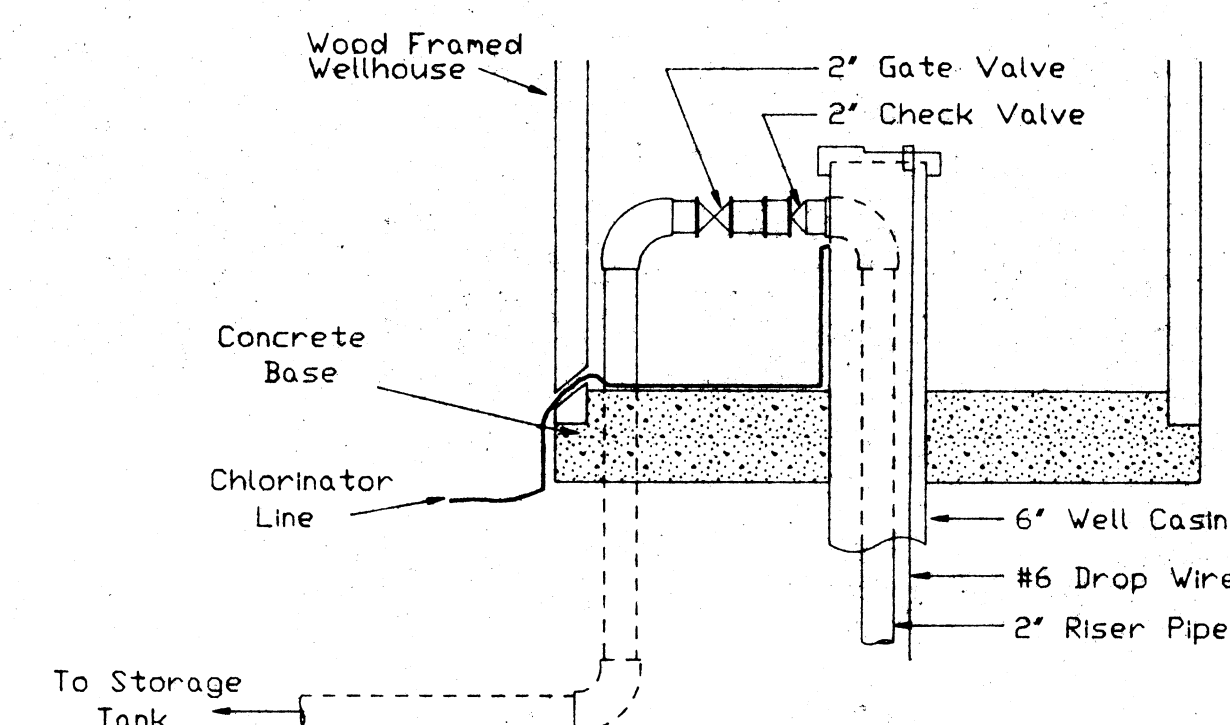
Pumphouse and Storage Tank Detail

(Approximate Scale: 1" = 10')



Well 2 Detail

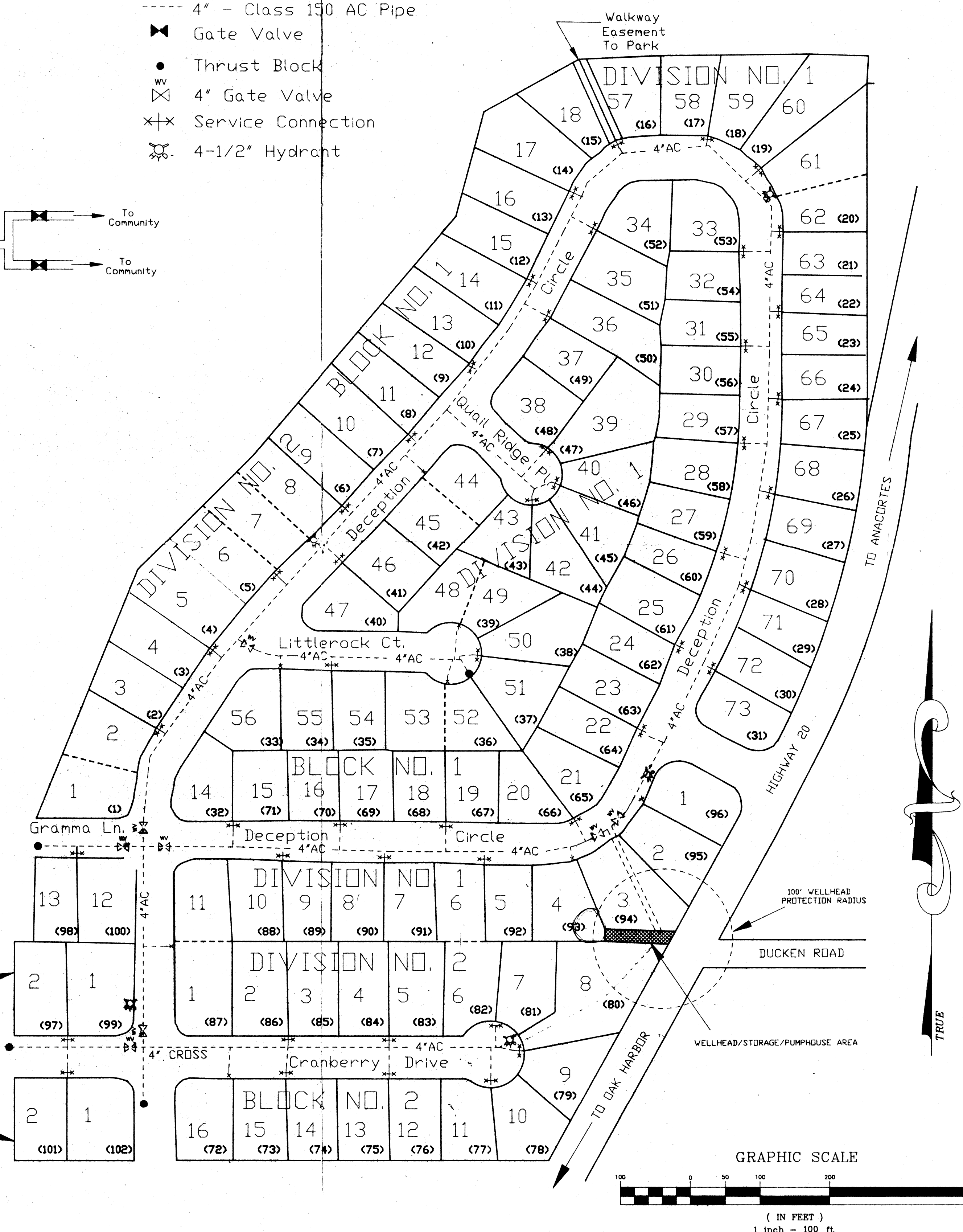
(Not to Scale)



Legend

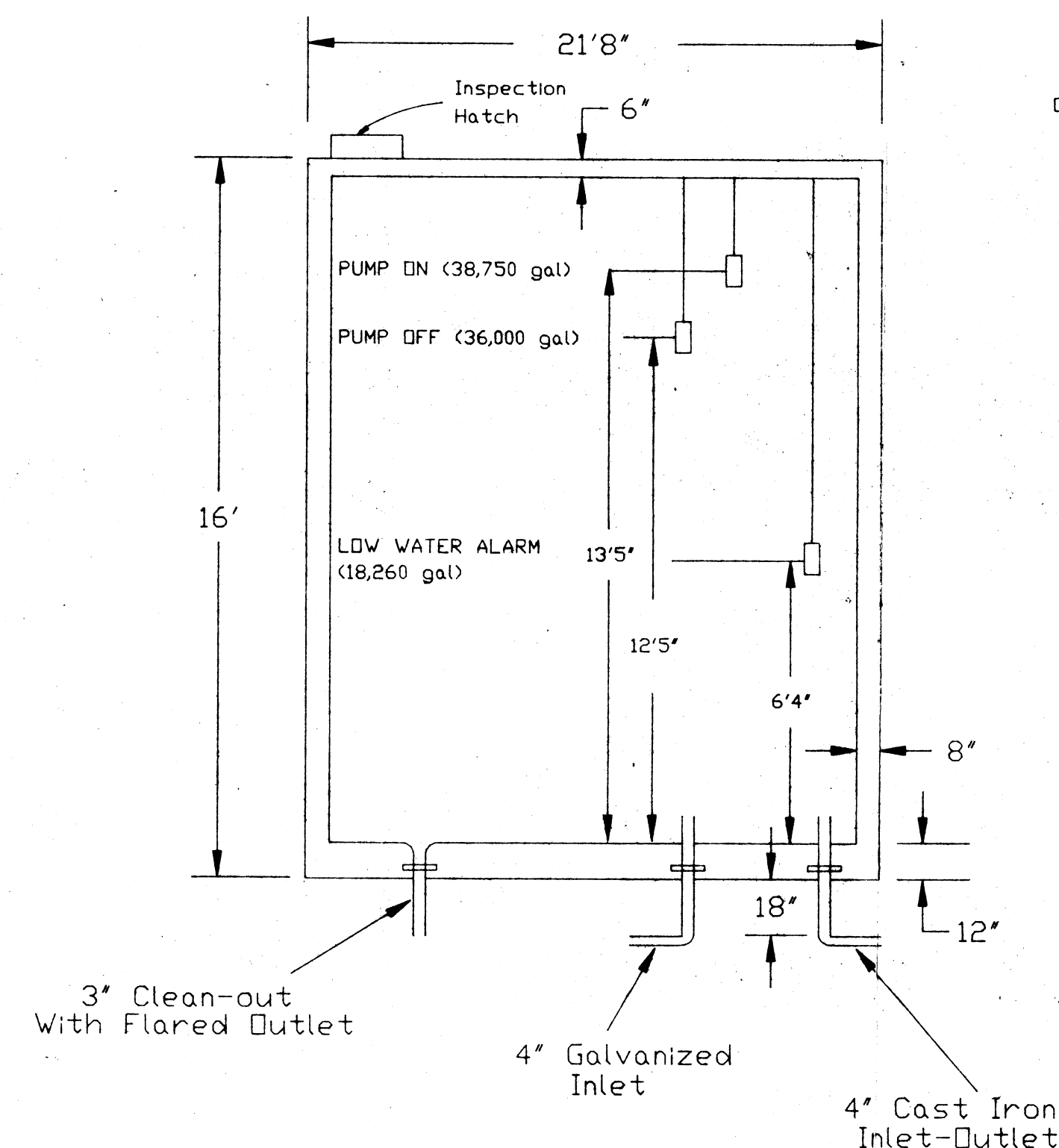
- 14 Legal Lot Number
- (8) Lot Count
- 4" - Class 150 AC Pipe
- ✕ Gate Valve
- Thrust Block
- ✕ 4" Gate Valve
- ✕ Service Connection
- ✕ 4-1/2" Hydrant

Water Distribution System



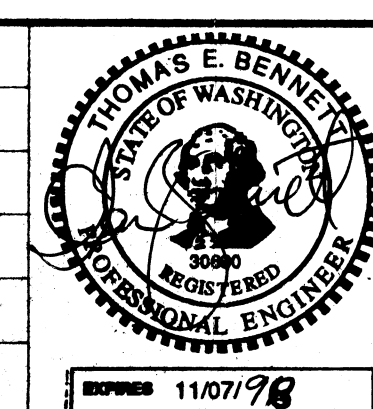
Storage Tank Detail

(Not to Scale)



BLOCK NO. 3
DIV. NO. 2
BLOCK NO. 4

1	DPVC PRELIMINARY AS-BUILT DRAWING	RPB/TEB	5/12/94
2	DPVC FINAL AS-BUILT DRAWING	RPB/TEB	10/26/94
3	AS-BUILT DRAWING UPDATE	TEB	11/22/96
NO.	REVISION	BY	DATE



CONSULTING ENGINEERS
Geology • Civil • Geotechnical • Environmental
2138 Humboldt Street
P.O. Box 5346
Bellingham, WA 98227
Ph: (206) 676-9589
Fax: (206) 676-4625

JOB NO.: 91080D.94
DWG. NAME: DPVC.DWG
DESIGNED BY: RPB
DRAWN BY: RPB
CHECKED BY: TEB

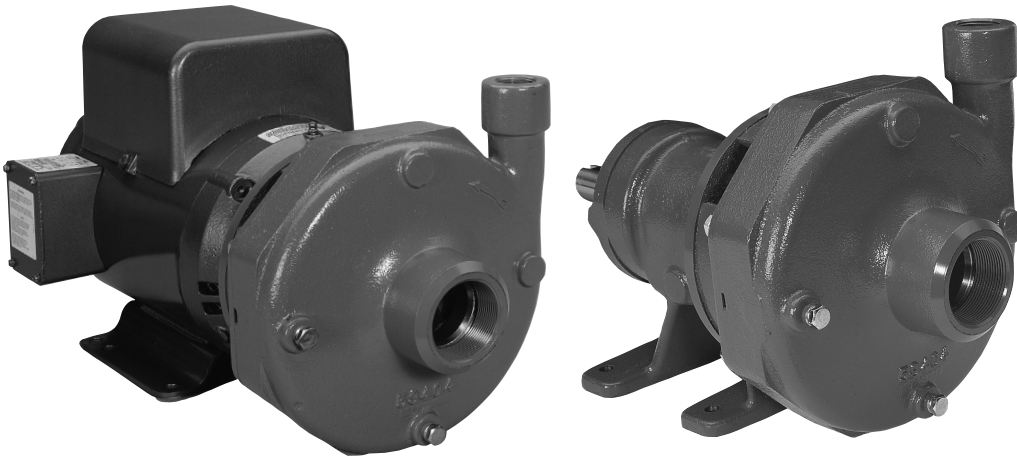
Deception Park View Comm.
P.O. Box 2446
Oak Harbor, WA 98277

AS-BUILT WATER SYSTEM PLAN
Deception Park View Community
Island County, Washington

DATE: May 12, 1994 SCALE: H: 1" = 100' V: N/A

DRAWING: DPVC
SHEET: 1 of 1

APPENDIX B Equipment Information & Specifications



3656/3756 S-Group

CAST IRON, BRONZE FITTED CENTRIFUGAL PUMPS

BOMBAS CENTRÍFUGAS EN HIERRO FUNDIDO CON ACCESORIOS DE BRONCE

3656/3756 S-GROUP NUMBERING SYSTEM FOR ALL UNITS BUILT AFTER AUGUST 3, 1998 SISTEMA DE NUMERACIÓN DEL GRUPO S, MODELOS 3656/3756, PARA TODAS LAS UNIDADES FABRICADAS LUEGO DEL 3 DE AGOSTO DE 1998

The various versions of the 3656 and 3756 S-Group are identified by a product code number on the pump label. This number is also the catalog number for the pump. The meaning of each digit in the product code number is shown below.

Not all combinations of motor, impeller and seal options are available for every pump model. Please check with Goulds Water Technology on non-cataloged numbers.

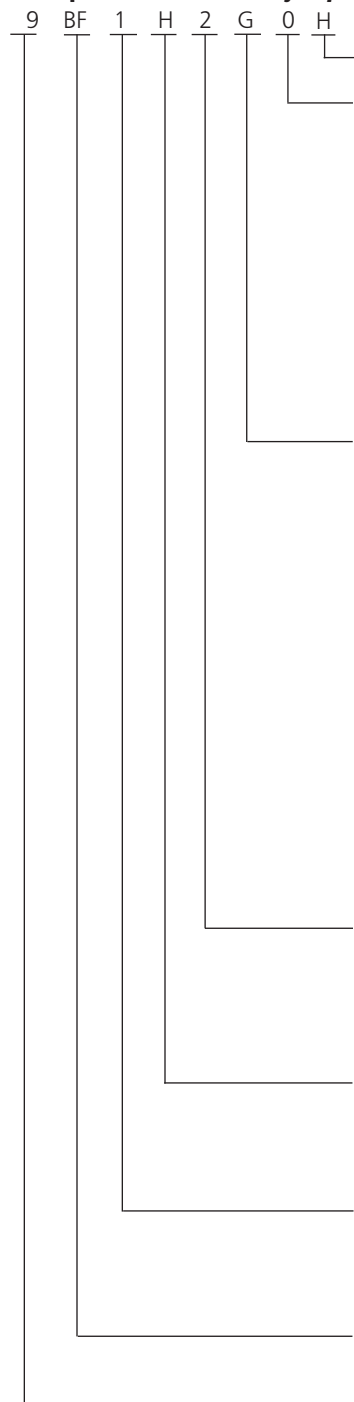
Not recommended for operation beyond printed H-Q curve. For critical application conditions consult factory.

Las diferentes versiones de los modelos 3656 y 3756 del Grupo S se identifican con un número de código de producto en la etiqueta de la bomba. Este número es también el número de catálogo de la bomba. A continuación se ilustra el significado de cada dígito en el código del producto.

No todas las combinaciones de motor, impulsor y sellos están disponibles para cada modelo. Consulte a Goulds Water Technology sobre números que no aparecen en el catálogo.

No se recomienda la operación más allá de la curva impresa de H-Q (carga-capacidad). Para aplicaciones bajo condiciones críticas, consulte con la fábrica.

Example Product Code, Ejemplo del código de producto



High Head Impeller (1½ x 2 – 6H Only), Impulsor de carga alta (1½ x 2 – 6H únicamente)

Mechanical Seal and O-ring, Sello mecánico y anillo en O

Type 21 Mechanical Seal, <i>Tipo 21 sello mecánico</i>					
Seal Code, Código del Sello	Rotary, Rotativo	Stationary, Estacionario	Elastomers, Elastómeros	Metal Parts, Partes Metálicas	Part No., Pieza Número
0	Carbon, Carbón	Ceramic, <i>Cerámica</i>	BUNA-N	316 SS, 316 Acero inoxidable	10K13
1		Sil-Carbide, Carburo de	EPR		10K19
3		<i>silicona</i>	Viton		10K27
5	Sil-Carbide				10K64
9	Packed Box Design with BUNA O-Ring, <i>Diseño de prensaestopas empacado con anillo en O de BUNA</i>				15K16

Pump #1:
Goulds 3656, 11/2 x 2-6
3BF15012H

Pump #2:
Goulds 3656, 11/2 x 2-6
3BF15013

Note: 10K27 replaces obsolete 10K25, Nota: La 10K27 reemplaza la obsoleta 10K25.

Impeller Option Code, Código de opción de impulsor

Impeller Code, Código del impulsor	22BF	9BF	3BF		5BF	4BF	6BF
	1 x 2 – 7	1 x 2 – 8	1½ x 2 – 6	1½ x 2 – 6H	1½ x 2 – 8	2½ x 3 – 7	3 x 4 – 7
	Dia.	Dia.	Dia.	Dia.	Dia.	Dia.	Dia.
A	6¾"	8½" "	5½ ¹⁵ / ₁₆ " "	5½ ¹⁵ / ₁₆ " "	8½ ¹⁵ / ₁₆ " "	7½ ¹⁵ / ₁₆ " "	7½ ¹⁵ / ₁₆ " "
B	6 ⁷ / ₁₆	7 ⁷ / ₈	5 ⁵ / ₈	5 ⁵ / ₈	7 ⁷ / ₈	6 ⁷ / ₈	6 ³ / ₈
C	6	7 ⁷ / ₁₆	5½ ¹⁵ / ₈		6¾	6 ⁶ / ₁₆	5½
D	5¾	7	4¾		5¾	6	4 ¹¹ / ₁₆
E	5½	6½			7¾	5 ¹¹ / ₁₆	5½
F	5 ⁵ / ₁₆	6 ³ / ₁₆			7	5 ⁷ / ₁₆	6
G	4 ¹³ / ₁₆	5 ³ / ₈			6¼	5 ³ / ₁₆	
H	4 ⁹ / ₁₆	5½ ¹⁵ / ₈			6 ⁷ / ₈	4¾	
J	4 ³ / ₈					4½	
K	4 ¹ / ₁₆					4 ¹ / ₁₆	
L	3 ¹³ / ₁₆						

Driver, Elemento motor

1 = 1 PH, fase, ODP 4 = 1 PH, fase, TEFC 7 = 3 PH, fases, XP 0 = 1 PH, fase, XP
2 = 3 PH, fases, ODP 5 = 3 PH, fases, TEFC 8 = 3 PH, fases, 575 V, XP
3 = 3 PH, fases, 575 V, ODP 6 = 3 PH, fases, 575 V, TEFC 9 = 3 PH, fases, TEFC, PREFE
1 PH, fase = Monofásico; 3 PH, fases = Trifásico

HP Rating, Potencia nominal, HP

C = ½ HP F = 1½ HP J = 5 HP M = 15 HP
D = ¾ HP G = 2 HP K = 7½ HP N = 20 HP
E = 1 HP H = 3 HP L = 10 HP

Driver: Hertz/Pole/RPM, Elemento motor: Hertz/Polos/RPM

1 = 60 Hz, 2 pole, 3500 RPM 4 = 50 Hz, 2 pole, 2900 RPM
2 = 60 Hz, 4 pole, 1750 RPM 5 = 50 Hz, 4 pole, 1450 RPM
3 = 60 Hz, 6 pole, 1150 RPM

Material, Material

BF = Bronze fitted, Accesorios de bronce AI = All iron, Todo hierro AB = All bronze, Todo bronce

Pump Size, Tamaño de bomba

3 = 1½ x 2 – 6(H) 5 = 1½ x 2 – 8 9 = 1 x 2 – 8
4 = 2½ x 3 – 7 6 = 3 x 4 – 7* 22 = 1 x 2 – 7

*Flanged design suction and discharge. Succión y descarga brida del diseño.

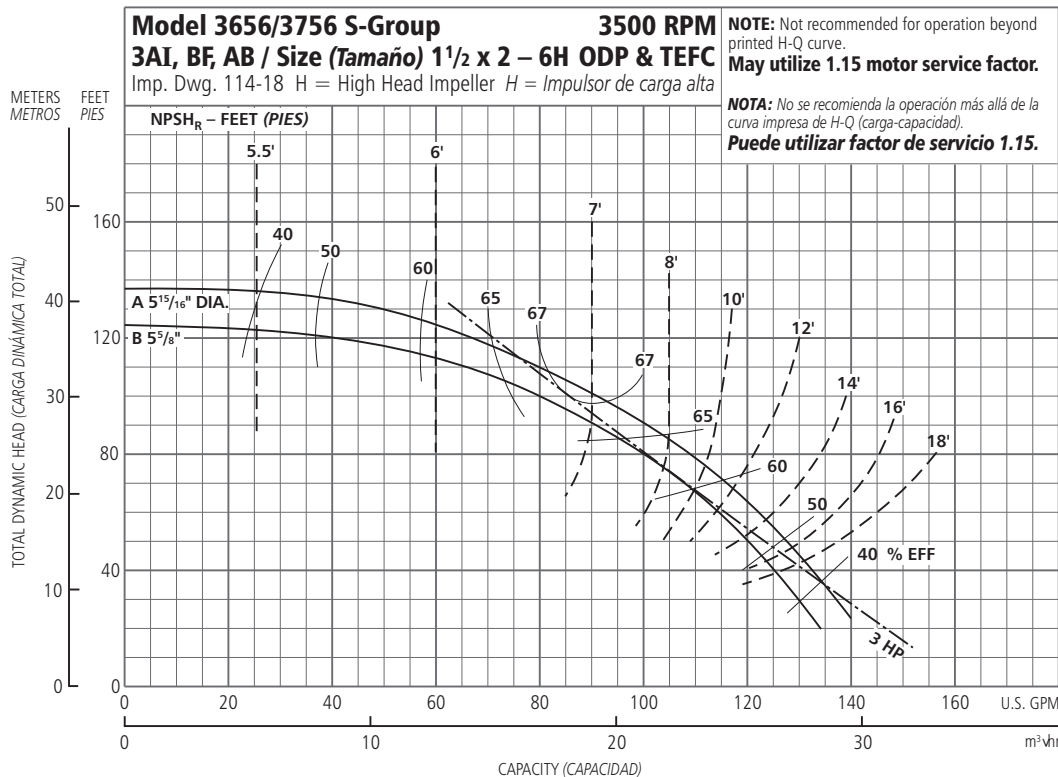
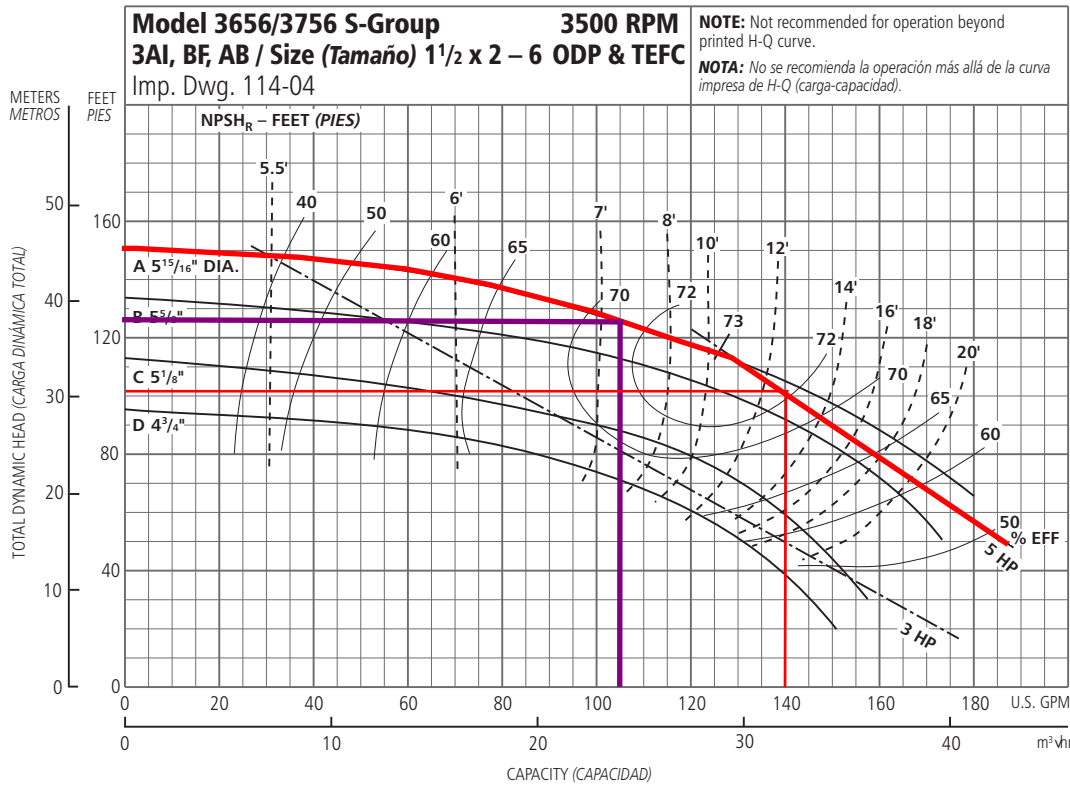
The 1 x 2 – 8 and 1 x 2 – 7 are only available in Bronze Fitted. Los tamaños 1 x 2 – 8 y 1 x 2 – 7 están disponibles con accesorios de bronce únicamente.

For frame mounted version, substitute the letters "FRM" in these positions.

Para las versiones de montaje en bastidor, reemplazar las letras en esta ubicación con "FRM".

Commercial Water

PERFORMANCE CURVES – 60 HZ, 3500 RPM CURVAS DE DESEMPEÑO – 60 HZ, 3500 RPM



(2) Existing Pressure Tanks

WM-SERIES (CLASSIC & CLASSIC QUICK CONNECT MODELS) CAPTIVE AIR TANKS

EASY TO INSTALL, MAINTAIN, AND SERVICE

Our WM-Series offers features and benefits that steel tanks can't match. From their corrosion-proof composite construction to their lighter weight, easier maintenance and less expensive installation, WM-Series pressure tanks are the preferred choice of professionals, especially when the following advantages are added to the mix:

- Available in two styles:
 - QUICK CONNECT drain assembly, heavy gauge polymer aircell
 - CLASSIC drain assembly, heavy gauge polymer aircell
- Replaceable Aircell – for easier field servicing

- Easy to carry
- Easy and Less Costly to Install – usually requiring only one person and fewer man-hours
- Greater Drawdown than Comparably-Sized Steel Tanks – for greater efficiency
- Won't Rust in Corrosive Environments – particularly important in agricultural and livestock applications, and coastal regions



Tested and Certified by the Water Quality Association (WQA) to NSF/ANSI-61, Section 8 and NSF/ANSI 372.

APPLICATIONS

- Residential
- Light Commercial
- Pressure Boosting



SPECIFICATIONS – CLASSIC QUICK CONNECT

MODEL	CAPACITY GAL / LITER	MAXIMUM OPERATING PRESSURE PSI / kPa / BAR	DRAWDOWN 30/50 SETTING** GAL/LITER	DIAMETER* INCH / CM	OVERALL HEIGHT* INCH / CM	HEIGHT* INLET/OUTLET TO FLOOR INCH / CM	SYSTEM CONNECTION	ASSEMBLY WEIGHT* LB / KG
WM-4 / WM0060 QC	14.5 / 55	125 / 862 / 8.6	4.5 / 17.0	16 / 41	26 / 66	1.75 / 4.4	1" male NPT	16.9 / 7.6
WM-6 / WM0075 QC	19.8 / 75	125 / 862 / 8.6	6.1 / 23.1	16 / 41	32 / 81	1.75 / 4.4	1" male NPT	20.85 / 9.5
WM-9 / WM0120 QC	29.5 / 112	125 / 862 / 8.6	9.1 / 34.4	16 / 41	44 / 112	1.75 / 4.4	1" male NPT	28.80 / 13.0
WM-12 / WM0150 QC	40.3 / 153	125 / 862 / 8.6	12.5 / 47.3	16 / 41	57 / 145	1.75 / 4.4	1" male NPT	35.05 / 15.9
WM-14WB / WM0180 QC	47.1 / 178	125 / 862 / 8.6	14.6 / 55.3	21 / 53	41.3 / 105	2.25 / 5.7	1-1/4" male NPT	46.27 / 21.0
WM-20WB / WM0235 QC	60.0 / 227	125 / 862 / 8.6	18.5 / 70.0	24 / 61	41.5 / 105	2.25 / 5.7	1-1/4" male NPT	52.87 / 24.0
WM-23 / WM0300 QC	79.6 / 301	125 / 862 / 8.6	24.6 / 93.1	21 / 53	62 / 157	2.25 / 5.7	1-1/4" male NPT	71.07 / 32.3
WM-25WB / WM0330 QC	86.7 / 328	125 / 862 / 8.6	26.8 / 101.5	24 / 61	55.25 / 140	2.25 / 5.7	1-1/4" male NPT	77.22 / 35.0
WM-35WB / WM0450 QC	119.7 / 453	125 / 862 / 8.6	37.0 / 140.1	24 / 61	74.25 / 189	2.25 / 5.7	1-1/4" male NPT	102 / 46.4

NOTE: Maximum external operating temperature 120°F [49°C]. Maximum internal operating temperature 100°F [38°C]. Minimum operating temperature 40°F [4°C].

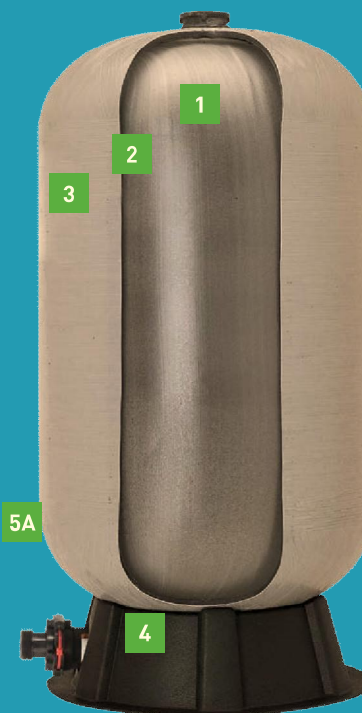
* Diameter, height and weight may vary slightly without notice.

** In keeping with current industry standards, drawdown factors are based on Boyle's law. Actual drawdowns will vary depending upon system variables, including the accuracy and operation of the pressure switch and gauge and operating temperature of the system.

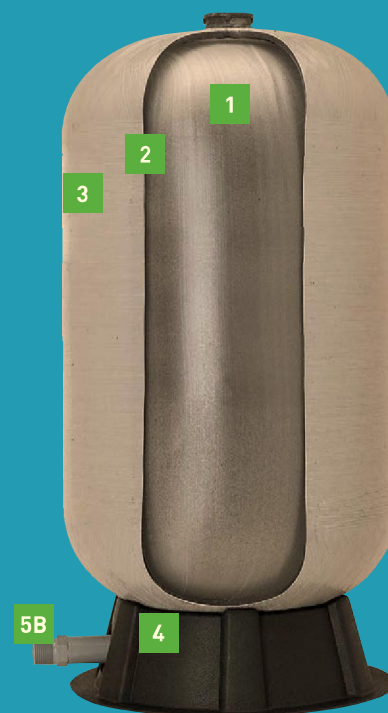
HERE ARE THE FEATURES THAT SET US APART

- 1 Heavy-gauge, polymer aircell is chlorine-resistant and fully replaceable
- 2 One-piece seamless inner shell is molded of high-density polyethylene
- 3 Outer shell is composed of continuous fiberglass strands sealed with high-grade epoxy resin
- 4 Sturdy, molded polymeric base is corrosion- and impact-proof
- 5A Quick connect, bottom inlet/outlet assembly is custom molded of high-impact engineered polymer
- 5B Bottom inlet/outlet one-piece drain is custom molded of high-impact PVC

CLASSIC QUICK CONNECT



CLASSIC



SPECIFICATIONS – CLASSIC

MODEL	CAPACITY GAL / LITER	MAXIMUM OPERATING PRESSURE PSI / kPa / BAR	DRAWDOWN 30/50 SETTING** GAL/LITER	DIAMETER* INCH / CM	OVERALL HEIGHT* INCH / CM	HEIGHT* INLET/OUTLET TO FLOOR INCH / CM	SYSTEM CONNECTION	ASSEMBLY WEIGHT* LB / KG
WM-4 / WM0060 C	14.5 / 55	125 / 862 / 8.6	4.5 / 17.0	16 / 41	26 / 66	1.75 / 4.4	1" male NPT	14.5 / 6.6
WM-6 / WM0075 C	19.8 / 75	125 / 862 / 8.6	6.1 / 23.1	16 / 41	32 / 81	1.75 / 4.4	1" male NPT	17.75 / 8.1
WM-9 / WM0120 C	29.5 / 112	125 / 862 / 8.6	9.1 / 34.4	16 / 41	44 / 112	1.75 / 4.4	1" male NPT	24.75 / 11.2
WM-12 / WM0150 C	40.3 / 153	125 / 862 / 8.6	12.5 / 47.3	21 / 53	57 / 145	2.25 / 5.7	1-1/4" male NPT	65.7 / 29.8
WM-14WB / WM0180 C	47.1 / 178	125 / 862 / 8.6	14.6 / 55.3	24 / 61	41.3 / 105	2.25 / 5.7	1-1/4" male NPT	50 / 22.7
WM-20WB / WM0235 C	60.0 / 227	125 / 862 / 8.6	18.5 / 70.0	24 / 61	41.5 / 105	2.25 / 5.7	1-1/4" male NPT	72.75 / 33.0
WM-23 / WM0300 C	79.6 / 301	125 / 862 / 8.6	24.6 / 93.1	21 / 53	62 / 157	2.25 / 5.7	1-1/4" male NPT	43 / 19.5
WM-25WB / WM0180 C	86.7 / 328	125 / 862 / 8.6	26.8 / 101.5	24 / 61	55.25 / 140	2.25 / 5.7	1-1/4" male NPT	72.75 / 33.0
WM-35WB / WM0450 C	119.7 / 453	125 / 862 / 8.6	37 / 140.1	24 / 61	74.25 / 189	2.25 / 5.7	1-1/4" male NPT	95 / 43.1

NOTE: Maximum external operating temperature 120°F [49°C]. Maximum internal operating temperature 100°F [38°C]. Minimum operating temperature 40°F [4°C].

* Diameter, height and weight may vary slightly without notice.

** In keeping with current industry standards, drawdown factors are based on Boyle's law. Actual drawdowns will vary depending upon system variables, including the accuracy and operation of the pressure switch and gauge and operating temperature of the system.

Pressure Tank Drawdown Factors

From Flexcond Industries Website

System Pressure (cut-out) PSIG / (kPa) / bar	Minimum System Pressure (cut-in) -- PSIG / (kPa) / bar																		
	20 (138) 1.38	25 (173) 1.72	30 (207) 2.06	35 (242) 2.41	40 (276) 2.76	45 (311) 3.10	50 (345) 3.45	55 (380) 3.80	60 (414) 4.16	65 (449) 4.48	70 (483) 4.83	75 (518) 5.17	80 (552) 5.51	85 (587) 5.86	90 (621) 6.20	95 (656) 6.55	100 (690) 6.89	105 (725) 7.24	110 (759) 7.58
30 / (207) / 2.06	0.21																		
35 / (242) / 2.41	0.28	0.19																	
40 / (276) / 2.76	0.34	0.26	0.17																
45 / (311) / 3.10	0.39	0.32	0.24	0.16															
50 / (345) / 3.45	0.44	0.37	0.30	0.22	0.15														
55 / (380) / 3.80	0.47	0.41	0.34	0.28	0.21	0.14													
60 / (414) / 4.16	0.50	0.44	0.38	0.32	0.26	0.19	0.13												
65 / (449) / 4.48	0.53	0.48	0.42	0.36	0.30	0.24	0.18	0.12											
70 / (483) / 4.83	0.56	0.50	0.45	0.40	0.34	0.29	0.23	0.17	0.11										
75 / (518) / 5.17		0.53	0.48	0.43	0.38	0.32	0.27	0.22	0.16	0.11									
80 / (552) / 5.51			0.50	0.46	0.41	0.36	0.31	0.26	0.21	0.15	0.10								
85 / (587) / 5.86				0.48	0.43	0.39	0.34	0.29	0.24	0.20	0.15	0.10							
90 / (621) / 6.20					0.46	0.42	0.37	0.32	0.28	0.23	0.19	0.14	0.09						
95 / (656) / 6.55						0.44	0.40	0.35	0.31	0.27	0.22	0.18	0.13	0.09					
100 / (690) / 6.89							0.42	0.38	0.34	0.30	0.26	0.21	0.17	0.13	0.09				
105 / (725) / 7.24								0.41	0.37	0.33	0.29	0.25	0.20	0.16	0.13	0.08			
110 / (759) / 7.58									0.39	0.35	0.31	0.27	0.24	0.20	0.16	0.12	0.08		
115 / (794) / 7.92										0.38	0.34	0.30	0.26	0.23	0.19	0.15	0.11	0.08	
120 / (828) / 8.27											0.36	0.33	0.29	0.25	0.22	0.18	0.15	0.11	0.07
125 / (863) / 8.62												0.35	0.32	0.28	0.25	0.21	0.18	0.14	0.11

For a 46 psi cut in pressure and 58 psi cut out pressure the interpreted values is 0.15.

Table from : <https://www.flexconind.com/contractor-engineer/proper-tank-sizing/water-systems.html>

APPENDIX C Water Right Information

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

CERTIFICATE OF WATER RIGHT

- ☐ Surface Water (Issued in accordance with the provisions of Chapter 117, Laws of Washington for 1917, and amendments thereto, and the rules and regulations of the Department of Ecology.)
- ☒ Ground Water (Issued in accordance with the provisions of Chapter 263, Laws of Washington for 1945, and amendments thereto, and the rules and regulations of the Department of Ecology.)

CERTIFICATE NUMBER	PERMIT NUMBER	APPLICATION NUMBER	PRIORITY DATE
G1-00552C	9050	9424	May 3, 1968

NAME ROBERT P. FAKKEMA			
ADDRESS (STREET)	(CITY)	(STATE)	(ZIP CODE)
4086 - 400th Avenue West	Oak Harbor	Washington	98277

This is to certify that the herein named applicant has made proof to the satisfaction of the Department of Ecology of a right to the use of the public waters of the State of Washington as herein defined, and under and specifically subject to the provisions contained in the Permit issued by the Department of Ecology, and that said right to the use of said waters has been perfected in accordance with the laws of the State of Washington, and is hereby confirmed by the Department of Ecology and entered of record as shown.

PUBLIC WATER TO BE APPROPRIATED

SOURCE A well - 6"x178'
TRIBUTARY OF (IF SURFACE WATERS)

MAXIMUM CUBIC FEET PER SECOND	MAXIMUM GALLONS PER MINUTE	MAXIMUM ACRE-FEET PER YEAR
	45.0	40.0

QUANTITY, TYPE OF USE, PERIOD OF USE Community domestic supply - continuously during entire year for a maximum potential of 200 lots
--

LOCATION OF DIVERSION/WITHDRAWAL

APPROXIMATE LOCATION OF DIVERSION/WITHDRAWAL 320 feet West and 1305 feet South of center of Sec. 3

LOCATED WITHIN (SMALLEST LEGAL SUBDIVISION)	SECTION	TOWNSHIP N.	RANGE, (E. OR W.) W.M.	W.R.I.A.	COUNTY
	35	34	1 E.	6	Island

RECORDED PLATTED PROPERTY

LOT	BLOCK	OF (GIVE NAME OF PLAT OR ADDITION)
Tract A		Plat of Deception Park View Division No. 1

LEGAL DESCRIPTION OF PROPERTY WATER TO BE USED ON

That part of the N $\frac{1}{2}$ SW $\frac{1}{4}$ and of the North 300 feet of SE $\frac{1}{4}$ SW $\frac{1}{4}$ of Sec. 35, T. 34 N., R. 1 E.W.M. lying Westerly of State Highway 525 (1-D).

PROVISIONS

Nothing in this permit shall be construed as excusing the permittee from compliance with any applicable federal, state, or local statutes, ordinances, or regulations including those administered by local agencies under the Shoreline Management Act of 1971.

The right to the use of the water aforesaid hereby confirmed is restricted to the lands or place of use herein described, except as provided in RCW 90.03.380, 90.03.390, and 90.44.020.

This certificate of water right is specifically subject to relinquishment for nonuse of water as provided in RCW 90.14.180.

Given under my hand and the seal of this office at Olympia, Washington, this 15th day of September, 1974.

JOHN A. BIGGS, Director
Department of Ecology

ENGINEERING DATA
OK DKK

by R. Jerry Bollen
R. JERRY BOLLEN, Assistant Director

FOR COUNTY USE ONLY



STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
P.O. Box 47600 • Olympia, Washington 98504-7600
(360) 407-6000 • TDD Only (Hearing Impaired) (360) 407-6006

September 13, 1999

Deception Park View Comm. Assoc.
Attn: Elaine Young
5073 N. Deception Circle
Oak Harbor, Washington 98277

RE: Addition of a second well to Water Right Certificate G1-00552C

Dear Ms. Young:

I am writing in response to our telephone conversation on August 30, 1999, and Affidavit received on September 8, 1999, that documents the existence of a second well (well #2) operating under Water Right Certificate G1-00552C. The documentation you provided allows your water system to utilize well #2 in accordance with RCW 90.44.100(3). Your water right file will be amended to reflect the existence of this second well.

The water right application #G1-27583 you submitted on January 19, 1995 is no longer necessary, and will be cancelled.

If you have any questions, I can be reached at (425) 649-7020.

Sincerely,

Sheila Baker
Environmental Specialist
Water Resources Program

Cc: Jan Cyr – U.. S. Department of Agriculture
Derek Pell – DOH
Susie King – King Management

RECEIVED

SEP 16 1999

NW DRINKING WATER





STATE OF WASHINGTON
DEPARTMENT OF HEALTH

1511 Third Ave., Suite 719 • Seattle, Washington 98101-1632

November 15, 1999

BOARD OF DIRECTORS
DECEPTION PARK VIEW WATER ASSOCIATION
C/O KING WATER MANAGEMENT
PO BOX 2446
OAK HARBOR WA 98277

Subject: Deception Park View Water System (ID#18305H) Island County
Well #2 Source Approval
Submittal #96-1203

Members of the Board:

I received a copy of the Department of Ecology's September 13, 1999 letter (from Sheila Baker) verifying that well #2 is covered under the association's existing water right certificate G1-00552C. With reference to my June 18, 1997 letter, the Department of Health now considers well #2 an approved source.

Please give me a call in Seattle at (206) 464-5401 if you have any questions or concerns.

Sincerely,

Derek M. Pell, PE
Regional Engineer
NW Drinking Water Operations

cc: Island County Health Department
Island County Assessors Office
Tom Bennett – Purnell & Associates

Water Right Self-Assessment Form for Small Water System Management Programs and Project Reports

System Name: Deception Park View Water System		System ID#: 18305 H		Type of System: Group A Comm			Proposed Type of System: (if changing)	
<u>Water Right Permit, Certificate, Claim # or Exempt</u> *If water right is interruptible, identify limitation in yellow section below	<u>Name on Water Right</u>	<u>FOR NON-MUNICIPAL SUPPLIERS ONLY:</u> Does water right identify a number of connections? If yes, how many?	<u>WFI Source #</u> If a source has multiple water rights, list each water right on separate line	<u>Existing Water Rights</u> Qi = Instantaneous Flow Rate Allowed (GPM or CFS) Qa = Annual Volume Allowed (Acre Feet/Year)				
				<u>Primary Qi</u> Maximum Rate Allowed	<u>Non-Additive Qi</u> Maximum Rate Allowed	<u>Primary Qa</u> Annual Volume Allowed	<u>Non-Additive Qa</u> Annual Volume Allowed	
1. G1-00552C	Robert P. Fakkema		Well #1 & Well #2	45		40.0		
2.								
3.								
4.								
TOTALS =				45		40.0		

Column Identifiers for Calculations:

A

B

<u>Current Source Production – Most Recent Calendar Year</u> Qi=Maximum Instantaneous Withdrawal from Source. (GPM or CFS) Qa=Maximum Annual Volume Withdrawn (Acre Feet/Year) This includes wholesale water provided to other systems				<u>Forecasted Source Production at Full System Build Out</u> Projected maximum withdrawal from source at full build out. This includes wholesale water provided to other systems			
<u>Total Qi</u> Instantaneous Flow Rate	<u>Excess or (Deficiency) Qi</u>	<u>Total Qa</u> Annual Volume	<u>Excess or (Deficiency) Qa</u>	<u>Total Qi</u> Instantaneous Flow Rate	<u>Excess or (Deficiency) Qi</u>	<u>Total Qa</u> Annual Volume	<u>Excess or (Deficiency) Qa</u>
0, 35	10	0.0, 11.0	29.0	0, 33	12	0.0, 22.4	17.6
35	10	11	29	33	12	22.4	17.6

C

=A-C

D

=B-D

E

=A-E

F

=B-F

<u>Interruptible Water Rights</u> Identify limitations on any water rights listed above that are interruptible	
Permit or certificate #	Time Period of Interruption

<u>INTERTIES:</u> Systems receiving wholesale water complete this section. Wholesaling systems must include water sold through interties in the source production columns above.										
Name of Wholesaling System Providing Water	Quantities Allowed In Contract		Currently Purchased Quantity currently purchased through intertie				Forecasted Purchase at Full System Build Out Forecasted quantity purchased through intertie			
	<u>Maximum Qi</u>	<u>Maximum Qa</u>	<u>Maximum Qi</u> Instantaneous Flow Rate	<u>Excess or (Deficiency) Qi</u>	<u>Maximum Qa</u> Annual Volume	<u>Excess or (Deficiency) Qa</u>	<u>Maximum Qi</u> Instantaneous Flow Rate	<u>Excess or (Deficiency) Qi</u>	<u>Maximum Qa</u> Annual Volume	<u>Excess or (Deficiency) Qa</u>
TOTALS =										

A

B

C

=A-C

D

=B-D

E

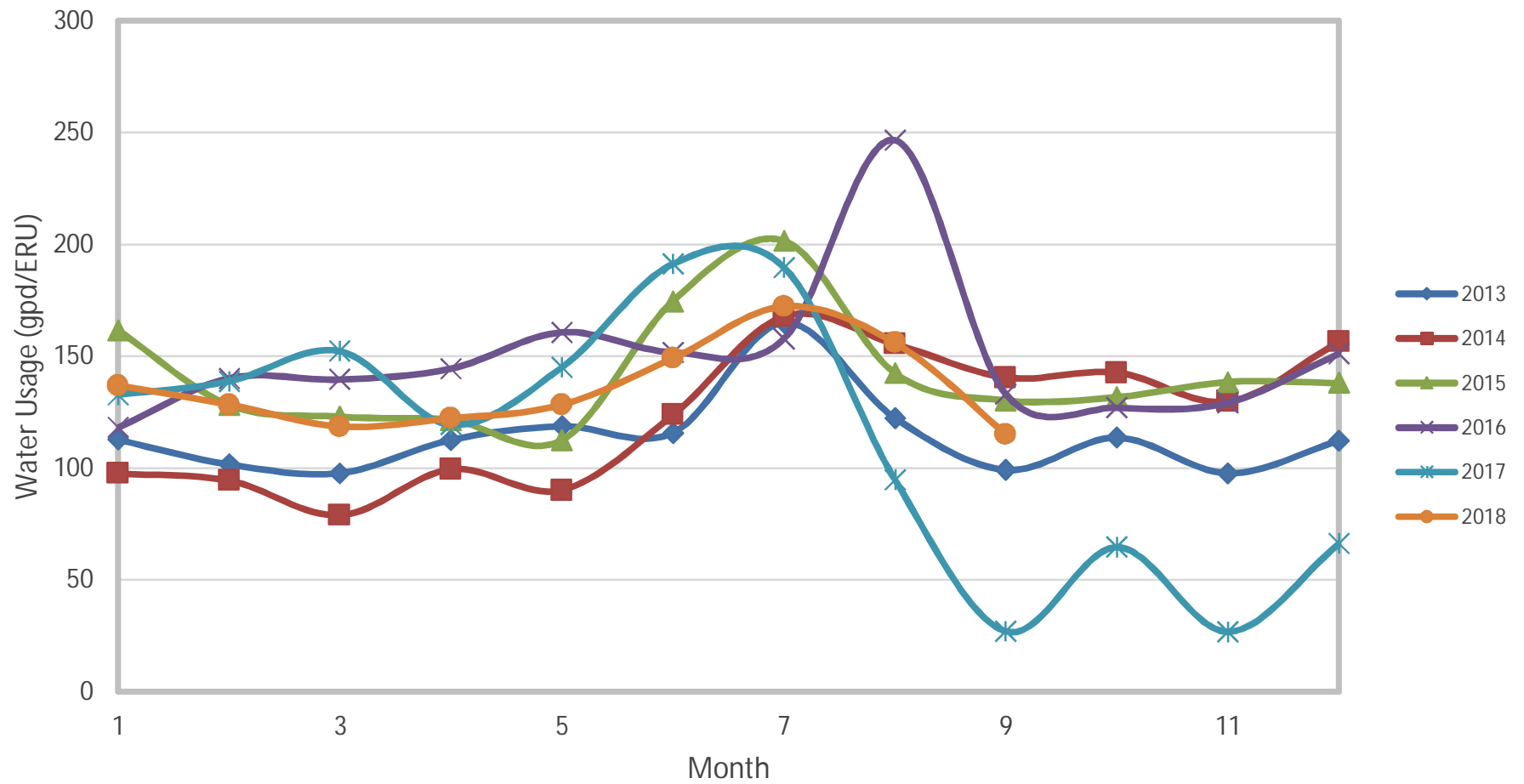
=A-E

F

=B-F

APPENDIX D Water Usage Data

Deception Park View



WATER CONSUMPTION PER DAY PER CONNECTION						
Year	2013	2014	2015	2016	2017	2018
Jan.	113	98	162	118	133	137
Feb.	102	94	128	140	139	128
Mar.	98	79	123	139	152	119
Apr.	113	99	121	144	119	122
May	119	90	113	161	145	128
Jun.	116	124	175	152	191	149
Jul.	165	168	201	158	190	172
Aug.	122	155	142	247	95	156
Sep.	99	140	130	133	27	115
Oct.	114	143	132	127	65	
Nov.	98	130	138	129	27	
Dec.	112	156	138	151	66	
Max.	165	168	201	247	191	172
Min.	98	79	113	118	27	115
Annual Average	114	123	142	150	112	136
Summer Average	126	147	162	172	126	148

APPENDIX E Capacity Analysis

AVERAGE DAY DEMAND (ADD) CALCULATION

Date Printed: 1/31/2019

System: Deception Park View
ID No.: 18305 H
Location: Whidbey Island, Island County

Summer ADD is based upon June - September readings

Year	Total Water Usage Gallons	# of Active Connections	Yearly ADD gpd/ERU	Summer ADD gpd/ERU	Total Usage (ac-ft/yr)
2013	2,710,400	65	114	126	8
2014	2,924,370	65	123	147	9
2015	3,370,088	65	142	162	10
2016	3,561,012	65	150	172	11
2017	2,665,292	65	112	126	8
2018	2,421,200	65	136	148	7
Average	2,942,060	65	130	147	9
Minimum	2,421,200	65	112	126	7
Maximum	3,561,012	65	150	172	11

ADD based upon maximum Summer ADD	=	172	gpd/ERU
Design ADD	=	200	gpd/ERU

MAXIMUM DAY DEMAND (MDD) CALCULATION

Date Printed: 1/31/2019

System: Deception Park View
ID No.: 18305 H
Location: Whidbey Island, Island County

From DOH Water System Design Manual (Section 5.2.1)

Equation 5-2

$$MDD = (1.7)(MADD)$$

Where:

MDD	=	Maximum Day Demand (gallons/day/ERU)
MADD	=	Maximum Monthly Average Day Demand (gallons/day/ERU)

Year	MADD	MDD
2013	165	280
2014	168	285
2015	201	343
2016	247	419
2017	191	325
2018	172	293
Average	191	324
Minimum	165	280
Maximum	247	419
Proposed	264	450

PEAK HOUR DEMAND (PHD) CALCULATION

System: Deception Park View
ID No.: 18305 H
Location: Whidbey Island, Island County

From DOH Water System Design Manual (Section 5.2.4)

Equation 5-1:
$$\text{PHD} = (\text{MDD}/1440)[(\text{C})(\text{N}) + \text{F}] + 18$$

Where:

PHD	=	Peak Hourly Demand, (gallons per minute, gpm)
C	=	Coefficient Associated with Ranges of ERUs
N	=	Number of Service Connections, ERUs
F	=	Factor Associated with Ranges of ERUs
MDD	=	Maximum Day Demand, (gpd/ERU)

Range of N (ERUs)		C	F
15	50	3.0	0
51	100	2.5	25
101	250	2.0	75
251	500	1.8	125
501	1,000,000	1.6	225

This is Table 5-1 in DOH Design Manual

Year	N (ERUs)	MDD (gpd/ERU)	C	F	PHD (gpm)
2013	65	280	2.5	25	55
2014	65	285	2.5	25	55
2015	65	343	2.5	25	63
2016	65	419	2.5	25	73
2017	65	325	2.5	25	60
2018	65	293	2.5	25	56
Current	65	450	2.5	25	77
Approved	69	450	2.5	25	80
Proposed	100	450	2.5	25	104

Main Reservoir Water System Storage Capacity Calculations

System: Deception Park View
ID No.: 18305 H
Location: Whidbey Island, Island County

Equations/Calc's in this spreadsheet are in accordance with the DOH's Group A Public Water System Design Manual

Source

Wells	Pump Rate (gpm)	Comment
S02	33	
emergency	0	
Qs:	33	Total minus emergency
QL:	33	
Q's:	0	Total minus largest

Water right limit source capacity to 45 gpm.

of Connections

Year	ERUs (N)	DOH Approved
2018	65	69
Proposed	100	

Reservoir Specifications

Reservoir	ID	Vol (gal)	Vol (cf)	Height (ft)	Base El	Top WS	Total Vol.	Vol/VF
Octagonal	20.4	36,673	4,903	15.00	117	132.00	36,673	2,445
Cylindrical	19.5	33,508	4,480	15.00	115.00	130.00	33,508	2,234
Total:							70,200	4,680

Top Dead Storage (DS)

Top WS	Dead Storage Depth (ft)	Top Dead Vol (gal)	Top Dead Vol (res. vf)
130.0	0.5	2,340	0.5

Note: Assumed top Dead Storage is 6".

Operational Storage (OS)

Top WS	Operational Depth (ft)	Oper. Level	Oper. Vol. (gal)	Oper. Vol (res. vf)
129.50	0.50	129.00	2,340	0.5

Based upon assumed probe settings.

Required Equalizing Storage (ES)

PHD (gpm)	Qs (gpm)	PHD-Qs (gpm)	Ves (gal)	Ves (res. vf.)
104	33	71	10,650	2.3

Ves=(PHD-Qs)*150 or Zero

Recommended Standby Storage (SB)

		Single Source			Greater of SB or FF
ADD (gpd/ERU)	N	SB (gal) Single Source	SB per ERU (gal/ERU)	SB (res. vf.)	
200	100	40,000	400	8.5	SB

Vsb (Single Source) = (2 days)(ADD)(N) or (200)(N) whichever is greater

Standby Storage (SB) Provided

gallons/ERU	# Conn's	Vsb 2	Vsb (res. vf.)
525	100	52,500	11.2

Fire Suppression Storage (FSS)

FF (gpm)	tm (minutes)	Vfss (gal)	Vfss (res. vf)
500	30	15,000	3.2

Vfss=FF*tm

Where: $FSS = (FF)(t_m)$
 $FF =$ Required fire flow rate (gpm)
 $t_m =$ Duration of FF rate (minutes)

Bottom Dead Storage (DS)

Res. Bot. Elev.	Top of Dead Storage	Dead Vol (gal)	Dead Vol (res. vf)
115.0	115.5	2,340	0.5

Note: Assumed Dead Storage is bottom 6" of reservoir

Storage Component	Vol (gal)	Res VF
Top Dead Storage	2,340	0.5
Operational Storage (OS)	2,340	0.5
Equalizing Storage (ES)	10,650	2.3
Standby Storage (SB)	52,530	11.2
Fire Suppression Storage (FSS)	15,000	3.2
Dead Storage (DS)	2,340	0.5
Totals:	70,200	15.0

SYSTEM CAPACITY

System: Deception Park View
ID No.: 18305 H
Location: Whidbey Island, Island County

WATER RIGHT CALCULATIONS

Based on Annual Volume & Average Day Demand (Eqn 6-3):

$$N = Va / (365 * ADD)$$

Where:

N = Number of Service Connections, ERUs

Va = Annual Volume of Water Available from Water Right (gallons/year)

ADD = Average Daily Demand per ERU (gpd/ERU)

	Va (acre-ft/year)	Va (gal/year)	ADD (gpd/ERU)	N (ERUs)
S02	40	13,033,152	200	178

Based on Instantaneous Flow & Maximum Day Demand (Eqn 6-4):

$$N = Vd / MDD = (Qi * td) / MDD$$

Where:

N = Number of Service Connections, ERUs

Vd = Total Volume of Water Available for Maximum Day's Demand (gpd)

MDD = Maximum Daily Demand per ERU (gpd/ERU)

Qi = Instantaneous Maximum Water Right Flow Rate (gpm)

td = Time that source operates per day (minutes/day)

	Qi (gpm)	td (min/day)	MDD (gpd/ERU)	N (ERUs)	Minutes Pumped/Hr
S02	45	1440	450	144	60

SOURCE CALCULATIONS

Based on Well Production & Max Day Demand:

$$N = Vd / ADD = (Qs * td) / MDD$$

Where:

N = Number of Service Connections, ERUs

Vd = Total Volume of Water Available for Average Day's Demand (gpd)

MDD = Max Daily Demand per ERU (gpd/ERU)

Qs = Total Well Production Flow rate (gpm)

td = Time that source operates per day (minutes/day)

	Qs (gpm)	td (min/day)	MDD (gpd/ERU)	N (ERUs)	Minutes Pumped/Hr
S02 (Approved Capacity)	33	1440	450	105	60

BOOSTER PUMP CALCULATIONS

Based on Well Production & max Day Demand:

$$N = [1440(Phd - 18) / MDD - F] / C$$

Where:

N = Number of Service Connections, ERUs

Phd = Peak Hour Demand (gallons/minute) (Booster Pump Capacity)

MDD = Maximum Daily Demand per ERU (gpd/ERU)

F = PHD Coefficient from Table 5-1 (= 225)

C = PHD Coefficient from Table 5-1 (= 1.6)

	Q _B (gpm)	C	F	MDD (gpd/ERU)	N (ERUs)
Booster Pumps	140	2.0	75	450	158

Limiting Factors

Condition	Limiting Factor	ERUs
Water Right- Annual	Va & ADD	178
Water Right - Instantaneous	Qi & MDD	144
Source	Qs & MDD	105
Booster Pump	Qs & MDD	158
Treatment	Qi & MDD	106

System Capacity (#ERUs): 105

Condition: Source

Limiting Factor: Qs & MDD



Hypochlorination Worksheet Calculations Water System Design Manual - December 2009

Water System Name: Deceptiion Park View
Water System Number: 18305 H
Source: Well #2

Water System Operating Parameters

Pressure range of system (open reservoir)		20 psi
Average Daily Water Use*		200 gpd/conn
Max. Daily Demand (Design Value - Theoretical)		450 gpd/conn
Number of Approved Connection		83 connections
Number of Existing connections		203 connections
Daily Average Water Use		16,600 gpd
Flow Rate at Injection Point	Qs	33 gpm
Flow rate from contact chamber	PHD	104 gpm
* - Values from current water usage readings		
Values used for PHD determination	MDD	450 gpd/ERU
Equation 5-1, WSDM 12/2009	C	2.5
	F	25
	N	100 connections

Estimated Required Chlorine Dose

demand		1.0 ppm
residual		1.0 ppm
Desired Chlorine dose	Cs	2.0 ppm

Chlorine Contact Time at Treatment System Inlet & Reservoir Outlet

Pipe Length	50 feet
Pipe Size	2 inches
Pipe Volume	8 gallons
Contact Time in Pipe (100%)	0.25 minutes
Total Pipe Contact Time	0.2 minutes
Ct x T (<i>Pipe</i>)	0.2 min x ppm
Tank Volume	70,200 gallons
Height	15 feet
Volume per foot	4,680 gallons
Top Dead Storage (0.5 feet)	2,340 gallons
Operational Storage (0.5 feet)	2,340 gallons
Equalizing Storage (PHD-Qs)*150	10,641 gallons
Total volume excluded from contact calculations	15,321 gallons
Reservoir Contact Volume (Standby Storage)	54,879 gallons
Baffling Efficiency (Top in/Bottom Out)	10%
Reservoir Contact Time	33 minutes
Total Contact Time (<i>Pipe + Reservoir</i>)	34 minutes
Ct x T (<i>Pipe + Reservoir</i>)	33.5 min x ppm
Minimum of 6	okay

APPENDIX F Water Quality Results



Division of Environmental Health Office of Drinking Water

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View Sample Detail - WSID 18305H - DECEPTION PARK VIEW

Collect Date 8/3/2016
Lab Number 057
Lab Name Avocet Environmental Testing
Sample Number 64653
Source 02
Analyte Group IOC-INORGANIC CONTAMINANTS
Test Panel IOC-COMPLETE INORGANIC ANALYSIS
Sample Location s02
Sample Type Post-Treatment / Finished

Analyte DOH		Result		Maximum		State Reporting
Num	Analyte Name	Result Range	Quantity	Contaminant Level	Units	
0010	MANGANESE	EQ	0.0150	0.0500	mg/L	0.0100
0014	SODIUM	EQ	48.0000		mg/L	5.0000
0015	HARDNESS	EQ	120.0000		mg/L	10.0000
0016	CONDUCTIVITY	EQ	400.0000	700.0000	Umhos/cm	70.0000
0017	TURBIDITY	EQ	0.2300		NTU	0.1000
0019	FLUORIDE	EQ	0.5000	4.0000	mg/L	0.2000
0021	CHLORIDE	EQ	31.0000	250.0000	mg/L	20.0000
0004	ARSENIC	LT	0.0010	0.0104	mg/L	0.0010
0005	BARIUM	LT	0.4000	2.0000	mg/L	0.1000
0006	CADMIUM	LT	0.0020	0.0050	mg/L	0.0010
0007	CHROMIUM	LT	0.0200	0.1000	mg/L	0.0070
0008	IRON	LT	0.1000	0.3000	mg/L	0.1000
0009	LEAD	LT	0.0010		mg/L	0.0010
0011	MERCURY	LT	0.0004	0.0020	mg/L	0.0002
0012	SELENIUM	LT	0.0100	0.0500	mg/L	0.0020
0013	SILVER	LT	0.1000	0.1000	mg/L	0.1000
0018	COLOR	LT	15.0000	15.0000	CU	15.0000
0020	NITRATE-N	LT	0.2000	10.0000	mg/L	0.5000
0022	SULFATE	LT	50.0000	250.0000	mg/L	50.0000
0023	COPPER	LT	0.0200		mg/L	0.0200
0024	ZINC	LT	0.2000	5.0000	mg/L	0.2000
0110	BERYLLIUM	LT	0.0008	0.0040	mg/L	0.0003
0111	NICKEL	LT	0.1000	0.1000	mg/L	0.0050
0112	ANTIMONY	LT	0.0060	0.0060	mg/L	0.0030
0113	THALLIUM	LT	0.0020	0.0020	mg/L	0.0010



Records 1 - 25 of 28

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by the Washington State Department of Health*

Department of Health, Office of Drinking Water



Division of Environmental Health Office of Drinking Water

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View Sample Detail - WSID 18305H - DECEPTION PARK VIEW

Collect Date 8/3/2016
Lab Number 057
Lab Name Avocet Environmental Testing
Sample Number 64653
Source 02
Analyte Group IOC-INORGANIC CONTAMINANTS
Test Panel IOC-COMplete INORGANIC ANALYSIS
Sample Location s02
Sample Type Post-Treatment / Finished

Analyte DOH		Result		Maximum Contaminant		State Reporting Limit
Num	Analyte Name	Result Range	Quantity	Level	Units	
0114	NITRITE-N	LT	0.2000	1.0000	mg/L	0.1000
0116	CYANIDE	LT	0.0100	0.2000	mg/L	0.0500
0161	TOTAL NITRATE/NITRITE	LT	0.5000		mg/L	0.5000

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Department of Health, Office of Drinking Water

Street Address:

243 Israel Road S.E. 2nd floor
Tumwater, WA 98501

Mail:

PO BOX 47822
Olympia, WA 98504-7822

Send inquiries about DOH and its programs to the [Health Consumer Assistance Office](#)

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For technical issues with this website send email to DOH IT Service Desk or call 360-236-4357.



Division of Environmental Health Office of Drinking Water

[Help](#)**View Sample Detail - WSID 18305H - DECEPTION PARK VIEW**

Collect Date 11/11/2015
Lab Number 174
Lab Name Exact Scientific Services, Inc
Sample Number 42712
Source 02
Analyte Group VOC-VOLATILE ORGANIC CONTAMINANTS
Test Panel VOC1-VOLATILE ORGANIC
Sample Location s02
Sample Type Post-Treatment / Finished

Analyte DOH		Result		Maximum Contaminant		State Reporting Limit
Num	Analyte Name	Result Range	Quantity	Level	Units	
0027	CHLOROFORM	EQ	14.6000		ug/L	0.5000
0028	BROMODICHLOROMETHANE	EQ	18.1000		ug/L	0.5000
0029	DIBROMOCHLOROMETHANE	EQ	18.5000		ug/L	0.5000
0030	BROMOFORM	EQ	4.1000		ug/L	0.5000
0031	TOTAL TRIHALOMETHANE	EQ	55.3000	80.0000	ug/L	
0045	VINYL CHLORIDE	LT	0.5000	2.0000	ug/L	0.5000
0046	1,1 DICHLOROETHYLENE	LT	0.5000	7.0000	ug/L	0.5000
0047	1,1,1 TRICHLOROETHANE	LT	0.5000	200.0000	ug/L	0.5000
0048	CARBON TETRACHLORIDE	LT	0.5000	5.0000	ug/L	0.5000
0049	BENZENE	LT	0.5000	5.0000	ug/L	0.5000
0050	1,2 DICHLOROETHANE	LT	0.5000	5.0000	ug/L	0.5000
0051	TRICHLOROETHYLENE	LT	0.5000	5.0000	ug/L	0.5000
0052	1,4 DICHLOROBENZENE	LT	0.5000	75.0000	ug/L	0.5000
0053	CHLOROMETHANE	LT	0.5000		ug/L	0.5000
0054	BROMOMETHANE	LT	0.5000		ug/L	0.5000
0055	CHLOROETHANE	LT	0.5000		ug/L	0.5000
0056	METHYLENE CHLORIDE (DICHLOROMETHANE)	LT	0.5000	5.0000	ug/L	0.5000
0057	TRANS- 1,2 DICHLOROETHYLENE	LT	0.5000	100.0000	ug/L	0.5000
0058	1,1 DICHLOROETHANE	LT	0.5000		ug/L	0.5000
0059	2,2 DICHLOROPROPANE	LT	0.5000		ug/L	0.5000
0060	CIS- 1,2 DICHLOROETHYLENE	LT	0.5000	70.0000	ug/L	0.5000
0062	1,1 DICHLOROPROPENE	LT	0.5000		ug/L	0.5000
0063	1,2 DICHLOROPROPANE	LT	0.5000	5.0000	ug/L	0.5000
0064	DIBROMOMETHANE	LT	0.5000		ug/L	0.5000
0065	CIS- 1,3 DICHLOROPROPENE	LT	0.5000		ug/L	0.5000

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View Sample Detail - WSID 18305H - DECEPTION PARK VIEW

Collect Date 11/11/2015
Lab Number 174
Lab Name Exact Scientific Services, Inc
Sample Number 42712
Source 02
Analyte Group VOC-VOLATILE ORGANIC CONTAMINANTS
Test Panel VOC1-VOLATILE ORGANIC
Sample Location s02
Sample Type Post-Treatment / Finished

Analyte DOH		Result Range	Result Quantity	Maximum Contaminant		State Reporting Limit
Num	Analyte Name			Level	Units	
0066	TOLUENE	LT	0.5000	1000.0000	ug/L	0.5000
0067	1,1,2 TRICHLOROETHANE	LT	0.5000	5.0000	ug/L	0.5000
0068	TETRACHLOROETHYLENE	LT	0.5000	5.0000	ug/L	0.5000
0069	TRANS- 1,3 DICHLOROPROPENE	LT	0.5000		ug/L	0.5000
0070	1,3 DICHLOROPROPANE	LT	0.5000		ug/L	0.5000
0071	CHLOROBENZENE	LT	0.5000	100.0000	ug/L	0.5000
0072	1,1,1,2 TETRACHLOROETHANE	LT	0.5000		ug/L	0.5000
0073	ETHYLBENZENE	LT	0.5000	700.0000	ug/L	0.5000
0074	M/P XYLENES (MCL FOR TOTAL)	LT	0.5000		ug/L	0.5000
0075	O- XYLENE (MCL FOR TOTAL)	LT	0.5000		ug/L	0.5000
0076	STYRENE	LT	0.5000	100.0000	ug/L	0.5000
0078	BROMOBENZENE	LT	0.5000		ug/L	0.5000
0079	1,2,3 TRICHLOROPROPANE	LT	0.5000		ug/L	0.5000
0080	1,1,2,2 TETRACHLOROETHANE	LT	0.5000		ug/L	0.5000
0081	O- CHLOROTOLUENE	LT	0.5000		ug/L	0.5000
0082	P- CHLOROTOLUENE	LT	0.5000		ug/L	0.5000
0083	M- DICHLOROBENZENE	LT	0.5000		ug/L	0.5000
0084	1,2 DICHLOROBENZENE	LT	0.5000	600.0000	ug/L	0.5000
0085	TRICHLOROFLUOROMETHANE	LT	0.5000		ug/L	0.5000
0086	BROMOCHLOROMETHANE	LT	0.5000		ug/L	0.5000
0087	ISOPROPYLBENZENE	LT	0.5000		ug/L	0.5000
0088	N-PROPYLBENZENE	LT	0.5000		ug/L	0.5000
0089	1,3,5 TRIMETHYLBENZENE	LT	0.5000		ug/L	0.5000
0090	TERT- BUTYLBENZENE	LT	0.5000		ug/L	0.5000
0091	1,2,4 TRIMETHYLBENZENE	LT	0.5000		ug/L	0.5000

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View Sample Detail - WSID 18305H - DECEPTION PARK VIEW

Collect Date 11/11/2015
Lab Number 174
Lab Name Exact Scientific Services, Inc
Sample Number 42712
Source 02
Analyte Group VOC-VOLATILE ORGANIC CONTAMINANTS
Test Panel VOC1-VOLATILE ORGANIC
Sample Location s02
Sample Type Post-Treatment / Finished

Analyte DOH		Result Range	Result Quantity	Maximum Contaminant		State Reporting Limit
Num	Analyte Name			Level	Units	
0092	SEC- BUTYLBENZENE	LT	0.5000		ug/L	0.5000
0093	P-ISOPROPYLTOLUENE	LT	0.5000		ug/L	0.5000
0094	N-BUTYLBENZENE	LT	0.5000		ug/L	0.5000
0095	1,2,4 TRICHLOROBENZENE	LT	0.5000	70.0000	ug/L	0.5000
0096	NAPHTHALENE	LT	0.5000		ug/L	0.5000
0097	HEXACHLOROBUTADIENE	LT	0.5000		ug/L	0.5000
0098	1,2,3 TRICHLOROBENZENE	LT	0.5000		ug/L	0.5000
0104	DICHLORODIFLUOROMETHANE	LT	0.5000		ug/L	0.5000
0154	1,3 DICHLOROPROPENE	LT	0.5000		ug/L	0.5000
0160	TOTAL XYLENES	LT	0.5000	10000.0000	ug/L	0.5000
0427	EDB (screening)	LT	0.5000		ug/L	0.5000
0428	DBCP (screening)	LT	0.5000		mg/L	0.5000

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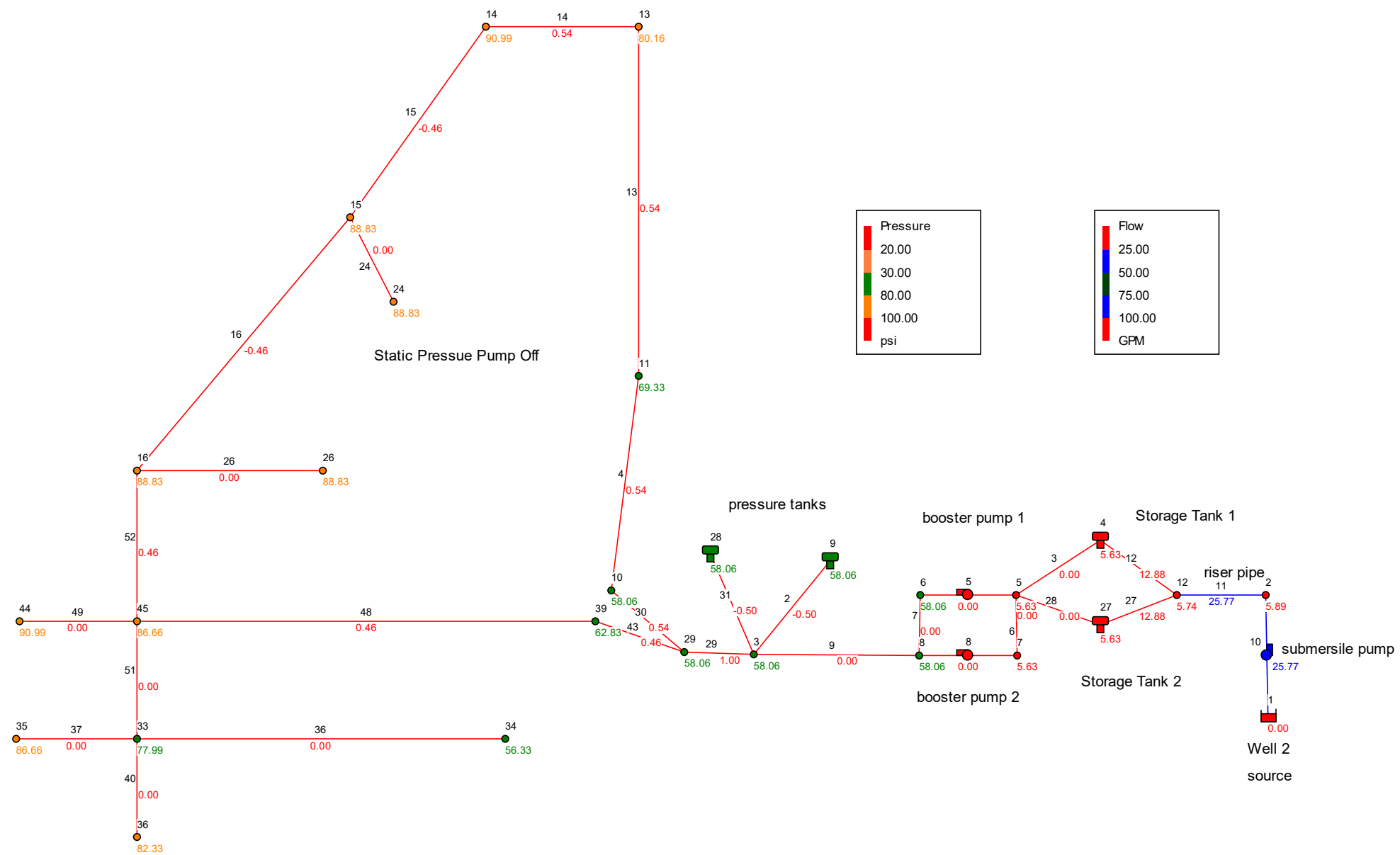
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APPENDIX G Hydraulic Modeling

Deception Park View - Static (High Pressure)



Deception Park View - Static (High Pressure)

Network Table - Nodes at 0:00 Hrs

Node ID	Elevation ft	Demand GPM	Pressure psi
Junc 2	101	0.00	5.89
Junc 5	101	0.00	5.63
Junc 6	101	0.00	58.06
Junc 7	101	0.00	5.63
Junc 8	101	0.00	58.06
Junc 10	101	0.00	58.06
Junc 11	75	0.00	69.33
Junc 12	101	0.00	5.74
Junc 3	101	0.00	58.06
Junc 13	50	0.00	80.16
Junc 14	25	1.00	90.99
Junc 15	30	0.00	88.83
Junc 16	30	0.00	88.83
Junc 24	30	0.00	88.83
Junc 26	30	0.00	88.83
Junc 29	101	0.00	58.06
Junc 33	55	0.00	77.99
Junc 34	105	0.00	56.33
Junc 35	35	0.00	86.66
Junc 36	45	0.00	82.33
Junc 39	90	0.00	62.83
Junc 44	25	0.00	90.99
Junc 45	35	0.00	86.66
Resvr 1	-11	-25.77	0.00
Tank 4	101	12.89	5.63
Tank 9	101	-0.50	58.06
Tank 27	101	12.89	5.63
Tank 28	101	-0.50	58.06

Deception Park View - Static (High Pressure)

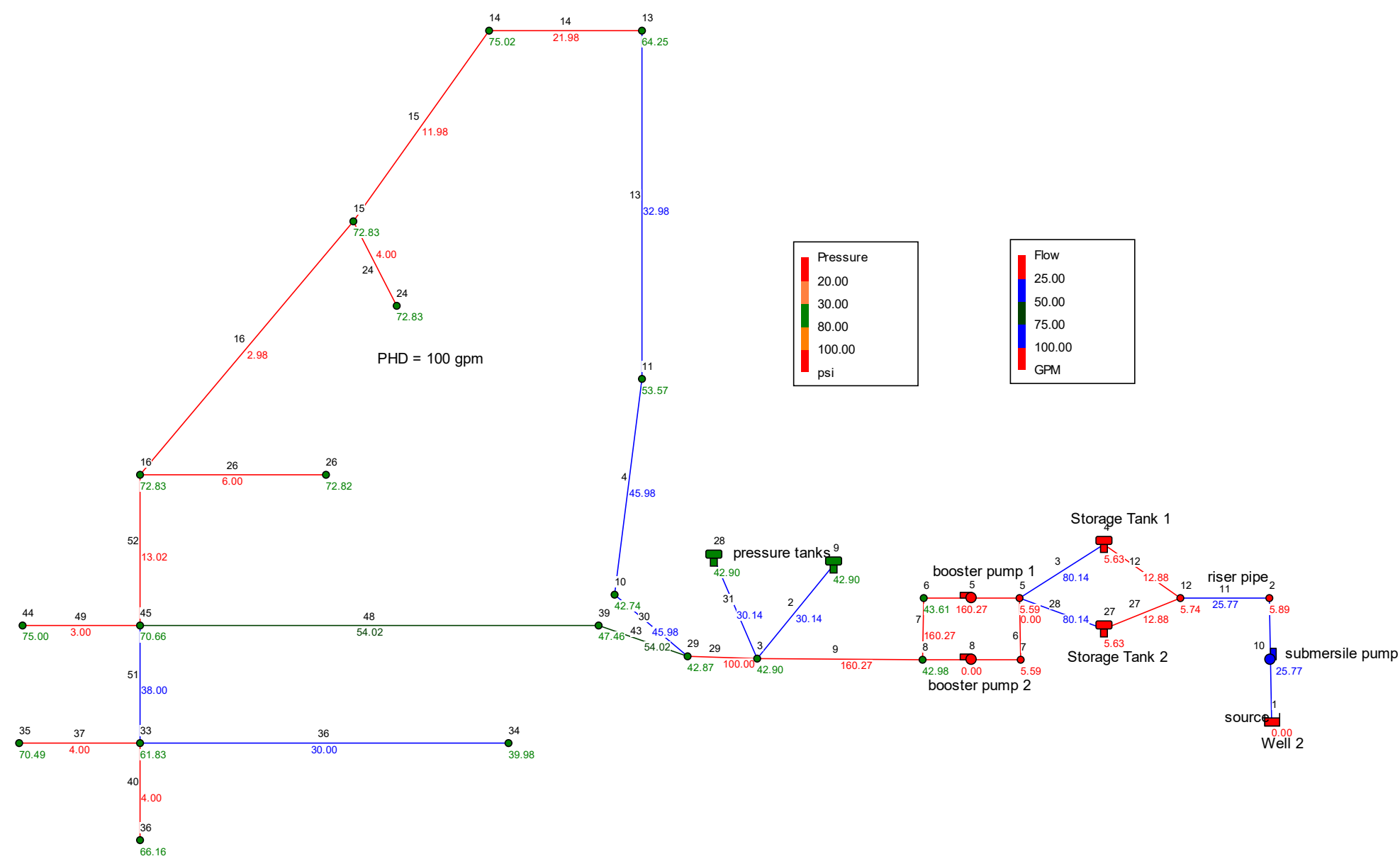
Network Table - Links at 0:00 Hrs

Link ID	Length ft	Diameter in	Roughness	Flow GPM	Velocity fps
Pipe 3	20	4	130	0.00	0.00
Pipe 6	20	3	130	0.00	0.00
Pipe 7	20	3	130	0.00	0.00
Pipe 9	10	4	130	0.00	0.00
Pipe 4	560	4	130	0.54	0.01
Pipe 11	20	2	130	25.77	2.63
Pipe 12	50	2	130	12.88	1.32
Pipe 2	10	4	130	-0.50	0.01
Pipe 13	370	4	130	0.54	0.01
Pipe 14	320	4	130	0.54	0.01
Pipe 15	345	4	130	-0.46	0.01
Pipe 16	740	4	130	-0.46	0.01
Pipe 24	163	4	130	0.00	0.00
Pipe 26	317	4	130	0.00	0.00
Pipe 27	50	2	130	12.88	1.32
Pipe 28	20	4	130	0.00	0.00
Pipe 29	10	4	130	1.00	0.03
Pipe 30	170	4	130	0.54	0.01
Pipe 31	10	4	130	-0.50	0.01
Pipe 36	515	4	130	0.00	0.00
Pipe 37	185	4	130	0.00	0.00
Pipe 40	110	4	130	0.00	0.00
Pipe 43	170	4	130	0.46	0.01
Pipe 48	600	4	130	0.46	0.01
Pipe 49	180	4	130	0.00	0.00
Pipe 51	310	4	130	0.00	0.00
Pipe 52	70	4	130	0.46	0.01
Pump 5	#N/A	#N/A	#N/A	0.00	0.00
Pump 8	#N/A	#N/A	#N/A	0.00	0.00

Deception Park View - Static (High Pressure)

Link ID	Length ft	Diameter in	Roughness	Flow GPM	Velocity fps
Pump 10	#N/A	#N/A	#N/A	25.77	0.00

Deception PArk View Peak Hour Demand



Deception PArk View Peak Hour Demand

Network Table - Nodes at 0:00 Hrs

Node ID	Elevation ft	Demand GPM	Pressure psi
Junc 2	101	0.00	5.89
Junc 5	101	0.00	5.59
Junc 6	101	0.00	43.61
Junc 7	101	0.00	5.59
Junc 8	101	0.00	42.98
Junc 10	101	0.00	42.74
Junc 11	75	13.00	53.57
Junc 12	101	0.00	5.74
Junc 3	101	0.00	42.90
Junc 13	50	11.00	64.25
Junc 14	25	10.00	75.02
Junc 15	30	5.00	72.83
Junc 16	30	10.00	72.83
Junc 24	30	4.00	72.83
Junc 26	30	6.00	72.82
Junc 29	101	0.00	42.87
Junc 33	55	0.00	61.83
Junc 34	105	30.00	39.98
Junc 35	35	4.00	70.49
Junc 36	45	4.00	66.16
Junc 39	90	0.00	47.46
Junc 44	25	3.00	75.00
Junc 45	35	0.00	70.66
Resvr 1	-11	-25.77	0.00
Tank 4	101	-67.25	5.63
Tank 9	101	30.14	42.90
Tank 27	101	-67.25	5.63
Tank 28	101	30.14	42.90

Deception PArk View Peak Hour Demand

Network Table - Links at 0:00 Hrs

Link ID	Length ft	Diameter in	Roughness	Flow GPM	Velocity fps
Pipe 3	20	4	130	80.14	2.05
Pipe 6	20	3	130	0.00	0.00
Pipe 7	20	3	130	160.27	7.27
Pipe 9	10	4	130	160.27	4.09
Pipe 4	560	4	130	45.98	1.17
Pipe 11	20	2	130	25.77	2.63
Pipe 12	50	2	130	12.88	1.32
Pipe 2	10	4	130	30.14	0.77
Pipe 13	370	4	130	32.98	0.84
Pipe 14	320	4	130	21.98	0.56
Pipe 15	345	4	130	11.98	0.31
Pipe 16	740	4	130	2.98	0.08
Pipe 24	163	4	130	4.00	0.10
Pipe 26	317	4	130	6.00	0.15
Pipe 27	50	2	130	12.88	1.32
Pipe 28	20	4	130	80.14	2.05
Pipe 29	10	4	130	100.00	2.55
Pipe 30	170	4	130	45.98	1.17
Pipe 31	10	4	130	30.14	0.77
Pipe 36	515	4	130	30.00	0.77
Pipe 37	185	4	130	4.00	0.10
Pipe 40	110	4	130	4.00	0.10
Pipe 43	170	4	130	54.02	1.38
Pipe 48	600	4	130	54.02	1.38
Pipe 49	180	4	130	3.00	0.08
Pipe 51	310	4	130	38.00	0.97
Pipe 52	70	4	130	13.02	0.33
Pump 5	#N/A	#N/A	#N/A	160.27	0.00
Pump 8	#N/A	#N/A	#N/A	0.00	0.00

Deception PArk View Peak Hour Demand

Link ID	Length ft	Diameter in	Roughness	Flow GPM	Velocity fps
Pump 10	#N/A	#N/A	#N/A	25.77	0.00

APPENDIX H Seawater Intrusion Analysis



Island County Health Department

P.O. Box 5000 • Coupeville, WA 98239

Island County Seawater Intrusion Protection Intrusion Risk Rating Certification

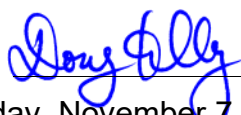
Issued: Wednesday, November 7, 2018

Intrusion Rating for Well # 4QD is 'Low Risk'

PwsID/SO#: 18305/2

Wells within 1/2 Mile of Well # 4QD*

Well Key	Owner Name	Well Address	Max Chloride	Water Level Elev	Distance from Center	Total Depth Elev	Loc Acc*
4QC	R P Fakkema	5078 N DECEPTION CIR (from parcel addr	59	19.28	13	-74	-2
GQP	John Sitko	40251 SR 20B, Oak Harbor	49		2264	-21	3
F3K	John & Ronnie Sitko	40219 SR 20	41		1983	-18	3
CDE	Si Heller	0 (from parcel address)	40		2639	-78	3
4QD	Deception Park View Community Assoc.		36		0	-188	2
4PR	Rob VanDyk	515 W. Ducken Road, Oak Harbor, WA 982	32		2188	-103	3

Staff Signature: 
Expires: Thursday, November 7, 2019

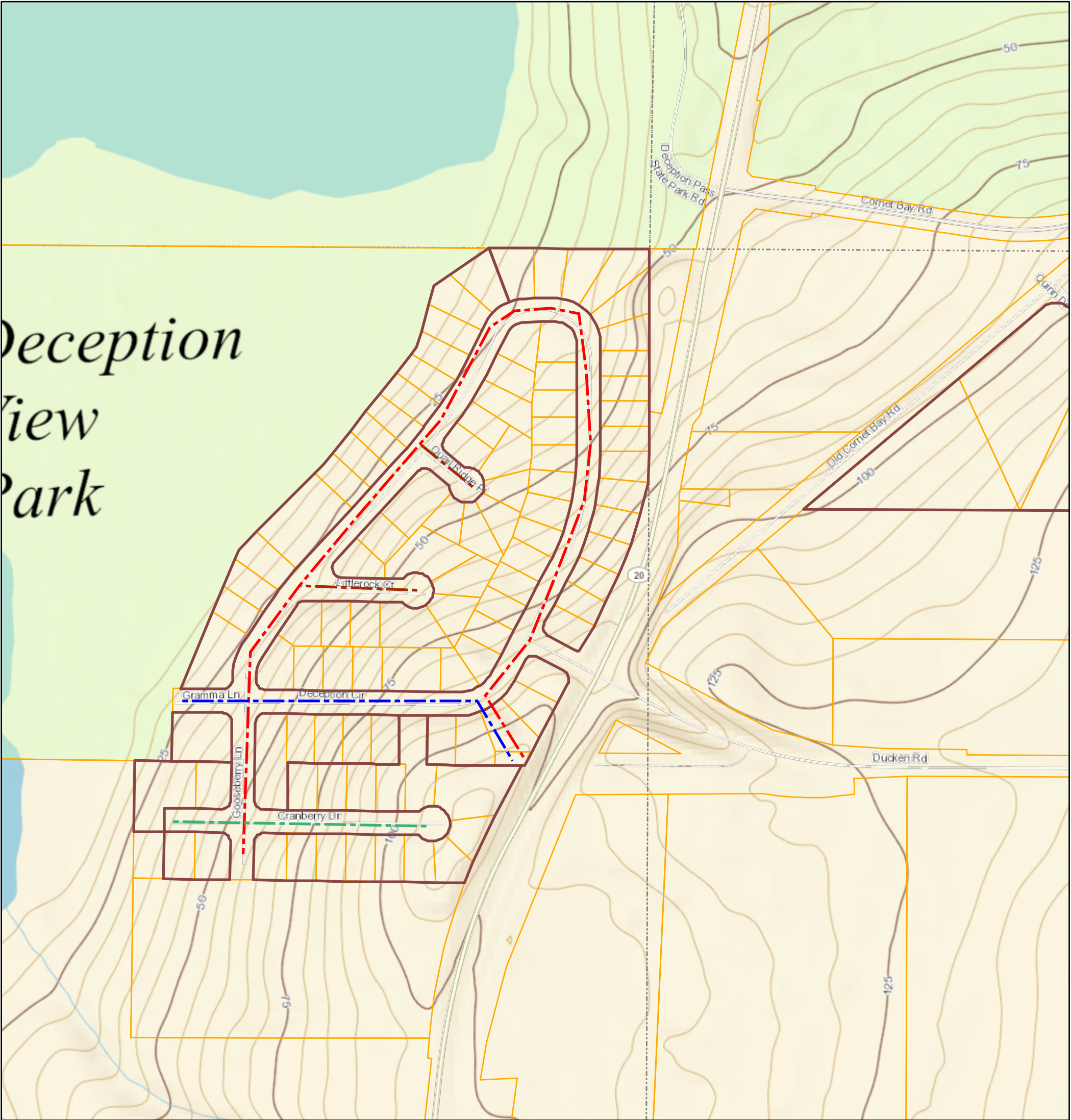
Parcel Acres:

Xcode: 434112070393 34N/01E-35

*** Location Accuracy**

0 = TRS 1 = Parcel 2 = DGPS
3 = Site plan / GE " " = Unknown
< 0 = Elev Surveyed

Topographic_Island county map



11/6/2018 4:34:35 PM

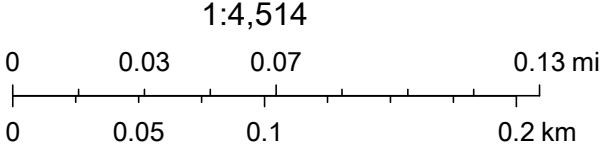
- Plats

 - Plat
- Tideland Only Parcels

 - No Adjacent Land
- Parcels

 - Quarter Sections
- One Way Directions
- Road Closures
- Roads

 - Highway
 - Collector and Arterial
 - Local
 - Private



Island County

APPENDIX J Asset Inventory

Asset	Install Date (Year)	Est. Effective Life (Years)	Est. Remaining Life (Years)
Well #1 (AGA575) Inactive)	1969	60	0
Well #1 Pump (Inactive)	1969	15	0
Well #2 (AGA589)	1975	60-70	10-20
Well #2 Pump	2010	15-20	5-10
Pressure Line from Well to Reservoirs	1997	60	40
Octagonal Reservoir (36,700 gal)	1976	50-70	5 -25
Cylindrical Reservoir (33,400 gal)	2001	50-70	25-35
Pumphouse Building	1994	50	20
Cycle Stop Valves	2015	15	10
(2) Pressure Tank (119 gallon Wellmate)	2015	10	5
4" AC Distribution Pipes (4,500 LF)	1970	50-80	0
(5) Fire Hydrants	1970	40-50	0
(7) 4" Gate Valves	1970	25-50	0
Chlorination Tank	2010	20	10
Chlorination Pump	2010	15	3
Generator and Auto Transfer Switch	2010	20-30	10-20
Booster Pump #1: 5 HP Goulds 3656	2013 (rebuilt)	15	5
Booster Pump #2: 5 HP Goulds 3656	2013	15	5